SOURCES OF STRESS, STRESS AND COPING IN A POPULATION OF PRE-REGISTRATION NURSING AND MIDWIFERY STUDENTS

A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy in the Faculty of Medicine, Dentistry, Nursing and Pharmacy

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2003

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ABSTRACT

Background – This thesis concerns an investigation into stress in pre-registration nursing and midwifery students in a British university. The investigation was commissioned and funded by the university's nursing and midwifery department. The research purpose was to explore the mental health of pre-registration students in the department and inform an effective student support strategy. From this purpose a number of research objectives were set and from those objectives, a number of research questions were established.

Method – The investigation is embedded in the positivistic paradigm. A cross-sectional, mixed design survey was employed as the method, with a self-administered questionnaire pack being the data collection technique. Data was collected on sources of stress, stress and coping using a number of pre-existing measures. Demographic data was also collected. Data were analysed using a variety of descriptive and inferential statistical methods. In particular, parametric and non-parametric tests of comparison and logistic regression were employed.

Sample – 1,543 'Project 2000' pre-registration students of nursing and midwifery attending the university's nursing and midwifery department were asked to complete a questionnaire pack. 1,122 packs were returned of which 1,107 were used in analysis.

Results – Overall, the population considered was predominantly young, white, female, of the higher social classes and educated beyond the minimum requirements for entry into nurse or midwife training. Examinations/assessments, fear of failing the course and managing bursary were the major sources of stress. The overall prevalence of stress ('caseness' rate) was around one-third. Respondents appeared reasonably able at gauging their own stress levels; indeed, such self-assessments were predictive of caseness in both the nursing and the midwifery subpopulations. In comparing caseness rates and stress levels across population subgroups, effects were evident for range of variables although consistent and substantial differences were only evident on a few, namely common foundation

programme vs. branch, sex, assessment load, difficulty in travelling to the academic base, familiarity with the local area and unseen disability. Paradoxically, none of these variables predicted caseness in either the nursing or the midwifery subpopulations. In addition to self-assessment of stress levels, whether respondents had children and the ages of those children predicted caseness in nursing; in midwifery, the key predictors of caseness were the particular midwifery programme being pursued and whether the respondent was a smoker or not. Thoughts of dropping out and asking for extensions on assessments were common behaviours. Alcohol use was widespread amongst respondents but not necessarily as a coping mechanism; the converse seemed to be true for smoking. Illicit and prescription drug use was rare amongst respondents. With regard to coping, respondents tended to prefer task- and avoidance-oriented coping (social diversion in particular) to emotion-oriented coping, although demographic factors such as age on entry, sex and ethnicity influenced coping preferences. Respondents preferred to seek support from external sources (friends and family, in particular) rather than from university-based support mechanisms although the personal teacher was seen a primary source of support. Methodological and other limitations of the investigation were addressed.

Conclusions – Nursing and midwifery students have more in common with students of other disciplines than they have differences. Being a student – regardless of academic or professional discipline – appears to be a stressful experience. In informing an effective student support strategy, a number of recommendations are made including recommendations concerning the use of the personal teacher, work-life balance and evidence based curriculum design. A range of interventions, which cut across primary, secondary and tertiary approaches to stress management are also suggested. These interventions should also form the bedrock of the next generation of research into student stress.

DECLARATION, COPYRIGHT & OWNERSHIP OF INTELLECTUAL PROPERTY RIGHTS

No portion of the work referred to in this thesis has been submitted in support of an application for another degree or qualification at this or any other university or other institute of learning.

BIOGRAPHICAL NOTES

Following successful completion of an honours degree in psychology at the University of Manchester in 1985, the author of this thesis undertook training to become a Registered Mental Heath Nurse, successfully qualifying in 1990. Whilst employed as a Mental Health Nurse, the author undertook further part-time study, obtaining an MSc in applied psychology in 1994, also from the University of Manchester. This MSc, although a largely taught degree, involved a sizeable research component and a requirement that empirical work be undertaken, empirical work that culminated in a dissertation entitled 'Family Carers of Adolescent Sufferers of Schizophrenia'.

Towards the end of MSc studies, the author undertook training to become a Registered Nurse Teacher, obtaining a Post-Graduate Diploma in Education in 1994, again from the University of Manchester. In 1995, the author subsequently obtained a post as a nurse tutor in an NHS college of nursing. This college was assimilated into the University of Manchester's School of Nursing, Midwifery and Health Visiting in 1997, where the author has been employed as a nursing lecturer and research associate ever since.

The author has a number of peer-reviewed publications, book chapters and professional articles published. The author is a graduate member of the British Psychological Society and is working towards full membership of the Society's Division for Teachers and Researchers in Psychology.

ACKNOWLEDGEMENTS

I am indebted to a number of people without whom this thesis would not have been possible. On a professional level, I would like to thank Professors Charlie Brooker, Tony Butterworth and Karen Luker for their initial support and encouragement. I would also like to thank, in no particular order, Drs Karina Lovell, Malcolm Campbell, Ann-Louise Caress and Martyn Jones for their practical help and advice along the way. Thanks also to my work colleagues (particularly my mental health colleagues) for their patience and encouragement over the last four-and-a half years. Above all, I am grateful to my supervisor, Professor Dave Richards, for being fair, firm, motivating, supportive and knowledgeable – I could not have asked for a better supervisor. On a personal level, I am grateful to those close to me – especially MBW – for still being close to me even though they have been ignored for the best part of four years! Last, and by no means least, I would like to express my heartfelt thanks to all the students who took part in the investigation.

To MBW. And to PP and CGM, who would have been so proud.

CHAPTER 1
INTRODUCTION

1.1 BACKGROUND TO THE INVESTIGATION

This thesis concerns an investigation into stress in a specific population, namely pre-registration nursing and midwifery students in the University of Manchester's School of Nursing, Midwifery and Health Visiting (hereinafter referred to as 'the School'). The investigation was commissioned and funded by the School with the understanding that it would be of strategic value to the School and that it would provide the investigator with the means of obtaining, on a part-time basis, the degree of Doctor of Philosophy.

Work on the investigation began in autumn 1998. The empirical aspects of the investigation took place between spring 1999 and autumn 2000 with data entry and analysis subsequently being undertaken during 2001.

1.2 CONTEXT

The School delivers a number of educational programmes that lead to statutory registration as a nurse or midwife. At the time of the investigation, three main pre-registration programmes were available: a four-year honours degree in nursing (the Bachelor of Nursing, BNurs), a three-year nursing diploma (the Diploma in Professional Studies in Nursing, DPSN) and a three-year midwifery diploma (the Diploma in Professional Studies in Midwifery, DPSM).

1.2.1 Pre-registration nursing programmes at the University of Manchester

The two main nursing programmes available at the time – the degree and the diploma – were both grounded in the 'Project 2000' initiative. Project 2000 was a nurse-led, government-backed initiative designed to align nurse education with the education of other health professionals by transferring the responsibility from the hospital-based schools of nursing to the higher education (HE) sector. At its core was the wholesale replacement – by the year 2000 – of the traditional, work-based apprenticeship models of nurse *training* with the academically-grounded diploma and degree programmes of nurse *education*.[1]

1.2.1.1 Diploma programmes

In line with the statutory requirements for Project 2000 programmes, the standard three-year nursing diploma (DPSN) was split into two parts. For the first 18 months, all students undertook a 'common foundation programme' (CFP). DPSN students subsequently entered an 18-month 'branch' programme in which the students specialised in one of the four branches of nursing: adult, mental health, children's or learning disability. Successful completion of the programme facilitated entry to the UKCC[2] register together with the academic award of an HE diploma.

For adult, mental health and children's nursing, there were two intakes each year, one in the spring and one in the autumn. The learning disability programme differed from the other three branches in that learning disability students undertook a joint programme in nursing and social work, the social work component being delivered via a partnership with the University of Salford. Although learning disability students completed the same 18-month CFP as the other three branches, additional social work studies (especially in the branch) earned these students a double award: a diploma in nursing (the DPSN like other students) *plus* a diploma in social work. Unlike the other branches, there was only one learning disability intake each year, in the spring.

[1] During the data collection period, the Government published its new strategy for nursing, midwifery and health visiting: *Making a Difference* (Department of Health 1999a). Contained within *Making a Difference* were recommendations for nurse education that built upon the strengths of Project 2000 whilst addressing some of its perceived weaknesses. These recommendations were subsequently implemented and, in line with national policy, 'Making a Difference' programmes superseded Project 2000 programmes in the School in autumn 2001.

[2] The United Kingdom Central Council for Nursing, Midwifery and Health Visiting (UKCC), the statutory regulatory body at the time, was responsible for maintaining the nursing and midwifery register. It was replaced by the Nursing and Midwifery Council (NMC) in April 2002.

1.2.1.2 Diploma sub-programmes

A number of flexibilities existed within the DPSN that enabled students with previous qualifications to complete in less than the prescribed three years. Graduates in relevant subjects were able to complete the programme in two years. These students undertook an accelerated CFP lasting only six months and subsequently joined standard DPSN students in one of the branch programmes. In addition, students who were already on the UKCC register (i.e. already registered nurses), but who wished to 'convert' to another branch (e.g. an adult nurse who wished also to become a mental health nurse) were exempted from the CFP. These students undertook only the appropriate branch programme and hence completed in 18 months. Intakes for these two sub-programmes were variable and were organised so that they dovetailed with the pre-existing branch programmes of the standard three-year DPSN.

1.2.1.3 Degree programme

Like the DPSN, the four-year degree programme (BNurs) also led to entry to the UKCC register. It was, however, delivered and organised independently of the DPSN although, as a Project 2000 programme, it adopted a similar pattern to the DPSN for the first three years (18-month CFP; 18-month branch) except that only two branches – adult and mental health – were available. Like DPSN students, BNurs students fulfilled the requirements for entry to the UKCC register at the end of their third year and were, as such, qualified (registered) nurses when they entered their fourth year. In the fourth year, these students undertook a further period of study that led to an additional UKCC-recognised qualification – 'specialist practice' – which could be in district nursing, health visiting or community mental health nursing. Thus, at the end of their programme, BNurs students exited with an honours degree, as a registered nurse and as a specialist practitioner. There was one intake each year: an autumn intake that started at the same time as all other full-time degree students in the University.

1.2.2 Pre-registration midwifery programmes at the University of Manchester

Although rarely referred to as Project 2000 programmes, university-based midwifery programmes came about as a result of the same philosophy and legislation that fashioned Project 2000 for nursing. Midwifery programmes differ from nursing programmes, however, in that they are integral programmes rather than programmes made up of two separate halves.

Two main programmes existed in the School at the time of the investigation: a three-year diploma programme and an 18-month 'shortened' programme. With regard to the three-year diploma, two versions of the programme co-existed as a result of a curriculum change in February 1999. Entrants who had started on a programme prior to February 1999 undertook a standard three-year midwifery diploma (DPSM), analogous to the standard three-year nursing diploma (DPSN). Entrants who had started after February 1999 undertook an 'enhanced' DPSM. Like the standard DPSM, the enhanced programme provided the necessary requirements for the academic award of a diploma and for registration as a midwife. However, by providing successful completers with an additional 60 level three academic credits, the enhanced DPSM was akin to something half-way between a diploma and an honours degree. The 'shortened' midwifery programme allowed nurses (specifically adult branch nurses) already on the UKCC register to complete midwifery training in 18 months rather than the standard three years. There were two intakes per year for the three-year DPSM programmes, one in the spring and one in the autumn; intakes for the shortened course were variable and were subject to demand.

1.3 STRESS: A CONCEPT IN NEED OF CLARIFICATION

Central to this thesis is the concept of 'stress'. Surprisingly, for a concept so entrenched in the consciousness of the modern-day world, there is no uniform agreement in the specialist literature on the defining characteristics of stress. Sutherland and Cooper (1990) remark that those disciplines with an interest in stress research – the medical, behavioural and social sciences – have variously interpreted stress as a stimulus (i.e. as the independent variable) and as a response (i.e. as the dependent variable). In a similar vein, Payne (1999) notes that stress has been interpreted to mean both the cause and the consequence and Payne goes on to argue that stress can also be interpreted as a process. Attempts at clarifying stress are further complicated by the utilisation of a number of related terms and concepts in the literature, terms and concepts such as 'pressure', 'source of stress', 'stressor', 'demand', 'distress', 'mental health', 'burnout', 'coping', 'anxiety' and 'strain'.

An appropriate starting point in an academic treatise on stress is, therefore, an exploration of the terms and concepts commonly employed in stress research with the goal of establishing some clarity and consistency in the debate. Inseparable from this exploration of terms and concepts is a consideration of the different models of stress that have permeated stress research over the past fifty years or so. Indeed, Cox (1993) argues that the key to clarity is understanding that there are essentially three different, but overlapping, approaches to stress: the 'engineering' approach, the 'physiological' approach and the 'psychological' approach.

1.3.1 The engineering approach: stress as a stimulus

In the engineering approach, stress is seen as a property of the environment rather than the person. Stress is the stimulus, the response to which is 'strain'. The engineering approach has its roots in the physical sciences and analogies from these disciplines are easy to identify: repeatedly bend a piece of metal (stress it) and the resulting strain will ultimately manifest as metal fatigue; too much pressure (a common synonym for stress as a stimulus) when inflating a vehicle tyre and the tyre will eventually burst as a result of the strain experienced. In both of these analogies, some sort of threshold – or breaking point – is implied and, unsurprisingly, it is within the engineering approach that the notion of a 'stress threshold' was first developed (Cox 1993). The engineering approach is also reflected in common sayings such as 'cracking under pressure', 'the strain was too much' and 'reaching breaking point'.

The relationships between person and environment, stimulus and response, and stress threshold within the engineering approach are illustrated in Figure 1.1 overleaf. Note, in particular, the thickness of the line, representing the stress threshold, around the 'person' box.

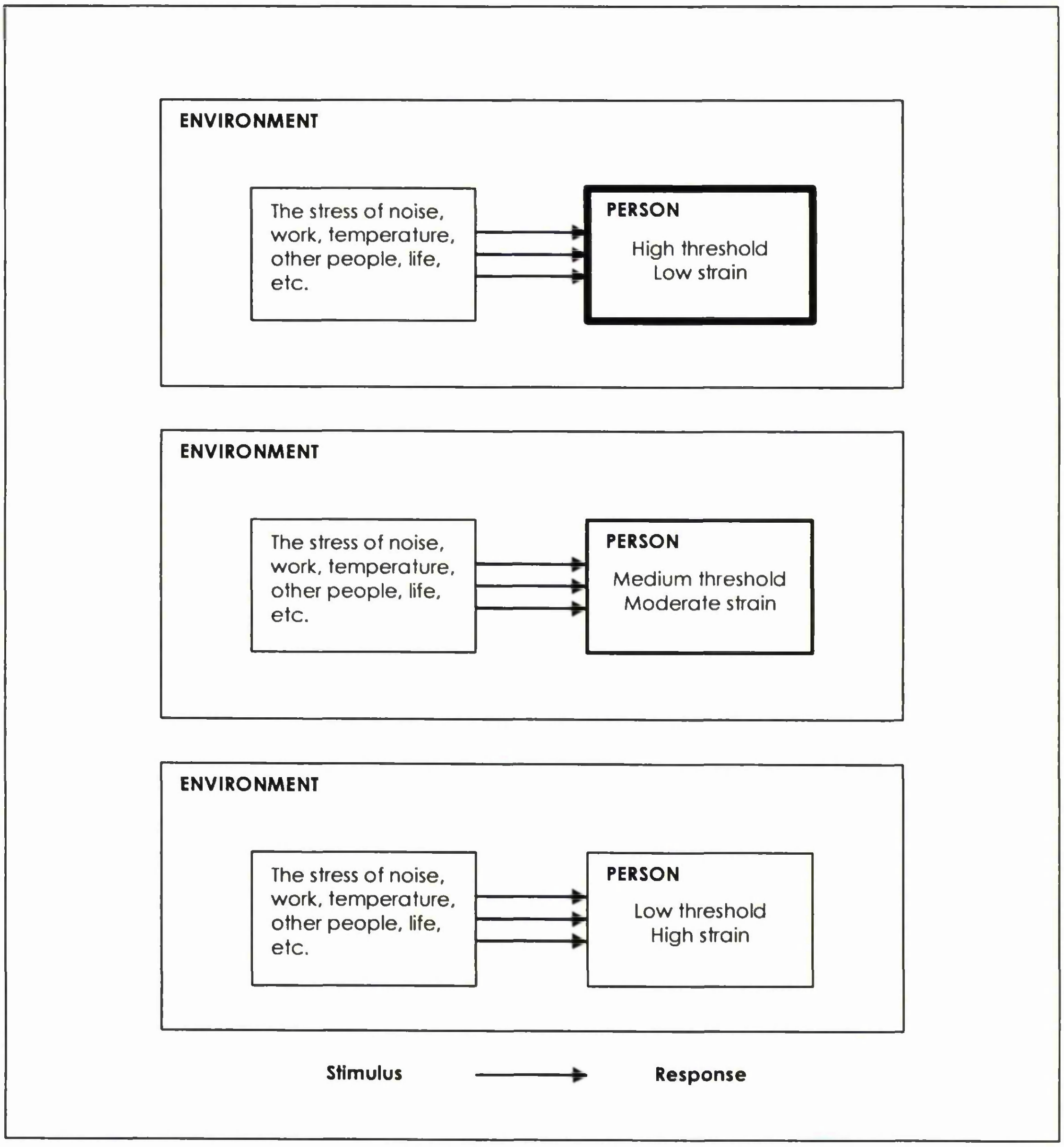

Figure 1.1 The engineering approach to stress.

Much of the early work on occupational stress was embedded in the engineering approach, with a focus on identifying the particular stresses (or 'demands', to use the parlance of occupational psychologists) responsible for suboptimal working conditions (Sutherland and Cooper 1990). The widely known *Social Readjustment Rating Scale* of Holmes and Rahe (1967 – see, for example, Rice 1999) is another example of the engineering approach's influence. Holmes and Rahe's scale is, in effect, a rank-ordered list of certain environmental demands – those relating specifically to 'life-events'.

1.3.2 The physiological approach: stress as a response

In contrast to the engineering approach, the physiological approach sees stress as a property of the person rather than then environment. Stress is seen as a response (specifically, a *physiological* response involving the autonomic nervous system) to a particular stimulus (more often than not, a threatening or harmful stimulus). The physiological approach has its roots in the study of emotion and, in particular, the study of fear and arousal.

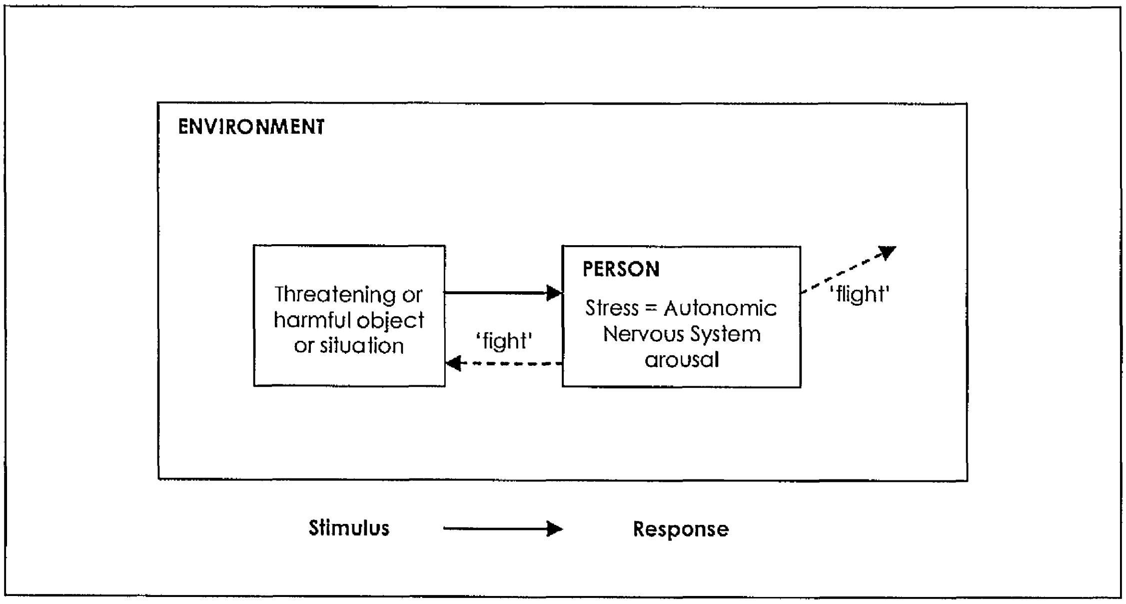

Figure 1.2 The fight-or-flight response.

1.3.2.1 Fight-or-flight

In its most naïve form, the physiological approach maintains that a threatening stimulus will result in a physiological response, the so-called 'fight-or-flight' response (Figure 1.2). There is a problem with this viewpoint, however. When stress is equated to a feeling (to the person) rather than to environmental demands, most people would argue that the fight-or-flight response is more in tune with feelings of *fear* rather than feelings of stress. What distinguishes the qualitative experience of stress from the qualitative experience of fear (leaving aside, for the time being, the role that cognitive processes might play) seems to be the *persistence* of the stimulus. The relationship between persistent stimuli and the stress experience is accounted for in another physiological model of stress, the 'general adaptation syndrome'.

1.3.2.2 General adaptation syndrome

The general adaptation syndrome (GAS) was identified by Selye in the 1950s (see, for example, Selye 1976). It is a three-stage model of stress. The first stage – 'alarm' – is analogous to the flight-or-fight response discussed above. If the individual is unable to escape (flee) or overcome (fight) the threatening stimuli, the body moves into 'resistance', a stage where the body's physiological defences go into overdrive in order to protect the individual. However, over time the body's resources become depleted as the body continues to resist the threatening stimuli and, if the threatening stimuli continue to persist over lengthy periods of time, the body may move into a third stage – 'exhaustion' (Figure 1.3).

GAS has been immensely influential in stress research. In particular, the central role of the neuroendocrine system in modelling stress led to the establishment of the discipline of psychoimmunology, and considerations of the third stage – exhaustion – laid the foundations for the work on 'burnout' (Payne 1999). Yet, despite its influence, there are still major problems with GAS. Like the engineering approach, it ignores the role that psychological processes play both in the perception of stimuli and in the interpretation of the response (Cox 1993; Edelmann 1996; Sutherland and Cooper 1990). For a stimulus to be threatening, it has to be *perceived* as a threat – not everyone is afraid of spiders, after all. And the seminal work of Schachter and Singer (1962), in which they demonstrated that the experience of emotion needs not only physiological arousal but also environmental cues (a 'label' for the arousal), clearly illustrates that cognitive processes play a role in the experience of emotion.

In the next section, several models of stress are considered that do, indeed, take cognitive and perceptual processes into account when trying to explain stress. Before moving on, however, it is worth taking stock on issues regarding the terminology employed in stress research.

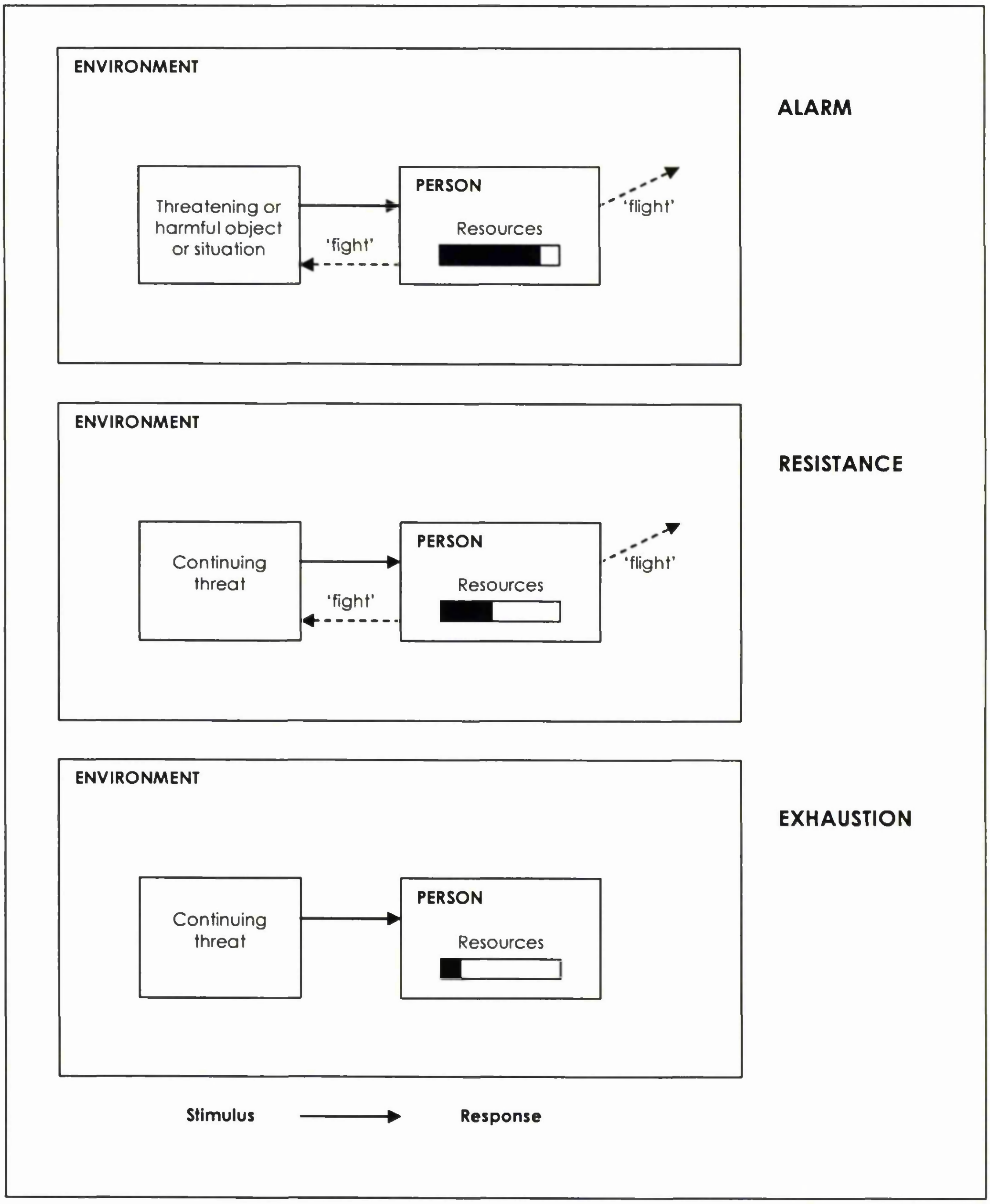

Figure 1.3 The general adaptation syndrome.

In the engineering approach, stress was used a synonym to describe environmental stimuli variously referred to as 'demands', 'pressure', 'stressors' or 'sources of stress'. On the other hand, in the physiological approach, stress has been used to describe a response to environmental stimuli, i.e. as a synonym for 'strain'. Whilst strain is a useful term and whilst many authors have shown a preference for this term (Borrill *et al.* 1998; Edelmann 1996; Rice 1999), the preference in the current investigation, however, **is to use the term 'stress' to denote a response.** In this sense, stress becomes allied to 'distress', a closely related term frequently employed in the psychiatric and psychotherapeutic literature.[3]

If stress is taken to mean a response then, obviously, an alternative term has to be chosen to represent the stimuli. Pagana (1990) remarks that environmental stimuli can be challenging (having the potential for growth, mastery or gain) as well as threatening (having the potential for harm). This implies that the best term is perhaps one that is relatively neutral. Of the four candidates – demands, pressures, stressors and sources of stress – demands is the most neutral, although Cary Cooper claims (McCourt-Mooney 2000) that pressures can also be stimulating, 'growthful' and motivating as well as stress-inducing. Nonetheless, pressure still has negative connotations for most people. Although a better term in many respects, demands tends to be used exclusively by those with an interest in work (as opposed to life) stress. This leaves only stressors and sources of stress, terms that are essentially synonymous although stressors is perhaps a little more formal than sources of stress. And whilst both have negative connotations, they are relatively straightforward terms that are common in the literature.[4] Consequently, in this investigation, **environmental stimuli will be referred to as 'sources of stress'** or by the synonym 'stressors'. A rider needs to be included here, however. When dealing with a non-technical audience (participants in a study on stress, for example), 'pressures' is a useful alternative to the wordy 'sources of stress', the formal 'stressors' and the unfamiliar 'demands'. As such, when communicating directly with participants, the investigator has occasionally used pressures as a synonym for sources of stress. 'Under pressure' has, likewise, occasionally been used as a synonym for stress.

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[3] Selye's notion (see, for example, Selye 1976) of 'eustress' as positive stress and 'distress' as negative stress better explains the semantic relationship between stress and distress. Few authors, however, have made use of the term eustress, perhaps because most of the literature has concerned damaging, unpleasant stress (distress) rather than motivating, life-enhancing stress (eustress). The current investigation is no different hence, on occasions, the terms 'stress' and 'distress' are used interchangeably.

[4] If Selye's view of eustress-distress had been more widely adopted, 'stress' would have been a neutral term and, by consequence, so would have 'stressor' and 'sources of stress'.

1.3.3 Psychological approaches

Psychological approaches dominate contemporary views of stress. Cox (1993) divides the models within this approach into two main camps: 'interactional' models and 'transactional' models. Interactional models have their roots in the work, rather than life, stress literature and are concerned with the interaction between stressors (specifically, demands at work) and the characteristics of the individual exposed to those stressors. Transactional models are not inconsistent with interactional models, but their focus tends to be on the cognitive and perceptual processes that underpin the interactions rather than on the interactions themselves.

1.3.3.1 Interactional models of stress

The two most well-known interactional models of stress are the 'person-environment fit' (P-E fit) model of French *et al.* (1981) and the 'demands-decision latitude' model of Karasek (1979).

In the P-E fit model (also known as the 'Michigan' model), stress arises as a result of a 'lack of fit' between the person and the environment. In work situations, this happens when the demands of the work environment are incongruous with the knowledge, skills or ability of the person, or vice versa. Thus a demand only becomes a stressor when there is a lack of fit. Psychological processes come into play in P-E fit because the lack of fit may arise as a result of *perceived* (subjective) as well as real (objective) demands or ability. The implications of the P-E fit model are that stress can be avoided in the workplace by ensuring that the 'right' person is in the 'right' job (the focus here being on selection techniques) or that changes be made to the job (job re-design) or to the work environment. An implicit assumption of the model is that people and their work environments are relatively stable over time; however, as Sutherland and Cooper (1990) and Parkes (1994) point out, this is not necessarily the case. Moreover, the model fails to take into account the influence of events outside of the work environment when there is clear evidence in the literature of a home-work relationship (see, for example, Jones and Johnston 2000a; Kipping 2000; Rice 1999; Snape and Cavanagh 1995; Wheeler 1998a).

In the demands-decision latitude model (also known as the 'demand-discretion' model), the focus is on the interaction between workplace demands and one specific aspect of the person: the degree of control ('decision latitude') which the individual has over their work circumstances. Thus, individuals in jobs with high demands and low decision latitude are said to be in 'high strain' jobs, whereas individuals in jobs with low demands and high decision latitude are said to be in 'relaxed' (low strain) jobs. The demand-discretion model is also not without its criticisms. Like the P-E fit model, it fails to explicitly account for factors outside of the work environment although some adaptations of the model, such as the 'demands-support-constraints' model (Payne 1999) and the 'demand x discretion x social support' model (Parkes *et al.* 1994) have attempted to address this failing. Nevertheless, the interactional models have made an important contribution to the understanding of stress in that they demonstrate that stress is a function of both environmental and personal factors; in particular, they emphasise the role of personality and individual differences in conceptualisations of stress.

1.3.3.2 Personality and individual differences

Control (discretion; decision latitude) is not the only aspect of personality to have been implicated in the stress equation. A number of other personality attributes, notably 'hardiness', 'locus of control', 'Type A' personality and 'negative affectivity', have been considered in the literature. Although some of these personality attributes are very closely related to the notion of control, it is expedient, given the extent to which these personality attributes have been considered in the literature, to make a brief comment about each before moving on to consider the transactional models of stress.

Hardiness (Kobasa 1979) is a personal quality defined by three key characteristics: the perception of situations and events as *challenging* rather than threatening; a strong sense of *commitment* (whether to work, family or community); and a sense of being in *control*. There is some evidence that hardiness can buffer stress (Cox 1993; Pagana 1990; Sawatzky 1998; Sutherland and Cooper 1990) although the evidence is not particularly overwhelming (Parkes 1994).

Although control is an important aspect of both hardiness and the demands-discretion model, the 'locus of control' concept (Rotter 1966) is concerned more with the (perceived) origin of control rather than its mere existence. Individuals with an internal locus of control ('internals') tend to see the driving force behind their successes and failures as their own personal effort and ability, whereas individuals with an external locus of control ('externals') tend to see external factors such as fate, chance and powerful others, as the driving force. There is a relationship between locus of control and hardiness in that (internal) locus of control could well be the same construct as the sense of being in control found in hardiness (Parkes 1984). There is some evidence that locus of control can affect the stress-health relationship in that externals are more likely to show symptoms of stress and have worse health outcomes (such as depression) than internals (Parkes 1984, 1994; Payne 1999; Sutherland and Cooper 1990).

Originally suggested by two cardiologists, Friedman and Rosenman (1974), the 'Type A' person is typically impatient ('hurry sickness' has been used as a synonym), hostile, irritable, aggressive, and competitive. There is some consistent research showing a relationship between Type A behaviours and adverse health outcomes (such as heart problems), but questions about the validity of the construct have also been raised (Cox 1993; Parkes 1994; Sutherland and Cooper 1990). The issue of control is central to an understanding of Type A personality in that Type A individuals seem to be constantly fighting to gain control over situations or events (Cox 1993). To some extent, Type A personality is the converse of the hardy personality (Cox *et al.* 2000) – whilst being in control is a facet of hardy individuals, not having control is a characteristic of Type A individuals.

As Watson and Clark (1984) note in the title of their paper (p 465), negative affectivity is the disposition to experience aversive emotional states. It is the tendency to view events from a negative perspective and experience distress in almost every situation the individual encounters and it seems to be similar to other constructs such as 'neuroticism', 'trait anxiety' and 'social desirability' (Watson and Clarke 1984). There is some evidence that the relationship between perceived stressors and perceived outcomes may be artificially inflated in individuals high on negative affectivity, although the literature appears to be divided is on the matter (Cox *et al.* 2000; Parkes 1982, 1990, 1994).

1.3.3.3 Transactional models of stress

Cox *et al.* (2000) note that personality has been investigated as either a component of the appraisal process (i.e. questioning whether personality determines how an individual might perceive events or their ability to deal with those events) or as a moderator of the stress-health relationship (i.e. questioning the extent to which specific personality characteristics like hardiness or control moderate the relationship between environmental characteristics and health). Unlike the interactional models, the transactional models of stress take both of these aspects of personality into account. Whilst the interactional models acknowledge that stress is a function of both person and environment, transactional models go one step further by speculating on the nature of person-environment interactions. Within the transactional models, it is the ongoing *transactions* between person and environment that are of interest. Specifically, it is *appraisals* of these transactions that give rise to the stress experience. 'Primary' appraisal relates to an initial assessment of the environment and is reflected in questions such as 'do I have a problem?' (Cox *et al.* 2000) or 'is the environment threatening?' (Payne 1999). Unpleasant emotions and feelings of discomfort obviously help here, but other factors such as personality and past experience will have an influence on primary appraisal. 'Secondary' appraisal is contingent on primary appraisal and is reflected in questions such as 'what am I going to do about it?' (Cox *et al.* 2000) or 'can I cope with the threat?' (Payne 1999). Thus, within transactional models, the experience of stress is defined by an individual's '... realisation that they are having difficulty coping with demands and threats to their well-being ... [and by a realisation] that coping is important and the difficulty in coping worries or depresses them' (Cox *et al.* 2000, p 42).

Most of the leading stress investigators operate with a transactional framework. For specific models see, for example, Lazarus and Folkman (1984), Endler and Parker (1990a), Cox (1993 – for Cox and Mackay's model), Sutherland and Cooper (1990 – for Cooper's transactional model of work stress) and Payne (1999). A transactional model of stress, based on aspects of some of these models but specific to this thesis can be found in Figure 1.4 overleaf.

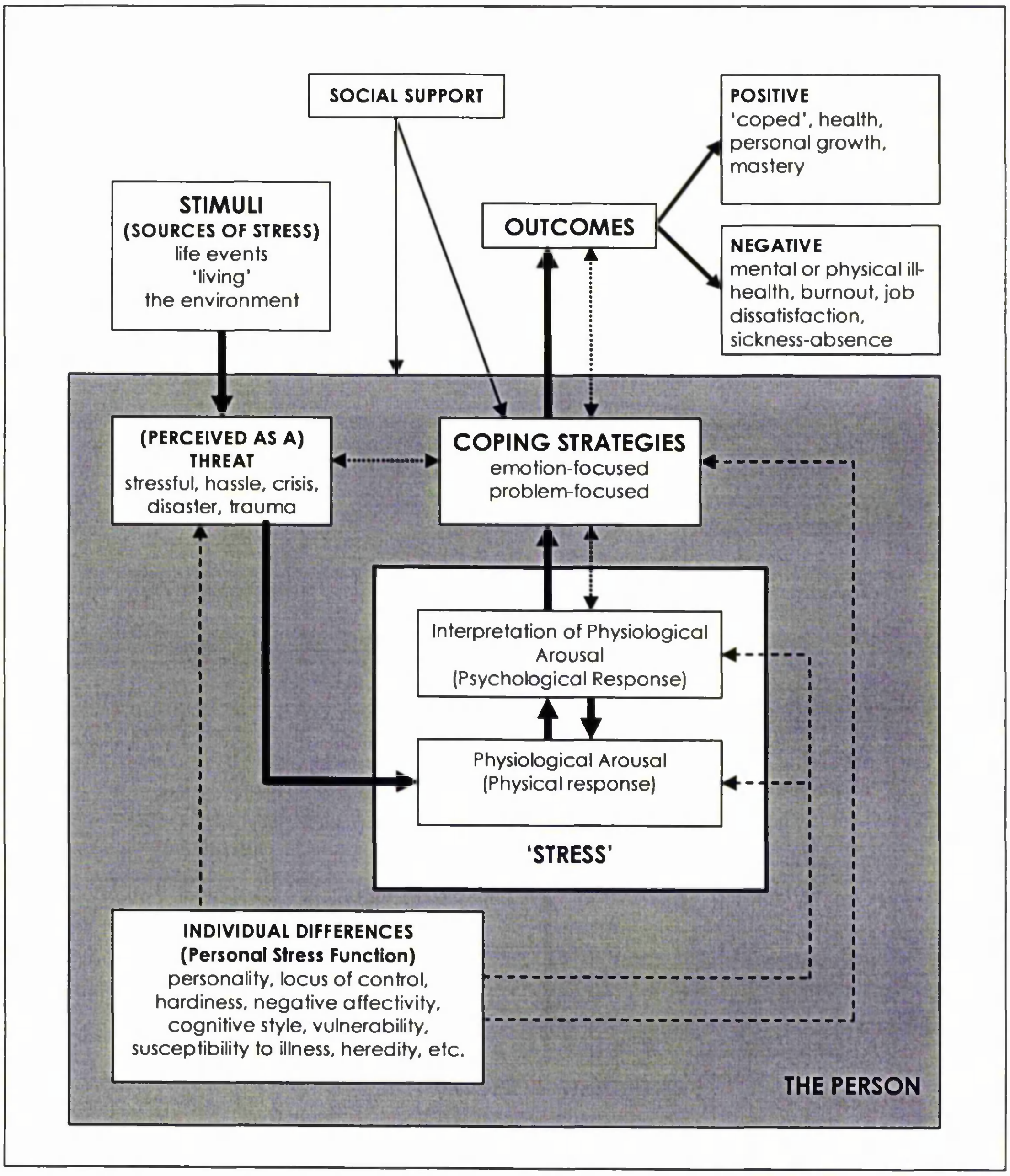

Figure 1.4 A transactional model of stress (after Endler and Parker 1990a; Lazarus and Folkman 1984; Payne 1999).

From the solid, black lines in Figure 1.4, it can be seen that situations or events (potential sources of stress) have to firstly be perceived as threatening. Once perceived as threatening, physiological arousal occurs. The physical feelings associated with this arousal together with a cognitive interpretation of these feelings form the basis of the subjective experience of stress. The subjective experience of stress – even to the point that it will be labelled 'stress' rather than some other state such as anxiety – is, however, dependent on other factors such as individual differences (represented by the dashed lines). Individual differences can affect both primary appraisal (how stimuli are perceived) and secondary appraisal (appraisal of the individual's coping resources). Individual differences will, by their very nature, also influence the individual's stress response directly, i.e. personality can have a direct effect on the stress response (as a moderator) as well as an indirect influence via the appraisal process. Muir (1999) calls the totality of these individual differences the 'personal stress function'; indeed, Muir suggests that it is this personal stress function that ultimately determines whether the subjective experience will be one of 'stress' or 'anxiety'.[5]

The coping strategies at the individual's disposal are also dependent on appraisals: appraisals of (a) the threat itself, (b) the individual's own response to the threat and (c) the desired or anticipated outcome. These appraisals are illustrated by the dotted (as opposed to dashed) lines. The double-headed arrows on these lines indicate that appraisal is a two-way process: coping ability is determined both by the current situation and by past experiences, past outcomes and past attempts at coping.

With regard to outcomes, only negative outcomes tend to be considered in the literature. In the work stress literature, the focus tends to be on organisational outcomes such as job dissatisfaction, sickness-absence and staff turnover. The focus in the life stress literature tends to be on outcomes of a more personal nature, the presence of psychiatric symptoms for example. A specific work-related outcome that has generated a significant amount of literature is 'burnout', a concept introduced in the 1970s by the psychoanalyst Herbert Freudenberger and popularised around the same time by Christina Maslach, a social psychologist (Schaufeli 1999). According to Schaufeli, burnout is a social problem associated with 'people work' in the human services. It has at its heart, the core indicator of *exhaustion* with four accompanying symptoms: distress; a sense of reduced effectiveness at work; decreased motivation; and dysfunctional attitudes and

[5] Rice (1999) remarks that it is nearly impossible to distinguish anxiety from stress. Muir's 'personal stress function', however, suggests the only difference between the two is the label given to the emotional state by the individual or by others.

behaviours at work (typically cynicism towards the specific client groups that workers are responsible for).

Finally, 'social support' is included in the model depicted in Figure 1.4 because of important findings regarding the role that social support plays in the experience of stress (Cohen and Wills 1985; Dignam and West 1988; Parkes *et al.* 1994). The role of social support is discussed in more detail below, but it is worth mentioning at this point that social support is thought to operate on two levels – either generally on the person (as a moderator or main effect) or specifically on the person's ability to cope in a given situation (as a mediator, buffer or interaction) – hence the two arrows.

1.3.3.4 Coping and social support

Although the transactional models emphasise the importance of coping in the stress equation, coping is perhaps the least understood aspect of stress research (Cox 1993). It is not simply the way in which individuals respond to particular stressors, but the way in which they arbitrate between sources of stress, their responses to these stressors and the possible outcomes (Lazarus and Folkman 1984; Endler and Parker 1990b). As such, coping is clearly a process but, as Cox (1993) points out, it is a process that is context dependent. Moreover, it is a process that is also independent of outcome: as Parkes (1994) and Edelmann (1996) remark, coping does not necessarily imply successful coping.

Figure 1.5 (overleaf) and Figure 1.6 (p 41) illustrate how various investigators have perceived coping in the 25 or so years in which it has been studied. Figure 1.5 is concerned with the earlier work on coping, when it was thought that there were three broad ways in which individuals might cope: by tackling the stress-inducing situation directly, by dealing with the emotional response or by trying to change perceptions of the situation. Billings and Moos (1984) called these ways of coping, respectively, problem-focused, emotion-focused and appraisal-focused coping. Parkes (1984) uses a different taxonomy, preferring instead to talk of two types of 'specific' coping (as opposed to 'general' coping, which is merely the number and range of coping strategies used) – 'direct coping' and 'suppression'. However, as Figure 1.5 illustrates, both direct coping and suppression can be mapped onto Billings and Moos' three types of coping.

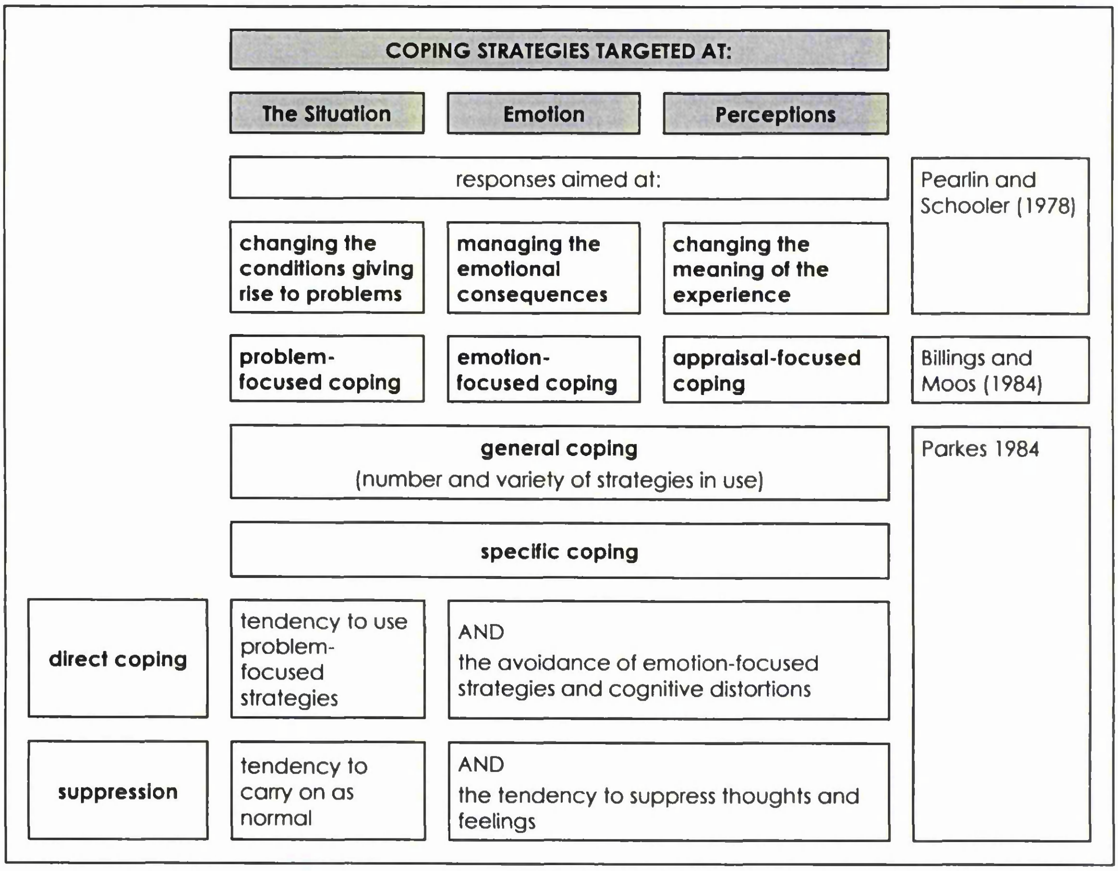

Figure 1.5 Mapping coping strategies – earlier work.

As the work on coping has progressed (Figure 1.6), the category of appraisal-focused coping seems to have been dispensed with. Both Folkman and Lazarus (1988) and Carver *et al.* (1989) list a range of strategies that can be broadly categorised as either problem-focused or emotion-focused strategies. Endler and Parker (1990a, 1990b) prefer to say that coping is 'task-oriented' rather than problem-focused and 'emotion-oriented' rather than emotion-focused and they add a third type of coping – avoidance-oriented – which spans both the main categories of coping via two subtypes, 'distraction' and 'social diversion'. The view of Steptoe (1991) is perhaps the most comprehensive in that the two main categories of coping are subdivided into those with a behavioural and those with a cognitive mode of action. Moreover, within in each of the four possible combinations Steptoe argues that there are both 'active' and 'passive' strategies, the active strategies being largely adaptive and the passive strategies largely maladaptive.

	COPING STRATEGIES TARGETED AT:		
	The situation	**The person**	
	problem-focused strategies: • planful problem solving	**emotion-focused strategies:** • wishful thinking • distancing • emphasising the positive • self-blame • tension-reduction • self-isolation	Folkman and Lazarus (1988)
	• seeking social support		
	problem-focused strategies: • active coping (cf. planful problem solving) • planning • suppression of competing activities • restraint • seeking social support for instrumental reasons	**emotion-focused strategies:** • seeking social support for emotional reasons • focusing on and venting of emotions • behavioural disengagement • mental disengagement	Carver *et al.* (1989)
	task-oriented coping	**emotion-oriented coping**	Endler and Parker (1990a)
	avoidance-oriented coping		
	distraction	seeking social support	
	problem-focused strategies	**emotion-focused strategies**	Steptoe (1991)
behavioural strategies	*active*: taking control of the situation	*active*: seeking information; social support	
	passive: avoidance, escape	*passive*: tension reduction, e.g. nail biting, smoking	
cognitive strategies	*active*: redefinition or restructuring of the situation	*active*: expression of affect, e.g. crying	
	passive: distancing; wishful thinking	*passive*: denial; repression	

Figure 1.6 Mapping coping strategies – later work.

Thus, despite the different perspectives on coping, there is, as Endler and Parker (1990b) have pointed out, a general consensus in the literature that a distinction can be made between problem-focused and emotion-focused coping. There also appears to be a consensus that both problem-focused and emotion-focused coping can be adaptive. For example, Parkes (1994) remarks that in situations not amenable to personal control, emotion-focused coping may be the most adaptive whereas, in situations where some degree of control is possible, problem-focused coping may be more effective. And Steptoe's classification is interesting in that all four coping approaches – problem-focused (behavioural), problem-focused (cognitive), emotion-focused (behavioural) and emotion-focused (cognitive) – have the potential to be adaptive.

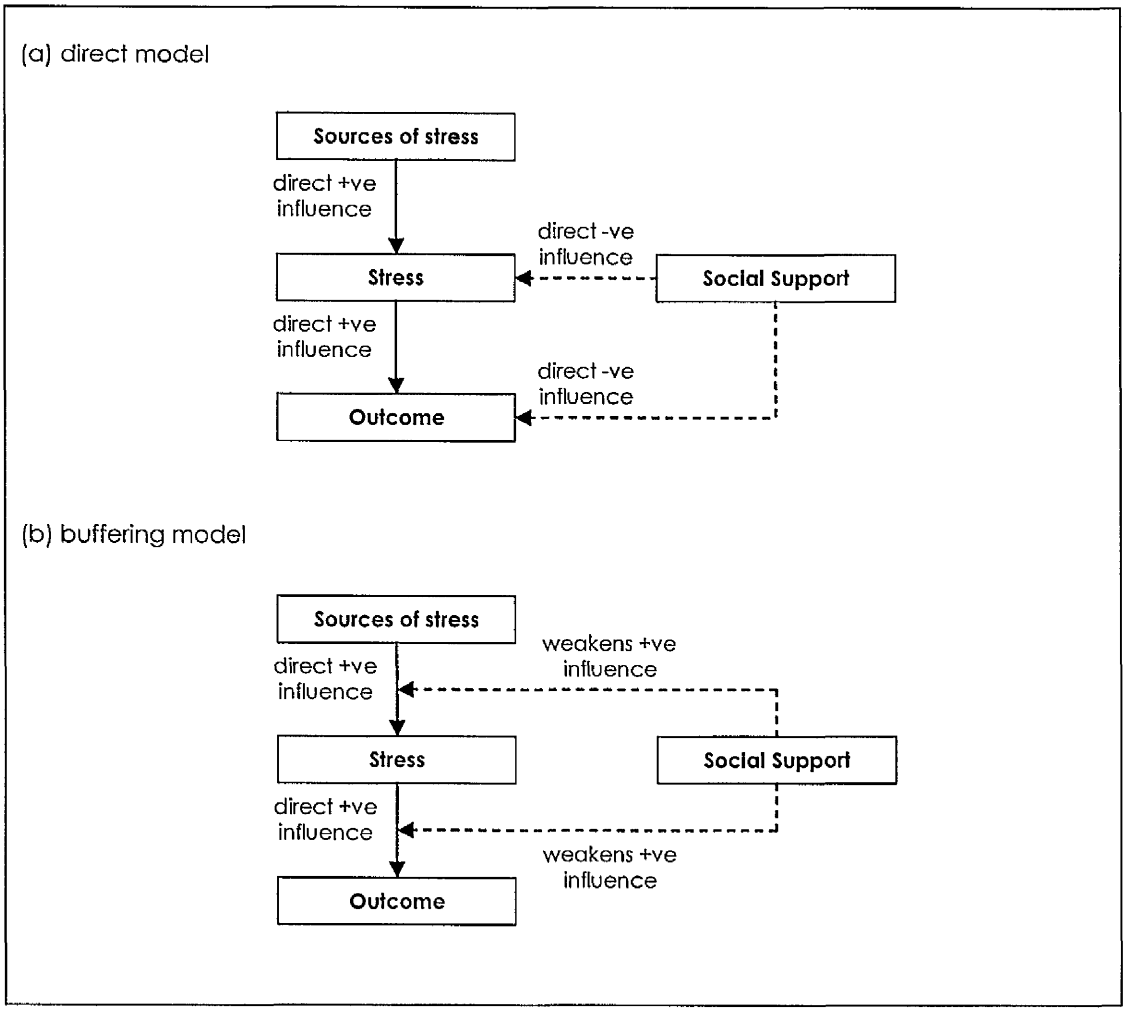

Figure 1.7 Two models of social support (after Dignam and West 1988).

As far as social support is concerned, '... the consensus is, that the deleterious effects of psychosocial stress may be lessened or eliminated by the presence of social support' (Sutherland and Cooper 1990, p 92). The arguments in the literature appear to be whether social support has as a main (direct, moderating) effect or whether it has an interactional (buffering, mediating) effect (Cohen and Wills 1985; Cox *et al.* 2000; Dignam and West 1988; Parkes *et al.* 1994; Sutherland and Cooper 1990; Thoits 1986). A schematic diagram of these two views of social support can be found in Figure 1.7.

As a direct effect (Figure 1.7a), social support might work by bolstering an individual's self-esteem and by promoting a general positive affect (Cohen and Wills 1985). Thus, social support can have a direct negative influence on stress or on the outcomes of stress such as mental illness or job dissatisfaction. As a buffering effect (Figure 1.7b) social support weakens the link between stressor and stress and can be seen as merely another way of *coping* (Sutherland and Cooper 1990) or as what Thoits (1986) calls 'coping assistance'.

1.4 MEASURING STRESS AND RELATED CONCEPTS

It is clear from the model presented in Figure 1.4 that investigators interested in stress from a transactional perspective have a number of key aspects to consider, namely sources of stress (specifically, those considered to be threats), the actual experience of stress (as a response), the role that coping plays and the range of possible outcomes. It may also be prudent to consider individual differences and the role of social support.

Regardless of the methodological approach employed, most studies on stress have focused on one or more of these aspects and, prior to examining some of the pertinent existing work, a brief examination of the tools used to assay these aspects is warranted. Because of the nature of stress research, most of the tools discussed here are *quantitative* although reference is made to qualitative approaches where appropriate.

1.4.1 Measuring sources of stress

Sources of stress have typically been measured in two ways. In the first – a favourite of exploratory and qualitative studies – individuals have been asked to think specifically about a time (or generally about the times) they have been under stress and then identify, freeform, the causative factors that, in their view, subsequently led to them feeling stressed. In the second, individuals are presented with a prepared list of potential sources of stress and are then asked to identify, either on a 'yes-no' basis or on a Likert-type scale, which of the stressors apply to them. More often than not, the prepared list is *ad hoc*, being based either on the investigator's gut feelings or on some other unsystematic grounds, although some prepared lists have arisen as a result of systematic processes involving tried and tested psychometric principles. Included in this latter category are the *Beck and Srivastava Stress Inventory* (Beck and Srivastava 1991; Beck *et al.* 1997), the *Nurse Stress Index* (Harris et *al.* 1998; Harris 1989), the *Nursing Stress Scale* (Gray-Toft and Anderson 1981), the *Student Nurse Stress Index* (Jones 1999; Jones and Johnston 1999) and the 'sources of pressure' scale of the *Occupational Stress Indicator* (Cooper *et al.* 1988).

1.4.2 Measuring stress

Stress itself has been operationalised using a broad range of subjective and objective measures, the range of measures reflecting the complexity of the concept.

Objective measures have tended to focus largely on the physiological aspects of the stress-response and have included measures of blood pressure, heart rate and galvanic skin response (Rice 1999) as well as levels of the so-called 'stress hormones' adrenaline, noradrenaline and cortisol in saliva, urine or blood (Wheeler 1998b; Payne 1999). In the occupational literature job satisfaction/dissatisfaction, absenteeism and burnout have been used as objective measures of stress (Jones and Johnston 2000a) although it could be argued that these are measures of outcome (i.e. the consequences of stress) rather than measures of stress *per se*. Similarly, in the psychiatric and psychotherapeutic literature, deviations from mental health (e.g. high scores on a depression scale) have been used as objective measures of stress although these too could be viewed as measures of outcome.

Subjective measures, on the other hand, have largely relied on self-reports of feelings and experiences associated with stress, more often than not via a prepared list of 'symptoms'. As with the measures of sources of stress, some investigators have employed *ad hoc* measures of stress in their studies, but the overwhelming majority of studies have employed formally developed and tested scales, the most widely used of these being the *State-Trait Anxiety Inventory* (Spielberger 1983) and the *General Health Questionnaire* (Goldberg and Williams 1988). The *State-Trait Anxiety Inventory* (STAI) purports to measure anxiety, both 'trait' (dispositional) and 'state' (situational). The *General Health Questionnaire* (GHQ) produces either a general index of psychological distress or categorisation into the dichotomy 'case' vs. 'normal', depending on how the scale is scored.[6] If using the GHQ to determine whether respondents are cases or not, a threshold value needs to be determined. This is not necessarily a straightforward procedure and further consideration on this matter is given in Chapter 3.

1.4.3 Measuring coping

The measurement of coping has focused largely on the coping styles used by individuals, either in specific situations (situational measures) or generally (dispositional or trait measures). Formal coping scales are widely available and, unlike measures of sources of stress or stress itself, the use of *ad hoc* measures of coping tends to be the exception rather than the rule. Most of the authors mentioned in Figures 1.5 and 1.6 have produced a formal coping scale and, in most cases, the aim of the scale has been to provide a profile of the coping styles used, either generally or in specific situations. Perhaps the most widely used is the *Ways of Coping Questionnaire* (Folkman and Lazarus 1988), although some British studies (e.g. [M C] Jones 1998; Parkes 1984, 1990, 1994) have preferred to use Parkes' adaptation of this scale (Parkes 1984). Other well-known coping measures include '*COPE*' (Carver *et al.* 1989) and the *Coping Inventory for Stressful Situations* (Endler and Parker 1990a).

[6] Although case and normal are ugly terms, they are widespread in the literature and no suitable alternatives have been proposed. They are, as such, used throughout this thesis, albeit reluctantly.

1.4.4 Measuring outcomes

The measurement of outcomes – the consequences of stress – was considered briefly in the section on the measurement of stress. Outcome can be conceived on two levels: on an organisational level and on a personal level. Measures of organisational outcome include measures of job satisfaction/dissatisfaction, sickness-absence and staff turnover (Jones and Johnston 2000a). Measures of personal outcome include objective measures of performance such as examination grades or the frequency of mistakes as well as measures of psychiatric symptomatology obtained from scales such as the *Beck Depression Inventory* (Beck *et al.* 1996), the *Hospital Anxiety and Depression Scale* (Zigmond and Snaith 1983), the *Symptom Checklist-90-R* (Derogatis 1993a) and its derivative, the *Brief Symptom Inventory* (Derogatis 1993b). As mentioned earlier, burnout has been subject to extensive investigation and in almost all cases the tool of choice has been the *Maslach Burnout Inventory* (Maslach and Jackson 1986).

1.5 EXISTING WORK

The literature on occupational stress is extensive and it is beyond the scope of this thesis to consider anything other than a selective review (for comprehensive general reviews, see Cox 1993 and Cox *et al.* 2000). It goes without saying, however, that the existing work on nursing and midwifery students needs to be considered in detail. A comprehensive review of the stress research involving nursing and midwifery students consequently forms the bulk of this section. It is also worth giving some attention to work involving appropriate reference groups, the most appropriate of these being health professionals (*qualified* nurses and midwives, in particular) and generic university/college students.

Given that the literature on stress and health professionals is relatively abundant, the work on health professionals that has been reviewed here has been sourced largely from the UK. The work on generic university/college students is, on the other hand, rather more limited; consequently, when discussing this particular reference group, the net has been cast further afield.

1.5.1 Health professionals

The work on health professionals has focused on both qualified health professionals and on students in training for one or other of the health professions. Considerations of the work on health professionals often fail to make a distinction between these two separate, yet related, populations. With nurses and midwives, the blurring was understandable prior to the introduction of Project 2000 when students were, in fact, paid employees. Since the introduction of Project 2000, the blurring of the qualified and in-training populations is less justifiable. Moreover, for doctors, dentists and other health professionals with a long tradition of university-based education, the justification for blurring the findings from the qualified and in-training populations has never been particularly robust.

Given these comments, the existing work on health professionals in training is discussed with an emphasis on the individuals concerned being *students* rather than health professionals. Consequently, only work relating to qualified health professionals is discussed in this and the next section. Work on student health professionals is discussed in Section 1.5.4 alongside the work on generic university/ college students.

In the UK, the landmark investigation into stress and the health professions has to be the large-scale Department of Health commissioned investigation into the NHS workforce (hereinafter referred to as the 'NHS study'), carried out by the Universities of Sheffield and Leeds (Borrill *et al.* 1996, 1998). This investigation considered the full range of British health professions – doctors, nurses, the 'professions allied to medicine' (physiotherapists, clinical psychologists, occupational therapists and dieticians, for example) – as well as managers, administrative, technical and ancillary staff and provided comprehensive data on sources of stress, prevalence rates and the effectiveness of certain stress management interventions.

Prior to the NHS study, most of the British work on stress and the health professions had been undertaken with doctors (both qualified and in-training) or with nurses and the bulk of the literature examined focuses on these two occupational groups. The work on nurses is considered in more detail in the next section. The work on doctors, although interesting, is not discussed in any great detail because of constraints on space and because medical students – as *students* – have perhaps more in common with nursing and midwifery students than do qualified doctors. The work on medical students is discussed in Section 1.5.4 alongside the work on generic students; for work on qualified doctors see, for example, Baldwin *et al.* (1997a, 1997b), British Medical Association (1992), Firth-Cozens (1987, 1997, 1999) and McManus *et al.* (1999).

1.5.2 Qualified nurses and midwives

Given that nurses top the league of female suicides (Farrington 1995; Hawton *et al.* 2002; Kelly and Bunting 1998)[7] and that a large proportion of health care is concerned with sickness, disease, suffering and death, it is hardly surprising to find that nurses have been targeted by investigators interested in stress.

In the NHS study, the prevalence of minor psychiatric disorder among nurses was estimated to be between 27.6 per cent (Borrill *et al.* 1998) and 28.5 per cent (Borrill *et al.* 1996). This compares with estimates of between 24.6 and 27.8 per cent for doctors, 32.8 and 33.4 per cent for NHS managers, around 26.8 per cent for the professions allied to medicine and a figure of between 17.8 and 18.4 per cent for the general population (Borrill *et al.* 1996, 1998). A word of caution is required, however, concerning the figures quoted for nurses. The occupational group 'nurses' was a generic group that included all those graded on the NHS nursing scale. This included midwives, health visitors and unqualified staff (such as nursing assistants) as well as qualified nurses. Although Borrill *et al.* (1998) helpfully provide some data for three categories of nursing staff (a figure of 22.4 per cent for unqualified/junior nurses, a figure of 28.2 per cent for staff nurses and a figure of 30.4 per cent for senior/ specialist/manager nurses), midwives and health visitors still form part of these figures.

Given that the literature on qualified nurses is extensive, only a brief overview is provided here. For more detailed summaries, the reader is referred to Bailey and

[7] The proportional mortality ratio (PMR – the number of observed suicides compared to a baseline expected number of 100) was 144 for female nurses in the five-year period 1982-87 and 139 in the period 1991-96 (Kelly and Bunting 1998). For the same periods, male nurses had PMRs below 100.

Clarke (1989), Farrington (1995), Jones and Johnston (2000b), Sutherland and Cooper (1990), Wheeler (1997a, 1997b, 1997c, 1997d, 1998a, 1998b) and Williams *et al.* (1998). Generally, the findings from the work on qualified nurses are as follows:

- Most of the work has been undertaken in North America (Wheeler 1997a).

- Most of the work has focused on general (as opposed to mental health, children's or learning disability) nursing, although there is a growing body of work on mental health nurses including, in the UK, the large-scale Claybury study (Fagin *et al.* 1995, 1996; Hopkinson *et al.* 1998) and work by Carson *et al.* (1999). There has also been relatively recent work on mental health nurses in Ireland (Ryan and Quayle 1999) and Australia (Thompson *et al.* 1993).

- Much of the work on has focused on high-dependency, intensive-care nursing (see, for example, Nichols *et al.* 1981; Tyler and Ellison 1994). This is probably because, superficially, these areas look as if they should be stressful, although Rhead (1995) cautions against presuming that individuals will be more stressed just because the area and nature of work appears stressful.

- High levels of stress are experienced by nurses working in a wide variety of settings (Williams *et al.* 1998) although diverse methodologies make it difficult to compare prevalence rates (Wheeler 1997d).

- Sources of stress for qualified nurses include workload and staffing problems, interpersonal problems (both at home and at work), death and dying, difficult and helpless patients, and a lack of support from superiors (Sutherland and Cooper 1990; Wheeler 1998a).

- Compared to the work on stress and sources of stress, there is little work on coping (Jones and Johnston 2000c; Wheeler 1997a).

Overall, the work on qualified nurses is summed up by Baldwin (1999) who notes that '... stress in nursing shows similarities to that in other occupational groups; it is associated with high workload, low job control and lack of staff support' (p 22).

As far as midwives are concerned, there is very little discrete British work available. Although midwives participated in the NHS study, midwifery was treated merely as a category of nursing. Prior to the current investigation, only five discrete British studies on midwives and stress were identified. Two of these (Carlisle *et al.* 1994; Wheeler and Riding 1994) compared midwives with nurses. A third was concerned with midwifery *students* (Cavanagh and Snape 1997a, 1997b) and is, as such, discussed in Section 1.5.3. The fourth (Mackin 1999) was a simple descriptive study that looked at midwives in Northern Ireland and the fifth (Sandall 1999) focused on team midwifery[8] and burnout. A sixth British study (Birch 2001), also focusing on team midwifery, was identified after the empirical aspects of the investigation were completed.

Given the paucity of British work, it was necessary to cast the net wider. However, as Carlisle *et al.* (1994) point out, there is a particular danger with this course of action where midwifery is concerned. The UK is one of the very few countries that see midwifery as a profession distinct from nursing. And where 'direct-entry' midwifery[9] is available, it is often (as is the case in the United States), that these midwives are seen as second-rate midwives compared to the more powerful 'nurse-midwives'. In casting the net wider, Carlisle *et al.*'s warning proved rather inconsequential since only three further papers were found: a descriptive paper focusing on nurse-midwifery *students* in the US (Carveth *et al.* 1996) and two empirical papers – one American (Beaver *et al.* 1986) and one Dutch (Bakker *et al.* 1996) – that looked specifically at burnout in midwives.

Given the limited amount of work on midwives, there are relatively few findings available. In a simple cross-sectional study that did not employ any established measures, Wheeler and Riding (1994) found that workload and time pressures were the biggest sources of stress for both nurses and midwives. Birch (2001) similarly identified workload as a major stressor for midwives, along with the home-work interface, and Sandall (1999) suggested that the most stressful aspect of midwives' work was their (NHS) working conditions.

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[8] Defined as '[t]he grouping of midwives into small, community-based teams which provide total care for all childbearing women in their community' (Bower 1993, p143).

[9] Midwifery where a (state-sanctioned) qualification has been obtained without a prerequisite nursing qualification.

Mackin (1999), using the GHQ, found that around a third of her sample was stressed. Carlisle *et al.* (1994), employing the *Work Environment Scale*[10] found that midwives had less 'supervisor support', less 'involvement' (concern and commitment to the job), less 'autonomy', greater 'work pressure', and less 'clarity' (knowing what to expect; how explicitly rules and policies are communicated) than nurses. With regard to burnout, Bakker *et al.* (1996) reported that Dutch midwives were less likely to be burnt out than Dutch GPs, Beaver *et al.* (1986) reported that burnout in American nurse-midwives seemed to be associated with respondents who were younger, had children and who were relatively newly employed and Sandall (1999) found that team midwifery was associated with higher levels of burnout.

1.5.3 Nursing and midwifery students

In reviewing the existing work on nursing and midwifery students, a comprehensive search of the databases *British Nursing Index*, *CINAHL* (nursing and allied health professions), *ERIC* (education), *Medline* (medicine) and *PsycInfo* (psychology) was undertaken. In tracking down appropriate nursing literature, all five databases were searched using the search term 'student + nurs$' ($ being a wildcard) in combination with the terms stress, distress, source(s) of stress and stressor ('stress$' picking all of these up), pressure, demand(s), mental health, burnout, coping, anxiety and strain. To obtain appropriate literature for midwifery, the searches were repeated using 'midwi$' instead of nurs$. In both cases, the abstracts of the search results were examined for relevance and hard copies of any seemingly relevant papers obtained. Some of these papers considered anyone – qualified or unqualified – undertaking an educational programme in nursing or midwifery, no matter how long, to be a nursing/midwifery student. With the focus of the current investigation being *pre-registration* nursing and midwifery students, however, only those papers featuring students undertaking a programme (regardless of length) leading to a first-level, statutory registration were included for review. Furthermore, only *empirical* studies are considered in any detail.

[10] The *Work Environment Scale* (see Moos 1988) is a measure of the 'social climate' of the workplace.

A summary of the empirical studies on nursing and midwifery students published prior to the data collection period is presented in Table 1.1 (pp 53-60). The main findings from these studies are considered shortly in Section 1.6. A further three studies were identified as potentially useful but these were excluded from the summary table because they were not directly concerned with student stress: two of these studies (Hawker and Holtby 1988; West and Hargeaves 1995) are British and examine smoking behaviour in nursing students; the third (Marion *et al.* 1996) is an American study that looks at drinking problems in nursing students.

Most of the studies are concerned with nursing, rather than midwifery, students. In particular, midwifery students are considered only by Cavanagh and Snape (1997a, 1997b) and Jones and Johnston (1997, 1999). Moreover, Cavanagh and Snape's work is the *only* work that deals exclusively with midwifery students. That the locale of both these pieces of research is the UK is relatively unsurprising given that the UK is one of the few countries to offer state-sanctioned, direct-entry midwifery training.

With regard to the studies focusing on nursing students, most have been conducted in North America, the United States in particular. The few that have been conducted in the UK have tended to be small-scale (Bailey 1984; Lindop 1993; Price 1984; Rhead 1995) or qualitative (Hamill 1995; Lindop 1989; Price 1984; Sellek 1982), or they have concentrated on the pre-Project 2000 apprenticeship model (Bailey 1984; Elkind 1988; Lindop 1991; Parkes 1980a, 1980b, 1982, 1984, 1985; West and Rushton 1986). Many of the British studies are constrained in other ways. For example, several have a very limited focus, be it the question of whether sources of stress are practical or academic (Rhead 1995), the relationship between smoking and stress (Elkind 1988) or the relationship between stress and outcomes such as absence from work (Price 1984) or drop-out rates (Lindop 1989, 1991; West and Rushton 1986). Other studies are limited by participant. For example, Bailey (1984), Elkind (1988), Parkes (1980a, 1980b, 1984) and Scullion (1994) consider only female students and Hamill (1995) and Lindop (1999) consider only adult branch students. Moreover, when the separate nations of the UK are considered, almost all of the recent, substantial work has been conducted in Scotland (Baldwin *et al.* 1998; [M C] Jones 1998). This is an important point because the education of nurses in Scotland is governed by different regulations to that of England, Wales and Northern Ireland and because the Scottish HE system differs considerably from that of the rest of the UK.

Table 1.1 Empirical studies on stress in nursing and midwifery students (continued overleaf).

Author(s)	Locale	Programme type	Participants	Focus	Design/method(s) of analysis
Adejumo and Brysiewicz (1998)	South Africa	baccalaureate	27 third year nursing students on a problem-based learning programme	coping	cross-sectional study; descriptive analyses
Admi (1997a, 1997b)	Israel	diploma	46 freshman nursing students	sources of stress (in the initial clinical experience)	longitudinal study; measures taken prior to, at the beginning, and at the end of, the initial clinical experience; time comparisons
				impact of a stress management programme on clinical performance	intervention study; experimental pre-test/post-test design; stress inoculation training vs. campus-based preparation for practice vs. clinically-based preparation for practice
Bailey (1984)	UK: England	apprenticeship	45 first year female nursing students	impact of a stress management programme on sickness-absence	intervention study; quasi-experimental pre-test/post-test design; sessions on stress coupled with autogenic relaxation training vs. sessions on stress
Baldwin *et al.* (1998)	UK: Scotland	apprenticeship; diploma	at the outset, 147 third year apprenticeship model nursing students and 212 first year Project 2000 nursing students	sources of stress; stress; coping; outcomes	longitudinal study; measures taken over four years; descriptive analyses; between cohort and other naturalistic comparisons as well as time comparisons
Basson and van der Merwe (1994)	South Africa	'students in a training hospital'	81 second and third year white female nursing students	sources of stress; coping; outcomes (burnout)	cross-sectional study; descriptive analyses; naturalistic comparisons; correlations and multiple regression
Beck and Srivastava (1991)	Canada	baccalaureate	94 second year and above nursing students (some post-registration)	sources of stress; stress	cross-sectional study; descriptive analyses; naturalistic comparisons

Table 1.1 (cont.) Empirical studies on stress in nursing and midwifery students (continued overleaf).

Author(s)	Locale	Programme type	Participants	Focus	Design/method(s) of analysis
Beck *et al.* (1997)	Canada	baccalaureate	552 nursing, pharmacy, social work and medical students, all second year or above	sources of stress; stress	cross-sectional study; descriptive analyses; between discipline and other naturalistic comparisons
Bell (1991)	USA	baccalaureate	30 junior year nursing students	impact of an anxiety management programme on anxiety	intervention study; quasi-experimental pre-test/post-test design; preclinical skill evaluation vs. watching videotape of skill
Biggers *et al.* (1988)	USA	associate degree; diploma; baccalaureate	171 graduating nursing students from the three programmes	stress (anxiety)	cross-sectional study; descriptive analyses; naturalistic comparisons; correlations
Carter (1982)	USA	baccalaureate	103 senior female nursing students and 103 senior female liberal arts students	relationship between coping and outcome	cross-sectional study; descriptive analyses; between discipline comparisons
Cavanagh and Snape (1997a, 1997b)	UK: England	diploma	127 pre-registration and 74 post-registration (shortened) midwifery students	sources of stress	cross-sectional study; descriptive analyses; theme generation (both qualitative and via factor analysis); between cohort comparisons
Charlesworth *et al.* (1981)	USA	'a course on medical-surgical nursing'	18 nursing students	impact of a stress management programme on anxiety	intervention study; quasi-experimental pre-test/2 x post-tests design; stress management programme vs. waiting list control
Clarke and Ruffin (1992)	Australia	university-based; college-based; hospital-based	306 first year nursing students from the three programmes	sources of stress	longitudinal study; measures taken at the beginning and at the end of the first year; descriptive; between cohort and other naturalistic comparisons as well as time comparisons; factor analysis

Table 1.1 (cont.) Empirical studies on stress in nursing and midwifery students (continued overleaf).

Author(s)	Locale	Programme type	Participants	Focus	Design/method(s) of analysis
Dudley *et al.* (1988)	Australia	apprenticeship	212 psychiatric and 312 general nursing students	stress ('psychological dysfunction')	cross-sectional study; between cohort and other naturalistic comparisons
Elkind (1988)	UK: England	apprenticeship	69 female student nurses and 43 female student teachers	maladaptive coping (smoking)	longitudinal study; measures taken at six points over a15-month period; descriptive analyses; between discipline as well as time comparisons
Fehring (1983)	USA	baccalaureate	78 college students (mainly nursing students)	impact of a stress management programme on mood and stress	intervention study; experimental pre-test/post-test design; relaxation vs. biofeedback-aided relaxation vs. no treatment control
Floyd (1991)	USA	baccalaureate	46 senior nursing and 25 senior liberal arts students	stress; maladaptive coping (drug use)	cross-sectional study; between discipline comparisons
Foley and Stone (1988)	USA	baccalaureate	36 female nursing students	impact of a stress management programme on grades	intervention study; quasi-experimental 2 (high vs. low 'cognitive need') x 3 (stress inoculation training vs. partial treatment vs. no treatment) x 3 (pre-test, post-test, follow-up) design
Forbes (1992)	USA	not reported	300 nursing students	stress management	intervention study; simple interrupted time series design; no control
Godbey and Courage (1994)	USA	baccalaureate	19 junior and senior year 'distressed' nursing students	impact of a stress management programme on depression	intervention study; quasi-experimental pre-test/post-test/follow-up design; individual counselling/stress management vs. no treatment control
Haack (1988)	USA	baccalaureate	300+ nursing students all second year or above	coping; outcomes (depression, burnout)	longitudinal study; measures taken at 3 points over an 18-month period; naturalistic as well as time comparisons; correlations

Table 1.1 (cont.) Empirical studies on stress in nursing and midwifery students (continued overleaf).

Author(s)	Locale	Programme type	Participants	Focus	Design/method(s) of analysis
Hamill (1995)	UK: Northern Ireland	diploma	35 adult branch second year nursing students	sources of stress; stress	qualitative approach; grounded theory
Heaman (1995)	USA	baccalaureate	40 female junior nursing students	impact of an anxiety management programme on anxiety	intervention study; quasi-experimental pre-test/post-test design; 'quieting response' training vs. no treatment control
Johannson (1991)	USA	baccalaureate	76 sophomore/senior nursing students	impact of a stress management programme on depression	intervention study; experimental pre-test/post-test design; stress inoculation training vs. no treatment control
Jones L H (1988)	USA	baccalaureate	sophomore, junior and senior nursing students	sources of stress	repeated cross-sectional studies; assessment tool development
Jones M C (1988)	UK: Scotland	diploma	221 first year nursing and midwifery students in two separate cohorts	sources of stress; stress; coping	cross-sectional study; descriptive analyses; between cohort comparisons; correlations (Jones and Johnston 1997)
			several cohorts of nursing and midwifery students	sources of stress	repeated cross-sectional studies; assessment tool development; factor analysis (Jones and Johnston 1999)
			79 'distressed' nursing students	impact of a stress management programme on a range of outcomes	intervention study; experimental pre-test/post-test/follow-up design; stress management training vs. waiting list control (Jones and Johnston 2000c)
Kirkland (1998)	USA	baccalaureate	23 African-American female junior and senior nursing students	sources of stress; coping	cross-sectional study; descriptive analyses

Table 1.1 (cont.) Empirical studies on stress in nursing and midwifery students (continued overleaf).

Author(s)	**Locale**	**Programme type**	**Participants**	**Focus**	**Design/method(s) of analysis**
Kleehammer *et al.* (1990)	USA	baccalaureate	39 junior and 53 senior nursing students	stress (anxiety)	cross-sectional study; descriptive analyses (both quantitative and qualitative); between cohort comparisons
Lindop (1989)	UK: England	apprenticeship	23 former nursing students who left their programme of study	outcomes (student nurse attrition)	qualitative study; descriptive analyses (both quantitative and qualitative)
Lindop (1991)	UK: England	apprenticeship	324 student and 89 pupil general nurses	stress; outcomes (student nurse attrition)	cross-sectional study; descriptive analyses; between cohort and other naturalistic comparisons
Lindop (1993)	UK: England	diploma	11 nursing students	stress management	action research
Lindop (1999)	UK: England	apprenticeship; diploma	146 adult nursing students	stress	cross-sectional study; descriptive analyses; sample compared with 1988 (Lindop 1991) sample
Mahat (1996)	Nepal	'certificate program'	104 first year nursing students	sources of stress; coping	cross-sectional study; descriptive analyses
Mahat (1998)	USA	baccalaureate	107 junior nursing students	sources of stress; coping	cross-sectional study; descriptive analyses; naturalistic comparisons; correlations
Manderino *et al.* (1988)	USA	baccalaureate	276 nursing *programmes*	stress management content in nursing curricula	survey; descriptive analyses
O'Connor and Bevil (1996)	USA	baccalaureate	145 junior and senior day and 48 junior and senior evening nursing students	stress; outcomes (grades)	cross-sectional study; descriptive analyses; between cohort comparisons; correlations

Table 1.1 (cont.) Empirical studies on stress in nursing and midwifery students (continued overleaf).

Author(s)	Locale	Programme type	Participants	Focus	Design/method(s) of analysis
Oermann and Standfest (1997)	USA	associate degree; baccalaureate	416 nursing students across a range of specialties	sources of stress	cross-sectional study; descriptive analyses; between specialty and other naturalistic comparisons
Pagana (1988)	USA	baccalaureate	262 sophomore and junior nursing students	sources of stress	cross-sectional study; descriptive analyses; between cohort and other naturalistic comparisons; content analysis from qualitative data
Pagana (1990)	USA	baccalaureate	246 nursing students	sources of stress; coping (social support); hardiness	cross-sectional study; descriptive analyses; correlations
Parkes (1980a, 1980b)	UK: England	apprenticeship	101 first year female nursing students	sources of stress	longitudinal study; measures taken at 5 points over an 6-month period; naturalistic comparisons
Parkes (1982)	UK: England	apprenticeship	164 nursing students	sources of stress; stress; outcomes (sickness-absence)	longitudinal study; measures taken at 5 points over a 6-month period; group comparisons via a 'natural experiment' embedded in the design
Parkes (1984)	UK: England	apprenticeship	171 female student nurses	coping; locus of control	cross-sectional study; descriptive analyses; naturalistic comparisons; correlation and multiple regression
Parkes (1985)	UK: England	apprenticeship	150 first year students	'stressful episodes'	qualitative study; theme generation
Price (1984)	UK: England	apprenticeship	30 third year nursing students	short-term absence (as an outcome or as a way of coping)	cross-sectional study coupled with qualitative interviews; descriptive analyses for both aspects
Rhead (1995)	UK: England	apprenticeship; diploma	55 third year apprenticeship model nursing students and 51 second year Project 2000 nursing students	sources of stress	cross-sectional study; descriptive analyses; between cohort comparisons; correlation and factor analysis

Table 1.1 (cont.) Empirical studies on stress in nursing and midwifery students (continued overleaf).

Author(s)	Locale	Programme type	Participants	Focus	Design/method(s) of analysis
Russler (1991)	USA	baccalaureate	57 beginning nursing students	impact of a stress management programme on anxiety; coping	intervention study; experimental pre-test/post-test design; multidimensional stress management training vs. 'normal activities' control
Scullion (1994)	UK: England	apprenticeship; Enrolled Nurse (EN) conversion	11 female EN conversion, and 33 female adult branch, nursing students	sources of stress (in an Accident & Emergency department)	cross-sectional study; descriptive analyses (both quantitative and qualitative); between cohort comparisons; correlations
Sellek (1982)	UK: England	apprenticeship	65 nursing students	satisfying and anxiety-creating incidents	qualitative study; theme extraction
Snape and Cavanagh (1995)	UK: England	diploma	478 nursing students	sources of stress	cross-sectional study; descriptive analyses (both quantitative and qualitative); factor analysis
Speck (1990)	USA	baccalaureate	26 first year nursing students	impact of an anxiety management programme on performance of a specific clinical skill	intervention study; quasi-experimental pre-test/post-test design; guided imagery vs. 'usual practices' control
Stephens (1992)	USA	associate degree; baccalaureate	159 female first year nursing students	impact of a stress management programme on anxiety	intervention study; quasi-experimental pre-test/post-test design; imagery vs. imagery coupled with relaxation vs. no treatment as control
Summers *et al.* (1990)	USA	baccalaureate	45 junior nursing students undertaking maternal health and children's nursing courses	impact of an anxiety management programme on anxiety	intervention study; quasi-experimental pre-test/post-test design; music (at 60 bpm) vs. no treatment as control

Table 1.1 (cont.) Empirical studies on stress in nursing and midwifery students.

Author(s)	Locale	Programme type	Participants	Focus	Design/method(s) of analysis
Thyer and Bazeley (1993)	Australia	diploma	79 first year students	sources of stress	cross-sectional study; descriptive analyses; naturalistic comparisons
Tichy and Means (1990)	USA	associate degree	496 graduates of community college nursing programmes	stress; coping; health status	cross-sectional study; descriptive analyses; naturalistic comparisons
Turkoski (1987)	USA	baccalaureate	143 fourth year nursing students	sources of stress; stress	qualitative study; descriptive analyses; theme generation
Wernick (1984)	USA	practical nursing (12-month sub-RN programme)	130 practical nursing students	impact of a stress management programme on attrition rates	intervention study; quasi-experimental pre-test/post-test design; stress inoculation training vs. no treatment as control
West and Rushton (1986)	UK: England	apprenticeship	145 nursing students	stress; coping	cross-sectional study; descriptive analyses
Williams (1988)	USA	baccalaureate	66 sophomore students	relationship between cognitive styles and stress	cross-sectional study; descriptive analyses; correlation and multiple regression
Williams *et al.* (1995)	USA	baccalaureate; master's; doctoral	408 female nursing students (undergraduate and postgraduate)	sources of stress; stress; coping	cross-sectional study; descriptive analyses; correlations; path analysis.
Youssef and Goodrich (1996)	USA	associate degree	48 'accelerated' nursing students (cf. graduate entry) and 46 traditional nursing students	stress; outcomes (academic performance)	cross-sectional study; descriptive analyses; between cohort comparisons
Zujewskyj and Davis (1985)	Canada	baccalaureate	32 third year female nursing students	sources of stress; stress (test anxiety)	longitudinal study; measures taken at 2 points over a 5-month period; time comparisons

Note: In North America, baccalaureate programmes are normally four-year degree programmes; associate degree programmes are normally two years long. For baccalaureate programmes, 'freshman' = first year, 'sophomore' = second year, 'junior' = third year and 'senior' = fourth year.

Running the database searches again in 2001 (in preparation for the writing of this thesis) some further work that had appeared during the course of the investigation, but after the investigator had started collecting the data, was identified. In the UK, two further studies concerning stress and Project 2000 students (Brown and Edelmann 2000; Howard 2001) were published, whilst Kipping (2000) reported on the recollections of qualified mental health nurses who had undergone apprenticeship model training. Elsewhere, Timmins and Kaliszer (2002) reported on a study undertaken in the Irish Republic, whilst Lo (2002) reported on a study undertaken in Australia.

1.5.4 University/college students

Apart from students in training for a profession (more often than not, one of the *health* professions), the literature on stress in generic university/college students is sparse. With regard to the work on students in training for a profession, North American work has looked at dental students (George *et al.* 1987; Davis *et al.* 1989), medical students (Heins *et al.* 1984; Beck *et al.* 1997), pharmacy and social work students (Beck *et al.* 1997), law students (Heins *et al.* 1984) and occupational therapy students (Everly *et al.* 1995). The studies on nursing and midwifery students have already been considered. Elsewhere, the studies that have considered generic university/college students have tended to use them merely as benchmark groups for students of the health professions. Carter (1982), for example, compared liberal arts with nursing students and Heins *et al.* (1984) compared medical students with psychology, chemistry and law students.

In the UK, the picture is similar in that it is predominantly students in training for a profession that have been studied. For example, in addition to the work on nursing and midwifery students, work has been carried out on medical students (see, for example, Firth 1986; Guthrie *et al.* 1997), students of the professions allied to medicine (Monk 1999; Monk and Mahmood 1999), student social workers (Tobin and Carson 1994) and student teachers (Parkes 1990; Parkes *et al.* 1994; Tobin and Carson 1994). With regard to generic students, there is very little direct work on stress although Tobin and Carson (1994) used psychology students as a benchmark group in the course of their work on student social workers. Nonetheless, work on the relationship between economic circumstances and mental and physical health amongst students (Roberts *et al.* 1999), work on homesickness amongst students (Fisher 1988; Fisher and Hood 1987, 1988) and work on relationships and support amongst students (Norton *et al.* 1998) does have some relevance to the current investigation, as does the recent investigation into psychological health at the University of Leicester (1998, 2002).

1.6 MAIN FINDINGS FROM STUDIES ON STUDENT STRESS

1.6.1 Sources of stress

With regard to sources of stress, investigators have typically produced lists of stressors (usually presented in a hierarchy of most-to-least stressful) or they have attempted to allocate stressors to specific categories either informally or through a formal (often statistical) process such as factor analysis. Regardless of approach, the end result has been to identify either the categories of stressor or the individual stressors deemed most responsible for student stress.

1.6.1.1 Broad categories

Fox *et al.* (1963) argued, almost 40 years ago, that the sources of stress in nursing students could be categorised as being personal, academic or clinical in origin. More recent attempts at categorising sources of stress (Admi 1997a; Clarke and Ruffin 1992; Jones and Johnston 1999; Rhead 1995; Snape and Cavanagh 1995; Zujewsky and Davis 1985) have produced a variety of results but overall there appears to be a consensus in that, when situations and events outside the educational programme have been excluded, the sources of stress are broadly academic or clinical in nature. For example, Rhead (1995) identified three factors – 'academic', 'practical' and 'death and suffering', the first of which obviously corresponds to the academic category whilst the latter two could be considered clinical. Admi (1997a) identified six factors, one of which is academic ('inadequate knowledge'), two of which are clinical ('causing pain' and 'adverse sights') and three of which transcend both categories ('reality conflict', 'instructor's supervision', 'insufficient resources'). On the other hand, when situations and events outside the educational programme are included, a third category – personal/social – is available. Jones and Johnston (1999), for example, identify four factors, two of which ('academic load' and 'clinical concerns') reflect the academic and clinical categories; the remaining two ('personal problems' and 'interface worries'), the personal/social category. Regarding midwifery students, Cavanagh and Snape (1997a) suggested that there were two sources of stress: one ('organisation and learning experience') that transcended both the academic and clinical categories and a second ('home vs. study demands') reflecting the personal/social category.

One of the main consequences of categorising sources of stress has been to open a (superfluous?) debate over which category is the more influential. Thus, there are claims that the sources of stress in nursing students are predominantly clinical (Lindop 1989; Mahat 1998; Pagana 1988; Rhead 1995 [Rhead's Project 2000 students]), counterclaims that they are predominantly academic (Beck and Srivastava 1991; Clarke and Ruffin 1992; Howard 2001; Timmins and Kaliszer 2002) and claims – possibly the most level-headed – that they are both of equal influence (Baldwin *et al.* 1998; Hamill 1995; Rhead 1995 [Rhead's apprenticeship model students]).

1.6.1.2 Individual stressors

With regard to individual stressors, a comprehensive range of factors have been identified in the literature. These can be considered under the three broad categories discussed above.

As far as *nursing* students are concerned, academic sources of stress consistently reported in the literature include: **examinations and assessments** (Baldwin *et al.* 1998; Basson and van der Merwe 1994; Beck and Srivastava 1991; Beck *et al.* 1997; Clarke and Ruffin 1992; Howard 2001; Jones and Johnston 1997; Kipping 2000; Lindop 1991; Thyer and Bazeley 1993; Snell 1995); **workload** (Beck *et al.* 1997; Clarke and Ruffin 1992; Jones and Johnston 1997; Lo 2002; Mahat 1998; Zujewskyj and Davis 1985) and the **fear of failure** (Jones and Johnston 1997; Parkes 1985).

Clinical sources of stress consistently reported include: **placements in general** (Kipping 2000; Snape and Cavanagh 1995), although Oermann and Standfest (1997) remark that many students find placements *challenging* rather than threatening; the **fear of making mistakes** (Clarke and Ruffin 1992; Kleehammer *et al.*

1990); the **initial clinical experience** (Jones and Johnston 1997; Kleehammer *et al.* 1991; Mahat 1996, 1998; Sellek 1982); issues related to **death and dying** (Parkes 1985; Rhead 1995; Scullion 1994; Snape and Cavanagh 1995) and **interpersonal relationships with other staff,** particularly negative and hostile attitudes from superiors (Howard 200; Kirkland 1998; Kleehammer *et al.* 1990; Lindop 1989, 1991; Mahat 1996, 1998; Parkes 1985; Sellek 1982; Snell 1995; Turkoski 1987; Zujewskyj and Davis 1985).

Personal/social sources of stress consistently reported include: **finances** (Baldwin *et al.* 1998; Beck and Srivastava 1991; Brown and Edelmann 2000; Jones and Johnston 1997; Kirkland 1998; Lo 2002; Snell 1995; Thyer and Bazeley 1993; Timmins and Kaliszer 2002) and issues relating to the **home-college 'interface'** (Baldwin *et al.* 1998), such as a lack of free time (Basson and van der Merwe 1994; Beck *et al.* 1997)

For *midwifery* students, the findings are particularly limited, although Cavanagh and Snape (1997a, 1997b) report the main source of stress to be concerns about finding employment after qualification.

With regard to generic university/college students, **academic demands** such as workload and examinations have been identified as major sources of stress (Everly *et al.* 1995; Fisher and Hood 1987; Monk 1999; Monk and Mahmood 1999; University of Leicester 2002). **Financial problems** also appear to be a major stressor (Fisher and Hood 1987; Monk 1999; Monk and Mahmood 1999; University of Leicester 2002). Other major stressors reported include **concerns about future careers** (University of Leicester 2002), **adjusting to new routines** (Fisher and Hood 1987) and, for mature women students in particular, **a change in identity** (Edwards 1993) and **home-work demands** (Edwards 1993).

1.6.2 Levels of stress

A number of studies have included estimates of the prevalence of psychological distress amongst the populations studied, although as Wheeler (1997a) has pointed out, the diverse methodologies employed make it difficult to compare prevalence rates. Nevertheless, several studies have provided GHQ-derived estimates of prevalence rates. In a Canadian study, Beck *et al.* (1997) found that baccalaureate nursing students experienced higher levels of stress and more physical/psychological symptoms than other health professionals. Of the British studies available, Parkes (1982) found around 21 per cent of student nurses had high levels of stress and West and Rushton (1986) found that GHQ scores of student nurses were worse than a comparable group of young women in non-nursing occupations but equivalent to young unemployed women. Jones and Johnston (1997) found between half and two-thirds of student nurses had high levels of stress (even when the GHQ scores were adjusted by applying more conservative criteria, the levels remained high at between 35 and 44 per cent), and the longitudinal study of Baldwin *et al.* (1998) found prevalence rates of between 32 and 55 per cent among nurses in training, which subsequently dropped to between 23 and 28 per cent on qualification.

These figures compare with GHQ-derived prevalence rates of about a third for medical students (Firth 1986; Guthrie *et al.* 1997), around 30 per cent for social work students and 40 per cent for psychology students (Tobin and Carson 1994). Roberts *et al.* (1999) found around a third of generic university/college students had GHQ scores in excess of one standard deviation above the population mean for their age and sex. Roberts *et al.* also reported that higher GHQ scores were related to working long hours outside the course, difficulty paying bills and having considered dropping out of studies.

1.6.3 Coping and support

The findings relevant to coping and support relate to the range and type of coping strategies used, evaluations of formal stress management programmes and some findings about the sources of support used.

From the limited number of coping studies available, the findings regarding the range and type of coping strategies employed appear somewhat inconsistent. For example, Hamill (1995) and Mahat (1998) found that nursing students tended to use problem-focused strategies in preference to emotion-focused strategies, whilst Mahat (1996) found the opposite. Brown and Edlemann (2000) found that students at the beginning of their training tended to make greater use of problem-focused strategies compared to newly qualified nurses who tended to make greater use of emotion-focused strategies. Using Parkes' adaptation of the *Ways of Coping Questionnaire*, Jones and Johnston (1997) found that direct coping was associated with lower levels of stress whilst students who employed fantasy or hostility tended to have higher levels of stress.

The utility of setting one coping strategy against another is questionable however, given that it has already been noted (Section 1.3.3.4) that both problem-focused and emotion-focused coping can be adaptive. Although a relatively mundane statement, utility could well lie in findings such as those of Adejumo and Brysiewicz (1998) who remark that nursing students seem to use a mix of emotion- and problem-focused strategies.

Stress management interventions with nursing students appear to be beneficial. Out of the intervention studies considered only Russler (1991) did not find an effect. A range of interventions have been considered in the literature including 'autogenic regulation training' (Bailey 1984), 'biofeedback aided relaxation' (Fehring 1983), 'stress inoculation training' (Admi 1997b; Foley and Stone 1988; Wernick 1984), imagery (Speck 1990; Stephens 1992), the 'quieting response' (Heaman 1995) and general, multidimensional stress management programmes (Charlesworth *et al.* 1981; Godbey and Courage 1994; Johannson 1991; Jones and Johnston 2000c; Russler 1991).

With regard to sources of support, student nurses appear to find relatives and friends the most useful source of support (Carter 1982; Hamill 1995; Lindop 1991, 1999; Lo 2002; Mahat 1998). Parkes (1982) found increases in social support were associated with a decrease in symptoms of depression and Haack (1998) found that students who had frequent contact with peers were less depressed. Elkind (1988) found that the absence of social support outside nursing was associated with greater smoking behaviour.

1.6.4 Personality influences

Where the influence on personality and individual differences has been investigated in the student population, the findings tend to reflect the findings of other occupational groups. Hardiness, for example, appears to buffer stress in nursing students (Pagana 1990; Sawatzky 1998). Similar constructs have been reported by other investigators, for example Lindop (1993, 1999) talks of 'determination' and

Everly *et al.* (1994) talk of 'perseverance'. With regard to locus of control, Parkes (1984) reported that nursing students categorised as 'internals' tended to use more direct coping and less suppression than internals, a finding consistent with Parkes' general observation that internals tend to employ active, problem focused coping (Parkes 1994). With regard to Type A behaviour, George *et al.* (1987) reported greater stress levels in Type A dental students.

1.6.5 Outcomes

There is little work on specific outcomes in nursing and midwifery students, although both Haack (1988) and Basson and van der Merwe (1994) found symptoms of burnout in their samples. With regard to generic university/college students, around 13 per cent of University of Leicester students had, at both the 1998 and 2001 survey points, moderate distress on the 'depression' scale of the *Brief Symptom Inventory* (BSI), around 13 per cent had moderate distress on the 'obsessive-compulsive' scale, around 12 per cent moderate distress on the 'social comfort' scale and around 8.5 per cent moderate distress on the 'hostility' scale (University of Leicester 2002).[11]

Hilbert (1987) claims that many aspects of academic fraud in nursing (e.g. plagiarising others' assignments, doing assignments for someone else and ringing in sick when not) are down to academic stressors such as the pressure for good grades, the number and significance of assignments and a lack of time. In a similar vein, Cavanagh and Snape (1997b) claim that feelings of disillusionment and a lack of control in midwifery students led some to deliberately miss lectures or placements, delay submission dates or avoid certain lecturers.

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[11] Depression', 'obsessive-compulsive' and 'hostility' are reasonably self-explanatory. They are identical to three of the nine standard BSI subscales. 'Social comfort' is not one of the BSI's original subscales but appears in a six-subscale adaptation (Hayes 1997) derived from college students. It is the '... degree to which one feels at ease with others' (Hayes 1997, p 366).

1.6.6 Summary of the main findings of the studies on student stress

For most students, regardless of academic discipline, both the programme of study and the students' lives outside of university/college are potential sources of stress. The stressors that emanate from within the programme of study typically include academic stressors such as assessments and examinations, workload and a fear of failure and, where a clinical component is included, clinical stressors such as placement issues, death and dying, fear of making mistakes and interpersonal relationships with staff and colleagues. Outside of their programmes of study (again, regardless of academic discipline), personal/social stressors typically include finances, relationships and the home-college interface.

Stress levels among students appear relatively high, with studies reporting potentially harmful stress levels in anything between 20 and 55 per cent of students. Regarding coping and support, students appear to use a mix of coping strategies, and stress management interventions seem to be beneficial. Relatives and friends are typically the preferred source of support for students and there is evidence that social support has a positive effect on the mental health of students. With regard to outcomes, there is some evidence that burnout, psychiatric symptomatology and negative behaviours like academic fraud and non-attendance are associated with student stress.

1.7 THE INVESTIGATION

Good research requires systematic planning. In planning research systematically, a number of preliminary stages are required (Babbie 2001; Burns and Grove 1997; Fink 1995). In the first instance, it is necessary to define a 'research problem' (or 'statement of need', given that there is not always a 'problem' so-to-speak). Once the research problem has been identified, the 'research purpose' can be stated, following which specific objectives can be established. Objectives give overall direction to the investigation, in that they help determine the methods of inquiry and analysis.

1.7.1 The research problem

Following on from the earlier discussion of the current status of stress research in relation to pre-registration nursing and midwifery students, the research problem (statement of need) is thus:

> 'Whilst there is some research on stress among pre-registration student *nurses* in the UK, much of this work has been conducted on nurses training under the old apprenticeship model. Moreover, the research undertaken has often been small-scale or qualitative in nature. There has been some recent work on Project 2000 students in Scotland; Scotland, however, has a different system of higher education to the rest of the UK.
>
> As far as pre-registration student *midwives* are concerned, there is a dearth of research relating to stress, both nationally and internationally.'

A large-scale, quantitative investigation of stress (and related concepts such as coping) among Project 2000 nursing and midwifery students in *England* is justified as such and is likely to make a contribution to the existing body of knowledge. However, given that some reasonably large-scale English quantitative investigations of stress and related concepts have already been undertaken (Cavanagh and Snape 1997a, 1997b; Lindop 1991, 1999; Parkes 1980a, 1980b, 1982, 1984, 1985; Snape and Cavanagh 1995; West and Rushton 1986 – see Table 1.1 for details), there is a need to clarify further the originality of the current investigation. For a start, almost all of the studies (with the exception of Cavanagh and Snape's work and the later work of Lindop) have been undertaken on apprenticeship rather than diploma model programmes. Moreover, the current investigation is unique in that, unlike all of the studies cited above, it (a) considers all four branches of nursing as well as midwifery and (b) embraces the three core aspects – sources of stress, stress and coping – of the transactional model underpinning the investigation rather than focusing on a single aspect.

Furthermore, since nursing and midwifery have been experiencing some recruitment difficulties (Department of Health 1999a) and since there has been some speculation that stress is associated with dropout rates (Baldwin *et al.* 1998; Lindop 1989; West and Rushton 1986), any investigation into stress among student nurses and midwives that leads to a greater understanding of the factors involved in stress can only be welcomed by those funding and providing nursing and midwifery education.

1.7.2 The research purpose and research objectives

The research purpose conveys what an investigator hopes to achieve by carrying out a specific investigation. The main purpose of the current investigation was set when the investigation was originally commissioned by the School, namely **'to explore the mental health of pre-registration students in the School and inform an effective student support strategy'**. At first sight, this purpose seems almost entirely local. Local knowledge, however, often has implications for a wider audience and it is implicit in the main purpose that the investigation will also address issues of interest to a wider audience. To this extent, the investigation has two purposes: (a) a *local* purpose that will address issues peculiar to the School, and (b) a *wider* purpose that will address issues of interest to wider audiences.

Alongside these purposes, a number of specific objectives were also set at the time the investigation was commissioned, namely:

1. To establish the sources and levels of stress among students on pre-registration nursing and midwifery programmes provided by the University of Manchester.
2. To assess the coping strategies of these students in the context of the support systems available to these students.
3. To make comparisons between students on different pre-registration programmes within the School and at different stages in their training.
4. To relate the findings to other pertinent populations, such as the general population and comparable professional groups.
5. To identify the factors contributing to stress among students on pre-registration nursing and midwifery programmes in the School with a view to making predictions of those more likely to be stressed.

1.7.3 The research questions

According to Burns and Grove (1997), research questions are interrogative statements that make explicit reference to one or more of the variables under investigation. Ultimately it is the research questions that drive the investigation in that the methods of inquiry and assay are dependent, to a large extent, on the research questions adopted.

In quantitative research, research questions can be classified as those that are 'inquiry-driven' and those that are 'reference-driven'. Reference-driven research questions normally follow on from inquiry-driven research questions and the reference point can be either the central population of interest or some other comparable population. Inquiry-driven questions have the study sample as their focus and there are two types of inquiry-driven question: those that generate *descriptive* findings and those than generate *analytical* findings. With regard to analytical questions, three subtypes can be further identified: those that focus on the *differences* between variables; those that focus on the *relationships* between variables; and those that are concerned with whether *predictions* of a dependent variable can be made on the basis of one or more independent variables.

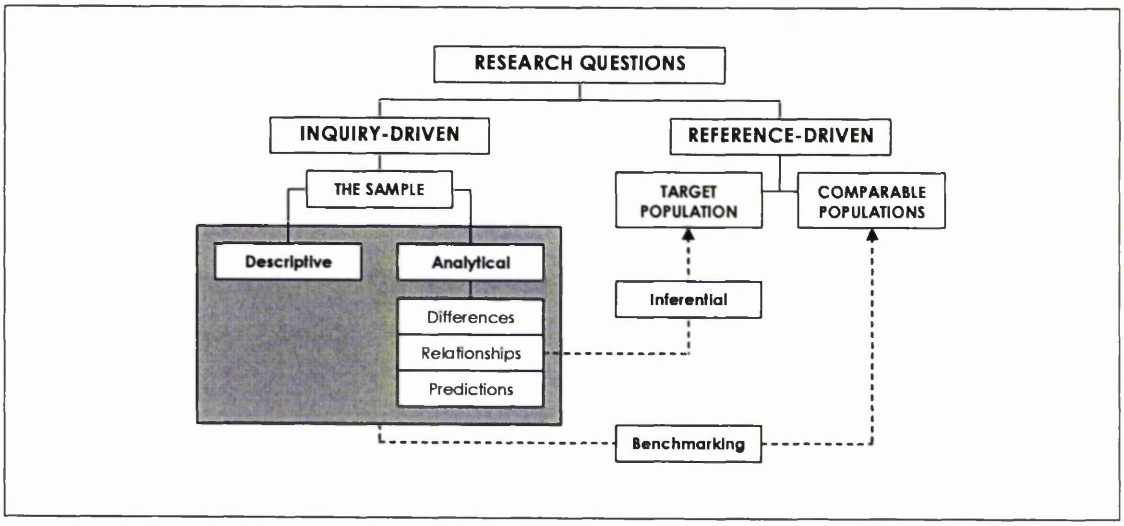

Figure 1.8 A typology of research questions.

Reference-driven research questions involve a leap from sample to population and the process behind these questions can be formal, involving the rules, logic and philosophical complexities of statistical theory ('inferential' research questions), or the process can be informal, involving largely narrative comparisons of the findings from the study sample with comparable populations ('benchmarking' research questions). This typology of research questions is illustrated in Figure 1.8.

Table 1.2 The research questions and their relationship to the research objectives and research purposes.

	Research question	Type of inquiry	Relates to purpose(s)	Relates to objective(s)
1: SOURCES OF STRESS (STRESSORS)				
1a	What are the sources of stress among pre-registration students in the School?	descriptive; benchmarking	local	1
1b	Are there discernible differences in sources of stress between various subgroups of the study population?	analytical; inferential	local, wider	3
1c	How do the sources of stress identified in the study population compare with other populations?	benchmarking	wider	4
2: STRESS				
2a	What is the prevalence of stress among pre-registration students in the School?	descriptive; benchmarking	local	1
2b	Are there discernible differences in levels of stress between various subgroups of the study population?	analytical; inferential	local, wider	3
2c	How do the levels of stress identified in the study population compare with other populations?	benchmarking	wider	4
3: COPING				
3a	What coping styles do pre-registration students in the School employ?	descriptive; benchmarking	local	2
3b	Are there discernible differences in coping styles between various subgroups of the study population?	analytical; inferential	local, wider	2, 3
3c	What roles do support services play?	descriptive; benchmarking	local	2
4: MODEL BUILDING				
4	What factors contribute to stress in nursing and midwifery students?	analytical; inferential	local, wider	5

Table 1.2 lists the specific research questions that underpin the current investigation. In each case, the research question is categorised according to the typology discussed earlier and according to whether it addresses the local or wider purpose of the investigation (or, indeed, both purposes). Reference is also made to the appropriate research objectives in order to demonstrate a relationship between the research objectives and the research questions. The research questions are, furthermore, grouped into discrete sections that reflect the influence of the transactional model – the theoretical model underpinning the investigation – in the research design.

CHAPTER 2
THE PILOT STUDY: METHODOLOGY

2.1 CHAPTER INTRODUCTION

It is good practice to undertake a pilot study prior to carrying out the main study (Burns and Grove 1997; de Vaus 1991; Parahoo 1997; Prescott and Soeken 1989; van Teijlingen and Hundley 2002). Burns and Grove (1997) provide a list of reasons why pilot studies might be undertaken, several of which provide a rationale for the pilot study, undertaken during summer 1999 and described in this chapter. These reasons are: (a) to test the feasibility of the proposed main study; (b) to identify potential problems with the proposed design; (c) to aid development or refinement of the data collection tools; and (d) to give the investigator experience with the proposed participants, the proposed setting and the proposed procedure.

2.2 DESIGN

Confusingly, the terms 'methodology', 'method', 'design' and 'technique' are often used interchangeably in research texts. To add to the confusion, these terms are often used to describe both the *entire* research process and *specific aspects* of the research process such as the way in which the data might be collected, the organisation of the participants or the particular analyses that might be undertaken. For the sake of precision and clarity, these four terms have been given specific meanings in this thesis. Firstly, a distinction between 'method' and 'methodology' needs to be made. The title of this chapter includes the word 'methodology' rather than 'method' because this chapter is concerned with the *procedural* aspects of the research process, a concern more in keeping with the true meaning of the word. For example, the *Oxford English Dictionary* (Oxford University Press 1998) defines methodology as 'a treatise or dissertation on method' (also remarking that its use is often weakened to mean little more than method) and the *Merriam-Webster Online Dictionary* (Merriam-Webster Inc 2001) defines it as 'a body of methods, rules, and postulates employed by a discipline: a particular procedure or set of procedures'. Method, on the other hand is '... the practical means, the tools, for collecting and analysing data' (Grant and Giddings 2002, p 12). In other words, method refers to the specific way(s) in which the data is obtained and subsequently dealt with, whilst methodology is a discussion of procedures and processes that are inherently associated with the method. The third term – technique – refers to the type of tool used to obtain the data and, finally, 'design' is used to describe the interplay between the method (and its component techniques) and the specific demands of an investigation. The design of an investigation is shaped, therefore, by such demands as the research objectives and research questions, sampling issues, resource limitations, the influence of sponsors, the urgency of the information required and the proposals for data analysis.

2.2.1 Selecting the design

Not only is the selection of a particular design shaped by external factors such as those listed above, the choice of design is also shaped by philosophical factors such as one's beliefs about the nature of being (ontology) and the nature of knowledge (epistemology). Traditionally, these beliefs have led to alignment to one or other side of a dichotomy that has qualitative, inductive, reflecting, interpretive designs, methods and techniques on one side and quantitative, deductive, hypothesis-testing, positivistic designs, methods and techniques on the other (Babbie 2001; Burns and Grove 1997; Grant and Giddings 2002; Parahoo 1997; Pryjmachuk 1996). This dichotomous approach is questionable, however, given that it is easy to find examples of research that transcend both sides of the dichotomy. For example, generalising the results of a discrete experiment (experiments typically involve hypothesis-testing) to some wider population is an *inductive* process, and content analysis, a data analysis technique frequently used in qualitative research, makes use of frequency counting, an inherently quantitative procedure. It is hardly surprising, therefore, to find a growing acceptance in the literature that there are multiple dimensions to research (see, for example, Babbie 2001; Grant and Giddings 2002; Hopkins 2002; Pryjmachuk 1996).

An interesting way of relating specific ontological and epistemological perspectives to the selection of a research design – a way that also encapsulates the multi-dimensional nature of research – is to embed the choice within a specific 'paradigm'. Paradigm is used here in the sense ascribed to it by the philosopher Thomas Kuhn: a shared way of seeing and doing things amongst a particular group of investigators. In the social sciences, a wide range of paradigms are available. Babbie (2001), for instance, identifies a range of paradigms that include positivism, social Darwinism, symbolic interactionism, ethnomethodology, Marxism, structural functionalism and feminism. Grant and Giddings (2002) helpfully subsume all of these into just four paradigms: positivism, interpretivism, radicalism and post-structuralism. What distinguishes each of these paradigms are the ways in which researchers attempt to solve a particular problem or answer a particular question; in other words, the ways in which they attempt to construct reality or pursue 'Truth'. Given that research is essentially the process by which questions are answered, problems are solved or reality is constructed (Pryjmachuk 1996), it is worth examining each of Grant and Gidding's paradigms in a little more detail.

Positivism is a philosophical position that holds that Truth is that which can be verified through systematic observation and experimentation. Developed by the 19th century philosopher August Comte, positivism was a reaction to the supernatural and metaphysical explanations of the world common in the 18th century. In pursuing Truth, the positivists saw no point studying phenomena (like God) that were beyond the bounds of observation, instead basing Truth on absolute, verifiable – i.e. *positive* – facts. Logical positivism, an early 20th century continuation of positivism, saw an alliance between logic (in particular, mathematics) and the principles of observation and experimentation inherent in positivism. In the middle part of the 20th Century, the position of positivism was both strengthened and weakened by Karl Popper's rejection of verification in favour of falsification. It was strengthened because Popper laid the foundations for the 'scientific method', the dominant epistemology of the West for last half-century or so; it was weakened because, by abandoning the principle of verification, Popper effectively signed its death warrant. A number of other factors also conspired to kill positivism in its purest forms. For example, contrary to one of the fundamental tenets of positivism, both the 'hard' and the 'soft' sciences began to study abstract and esoteric concepts (subatomic particles in physics and the mind in psychology, for example). In addition, a growing realisation developed that even, if science was conducted under the strict rules of observation and verification/falsification, the results still had to be *interpreted* by a human being (Appleyard 1992). Nevertheless, positivism is a paradigm that is still hugely influential in the medical and life sciences and, to some extent, the social sciences, although the constraints listed above have 'softened' the paradigm to the extent that it is often known as 'post-positivism' (Grant and Giddings 2002).

Unlike the other paradigms, (post-)positivistic research designs tend to be delineated and categorised by logistical and statistical procedures rather than by theoretical or philosophical perspective. Not only do these procedures underpin the delineation and categorisation of research designs, the value assigned to each (in terms of how well the procedure can establish *cause* or how well it *controls* for alternative explanations) determines where a particular design lies in a hierarchy of positivistic research designs. From a statistical perspective, descriptive designs appear at the bottom of the hierarchy, correlational designs in the middle and comparative designs at the top. Moreover, within each of these design sets, logistical procedures determine further hierarchies. Thus, in the comparative designs, those that have the highest degree of control over what Leibert and Liebert (1995) call 'plausible rival hypotheses' – and consequently those that are best able to answer questions of causality – appear at the top. This explains why the 'true' experiment (see, for example, Campbell and Stanley 1966) and its clinical analogue, the randomised controlled trial (RCT), appear at the top of the positivistic research design hierarchy.

Intrepretivism is a mid 20th Century reaction to positivism heavily influenced by the existential philosophies, in particular those of Martin Heidegger and Edmund Husserl. The crux of the existential philosophies is that an event (phemonenon) has no real meaning except that which the individual gives to it. In other words, an event has to be *interpreted* in order to be understood. Interpretivism is often (erroneously) equated with qualitative research and although the designs employed in the interpretive paradigm are largely qualitative, quantitative designs are not necessarily excluded.

Most of the interpretive designs require a subtle interplay between the researcher and those being researched hence 'reflexivity' plays a key role in interpretive research (reflexivity is the process of taking into account the effect of the personality or presence of a researcher on those researched). Unlike the positivistic research designs, interpretive designs tend to be delineated by philosophical perspectives. Thus, 'phenomenological' designs have their roots in the Husserlian view that Truth is constructed by focusing merely on phenomena (presuppositions and questions of causality being irrelevant) whereas 'hermeneutic' designs have their roots in the Heideggerian view that Truth is constructed through the very *act* of interpretation (Parahoo 1997). A third design within the interpretive paradigm is 'grounded theory' (Glaser and Strauss 1967). In grounded theory, the focus is on the interplay between researcher and researched, interpretations from both parties being used to build theory – theory that is *grounded* in the data, hence its name.

The radical paradigm is underpinned by the premise that research is a socio-political activity. It has, as its chief influence, those socio-political movements that believe that, because of injustices in the world, societal change is necessary and that any such change must come from within the very groups who are oppressed and marginalised. In the social sciences, the most dominant of these movements has been the feminist movement, but other movements with influence, particularly in the USA, include the black and the gay rights movements that have subsequently influenced 'Afro-centric' and 'queer' research respectively. Regarding the pursuit of Truth, the view within the radical paradigm is that Truth cannot be established until the distortions caused by social inequality are tackled. Radical research is, as such, concerned with identifying, clarifying and challenging these distortions with the ultimate goal of effecting societal change – change that addresses these inequalities. The focus on equality means that the researcher is acutely aware of the power imbalances between researcher and researched that are evident in many of the other research paradigms (particularly the positivistic paradigm, but also in the interpretive paradigm); thus, there tends to be a collaborative, co-operative aspect to radical research. Consequently, research designs within the radical framework include those designs with a collaborative aspect and/or those where change is of central importance. It should come as no surprise to find that designs in the radical paradigm include critical ethnography, co-operative research and (emancipatory and participatory) action research (Grant and Giddings 2002; Parahoo 1997).

Post-structuralism is a complex paradigm, based in part of the work of the deconstructionist philosophers Jacques Derrida and Michel Foucault. Called post-structuralism because it is both a product of, and a reaction to, 'structuralism' (a movement interested in the *structures* in society, be they literary, sociological, linguistic, cultural, etc.), it has at its core a view that '... no-one can stand outside the traditions or discourses [speech or writing] of their time' (Grant and Giddings 2002, p 20). Truth is, as such, dependent on the written and spoken word but not merely on a superficial level – the historical, social and political context of the discourse has to be taken into account including that which is (consciously or unconsciously) ignored, silenced or missing from the discourse. Thus, Truth within the post-structuralist paradigm is inherently subjective, unstable, partial and multiple. No specific research designs are allied to post-structuralism. Rather, any design (including designs 'borrowed' from the other paradigms) can be utilised so long as the discourses surrounding both the research design and the individuals taking part in the research (researcher and researched) are considered. Predictably, the key technique in post-structuralist research is 'discourse analysis' (sometimes referred to as 'critical analysis'). The simple name for the technique contrasts, however, with the variety of different ways in which a discourse analysis can be undertaken. For example, discourse analyses that are essentially deconstructionist would be the remit of Derridean researchers, discourse analyses with a genealogical perspective would be the remit of Foucaultian researchers and discourse analyses with women's experiences and perspectives at the centre would be the remit of feminist post-structuralists.

These paradigms have impacted on the choice of a research design for the current investigation in several ways, some blatant and others more subtle. In the first instance, the investigator's beliefs and experience clearly define him as a post-positivist. Although this implies that the investigator has an immediate affinity with positivistic designs, methods and techniques, this does not necessarily have to be the case. Personal ontological and epistemological perspectives can, after all, be constrained (and, indeed, frequently are) by external factors such as sponsors' demands, co-researchers' views, sample availability and politics. As Grant and Giddings (2002) remark '... in practice we often live and research within contradictions' (p 12).

One constraint from the investigator's sponsor (the School's management), evident in the research objectives, was that an *exploration* of the study population was required in the first instance. Admittedly, this is hardly a constraint of consequence given that an exploratory study could have been conducted within any of the four paradigms but it does reinforce the importance of considering all potential constraints – consequential or inconsequential – when choosing a research design. Some other constraints, however, did have a more powerful impact on the choice of design. For example, it was difficult to see how the investigation could be framed in a radical paradigm given that the study population were not, in this context, a particularly disempowered or marginal group.[12] On the other hand, the fact that the research problem (Section 1.7.1) alluded to the paucity of *large-scale* research into stress amongst British nursing and midwifery students inherently pushed the investigation in a quantitative rather than qualitative direction, as did the School's offer of access (subject to ethical approval) to the entire population of pre-registration students. The impracticality of undertaking large-scale (with the emphasis on the *large*) qualitative work made a design within the post-structuralist paradigm difficult, although it did not necessarily preclude an interpretive design. Thus, the only realistic paradigms in which to frame the investigation were the positivistic and interpretive paradigms. However, given that interpretive research is oversubscribed in nursing (Cullum 1998) and given the investigator's acknowledged post-positivistic leanings, the decision was made to embed the investigation in the positivistic paradigm.

Embedding the investigation in the positivistic paradigm was, however, only the first step in selecting a research design. As mentioned earlier, there is a hierarchy of research designs within the positivistic paradigm. Certain designs – those towards the top of the hierarchy – were impracticable for a variety of reasons. For example, whilst it was certainly feasible to employ experimental or quasi-experimental designs (Campbell and Stanley 1966), these designs – as designs that essentially test *interventions* – were largely at odds with the research objectives. Another comparative design, the longitudinal design (the comparisons being different time points) was similarly impracticable given that any investigation had to be manageable within the time-scale of a part-time PhD programme. Nevertheless, comparisons needed to be made – Research Questions 1b, 2b and 3b demanded as much – so a design that facilitated comparisons needed to be chosen. Moreover, some description (Research Questions 1a, 2a, 3a and 3c) was required and Research Question 4 demanded some consideration of, if not causality, at least association. A design that can accommodate all of these demands is the cross-sectional design.

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[12] As most nurses and midwives are women, it could be argued that a design incorporating a feminist perspective was feasible. However, with the investigator being a man, feminist research would have been impracticable, if not impossible, as it is generally very difficult for men to do feminist research (Wadsworth 2001).

2.2.2 Cross-sectional, mixed-design survey

Like most research designs, cross-sectional designs are not without their limitations but in their favour they are economical, especially in terms of costs and time, they are useful when answers are required relatively quickly (cf. longitudinal studies) and they can, despite common misconceptions, serve an explanatory function as well as an exploratory or descriptive function (Babbie 2001).

Whilst the design chosen was cross-sectional, the method chosen was the *survey*. 'Survey' is used here not to denote the canvassing of views – 'poll' is a better term for this activity – but to denote, as de Vaus (1991) puts it, a specific, systematic method of collecting, organising and analysing data. Most survey research has multiple objectives (Sonquist and Dunkelberg 1977) and the current investigation is no exception. Given that the objectives of this investigation solicit both description and analysis (explanation), the design can also be said to be *mixed* (Abramson 1990).

As discussed earlier, technique is the manner in which the empirical data is obtained, thus the technique employed in the current investigation is *the self-administered questionnaire*. Many of the factors influencing the design of a study also influence the selection of a technique. A self-administered questionnaire pack[13] was chosen because of resource and time limitations (cf. the use of face-to-face or telephone interviewing), and because established tools for measuring key variables (such as stress and coping) easily availed themselves to this technique.

2.3 MEASURES: THE QUESTIONNAIRE PACK

For any given investigation, it is the objectives and research questions that determine the nature and scope of the data that needs to be collected. In the current investigation, the objectives and research questions called for data to be collected on a range of concepts including sources of stress (stressors), stress and

[13] The reasons for employing the term 'questionnaire pack' rather than simply using 'questionnaire' are given in Section 2.3.

coping. These concepts are, of course, embedded in the transactional model underpinning the current investigation.

Whenever particular concepts are involved, it is wise to use valid and reliable pre-existing measures (Parkes 1982; Polgar and Thomas 2000). Using such measures conserves resources and assists in the replication and accumulation of research findings (Miller 1991). Fortunately, pre-existing measures of the key concepts – sources of stress, stress and coping – were relatively easy to obtain. The objectives and research questions also demanded that data be collected on a wide range of variables for which no suitable pre-existing tools existed. Consequently, a separate self-administered questionnaire was developed in order to obtain this data.

At this point it is useful to explain why the term 'questionnaire pack' has been employed in preference to 'questionnaire'. Given that each of the proposed pre-existing measures took the form of a self-administered questionnaire and that the investigator planned to include an additional, self-administered questionnaire to collect additional data, it made sense to choose a term that referred to a number of questionnaires rather than a single one. The term 'questionnaire pack' also embraces two other aspects of the overall data collection process: an information leaflet (see Section 2.5.1) and a postage-paid (Freepost) envelope to facilitate the return of completed questionnaires. Each of the pre-existing measures employed is discussed below. In line with copyright regulations, formal permission to use each of these measures was sought and subsequently granted prior to their use.

2.3.1 Measuring sources of stress

In order to achieve the investigation's objectives, it was necessary to obtain some knowledge about the situations and events that nursing and midwifery students find stressful. At the outset of the investigation, a scan of the literature for an appropriate, reliable and valid tool that measured sources of stress yielded a large number of *ad hoc* measures with questionable psychometric properties, although a few measures with potential were identified: the 'sources of pressure' scale of the *Occupational Stress Indicator* (Cooper *et al.* 1988), the *Nursing Stress Scale* (Gray-Toft and Anderson 1981), the *Nurse Stress Index* (Harris *et al.* 1998) and the *Beck and Srivastava Stress Inventory* (Beck and Srivastava 1991; Beck *et al.* 1997). After considering each of these measures, the *Occupational Stress Indicator* scale was rejected because it was not specific enough to health-care workers, whilst the *Nursing Stress Scale* and the *Nurse Stress Index* were rejected because they were meant for use with *qualified* nurses.

The *Beck and Srivastava Stress Inventory* (BSSI), on the other hand, looked promising. A 44-item questionnaire with each item attracting a Likert rating of between one and five (where 1 = 'not stressful' and 5 = 'extremely stressful), the BSSI has alpha-coefficient reliabilities of between 0.82 and 0.90 and acceptable face and content validity (Beck *et al.* 1997). There were some shortcomings with the BSSI, however. For a start, it is has rather simplistic scoring in that it is scored merely by adding the 44 individual Likert ratings to produce a total BSSI score of between 44 and 220. In addition, being Canadian, it does not translate readily to a British audience. Nevertheless, despite these shortcomings, it was anglicised by the investigator (with approval from its lead author, Deborah Beck) and subsequently employed in the pilot study.

2.3.2 Measuring stress

Two main measures of stress appear to have been employed in the literature on nursing and midwifery students, measures that also make a regular appearance in studies on other populations: the *State-Trait Anxiety Inventory* (Spielberger 1983) and the *General Health Questionnaire* (Goldberg and Williams 1988). Predictably, given their respective origins, the *State-Trait Anxiety Inventory* (STAI) is largely a feature of the North American literature (Bell 1991; Charlesworth *et al.* 1981; Fehring 1983; Foley and Stone 1988; Godbey and Courage 1994; Heaman 1995; Johannson 1991; O'Connor and Bevil 1996; Russler 1991; Speck 1990; Stephens 1992; Summers *et al.* 1990; Youseff and Goodrich 1996), whereas the *General Health Questionnaire* (GHQ) has largely permeated the British literature (Baldwin *et al.* 1998; Borrill *et al.* 1996, 1998; Firth 1986; Guthrie *et al.* 1997; [M C] Jones 1998; Parkes 1982, 1990; Roberts *et al.* 1999; West and Rushton 1986). Given the locale of the current investigation, the GHQ was the obvious choice, a choice that was reinforced by its utilisation in significant British studies such as the NHS study (Borrill *et al.* 1996, 1998) and the two Scottish studies on nursing and midwifery students (Baldwin *et al.* 1998; [M C] Jones 1998).

Four different versions of the GHQ exist: an original 60-item version (GHQ-60), two versions derived from this original version – a 30-item version (GHQ-30) and a 12-item version (GHQ-12) – and a related, but separately derived, 28-item version (GHQ-28). The GHQ manual (Goldberg and Williams 1988) provides some assistance in choosing between the different versions. According to the manual, the GHQ-28 should be used only if subscales are required (the 28-item version elicits four subscales). As the subscales were not deemed important in this investigation, the choice was between the 60, 30 and 12 item version. As far as reliability and validity are concerned, there is little to distinguish all four versions (Goldberg and Williams 1988; Goldberg *et al.* 1997); consequently, as the shortest, the GHQ-12 (Goldberg 1978) was selected.

Each of the 12 items on the GHQ-12 has four possible responses on a Likert-type scale. There are two main methods of scoring the GHQ-12, the 'Likert' method and the 'GHQ' method. The Likert method (scoring 0-1-2-3 for the four responses) produces a continuous variable with scores ranging from zero to 36. The Likert method is essentially a measure of the degree to which an individual is distressed, with zero equating to 'not distressed' and 36 equating to 'extremely distressed'. The GHQ method (scoring 0-0-1-1 for the four responses) produces a score of between zero and 12. GHQ method scores are used mainly to determine 'caseness', that is whether a participant can be classified as a 'case' or a 'normal'. The GHQ method is useful in clinical work in that it essentially distinguishes between those whose stress/distress levels could be deemed pathological (cases) and those whose stress levels could be deemed normal (normals). That the GHQ-12 can elicit a dichotomous variable also provided a rationale for its selection in that the investigator intended to use logistic regression (a statistical method that requires a dichotomous dependent variable) as a part of the data analysis strategy (the data analysis strategy is further discussed in Section 4.7.3).

The GHQ-12 is a reliable instrument having alpha-coefficients of between 0.82 and 0.86 (Goldberg *et al.* 1997). No specific test-retest reliability coefficients are available for the GHQ-12, although Goldberg and Williams (1988) report coefficients ranging from 0.36 to 0.90 for other versions of the GHQ. Goldberg and Williams note, however, that test-retest reliability is difficult to establish when measuring a highly variable quality like mental distress. The GHQ-12 also has good convergent and discriminant validity in that it correlates well with other measures of mental well-being yet poorly with measures of somatic health (Goldberg *et al.* 1997; Hardy *et al.* 1999).

In addition to the GHQ-12, a second measure, the twelve-item version of the 'Short Form' (SF-12) was also employed. The SF-12 (Ware *et al.* 1998) is a shortened version of the SF-36 (Ware *et al.* 1994), a measure of general physical and mental well-being used frequently in outcomes research. The SF-12 yields two summary measures – a physical component score (PCS), a measure of physical well-being and, of most use to the current investigation, a mental component score (MCS), a measure of mental well-being. The two summary scales of the SF-12 – the MCS and PCS – are norm-based standardised scales, with a mean of 50 and standard deviation of ten. In the context of the population from which the norms are taken, an MCS or PCS score of 50 represents 'average' health. Scores above 50 represent better-than-average health and scores below, worse-than-average health. These scores were calculated using the formulae set in the SF-12 manual (Ware *et al.* 1998). These formulae, however, are based on *US* population norms. Even though a British version of the SF-12 (Jenkinson *et al.* 1997) was employed in the investigation, no British norms were available at the time. A decision to derive the MCS and PCS using the US population norms was made following advice from Crispin Jenkinson (1999), the British lead on the SF-12.

The SF-12's value in outcomes research[14] was the principal factor for including it in the investigation, as some future outcomes research was contemplated at the time the investigation was commissioned. Several other factors also influenced this choice. Firstly, the SF-12 is brief and its addition to the questionnaire pack would not, as such, have added any significant burden to participants. Secondly, its use would enable the GHQ-12 to undergo a degree of validity testing in that the MCS, as a measure of mental well-being, should correlate strongly with the GHQ, as a measure of stress/distress. Thirdly, it elicited another potentially useful measure – a measure of *physical* health (the PCS) – at no extra cost. Finally, it and its parent, the SF-36, have also been employed, though to a lesser extent than the GHQ, in pertinent stress

[14] Research concerned with the end-results of patient/client care, i.e. the outcomes of interventions or treatments such as changes in symptoms, health, quality of life, and so on.

research. The SF-36, for example, was employed in the NHS investigation (Borrill *et al.* 1996, 1998).

The SF-12 has good test-retest reliability: according to the manual (Ware *et al.* 1998), test-retest coefficients for the PCS for US and UK populations are 0.89 and 0.88 respectively and 0.76 and 0.78 respectively for the MCS (the 'better' correlations for the PCS may be down to physical health being more stable over time than mental health). No internal consistency reliability (Cronbach's alpha) statistics are available for the SF-12, although data for the SF-36 (Ware *et al.* 1994) suggests that alpha-coefficients for the PCS are typically between 0.92 and 0.94 and typically between 0.87 and 0.89 for the MCS. Regarding validity, Ware *et al.* (1998) and Jenkinson *et al.* (1997), report that there is little (apart from brevity) to distinguish the SF-12 from the SF-36. It also has good discriminant validity in that it is able to discriminate between what Ware *et al.* (1998) call the 'four known groups' – those with minor medical problems, those with a major physical condition, those with a major mental health problem and those with both serious mental and serious physical health problems.

2.3.3 Measuring coping

One of the most widely used tools in coping research is the *Ways of Coping Questionnaire* (WCQ) (Folkman and Lazarus 1988), a 68-item questionnaire yielding eight subscales: a problem-focused coping subscale, six emotion-focused coping subscales and a 'seeking social support' subscale that transcends both problem- and emotion-focused coping (these subscales were alluded to earlier in Figure 1.6 on p 41). The WCQ was considered for use in the investigation, not least because of its use in comparable studies (e.g. [M C] Jones 1998). However, a number of validity and reliability issues have dogged the WCQ (Carver *et al.* 1989; Endler and Parker 1990a, 1990b; Parkes 1994). Endler and Parker are perhaps the most vehement critics of the WCQ noting that it has '... probably been used by other researchers more frequently than the psychometric properties of the scales would warrant' (1990b, p 846). They add that what little empirical support exists for the validity of the eight subscales is weak and that Cronbach's alpha scores are, at best, modest. Endler and Parker have not been merely reactive in their criticisms, however. They have built upon the work of Folkman, Lazarus and other coping researchers to develop their own multi-dimensional tool for the measurement of coping, the *Coping*

Inventory for Stressful Situations (CISS) (Endler and Parker 1990c). Unlike the WCQ, the CISS has impressive reliability statistics. Typically Cronbach's alpha for the CISS has been in the range 0.7 to 0.9, and test-retest reliabilities have been between 0.55 and 0.73 (Endler and Parker 1990a). With regard to validity, Endler and Parker (1990a) claim that validity has been established both in terms of its multi-dimensionality (i.e. it independently assesses three different types of coping) and in terms of its construct validity (it has, for example, good discriminant and convergent validity).

The CISS-Adult, the version employed in the current investigation, is a 48-item measure of dispositional (as opposed to situational) coping that yields three factors. As was illustrated in Figure 1.6 on p 41, two of the factors, 'task-oriented' coping (coping that employs cognitive or behavioural problem-solving techniques) and 'emotion-oriented' coping (coping that employs emotional techniques, such as fantasy or self-preoccupation) are comparable, respectively, to the problem- and emotion-focused scales found in other widely used coping scales, including the WCQ. Endler and Parker also identify a third factor, 'avoidance-oriented' coping, which simply involves avoidance of the stressful situation by either engaging in a distracting task or by seeking out other people. The construction of the CISS allows these two strategies to be investigated independently, if required, through the use of two avoidance subscales, 'distraction' and 'social diversion'.

Like the SF-12, the CISS yields norm-based standardised summary scores ('T-scores'), with a mean of 50 and standard deviation of 10. At the time of the pilot study, no British norms were available, the only norms available being those for the US adult and US college populations. Initially, both of these sets of norms were used (i.e. two sets of T-scores were obtained) but, for reasons which are outlined later (see Section 4.7.2.1), the T-scores were subsequently abandoned in favour of the CISS raw scores.

2.3.4 Additional measures

Choosing specific pre-existing measures marked the first stage in the development of the questionnaire pack. The next stage involved a consideration of the research questions in order to establish what additional information might be required from respondents. Once this was established, the investigator set about devising specific questions to address these needs.

Table 2.1 Sources of additional, predefined measures and response sets.

Measure	Type	Source(s)	Comments
Ethnicity	direct	*Harmonised Questions for Government Social Surveys* (GSS 1995a); the 1991 Census (OPCS/GROS 1992)	Standard nine-category response set employed. Same response set used by HESA (1999).
Social class	derived	*The Question Bank* (CASS 1999)	'Economic activity' section provided background information on appropriate questions to ask in order to derive this variable.
		Standard Occupational Classification, Volumes 2 and 3 (GSS 1991, 1995b)	The *Registrar General's* classification of social class was employed. Response sets (codes) and coding instructions are contained in these volumes.
Family type Children in household	derived derived	*The Question Bank* (CASS 1999); the 1991Census (OPCS/GROS 1992)	'Household definition and structure' section of the *Question Bank* and the 22-category 1991 Census response set provided background information on appropriate questions to ask in order to derive these two variables.
Accommodation type	direct	*Harmonised Questions for Government Social Surveys* (GSS 1995a)	Standard three-category response set – house/bungalow, flat/maisonette, other – was extended with two additional categories relevant to the study: nurses' home and university halls of residence.
Tenure of accommodation	direct	*Harmonised Questions for Government Social Surveys* (GSS 1995a)	Standard six-category response set was employed.
Highest qualification on entry	derived	National Qualifications Framework (QCA 2001; QAA, 2001)	Initially no definitive categories were available, but during data entry for the main study, work on a National Qualifications Framework (NQF) was published. Thus in the main study, a six-category NQF-based response set was employed.
Disability	direct	HESA (1998)	Six types of disability (six dichotomous disability-or-not variables) identified from this source.

Notes: For 'direct' variables, respondents were able to self-code as the categories presented were identical to those used for data entry; for 'derived' variables, the investigator coded the respondents on the basis of their responses to a set of questions.

GSS = Government Statistical Service. OPCS = Office of Population Censuses and Surveys. GROS = General Register Office for Scotland. HESA = Higher Education Statistics Agency. CASS = Centre for Applied Social Surveys. QCA = Qualifications and Curriculum Authority. QAA = Quality Assurance Agency for Higher Education.

In line with good practice (de Vaus 1991; Fink 1995; Liebert and Liebert 1995), careful thought was given to the layout and wording of these questions. In order to maximise validity and reliability, public sources of information such as the online resource *The Question Bank* (Centre for Applied Social Studies 1999) and various academic and Government publications were consulted to see if pre-defined and validated questions and/or response sets already existed. For several of the additional measures of interest, several validated questions and/or response sets did, indeed, exist. A summary of these measures, together with their sources, is provided in Table 2.1.

2.4 PARTICIPANTS

A single cohort containing 188 pre-registration nursing students, close to the end of their programme of study (and consequently in branch) was selected for the pilot. This cohort was chosen deliberately to prevent contamination of the main study's population since, being close to the end of their studies, this cohort would have completed their studies by the time the main study commenced. As only nursing students were chosen, no midwifery students were included. Moreover, as there were no learning disability students in this particular cohort, only three of the branches – adult, mental health and children's – were represented.

2.5 ETHICAL ISSUES

Obviously, research on human beings is subject to a number of ethical demands. Burns and Grove (1997) provide a useful framework for assessing the ethical considerations of research studies. Using a framework of human rights, they suggest that five considerations are taken into account, namely the rights to: (a) self-determination; (b) privacy; (c) anonymity and confidentiality; (d) fair treatment; and (e) protection from discomfort and harm.

These considerations are reflected in the demands of the organisations and bodies to which the investigator was answerable. As the investigation was conducted under the auspices of the University of Manchester, the investigator was subject to the demands of the University's ethics committee (University of Manchester 1999). As a Registered Nurse, the demands of the regulatory body at the time – the UKCC – also needed be taken into account (UKCC 1996). In addition, as a member, the investigator was subject to the ethical demands of the British Psychological Society (1996, 1998).

In order to receive approval from the School's ethics committee (a subgroup of the University's ethics committee), the issues discussed below needed to be addressed. These were addressed to the satisfaction of the School's ethics committee and ethical approval was granted early in 1999.

2.5.1 Informed consent

Respect for the individual's right to self-determination is reflected in the concept of 'informed consent'. The key aspect of this concept is not necessarily the issue of consent, but that prospective participants are *informed* so that they can make an autonomous decision as to whether to participate in the investigation or not. Informed consent was obtained by the provision of an information leaflet, which participants were asked to read prior to making a decision whether or not to complete the questionnaire pack. The information contained in this leaflet was also given verbally to those participants who received their questionnaire packs from the investigator in person.

In keeping with recognised good practice (Burns and Grove 1997), the information leaflet contained information about the investigator (including contact details), explained the purpose of the investigation, and addressed anonymity and confidentiality issues. The leaflet also re-iterated that participation was entirely voluntary and that participants had a right to seek further information about the investigation if they so wished.

2.5.2 Protection from discomfort and harm

Protecting research participants from discomfort or harm is often far from straightforward. Stress research inherently forces those taking part to think about their personal circumstances. After taking part in such research, participants may have a heightened awareness of their own circumstances and may find that their circumstances are perhaps not as stable as they previously thought. Consequently, those conducting stress research need to ensure that systems are available to deal with any such eventualities. These eventualities were planned for by including the contact details of a number of pertinent support services in the information leaflet and by offering participants the opportunity to make unsolicited contact with the investigator. Supplying details of pertinent support services and offering participants the opportunity to make unsolicited contact with the investigator was a support strategy offered globally, i.e. to all participants, regardless of whether they completed the questionnaire pack or not.

The transactional model of stress underpinning this investigation suggests that individuals with high levels of stress and who lack support could well be those most likely to suffer negative, damaging outcomes. Such individuals may even be at risk of *harm*. From the completed questionnaire packs, it was possible to determine which respondents were likely to be under a high degree of stress and who also lacked support. The ethics committee believed that the right to protection from discomfort and harm meant that the investigator had an ethical obligation to seek out these 'high-risk' respondents to offer additional support and advice should they require it.

The process for identifying high-risk respondents in the pilot study was based on the investigator's overall appraisal of the responses, in particular of the GHQ-12 scores. As mentioned earlier (Section 2.3.2), the GHQ-12 is often used to determine those in clinical need – *cases* – and, to some extent, this seemed the most appropriate group to follow-up. In hindsight, the process for identifying high-risk respondents was rather unsystematic and was subsequently amended in readiness for the main study (this amended process is discussed in detail in Section 4.5.2).

2.5.3 Privacy, confidentiality and anonymity

To maintain confidentiality, completed questionnaire packs were stored in a locked filing cabinet to which only the investigator had access. In addition, no-one other than the investigator or the individual participant was allowed access to completed packs. Individual participants are not identifiable from their responses (but see the point about anonymity below). To reinforce the confidential nature of the investigation, the questionnaire packs were marked 'strictly confidential' and a specific point about confidentiality was included in the accompanying information leaflet.

Because of the ethics committee's concerns about high-risk respondents, total anonymity could not be guaranteed. In order to follow-up high-risk respondents, some means of identifying them from the completed questionnaire packs was necessary. Following advice from the ethics committee, it was decided that the best approach would be to assign a unique identification (ID) number to each participant. This ID number system obviously required the compilation of a list of participant names and corresponding ID numbers. To maintain the confidentiality of the investigation, only one copy of this list was produced and only the investigator had access to it. In using the ID number on the questionnaire packs rather than asking for, say, the participant's name or University registration number, it was possible to identify high-risk respondents whilst, at the same time, affording some degree of anonymity in that only those respondents identified as high-risk had their ID numbers 'decoded'. In keeping with the spirit of informed consent, the ID number system was explained to participants, both in the information leaflet and verbally whenever possible.

2.6 PROCEDURE

2.6.1 Testing out the questionnaire pack

In the first instance, a draft questionnaire pack was developed. Once the draft had been completed, and in order to enhance the pack's content validity (Babbie 2001; Burns and Grove 1997), four nursing and midwifery colleagues with experience of pre-registration students were asked for an expert opinion on the pack's construction and to look for any ambiguities. They were also asked to complete the questionnaire pack as if they were an actual participant to glean some idea of how long the questionnaire pack would take to complete.

Although feedback from these reviewers was generally positive, some ambiguities and potential pitfalls were identified and the questionnaire was adjusted accordingly. This revised version of the questionnaire pack was subsequently employed in the pilot, a copy of which can be found in Appendix 1. Given the feedback from the reviewers, the pack was expected to take around twenty minutes to complete which did not seem particularly onerous.[15]

2.6.2 The codebook

To assist data entry (and, indeed, subsequent data analyses) and in line with good practice (Afifi and Clarke 1996; Burns and Grove 1997; Babbie 2001), a codebook was developed simultaneously with the questionnaire pack. The codebook listed all the variables of interest, together with the specific questions or items from the questionnaire pack that generated those variables. The numerical codes representing the possible responses (values) for each variable were also listed, including codes for missing or incomplete data. In line with convention (Afifi and Clark 1996), missing data was coded as '9' for single-digit variables, '99' for two-digit variables and '999' for three-digit variables.

2.6.3 Delivering the questionnaire packs

Each of the three branch groups was seen separately for a few minutes prior to a classroom session or lecture. The investigator gave each of the groups a brief outline of the investigation – informing them it was a pilot – and handed each of the participants an individualised (by virtue of the ID number referred to earlier) questionnaire pack. A few minutes was provided to allow the participants to ask questions. The participants were asked to complete the questionnaire pack in their own time and return it to the investigator in the postage-paid envelope included in the questionnaire pack. Questionnaire packs, together with a covering letter, were mailed out to those participants who did not attend the classroom session or lecture.

[15] Although common sense dictates that the shorter the questionnaire, the higher the response rate, Bosen (1996) in a review of the literature of questionnaire length and response rates found very little evidence to corroborate this supposition. Nevertheless, the investigator was comfortable with a questionnaire of around twenty minutes especially since the pilot would intrude on participants' private time.

A standard procedure for maximising response rates is a follow-up mailing (Burns and Grove 1997; Babbie 2001) thus, irrespective of the method of delivery, a reminder letter was sent 4-6 weeks later to those participants who had not returned their questionnaire packs. Upon return, and prior to data entry, completed questionnaire packs were, in line with the ethical demands discussed earlier, checked to see whether the responses suggested evidence of high levels of stress and a lack of support. The process of checking for high-risk respondents involved the investigator simply 'eyeballing' completed packs to glean an overall impression of the respondent, paying particular attention to the GHQ-12 responses and the responses to a few other salient questions.

2.7 DATA MANAGEMENT

2.7.1 Keeping records

When dealing with a large number of participants, it is judicious to keep accurate records of the data collection process. For example, it is necessary to know which participants have responded so that these participants do not receive a reminder letter at a later stage. It is also important to keep a record of respondents identified for follow-up, together with some comments about the outcome of these follow-ups.

It was decided that the best way of keeping these records would be to integrate them into the confidential ID number/participant name list and a spreadsheet was thus designed for this purpose (a copy of which can be found in Appendix 2). Using this spreadsheet had the advantage of ensuring that only one set of central records needed to be kept and also meant that, like the ID number list, the data collection records remained confidential.

2.7.2 Data entry

The original plan for data entry was to enlist the services of *Manchester Computing*, a quasi-autonomous unit of the University who operate a data entry service for University staff. The questionnaire pack was, as such, laid out in a manner amenable to the data entry requirements of *Manchester Computing*. For each variable of interest, a numbered box was listed in a separate left-hand margin into which appropriate values could be entered (a process known as 'edge coding').

2.8 CHAPTER SUMMARY

In summary, the pilot study described here set out to test the feasibility of a study into student stress that intended to use, as its research design, a cross-sectional survey and, as its research technique, a questionnaire pack. The proposed questionnaire pack contained a measure of sources of stress (the BSSI), two measures of stress (the GHQ-12 and the SF-12) and a measure of coping (the CISS) together with some questions designed to elicit demographic data. Questionnaire packs were distributed to a single cohort of nursing students nearing the end of their studies and plans were made as to how the returning packs and the data contained therein would be managed.

Whether the proposed main study would prove feasible or whether its feasibility would be dependent on modifications to the design, procedures or technique is considered in the next chapter.

CHAPTER 3
THE PILOT STUDY: RESULTS & DISCUSSION

3.1 CHAPTER INTRODUCTION

The main aim of the pilot was to test the data collection and data management process. As such, the pilot data was not subjected to detailed statistical analysis. However, a number of specific logistical issues arose (as is to be expected, given the nature of pilot studies) and each of these issues is discussed here together with details of how they were resolved in preparation for the main study.

3.2 RESULTS

Given that the pilot data was not subjected to detailed statistical analysis, few formal results are available for the pilot study. Some basic results relating to response rates and to the GHQ-12 scores are, however, considered for reasons that will shortly become clear.

3.2.1 Response rates

Table 3.1 below provides details of the overall response rate as well as a summary of the response rates obtained for each of the two delivery methods employed: 'direct contact' (those given their packs directly by the investigator) and 'mail' (those whose packs were mailed out).

Table 3.1 Response rates for the pilot study.

Method of delivery	Valid Out	Returned without reminder		Increase with reminder		Total returned	
Direct contact	138	65	(47.1%)	16	(11.6%)	81	(58.7%)
Mail	50	14	(28.0%)	2	(4.0%)	16	(32.0%)
All questionnaire packs	**188**	**79**	**(42.0%)**	**18**	**(2.93%)**	**97**	**(51.6%)**

Overall, around 50 per cent of participants returned completed questionnaire packs. Reminder letters increased the response rates among the direct contact and mail groups by almost twelve and by four per cent respectively.

3.2.2 GHQ-12 scores

The mean GHQ-12 score (GHQ method) is presented here because it can have a bearing on the selection of a GHQ threshold (see Section 3.3.4). In the pilot, a mean GHQ method score of **3.75** (n = 96) was obtained.

3.3 DISCUSSION

3.3.1 Response rates

The overall response rate, at around 50 per cent, was an 'adequate' figure for analysis and reporting (Babbie 2001), but somewhat disappointing. The reminder letters proved useful, however, in that they led to some increases in response rates.

Further examination of the response rate data produced a number of useful observations. For example, it seemed that speaking to the participants directly and handing over a questionnaire pack in person elicited a better response rate (almost 60 per cent against around 30 per cent) than simply mailing out the questionnaire packs. Out of the 188 questionnaire packs, 50 needed to be mailed out suggesting that, at any given classroom session or lecture, around a quarter of students might be expected to be absent. These observations suggested that, for the main study, it would be wise to make direct contact, in a classroom or lecture theatre setting, getting as many students as possible to attend. Moreover, given that participation in studies can be enhanced by making participation as convenient, inviting and as enjoyable as possible (Liebert and Liebert 1995), it was also decided that the participants should be given the opportunity to complete the questionnaire pack in formally timetabled time rather than their own private time. This would hopefully encourage responses from the (unknown) proportion of non-responders who might have been interested in completing the questionnaire pack, but found that they did not have the time once they got home.

3.3.2 An alternative to the BSSI

Shortly after the pilot had been completed, a pertinent British publication appeared (Jones and Johnston 1999) criticising the BSSI. Jones and Johnston noted that the BSSI had not been validated across independent samples, that its test construction methods had not been described in the literature and that the factor structure of the BSSI had not been explored in any detail. Jones and Johnston went on to propose, as an alternative, an adapted, validated and factor analysed version of the BSSI, which they called the *Student Nurse Stress Index* (SNSI). The investigator consequently arranged a meeting with the principal author, Martyn Jones, and a decision was subsequently made to employ the SNSI in the main study in preference to the BSSI. Given its adoption in the main study, the SNSI is discussed in more detail in the next chapter.

3.3.3 Identifying high risk respondents

The ethical demand that high-risk respondents be followed-up raised a number of issues during the pilot study. For instance, knowing how many respondents could be categorised as high-risk was a prerequisite in planning for the main study. If the figure was large, it would raise logistical problems for the investigator, in that it would be extraordinarily difficult for the investigator to follow-up several hundred respondents directly. The process employed in the pilot identified 5 out of 97 respondents (roughly five per cent) as high-risk and in need of follow-up. Translated to the main study population (estimated at around 1,600), this proportion would certainly be manageable.

Concerns were raised by the investigator's supervisor, however, that the procedure for identifying high-risk respondents was somewhat unsystematic and subjective, being based on the investigator's overall appraisal of the responses, in particular the GHQ-12 scores. A more systematic procedure was needed for the main study, especially given the large number of potential participants. The logistics of the amended follow-up procedure are discussed in more detail in the next chapter, but it is convenient at this point to mention that the determination of a GHQ-12 threshold value (i.e. a value that distinguished between cases and normals) was central to this procedure.

3.3.4 GHQ and threshold issues

Determining a threshold value is not as straightforward as it might seem. Threshold values are best determined by the use of 'receiver operating characteristics' (ROC) analysis (Goldberg and Williams 1988). ROC analysis helps in the determination of threshold values by providing a way of identifying the best trade off between 'sensitivity' (the probability that a true case will be correctly identified as a case) and 'specificity' (the probability that a true normal will be correctly identified as a normal). ROC analysis, as a multi-stage process is, however, unsuitable for one-stage designs (like cross-sectional surveys) and, as such, the threshold had to be determined using other means.

Unfortunately, at the time, the literature proved to be unhelpful, in that studies using the GHQ-12 have identified threshold values of between one and four (Goldberg and Williams 1988; Goldberg *et al.* 1998; Hardy *et al.* 1999; McManus *et al.* 1999). The GHQ manual suggests a threshold of 1/2 or 2/3; a number of studies, however, have used a more conservative threshold of 3/4 (Firth 1986; Borrill *et al.* 1996, 1998; Guthrie *et al* 1997; Weinberg and Creed 2000). Given that it is usually preferable to trade specificity for sensitivity in clinical environments (it is better to correctly diagnose cases than misdiagnose normals) and as higher thresholds (which inherently achieve better specificity) often have little impact on the GHQ-12's sensitivity (Goldberg *et al.* 1998), the 3/4 threshold employed in the studies listed above is a rational choice. In choosing a threshold, Goldberg *et al.* (1998) also suggest that the mean GHQ-12 scores from a pilot study be examined, arguing that if the mean pilot GHQ-12 scores in a primary care population are above 2.7, then a conservative threshold of 3/4 is the most appropriate. As reported earlier, the mean GHQ-12 score for the pilot was 3.75. This observation, coupled with the arguments in favour of a conservative threshold discussed above, led to a 3/4 threshold being chosen for the main study.

3.3.5 Data entry

Although the original plans for data entry involved the data entry service of *Manchester Computing*, the edge coding demanded by *Manchester Computing* required that the numbered boxes on the questionnaire pack be manually coded prior to being passed onto them. During the pilot, it became evident that it took far less time to enter the data directly into a computer than to manually code the numbered boxes. Consequently, a decision was made not to use the services of *Manchester Computing* and, instead, the investigator entered the data directly into *SPSS for Windows*.[16] In line with the ethical demands of the investigation, no personal details that would enable participants to be identified, other than respondent ID number, were entered into SPSS.

3.3.6 The final version of the questionnaire pack

Examining the missing data in the pilot data set (i.e. looking at the specific questions that were largely unanswered or answered incorrectly) led to the identification of a number of questions in the questionnaire pack that were likely to be problematic. A number of modifications were, as such, made to the questionnaire pack to produce the final version that would be used in the main study. For example, those questions that elicited a large amount of missing data were eliminated or reworded and a small number of questions were added. In addition, it was decided to split the questionnaire pack into two parts: Part B which contained the pre-existing questionnaires that would elicit the investigation's 'primary' measures (sources of stress, stress and coping) and Part A which contained questions that would elicit the additional measures required.

Table 3.3 (overleaf) outlines the specific modifications made to the pilot questionnaire to produce the final version. The subsequent changes made to the questionnaire pack were also reflected in revisions to the codebook. A copy of the

[16] To avoid verbosity, the data analysis package employed – *SPSS for Windows* – will be referred to simply as 'SPSS' from this point on. Version 9 (SPSS Inc 1999) was employed in the pilot; version 10.1 (SPSS Inc 2000) in the main study.

final version of the questionnaire pack – the version employed in the main study – can be found in Appendix 3.

Table 3.2 Modifications made to the pilot questionnaire to produce the final version (continued overleaf).

Pilot Question	Nature of question(s) (Variable)	Comments	Final version question	Relates to research question(s)
Q1	Number of months into the programme		Part A, Q1	1b, 2b, 3b, 4
Q2	Respondent sex		Part A, Q11	1b, 2b, 3b, 4
Q3	Respondent age		Part A, Q12	1b, 2b, 3b, 4
Q4	Ethnic origin		Part A, Q13	1b, 2b, 3b, 4
Q5-6	English as first language	Eliminated	---	---
CISS-Adult	Coping measure		Part B	3a, 3b, 3c 4
GHQ-12	Stress measure		Part B	2a, 2b, 2c, 4
Q7-8	Social class	Minor amendments made to the wording	Part A, Q14-15	1b, 2b, 3b, 4
Q9-12	Household composition	Minor amendments made to the wording	Part A, Q16-20	2b, 4
Q13	Accommodation type		Part A, Q21	2b, 4
Q14	Tenure		Part A, Q22	2b, 4
Q15-17 and Q20-25	Current programme of study/cohort	Most of the information asked for was already known. Hence, precoding was used in the final version.	Part A, Q2 (precoded) Part A, Q3-4	1b, 2b, 3b, 4
Q18	Highest qualifications on entry		Part A, Q5	1b, 2b, 3b, 4
Q19	Number of years as a qualified nurse		Part A, Q26	2b, 4
Q26	Difficulty with journey to classroom sessions		Part A, Q6	2b, 4
Q27-28	Difficulty with journey to placements		Part A, Q7-8	2b, 4
Q29	Familiarity with the Manchester area		Part A, Q23	2b, 4
Q30-31	Assessments	Response categories (coded by the investigator) amended.	Part A, Q10	2b, 4
Q32-33	Paid work in addition to studies		Part A, Q26-27	2b, 4
Q34	Disabilities/special needs		Part A, Q28	2b, 4
Q35	Self-assessment of stress		Part A, Q29	2a, 2b, 4
Q36-37	Specific worries	Eliminated	---	---
---	Attribution of stress to studies or personal factors	Question added	Part A, Q30	1a

Table 3.2 (cont.) Modifications made to the pilot questionnaire to produce the final version.

Pilot Question	Nature of question(s) (Variable)	Comments	Final version question	Related to research question(s)
Q38-42	Behaviours common among students that could be seen as direct attempts at coping.	Substantially revised	Part A, Q31-35	3a, 4
Q43-44	Extent of 'substance use as coping' behaviours (Q43) and whether or not these behaviours were used as coping strategies (Q44)	Some confusion on these questions. Questions were thus combined into a single question that elicited the extent to which these behaviours were used as coping strategies.	Part A, Q36	3a, 3b, 4
Q45-46	Helpfulness of support mechanisms (Q44) and the likelihood of respondents using these mechanisms in the future (Q45)	Much confusion on these questions and large amounts of missing data. Only a revised version of Q45 retained.	Part A, Q37	3c
BSSI	Sources of stress (stressor) measure	Replaced by the SNSI	Part B	1a, 1b, 1c, 4
SF-12	Measure of physical and psychological well-being		Part B	2a, 2b, 2c
Not numbered	Consent to further research		Part A, Q39	(Future planning)
---	Consent to follow-up contact	Not in pilot, but added to assist in the management of the follow-up process	Part A, Q39	(Ethical demand)

3.4 CHAPTER SUMMARY

Following the pilot, a number of modifications were made in preparation for the main study for the reasons outlined in this chapter. These modifications affected both the design of the study (specifically, the content and structure of the questionnaire pack) and the logistics of the study (specifically, the way in which the questionnaire packs would be distributed to participants, the way in which high-risk respondents would be identified and the way in which data would be entered into the computer in preparation for analysis).

CHAPTER 4
THE MAIN STUDY: METHODOLOGY

4.1 CHAPTER INTRODUCTION

In Chapter 2, it was noted that pilot studies are useful for: (a) testing the feasibility of the main study; (b) identifying potential problems in the study design; (c) assisting with the development or refinement of data collection tools; and (d) giving investigators experience with the participants, setting and procedures. In considering these points, it was clear from the pilot that the main study would, indeed, be feasible so long as some modifications were made to the data collection tools (the questionnaire pack) and to a few logistical aspects of the study. These modifications and amendments were subsequently enacted and the main study took place between the spring and the autumn of 2000.

4.2 DESIGN

As with the pilot, the design for the main study was a cross-sectional, mixed design; again, the survey method was used, and the technique remained the self-administered questionnaire pack.

4.3 MEASURES

4.3.1 Measuring sources of stress

As outlined in Chapter 3, the *Student Nurse Stress Index* (SNSI) was employed in the main study in preference to the BSSI. Two sets of data were derived from its subsequent use. Firstly, in common with Beck *et al.* (1997) and Jones and Johnston (1997) and in an attempt to ascertain the principal sources of stress affecting the respondents, the proportion of respondents rating *individual* SNSI items as 'very stressful' (score 4) or 'extremely stressful' (score 5) was calculated. Both Beck *et al.* (for the BSSI) and Jones and Johnston (for the SNSI) subsequently used these proportions to identify a sources of stress 'top-ten'. This top-ten method of identifying principal stressors is problematic, however, in that it gives weight to a BSSI or SNSI item regardless of the actual proportion of respondents rating it very or extremely stressful. For example, an item could be ranked at the top of the list even if only 25 per cent of respondents had given it ratings of 4 or 5. To get round this limitation, the approach taken in this investigation was to identify the SNSI items that are seen as very or extremely stressful (score 4 or 5) by more than half of respondents – SNSI items that will subsequently be referred to as 'major stressors'. This approach produces a more meaningful list, although by not limiting the list to the first ten items in a hierarchy, there is a risk – as will become apparent when the results are presented – that lists of major stressor may be less manageable than top-ten lists. Five summary variables (a total SNSI score and four subscale scores), obtainable from the original 22-item version of the SNSI, formed the second set of data.[17] These five summary variables are discussed in more detail later in this chapter.

Unlike the BSSI, reasonable reliability and validity data is available for the SNSI. With regard to reliability, Jones and Johnston (1999) report that Cronbach's alpha exceeded 0.7 in seven out of eight situations (i.e. two datasets x four SNSI subscales), although no test-retest reliability statistics are available. With regard to predictive validity, SNSI subscale and total scores showed no reliable association with objective data on sickness, absence or academic performance. By comparing SNSI scores with the GHQ-30, discriminant validity of the SNSI was demonstrated with the subscale and total SNSI score means being higher for GHQ cases than normals (Jones and Johnston 1999).

4.3.2 Measuring stress

As with the pilot, the GHQ-12 and the SF-12 MCS were used as the primary measures of stress.

[17] The version of the SNSI (Jones 1999) used in the current investigation contains an additional 50 items to the 22 items in the published version. This 72-item version will help the SNSI's author further test and clarify the factors (summary variables) identified thus far. The 72-item version of the SNSI was employed in the current investigation as a gesture of thanks to the SNSI's author for permitting its use without charge.

4.3.3 Measuring coping

As with the pilot, the CISS-Adult was employed as the main measures of coping.

In addition to the formal measure of coping, several questions related to coping and support were included in Part A of the questionnaire pack. In particular, Questions 31 to 35 centred on behaviours common in students (thinking about dropping out, taking time out, being absent from lectures or the clinical areas, asking for extensions or missing submission dates) that could also be seen as direct attempts at coping (Cavanagh and Snape 1997b; Guthrie *et al.* 1997; Hilbert 1987; University of Leicester 2002). Question 36 asked about substance use (cigarettes, alcohol and drugs) because of their putative association with stress and coping (Baldwin *et al.* 1998; Elkind 1988; George *et al.* 1987; Parkes 1990; Williams *et al.* 1995) and Question 37 asked respondents about their likelihood of using each of the identified support mechanisms available to them.

4.4 PARTICIPANTS

All pre-registration students on the School's books at the start of the data collection period, including those interrupting their studies (taking time out), were asked to take part. In all, 1,543 'live' students were identified from the School's central records. Given that numbers of this size are easily manageable in survey research, it made sense to employ the total population (all 1,543 students) rather than a sample. The reasons underpinning this decision, together with some philosophical issues are discussed later in Section 4.7.4. Using the total population also ensured that every pre-registration student had the opportunity to take part if they so wished.

4.5 ETHICAL ISSUES

4.5.1 Informed consent

As with the pilot, informed consent was obtained with the help of an information leaflet. A copy of this leaflet can be found in Appendix 4. The information contained in this leaflet was also given verbally to those participants who received their questionnaire packs directly from the investigator.

4.5.2 Protection from discomfort and harm

In the previous chapter, it was noted that a more systematic approach to identifying high-risk respondents was needed for the main study. The rationale for selecting a GHQ-12 threshold of 3/4 was also outlined. Earlier, in Chapter 2, it had been noted that categorising respondents as GHQ-12 cases or normals could serve as a basis for identifying high-risk respondents. A GHQ method score of four or more thus formed the first of the systematic follow-up criteria. The second criterion related to the SF-12. Fortunately, specific thresholds for 'pathology' are available for the SF-12: a score of 42 or less on the MCS (see Ware *et al.* 1994) was, consequently, also deemed a necessary requirement for follow-up.

In the spirit of informed consent, it was decided to follow up only those respondents who consented. Consent for follow-up was obtained via a simple yes/no tick box added to the questionnaire at the end of Part A of the questionnaire pack. This approach also had the advantage of helping the investigator ensure that the number of potential follow-ups would be manageable.

Respondents identified for follow-up on the basis of these three criteria (GHQ ≥ 4; SF-12 MCS ≤ 42; consent given) were sent a simple letter, 'Letter A' (see Appendix 5). This letter informed the respondent that they appeared to be under a high degree of stress and/or struggling to cope at the time they had completed the questionnaire pack. The letter subsequently invited the respondent to take advantage of the support systems listed in the letter, or to contact the investigator directly for support and advice if they so wished. Respondents who additionally met a fourth criterion – 'unsupported' – were sent a slightly different letter, 'Letter B' (see Appendix 6). These respondents indicated that they would not use any of the support mechanisms listed in Question 37 of Part A of the questionnaire pack. Given the potential buffering or moderating role of support mechanisms in the transactional view of stress, these respondents were felt to be more at more risk than others identified for follow-up, hence the letter sent *insisted*, rather than requested, that they get in touch with the investigator.

Identification of respondents for follow-up on the basis of the criteria identified above was made easier by the establishment of a simple SPSS syntax algorithm. Once the data from batches of completed questionnaire packs had been entered, this algorithm was run and the computer automatically determined whether or not a follow-up letter was required and, if so, which type of letter – A or B. Given that the algorithm could not be used until the questionnaire pack data had been entered into SPSS and given that it would be prudent to get the follow-up letters out as soon as possible after the respondent had completed the pack, priorities needed to be set for data entry. Data entry was prioritised in that those likely to require follow-up (and who also consented to such follow-up) were given priority. Prioritising the packs for data entry was relatively easy. The design of the GHQ-12 enabled the investigator to rapidly determine, from a quick visual inspection, whether or not the respondent had a score equal to or exceeding the threshold of four. Whether or not the respondent had consented for follow-up was also easy to determine from a quick visual inspection of the questionnaire pack.

As such, those scoring four or more on the GHQ and who consented to follow-up were given the highest priority for data entry, and were entered into SPSS within a week or two of receipt. Once the data had been entered into SPSS, running the SPSS algorithm enabled a decision to be made in a matter of seconds as to whether a follow-up letter would, in fact, be required. Those requiring a follow-up letter consequently had one mailed to them within a couple of weeks of the investigator receiving the completed questionnaire pack. In the majority of cases, the delay between receipt of the questionnaire pack and follow-up letter was no greater than two weeks.

4.5.3 Privacy, confidentiality and anonymity

The procedures used to maintain confidentiality in the main study were identical to those used in the pilot: completed questionnaire packs were stored in a locked filing cabinet to which only the investigator had access; no-one other than the investigator or the individual participant was allowed access to completed packs; the questionnaire packs were marked 'strictly confidential'; and a specific point about confidentiality was included in the accompanying information leaflet.

The ID number system used in the pilot was also used for the main study. Again, a list of participant names and corresponding ID numbers was produced and, as with the pilot, only one copy of this list was produced with only the investigator having access to it. The ID number system was explained to participants, both in the information leaflet and verbally whenever possible with particular reference being made to the circumstances under which ID numbers would be decoded.

4.6 PROCEDURE

Experiences with the pilot suggested that the best response rates were likely to be obtained if the investigator made direct contact with the participants, handing over a questionnaire pack in person. During the data collection period, the total population of pre-registration students (with the exception of those interrupting their studies) was spread across 25 discrete teaching groups varying in size from around ten to almost 300 students. The investigator arranged to see each of these groups during formally timetabled periods. In most cases, an hour of each group's time was procured, an hour being more than adequate for a questionnaire pack that took around twenty-minutes to complete. These hour-long sessions were booked onto the students' timetables merely as 'student stress study'.

The sessions began with the investigator giving a brief outline of the study, together with an opportunity for the participants to ask questions. Following this brief introduction, an individualised questionnaire pack was handed over to each of the participants present. The length of the session provided ample time for these administrative aspects and for those present to complete the questionnaire pack if they so wished. Some of the participants present at these sessions chose not to take advantage of this allocated time, asking instead if they could take the questionnaire pack home to complete in their own time. No objections to these requests were offered and these participants were asked to return the completed packs in the postage-paid envelope provided. Given that one of the advantages of self-administered questionnaires is the absence of interviewer effect (Liebert and Liebert 1995; Parahoo 1997), the investigator left the room during the time allotted to fill in the packs, returning at the end of the session simply to collect any completed packs.

With a few of the groups, it was only possible to procure ten minutes or so of the participants' time. In these circumstances, the procedure mirrored that of the pilot in that the participants were asked, after being given a brief outline of the study, to take the questionnaire packs home with them. In a couple of cases, it was not possible for the investigator to meet with a group directly and, with these groups, a colleague agreed to hand the participants a sealed questionnaire pack and provide a brief outline of the study.

As with the pilot, those participants who did not attend the pre-arranged sessions were mailed an individualised questionnaire pack, together with a brief covering letter (see Appendix 7). Again, reminder letters (Appendix 8) were mailed out to non-respondents once a 4-6 week time period had elapsed. As with the pilot, records of the data collection process were kept using a spreadsheet devised by the investigator (Appendix 2).

Upon receipt, completed questionnaire packs were, in line with the ethical demands discussed earlier, eyeballed in order to prioritise data entry with suspected high-risk respondents being given the highest priority for data entry.

4.7 DATA MANAGEMENT

Given the large amount of data expected to be generated in the main study, it was necessary to develop a data management strategy (Burns and Grove 1997). Without such a strategy, the investigator ran the risk of being overwhelmed with the data, being subjected to an increased risk of errors or of succumbing to temptations such as 'data dredging' (Selvin and Stuart 1966).

As with the pilot, a codebook played a key role in the management of the main study's data. In addition, there were a number of steps to the data management strategy. The first step, which has already been discussed, concerned the collection and subsequent recording of the data. The second step – data cleaning – is concerned with the integrity of the data collected. The third and final step – data analysis – has two aspects to it: (a) issues connected with the preparation of the data prior to analysis, and (b) issues related to the data's actual analysis.

4.7.1 Data cleaning

An initial version of the data set became available once all the data from the questionnaire packs had been entered into SPSS. Because initial versions of data sets inevitably contain errors, these data sets are often called 'dirty' (Babbie 2001; NCS Pearson 1997). The next stage in the data management process was to clean this dirty data set, i.e. detect, and subsequently correct, any such errors.

To clean the data, the initial data set was first subjected to a random ten per cent check (NCS Pearson 1997), that is ten per cent of the entries (SPSS rows) were randomly selected and checked against the completed questionnaire packs. Frequency checks on all 226 variables in the initial data set were then undertaken to check that the values for each of the variables were in the acceptable (valid) range (Babbie 2001; NCS Person 1997). A final stage in the data cleaning process involved checking related respondent blocks for expected response similarities. On some variables (like months into the programme of study and assessments due in the next four weeks), there should be little or no variability within cohorts. As the first two digits of the five-digit ID number system used represented a particular cohort, respondents could be grouped by cohort and visually checked for similarities and differences.

4.7.2 Organising the data

4.7.2.1 Deriving summary and supplementary variables

Even after undergoing cleaning, the initial data set was not the data set that would ultimately be subjected to analysis. In order to obtain this data set – the final data set – a number of variables needed to be transformed and a number of summary variables derived. In the case of the main measures employed – the SNSI, GHQ-12, SF-12 and CISS – only the individual raw responses existed in the initial data set. All four measures yielded summary variables via relatively simple mathematical procedures and, as such, the SPSS syntax function was used to calculate the values of these summary variables.

With regard to the SNSI, the total SNIS score and four subscale scores – 'academic load', 'clinical concerns', 'personal problems' and 'interface worries' – were calculated via the formulae supplied by the measure's author (Jones 2000a). With regard to the GHQ-12, two summary variables were calculated according to the conventions described in the GHQ-12 manual (Goldberg and Williams 1988): the Likert GHQ score and a case/normal dichotomy, which was based on the GHQ method score and the agreed threshold of 3/4. The two summary scales of the SF-12 – the MCS and PCS – were calculated using the formulae set in the SF-12 manual (Ware *et al.* 1998). As outlined in the previous chapter, US norms were used in the calculation of the SF-12 summary scales as no UK norms were available. Finally, with regard to the CISS, the three main subscale scores – 'task', 'emotion' and 'avoidance' – as well as the two avoidance subscale scores – 'distraction' and 'social diversion' – were calculated using the formulae extracted from the CISS manual (Endler and Parker 1990a).

At this point, a comment needs to be made about the CISS summary (subscale) scores. The CISS manual outlines the procedure for converting the raw summary scores to norm-based T-scores. Although T-scores were calculated,[18] these T-scores were not subsequently employed in the data analyses because, unlike other norm-based scores such as the two SF-12 scores, CISS T-scores are derived with a built-in adjustment for sex. In other words, the CISS T-scores are derived using different norms according to the sex of the respondent. Whilst this procedural characteristic is important when individual test profiles are being compared with some reference population (the primary purpose of normative scoring), it creates problems when – as is the case in the current investigation – sex is one of the demographic variables where discernible differences in coping might be evident (see Section 4.7.3). As such, the raw CISS subscale scores rather than their associated T-scores were adopted as the measures of coping.

In line with the formal instructions contained in the manuals or received from the measure's author(s), missing values on any item for the SNSI, GHQ-12, and SF-12 rendered the whole measure invalid for any particular respondent. The CISS had a

[18] In actuality, two sets of T-scores were obtained: one set using the US general population as its reference; the other, the US college population as its reference.

rather more liberal approach to missing values, however, in that more than five items had to have missing values for the whole measure to be rendered invalid. In cases where there were five or fewer items with missing values, a score of three (the central point on the five-point scale used on the CISS items) was assigned to each missing value.

Several other variables needed to undergo some degree of transformation in preparation for data analysis. With some of the categorical (nominal and ordinal) variables, for example, the original categories available were collapsed into fewer categories so as to make the variable more manageable, or they were collapsed because there were relatively low frequencies in one or more of the categories.[19] In such cases, the SPSS 'compute' and 'recode' options were employed. Whenever these supplementary variables were created, they too were checked for errors, using the techniques described in the previous subsection, and codebook entries were either amended or added to.

4.7.2.2 Variable sets

As part of the overall data management process and in order to support the data analysis strategy, the data collected from participants was organised into a number of 'variable sets'. Details of these variable sets are listed in Tables 4.1 (overleaf) and Table 4.2 (pp 113-4).

The three variable sets in Table 4.1 match the three main areas of interest in the current investigation: sources of stress, stress and coping. These variables sets are labelled 'dependent' because a number of the research questions (e.g. Research Questions 1b, 2b and 3b) require that these variables be compared across various subgroups of the study population. These subgroups – the 'independent' variables – are in turn listed in Table 4.2. It is important to bear in mind, however, that although

[19] Low frequencies in one or more categories of a categorical variable can create problems in some statistical analyses (Garson 1999; Howell 1997). Unfortunately, there is no consensus on what constitutes a low frequency category; in the current investigation, however, low frequency categories are those that contain fewer than five per cent of the total number of observations.

specific variables have been labelled dependent or independent, these labels are in place largely as a means of organising the data and they are certainly not absolute. As a case in point, 'sources of stress' and 'coping' are categorised as dependent variables, yet when Research Question 4 is considered, they become independent variables.

Table 4.1 The 'dependent' variable sets.

Variable set	Variables in the set	Variable type	Derived from
SOURCES OF STRESS (STRESSORS)	Source of stress (programme vs. other things)	ordinal	Part A, Q30
	SNSI summary variables (five variables): (a) total SNSI score; (b) academic load; (c) clinical concerns; (d) personal problems; (e) interface worries	all scale	Part B, SNSI
STRESS	Self-report of stress	ordinal	Part A, Q29
	GHQ-12 summary variables (two variables): (a) Likert GHQ score; (b) GHQ case/normal dichotomy (derived from GHQ method score with a threshold of 3/4)	(a) scale; (b) nominal (D)	Part B, GHQ-12
	SF-12 Mental Component Score (MCS)	scale	Part B, SF-12
COPING AND SUPPORT	CISS summary variables (five variables): (a) task; (b) emotion; (c) avoidance (and its two subscales 'distraction' and 'social diversion')	all scale	Part B, CISS
	Direct attempts at coping (five variables): (a) thoughts of dropping out; (b) has taken time out; (c) absences from theory sessions; (d) absences from the clinical areas; (e) asked for extensions/missed submission deadlines	all nominal (D)	Part A, Q31-35
	Substance use as coping (eight variables): (a) cigarettes; (b) alcohol; (c) cannabis; (d) amphetamines; (e) other recreational drugs; (f) anti-depressants; (g) anxiolytics; (h) hypnotics	all nominal (D)	Part A, Q36
	Support mechanisms available (the 22 variables – support systems – are not individually listed due to economy of space)	all nominal (D)	Part A, Q37

Note: 'nominal (D)' = positive-negative dichotomous variable.

There are four independent variable sets. Given that the School commissioned the current investigation, the first – the 'primary' variable set – contains a number of subgroup comparisons (variables) of specific interest to the School's management. The 'top level' comparison is simply a comparison of all nursing respondents against all midwifery respondents. The portfolio of programmes on offer in the School was outlined in Chapter 1: five discrete nursing programmes (degree, standard diploma, joint nursing/social work learning disability diploma, graduate entry diploma and shortened 18-month diploma) and three discrete midwifery programmes (enhanced diploma, standard diploma and shortened 18-month diploma) thus formed the two 'second level' comparisons. 'Specialty' and 'CFP vs. branch' formed the 'third level' comparisons. Specialty is defined as either the respondent's actual branch or the branch that respondents anticipated they would enter once they had completed the CFP. Note that the third level comparisons apply to *nursing* respondents only. Furthermore, there are a couple of complexities with the nursing degree (BNurs) that affected the third level comparisons. Firstly, as BNurs Year 4 students were neither branch nor CFP students but 'specialist practitioner' students, these respondents were excluded from the CFP vs. branch comparisons. Secondly, unlike diploma students, BNurs students did not have to specify a preferred branch at the beginning of their programme. Hence an additional option 'specialty not decided' was available to BNurs students in the CFP and any such respondents were consequently excluded from the specialty comparisons.

It is also worth pointing out that, in making primary variable set comparisons, information is occasionally duplicated. For example, the learning disability specialty (specialty comparison) contains exactly the same members as the joint nursing/ social work diploma programme (nursing programme comparison).

Table 4.2 The 'independent' variable sets (continued overleaf).

VARIABLE SET	Variables in the set	Variable type	Derived from
PRIMARY VARIABLE SET (PROGRAMME-SPECIFIC VARIABLE SET)	Top level: nursing vs. midwifery	nominal	precoded
	Second level (two variables): (a) nursing programme type; (b) midwifery programme type	both nominal	precoded
	Third level (two variables): (a) specialty; (b) CFP/branch status	both nominal	(a) Part A, Q4; (b) precoded
	Full-time vs. part-time	nominal	Part A, Q3
STANDARD DEMOGRAPHIC VARIABLE SET	Age (three variables): (a) age at snapshot; (b) age on entry; (c) age on entry in HE age groups	(a) and (b) scale; (c) nominal	(a) Part A, Q12; (b) and (c) Part A, Q12 and Q1-Q2
	Sex	nominal	Part A, Q11
	Ethnicity	nominal	Part A, Q13
	Social class	ordinal	Part A Q14-15
	Highest qualification on entry	ordinal	Part A, Q5

Table 4.2 (cont.) The 'independent' variable sets.

VARIABLE SET	Variables in the set	Variable type	Derived from
EXTENDED DEMOGRAPHIC VARIABLE SET	Family type	nominal	Part A, Q16-17
	Children in household	nominal	Part A, Q19-20
	Accommodation type	nominal	Part A, Q21
	Tenure (housing costs)	nominal (D)	Part A, Q22
	Cares for a dependent adult	nominal	Part A, Q18
	Paid work in addition to studies (two variables): (a) yes/no dichotomy; (b) no. of hours worked per week	(a) nominal; (b) scale	Part A, Q24-25
ADDITIONAL VARIABLE SET	Assessment index	scale	Part A, Q9-10
	Familiarity with the Manchester area	nominal	Part A, Q23
	Difficulty in travelling to academic base	nominal	Part A, Q6
	Difficulty in travelling to clinical areas	nominal	Part A, Q7-8
	Already a qualified nurse	nominal	Part A, 26-27
	Disability variables (seven variables): (a) dyslexia; (b) mental health difficulties; (c) significant hearing impairment; (d) unseen disability (diabetes/epilepsy/ asthma); (e) partially sighted (f) mobility difficulties; (g) any other disability	all nominal (D)	Part A, Q28

Note: 'Nominal (D)' = positive-negative dichotomous variable.

The 'standard demographic' variable set contains the demographic variables – age, sex, ethnicity and social class – that are typically studied in social research together with an additional demographic variable useful in educational research, 'highest qualification on entry'. Sex is a straightforward variable to grasp. How ethnicity and social class have been conceptualised in the current investigation was outlined briefly in Chapter 2 (see Table 2.1 on p 87). Age is also a relatively straightforward variable except that in the current investigation, two measures of age were delineated: the age of the respondent at the time questionnaire pack was completed ('age at snapshot') and their age on entry to their programme ('age on entry'). Age on entry was calculated by taking the number of months into the programme away from the age at snapshot (in months) and dividing by twelve. For some analyses, age on entry has been classified into three 'HE' age groups, namely 'under 21', 'between 21 and 24', and 'over 25'. These three groups are the standard age groups used in British higher education (Higher Education Statistical

Agency 1999). With regard to highest qualification on entry, initially no definitive categories were available. However, in early 2001, during data entry for the main study, draft work on a National Qualifications Framework became formalised (Qualifications and Curriculum Authority 2001; Quality Assurance Agency for Higher Education 2001) enabling the respondents' responses to be categorised into one of six categories. The categories are summarised in Table 4.3 below.

Table 4.3 Categories for the 'highest qualification on entry' variable.

Category	Definition
Intermediate	five GCSEs or equivalent (e.g. NVQ Level 2, GNVQ intermediate, BTEC First)
Advanced	*at least one* 'A' level or equivalent (e.g. NVQ Level 3, GNVQ Advanced, Vocational 'A' Levels, BTEC National)
Certificate	certificate of higher education or equivalent (also includes first level registration as a nurse)
Diploma	diploma of higher education or equivalent (e.g. BTEC Higher)
Degree	first (honours) degree
Postgraduate	masters level including postgraduate certificates and diplomas

The 'extended demographic' and 'additional' variable sets contain a number of additional variables that warranted consideration. The extended demographic set contains some demographic variables that have been used in comparable research, although to a lesser extent than the standard demographic variable set. The additional variable set contains variables of particular interest to the current investigation that were not categorised into one of the other three variable sets. Variables in this set are self-explanatory, although two require additional comments. 'Assessment index' is a simply a measure of how many assessments respondents had due within four weeks of completing the questionnaire pack and the six disability variables are the standard disability variables used in British higher education research (Higher Education Statistical Agency 1999).

4.7.3 Data analysis strategy

The data analysis strategy is summarised in Table 4.4 on p 117. Logically, the starting point for a data analysis strategy appears to be the research questions driving the investigation. However, before undertaking analyses that specifically relate to the research questions, it is standard practice in survey research to undertake and present some simple, descriptive analyses of the demographic data obtained (Burns and Grove 1997; Cormack 1996; Wilkinson *et al.* 1999). The results of these descriptive analyses, together with the results of other 'preliminary' analyses such as the analysis of response rates are presented in the next chapter (Chapter 5).

The results of analyses that pertain specifically to the research questions are presented in Chapter 6. With regard to the analyses pertaining to the research questions, where the research questions demand a statistical test (where a hypothesis needs testing),[20] the guiding principle for choosing a particular statistical test has been, in line with Wilkinson *et al.* (1999), to choose a minimally sufficient analysis. In most cases, this has meant choosing a straightforward parametric test, unless, as Howell (1997) and Hopkins (2000) point out, there are strong reasons for not doing so, for example when the underlying assumptions of the parametric test are violated (violations of parametric test assumptions are discussed in detail later). Thus, in comparing groups, the most straightforward choice was, for two comparison groups, the t-test and, for three or more groups, the one-way analysis of variance (ANOVA). In situations where the underlying assumptions were breached, appropriate non-parametric tests were employed as alternatives. Logistic regression was chosen as the statistical tool to aid model-building (Research Question 4) because it has a number of advantages (see Section 4.7.5.5) over similar techniques such as multiple regression and discriminant analysis (Afifi and Clark 1996; Garson 1999; Hosmer and Lemeshow 1989).

In relation to the analyses pertaining to the research questions, two particular issues – one philosophical, the other practical – elicited some general questions about the validity of the data analysis proposals and thus warranted some further discussion. The philosophical issue concerned the question of whether the participants in the investigation could be considered as a population, as a sample or as both. The practical issue raised questions about plunging straight into the data analysis without first becoming acquainted with the data. The philosophical issue is discussed next; the practical issue afterwards in the section entitled 'exploratory data analysis'.

[20] Although hypotheses are not stated explicitly, where difference testing is concerned (Research Questions 1b, 2b and 3b) the null-hypothesis 'there are no differences on mean scores between the comparison groups' is assumed for each comparison.

Table 4.4 The data analysis strategy.

Research question		Type of inquiry	Statistical method	Typical measures/variable sets involved
(Preliminary descriptive analyses)		descriptive	descriptive statistics	(a) standard demographic variable set; (b) extended demographic variable set; (c) additional variable set
1: STRESSORS				
1a	What are the sources of stress among pre-registration students in the School?	descriptive; benchmarking	descriptive statistics	sources of stress variable set (Part A Q30 responses; SNSI summary variables)
1b	Are there discernible differences in sources of stress between various subgroups of the study population?	analytical (difference testing); inferential	t-test; ANOVA	*dependent:* SNSI summary variables *independent:* variables in the (a) primary and (b) standard demographic variable sets
1c	How do the sources of stress identified in the study population compare with other populations?	benchmarking	N/A	SNSI; other comparable measures discussed in the literature
2: STRESS				
2a	What is the prevalence of stress among pre-registration students in the School?	descriptive; benchmarking	descriptive statistics	stress variable set (GHQ-12; SF-12 MCS)
2b	Are there discernible differences in levels of stress between various subgroups of the study population?	analytical (difference testing); inferential	t-test; ANOVA	*dependent:* Likert GHQ-12; SF-12 MCS *independent:* variables in the (a) primary, (b) standard demographic, (c) extended demographic and (d) additional variable sets.
2c	How do the levels of stress identified in the study population compare with other populations?	benchmarking	N/A	GHQ-12; SF-12 MCS; other comparable stress measures discussed in the literature
3: COPING				
3a	What coping styles do pre-registration students in the School employ?	descriptive; benchmarking	descriptive statistics	Part A Q31-35, Q36 responses; CISS variables
3b	Are there discernible differences in coping styles between various subgroups of the study population?	analytical (difference testing); inferential	t-test; ANOVA	*dependent:* CISS variables *independent:* variables in the (a) primary and (b) standard demographic variable sets.
3c	What roles do support services play?	descriptive; benchmarking	descriptive statistics	Part A Q37 responses
4: MODEL BUILDING				
4	What factors contribute to stress in nursing and midwifery students?	analytical (prediction); inferential	logistic regression	*dependent:* GHQ case/normal dichotomy *independent:* a range of variables suspected of influencing the dependent ('caseness')

4.7.4 Surveying all students: population, sample or both?

The question posed above is both important and difficult to answer. It is an important question because whether the participant set (the 1,543 live students) is treated as a population, as a sample or, indeed, as both has ramifications for any subsequent analyses of the data. As Wilkinson *et al.* (1999) comment: 'How a population is defined in an article affects almost every conclusion in that article' (p 595). If the participant set is seen as a population, then only *descriptive* analyses can be employed. It is neither appropriate nor valid to use inferential statistics on an entire population as no inferences can be made. Inferential statistics are concerned with the estimation of population parameters and if the entire population is employed, there is no need to make *estimates* as the population parameters are already known. It is a difficult question because the participant set can be viewed as a population, as a sample or, indeed, as both.

Since all pre-registration students of nursing and midwifery in the School were given the opportunity to take part, the investigation is, at one level, a *census*. However, not all of the students responded, so the actual *respondent* set (as opposed to the *participant* set) can be seen as a *sample*, albeit non-random, of the total population of pre-registration nursing and midwifery students in the School. In these circumstances, is it legitimate to make inferences about the total population of pre-registration students in the School on the basis of those who responded? And the participant set is also a sub-population (or even a sample) of the population 'all pre-registration students of nursing and midwifery in Greater Manchester', which in turn is a sub-population of the population 'all pre-registration students of nursing and midwifery in England. Furthermore, the participant set could also be a sub-population of the population 'all pre-registration students of nursing and midwifery in the School *at some point in the future*'.

The dilemma that arises here is that although it is legitimate to make inferences using statistical methods from the respondent set, to what population or indeed populations can these inferences be targeted? Targeting these inferences at the total population of pre-registration students of nursing and midwifery in the School seems the most legitimate but, given the wider purpose of the investigation (see Chapter 1), is of the least merit. Is it legitimate, however, to target these inferences (as the investigator wished to do) to a wider population, such as the population of all pre-registration students of nursing and midwifery in England or all pre-registration students of nursing and midwifery in the UK?

In 1995, this philosophical dilemma – which is essentially a dilemma about external validity or generalisations – formed the focus of a 47-item debate on the Internet newsgroup *sci.stat.consult* (Scheltema *et al.* 1995). While not resolving the dilemma, this important debate (which has been largely ignored by the traditional print media) did add some credence to the investigator's intentions. In particular, discussion of the concept of 'metapopulation', a term borrowed from ecological biology (see, for example, Hanski 1999), provides a rationale for using the respondent set to address the wider purpose of the investigation in that a population can always be thought of as a member – or sample – of a larger (often imaginary) metapopulation. For example the population of the UK on any particular day is part of the metapopulation 'the population of the UK across history and into the future'. In other words, by introducing the concept of a metapopulation, any population can legitimately be seen as a sample and inferential statistics thereby employed.

To some extent, the debate considered here provides a sort of implicit link between the investigation's two main purposes, its local purpose and its wider purpose. In essence, addressing the local purpose – giving the School's senior management a snapshot of what is going on in the School – means treating the respondent set as a population ('all pre-registration students of nursing and midwifery in the School who responded'). Addressing the wider purpose – making *generalisations* about pre-registration students of nursing and midwifery – means treating the respondent set as a (non-random) sample of some wider population like 'all pre-registration students of nursing and midwifery in England' or 'all pre-registration students of nursing and midwifery in the UK'. Both are legitimate pursuits and both are complementary in the sense that the wider purpose is likely to be of interest to a local audience and the local purpose is a necessary prerequisite for understanding the wider purpose.

4.7.5 Exploratory data analysis

There are numerous criticisms in the literature (see, for example, Afifi and Clark 1996; Burns and Grove 1997; Howell 1997; Wilkinson *et al.* 1999) regarding the ritual of plunging straight into complex data analyses without systematically examining the data first, i.e. without *screening* the data. Although both are part of the data management process, data screening differs from data cleaning in that data cleaning is more about the identification of errors whereas data screening is more about 'getting acquainted' with the data. Note, however, that data cleaning is a necessary prerequisite for data screening.

The process central to data screening is 'exploratory data analysis' (Tukey 1977). Exploratory data analysis (EDA) has two main uses. Firstly, it enables the investigator to get a feel for the variables under investigation – the general shape of a variable's distribution or any peculiarities about the data, for example. As Burns and Grove (1997) observe, the purpose of EDA is '... to detect the unexpected in the data and to avoid overlooking crucial patterns that may exist' (p 437). Secondly, when making *inferences* about a parent population, EDA can help check for violations of the assumptions that underpin the specific analyses being undertaken (Afifi and Clark 1996; Howell 1997).

The peculiarities that investigators need to be on the look out for include *missing data* and *outliers*. Missing data can be problematic if a specific variable has a high proportion of such values. Afifi and Clark (1996) suggest that variables with a high proportion of missing responses should be deleted and that cases with missing responses to particular variables should be excluded from analyses involving those variables. Thus, a missing data analysis ('missing value analysis') was undertaken in SPSS as part of EDA in the current investigation.

Much of EDA involves the plotting and examination of graphs such as histograms, scatterplots, boxplots and stem-and-leaf plots. Not only do these graphs help investigators check for violations of the assumptions that underpin the various statistical tests available (Afifi and Clark 1996; Howell 1997), they can also help with the identification of *outliers*. These two issues – outliers and checking the assumptions of tests – are discussed in more detail below.

4.7.5.1 Outliers and influential points

Outliers – extreme values for a particular variable – can substantially affect the results of statistical analyses (Afifi and Clark 1996; High 2000; Hopkins 2000; Howell 1997; Wilkinson *et al.* 1999). High (2000), for instance, notes that outliers can lead to biased population estimates, inflated sums of squares, distorted *p*-values and faulty, even false, conclusions. Sometimes outliers result simply from errors of the data entry process (in which case, they can simply be corrected); on other occasions, they are real, but extreme, values.

A standard approach to the identification of outliers in a univariate distribution is to use the box plots and stem-and-leaf plots of EDA (Affifi and Clark 1996; Burns and Grove 1997; Howell 1997; Tukey 1977). As the SPSS 'explore' option produces these plots with relative ease, it was a fairly simple process to identify outliers when univariate distributions were being used (as was the case when tests of comparison, such as the t-test and ANOVA were undertaken). With regard to correlation and regression (which utilise bivariate or multivariate distributions), the situation regarding outliers is more complex although Afifi and Clark (1996) remark that extreme values on both the X and the Y variables (for bivariate distributions) or on any or all of the X_1, X_2, X_3 ... X_i variables as well as the Y variable (for multivariate distributions) are far more worrying than outliers on solely the X or solely the Y variables. One of the easiest ways of identifying these so-called 'influential points' is to examine a statistic known as Cook's D (which is an option in the regression functions in SPSS) and look for responses where $D > 1.00$ (Howell 1997; Montgomery *et al.* 2001).

In the current investigation, outliers and influential points were identified using the criteria specified above. Unfortunately, there is no clear-cut answer in the literature on how to deal with outliers and influential points once identified, although a common recommendation (see, for example, Afifi and Clark 1996; Howell 1997) is that the analyses be run both with and without the outliers/influential points. In these circumstances, both sets of results need to be presented. This recommendation was adopted in the current investigation.

4.7.5.2 Assumptions underlying parametric tests of comparison

For parametric tests of comparison, such as the t-test and ANOVA, there are a number of assumptions about the distributions being compared that need to be met. Firstly, these tests assume that the distributions being compared are *normal*. One of the best ways to check for normality is to simply look at graphs of the distributions being compared (Howell 1997; Wilkinson *et al.* 1999). This was done prior to each test of comparison, using the graphs produced by the SPSS 'explore' option. Note that the distributions do not have to be absolutely normal. The t-test is robust and relatively minor deviations from normality do not appear to influence the results unduly (Afifi and Clarke 1996; Ferguson 1981; Howell 1997). ANOVA can similarly cope with deviations from normality so long as the distributions being compared are similar in shape (Howell 1997).

The second assumption is that the variances of the distributions being compared are roughly equal. This 'homogeneity of variance' assumption is not a great problem with the t-test as SPSS produces two results: one if the variances are homogeneous and an adjusted result if the variances are heterogeneous (whether or not the variance is homogeneous can be gleaned from the Levene homogeneity of variance test included in the SPSS output.) With ANOVA, Howell (1997) argues that heterogeneous variances are not particularly problematic so long as the groups being compared have roughly equal sample sizes (as with the t-test, homogeneity of variance can be checked via the Levene test included in the SPSS output). Howell adds, however, that an ANOVA with unequal samples sizes together with heterogeneous variances produces a serious violation of the underlying assumptions and any results obtained will be suspect. In these circumstances, the non-parametric Kruskal-Wallis test was employed as an alternative.

An additional assumption that affects both the t-test and ANOVA concerns the *independence* of observations, i.e. whether the observations in one of the comparison groups is influenced by observations in the other group or groups. Afifi and Clarke (1996) argue that when data is collected from people it is frequently safe to assume independence of observations collected from different people, the independence of observations being only a serious problem when *repeated* measures are used. Given the cross-sectional design of the current investigation, violations of this particular assumption were not of great concern.

4.7.5.3 *Post hoc* tests and ANOVA

When a t-test elicits a statistically significant result, it is fair to assume that there is a real difference between the means of the two groups being compared. The situation with ANOVA, where more than two comparison groups are involved, is a little more complicated, however. Although a statistically significant result (*F*-value) implies that a difference exists, it is difficult to tell exactly where that difference lies because of the range of different inter-group comparisons that can be made. For example, in an ANOVA with three comparison groups (three categories of the independent variable) A, B and C, a statistically significant difference could mean that the means of A and B differ, that the means of B and C differ, that the means of A and C differ or, indeed, that differences exist in all or none of these pairs. A common method of finding where the difference lies when a significant *F*-value is obtained from an ANOVA is to undertake one of the many *post hoc* tests available (Howell 1997). Each of the *post hoc* tests available has its strengths and weaknesses and choosing which one to employ can be difficult; however, following advice from the School's statistician, SPSS's built-in help files (SPSS Inc 2000) and Howell (1997), the 'REGW-Q' procedure was chosen in preference to the other tests. The REGW-Q procedure is an option in SPSS, producing a table listing 'homogenous subsets', i.e. discrete groupings of the categories of the independent variable. Thus, if categories A and C form a homogenous subset distinct from category B, then the difference lies in between B and {A, C}.

Although SPSS includes the REGW-Q as an option in its ANOVA menu, SPSS unfortunately does not include any *post hoc* tests for non-parametric equivalents of ANOVA. Advice was sought from the School's statistician on this matter, who advised the use of a Bonferroni correction (see, for example, Howell 1997). Bonferroni corrections account for multiple pair-wise comparisons of means by increasing the obtained *p*-value by a factor of *X*, where *X* relates to number of pair-wise combinations involved.[21] Thus, for an ANOVA with three comparison groups, the obtained *p*-value would be increased by a factor of three (three pair-wise combinations: A-B, A-C and B-C); for four comparison groups, the obtained *p*-value

[21] Increasing the obtained *p*-value by a factor of *X* is mathematically equivalent to reducing the alpha value required for significance (often 0.05 or 0.01) by a factor of *X*.

would be increased by a factor of six (six pair-wise comparisons: A-B, A-C, A-D, B-C, B-D and C-D).

4.7.5.4 Assumptions underlying correlation and regression

When discussing the assumptions underlying correlation and regression, statisticians make a distinction between 'fixed-*X*' and 'variable-*X*' scenarios. These terms are self-explanatory, in that the distinction between the two lies in whether the investigator fixes the values of the *X* variable(s) prior to the investigation. Since all of the variables selected for correlation and regression analysis in the current investigation have *random* values (none were set by the investigator prior to the study being undertaken), only the assumptions underlying the variable-*X* scenario are pertinent.

For the variable-*X* scenario, there are three basic assumptions (Afifi and Clarke 1996; Howell 1997). The first assumption concerns linearity. When correlating two variables, *X* and *Y*, or using regression to predict *Y* from any number of *X* variables, X_1, X_2, X_3 ... X_i, there is an assumption that the relationship between the *X* variable(s) and *Y* is *linear*, i.e. it can be represented graphically by a straight line. The second assumption (cf. the normality assumption in tests of comparison) is that the data to be analysed is taken from the bivariate (*X*, *Y*) normal distribution or, in the case of multiple regression, from the multivariate (X_1, X_2, X_3 ... X_i, Y) normal distribution. A third assumption is that of 'homoscedasticity' (similarity in 'scatteredness'; cf. homogeneity of variance with tests of comparison), although in the variable-*X* scenario, this assumption automatically holds if bivariate (multivariate) normality can be demonstrated (Afifi and Clark 1996). For simple correlation, the easiest way of checking linearity and bivariate normality is to 'eyeball' the scatterplot of *X* against *Y* and look for a roughly elliptical shape (Afifi and Clarke 1996; Howell 1997).

Although correlation is subject to underlying assumptions in the same way that parametric tests of comparison are, these assumptions are only important if *inferences* about a target population are being made. If the purpose of correlation or regression is merely to *describe*, the assumptions do not need to be met (Cohen 1988; Howell 1997). Given that the few correlational analyses employed in the current investigation are merely descriptive, much of what has been considered above is irrelevant except, however, in the case of regression.

4.7.5.5 Assumptions underlying logistic regression

The regression technique employed in the current investigation to aid model-building (Research Question 4) is logistic regression. One of the advantages of logistic regression is that it requires fewer assumptions than related model-building techniques such as multiple linear regression and discriminant analysis (Afifi and Clark 1996; Garson 1999; Hosmer and Lemeshow 1989). For example, logistic regression does not assume a linear relationship between the dependent and independent variables nor is bivariate or multivariate normality or homoscedasticity an issue. In addition, logistic regression can cope with categorical independent variables. The dependent variable does, however, have to be a dichotomous categorical variable (in *binary* logistic regression), hence the use of the GHQ case/normal dichotomy in the current investigation.

The main issue to be aware of in *any* multiple regression analysis – linear, logistic or otherwise – is that of 'multicollinearity'. Multicollinearity occurs when several of the independent (X) variables are highly intercorrelated (Afifi and Clark 1996; Garson 1999; Hosmer and Lemeshow 1989; Montgomery *et al.* 2001; Rawlings *et al.* 1998). In *linear* regression, multicollinearity can be identified by a statistic called the 'variance inflation factor' (VIF), or by its inverse, known as 'tolerance'. For any particular independent variable, high VIF and low tolerance values imply that that variable can itself be predicted from one or more of the other independent variables in the regression equation. VIF is typically seen as being high when it exceeds a value of 10.0 (Rawlings *et al.* 1998; Montgomery *et al.* 2001) and, in these circumstances, the variable should be considered for removal from the equation (Afifi and Clark 1996). Multicollinearity is as much an issue in logistic regression as it is in linear regression. There are, however, problems in identifying multicollinearity in logistic regression as VIF is a property of linear regression (Afifi and Clark 1996; Garson 1999). No true analogue exists for logistic regression (Garson 1999) hence VIF statistics are unavailable in SPSS's logistic regression function. VIF statistics are, however, available in SPSS's linear regression function and both Garson (1999) and the School's statistician suggest checking the independent variables for multicollinearity using a linear regression model before running the logistic regression model. This is a reasonably straightforward procedure complicated only by the fact that linear regression requires that categorical independent variables with two or more categories be first transformed into 'dummy' variables. Dummy variables are positive/negative dichotomous variables, i.e. variables with two categories one of which is positive (1), the other negative (0). To derive dummy variables, a reference category must be selected. This is coded zero and thus becomes the negative category of the derived dummy variables. So, for example, in the three category variable age, the categories under 21, 21-25 and over 25 will elicit two dummies (with under 21 as the reference category): *D1*, where 0 = under 21 and 1 = 21-25, and *D2*, where 0 = under 21 and 1 = over 25.

4.7.5.6 Selecting independent variables for logistic regression

It is poor practice to merely toss all available independent variables into the regression equation (Afifi and Clarke 1996; Hosmer and Lemeshow 1989; Howell 1997). Systematic approaches to variable selection are available and the suggestions made by Afifi and Clark (1996) and Hosmer and Lemeshow (1989) have been adopted in the current investigation. The first step in this systematic approach is to undertake a univariate analysis of the dependent variable for each and every one of the independent variables (Afifi and Clarke recommend t-tests for scale independents and chi-squared tests for categorical independents). Once these exploratory tests have been completed, those independent variables yielding a *p*-value below a relatively generous alpha-value are selected for inclusion in the regression equation. Hosmer and Lemeshow (1989) suggest an alpha-value of 0.25; the investigator, however, adopted the recommendation of Afifi and Clark (1996) in setting alpha at 0.15. This threshold represents a balance between liberal and conservative selection, i.e. all independent variables as predictors in the equation against a situation where potentially useful predictors are missed.

This first-stage predictor set was entered into the SPSS binary logistic regression function (using the 'enter' method following advice from the School's statistician) and the preliminary results observed. The results of the regression are called 'preliminary' because, depending on the results – and on other factors such as evidence of multicollinearity – it is acceptable to drop specific independents and re-run the regression equation. In particular, Garson (1999), Hosmer and Lemeshow (1989) and Howell (1997) recommend dropping independents when the Wald statistic (included in SPSS's standard output for regression) has an associated *p*-value above 0.05, i.e. is not significant. Moreover, as Hosmer and Lemeshow remark, regressions can be re-run '... until it appears that all of the important [predictor] variables are included in the model' (p 88). The re-running of regression analyses obviously leads to a number of competing models being available and a decision needs to be made as to which of these is the 'best' model. In line with Hosmer and Lemeshow (1989), choice of the 'best' model should be based on the principle of parsimony (the fewer variables in the equation, the better). Additionally, it is worth examining the sensitivity and specificity of each model (sensitivity and specificity data is readily available in the SPSS logistic regression output), bearing in mind that in primary care and screening settings it is better to trade specificity for sensitivity, i.e. it is better to focus on the models that limit the number of falsely identified normals (cases in reality) than the number of falsely identified cases (normals in reality).

4.7.6 Presentation of the results: some comments

In the previous few subsections, preparatory processes leading up to the actual data analysis have been described in some detail. The results of these analyses are presented in the following two chapters. However, before moving on to consider the results of the main study, a few comments need to be made about the manner in which the results have been presented. These comments are made in the light of reports by Bailar and Mosteller (1988) and Wilkinson *et al.* (1996) on the standard of reporting of empirical work in, respectively, the medical and psychological literature.

4.7.6.1 Abbreviations and conventions

In presenting the results, a number of abbreviations are used and it is good practice to define these, even if they are widely used (Bailar and Mosteller 1988). 'ANOVA' is a standard abbreviation for analysis of variance that has already been encountered in this thesis. In addition, 'SD' refers to standard deviation, 'CI' to confidence interval, 'CL' to confidence limit, 'df' to degrees of freedom and '*p*' to statistical probability. In tables, 'ns' is used to signify that the result is not significant with the conventional alpha value 0.05. With regard to the abbreviation for sample size, the convention throughout this thesis is to use '*N*' to mean overall sample size and '*n*' to mean constituent 'sub-samples' of *N*.

4.7.6.2 Confidence intervals, effect sizes and the meaning of significance

Despite many decades of criticism, null-hypothesis significance testing and the associated fixation with *p*-values – particularly the notion of significance at the five per cent level – still feature heavily in the medical, nursing and psychological literature. The problem with the *p*-value approach is that it merely tells the individual that the two (or more) means are not the same. As Cohen (1994) points out, differences among groups always exist at some level of precision. Attaining statistical significance is merely a matter of sample size. With large sample sizes (as in the current investigation), very small differences may be statistically significant but have little real clinical or practical importance. Indeed, Cohen has noted that very small, yet statistically significant, differences have erroneously led to the establishment of theory.

There have been relatively recent moves, however, in both the medical (Bailar and Mosteller 1988) and psychological (Wilkinson *et al.* 1996) professions to address the widespread overdependence on *p*-values, with recommendations that alpha-values be adjusted to take account of the sample size, that confidence intervals (CIs) be employed as an adjunct to (or, indeed, instead of) *p*-values and that effect sizes be routinely reported alongside the test statistics and corresponding *p*-values. Each of these recommendations has, to some extent, been addressed in the current investigation.

Firstly, with regard to adjusting alpha values to take account of sample size, the protocol in the current investigation has been to report the actual *p*-values rather than use asterisks or the generic '$p < 0.05$' to mark significance. Presenting the actual *p*-value together with the sample size gives the reader the opportunity to make up their own mind about appropriate alpha values. And although statistical significance has been defined conventionally in the current investigation (i.e. alpha has been set at 0.05), reaching significance should be seen as a starting point for discussing *potentially* interesting results rather than as an absolute indication of discovery.

The confidence interval is the range of observations in which an investigator can be certain the true mean of population lies. It is delimited by an upper and a lower 'confidence limit'. As is the convention, 95 per cent confidence limits were adopted in the current investigation. This means that, for a given variable, the investigator could be 95 per cent confident that the true population mean will lie somewhere between the upper and lower confidence limits. The utility of confidence intervals in the current investigation is two-fold. Firstly, when a specific variable is being compared across two or more groups, plotting the variable's CI for each of the groups side-by-side can give an almost immediate indication of whether there is a difference between the groups (the respective CIs do not overlap) and, if there is, some indication of the size of the difference (the distance between the lower confidence limit of one group compared to the upper confidence limit of another). Secondly, when the CI for the *difference* between two means is considered, it can act as an adjunct – if not an alternative – to null-hypothesis significance testing in that if the CI for the difference between two means spans zero, the results are probably not significant.

Effect size (ES) statistics are important because they give an indication of something that has rarely been reported in empirical studies – the *magnitude* of the effect (or difference) found. The use of ES statistics can guard against Cohen's complaint that very small, yet statistically significant, differences are often implicated in the establishment of theory. In line with the recommendations of Wilkinson *et al.* (1999), effect sizes are routinely reported alongside statistically significant findings in the current investigation. A number of effect sizes (ES) statistics are available, depending in the statistical test employed. Those pertinent to the current investigation are summarised in Table 4.5 below.

Table 4.5 Determining small, medium and large effects for a variety of statistical procedures.

Statistical procedure	Effect size measure	Effect size thresholds			Source
		Small	Medium	Large	
correlation	coefficient, r	0.10	0.30	0.50	Cohen (1988)
t-test	Cohen's d	0.20	0.50	0.80	Cohen (1988)
t-test	Cohen's d	0.20	0.60	1.20	Hopkins (2000)
one-way ANOVA	eta-squared, η^2	0.01 (1%)	0.06 (6%)	0.14 (14%)	Cohen (1988)
logistic regression (1)	pseudo R^2	0.02 (2%)	0.13 (13%)	0.26 (26%)	Cohen (1988)
logistic regression (2)	odds ratio (risk)	1.5	3.5	9.0	Hopkins (2000)

The three effect size thresholds quoted in Table 4.5 give an indication of the values required for an effect (difference) to be qualitatively described as 'small', 'medium' or 'large'. For Cohen's d, two threshold sets are quoted, mainly because Hopkins

(2000) argues that Cohen's values are too low to define the thresholds for medium and large effects.

The two ES measures for logistic regression are a pseudo R^2 measure that gives an indication of the amount of the variance explained by the regression equation (cf. R^2 in multiple correlation/regression and r^2 in correlation/regression) and the odds ratio that gives an indication of the impact of specific independent variables on the dependent variable. The R^2 measures in logistic regression are referred to as 'pseudo' because there is no direct analogy to the 'true' R^2 of multiple regression. Although, SPSS produces two pseudo R^2 measures, the Nagelkerke R^2 has been employed in preference to the Cox and Snell R^2. This is because, like the true R^2 measure and unlike the Cox and Snell measure, the Nagelkerke R^2 produces a value that can range only from zero to one (Garson 1999).

The odds ratio (i.e. the exponential of the logistic regression coefficient, *B*) for a specific predictor variable is the factor by which the odds of being in the disease present category of the dependent variable (as opposed to the disease absent category) increase as the scores on the predictor variable rise by one unit. Thus an odds ratio of 5.00 for a particular predictor means that one unit increase on that predictor will mean the odds of having a disease increase five-fold and an odds ratio of 0.50 means the odds of having a disease halve, or conversely the odds of not having the disease double (2.00 being the reciprocal of 0.50). Importantly, an odds ratio of 1.00 means no change as the scores on the predictor increase or decrease. This means that odds ratios that deviate only slightly from 1.00 (in either direction) will have only a negligible effect. Note that when confidence intervals are presented for odds ratios, a CI than includes the value of 1.00 suggests a nil effect in the same way that there is a nil effect when the CI for the difference between two means includes zero.

4.7.6.3 Tables and figures

Tables and figures are used throughout the results chapters of this thesis. With regard to tables, any comments specific to a particular table are noted at the foot of the table. A few general comments need to be made about tables. The first relates to percentages and mainly affects tables containing only descriptive results (such as those that form the bulk of Chapter 5). Any percentages included are rounded up to one decimal place; as such, in some tables, row (and, where appropriate, column) totals may be slightly over or under 100 per cent.

Secondly, in tables containing the results of inferential comparisons (these appear mainly in Chapter 6), the means and SDs of the comparison groups are routinely reported together with the appropriate statistic (*t* for t-tests, *F* for ANOVA, X^2 for chi-squared tests and *H* for Kruskal-Wallis tests) and the *exact* *p*-value. Unless otherwise specified, the *p*-values cited are associated with two-tailed significance tests. Note that because p-values are limited to three decimal places, extremely significant results may be reported as $p = 0.000$ although this does not necessarily mean that a value of zero has been obtained. An effect size statistic is also routinely reported: Cohen's *d* for t-test comparisons and eta-squared (η^2) for one-way ANOVA comparisons. In addition, the difference between the means together with 95 per cent CIs for the difference are reported for t-test comparisons, whilst for ANOVA, comparisons, the results of *post hoc* REGW-Q analyses are included.

Given the utility of confidence intervals, CI plots are presented whenever tests of comparison are undertaken. Normally, two CI plots are shown when comparisons are being made: a plot representing the full data set being used in the comparison and a plot representing the data set with any identified outliers removed. Occasionally, no outliers are detected in the full data set. Where this is the case, only one plot is presented and the legend 'Full Data Set' is marked with an asterisk (*).

4.7.7 Summary: the data analysis process

Given the discussion over the last few pages, it is expedient to summarise the data analysis process here. In summary, when undertaking inferential rather than descriptive analyses, a five-stage process was adopted:

- Firstly, the variables under investigation were checked for violations of the underlying assumptions for the particular test to be employed using the protocols of exploratory data analysis.

- Secondly, outliers/influential points were identified using a method appropriate for the proposed analysis.

- Thirdly, for tests of comparison, CI plots were produced and examined.

- Next, appropriate tests were run both with and, where appropriate, without outliers/influential points. In cases, where two sets of tests were run, both sets of results were reported. During this stage, *post hoc* tests were subsequently undertaken for ANOVAs and, for logistic regression, decisions were made about removing specific predictor variables prior to re-running the analyses.

- Finally, the test results were recorded in the conventional manner of test statistic plus *p*-value although statistically significant results (defined as $p \leq 0.05$) were augmented by effect size statistics.

CHAPTER 5
THE MAIN STUDY: RESULTS 1 (THE SAMPLE)

5.1 CHAPTER INTRODUCTION

In the previous chapter, it was mentioned that some preliminary analyses would be undertaken prior to performing the analyses specifically related to the research questions. These results of these preliminary analyses are presented here. Three sets of results are presented. The first set contains analyses of response rates, data entry errors, missing data and other logistical features of the main study. The second set contains analyses of some basic demographic variables such as age, sex, ethnicity and social class. These analyses provide some straightforward *facts* about the sample. A deeper understanding of the sample, furthermore, has been obtained by cross-tabulating these demographic variables with some of the variables from the primary variable set (like nursing vs. midwifery, programme type and specialty). The detailed picture of the sample thus obtained goes part way to meeting the local purpose of the investigation and, in providing a foundation for the more complex analyses considered in the next chapter, also helps put a context to the investigation's wider purpose. The third – and perhaps most important – set of results is concerned with checking whether the sample is representative of some wider population (such as all pre-registration nursing and midwifery students in England or all pre-registration nursing and midwifery students in the UK). This 'test of representativeness' is particularly important in studies involving convenience samples as it can increase the validity – the population validity – of any generalisations that are subsequently made (Ferguson 1981; Howell 1997; Liebert and Liebert 1995; Wilkinson *et al.* 1999).

5.2 RESULTS PERTAINING TO THE LOGISTICS OF THE MAIN STUDY

5.2.1 Response rates

Of the 1,543 questionnaire packs that were distributed, 1,125 packs were returned. Three of the packs were returned blank and subsequently discounted, thus a total of 1,122 valid questionnaire packs were returned. This represents an overall response rate of almost 73 per cent. Given that 50 per cent is commonly seen as an acceptable response rate for representativeness (Babbie 2001; Burns and Grove 1987; Parahoo 1997), the overall response rate obtained is more than adequate.

It is worth examining, however, breakdowns of the overall response rate to determine whether specific subgroups of pre-registration students within the School are grossly over or under-represented. It is prudent here to use the subgroup classifications of the primary variable set outlined in the previous chapter, namely the top level comparison, nursing vs. midwifery, the second level comparisons, nursing programme type and midwifery programme type and, with regard to nursing, the third level comparisons, nursing specialty and CFP vs. branch. Table 5.1 below contains response rate data dealing with the top and second level comparisons.

Table 5.1 Response rates by programme type.

Programme	Valid Out	Returned	Rate
Nurs Degree	150	86	57.3%
Nurs Diploma	1016	788	77.6%
Nurs Diploma, Grad Entry	46	37	80.4%
Nurs Diploma, Shortened	6	5	83.3%
Nurs Diploma inc Soc Work	144	89	61.8%
All nursing programmes	**1362**	**1005**	**73.8%**
Midw Diploma	60	47	78.3%
Midw Diploma, Enhanced	48	43	89.6%
Midw Diploma, Shortened	12	12	100.0%
All midwifery programmes	**120**	**102**	**85.0%**
All excluding interrupters	**1482**	**1107**	**74.7%**
Interrupters	61	15	24.6%
All questionnaire packs	**1543**	**1122**	**72.7%**

From Table 5.1, it is clear that all of the programmes within the School are reasonably represented in that no subgroup has an unacceptable (defined as less than 50 per cent) response rate. The only exception is the 'interrupters' subgroup (made up of those taking time out from their programmes of study) with a somewhat disappointing response rate of around 25 per cent.

Table 5.2 outlines the response rates by the third level comparisons, nursing specialty and CFP vs. branch. There is little difference between the response rates for nursing students in the CFP (75.3 per cent) and nursing students in the branch (72.3 per cent). The children's branch, at almost 94 per cent, and midwifery, with an 85 per cent response rate, are noteworthy but the response rates for all of the branches are good, with the exception of learning disability at 44.4 per cent.

Table 5.2 Response rate by nursing specialty and by CFP vs. branch.

Specialty	Valid Out	Returned	Rate
Branch, Adult	487	351	72.1%
Branch, Mental Health	117	88	75.2%
Branch, Children's	49	46	93.9%
Branch, Learning Disability	45	20	44.4%
All nursing branches	**698**	**505**	**72.3%**
CFP, Learning Disability	99	69	69.7%
CFP, specialty unknown	565	431	76.3%
All CFP	**664**	**500**	**75.3%**
All nursing	**1362**	**1005**	**73.8%**
Midwifery	120	102	85.0%
Interrupters	61	15	24.6%
All questionnaire packs	**1543**	**1122**	**72.7%**

Note: By virtue of the responses to Q4, Part A of the questionnaire pack, (anticipated) specialty is known for all CFP responders. However, (anticipated) specialty is unknown for most CFP non-responders because, unlike branch students, CFP students are generally not delineated by specialty. The only exception are the learning disability students hence the identification of learning disability as a discrete CFP subgroup.

At first sight, the response rate for learning disability seems disconcerting. However, this figure was based on the one learning disability cohort in branch. There were a further two learning disability cohorts in the CFP, the response rate for these two cohorts being almost 70 per cent. Merging the two CFP cohorts with the single branch cohort results in a more acceptable response rate of around 62 per cent (when merged, these three cohorts are equivalent to the complete learning disability subgroup, referred to as 'Nurs Diploma inc Social Work', in Table 5.1).

The way in which participants received their questionnaire packs appears to have had some impact on response rates. Those given their packs in person by the investigator had a very high response rate (Table 5.3). Disappointingly, and in contrast to the 11.6 per cent increase experienced in the pilot, mailing out reminders to those who did not respond within a 4-6 week period produced negligible increases in response rates.

Table 5.3 Response rates by method of delivery.

Method of delivery	Valid Out	Returned without reminder		Increase with reminder		Total returned	
In person	1036	886	(85.5%)	25	(2.4%)	911	(87.9%)
Indirect, via a colleague	102	49	(48.0%)	6	(5.9%)	55	(53.9%)
Mail	405	136	(33.6%)	20	(4.9%)	156	(38.5%)
All questionnaire packs	**1543**	**1071**	**(69.4%)**	**51**	**(3.3%)**	**1122**	**(72.7%)**

Note: All interrupters received their questionnaire packs via mail.

5.2.2 Data entry errors

As outlined in the previous chapter, a random selection of ten per cent of the SPSS entries (rows) were checked for accuracy against the completed questionnaire packs. In all, 113 entries were checked for errors, the results of which are detailed in Table 5.4 below.

Table 5.4 Errors identified during the ten per cent data entry check.

Error	Frequency	Total errors
Reversed pair	6	12
Invalid code	27	27
Misread	9	9
Total errors		**48**

Three main types of data entry error were found: 'reversed pair', where two-digit entries were reversed (e.g. 21 might be entered as 12); 'invalid code' (in most cases, this arose when an additional digit was accidentally entered); and 'misread', where the code entered was valid but differed from the code marked on the completed questionnaire pack. As there were 226 variables (i.e. 226 SPSS columns per respondent) and as 113 rows were checked, 25,538 entries were checked in all. Being conservative and counting each reversed pair error as a double rather than single error gave a total of 48 errors – an error rate of merely 0.2 per cent and an accuracy rate of 99.8 per cent.

Frequency checks on all 226 variables in the entire SPSS data file (all 1,122 respondents) led to a further 25 errors being identified. On a *pro rata* basis, this would have added merely another two to three (= ten per cent of 25) errors to the

48 already identified, which would have had a negligible impact on the overall error/accuracy rate.

The third check of the data cleaning process – checking related respondent blocks for expected response similarities – produced a number of unexpected differences which were checked against the completed questionnaire packs. In most cases, the differences were legitimate but in two cases, a data entry error was detected. Again, these two errors would have had a negligible impact on the overall error/ accuracy rate.

5.2.3 Missing data

On a respondent-by-respondent basis, none of the respondents produced unusable returns with the exception of the three respondents who returned their questionnaire packs blank.

On a variable-by-variable basis, a missing value analysis in SPSS indicated that very few variables had a high proportion of missing responses. This is relatively unsurprisingly, given that the pilot should have excluded problematic variables. The majority of variables had less than one per cent of responses missing; the only variables to have more than ten per cent of responses missing were a number of items on the SNSI. These items were specifically related to clinical experiences and a superficial analysis of these items revealed that the respondents who had not responded to these items (or had written 'not applicable') were largely respondents who had not had any clinical experience. Following correspondence with the SNSI's author (Jones 2000b) it was decided that when *individual* SNSI items were under examination, all valid responses could be considered but that when the SNSI *summary variables* were being derived from the 22 original SNSI items (see Sections 4.3.1 and 4.7.2.1), only those respondents who had been on their programme for six months or more would be included.

5.2.4 The sample

Figure 5.1 shows how the final, usable sample was obtained from the original 1,543 questionnaire packs sent out.

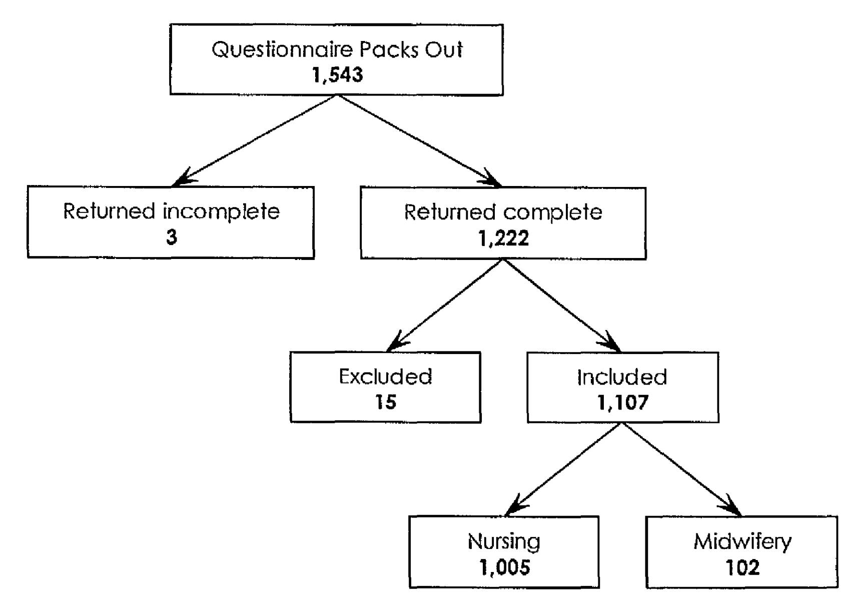

Figure 5.1 Flow chart outlining sample recruitment.

Although 1,122 respondents returned completed questionnaire packs, the packs completed by the 15 interrupters were excluded from the sample primarily because of the low response rate and the relatively small number of respondents in this subgroup. The analyses in the main study are thus based on a usable sample of 1,107 respondents: 1,005 nursing respondents and 102 midwifery respondents.

A further modification was made to the sample prior to the analyses being undertaken. Relative to the other nursing subgroups, the 'shortened' nursing diploma contained a very small number of respondents ($n = 5$), making its viability questionable. However, rather than exclude the respondents in this group, they were assimilated into the overall nursing diploma subgroup, a valid tactic given that shortened nursing diploma students do nothing more than 'piggy-back' onto the branch part of the main nursing diploma programme. On the basis of small numbers

(n = 12), the same could have been argued for the shortened midwifery diploma. The shortened midwifery diploma is, however, a discrete midwifery programme and although the numbers in this subgroup are small, the subgroup is viable when compared to the numbers in the other two midwifery subgroups (standard midwifery diploma, n = 47; enhanced diploma, n = 43).

5.2.5 Follow-up rates

The ethical demand that participants be protected from discomfort and harm meant that participants had to be offered the chance of follow-up. Follow-up data is contained in the flow chart in Figure 5.2.

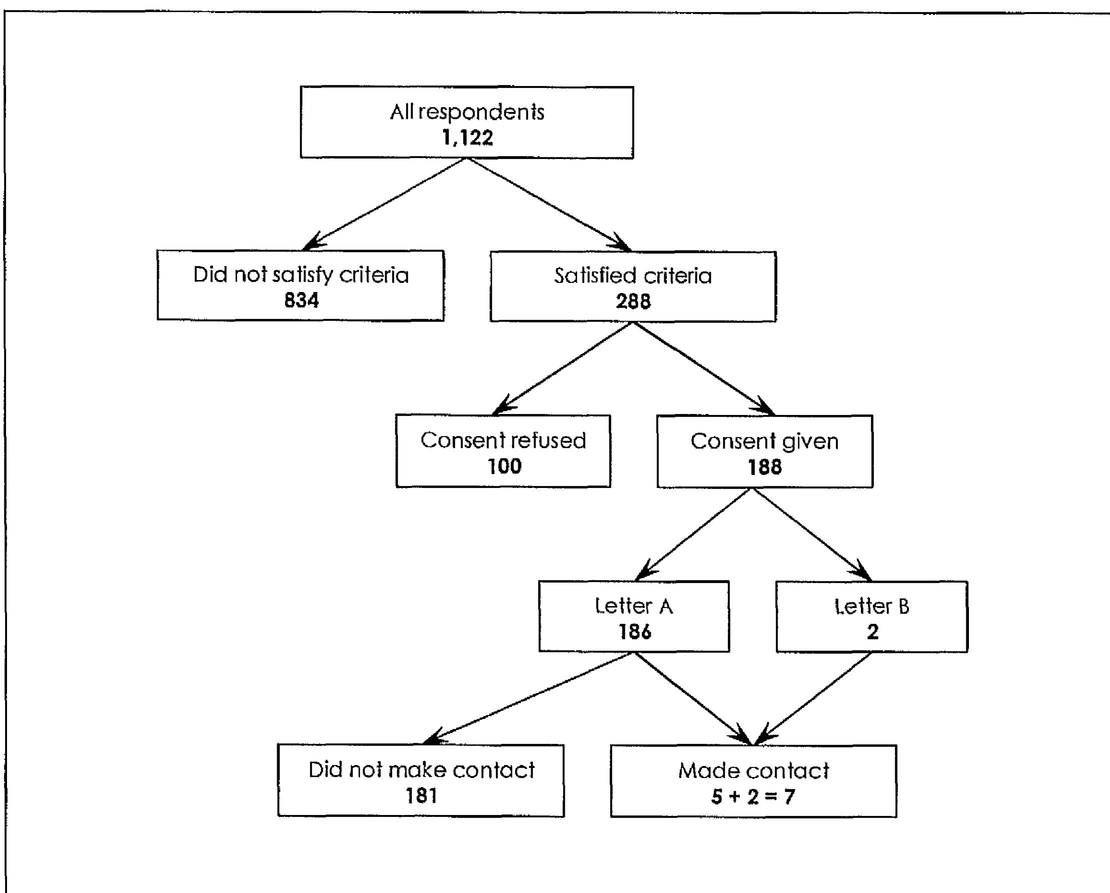

Figure 5.2 Flow chart outlining respondent follow-up.

The SPSS follow-up algorithm (described in Section 4.5.2) identified 288 respondents for follow-up (around a quarter of those completing the questionnaire packs). Of these 288 respondents, 100 refused consent for a follow-up letter. Consequently, 188 follow-up letters (186 Letter A's and only two Letter B's) were mailed out. This meant that around 17 per cent of respondents received a follow-up letter.

Of those receiving Letter A, the vast majority (around 97 per cent) did not take up the investigator's offer of support or advice. Only five responded and, of these five, three asked to see the investigator for support and advice, one sought advice through e-mail and the other merely sent the investigator a thank-you letter. Both students receiving Letter B made contact with the investigator. One merely sent the reply slip from the letter stating that she was fine; the other made an appointment to see the investigator for support and advice.

5.3 DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE

The standard demographic variable set of age, sex, ethnicity, social class and highest qualification on entry is examined in this section. To give a comprehensive picture of the sample, each of the standard demographic variables is broken down by the subgroup classifications contained in the primary variable set, namely nursing vs. midwifery, nursing programme type, midwifery programme type, and nursing specialty.[22]

5.3.1 Age

For the analyses presented here, the modified age variable – age on entry – is more useful than the actual age data collected (age at snapshot). Its usefulness arises from the fact that it is a standardised variable that can be readily compared with

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[22] Two variables from the original primary variable set are missing from this list. Firstly, the variable 'full-time vs. part-time' is missing because, as a result of lack of variability (see p 158), it was not used in any analyses. Secondly, 'CFP vs. branch' is missing from these particular breakdowns because in this context it would merely have acted as a chronological measure and the standard demographic variables would not have changed in any meaningful way over time.

data from other sources such as the UKCC (and its successor, the NMC), the Universities and Colleges Admission Service (UCAS) and the Higher Education Statistics Agency (HESA). Table 5.5 shows how age on entry varies by programme.

Table 5.5 Age on entry by programme type.

Programme	Valid *n* (100%)	Age on entry						Mean	SD
		<21		21-24		25+			
Nurs Degree	86	77	(89.5%)	5	(5.8%)	4	(4.7%)	19.4	2.9
Nurs Diploma	783	280	(35.8%)	137	(17.5%)	366	(46.7%)	26.3	7.6
Nurs Diploma, Grad Entry	37	1	(2.7%)	23	(62.2%)	13	(35.1%)	26.1	6.0
Nurs Diploma inc Soc Work	87	15	(17.2%)	22	(25.3%)	50	(57.5%)	28.0	7.4
All nursing programmes	**993**	**373**	**(37.6%)**	**187**	**(18.8%)**	**433**	**(43.6%)**	**25.8**	**7.5**
Midw Diploma	46	22	(47.8%)	5	(10.9%)	19	(41.3%)	25.2	7.7
Midw Diploma, Enhanced	43	11	(25.6%)	7	(16.3%)	25	(58.1%)	28.7	8.3
Midw Diploma, Short	12	0	---	2	(16.7%)	10	(83.3%)	31.6	7.2
All midwifery programmes	**101**	**33**	**(37.2%)**	**14**	**(18.4%)**	**54**	**(53.5%)**	**27.5**	**8.2**
All programmes	**1094**	**406**	**(37.1%)**	**201**	**(18.1%)**	**487**	**(44.5%)**	**26.0**	**7.6**
Excluded cases	13								
All valid respondents	**1107**								

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to age on entry.

From Table 5.5, more than half of all respondents were under the age of 25 when they entered their programme of study. However, despite the minimum entry age for both nursing and midwifery being 17½ years, most respondents were 21 or over at the start of their programme. This holds true for the majority of programmes, with the nursing degree being the notable exception: most nursing degree students (almost 90 per cent) were under 21 at the start of the programme.

Unremarkably, an examination of the means tells a similar story. The mean age on entry for all programmes is 26.0 years, with the mean age on entry for most programmes being somewhere in the mid-to-late twenties. The two exceptions are the shortened midwifery diploma, with a mean age on entry of 31.6 years and, again, the nursing degree with a mean age on entry of 19.4 years. The standard deviation of the nursing degree is also noteworthy in that, at 2.9 and in comparison with other programmes, it is relatively small.

How age on entry varies across nursing specialty can be seen in Table 5.6. With regard to specialty, the one observation of note relates to children's nursing. In contrast with the other specialties, over 74 per cent of this subgroup was under the age of 25 on entry to the programme. This observation is reflected in the mean age on entry for children's nursing which, at 23.0 years, is lower than the other specialties.

Table 5.6 Age on entry by nursing specialty.

Specialty (actual or anticipated)	Valid *n* (100%)	Age on entry						Mean	SD
		<21		21-24		25+			
Adult	650	258	(39.7%)	111	(17.1%)	281	(43.2%)	25.8	7.7
Mental Health	155	41	(26.5%)	38	(24.5%)	76	(49.0%)	26.8	7.1
Children's	86	50	(58.1%)	13	(15.1%)	23	(26.7%)	23.0	6.0
Learning Disability	87	15	(17.2%)	22	(25.3%)	50	(57.5%)	28.0	7.4
All nursing specialties	**978**								
Midwifery	101								
Excluded cases	28								
All valid respondents	**1107**								

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to age on entry and/or specialty.

At this point, it is worth making a comment about the subtotal 'all nursing specialties', introduced for the first time in Table 5.6. Had there been no missing responses to nursing specialty (and this includes the 'specialty not decided' responses from BNurs students), the subtotal 'all nursing specialties' would have equalled the subtotal 'all nursing programmes' seen in the breakdown by programme type (Table 5.5). Because of this discrepancy, the row 'all nursing specialities' has limited utility; consequently, column totals for breakdowns by nursing specialty are not provided in Table 5.6 or in any subsequent tables.

5.3.2 Sex

Tables 5.7 and 5.8 provide breakdowns of sex by programme and nursing specialty, respectively. The most obvious observation from Table 5.7 is that there are no male midwifery students. With respect to nursing, the ratio of female to male nursing students works out at around 15:2 for all programmes. In other words, there are between seven and eight female nursing students for every male student. This ratio varies little within nursing programmes, with the exception of the combined nursing/social work programme (learning disability), with a female to male ratio of roughly 9:2. The position of learning disability is, however, best explored by seeing it within the context of nursing specialty (Table 5.8).

Table 5.7 Sex by programme type.

Programme	Valid n (100%)	Sex				Ratio F:M
		Female		Male		
Nurs Degree	86	77	(89.5%)	9	(10.5%)	8.6
Nurs Diploma	793	704	(88.8%)	89	(11.2%)	7.9
Nurs Diploma, Grad Entry	37	33	(89.2%)	4	(10.8%)	8.3
Nurs Diploma inc Soc Work	89	73	(82.0%)	16	(18.0%)	4.6
All nursing programmes	**1005**	**887**	**(88.3%)**	**118**	**(11.7%)**	**7.5**
Midw Diploma	47	47	(100.0%)	0	---	note
Midw Diploma, Enhanced	43	43	(100.0%)	0	---	note
Midw Diploma, Short	12	12	(100.0%)	0	---	note
All midwifery programmes	**102**	**102**	**(100.0%)**	**0**	**---**	**note**
All programmes	**1107**	**989**	**(89.3%)**	**118**	**(10.7%)**	**8.4**
Excluded cases	0					
All valid respondents	**1107**					

Notes: Percentages are row percentages. Female to male ratios are meaningless for midwifery because midwifery has no males.

When broken down by nursing specialty, a more interesting picture is revealed. From Table 5.8, the female to male ratio for adult nursing is roughly 10:1. This contrasts sharply with mental health and learning disability nursing. Both of these specialties have a much higher proportion of males (almost a quarter of mental health and almost a fifth of learning disability students are male). Children's nursing, on the other hand, is notable for its much lower proportion of male students.

Table 5.8 Sex by nursing specialty.

Nursing specialty (actual or anticipated)	Valid *n* (100%)	Sex				Ratio F:M
		Female		Male		
Adult	657	596	(90.7%)	61	(9.3%)	9.8
Mental Health	157	120	(76.4%)	37	(23.6%)	3.2
Children's	87	85	(97.7%)	2	(2.3%)	42.5
Learning Disability	89	73	(82.0%)	16	(18.0%)	4.6
All nursing specialties	**990**					
Midwifery	102					
Excluded cases	15					
All valid respondents	**1107**					

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to nursing specialty.

5.3.3 Ethnicity

Breakdowns for ethnicity by programme and nursing specialty can be found in Tables 5.9 and 5.10 respectively (see p 145). Because of low frequencies in one or more of the original nine ethnicity categories, the nine original categories were collapsed into five for these analyses. Both of the ethnicity breakdowns reveal a sample and component subgroups that are largely white. Indeed, in all of the programme subgroups and nursing specialties examined, at least 90 per cent of respondents classified themselves as white.

5.3.4 Social Class

This variable proved to be one of the most difficult to deal with in that 46 respondents failed to answer Questions 14 and 15 (which provided the raw data for coding social class), and a further 52 respondents gave incomplete or insufficient responses to these questions, resulting in 98 missing responses in total. Nevertheless, this is still less than ten per cent of the sample and Tables 5.11and 5.12 (p 146) give an indication of the distribution of social class across programmes and across the specialties, respectively.

With regard to the breakdown by programme type (Table 5.11), it is clear that, regardless of programme, the bulk of the School's pre-registration students are drawn from the higher social classes (classes I and II), with only a minority being drawn from the lower classes (classes IV and V). Although fitting in with this general pattern, the results for several programmes merit some specific comments. Firstly, the nursing degree is interesting in that, of all the nursing programmes, the nursing degree has the highest combined proportion (at almost 70 per cent) of respondents in classes I and II, yet the lowest proportion (at just under 20 per cent) of class III respondents and the highest proportion (at 7.5 per cent) of class V respondents. Even so, if classes I to III and classes IV and V are combined for each nursing programme, the difference between the degree and the other nursing programmes all but disappears. Secondly, that three quarters of the shortened midwifery diploma respondents are in social class II should come as no surprise as the entry requirement for this programme – already a registered nurse – is itself a sufficient criterion for assignment into social class II.

With regard to nursing specialty (Table 5.12), there is little to distinguish between the subgroups with the exception of mental health which has a higher proportion of its respondents in social class I than the other specialties.

Table 5.9 Ethnicity by programme type.

Programme	Valid *n* (100%)	Ethnicity									
		White		Black		Chinese		Asian		Other	
Nurs Degree	86	79	(91.9%)	0	---	2	(2.3%)	1	(1.2%)	4	(4.7%)
Nurs Diploma	790	751	(95.1%)	23	(2.9%)	2	(0.3%)	10	(1.3%)	4	(0.5%)
Nurs Diploma, Grad Entry	37	35	(94.6%)	0	---	0	---	2	(5.4%)	0	---
Nurs Diploma inc Soc Work	89	84	(94.4%)	3	(3.4%)	0	---	1	(1.1%)	1	(1.1%)
All nursing programmes	**1002**	**949**	**(94.7%)**	**26**	**(2.6%)**	**4**	**(0.4%)**	**14**	**(1.4%)**	**9**	**(0.9%)**
Midw Diploma	47	45	(95.7%)	0	---	0	---	1	(2.1%)	1	(2.1%)
Midw Diploma, Enhanced	43	39	(90.7%)	1	(2.3%)	0	---	1	(2.3%)	2	(4.7%)
Midw Diploma, Short	12	12	(100.0%)	0	---	0	---	0	---	0	---
All midwifery programmes	**102**	**96**	**(94.1%)**	**1**	**(1.0%)**	**0**	**---**	**2**	**(2.0%)**	**3**	**(2.9%)**
All programmes	**1104**	**1045**	**(94.7%)**	**27**	**(2.4%)**	**4**	**(0.4%)**	**16**	**(1.4%)**	**12**	**(1.1%)**
Excluded cases	3										
All valid respondents	**1107**										

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to ethnicity.

Table 5.10 Ethnicity by nursing specialty.

Nursing specialty (actual or anticipated)	Valid *n* (100%)	Ethnicity									
		White		Black		Chinese		Asian		Other	
Adult	654	625	(95.6%)	14	(2.1%)	2	(0.3%)	9	(1.4%)	4	(0.6%)
Mental Health	157	144	(91.7%)	5	(3.2%)	2	(1.3%)	2	(1.3%)	4	(2.5%)
Children's	87	82	(94.3%)	4	(4.6%)	0	---	1	(1.1%)	0	---
Learning Disability	89	84	(94.4%)	3	(3.4%)	0	---	1	(1.1%)	1	(1.1%)
All nursing specialties	**987**										
Midwifery	102										
Excluded cases	18										
All valid respondents	1107										

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to ethnicity and/or nursing specialty.

Table 5.11 Social class by programme type.

Programme	Valid *n* (100%)	Social Class: Class I		Class II		Class III		Class IV		Class V	
Nurs Degree	80	15	(18.8%)	40	(50.0%)	15	(18.8%)	4	(5.0%)	6	(7.5%)
Nurs Diploma	725	71	(9.8%)	298	(41.1%)	258	(35.6%)	79	(10.9%)	19	(2.6%)
Nurs Diploma, Grad Entry	35	7	(20.0%)	14	(40.0%)	11	(31.4%)	3	(8.6%)	0	—
Nurs Diploma inc Soc Work	73	6	(8.2%)	39	(53.4%)	19	(26.0%)	9	(12.3%)	0	—
All nursing programmes	**913**	**99**	**(10.8%)**	**391**	**(42.8%)**	**303**	**(33.2%)**	**95**	**(10.4%)**	**25**	**(2.7%)**
Midw Diploma	44	2	(4.5%)	19	(43.2%)	20	(45.5%)	2	(4.5%)	1	(2.3%)
Midw Diploma, Enhanced	40	6	(15.0%)	18	(45.0%)	14	(35.0%)	2	(5.0%)	0	—
Midw Diploma, Short	12	0	—	9	(75.0%)	2	(16.7%)	1	(8.3%)	0	—
All midwifery programmes	**96**	**8**	**(8.3%)**	**46**	**(47.9%)**	**36**	**(37.5%)**	**5**	**(5.2%)**	**1**	**(1.0%)**
All programmes	**1009**	**107**	**(10.6%)**	**437**	**(43.3%)**	**339**	**(33.6%)**	**100**	**(9.9%)**	**26**	**(2.6%)**
Excluded cases	98										
All valid respondents	**1107**										

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to social class.

Table 5.12 Social class by nursing specialty.

Nursing specialty (actual or anticipated)	Valid *n* (100%)	Social Class: Class I		Class II		Class III		Class IV		Class V	
Adult	605	62	(10.2%)	250	(41.3%)	219	(36.2%)	57	(9.4%)	17	(2.8%)
Mental Health	143	25	(17.5%)	63	(44.1%)	32	(22.4%)	18	(12.6%)	5	(3.5%)
Children's	79	5	(6.3%)	31	(39.2%)	31	(39.2%)	11	(13.9%)	1	(1.3%)
Learning Disability	73	6	(8.2%)	39	(53.4%)	19	(26.0%)	9	(12.3%)	0	—
All nursing specialties	**900**										
Midwifery	96										
Excluded cases	111										
All valid respondents	**1107**										

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to social class and/or nursing specialty.

Table 5.13 Highest qualification on entry by programme type.

Programme	Valid *n* (100%)	Highest Qualification on Entry					
		Intermediate	Advanced	Certificate	Diploma	Degree	Postgraduate
Nurs Degree§	85	0 —	83 (97.6%)	0 —	1 (1.2%)	1 (1.2%)	0 —
Nurs Diploma	780	151 (19.4%)	518 (66.4%)	7 (0.9%)	38 (4.9%)	58 (7.4%)	8 (1.0%)
Nurs Diploma, Grad Entry§	37	0 —	0 —	0 —	0 —	32 (86.5%)	5 (13.5%)
Nurs Diploma inc Soc Work	88	7 (8.0%)	41 (46.6%)	6 (6.8%)	11 (12.5%)	21 (23.9%)	2 (2.3%)
All nursing programmes	**990**	**158 (16.0%)**	**642 (64.8%)**	**13 (1.3%)**	**50 (5.1%)**	**112 (11.3%)**	**15 (1.5%)**
Midw Diploma	47	9 (19.1%)	28 (59.6%)	0 —	4 (8.5%)	6 (12.8%)	0 —
Midw Diploma, Enhanced§	43	0 —	30 (69.8%)	1 (2.3%)	1 (2.3%)	9 (20.9%)	2 (4.7%
Midw Diploma, Short§	12	0 —	0 —	5 (41.7%)	5 (41.7%)	1 (8.3%)	1 (8.3%)
All midwifery programmes	**102**	**9 (8.8%)**	**58 (56.9%)**	**6 (5.9%)**	**10 (9.8%)**	**16 (15.7%)**	**3 (2.9%)**
All programmes	**1092**	**167 (15.3%)**	**700 (64.1%)**	**19 (1.7%)**	**60 (5.5%)**	**128 (11.7%)**	**18 (1.6%)**
Excluded cases	15						
All valid respondents	**1107**						

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to highest qualification on entry. Because of School or other stipulations, programmes marked § have entry requirements higher than the national minimum entry requirements for nurse or midwife training.

Table 5.14 Highest qualification on entry by nursing specialty.

Nursing specialty (actual or anticipated)	Valid *n* (100%)	Highest Qualification on Entry					
		Intermediate	Advanced	Certificate	Diploma	Degree	Postgraduate
Adult	645	119 (18.4%)	433 (67.1%)	5 (0.8%)	26 (4.0%)	51 (7.9%)	11 (1.7%)
Mental Health	155	17 (11.0%)	92 (59.4%)	1 (0.6%)	10 (6.5%)	33 (21.3%)	2 (1.3%)
Children's	87	15 (17.2%)	62 (71.3%)	1 (1.1%)	3 (3.4%)	6 (6.9%)	0 —
Learning Disability	88	7 (8.0%)	41 (46.6%)	6 (6.8%)	11 (12.5%)	21 (23.9%)	2 (2.3%)
All nursing specialties	**975**						
Midwifery	102						
Excluded cases	30						
All valid respondents	**1107**						

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to highest qualification on entry and/or nursing specialty.

5.3.5 Highest qualification on entry

Tables 5.13 and 5.14 (previous page) provide breakdowns for highest qualification on entry by programme type and nursing specialty respectively.

From Table 5.13, the most noteworthy observation concerning highest qualification on entry is that the majority (almost 85 per cent) of respondents have academic qualifications above the national minimum required for entry into nurse or midwife training. Even if those programmes that require higher than the national minimum entry requirements (programmes marked § in Table 5.13) are excluded, the position hardly differs: over 80 per cent of respondents on both the standard nursing and the standard midwifery diploma have qualifications that exceed the minimum entry requirements, as do over 90 per cent of the combined nursing/social work diploma respondents.

With regard to nursing specialty (Table 5.14), adult and children's nursing have the largest proportions of respondents with intermediate qualifications. Despite this observation, these respondents remain in the minority in that, again, over 80 per cent of adult and children's respondents exceed the minimum entry requirements. The proportion of mental health, learning disability and, to some extent, midwifery respondents with a first or postgraduate degree is also noteworthy.

5.3.6 Some additional characteristics of the sample

Providing a detailed description of the sample goes part way to addressing the local purpose of the investigation. So far, however, the sample has been examined using the (demographic) variables that are typically employed in social research. However, data on a range of additional demographic variables was also collected. Analyses, breakdowns and contrasts of these additional variables can further help build a picture of the sample and, in the process, help further address the investigation's local purpose.

These variables that are dealt with here are largely taken from two of the independent variable sets outlined in the previous chapter (Section 4.7.2.2): the extended demographic variable set and the additional variable set. As in the previous section, and where appropriate, these variables are broken down according to the subgroups in the primary variable set. Specifically, the variables considered here are household composition, accommodation type, tenure, cares for a dependent adult, paid work in addition to studies, familiarity with the Manchester area, travel difficulties (both to the academic base and to the clinical areas), mode of study and disability.

Two variables – household type and children in household – underpin the variable household composition. Given that the two-dimensional nature of household composition adds a degree of complexity to analyses, breakdowns by nursing specialty and by programme (other than by nursing vs. midwifery) have not been undertaken. The most useful way of exploring household composition is by cross-tabulating the two component variables. Tables 5.15, 5.16 and 5.17 contain cross-tabulations for all respondents, for nursing respondents and for midwifery respondents, respectively.

Table 5.15 All respondents: cross-tabulation of household type with children in household.

	Children in household							
Household type	None		Preschool		School age		**Row total**	
Single adult	95	(8.8%)	21	(1.9%)	51	(4.7%)	**167**	**(15.5%)**
Two or more adults	430	(39.9%)	10	(0.9%)	39	(3.6%)	**479**	**(44.5%)**
Couple	220	(20.4%)	71	(6.6%)	140	(13.0%)	**431**	**(40.0%)**
Column Total	**745**	**(69.2%)**	**102**	**(9.5%)**	**230**	**(21.4%)**	**1077**	**(100.0%)**
Excluded cases							30	
All valid respondents							**1107**	

Notes: Percentages are total percentages. Excluded cases = cases with missing responses to household type and/or children in household.

Table 5.16 Nursing: cross-tabulation of household type with children in household.

	Children in household							
Household type	None		Preschool		School age		**Row total**	
Single adult	91	(9.3%)	20	(2.0%)	47	(4.8%)	**158**	**(16.2%)**
Two or more adults	402	(41.1%)	7	(0.7%)	35	(3.6%)	**444**	**(45.4%)**
Couple	201	(20.6%)	59	(6.0%)	115	(11.8%)	**375**	**(38.4%)**
Column Total	**694**	**(71.0%)**	**86**	**(8.8%)**	**197**	**(20.2%)**	**977**	**(100.0%)**
Excluded cases							28	
All nursing respondents							**1005**	

Notes: Percentages are total percentages. Excluded cases = cases with missing responses to household type and/or children in household.

Table 5.17 Midwifery: cross-tabulation of household type with children in household.

	Children in household							
Household type	None		Preschool		School age		**Row total**	
Single adult	4	(4.0%)	1	(1.0%)	4	(4.0%)	**9**	**(9.0%)**
Two or more adults	28	(28.0%)	3	(3.0%)	4	(4.0%)	**35**	**(35.0%)**
Couple	19	(19.0%)	12	(12.0%)	25	(25.0%)	**56**	**(56.0%)**
Column Total	**51**	**(51.0%)**	**16**	**(16.0%)**	**33**	**(33.0%)**	**100**	**(100.0%)**
Excluded cases							2	
All midwifery respondents							**102**	

Notes: Percentages are total percentages. Excluded cases = cases with missing responses to household type and/or children in household.

From Table 5.15 (all respondents), the row and column totals are perhaps the most enlightening. Most respondents live with another adult: a minority of around 15 per cent classified themselves as a single adult household. The majority (almost 70 per cent) of respondents have no responsibility for children.

An examination of Tables 5.16 and 5.17 yields some interesting differences between nursing and midwifery. For a start, more student midwives have a childcare responsibility than do student nurses (49 per cent against 29 per cent). More student nurses live alone than do student midwives (around 16 against 9 per cent) and fewer student nurses classify themselves as a couple than do student midwives (around 38 per cent compared to 56 per cent). In nursing, the largest household group, at around 41 per cent of respondents, is 'two or more adults with no children'. Although this is also the largest household group for midwifery, the overall proportion, at 28 per cent, is much less than for nursing and is trailed closely by the household group 'couple with school age children'.

To enhance interpretation, the variables 'accommodation type' and tenure' were subject to some minor modifications. With regard to accommodation type, the original four categories were collapsed into the dichotomy 'institutional vs. non-institutional accommodation'. The original six categories of the variable 'tenure' were similarly collapsed into a dichotomy, 'housing costs vs. no housing costs' and, given the categories of this dichotomy, the variable was subsequently renamed 'housing costs'.

Table 5.18 Accommodation type by programme type.

Programme	Valid *n* (100%)	Accommodation type			
		Institutional		Non-institutional	
Nurs Degree	85	15	(17.6%)	70	(82.4%)
Nurs Diploma	786	86	(10.9%)	700	(89.1%)
Nurs Diploma, Grad Entry	37	12	(32.4%)	25	(67.6%)
Nurs Diploma inc Soc Work	89	9	(10.1%)	80	(89.9%)
All nursing programmes	**997**	**122**	**(12.2%)**	**875**	**(87.8%)**
Midw Diploma	44	1	(2.1%)	46	(97.9%)
Midw Diploma, Enhanced	42	2	(4.8%)	40	(95.2%)
Midw Diploma, Short	12	0	---	12	(100.0%)
All midwifery programmes	**101**	**3**	**(3.0%)**	**98**	**(97.0%)**
All programmes	**1098**	**125**	**(11.4%)**	**973**	**(88.6%)**
Excluded cases	9				
All valid respondents	**1107**				

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to accommodation type.

The results in Table 5.18 indicate that, overall, the majority (almost 90 per cent) of respondents live in non-institutional accommodation (in a private or rented house or flat rather than a nurses' home or hall of residence). Across programmes, very few midwifery students live in institutional accommodation. Within the nursing programmes, the proportion of respondents living in institutional accommodation is generally relatively low, although the graduate entry programme (at 32.4 per cent) and the nursing degree (at 17.6 per cent) have sizeable minorities in institutional accommodation.

Table 5.19 Housing costs by programme type.

Programme	Valid *n* (100%)	Housing costs			
		No costs		Costs	
Nurs Degree	85	13	(15.3%)	72	(84.7%)
Nurs Diploma	791	85	(10.7%)	706	(89.3%)
Nurs Diploma, Grad Entry	37	1	(2.7%)	36	(97.3%)
Nurs Diploma inc Soc Work	89	7	(7.9%)	82	(92.1%)
All nursing programmes	**1002**	**106**	**(10.6%)**	**896**	**(89.4%)**
Midw Diploma	47	9	(19.1%)	38	(80.9%)
Midw Diploma, Enhanced	43	5	(11.6%)	38	(88.4%)
Midw Diploma, Short	12	0	---	12	(100.0%)
All midwifery programmes	**102**	**14**	**(13.7%)**	**88**	**(86.3%)**
All programmes	**1104**	**120**	**(10.9%)**	**984**	**(89.1%)**
Excluded cases	3				
All valid respondents	**1107**				

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to housing costs.

Housing costs (rent, board or mortgage costs) are also a fact of life for the vast majority of respondents (Table 5.19). With regard to housing costs, the proportion of nursing degree and standard midwifery diploma respondents, at around 15 and 19 per cent respectively, who are not subject to housing costs is noteworthy.

There is some variability across the specialities (Tables 5.20 and 5.21) but overall the same picture emerges: in each of the specialties, most of the respondents live in non-institutional accommodation and most have housing costs.

Table 5.20 Accommodation type by nursing specialty.

Nursing specialty (actual or anticipated)	Valid *n* (100%)	Accommodation type			
		Institutional		Non-institutional	
Adult	652	77	(11.8%)	575	(88.2%)
Mental Health	155	20	(12.9%)	135	(87.1%)
Children's	86	12	(14.0%)	74	(86.0%)
Learning Disability	89	9	(10.1%)	80	(89.9%)
All nursing specialties	**982**				
Midwifery	101				
Excluded cases	24				
All valid respondents	**1107**				

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to accommodation type and/or nursing specialty.

Table 5.21 Housing costs by nursing specialty.

Nursing specialty (actual or anticipated)	Valid *n* (100%)	Housing costs			
		No costs		Costs	
Adult	655	67	(10.2%)	588	(89.8%)
Mental Health	156	15	(9.6%)	141	(90.4%)
Children's	87	13	(14.9%)	74	(85.1%)
Learning Disability	89	7	(7.9%)	82	(92.1%)
All nursing specialties	**1089**				
Midwifery					
Excluded cases	18				
All valid respondents	**1107**				

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to housing costs and/or nursing specialty.

With regards to the variable 'cares for a dependent adult', of those respondents living with another adult (n = 931), around 12 per cent of respondents cared for an adult dependant in their household (Table 5.22). The most interesting breakdown of the care responsibility data is by sex: 12.5 per cent of females having a care responsibility, compared with only 5.2 per cent of males.

Table 5.22 Cares for a dependent adult by sex.

Sex	Valid *n* (100%)	Cares for a dependent adult? Yes		No	
Female	835	104	(12.5%)	731	(87.5%)
Male	96	5	(5.2%)	91	(94.8%)
Both sexes	**931**	**109**	**(11.7%)**	**822**	**(88.3%)**
Lives alone ('not applicable')	167				
Excluded cases	9				
All valid respondents	**1107**				

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to cares for a dependent adult.

The proportion of students undertaking paid work in addition to their studies (whether as bank nursing assistants or otherwise) is presented in Tables 5.23 and 5.24. The mean number of hours worked per week, together with the maximum and minimum number of hours worked is also provided to give some idea of the range of hours worked.

Table 5.23 Paid work in addition to studies by programme.

Programme	Valid *n*	No. undertaking paid work		Hours worked per week: Mean	SD	Min	Max
Nurs Degree Year 4	23	15	(65.2%)	10.1	5.9	4	28
Nurs Degree Years 1-3	63	34	(54.0%)	10.2	5.7	2	25
Nurs Diploma	779	411	(52.8%)	11.7	5.8	2	40
Nurs Diploma, Grad Entry	37	23	(62.2%)	9.1	5.3	3	20
Nurs Diploma inc Soc Work	88	65	(73.9%)	13.8	8.1	1	45
All nursing programmes	**990**	**548**	**(55.4%)**	**11.7**	**6.1**	**1**	**45**
Midw Diploma	47	13	(27.7%)	11.2	4.5	4	20
Midw Diploma, Enhanced	43	11	(25.6%)	8.9	5.3	2	19
Midw Diploma, Short	12	5	(41.7%)	9.2	1.8	6	10
All midwifery programmes	**102**	**29**	**(28.4%)**	**10.0**	**4.5**	**2**	**20**
All programmes	**1092**	**577**	**(52.8%)**	**11.7**	**6.1**	**1**	**45**
Excluded cases	15						
All valid respondents	**1107**						

Notes: Excluded cases = cases with missing responses to number of paid hours worked per week.

In Table 5.23, Year 4 nursing degree students are listed separately because, having qualified as nurses at the end of Year 3, these students could obtain higher rates of pay if they chose to do paid nursing work. The shortened midwifery respondents could similarly obtain higher rates of pay given that being a qualified nurse is an inherent part of the entry criteria for this programme.

With regard to paid work by programme type, the most striking difference is between student nurses and student midwives. On all nursing programmes, more than half of respondents supplement their bursary (or other income) by undertaking paid work; with midwifery programmes, it is only around a quarter, with the exception of the shortened diploma, where the proportion hovers at around 40 per cent. The combined nursing/social work diploma is noteworthy in that almost three quarters of these respondents undertook paid work in addition to their studies. Of those respondents who undertook paid work in addition to their studies, the mean number of hours worked per week is around 12 hours. Across the programmes, there is little variability in the mean number of hours worked per week, although the mean for learning disability respondents is the highest at almost 14 hours. The maximum number of hours worked is interesting merely because it demonstrates that some respondents claimed to be working up to 45 hours per week *as well as undertaking an academic course*. Table 5.24, which examines additional paid work by nursing specialty, provides nothing remarkable that is not already apparent from the breakdown by programme.

Table 5.24 Paid work in addition to studies by nursing specialty.

Nursing specialty (actual or anticipated)	Valid *n*	No. undertaking paid work		Hours worked per week			
				Mean	SD	Min	Max
Adult	645	325	(50.4%)	10.8	5.6	2	40
Mental Health	157	104	(66.2%)	13.4	6.3	2	30
Children's	85	46	(54.1%)	11.5	5.1	4	25
Learning Disability	88	65	(73.9%)	13.8	8.1	1	45
All nursing specialties	**975**						
Midwifery	102						
Excluded cases	30						
All valid respondents	**1107**						

Notes: Excluded cases = cases with missing responses to number of paid hours worked per week and/or nursing specialty.

Overall, around 55 per cent of respondents were fairly or very familiar with the Manchester area, the remaining 45 per cent being unfamiliar or vaguely familiar. This suggests that the School recruits slightly more students from within its local catchment area than it does from outside.

This statement, however, may not be as definitive as it seems. Table 5.25, which breaks down familiarity with the Manchester area by programme type, shows some interesting variations across programmes. Some, like the nursing degree (with almost two thirds of respondents unfamiliar or vaguely familiar with the Manchester area), appear to recruit largely from outside the local catchment area. Others, like the nursing diploma (with around 60 per cent of respondents being fairly or very familiar with the Manchester area) and the midwifery programmes (with almost two thirds of respondents being fairly or very familiar with the Manchester area), appear to recruit largely from within the local catchment area. The breakdown by speciality (Table 5.26) reveals nothing additional of note.

Table 5.25 Familiarity with the Manchester area by programme.

Programme	Valid *n* (100%)	Familiarity with the Manchester area: Unfamiliar or vaguely familiar		Familiarity with the Manchester area: Fairly or very familiar	
Nurs Degree	86	55	(64.0%)	31	(36.0%)
Nurs Diploma	793	325	(41.0%)	468	(59.0%)
Nurs Diploma, Grad Entry	37	20	(54.1%)	17	(45.9%)
Nurs Diploma inc Soc Work	89	49	(55.1%)	40	(44.9%)
All nursing programmes	**1005**	**449**	**(44.7%)**	**556**	**(55.3%)**
Midw Diploma	47	25	(53.2%)	22	(46.8%)
Midw Diploma, Enhanced	43	9	(20.9%)	34	(79.1%)
Midw Diploma, Short	12	5	(25.0%)	9	(75.0%)
All midwifery programmes		**37**	**(36.3%)**	**65**	**(63.7%)**
All programmes	1107	486	(43.9%)	621	(56.1%)
Excluded cases	0				
All valid respondents	1107				

Notes: Percentages are row percentages.

Table 5.26 Familiarity with the Manchester area by nursing specialty.

Nursing specialty (actual or anticipated)	Valid *n* (100%)	Familiarity with the Manchester area: Unfamiliar or vaguely familiar		Familiarity with the Manchester area: Fairly or very familiar	
Adult	657	283	(43.1%)	374	(56.9%)
Mental Health	157	72	(45.9%)	85	(54.1%)
Children's	87	39	(44.8%)	48	(55.2%)
Learning Disability	89	49	(55.1%)	40	(44.9%)
All nursing specialties	**990**				
Midwifery	102				
Excluded cases	15				
All nursing	**1107**				

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to nursing specialty.

Tables 5.27 and 5.28 show the difficulty respondents experienced travelling, respectively, to their academic base and to the clinical areas by programme type. With regard to travelling to the academic base, the differences that exist across programmes are unremarkable in that, for each programme, the majority of respondents (as many as three quarters in the case of the nursing degree and enhanced midwifery diploma) have little or no difficulty travelling to their academic base.

Table 5.27 Difficulty in travelling to academic base by programme type.

		Travelling to academic base			
Programme	**Valid *n* (100%)**	None or hardly any difficulty		Some or a lot of difficulty	
Nurs Degree	86	64	(74.4%)	22	(25.6%)
Nurs Diploma	788	509	(64.4%)	279	(35.4%)
Nurs Diploma, Grad Entry	37	27	(73.0%)	10	(27.0%)
Nurs Diploma inc Soc Work	89	56	(62.9%)	33	(37.1%)
All nursing programmes	**1000**	**656**	**(65.6%)**	**344**	**(34.4%)**
Midw Diploma	47	32	(68.1%)	15	(31.9%)
Midw Diploma, Enhanced	43	33	(76.7%)	10	(23.3%)
Midw Diploma, Short	12	7	(58.3%)	5	(41.7%)
All midwifery programmes	**102**	**72**	**(70.6%)**	**30**	**(29.4%)**
All programmes	**1102**	**728**	**(66.1%)**	**374**	**(33.9%)**
Excluded cases	5				
All valid respondents	**1107**				

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to difficulty travelling to academic base.

Table 5.28 Difficulty in travelling to clinical areas by programme type.

		Travelling to clinical areas			
Programme	**Valid *n* (100%)**	None or hardly any difficulty		Some or a lot of difficulty	
Nurs Degree	83	15	(18.1%)	68	(81.9%)
Nurs Diploma	617	375	(60.8%)	242	(39.2%)
Nurs Diploma, Grad Entry	27	18	(66.7%)	9	(33.3%)
Nurs Diploma inc Soc Work	49	27	(55.1%)	22	(44.9%)
All nursing programmes	**776**	**435**	**(56.1%)**	**341**	**(43.9%)**
Midw Diploma	46	30	(65.2%)	16	(34.8%)
Midw Diploma, Enhanced	43	23	(53.5%)	20	(46.5%)
Midw Diploma, Short	12	9	(75.0%)	3	(25.0%)
All midwifery programmes	**101**	**62**	**(61.4%)**	**39**	**(38.6%)**
All programmes	**877**	**497**	**(56.7%)**	**380**	**(43.3%)**
No placements as yet	221				
Excluded cases	9				
All valid respondents	**1107**				

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to difficulty travelling to clinical areas.

With regard to the difficulty respondents experienced in travelling to the clinical areas, a similarly unremarkable picture exists, apart from one striking observation: the nursing degree. Here, of those who had had a clinical placement, the majority of respondents (over 80 per cent) encountered some or a lot of difficulty in travelling to their clinical areas.

The breakdowns for difficulty travelling to academic base and to clinical areas by nursing specialty (Tables 5.29 and 5.30) are unremarkable and paint a similar picture to that discussed above.

Table 5.29 Difficulty in travelling to academic base by nursing specialty.

Nursing specialty (actual or anticipated)	Valid *n* (100%)	Travelling to academic base: None or hardly any difficulty		Travelling to academic base: Some or a lot of difficulty	
Adult	653	422	(64.6%)	231	(35.4%)
Mental Health	156	108	(69.2%)	48	(30.8%)
Children's	87	59	(67.8%)	28	(32.2%)
Learning Disability	89	56	(62.9%)	33	(37.1%)
All nursing specialties	**985**				
Midwifery	102				
Excluded cases	20				
All valid respondents	**1107**				

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to difficulty travelling to academic base and/or nursing specialty.

Table 5.30 Difficulty in travelling to clinical areas by nursing specialty.

Nursing specialty (actual or anticipated)	Valid *n* (100%)	Travelling to clinical areas: None or hardly any difficulty		Travelling to clinical areas: Some or a lot of difficulty	
Adult	518	296	(57.1%)	222	(42.9%)
Mental Health	124	67	(54.0%)	57	(46.0%)
Children's	72	41	(56.9%)	31	(43.1%)
Learning Disability	49	27	(55.1%)	22	(44.9%)
All specialties	**763**				
No placements as yet	221				
Midwifery	101				
Excluded cases	22				
All valid respondents	**1107**				

Notes: Percentages are row percentages. Excluded cases = cases with missing responses to difficulty travelling to clinical areas and/or speciality.

With regard to mode of study, of the 1,102 respondents who gave information about their mode of study (full- vs. part-time), only 12 respondents (just over one per cent) were undertaking part-time study. Given its lack of variability, this variable was subsequently excluded from the additional variable set.

Table 5.31 summarises the number and proportion of respondents with one of six specific disabilities. These disabilities are the standard six acknowledged by higher education, although respondents were also given the option of stating whether they had additional 'unspecified' disabilities.

Table 5.31 Number and proportion of respondents with a disability.

Disability	Valid n	no. with	disability
Dyslexia	1107	30	(2.7%)
Mental health problems	1107	9	(0.8%)
Significant hearing problems	1107	4	(0.4%)
Unseen disability	1107	64	(5.8%)
Significant visual impairment	1107	14	(1.3%)
Mobility impairment	1107	0	(0.0%)
Other disability (unspecified)	1107	6	(0.5%)

The most prevalent disability, at almost six per cent, was the 'unseen' disability (a physical disability such as diabetes, epilepsy or asthma). Around three per cent of respondents said they had dyslexia. No respondents admitted to being mobility impaired, and less than one per cent admitted to mental health problems or significant hearing problems. Just over one per cent of respondents had a significant visual impairment. Of the seven disability variables, only two – dyslexia and unseen disability – had sufficient variability to be worthy of further investigation; as such, the other five variables were dropped from any subsequent analyses.

5.4 REPRESENTATIVENESS OF THE PARTICIPANT SET

The discussion in the previous chapter (Section 4.74) questioning whether the respondent set was to be treated as a population, sample or both concluded with the investigator's opinion that it was legitimate to treat the respondent set as both: as a population when considering the local purpose of the investigation and as a sample when addressing the wider purpose of the investigation.

The local purpose of the investigation has been addressed, to some extent, in the preceding sections of this chapter, although further issues of interest to the local purpose will be raised in the next chapter. The bulk of the next chapter, however, is concerned with the wider purpose of the investigation and, to a great extent, this requires that the respondent set be treated as a sample of some larger population such as 'all pre-registration nursing and midwifery students in England' or 'all pre-registration nursing and midwifery students in the UK'.

Whilst the philosophical legitimacy of employing the participant set as a sample of some wider population has been settled, at least as far as this particular investigation is concerned, there remains a further problem. If the inferences to be drawn about some wider population are to be legitimate, then ideally a random (probability) sample should have been employed (Afifi and Clark 1996; Babbie 2001; Davis 1971; Howell 1997). Even if the respondent set in the current investigation is treated as a sample, as a *convenience* sample, it is clearly not a random sample.

Convenience samples are inexpensive and accessible; they are, however, certainly not without their problems (Burns and Grove 1997). They can, for example, lead to an underestimate of the population variance and to possible bias (Afifi and Clark 1996). As Davis (1971) remarks '[t]here remains the problem of applying statistical inference to data which are not probability samples ... This issue involves extremely difficult problems reaching to the philosophical roots of probability and inference and is hotly debated in social science' (p 60). Nevertheless, Afifi and Clark (1996), Babbie (2001), Davis (1971) and Howell (1997) all suggest that meaningful results can be obtained from non-probability samples so long as the investigator (or, indeed, the reader) acknowledges the limitations of the sample. Moreover, Wilkinson *et al.* (1999) state that the representativeness of a convenience sample (and hence the meaningfulness of any inferences made) can often be strengthened by the explicit comparison, across a wide range of variables, of sample characteristics with those of a defined population.

Given the nature of nurse and midwife education in the UK (each of the four countries of the UK has its own rules and regulations), two target populations are of interest to the investigator: 'all pre-registration students of nursing and midwifery in England' and 'all pre-registration students of nursing and midwifery in the UK'. With regard to these two populations, two primary sources of comparison data were available. Data for England was obtained from the English National Board for Nursing, Midwifery and Health Visiting (ENB) (ENB 2001; Stevens 2001) who collected annual statistics of all nurses and midwives in training.[23] Data for the whole of the UK was obtained from the Royal College of Nursing (RCN), who undertook a hardship survey of 790 nurses (no midwives) across the UK (see RCN 2001). Three of the main demographic variables – age (on entry), sex and ethnicity – were common to both data sets and each of these is discussed in more detail below.

5.4.1 Age

Table 5.32 compares this investigation's findings for age on entry with data obtained directly from the ENB (Stevens 2001), data obtained from the RCN's survey (RCN 2001) and data about degree admissions to the University of Manchester obtained from the Universities and Colleges Admissions Service, UCAS (2000).

Table 5.32 Age on entry: the current investigation compared with other data sources.

	Data source	**Age groups**			**Mean**
		<21	21-24	25+	
Nursing degree	This investigation	89.5%	5.8%	4.7%	19.4
	ENB (Stevens 2001)	50.5%	12.4%	37.1%	24.6
	RCN (2001)	n/a	n/a	n/a	25.0
Nursing diploma	This investigation	32.6%	20.1%	47.3%	26.5
	ENB (Stevens 2001)	28.7%	20.9%	50.4%	27.0
	RCN (2001)	n/a	n/a	n/a	28.0
All nursing	This investigation	37.6%	18.8%	43.6%	25.9
	ENB (Stevens 2001)	30.9%	20.0%	49.0%	26.8
Midwifery	This investigation	32.7%	13.9%	53.5%	27.5
	ENB (Stevens 2001)	33.1%	13.9%	53.0%	26.8
UoM degree acceptances (1999 entry)	UCAS (2000)	91.9%	4.7%	3.4%	n/a

Notes: Percentages are row percentages. n/a = not available. UoM = University of Manchester.

With regard to nursing, it appears that, overall, the age spread in the current investigation is reasonably representative of the age spread in the population of student nurses in England (ENB data). Examining the two main classes of nursing

[23] The ENB was disestablished in April 2002, when its functions were taken over by the NMC.

programme for which data is available, it seems that the age spread of University of Manchester diploma students is reasonably representative of the age spread of diploma students in England. However, with regard to the nursing degree, it seems that the University of Manchester had, at the time of data collection, a relatively younger population than the population of nursing degree students in England as a whole, although the age spread is reflective of those accepting places on a degree programme at the University of Manchester in 1999 (the entry year coinciding with the data collection period). The RCN age data (data for the whole of the UK), being limited to the mean ages for nursing degree and nursing diploma students, is less useful but tells a similar story to the ENB data.

With regard to midwifery, it appears that, again, the age spread in the current investigation is reasonably representative of the age spread in the population of student midwives in England (ENB data). No RCN data were available for student midwives.

5.4.2 Sex

Table 5.33 overleaf provides some comparison data on sex. Given that the major differences on sex seem to be found across specialties, the comparison data is also broken down by nursing specialty. No comparison data by sex is available from the RCN survey and data was difficult to extract from the ENB source (ENB 2001). However, some crude comparisons can be made using the ENB data in that the ENB data provides statistics on sex for 'completers', i.e. those who successfully completed their programmes of study. The legitimacy of this sex data, however, relies on an assumption that similar proportions of males and females fail to complete.

For nursing, the overall sex split in the current investigation is almost identical to the sex split reported in the RCN survey. However, the RCN data includes respondents from all four countries of the UK. Given the relative superiority of the ENB age data over the RCN age data, it is disappointing that the same does not hold true here. Nevertheless, for nursing, the ENB sex data does not deviate dramatically from the sex data reported in the current investigation. For midwifery, the difference between the ENB sex data and the sex data in the current investigation is negligible.

Table 5.33 Sex: the current investigation compared with other data sources.

	Data source	Sex		Ratio F:M
		Female	Male	
Adult nursing	This investigation	90.7%	9.3%	9.8
	ENB (2001)	89.7%	10.3%	8.7
Mental health nursing	This investigation	76.4%	23.6%	3.2
	ENB (2001)	66.8%	33.2%	2.0
Children's nursing	This investigation	97.7%	2.3%	42.5
	ENB (2001)	94.0%	6.0%	15.7
Learning disability nursing	This investigation	82.0%	18.0%	4.6
	ENB (2001)	80.6%	19.4%	4.6
All nursing	This investigation	88.3%	11.7%	7.5
	RCN (2001)	88%	12%	7.3
	ENB (2001)	84.4%	15.6%	5.4
Midwifery	This investigation	100.0%	---	note
	ENB (2001)	99.4%	0.6%	note

Notes: Percentages are row percentages. RCN data are available only as integer percentages. n/a = not available. No RCN sex data are available for nursing specialty. No RCN data are available for midwifery. Female to male ratios are meaningless for midwifery because midwifery has no males.

With regard to the nursing specialties, adult and learning disability are fairly reflective of the ENB data. Children's and mental health, however, deviate from the English picture slightly in that, for both specialties, University of Manchester students are under-representative of males.

5.4.3 Ethnicity

How the current investigation's ethnicity data compares with other data sources is presented in Table 5.34 overleaf. When checking the representativeness of the current investigation's data, comparisons on ethnicity are, perhaps, the most disconcerting. At first sight, the School appears under-representative of ethnic groups other than white for both nursing and midwifery – black students in particular. For nursing, the data from the current investigation seems to 'fit' the RCN data better than the ENB data, although this anomaly may be due to the position of the London nursing schools which tend to have a much higher proportion of ethnic minorities. For example, in 1998, 27 per cent of entrants to diploma programmes at Kings College London were from ethnic groups other than white (Quality Assurance Agency for Higher Education, QAA 1999), and according to the Subject Review Report for Middlesex University's nursing school (QAA 2000a), *over 90 per cent* of students undertaking nursing diplomas in 2000 were from ethnic groups other than white. As far as ethnicity is concerned, the London schools would form a significant proportion of the ENB (English) data, but their influence would be diluted in the RCN's data, which considers all four countries of the UK.

Table 5.34 Ethnicity: the current investigation compared with other data sources.

		Ethnicity				
	Data source	White	Black	Chinese	Asian	Other
Nursing	This investigation	94.7%	2.6%	0.4%	1.4%	0.9%
	RCN (2001)	91%	8%	note	1%	note
	ENB (2001)	82.2%	14.6%	1.7%	0.2%	1.3%
Midwifery	This investigation	94.1%	1.0%	0.0%	2.0%	2.9%
	ENB (2001)	91.0%	6.8%	0.6%	0.3%	1.3%
Greater Manchester	1991 Census	94.1%	1.3%	0.2%	3.7%	0.7%

Notes: Percentages are row percentages. RCN data are available only as integer percentages. The RCN survey collapsed the 'Chinese' and 'other' categories into one category, with less than one per cent of respondents making up this combined category. No RCN data are available for midwifery. 1991 Census data from the Census Dissemination Unit (1999).

The ethnicity data compares more favourably with data from the local catchment area (the 1991 Census data for Greater Manchester). Midwifery, in particular, compares well although, as far as nursing is concerned, the sample is *over-representative* of the local Black population (2.6 per cent against 1.3 per cent) and *under-representative* of the local Asian population (1.4 per cent against 3.7 per cent).

5.4.4 Additional comparisons

As far as nursing is concerned, and in spite of the relatively limited scope of the RCN data, the profile of nursing students in the current investigation appears to reflect the profile of nursing students right across the UK (data from the RCN survey) better than the profile of nursing students in England only (data from the ENB). Further examination of the RCN survey data adds additional support to the claim that the sample is reasonably representative of nursing students across the UK. For example, the RCN survey reports that 41 per cent of its respondents lived with a partner (cf. around 38 per cent in the current investigation) and that 35 per cent of its respondents had children (cf. 29 per cent in the current investigation). Around 12 per cent of the RCN's respondents were studying for a nursing degree rather than a nursing diploma. In the current investigation, although only around 8.6 per cent of nursing respondents were studying for a nursing degree (the remainder studying for a diploma in one form or another), the figure when non-responders are taken into account is around 11 per cent (150 nursing degree students out of a total School population of 1,362 nursing students – see Table 5.1 on p 134), which is much closer to the RCN data.

The RCN survey also reports that, across the UK, around 60 per cent of nursing students undertake paid work averaging 13.7 hours per week. This compares with around 55 per cent of nursing students in the current investigation, who average 11.7 hours per week

5.4.5 The target population

Given that the sample fits, for nursing students at least, the UK (RCN) data better than the English (ENB) data, the investigator is, as such, minded to adopt 'all pre-registration students of nursing and midwifery in the UK' as the 'target' population, i.e. the population to which inferences will be made on the basis of findings from the current investigation.

This decision, however, needs to be tempered with three riders. Firstly, whilst the RCN data appear to be a better fit than the ENB data as far as *nursing* is concerned, the same cannot be said for midwifery, as the single comparable profile for midwives was extracted from the data for *England* provided by the ENB. Given this observation, and the fact that the School's student midwife profile does not depart radically from that provided by the ENB, a rational decision might be to have a separate target population for midwives ('all pre-registration student midwives in the England'). Although a rational decision, adopting separate target populations for nursing and for midwifery, would serve only to add a layer of complexity to the investigation. There is, after all, no evidence (simply because there is no UK-wide data available) that the School's student midwife profile radically departs from the profile of student midwives across the UK. On this basis, a pragmatic decision was taken to stick to the single UK-wide target population.

With regard to the second rider, the investigator and, indeed, the reader need to appreciate that the protocols and regulations governing nurse and midwife education vary between the four countries of the United Kingdom. Conclusions drawn from the current investigation, therefore, might not be applicable to students and institutions in Scotland, Wales or Northern Ireland, even if the student nurse and student midwife profiles in those countries are similar to the profiles in this investigation. Thirdly, although the ethnic make-up of the sample seems to reflect the local population of Greater Manchester (and, perhaps, protects the School from charges of 'institutional racism'), the sample does not reflect either of the national pictures of ethnicity among nursing and midwifery students.

Given these riders, the investigator is confident that the sample is a reasonable representation of nursing and midwifery students across the UK.

5.5 SUMMARY: A PICTURE OF THE SCHOOL

Overall, the sample is predominantly young, white, female, middle-class and educated beyond the minimum requirements for entry into nursing or midwifery. Whilst this observation is hardly typical of the general population, the demographic variables compared with the English and UK-wide nursing and midwifery student populations suggest it is typical of these populations. The observation also holds across specific programmes and specialties, although some noteworthy differences are evident. For example, nursing degree students were generally much younger on entry to their programme than diploma students but other than this there is little to distinguish the nursing programmes. Shortened midwifery diploma students tended to be older than students on the other midwifery programmes, but this is hardly surprising given that these respondents were essentially undertaking training for a second career.

Across specialties, the most obvious observation is that there were no male midwifery students. On the other hand, both mental health and learning disability nursing have a higher proportion of males than adult nursing, whilst children's nursing has a lower proportion. There are few differences with regard to highest qualifications on entry although the proportion of mental health, learning disability and, to some extent, midwifery respondents with a first or postgraduate degree is noteworthy.

Most of the respondents live with another adult – whether as a couple or with friends or relatives – and most have no childcare responsibilities. There are noticeable differences, however, between nursing and midwifery in that more student midwives than student nurses had childcare responsibilities and more student nurses than student midwives lived alone. Fewer student nurses identified themselves as part of a couple. Of those respondents living with another adult, around 1 in 8 cared for an adult dependant, with more than twice as many female than male respondents having such a responsibility. Most of the respondents live in non-institutional accommodation, although the graduate entry programme and the nursing degree have sizeable minorities in institutional accommodation. Housing costs are a fact of life for the vast majority of respondents although a significant number of nursing degree and standard midwifery diploma respondents had no housing costs.

More than half of nursing respondents supplemented their bursary (or other income) by undertaking paid work. In particular, almost three quarters of learning disability students undertook paid work in addition to their studies. Midwifery respondents were, by and large, less likely to undertake paid work than nursing respondents. Of those respondents who undertook paid work the mean number of hours worked per week is around 12 hours, the equivalent of two full working days.

With regard to familiarity with the Manchester area, the nursing degree appears to recruit largely from outside the local catchment area whilst the nursing diploma and the midwifery programmes appear to recruit largely from within the local catchment area. The majority of respondents have little or no difficulty travelling to their academic base. A similar picture exists with regard to the difficulty experienced in travelling to clinical areas, apart from the nursing degree where the majority of respondents encountered a degree of difficulty in travelling to their clinical areas.

The most prevalent disability, at almost six per cent, was the 'unseen' disability (a physical disability such as diabetes, epilepsy or asthma). Around three per cent of respondents reported they had dyslexia.

CHAPTER 6

THE MAIN STUDY: RESULTS 2 (THE RESEARCH QUESTIONS)

6.1 CHAPTER INTRODUCTION

The main focus of the previous chapter (aimed, in part, at meeting the local purpose of the investigation) was the provision of an overall picture of the sample; the analyses undertaken and presented in that chapter were, as such, necessarily descriptive. The main focus of this chapter (aimed predominantly at meeting the wider purpose of the investigation) is, however, a consideration of the specific research questions underpinning the investigation. Given the central importance of these research questions to the investigation, the results presented in this chapter are borne out of necessarily deeper and more complex analyses.

At this point, it should be clear that three main concepts – sources of stress, stress and coping – are under scrutiny in this thesis. Indeed, it is these three concepts that have guided not only the organisation of this chapter but the direction of the investigation as a whole. Fundamentally, however, there is only one central phenomenon of interest – *stress* – and this explains why the bulk of this chapter concentrates on addressing the research questions that relate specifically to the experience of stress, i.e. Research Questions 2a, 2b, 2c and 4. Nonetheless, considerations of sources of stress and coping are important in understanding the concept of stress (indeed, they are essential components of the transactional models of stress) hence, although they are considered in less detail than the research questions relating to stress, the research questions relating to these two concepts are far from neglected.

6.2 SOURCES OF STRESS

In this section, findings which attempt to address the research questions concerned with sources of stress (stressors) are presented. Specifically, the research questions addressed are:

1a. What are the sources of stress among pre-registration students in the School?

1b. Are there discernible differences in sources of stress between various subgroups of the study population?

1c. How do the sources of stress identified in the study population compare with other populations?

In addressing Research Question 1a, the variables in the 'sources of stress' dependent variable set (see Section 4.7.2.2 for a reminder of the variable sets) have been exploited. In particular, Question 30 of part A of the questionnaire pack ('Q30') and aspects of the formal measure of sources of stress – the SNSI – have been used. Q30 asked respondents to apportion the source of the stresses they had been under to their programme of study, to other things going on in their lives or to varying combinations of the two. As far as the SNSI is concerned, individual SNSI items are of greater utility in addressing Research Question 1a than the five SNSI summary variables.

The same variable set was used to address Research Question 1b. In addressing this particular research question, descriptive analyses of Q30 across subgroups defined by the primary variable set were undertaken. Naturalistic comparisons of the five SNSI summary variables by the subgroups of the both the primary variable set and the standard demographic variable set were also undertaken.

Research Question 1c relates to benchmarking and will be considered in detail in the discussion (Chapter 7), although the findings pertaining to Research Questions 1a and 1b provide a necessary context in which this discussion can take place.

6.2.1 The programme of study or other things in the respondents' lives?

Because of low frequencies[24] in one or more of the original five Q30 categories, the Q30 categories were collapsed to three – 'all/mainly programme', 'roughly equal' and 'all/mainly other things'.

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[24] Recall that low frequency categories are those that contain fewer than five per cent of the total number of observations.

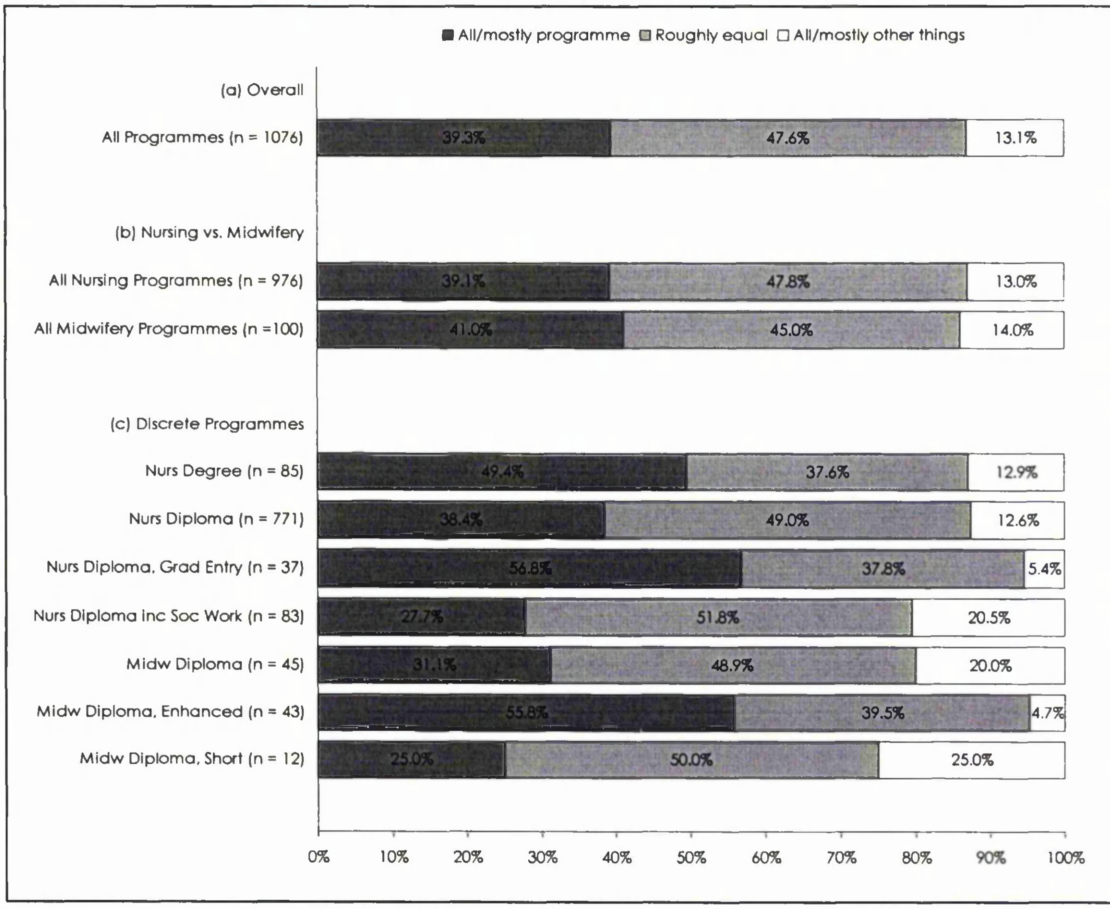


Figure 6.1 Question 30 responses: stacked bar charts for (a) all programmes, (b) nursing vs. midwifery and (c) the seven discrete programmes.

Figure 6.1 summarises the results of the Q30 responses. Overall, almost 40 per cent of respondents felt that their programme of study was entirely or mostly responsible for the stress levels they had experienced since starting their programme of study and almost 48 per cent felt it to be equally responsible along with other things going on in their lives. Combining these two response categories, over 85 per cent of respondents felt that their programme of study had contributed, in part, to their stress levels (Plot 6.1a). Figure 6.1 also includes breakdowns by the top level (nursing vs. midwifery) and second level (discrete programme type) subgroups. With regard to the top level comparison, there is little to distinguish the overall nursing and midwifery subgroups (Plot 6.1b). Indeed, the same basic pattern emerges for these two subgroups as for the sample as a whole. There are noteworthy differences when discrete programmes are considered, however (Plot 6.1c). For a number of programmes (the nursing degree, the graduate entry diploma and the enhanced midwifery diploma), the proportion of respondents apportioning blame entirely or mostly to their programme of study is around 50 to 55 per cent. In contrast, only around a quarter of respondents from the joint nursing/social work diploma and the shortened midwifery diploma apportion blame entirely or mostly to their programme of study. Nevertheless, irrespective of the programme undertaken, a majority of respondents (at least 75 per cent in each case) see their programme of study as entirely, mostly or equally responsible for the stress levels experienced.

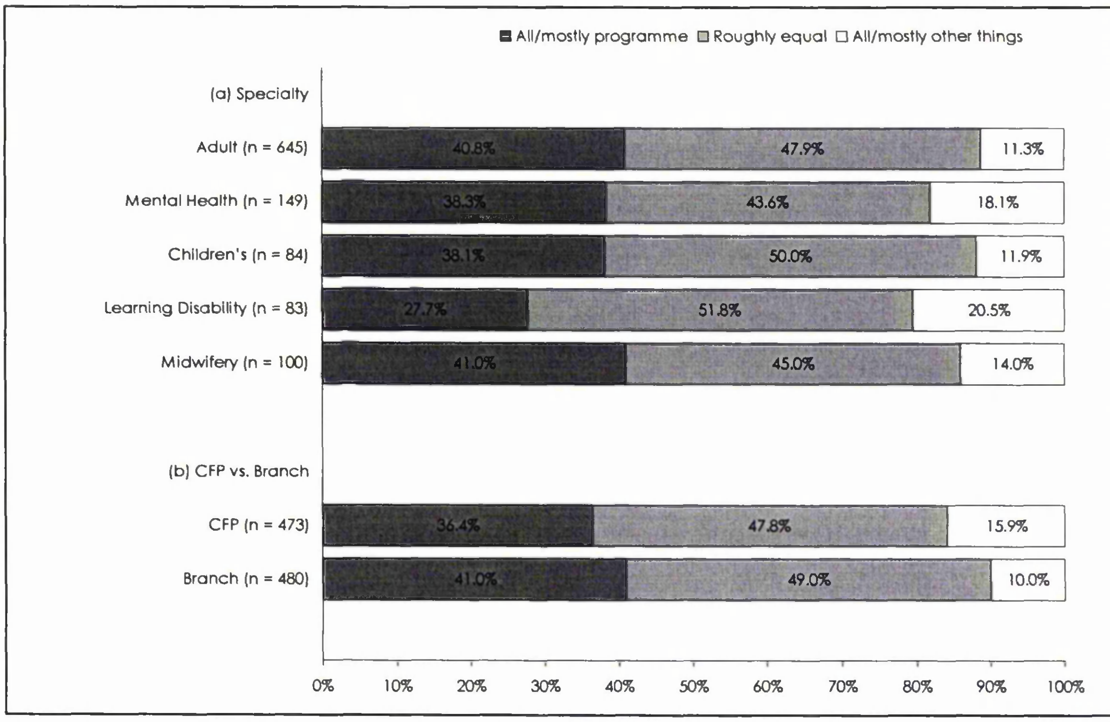


Figure 6.2 Question 30 responses: stacked bar charts for (a) specialty and (b) CFP vs. branch

Analyses of the responses to Q30 by specialty and by CFP vs. branch (Figure 6.2) are unremarkable in that a similar pattern to the overall pattern for the sample emerges, although the slight shift in attribution from 'other things' to 'programme of study' between CFP and branch respondents is noteworthy. For specialty, only learning disability deviates from the overall pattern. However, given that this subgroup is identical to the joint nursing/social work subgroup in Plot 6.1c, this anomaly has already been considered.

6.2.2 Specific sources of stress: individual SNSI items

Although the Q30 analyses give a clear indication of where the respondents apportion blame when faced with a simple choice (the programme or other things going on in their lives), this information is rather limited in itself. Far richer data regarding specific stressors can be obtained from responses to the full, 72-item SNSI.

Tables 6.1 and 6.2 identify the major stressors[25] for nursing and midwifery respondents, respectively. The major stressors for all nursing respondents ('examinations/assessments', 'fear of failing the course' and 'managing bursary') are the same as for the largest nursing subgroup (nursing diploma). This is relatively unsurprising as the nursing diploma subgroup is the largest of all the nursing subgroups and, as such, will obviously skew the results in its favour when all the nursing subgroups are combined.

Table 6.1 Major stressors: nursing programmes.

SNSI item	Valid *n*	Rating 4 or 5	
		No.	Proportion
All nursing programmes (*N* = 1005)			
Examinations/assessments	958	645	67.3%
Fear of failing the course	1003	577	57.5%
Managing bursary	989	560	56.6%
Nurs Degree (*N* = 86)			
Examinations/assessments	86	71	82.6%
Lack of free time	86	50	58.1%
Fear of failing the course	86	47	54.7%
Travelling time to placements	86	43	50.0%
Nurs Diploma (*N* = 793)			
Examinations/assessments	753	513	68.1%
Fear of failing the course	792	480	60.6%
Managing bursary	788	452	57.4%
Nurs Diploma, Grad Entry (*N* = 37)			
Managing bursary	36	25	69.4%
Nurs Diploma inc Soc Work (*N* = 89)			
Managing bursary	85	48	56.5%
Examinations/assessments	82	45	54.9%

[25] Defined, in Section 4.3.1, as the SNSI items that are seen as very or extremely stressful by at least 50 per cent of respondents.

Table 6.2 Major stressors: midwifery programmes.

SNSI item	Valid *n*	Rating 4 or 5 No.	Rating 4 or 5 Proportion
All midwifery programmes (*N* = 102)			
Examinations/assessments	101	77	76.2%
Managing bursary	94	59	62.8%
Death of a patient	85	51	60.0%
Amount of classwork material to be learned	102	61	59.8%
Fear of carrying out a clinical procedure incorrectly	101	59	58.4%
Lack of free time	102	58	55.9%
Fear of failing the course	102	57	55.6%
I do not have enough time for my family	102	55	53.9%
Performing certain clinical procedures	99	51	51.5%
Forgetting to carry out an important clinical procedure	96	48	50.0%
Midw Diploma (*N* = 47)			
Examinations/assessments	47	36	76.6%
Managing bursary	47	33	70.2%
Fear of failing the course	47	27	57.4%
Fear of carrying out a clinical procedure incorrectly	47	27	57.4%
Amount of classwork material to be learned	47	26	55.3%
Lack of free time	47	26	55.3%
Death of a patient	45	24	53.3%
Midw Diploma, enhanced (*N* = 43)			
Death of a patient	30	23	76.7%
Examinations/assessments	42	31	73.8%
Fear of carrying out a clinical procedure incorrectly	42	27	64.3%
Amount of classwork material to be learned	43	26	60.5%
I do not have enough time for my family	43	26	60.5%
Causing pain to a patient	43	26	60.5%
Performing certain clinical procedures	40	24	60.0%
Forgetting to carry out an important clinical procedure	37	22	59.5%
Settling into new clinical placements	43	25	58.1%
Lack of free time	43	24	55.8%
Managing bursary	43	22	55.8%
Conflict between work and home	43	22	55.8%
Fear of failing the course	43	23	53.5%
Worries regarding clinical competence	43	23	53.5%
Not knowing what a patient should be told regarding their treatment/condition	39	20	51.3%
Midw Diploma, short (*N* = 12)			
Examinations/assessments	12	10	83.3%
Amount of classwork material to be learned	12	9	75.0%
Having no idea of future career prospects	12	9	75.0%
Lack of free time	12	8	66.7%
I do not have enough time for my family	12	8	66.7%
Fear of failing the course	12	7	58.3%
Other personal problems	12	7	58.3%
Lack of timely feedback about performance	12	7	58.3%
I have no time for entertainment	12	7	58.3%
Performing certain clinical procedures	12	7	58.3%
Parking difficulties	9	5	55.6%
Managing bursary	4	2	50.0%

The nursing degree subgroup identifies two other major stressors: 'travelling time to placements' and 'lack of free time'. In addition, 'managing bursary' is not seen as a major stressor by this subgroup. The observation that 'examinations/assessments' is absent as a major stressor from the graduate entry subgroup is also noteworthy.

The most striking thing about the midwifery analysis (Table 6.2, p 172) is the sheer number of SNSI items identified as major stressors. The appearance of 'death of a patient' (with 60 per cent of all midwifery respondents rating this as a major stressor) is interesting.

Table 6.3 Major stressors: nursing specialties.

SNSI item	Valid *n*	Rating 4 or 5	
		No.	Proportion
Adult nursing (*N* = 657)			
Examinations/assessments	624	452	72.4%
Fear of failing the course	656	413	63.0%
Managing bursary	647	391	60.4%
Mental health nursing (*N* = 157)			
Examinations/assessments	153	78	51.0%
Children's nursing (*N* = 87)			
Examinations/assessments	84	56	66.7%
Fear of failing the course	87	47	54.0%
Fear of carrying out a clinical procedure incorrectly	80	41	51.3%
Learning disability nursing (*N* = 89)			
Managing bursary	85	48	56.5%
Examinations/assessments	82	45	54.9%

The analysis for nursing specialty (Table 6.3 above) produces no particularly striking observations, although mental health respondents are interesting in that only one SNSI item ('examinations/assessments') met the criteria to be a major stressor. The major stressors for adult nursing respondents ('examinations/assessments', 'fear of failing the course' and 'managing bursary') are the same as far all nursing respondents. Again, this is probably an artefact of the size of this subgroup in relation to the other nursing subgroups.

Three items are common to CFP and branch respondents in the analysis by CFP vs. branch (Table 6.4 overleaf). That these three items – 'examinations/assessments', 'fear of failing the course' and 'managing bursary' – are the same as the three main stressors identified by all nursing respondents (Table 6.1) is unremarkable as CFP vs. branch is merely another way of dividing all nursing respondents. The additional item in CFP ('being assessed in the School's clinical skills laboratories') and the additional item in branch ('lack of free time') are noteworthy.

Table 6.4 Major stressors: CFP vs. branch.

SNSI item	Valid *n*	Rating 4 or 5	
		No.	Proportion
CFP (*N* = 500)			
Examinations/assessments	453	269	59.4%
Being assessed in the School's clinical skills laboratories	441	240	54.4%
Fear of failing the course	498	258	51.8%
Managing bursary	491	251	51.1%
Branch (*N* = 482)			
Examinations/assessments	482	355	73.7%
Fear of failing the course	482	309	64.1%
Managing bursary	477	299	62.7%
Lack of free time	481	263	54.7%

6.2.3 SNSI summary variables

As outlined in Section 4.3.1, the original 22-item SNSI (the first 22 items of the 72-item SNSI used in this investigation) elicits a total SNSI score and four subscales: academic load, clinical concerns, personal problems and interface worries. Interpretation of these factors is difficult as no norms or published comparisons are available. Nevertheless, some useful insights can be gained by naturalistic comparisons of these five variables across various sample subgroups. In particular, the subgroups defined by the primary variable set and the standard demographic set are considered.

The reader will note that the sample, at *N* = 827, seems somewhat depleted when the SNSI variables are being compared. This is because the SNSI total score and the four subscale scores were not derived for respondents who were less than six months into their programmes, for the reasons outlined earlier in Section 5.2.3.

6.2.3.1 The primary variable set

Here, comparisons of the five SNSI variables by nursing vs. midwifery, discrete programmes, specialty and CFP vs. branch are considered. Figures 6.3 (below) and

6.4 (overleaf) shows 95 per cent confidence interval (CI) plots of the total SNSI score and four SNSI subscales respectively by the top level comparison, nursing vs. midwifery.

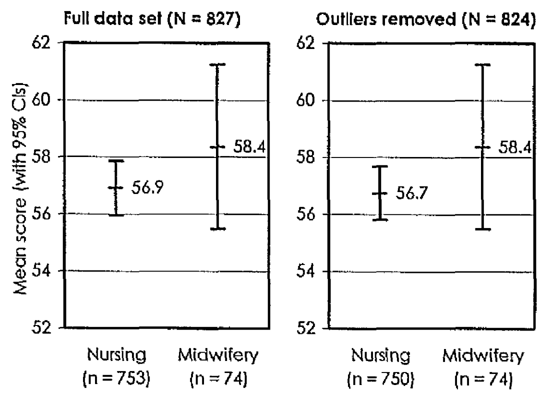


Figure 6.3 Nursing vs. midwifery: plots (with 95 per cent confidence intervals) for the total SNSI score.

As outlined in Chapter 4, CI plots give an indication of whether a statistically significant (at the five per cent level) difference exists between the groups being compared. In Figures 6.3 and 6.4, the confidence intervals for nursing and midwifery overlap in all nine plots suggesting that no statistically significant differences exist between nursing and midwifery respondents on any of the five SNSI variables, although the relatively small overlap between nursing and midwifery on academic load with identified outliers removed (Plot 6.4a) may be indicative of a difference. Table 6.5 summarises the results of statistical tests undertaken for the nine nursing vs. midwifery comparisons, results that are largely consistent with the picture given by the CI plots in Figures 6.3 and 6.4. Examining Table 6.5, the only significant difference, as expected, concerns academic load with identified outliers removed. With $p = 0.013$ and a small-to-medium effect size of around 0.3, there is some evidence that academic load is higher in midwifery respondents than in nursing respondents. It is worth mentioning, however, that it took the removal of outliers to obtain a statistically significant result.

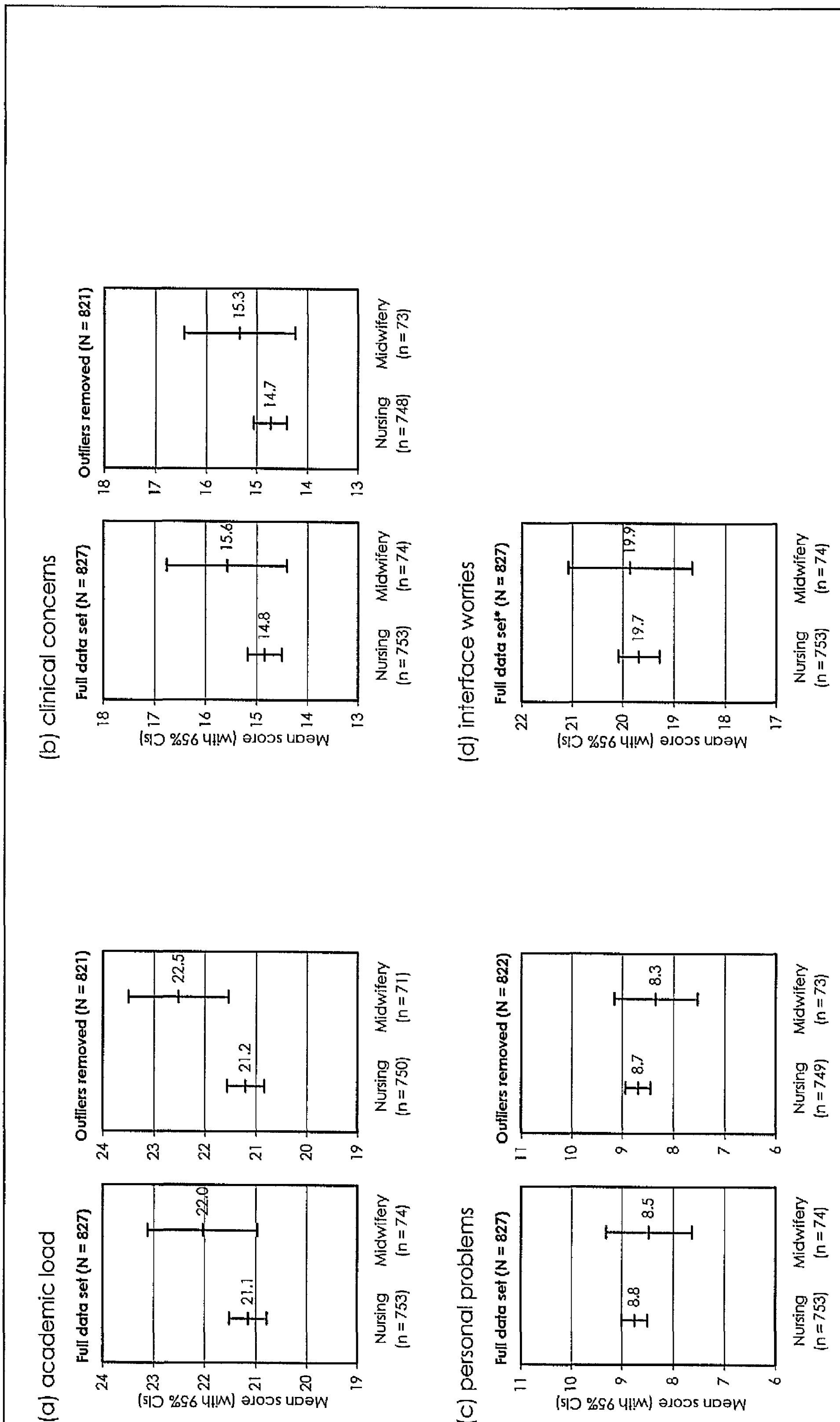


Figure 6.4 Nursing vs. midwifery: plots (with 95 per cent confidence intervals) for the four SNSI subscales.

Table 6.5 Nursing vs. midwifery: summary of the t-tests undertaken for the five SNSI variables.

SNSI variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Total SNSI score	**Full data set**	nursing	753		56.9	13.3	−0.903	0.367	−1.5	ns
		midwifery	74	827	58.4	12.5			(−4.6, 1.7)	
	Outliers removed	nursing	750		56.7	13.1	−1.026	0.305	−1.6	ns
		midwifery	74	824	58.4	12.5			(−4.8, 1.5)	
Academic load	**Full data set**	nursing	753		21.1	5.2	−1.429	0.153	−0.9	ns
		midwifery	74	827	22.0	4.7			(−2.1, 0.3)	
	Outliers removed§	nursing	750		21.2	5.1	−2.523	0.013	−1.3	0.262
		midwifery	71	821	22.5	4.1			(−2.4, −0.3)	
Clinical concerns	**Full data set**	nursing	753		14.8	4.7	−1.294	0.196	−0.7	ns
		midwifery	74	827	15.6	5.1			(−1.9, 0.4)	
	Outliers removed	nursing	748		14.7	4.5	−1.100	0.272	−0.6	ns
		midwifery	73	821	15.3	4.7			(−1.7, 0.5)	
Personal problems	**Full data set**	nursing	753		8.8	3.5	0.653	0.514	0.3	ns
		midwifery	74	827	8.5	3.6			(−0.6, 1.1)	
	Outliers removed	nursing	749		8.7	3.4	0.835	0.404	0.3	ns
		midwifery	73	822	8.3	3.5			(−0.5, 1.2)	
Interface worries	**Full data set***	nursing	753		19.7	5.6	−0.267	0.789	−0.2	ns
		midwifery	74	827	19.9	5.3			(−1.5, 1.1)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

With regard to the second level comparison, nursing programme type, the two CI plots in Figure 6.5 below suggest that statistically significant differences on the total SNSI score may exist between the graduate entry programme and the other three nursing programmes, especially when identified outliers are removed.

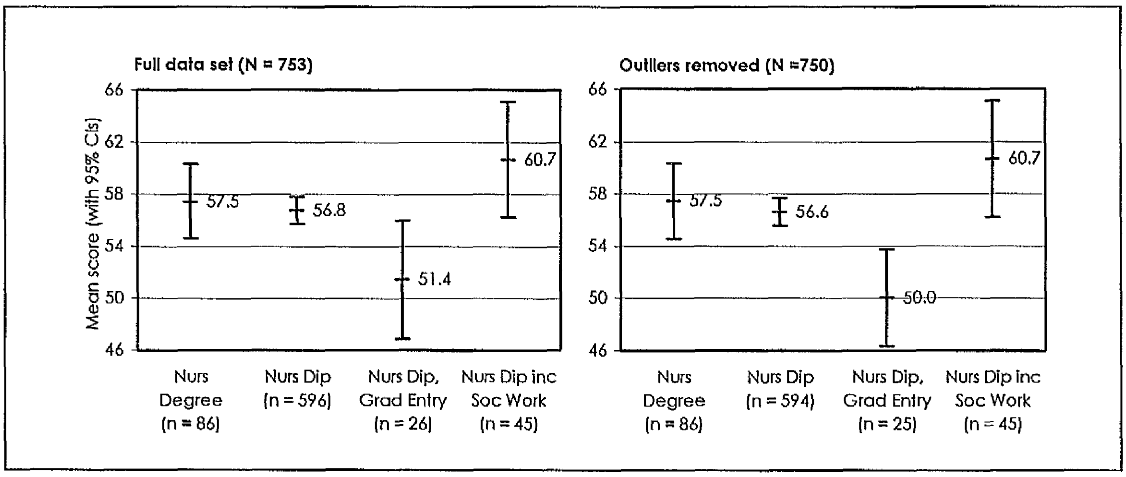


Figure 6.5 Nursing programmes: plots (with 95 per cent confidence intervals) for the total SNSI score.

Staying with the nursing programmes, the eight CI plots in Figure 6.6 (below and overleaf) suggest that statistically significant differences on academic load may exist between the graduate entry programme and the other three nursing programmes. A difference between the graduate entry programme and the nursing degree on clinical concerns may also be evident. In both cases, the differences are evident for both the full data set and the data set with identified outliers removed.

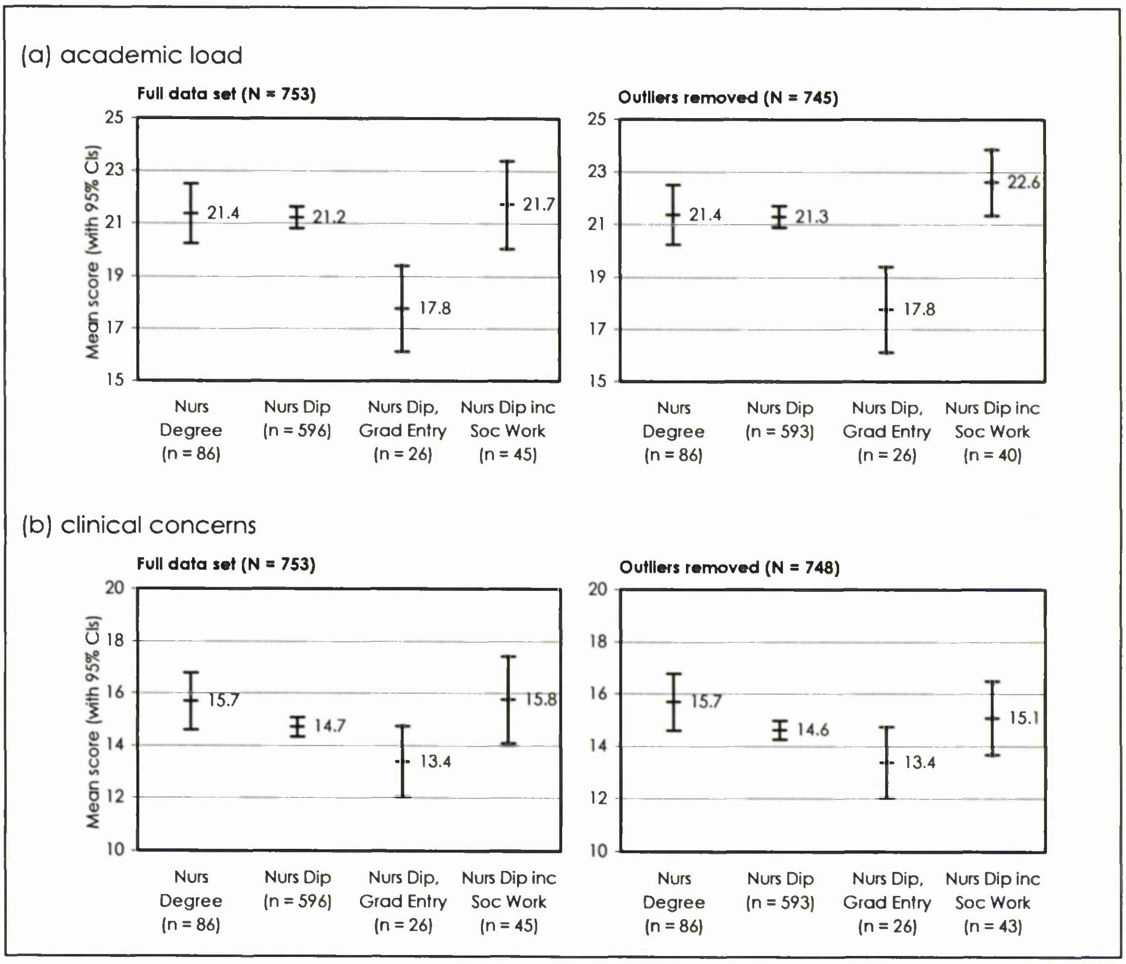


Figure 6.6 Nursing programmes: plots (with 95 per cent confidence intervals) for the four SNSI subscales (continued overleaf).

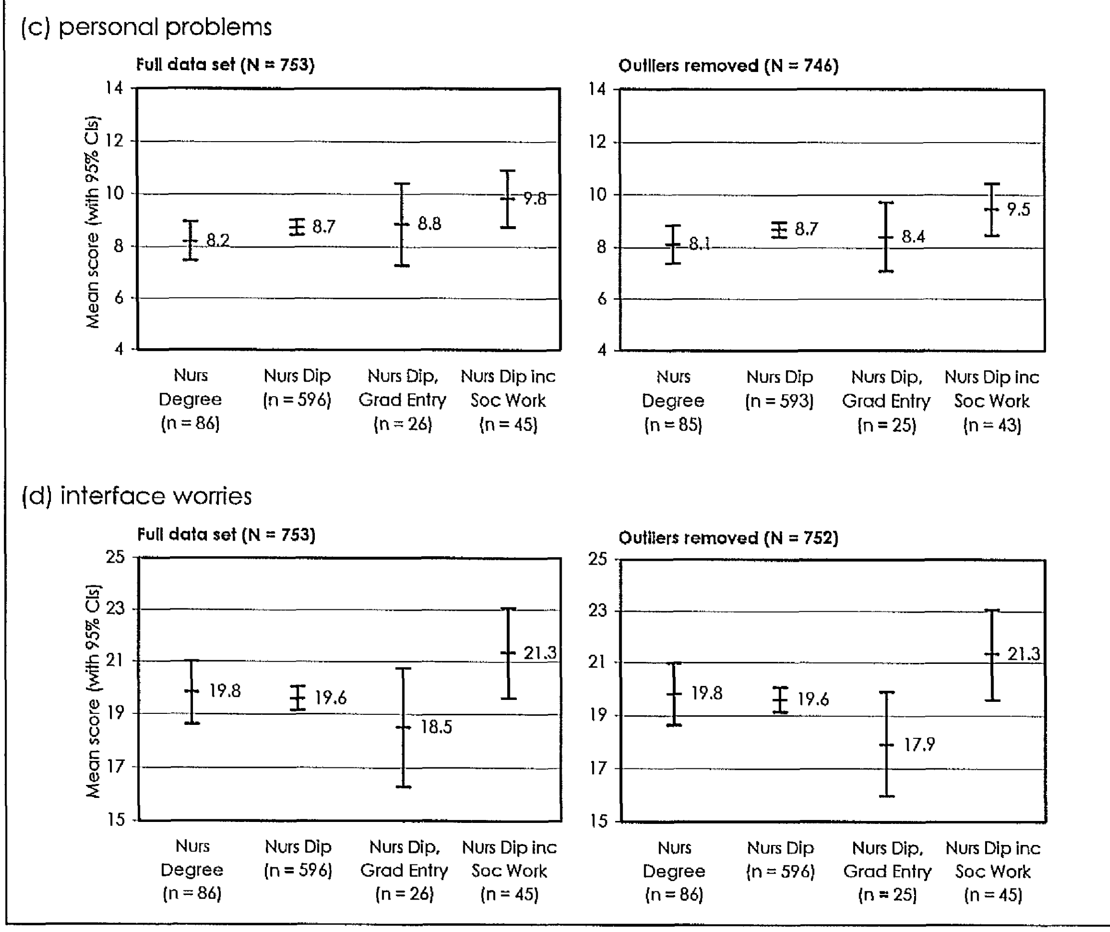


Figure 6.6 (cont.) Nursing programmes: plots (with 95 per cent confidence intervals) for the four SNSI subscales.

Table 6.6 overleaf summarises the results of statistical tests undertaken for the ten nursing programme type comparisons. The results are largely consistent with the picture given by the CI plots in Figures 6.5 and 6.6 in that the tests do, indeed, suggest significant differences on the total SNSI score and on academic load, both for the full data set (total SNSI, p = 0.042; academic load, p = 0.008) and with identified outliers removed (total SNSI, p = 0.012; academic load, p = 0.001). However, there was no statistical support for a difference on clinical concerns either with the full data set or when identified outliers were removed. *Post hoc* REGW-Q analyses pointed to the graduate entry programme as accounting for the difference in both the academic load tests, although in both cases the effect size was relatively small ($\eta^2 \approx 0.02$). For the total SNSI score, *post hoc* REGW-Q analyses did not identify any differences for the full data set. With identified outliers removed, the REGW-Q analyses identified two homogenous subsets: A = {degree, diploma, graduate entry} and B = {degree, diploma, diploma inc social work}. These groupings suggest that the identified effect may be down to a difference between the graduate entry programme and joint nursing/social work diploma. The effect size η^2, at between 0.01 and 0.02, was relatively small, however.

Table 6.6 Nursing programmes: summary of the analyses of variance undertaken for the five SNSI variables.

SNSI variable	Data set	Subgroups	*n*	*N*	Mean	SD	F value (df)	*p*	η^2	*Post hoc* grouping	
Total SNSI score	**Full data set**	degree	86		57.5	13.4	2.748	0.042	0.011	A	
		diploma	596		56.8	13.2	(3, 749)			A	
		dip, grad entry	26		51.4	11.3				A	
		dip inc soc work	45	753	60.7	14.7				A	
	Outliers removed	degree	86		57.5	13.4	3.662	0.012	0.015	A	B
		diploma	594		56.6	13.0	(3, 756)			A	B
		dip, grad entry	25		50.0	9.0				A	
		dip inc soc work	45	750	60.7	14.7					B
Academic load	**Full data set**	degree	86		21.4	5.2	3.996	0.008	0.016		B
		diploma	596		21.2	5.2	(3, 749)				B
		dip, grad entry	26		17.8	4.0				A	
		dip inc soc work	45	753	21.7	5.6					B
	Outliers removed	degree	86		21.4	5.2	5.206	0.001	0.021		B
		diploma	593		21.3	5.1	(3, 741)				B
		dip, grad entry	26		17.8	4.0				A	
		dip inc soc work	40	745	22.6	3.9					B
Clinical concerns	**Full data set**	degree	86		15.7	5.1	2.517	0.057	ns		
		diploma	596		14.7	4.6	(3, 749)				
		dip, grad entry	26		13.4	3.4					
		dip inc soc work	45	753	15.8	5.5					
	Outliers removed	degree	86		15.7	5.1	2.247	0.082	ns		
		diploma	593		14.6	1.5	(3,744)				
		dip, grad entry	26		13.4	3.4					
		dip inc soc work	43	748	15.1	4.6					
Personal problems	**Full data set**	degree	86		8.2	3.5	2.152	0.092	ns		
		diploma	596		8.7	3.5	(3, 749)				
		dip, grad entry	26		8.8	3.9					
		dip inc soc work	45	753	9.8	3.6					
	Outliers removed	degree	85		8.1	3.4	1.662	0.174	ns		
		diploma	593		8.7	3.4	(3, 742)				
		dip, grad entry	25		8.4	3.2					
		dip inc soc work	43	746	9.5	3.2					
Interface worries	**Full data set**	degree	86		19.8	5.5	1.771	0.151	ns		
		diploma	596		19.6	5.6	(3, 749)				
		dip, grad entry	26		18.5	5.5					
		dip inc soc work	45	753	21.3	5.8					
	Outliers removed	degree	86		19.8	5.5	2.229	0.084	ns		
		diploma	596		19.6	5.6	(3, 748)				
		dip, grad entry	25		17.9	4.7					
		dip inc soc work	45	752	21.3	5.8					

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §.

Graduate entry programme respondents appear to experience a lower academic load than respondents on the other nursing programmes and these same respondents appear to have total SNSI scores that are lower than those of the joint nursing/social work diploma respondents.

With regard to the midwifery programmes, the CI plots in Figures 6.7 (below) and 6.8 (overleaf) suggest that there are no differences between the two midwifery programmes[26] on any of the SNSI summary variables.

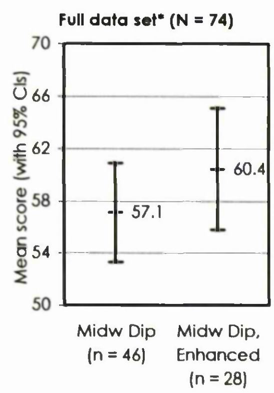


Figure 6.7 Midwifery programmes: plot (with 95 per cent confidence intervals) for the total SNSI score.

Table 6.7 (p 183) summarises the results of statistical tests undertaken for the nine comparisons by midwifery programme type. These results are largely consistent with the picture given by the CI plots in Figures 6.7 and 6.8 in that no differences between the two midwifery programmes are evident for eight of the nine tests undertaken.

[26] For the SNSI variables, only two of the three midwifery programmes could be compared as respondents on the shortened midwifery programme did not meet the prerequisite for eliciting valid SNSI summary variables of being on the programme for more than six months.

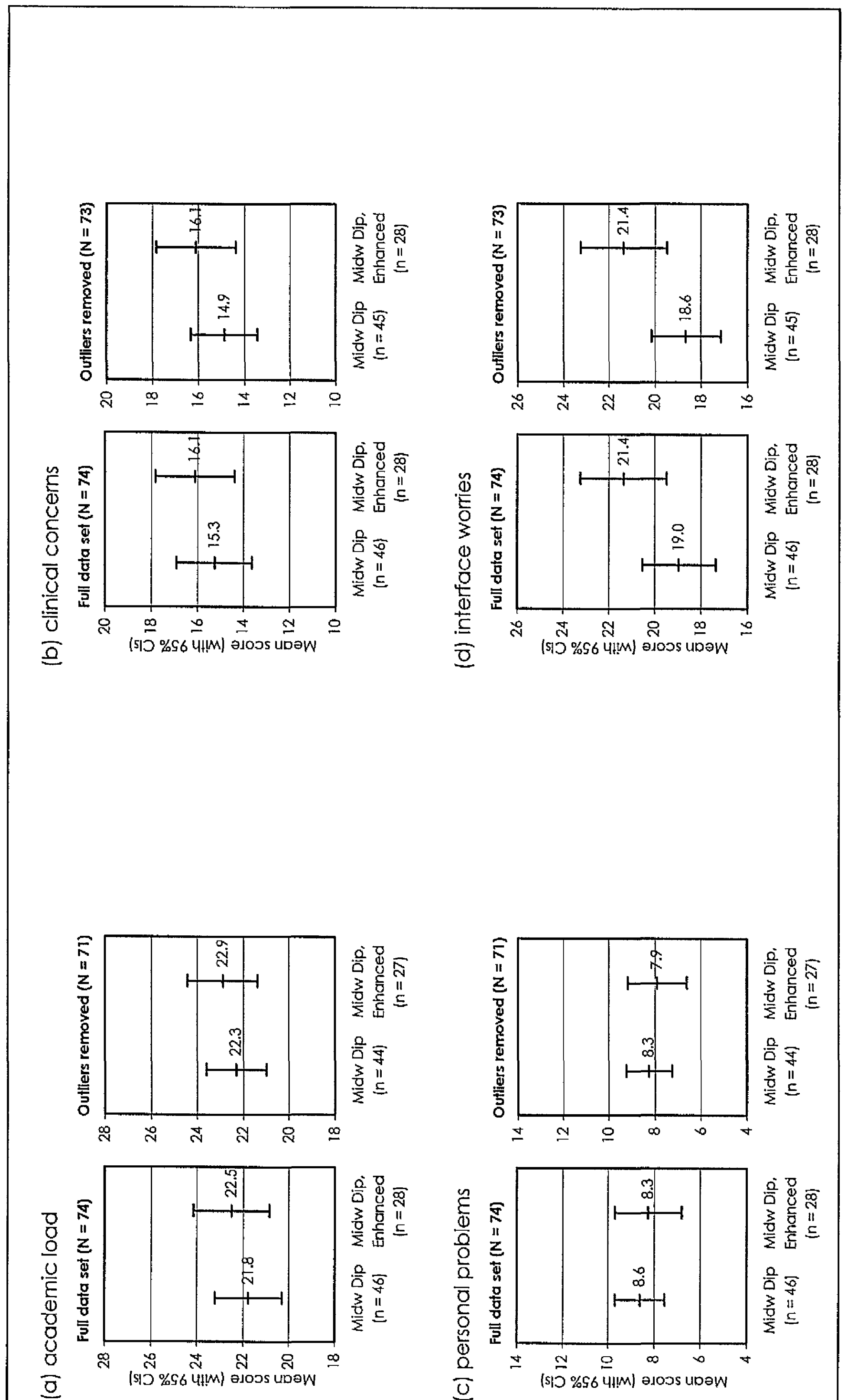


Figure 6.8 Midwifery programmes: plots (with 95 per cent confidence intervals) for the four SNSI subscales.

Table 6.7 Midwifery programmes: summary of t-tests undertaken for the five SNSI variables.

SNSI variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Total SNSI scores	**Full data set***	diploma	46		57.1	12.8	−1.108	0.272	−3.3	ns
		dip, enhanced	28	74	60.4	11.9			(−9.3, 2.7)	
Academic load	**Full data set**	diploma	46		21.8	4.9	−0.658	0.513	−0.7	ns
		dip, enhanced	28	74	22.5	4.3			(−3.0, 1.5)	
	Outliers removed	diploma	44		22.3	4.3	−0.588	0.559	−0.6	ns
		dip, enhanced	27	71	22.9	3.8			(−2.6, 1.4)	
Clinical concerns	**Full data set**	diploma	46		15.3	5.5	−0.691	0.492	−0.8	ns
		dip, enhanced	28	74	16.1	4.4			(−3.3, 1.8)	
	Outliers removed	diploma	45		14.9	4.8	−1.100	0.275	−1.2	ns
		dip, enhanced	28	73	16.1	4.4			(−3.5, 1.0)	
Personal problems	**Full data set**	diploma	46		8.6	3.6	0.409	0.684	0.4	ns
		dip, enhanced	28	74	8.3	3.7			(−1.4, 2.1)	
	Outliers removed	diploma	44		8.3	3.3	0.452	0.653	0.4	ns
		dip, enhanced	27	71	7.9	3.3			(−1.2, 2.0)	
Interface worries	**Full data set**	diploma	46		19.0	5.4	−1.938	0.057	−2.4	ns
		dip, enhanced	28	74	21.4	4.8			(−4.9, 0.1)	
	Outliers removed	diploma	45		18.6	5.0	−2.289	0.025	−2.7	0.551
		dip, enhanced	28	73	21.4	4.8			(−5.1, −0.3)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

There is, however, an anomaly with the variable interface worries in that a significant difference ($p = 0.025$) between the two midwifery programmes is evident when the sole identified outlier is removed. With a medium effect size of around 0.6, this result is not easily disregarded and will be considered further in the discussion.

With regard to the third level comparisons (specialty and CFP vs. branch), 'specialty not decided' respondents are excluded from the specialty comparisons and Year 4 nursing degree respondents are excluded from the CFP vs. branch comparisons for the reasons outlined in Section 4.7.2.2.

CI plots for nursing specialty are provided in Figures 6.9 and 6.10; the CI plots for CFP vs. branch are provided later in Figures 6.11 and 6.12.

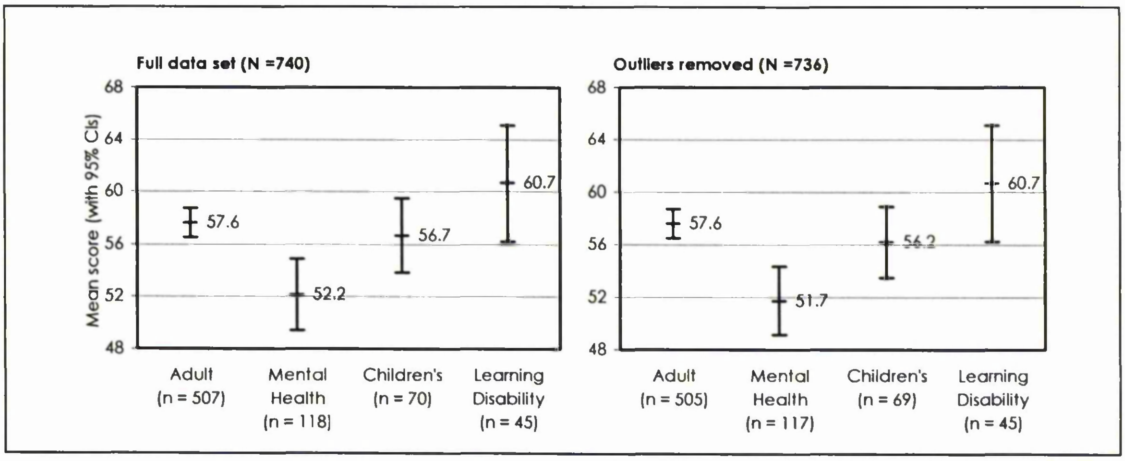


Figure 6.9 Nursing specialty: plots (with 95 per cent confidence intervals) for the total SNSI score.

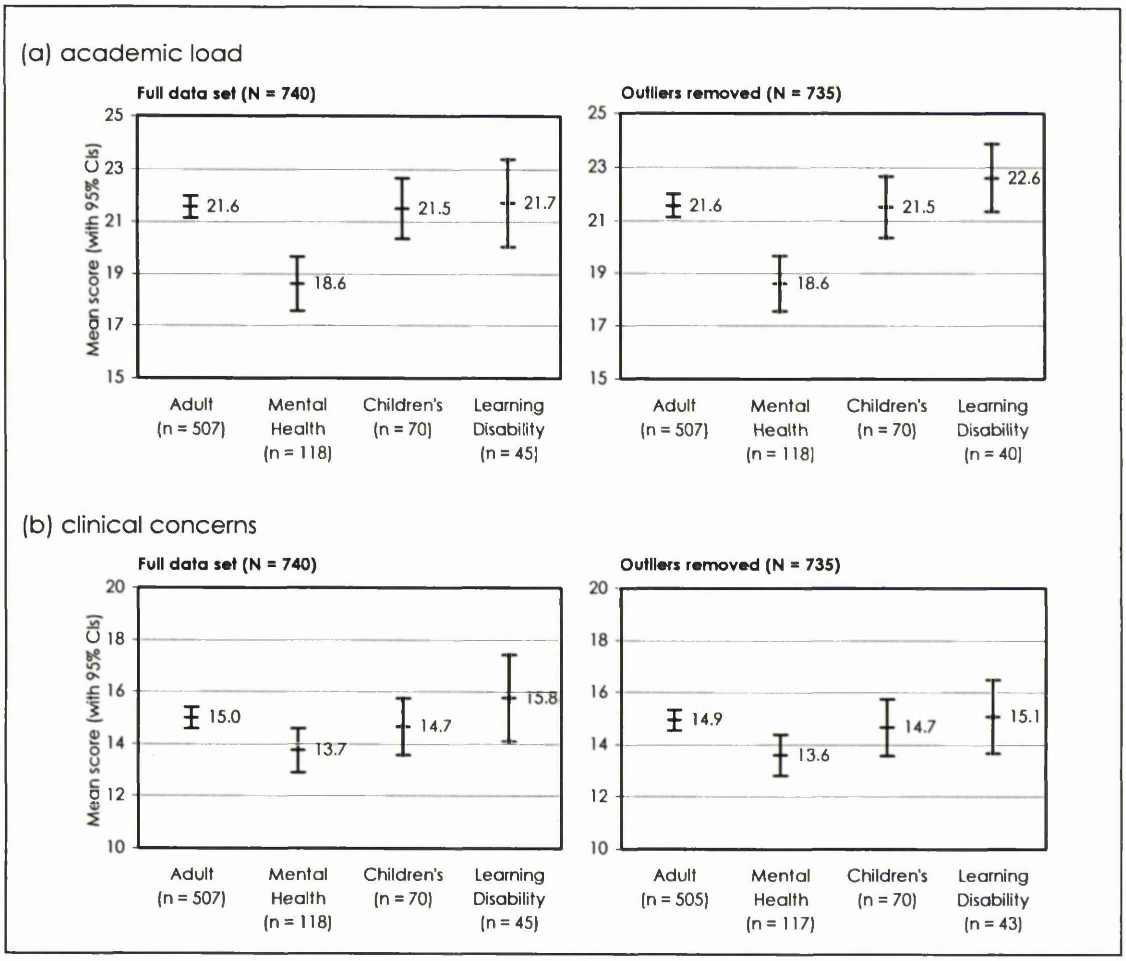
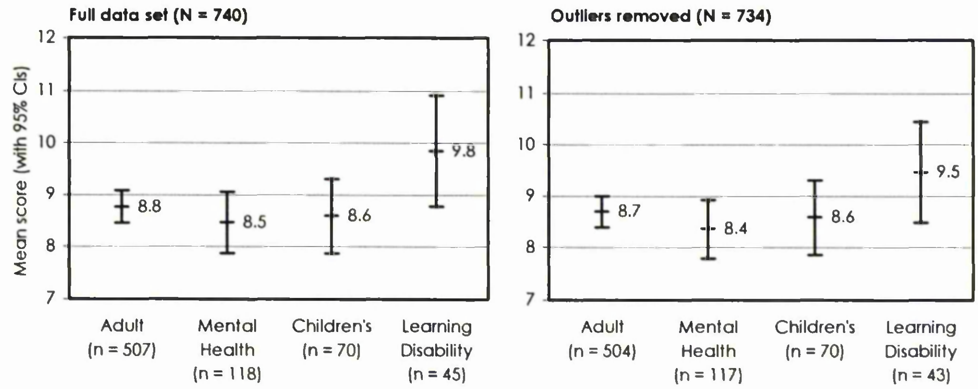


Figure 6.10 Nursing specialty: plots (with 95 per cent confidence intervals) for the four SNSI subscales (continued overleaf).

(c) personal problems



(d) interface worries

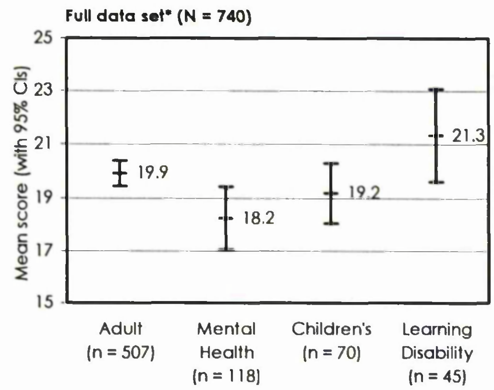


Figure 6.10 (cont.) Nursing specialty: plots (with 95 per cent confidence intervals) for the four SNSI subscales.

The CI plots in Figures 6.9 and 6.10 suggest that the mental health specialty differs from the other nursing specialties on total SNSI score and academic load (both for the full data set and when identified outliers are removed). There may also be a difference between adult and mental health on clinical concerns (again, both for the full data set and when identified outliers are removed) and a difference between mental health and adult and mental health and learning disability on interface worries. Table 6.8 overleaf summarises the results of statistical tests undertaken for the nine comparisons by nursing specialty.

Table 6.8 Nursing specialty: summary of the analyses of variance undertaken for the five SNSI variables.

SNSI variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping	
Total SNSI score	**Full data set**	adult	507		57.6	12.8	6.781	0.000	0.027		B
		mental health	118		52.2	14.9	(3, 736)			A	
		children's	70		56.7	11.8				A	B
		learning dis	45	740	60.7	14.7					B
	Outliers removed	adult	505		57.6	12.6	8.052	0.000	0.032		B
		mental health	117		51.7	14.2	(3, 732)			A	
		children's	69		56.2	11.2				A	B
		learning dis	45	736	60.7	14.7					B
Academic load	**Full data set§**	adult	507		21.6	4.9	11.233	0.000	0.044		B
		mental health	118		18.6	5.8	(3, 736)			A	
		children's	70		21.5	4.8					B
		learning dis	45	740	21.7	5.6					B
	Outliers removed§	adult	507		21.6	4.9	12.575	0.000	0.049		B
		mental health	118		18.6	5.8	(3, 731)			A	
		children's	70		21.5	4.8					B
		learning dis	40	735	22.6	3.9					B
Clinical concerns	**Full data set**	adult	507		15.0	4.6	2.981	0.031	0.012	A	
		mental health	118		13.7	4.6	(3, 736			A	
		children's	70		14.7	4.6				A	
		learning dis	45	740	15.8	5.5				A	
	Outliers removed	adult	505		14.9	4.5	2.977	0.031	0.012	A	
		mental health	117		13.6	4.3	(3, 731)			A	
		children's	70		14.7	4.6				A	
		learning dis	43	735	15.1	4.6				A	
Personal problems	**Full data set**	adult	507		8.8	3.6	1.811	0.144	ns		
		mental health	118		8.5	3.3	(3, 736)				
		children's	70		8.6	3.0					
		learning dis	45	740	9.8	3.6					
	Outliers removed	adult	504		8.7	3.5	1.157	0.325	ns		
		mental health	117		8.4	3.1	(3, 730)				
		children's	70		8.6	3.0					
		learning dis	43	734	9.5	3.2					
Interface worries	**Full data set*§**	adult	507		19.9	5.4	4.533	0.004	0.007	A	B
		mental health	118		18.2	6.5	(3, 736)			A	
		children's	70		19.2	4.7				A	B
		learning dis	45	740	21.3	5.8					B

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

The picture given by the CI plots in Figures 6.9 and 6.10 is largely verified by the statistical tests undertaken: statistically significant differences for total SNSI score, academic load, clinical concerns and interface worries were, indeed, obtained. For total SNSI score, a small-to-medium effect size ($\eta^2 \approx 0.03$) is evident for both of the tests undertaken, with *post hoc* REGW-Q analyses identifying, in both cases, two homogenous subsets: A = {mental health, children's} and B = {adult, children's, learning disability}. This suggests that there is a difference between mental health and adult and mental health and learning disability on total SNSI score but not between mental health and children's. For academic load, a small-to-medium effect size is evident for both of the tests undertaken (η^2 being, respectively, around 0.04 and 0.05), with *post hoc* REGW-Q analyses implying, in both cases, that the mental health specialty accounts for the effect. The validity of these results is suspect, however, given that both comparisons involved unequal sample sizes coupled with heterogeneous variances (a major violation of the assumptions underlying ANOVA). However, the Kruskal-Wallis test and the concomitant non-parametric *post hoc* analysis that were run as alternatives yielded identical results, both in terms of the *p*-value obtained and the comparison group – mental health – deemed responsible for the effect (see Table 6.9). It seems that respondents in the mental health specialty experience a lower total SNSI score than the adult and learning disability specialties and a lower academic load than respondents in the other three nursing specialties.

Table 6.9 Nursing specialty: summary of the Kruskal-Wallis tests undertaken for two of the SNSI variables.

SNSI variable	Data set	Subgroups	*n*	*N*	Mean rank	*H* value (df)	*p*	*Post hoc* grouping	
Academic load	**Full data set**	adult	507		388.38	28.805	0.000		B
		mental health	118		274.10	(3)		A	
		children's	70		384.45				B
		learning dis	45	740	400.14				B
Interface worries	**Full data set**	adult	507		380.97	13.850	0.003		B
		mental health	118		313.75	(3)		A	
		children's	70		350.98			A	B
		learning dis	45	740	431.76				B

For clinical concerns, although both of the ANOVAs undertaken produced statistically significant results with good *p*-values, the effect size is relatively small in both cases ($\eta^2 \approx 0.01$ in both cases). Moreover, regardless of whether outliers were included or excluded, *post hoc* REGW-Q analyses failed to identify any discrete specialties as being responsible for the effect. These findings have, as such, been disregarded. For interface worries the effect size is negligible for the single test undertaken, with the *post hoc* REGW-Q identifying two homogenous subsets: A = {adult, mental health, children's} and B = {adult, children's, learning disability}. These subsets imply that the statistically significant effect may well lie in a difference between the mental health and learning disability specialties. Again, the validity of this result is suspect, given that the test involved unequal sample sizes coupled with heterogeneous variances. The Kruskal-Wallis test that was run as an alternative (Table 6.9) yielded reasonably consistent results in terms of the *p*-value obtained (0.003 for the Kruskal-Wallis test against 0.004 for the ANOVA). The concomitant non-parametric *post hoc* analysis undertaken also pointed to a difference between mental health and learning disability respondents as accounting for the effect but, unlike the REGW-Q, this *post hoc* test also identified a difference between mental health and adult nursing. Mental health respondents may have fewer interface worries than adult or learning disability respondents.

With regard to CFP vs. branch (Figures 6.11 and 6.12), the confidence intervals overlap in all nine plots, implying that no significant differences between CFP and branch respondents on any of the SNSI summary variables will be evident. Table 6.10 (p 190) summarises the results of statistical tests undertaken for the nine CFP vs. branch comparisons. These results are consistent with the picture given by the CI plots in that none of the nine tests undertaken elicited a statistically significant result.

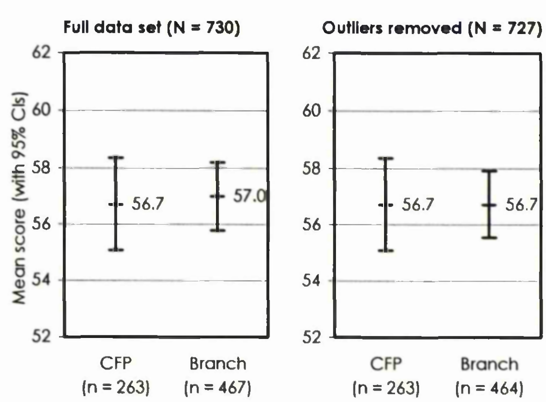


Figure 6.11 CFP vs. branch: plots (with 95 per cent confidence intervals) for the total SNSI score.

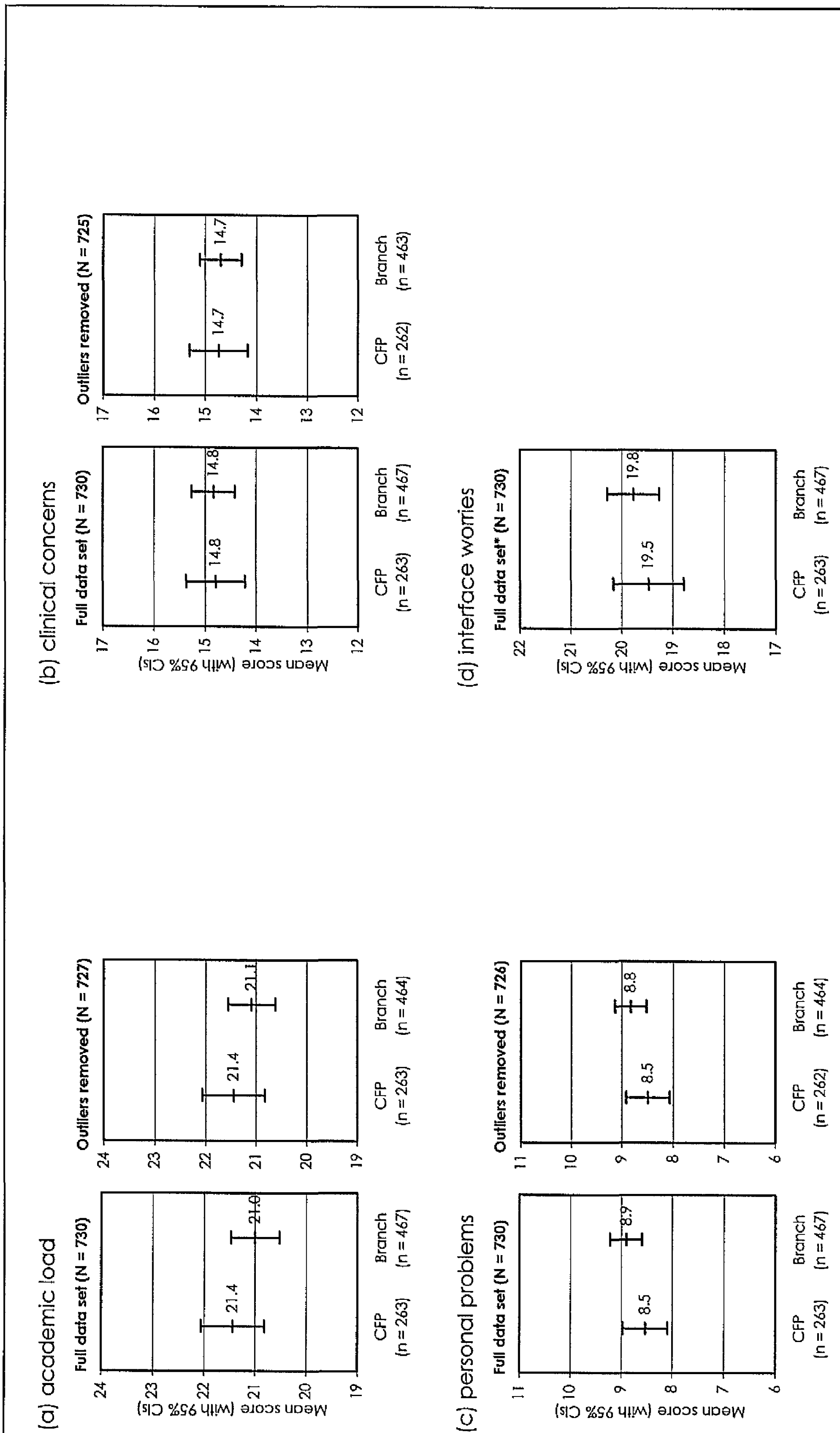


Figure 6.12 CFP vs. branch: plots (with 95 per cent confidence intervals) for the four SNSI subscales.

Table 6.10 CFP vs. branch: summary of the t-tests undertaken for the five SNSI variables.

SNSI variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Difference (95% CLs)	*d*
Total SNSI score	**Full data set**	CFP	263		56.7	13.4	−0.264	0.792	−0.3	ns
		branch	467	730	57.0	13.3			(−0.9, 0.2)	
	Outliers removed	CFP	263		56.7	13.4	0.003	0.998	0.0	ns
		branch	464	727	56.7	12.9			(−0.9, 0.1)	
Academic load	**Full data set**	CFP	263		21.4	5.1	1.103	0.270	0.4	ns
		branch	467	730	21.0	5.2			(−0.3, 1.2)	
	Outliers removed	CFP	263		21.4	5.1	0.887	0.375	0.4	ns
		branch	464	727	21.1	5.1			(−0.4, 1.1)	
Clinical concerns	**Full data set**	CFP	263		14.8	4.7	−0.112	0.911	0.0	ns
		branch	467	730	14.8	4.6			(−0.7, 0.7)	
	Outliers removed	CFP	262		14.7	4.7	0.129	0.897	0.0	ns
		branch	463	725	14.7	4.4			(−0.6, 0.7)	
Personal problems	**Full data set**	CFP	263		8.5	3.6	−1.389	0.165	−0.4	ns
		branch	467	730	8.9	3.4			(−0.9, 0.2)	
	Outliers removed	CFP	262		8.5	3.5	−1.316	0.189	−0.3	ns
		branch	464	726	8.8	3.3			(−0.9, 0.1)	
Interface worries	**Full data set***	CFP	263		19.5	5.6	−0.696	0.487	−0.3	ns
		branch	467	730	19.8	5.6			(−1.1, 0.5)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

6.2.3.2 The standard demographic variable set

In addressing Research Questions 1a and 1b, some further insights can be gleaned by making comparisons of the five SNSI variables using the variables of the standard demographic variable set. Specifically, comparisons by age on entry (in the three HE age groups), sex, ethnicity, social class and highest qualification on entry are considered.

Figures 6.13 and 6.14 show CI plots for, respectively, comparisons of the total SNSI score and the four SNSI subscale variables by age on entry. For personal problems and interface worries the CIs overlap in all four plots suggesting that no statistically significant differences exist between the three age groups on these two SNSI summary variables. The plots for total SNSI score (Figure 6.13), academic load (Plot 6.14a) and clinical concerns (Plot 6.14b), however, do imply statistically significant differences. With regard to SNSI total scores, it seems that the under 21 group differs from both the 21-25 and over 25 age groups (a difference that is more defined when outliers are removed). A similar picture exists for academic load. With regard to clinical concerns, it seems that there are differences between the older (over 25) and younger (under 21) age groups both for the full data set and the data set with identified outliers removed. Table 6.11 (p 193) summarises the results of statistical tests undertaken for the ten age on entry comparisons, results that are consistent with the picture given by the CI plots in Figures 6.13 and 6.14).

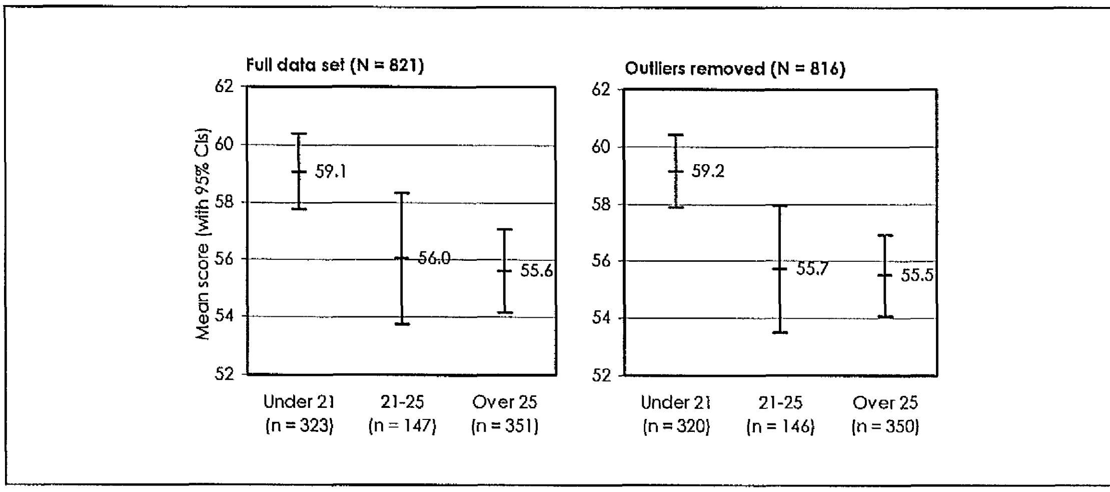


Figure 6.13 Age on entry: plots (with 95 per cent confidence intervals) for the total SNSI score.

For total SNSI scores, the effect size (at between 0.01 and 0.02) is small-to-medium for both of the tests undertaken. For academic load, the effect size (at between 0.03 and 0.04) is small-to-medium for both of the tests undertaken. *Post hoc* REGW-Q analyses imply, for both SNSI total score and academic load that the younger (under 21) entrants account for the effect. This is regardless of whether outliers were included or excluded. The validity of these results is suspect, however, given that all four comparisons involved unequal sample sizes coupled with heterogeneous variances. However, the Kruskal-Wallis tests and the concomitant non-parametric *post hoc* analyses that were run as alternatives (see Table 6.12 on p 193) yielded identical results for both the total SNSI score and academic load, both in terms of the *p*-value obtained and the subgroup deemed responsible for the effect – those under 21.

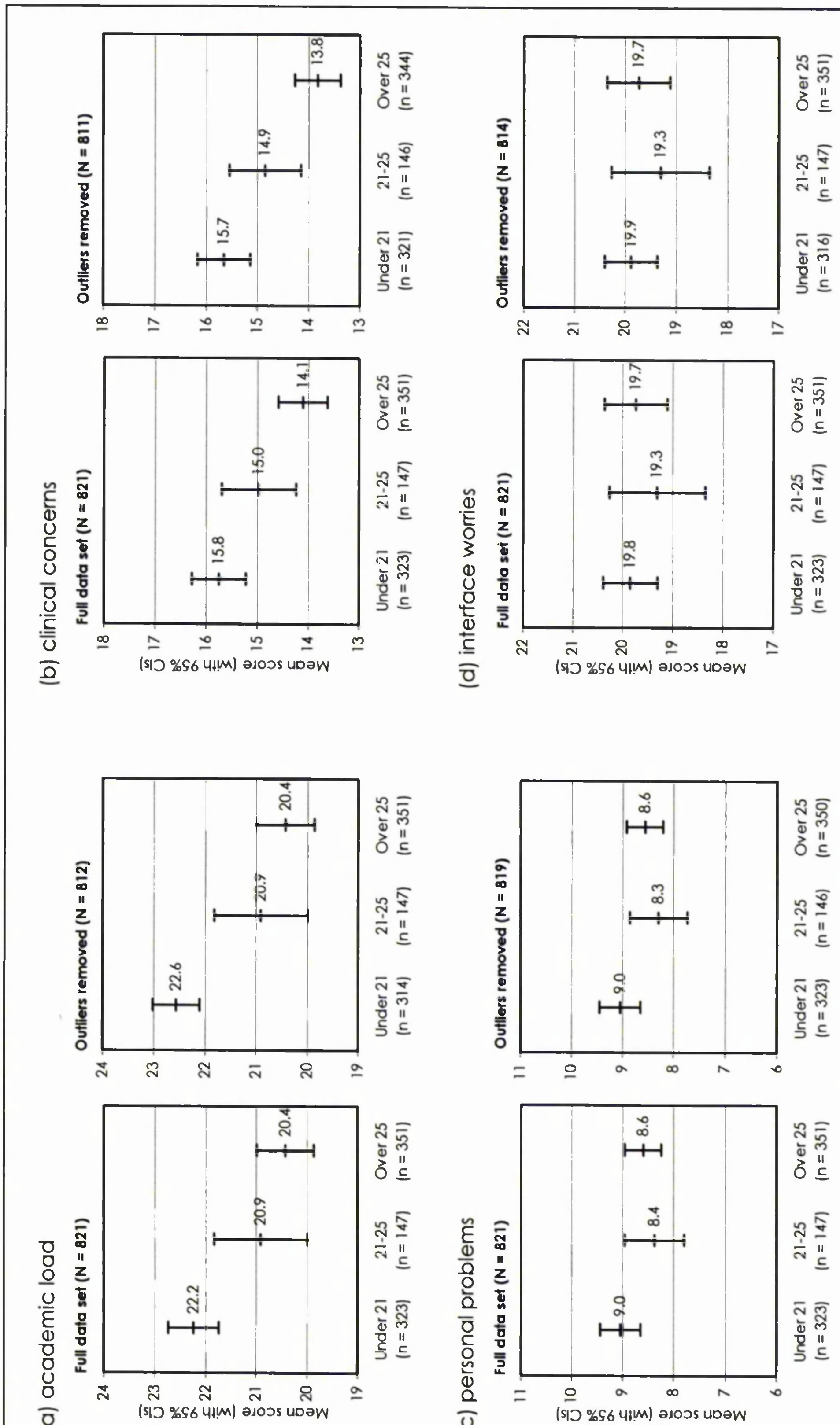


Figure 6.14 Age on entry: plots (with 95 per cent confidence intervals) for the four SNSI subscales.

Table 6.11 Age on entry: summary of the analyses of variance undertaken for the five SNSI variables.

SNSI variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping
Total SNSI score	**Full data set§**	under 21	323		59.1	12.0	6.345	0.002	0.015	A
		21-25	147		56.0	14.1				B
		over 25	351	821	55.6	13.8				B
	Outliers removed§	under 21	320		59.2	11.6	7.585	0.001	0.018	A
		21-25	146		55.7	13.6				B
		over 25	350	816	55.5	13.7				B
Academic load	**Full data set§**	under 21	323		22.2	4.5	10.919	0.000	0.026	A
		21-25	147		20.9	5.6	(2, 818)			B
		over 25	351	821	20.4	5.3				B
	Outliers removed§	under 21	314		22.6	4.1	15.959	0.000	0.038	A
		21-25	147		20.9	5.6	(2, 809)			B
		over 25	351	812	20.4	5.3				B
Clinical concerns	**Full data set**	under 21	323		15.8	4.8	10.480	0.000	0.025	A
		21-25	147		12.0	4.5	(2, 818)			A B
		over 25	351	821	14.1	4.6				B
	Outliers removed	under 21	321		15.7	4.7	14.313	0.000	0.034	A
		21-25	146		14.9	4.3	(2, 808)			A
		over 25	344	811	13.8	4.2				B
Personal problems	**Full data set**	under 21	323		9.0	3.6	2.307	0.100	ns	
		21-25	147		8.4	3.5	(2, 818)			
		over 25	351	821	8.6	3.4				
	Outliers removed	under 21	323		9.0	3.6	2.863	0.058	ns	
		21-25	146		8.3	3.4	(2, 816)			
		over 25	350	819	8.6	3.3				
Interface worries	**Full data set§**	under 21	323		19.8	4.9	0.482	0.618	ns	
		21-25	147		19.3	5.9	(2, 818)			
		over 25	351	821	19.7	5.9				
	Outliers removed§	under 21	316		19.9	4.6	0.563	0.570	ns	
		21-25	147		19.3	5.9	(2, 811)			
		over 25	351	814	19.7	5.9				

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §.

Table 6.12 Age on entry: summary of the Kruskal-Wallis tests undertaken for three of the SNSI variables.

SNSI variable	Data set	Subgroups	*n*	*N*	Mean rank	*H* value (df)	*p*	*Post hoc* grouping
Total SNSI score	**Full data set**	under 21	323		445.98	13.379	0.001	A
		21-25	147		388.39	(2)		B
		over 25	151	821	382.62			B
Academic load	**Full data set**	under 21	323		458.55	22.516	0.000	A
		21-25	147		396.78	(2)		B
		over 25	151	821	373.19			B
Interface worries	**Full data set**	under 21	323		417.11	0.883	0.643	ns
		21-25	147		395.11	(2)		
		over 25	151	821	412.04			

For clinical concerns, again the effect size is small-to-medium for both of the tests undertaken. For the full data set, the *post hoc* REGW-Q analysis identified two homogenous subsets: A = {under 21, 21-25} and B = {21-25, over 25}. Given that the 21-25 group is common to both subsets, the statistically significant effect may well lie in a difference between the younger and older age groups. With outliers removed, the *post hoc* REGW-Q analysis identified the older (over 25) age group as a discrete subset, implying that this subgroup was responsible for the effect.

As far as age on entry is concerned, it seems that those 21 and under on entry experience a higher total SNSI score and a higher academic load than those over 21 on entry and those over the age of 25 on entry experience fewer clinical concerns than those under 25.

The CI plots in Figures 6.15 (below) and 6.16 (overleaf) relate to respondent sex. These plots suggest that total SNSI scores, academic load and interface worries are lower for males than for females and that the same may be true for clinical concerns. The picture conveyed by the CI plots in Figures 6.15 and 6.16 is consistent with the results of the statistical tests undertaken on all five SNSI variables for sex, results which are summarised in Table 6.13 (p 196).

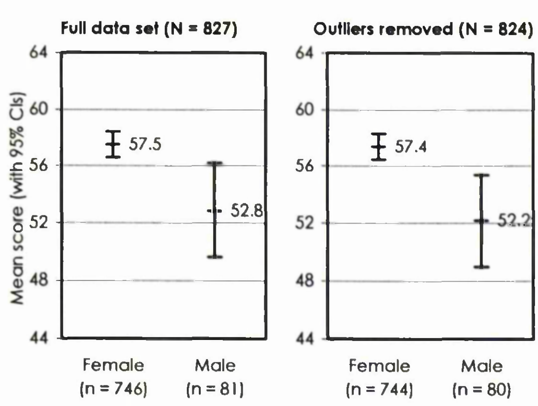


Figure 6.15 Sex: plots (with 95 per cent confidence intervals) for the total SNSI score.

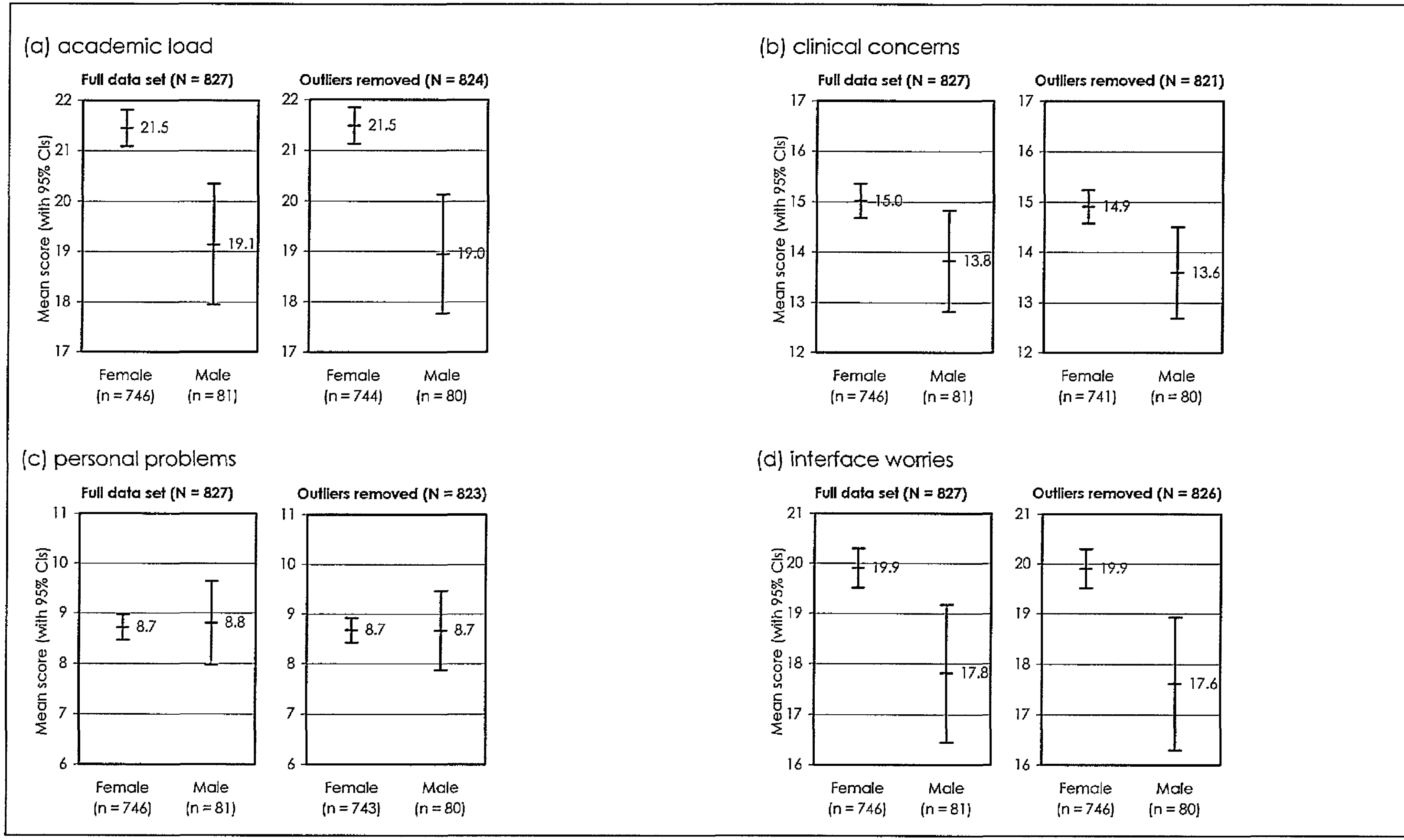


Figure 6.16 Sex: plots (with 95 per cent confidence intervals) for the four SNSI subscales.

Table 6.13 Sex: summary of the t-tests undertaken for the five SNSI variables.

SNSI variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Total SNSI score	**Full data set**	female	746		57.5	13.0	3.059	0.002	4.7	0.356
		male	81	827	52.8	15.3			(1.7, 7.8)	
	Outliers removed	female	744		57.4	12.8	3.431	0.001	5.2	0.404
		male	80	824	52.2	14.3			(2.2, 8.2)	
Academic load	**Full data set**	female	746		21.5	5.1	3.862	0.000	2.3	0.452
		male	81	827	19.1	5.4			(1.1, 3.5)	
	Outliers removed	female	744		21.5	5.0	4.295	0.000	3.5	0.505
		male	80	824	19.0	5.2			(1.4, 3.7)	
Clinical concerns	**Full data set**	female	746		15.0	4.7	2.163	0.031	1.2	0.253
		male	81	827	13.8	4.5			(0.1, 2.3)	
	Outliers removed	female	741		14.9	4.6	2.470	0.014	1.3	0.291
		male	80	821	13.6	4.1			(0.3, 2.4)	
Personal problems	**Full data set**	female	746		8.7	3.5	−0.205	0.838	−0.1	ns
		male	81	827	8.8	3.8			(−0.9, 0.7)	
	Outliers removed	female	743		8.7	3.4	0.026	0.979	0.0	ns
		male	80	823	8.7	3.6			(−0.8, 0.8)	
Interface worries	**Full data set**	female	746		19.9	5.5	3.234	0.001	2.1	0.378
		male	81	827	17.8	6.2			(0.8, 3.4)	
	Outliers removed	female	746		19.9	5.5	3.543	0.000	2.3	0.417
		male	80	826	17.6	5.9			(1.0, 3.6)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §.

Regarding sex, statistically significant differences were obtained for total SNSI score, academic load, clinical concerns and interface worries. Medium effect sizes are evident for total SNSI score (between 0.3 and 0.4 for the two tests undertaken), academic load (around 0.5 for each of the tests undertaken) and interface worries (around 0.4 for each test). Males seem to experience a lower total SNSI score, a lower academic load and fewer interface worries than females. For clinical concerns, the effect size (at around 0.3 for both tests) is less impressive but still notable: males also appear to have fewer clinical concerns than females.

Given that several of the non-white ethnicity categories contained low frequencies, the original four non-white categories were collapsed to a single category. Ethnicity is, as such, considered only as a simple white/non-white dichotomy from this point on. The CI plots in Figures 6.17 (overleaf) and 6.18 (p 198) relate to ethnicity. These plots suggest there may be a difference between white and non-white respondents on academic load (especially when outliers are removed) but that no differences seem to exist on the SNSI total score or on the other three SNSI subscales. The picture conveyed by the CI plots in Figures 6.17 and 6.18 is consistent with the results of the statistical tests undertaken, results which are summarised in Table 6.14 below.

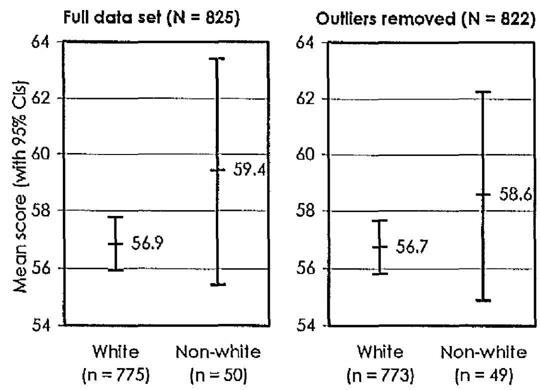


Figure 6.17 Ethnicity: plots (with 95 per cent confidence intervals) for the total SNSI score.

Table 6.14 Ethnicity: summary of the t-tests undertaken for the five SNSI variables.

SNSI variable	Data set	Subgroups	n	N	Mean	SD	t value	p	Diff-means (95% CLs)	d
Total SNSI score	**Full data set**	white	775		56.9	13.2	−1.325	0.186	−2.6	ns
		non-white	50	825	59.4	14.0			(−6.4, 1.2)	
	Outliers removed	white	773		56.7	13.1	−0.949	0.343	−1.8	ns
		non-white	49	822	58.6	12.8			(−5.6, 2.0)	
Academic load	**Full data set**	white	775		21.1	5.2	−1.700	0.089	−1.3	ns
		non-white	50	825	22.4	4.9			(−2.7, 0.2)	
	Outliers removed§	white	773		21.2	5.1	−2.627	0.011	−1.5	0.301
		non-white	47	820	22.7	3.8			(−2.7, −0.4)	
Clinical concerns	**Full data set**	white	775		14.9	4.7	−1.143	0.253	−0.8	ns
		non-white	50	825	15.6	5.1			(−2.1, 0.6)	
	Outliers removed	white	770		14.8	4.5	−1.340	0.181	−0.9	ns
		non-white	50	820	15.6	5.1			(−2.2, 0.4)	
Personal problems	**Full data set**	white	775		8.7	3.5	−1.944	0.520	−1.0	ns
		non-white	50	825	9.7	3.8			(−2.0, 0.0)	
	Outliers removed	white	772		8.6	3.4	−1.639	0.102	−0.8	ns
		non-white	49	821	9.5	3.6			(−1.8, 0.2)	
Interface worries	**Full data set***	white	775		19.7	5.5	−0.131	0.895	−0.1	ns
		non-white	50	825	19.8	6.2			(−1.7, 1.5)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

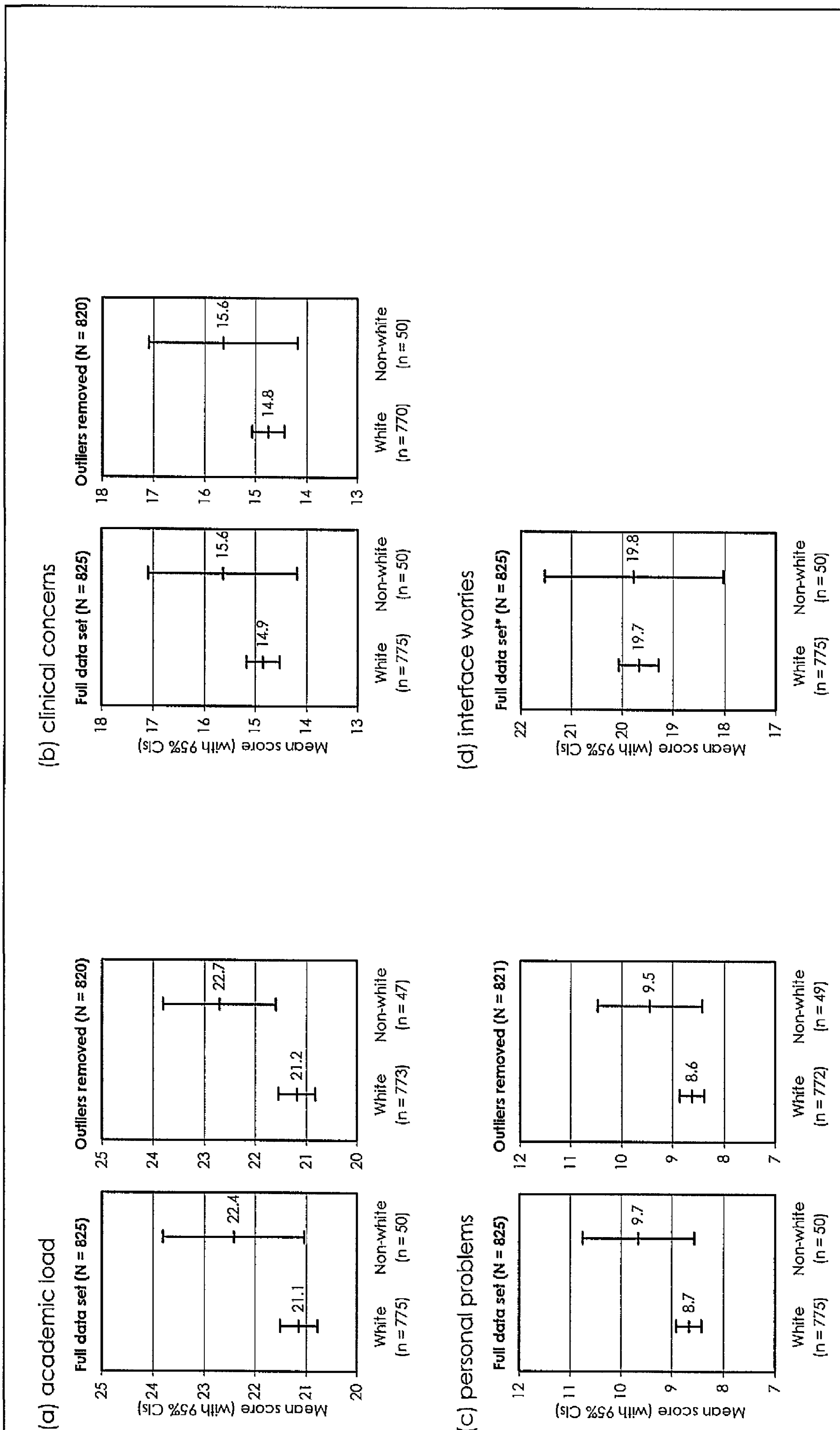


Figure 6.18 Ethnicity: plots (with 95 per cent confidence intervals) for the four SNSI subscales.

For ethnicity, the only significant difference evident concerns academic load with identified outliers removed, as anticipated. With a *p*-value of 0.011 and a small-to-medium effect size of around 0.3, this result is noteworthy. There is some evidence that academic load is higher in non-white than in white respondents. However, it is worth mentioning that it took the removal of outliers to obtain a statistically significant result here.

As with ethnicity, several of the original categories of social class contained low frequencies. As such, the five original social class categories were collapsed to three (classes I/II; class III; classes IV/V). The CI plots relating to social class (Figures 6.19 and 6.20) suggest that social class has no bearing on any of the five SNSI variables, an expectation reinforced by the statistical tests undertaken and summarised in Table 6.15 (p 201).

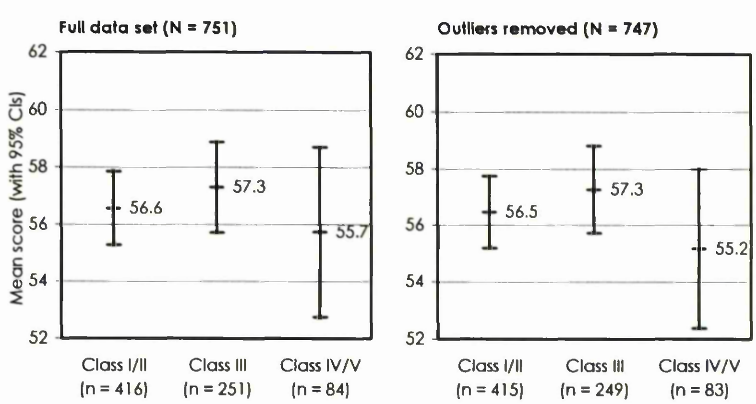


Figure 6.19 Social class: plots (with 95 per cent confidence intervals) for the total SNSI score.

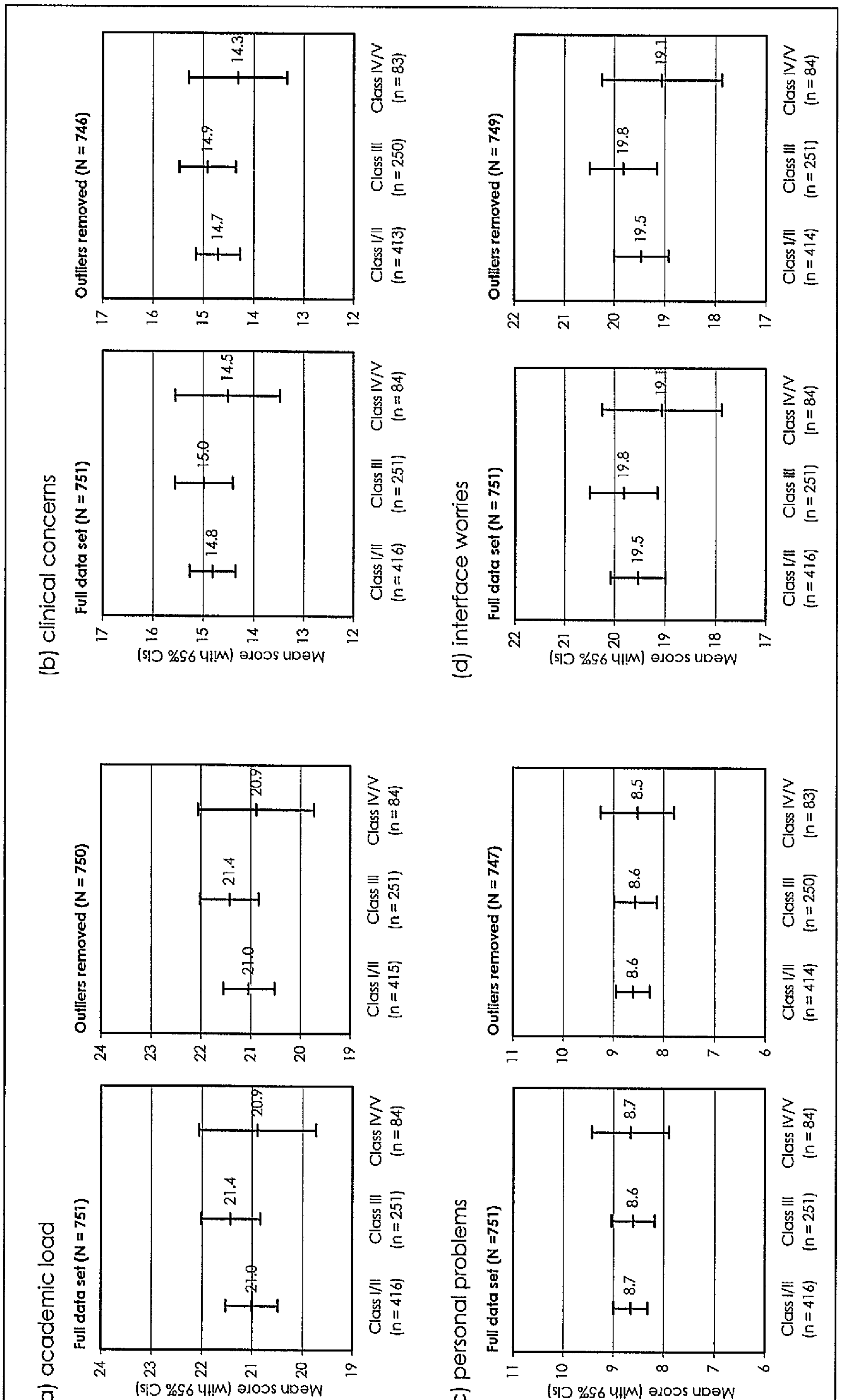


Figure 6.20 Social class: plots (with 95 per cent confidence intervals) for the four SNSI subscales.

Table 6.15 Social class: summary of the analyses of variance undertaken for the five SNSI variables.

SNSI variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2
Academic load	**Full data set**	class I/II	416		56.6	13.4	0.504	0.605	ns
		class III	251		57.3	12.8	(2, 748)		
		class IV/V	84	751	55.7	13.7			
	Outliers removed	class I/II	415		56.5	13.3	0.839	0.433	ns
		class III	249		57.3	12.4	(2, 744)		
		class IV/V	83	747	55.2	12.8			
Academic load	**Full data set**	class I/II	416		21.0	5.4	0.623	0.537	ns
		class III	251		21.4	4.7	(2, 748)		
		class IV/V	84	751	20.9	5.3			
	Outliers removed	class I/II	415		21.0	5.3	0.564	0.569	ns
		class III	251		21.4	4.7	(2, 747)		
		class IV/V	84	750	20.9	5.3			
Clinical concerns	**Full data set**	class I/II	416		14.8	4.7	0.335	0.716	ns
		class III	251		15.0	4.6	(2, 748)		
		class IV/V	84	751	14.5	4.8			
	Outliers removed	class I/II	413		14.7	4.6	0.577	0.562	ns
		class III	250		14.9	4.5	(2, 743)		
		class IV/V	83	746	14.3	4.5			
Personal problems	**Full data set**	class I/II	416		8.7	3.5	0.024	0.977	ns
		class III	251		8.6	3.4	(2, 748)		
		class IV/V	84	751	8.7	3.5			
	Outliers removed	class I/II	414		8.6	3.4	0.032	0.968	ns
		class III	250		8.6	3.4	(2, 744)		
		class I/II	83	747	8.5	3.3			
Interface worries	**Full data set**	class I/II	416		19.5	5.7	0.618	0.539	ns
		class III	251		19.8	5.4	(2, 748)		
		class IV/V	84	751	19.1	5.5			
	Outliers removed	class I/II	414		19.5	5.6	0.683	0.505	ns
		class III	251		19.8	5.4	(2, 746)		
		class IV/V	84	749	19.1	5.5			

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §.

Again, because of low frequencies in some of the original categories, the six original highest qualification on entry categories were collapsed to four (certificate and diploma were collapsed into a single category as were first degree and postgraduate degree). The CI plots in Figures 6.21 and 6.22 (pp 202-3) relate to highest qualification on entry. These plots suggest that highest qualification on entry may have an effect on total SNSI score and academic load but not on the other three SNSI subscales. For total SNSI score and for academic load, the plots suggest (both for the full data set and the data set with identified outliers removed in each case) that the degree group differs from the intermediate and advanced group but not necessarily from the certificate/diploma group.

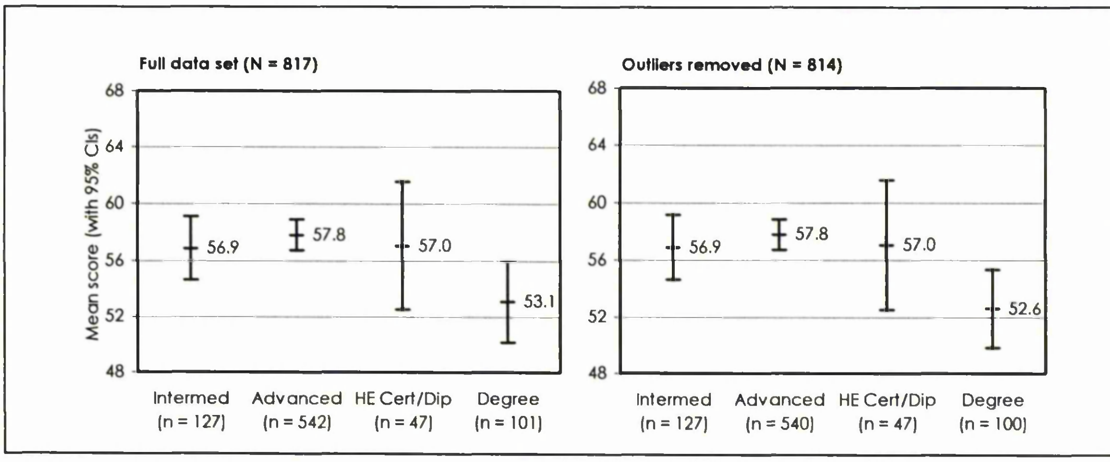


Figure 6.21 Highest qualification on entry: plots (with 95 per cent confidence intervals) for the total SNSI score.

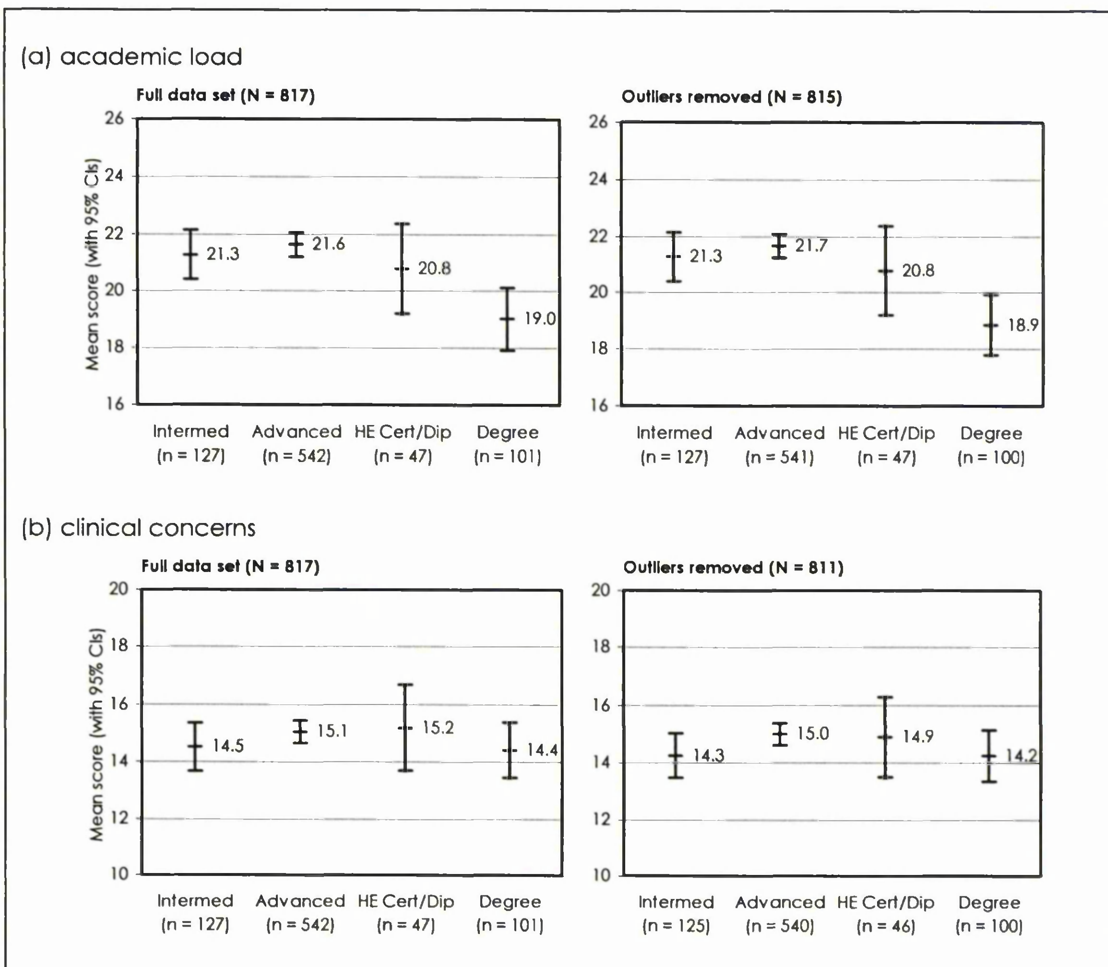


Figure 6.22 Highest qualification on entry: plots (with 95 per cent confidence intervals) for the four SNSI subscales by (continued overleaf).

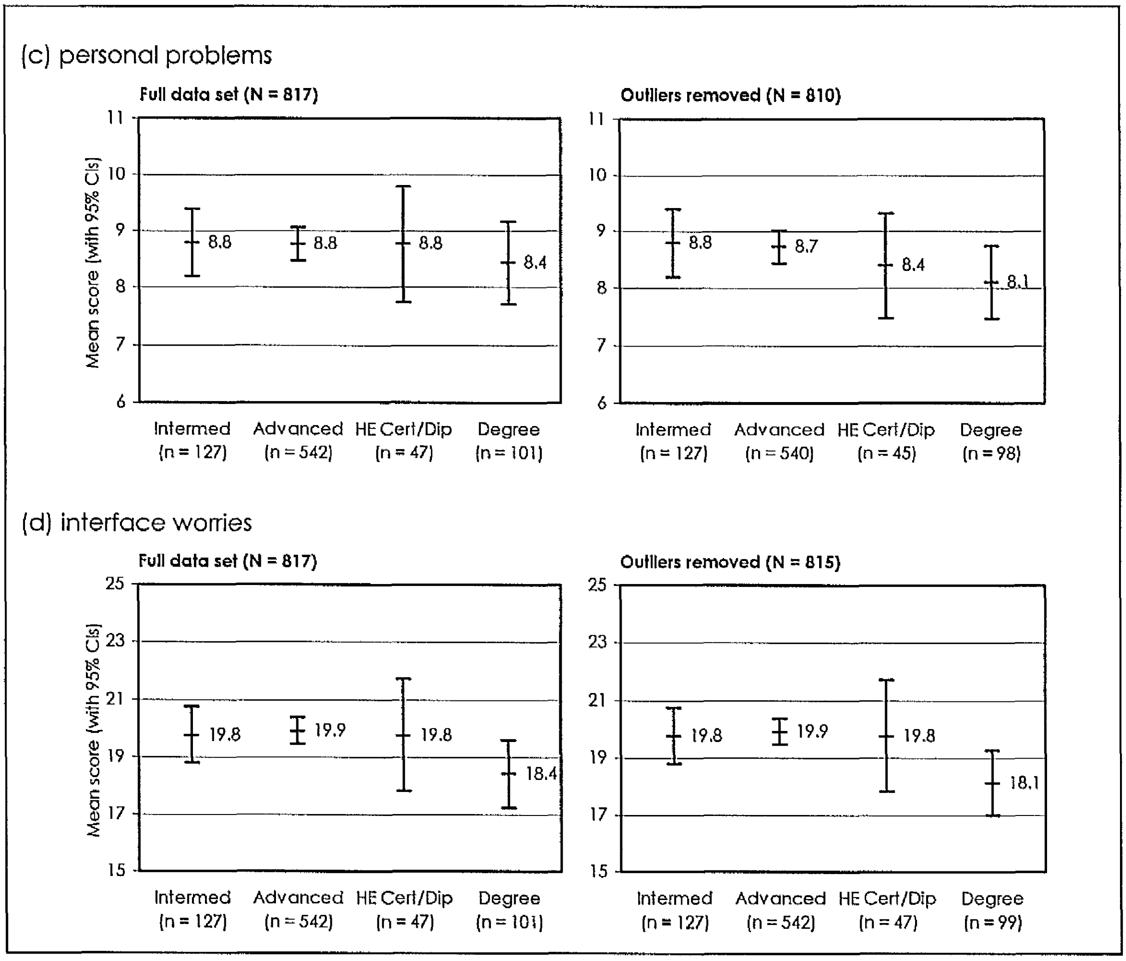


Figure 6.22 (cont.) Highest qualification on entry: plots (with 95 per cent confidence intervals) for the four SNSI subscales.

The picture conveyed by the CI plots in Figures 6.21 and 6.22 is consistent with the results of the statistical tests undertaken. These results are summarised in Table 6.16 overleaf. As expected, highest qualification on entry appears to have a small effect on total SNSI scores, both for the full data set and the data set with identified outliers removed (η^2 is between 0.01 and 0.02 for both tests). For the full data set, a *post* hoc REGW-Q analysis identified only a single homogenous subset although *post hoc* tests suggested a difference between the advanced and the degree groups when identified outliers were removed. For academic load, a small-to-medium effect was evident, both for the full data set and the data set with identified outliers removed ($\eta^2 \approx 0.03$ for both tests). For both the academic load tests, the *post hoc* analyses identified two homogenous subsets: A = {certificate/diploma, degree} and B = {intermediate, advanced, certificate/diploma}. This implies that the statistically significant effect may lie in differences between the degree and intermediate group and between the degree and advanced group. Respondents having at least a first degree on entry seem to experience a lower academic load than those with intermediate or advanced qualifications but not necessarily a lower load than those with certificate/diploma level qualifications. Those with a degree may also experience lower total SNSI scores than those with advanced qualifications.

The statistically significant result for interface worries when identified outliers were removed was unexpected. Although the *p*-value of 0.011 is good, the effect size (at around 0.01) is relatively small. Moreover, the *post hoc* REGW-Q analysis indicated that all four categories of highest qualification on entry formed a single homogeneous subset. This particular finding has, as such, been disregarded.

Table 6.16 Highest qualification on entry: summary of the analyses of variance undertaken for the five SNSI variables (continued overleaf).

SNSI variable	Data set	Subgroups	*n*	*N*	Mean	SD	F value (df)	*p*	η^2	*Post hoc* grouping	
Total SNSI score	**Full data set**	intermediate	127		56.9	12.8	3.650	0.012	0.013	A	
		advanced	542		57.8	12.8	(3, 813)			A	
		HE cert/dip	47		57.0	15.4				A	
		degree	101	817	53.1	14.7				A	
	Outliers removed	intermediate	127		56.9	12.8	4.530	0.004	0.017	A	B
		advanced	540		57.8	12.6	(3, 810)				B
		HE cert/dip	47		57.0	15.4				A	B
		degree	100	814	52.7	13.9				A	
Academic load	**Full data set**	intermediate	127		21.3	5.0	7.683	0.000	0.028		B
		advanced	542		21.6	5.0	(3, 813)				B
		HE cert/dip	47		20.8	5.4				A	B
		degree	101	817	19.0	5.6				A	
	Outliers removed	intermediate	127		21.3	5.0	8.900	0.000	0.032		B
		advanced	541		21.7	5.0	(3, 811)				B
		HE cert/dip	47		20.8	5.4				A	B
		degree	100	815	18.9	5.3				A	
Clinical concerns	**Full data set**	intermediate	127		14.5	4.8	0.898	0.442	ns		
		advanced	542		15.1	4.7	(3, 813)				
		HE cert/dip	47		15.2	5.1					
		degree	101	817	14.4	4.9					
	Outliers removed	intermediate	125		14.3	4.4	1.467	0.222	ns		
		advanced	540		15.0	4.6	(3, 807)				
		HE cert/dip	46		14.9	4.7					
		degree	100	811	14.2	4.5					

Table 6.16 (cont.) Highest qualification on entry: summary of the analyses of variance undertaken for the five SNSI variables.

SNSI variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping
Personal problems	**Full data set**	intermediate	127		8.8	3.4	0.273	0.845	ns	
		advanced	542		8.8	3.5	(3, 813)			
		HE cert/dip	47		8.8	3.5				
		degree	101	817	8.4	3.7				
	Outliers removed	intermediate	127		8.8	3.4	1.099	0.349	ns	
		advanced	540		8.7	3.5	(3, 812)			
		HE cert/dip	45		8.4	3.1				
		degree	98	810	8.1	3.2				
Interface worries	**Full data set**	intermediate	127		19.8	5.5	2.109	0.098	ns	
		advanced	542		19.9	5.3	(3, 813)			
		HE cert/dip	47		19.8	6.6				
		degree	101	817	18.4	6.1				
	Outliers removed	intermediate	127		19.8	5.5	3.056	0.028	0.011	A
		advanced	542		19.9	5.3	(3, 811)			A
		HE cert/dip	47		19.8	6.6				A
		degree	99	815	18.1	5.7				A

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §.

6.2.4 Sources of stress: summary of results

In addressing Research Question 1a it seems that the programme of study is perceived to be a source of stress by the majority of respondents although, for a good proportion of students, factors outside the programme appear to have some influence. Exploration of 72 items from the SNSI reveal that examinations/ assessments, fear of failing the course and managing bursary are major stressors for a large proportion of respondents. The sheer number of SNSI items identified as major stressors by midwifery respondents is noteworthy.

In addressing Research Question 1b, there are discernible differences between subgroups. Some major stressors were peculiar to certain subgroups, for example lack of free time is a major stressor to nursing degree respondents and to branch respondents, travelling time to placements is a major stressor to nursing degree respondents, being assessed in the School's clinical skills laboratories is a major stressor for CFP respondents and the death of a patient is a major stressor for midwifery students. Additionally, that one or more of the three 'core' stressors – examinations/assessments, fear of failing the course and managing bursary – is missing for some of the subgroups is, in itself, noteworthy. In particular, managing bursary is notable by its absence from the nursing degree's list of major stressors and examinations/assessments notable by its absence from graduate entry respondents.

With regard to the SNSI summary variables, there were some hints that the total SNSI scores (a measure of the number and perceived intensity of stressors) may be lower in those with a degree (whether they were on the graduate entry programme or not) but the results were not particularly robust. Mental health respondents, however, did appear to have lower total SNSI scores than, if not the other three specialties, learning disability respondents at least. Younger respondents (those under 21) certainly had greater total SNSI scores than those 21 and over, as did female respondents.

Regarding the four SNSI subscale variables, there were no discernible differences between subgroups on personal problems. There is some evidence that academic load is higher in midwifery than in nursing respondents but it took the removal of outliers to obtain a statistically significant result. Respondents undertaking the graduate entry nursing programme seem to experience a lower academic load than other nursing programmes; a finding congruent with the finding that respondents (regardless of programme) with at least a first degree on entry seem to experience a lower academic load than respondents with intermediate or advanced qualifications. Academic load also seems to be less of an issue for mental health students than for the other nursing specialties and mental health students may have fewer interface worries than adult or learning disability students. There were discernible differences with regard to age and sex. Respondents who entered their programmes aged 21 or above experienced less academic load than those under 21 and those 25 and over on entry experienced fewer clinical concerns than those under 25. Men appear to experience lower levels of academic load, fewer clinical concerns and fewer interface worries than women. There may also be a difference on academic load with regard to ethnicity, with non-white respondents experiencing higher scores than white respondents.

6.3 STRESS

In this section, findings which attempt to address the research questions concerned with stress (Research Questions 2a to 2c) are presented. Specifically, the research questions addressed are:

2a. What is the prevalence of stress among pre-registration students in the School?

2b. Are there discernible differences in levels of stress between various subgroups of the study population?

2c. How do the levels of stress identified in the study population compare with other populations?

With regard to Research Question 2a, prevalence is, in an epidemiological context, the proportion of people in a given population who have a particular disease, disability or ailment at a specific point in time. In order to examine the prevalence of stress (the 'disease' in this instance), it is necessary to delineate between respondents who have the disease (cases) and respondents who do not have the disease (normals). The GHQ case/normal dichotomy (see Section 4.7.2.1) is, as such, ideally placed to establish prevalence. A further, less formal measure of stress, 'self-report of pressure' (obtained from Question 29, Part A of the questionnaire pack), is also given some limited consideration as far as prevalence is concerned.

In order to address Research Question 2b, Likert GHQ scores and SF-12 MCS (mental component) scores were compared across the subgroups of all four variable sets: the primary variable set, the standard and extended demographic variable sets and the additional variable set. For each of the four variable sets, breakdowns by prevalence (GHQ case/normal dichotomy) provide some initial descriptive data.

For deeper analyses, however, the Likert GHQ score was used as the dependent variable (cf. Borrill *et al.* 1996, 1998) because of the supplementary information (means, standard deviations, etc) obtainable from scale variables.[27] The SF-12 MCS score, as a corroborative measure, was also employed as a dependent variable. Note that there is a degree of concordance between Likert GHQ and SF-12 MCS scores in that the Pearson correlation between these two measures in the current investigation is very large ($r = -0.739$, $n = 1073$).[28] It is important to note, however, that the GHQ-12 and SF-12 MCS measure similar but *not* identical constructs. One way of emphasising this (although one could be accused of splitting hairs) is to think of the Likert GHQ score as an index of *psychological distress* and the SF-12 MCS and an index of *mental well-being* or *mental health*. The very high (negative) correlation is, as such, to be expected: higher Likert GHQ scores (higher psychological distress) tend to equate with lower SF-12 MCS scores (poorer mental health).

Like Research Question 1c, Research Question 2c relates to benchmarking and will be considered in greater detail in the discussion, although the findings pertaining to Research Questions 2a and 2b provide a necessary context in which this narrative can take place.

6.3.1 Prevalence of stress

Table 6.17 below provides some overall descriptive statistics for the two stress measures used in the investigation. Whilst not a stress measure, the physical component score (PCS) of the SF-12 is included for completeness.

Table 6.17 Descriptive statistics for the GHQ-12 and SF-12 measures.

Measure	Subscale	Valid *N*	*n* (%)	Mean	SD	Min	Max
GHQ-12	Likert score	1091		13.0	5.6	0	35
	Number of cases (prevalence)	1091	378 (34.6%)				
SF-12	MCS	1085		43.6	11.1	12.2	66.4
	PCS	1085		53.7	6.6	20.9	66.5

Notes: The threshold 3/4 defines normality or caseness.

[27] The GHQ case/normal dichotomy is, however, employed as the dependent variable in the analyses concerned with model building (the analyses addressing Research Question 4).

[28] Correlation is used here merely in a *descriptive* manner, hence no checks for outliers or influential points are required and no *p*-values are cited (Cohen 1988; Howell 1997).

Using a 3/4 threshold, the overall prevalence of stress (the GHQ caseness rate) is, at 34.6 per cent, equal to roughly one-third of respondents. Cited on its own, however, this prevalence rate is somewhat hollow. Nonetheless, its importance comes into play when, in the discussion, it is judged against comparable populations. The overall prevalence rate is also useful – as will soon become apparent – when caseness rates are compared across the various subgroups defined by the four independent variable sets.

As standardised scores (with a mean of 50 and a standard deviation of 10), scores above 50 on the SF-12 MCS and the SF-12 PCS indicate that any given sample is healthier than its normative population and scores below 50, that the sample is less healthy than its normative population. The respondents in the current investigation are generally less mentally well and more physically well than the US population (the normative population used).

Question 29, Part A of the questionnaire pack asked respondents to rate the degree of pressure they were under at the time of completion, the results of which are illustrated in Figure 6.23 below.

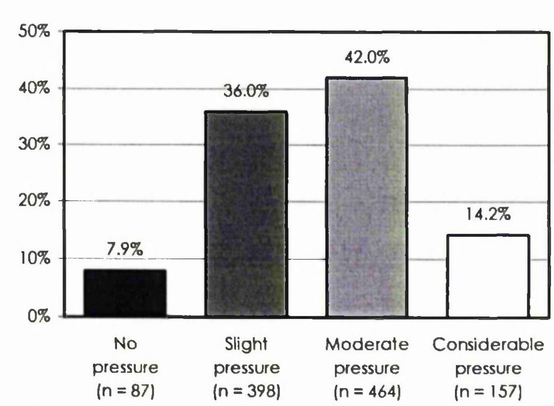


Figure 6.23 Bar chart for self-report of pressure (N = 1106).

Around 14 per cent of respondents reported that they were under considerable pressure at the time, with 42 per cent reporting they were under moderate pressure. At first sight these figures do not reconcile with the GHQ-12 derived prevalence of around a third cited earlier. Self-report of pressure is not an entirely meaningless measure, however. Although the variable has only four valid values (representing the four categories 'no pressure' through to 'considerable pressure'), the variable can be treated as a scale rather than ordinal measure because the underlying scale can be conceived as continuous (Afifi and Clark 1996). Treating self-report of pressure as a scale rather than ordinal measure has two advantages. Firstly, it provides a possible response to the irreconcilability discussed above in that it allows for the existence of (hypothetical) points between the response categories 'moderate pressure' and 'considerable pressure'. Given the proportions assigned to these two response categories (42.0 and 14.2 per cent, respectively), a hypothetical point between these two response categories could well elicit a proportion of around one-third. The second advantage is that correlation coefficients can be calculated between self-report of pressure and the two main stress measures in order to give some insight into the ability of respondents to self-assess their stress levels. Pearson's r is 0.509 (n = 1090) for self-report of pressure with the Likert GHQ and –0.486 (n = 1084) for self-report of pressure with the SF-12 MCS. With r at around 0.5, both coefficients are large, suggesting that respondents are reasonably good at gauging their own stress levels.

6.3.2 Stress variables

6.3.2.1 The primary variable set

The stacked bar charts in Figure 6.24 overleaf illustrate the prevalence (caseness) rates for each of the comparisons in the primary variable set. Whilst these bar charts provide only *descriptive* information, there are some noteworthy observations that can be gleaned from these charts, especially using the study's overall caseness rate of 34.6 per cent as a benchmark. Given this benchmark, any subgroups having a caseness rate an arbitrary ten or more per cent higher than the benchmark (i.e. a caseness rate greater than 38 per cent) are deemed to have 'appreciably higher' caseness rates. Likewise, any subgroups having a caseness rate ten or more per cent lower than the benchmark (i.e. a caseness rate less than 31 per cent) are deemed to have 'appreciably lower' caseness rates.

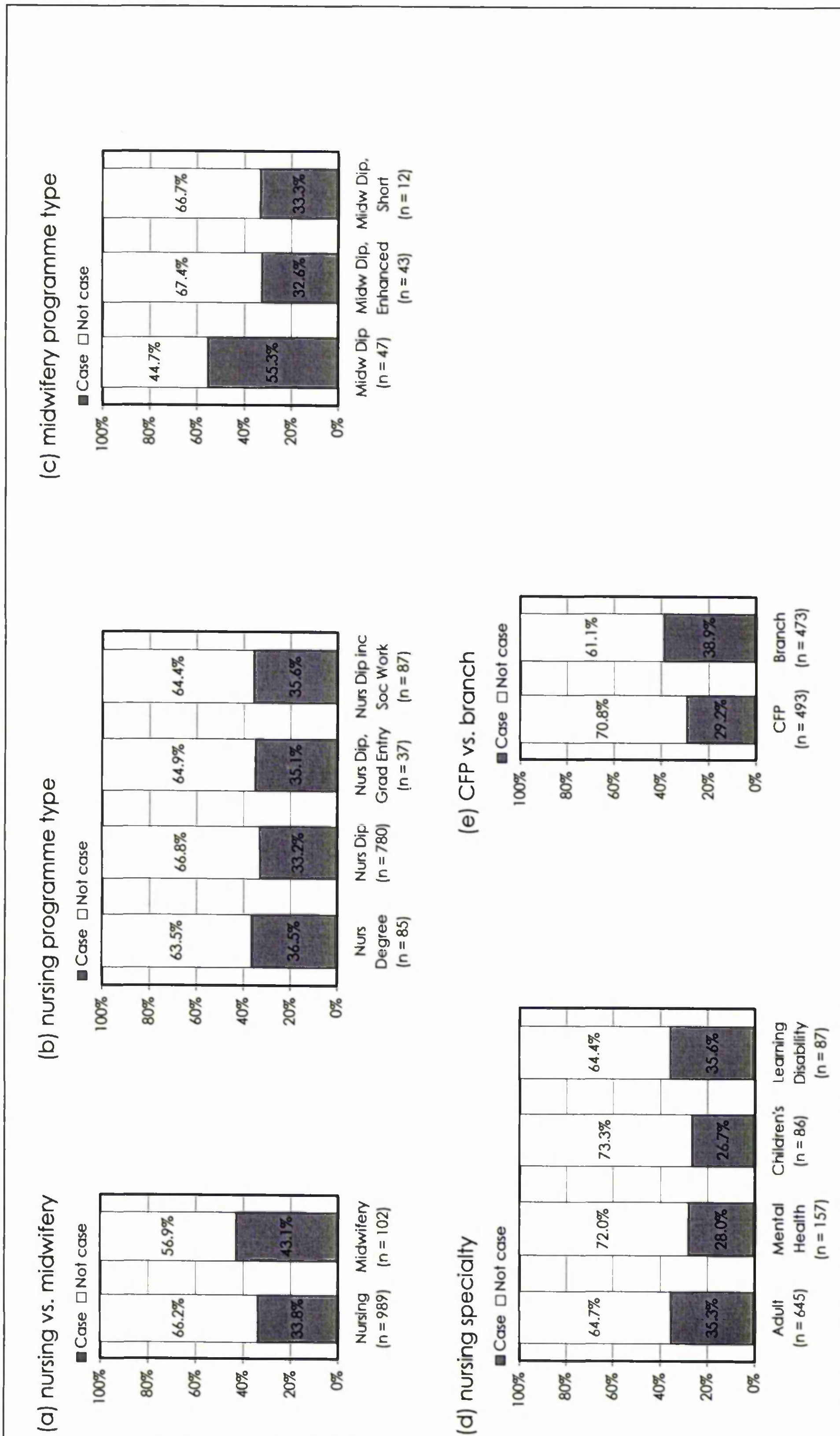


Figure 6.24 Stacked bar charts for GHQ caseness for the variables in the primary variable set.

That the proportion of cases is higher for midwifery than for nursing and appreciably above the benchmark rate (Plot 6.24a) seems to be down to the large proportion of cases – around 55 per cent – in the standard midwifery diploma group (Plot 6.24c). Across nursing programmes, there are few differences in caseness rates (Plot 6.24b). Mental health and children's nursing have an appreciably lower proportion of cases than the benchmark (Plot 6.24d), and there is (Plot 6.24e) an appreciably higher proportion of cases among branch respondents an appreciably lower proportion of cases among CFP respondents.

In order to see whether these descriptive observations are generalisable to some wider population (or, indeed, metapopulation), inferential tests using both the Likert GHQ and SF-12 MCS scores as dependent variables were undertaken. Figure 6.25 below contains CI plots for the Likert GHQ and SF-12 MCS scores by the top level comparison, nursing vs. midwifery. These CI plots suggest that there are no statistically significant differences between nursing and midwifery on either the stress measures; a picture consistent with the statistical tests undertaken and summarised in Table 6.18 overleaf but not with the descriptive caseness rate findings alluded to above.

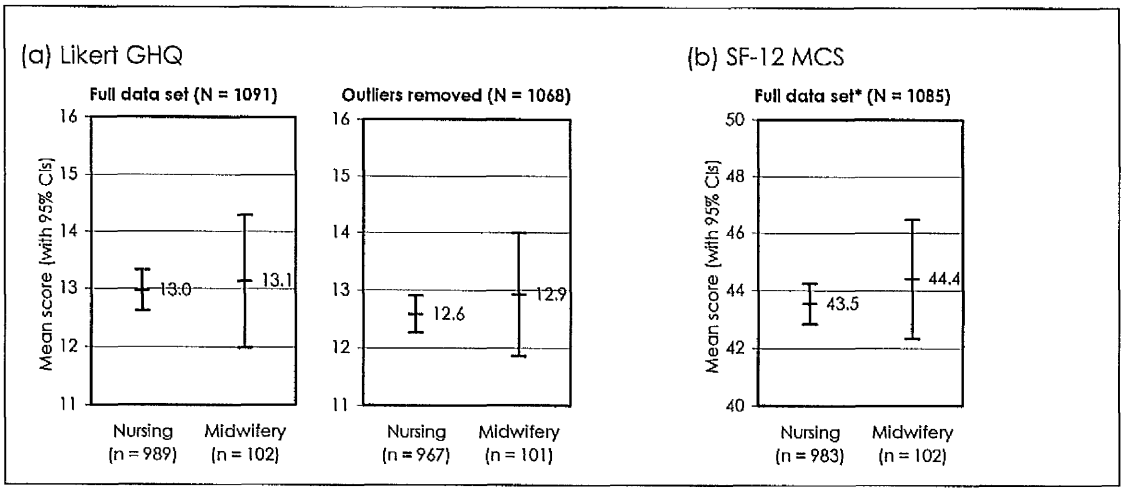


Figure 6.25 Nursing vs. midwifery: plots (with 95 per cent confidence intervals) for the two stress measures.

Table 6.18 Nursing vs. midwifery: summary of the t-tests undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Likert GHQ	Full data set	nursing	989		13.0	5.6	−0.275	0.783	−0.2	ns
		midwifery	102	1091	13.1	5.8			(−1.3, 1.0)	
	Outliers removed	nursing	967		12.6	5.0	−0.634	0.526	−0.3	ns
		midwifery	101	1068	12.9	5.4			(−1.4, 0.7)	
SF12-MCS	Full data set*	nursing	983		43.5	11.1	−0.755	0.451	−0.9	ns
		midwifery	102	1085	44.4	10.5			(−3.1, 1.4)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

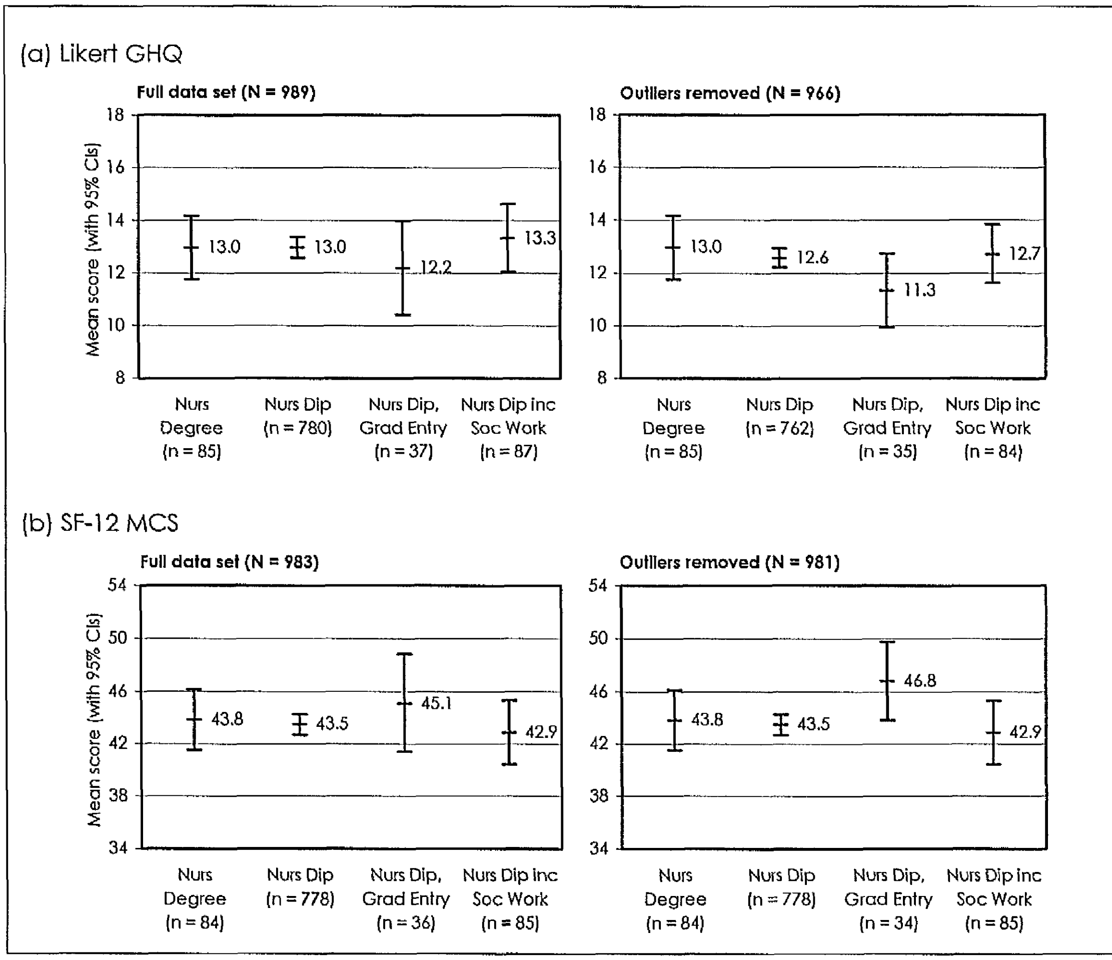


Figure 6.26 Nursing programmes: plots (with 95per cent confidence intervals) for the two stress measures.

Figure 6.26 (previous page) contains CI plots for the Likert GHQ and SF-12 MCS scores by nursing programme type. These CI plots suggest that there are no statistically significant differences between the nursing programmes on either of the stress measures, an observation consistent with the statistical tests undertaken and summarised in Table 6.19 below and the descriptive caseness rate findings.

Table 6.19 Nursing programmes: summary of the analyses undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2
Likert GHQ	Full data set	degree	85		13.0	5.5	0.358	0.784	ns
		diploma	780		13.0	5.6	(3, 985)		
		dip, grad entry	37		12.2	5.4			
		dip inc soc work	87	989	13.3	6.0			
	Outliers removed	degree	85		13.0	5.5	0.899	0.441	ns
		diploma	762		12.6	5.0	(3, 962)		
		dip, grad entry	35		11.3	4.1			
		dip inc soc work	84	966	12.7	5.1			
SF-12 MCS	Full data set	degree	84		43.8	10.5	0.356	0.784	ns
		diploma	778		43.5	11.2	(3, 979)		
		dip, grad entry	36		45.1	10.9			
		dip inc soc work	85	983	42.9	11.3			
	Outliers removed	degree	84		43.8	10.5	1.095	0.350	ns
		diploma	778		43.5	11.2	(3, 977)		
		dip, grad entry	34		46.8	8.5			
		dip inc soc work	85	981	42.9	11.3			

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

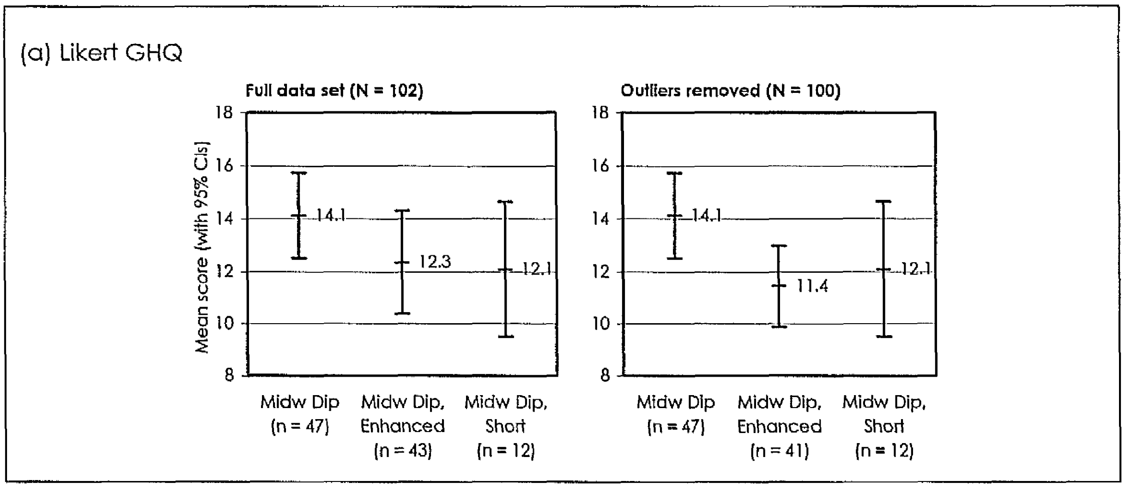


Figure 6.27 Midwifery programmes: plots (with 95per cent confidence intervals) for the two stress measures (continued overleaf).

(b) SF-12 MCS

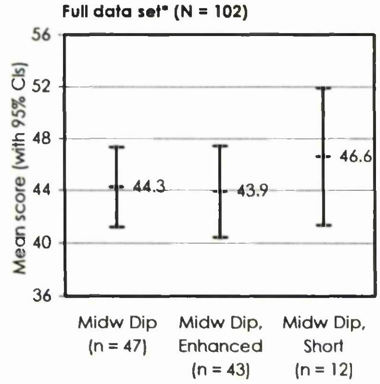


Figure 6.27 (cont.) Midwifery programmes: plots (with 95per cent confidence intervals) for the two stress measures.

Figure 6.27 contains CI plots for the Likert GHQ and SF-12 MCS scores by midwifery programme type. As with the nursing programmes, the CI plots imply that there are no statistically significant differences between the midwifery programmes on either of the stress measures. The statistical tests undertaken (Table 6.20) do, however, produce an anomaly.

Table 6.20 Midwifery programmes: summary of the analyses of variance undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping
Likert GHQ	**Full data set**	diploma	47		14.1	5.5	1.285	0.281	ns	
		dip, enhanced	43		12.3	6.4	(2, 99)			
		dip, short	12	102	12.1	4.1				
	Outliers removed	diploma	47		14.1	5.5	3.126	0.048	0.061	A
		dip, enhanced	41		11.4	4.9	(2, 97)			A
		dip, short	12	100	12.1	4.1				A
SF-12 MCS	**Full data set***	diploma	47		44.3	10.4	0.306	0.737	ns	
		dip, enhanced	43		13.9	11.3	(2, 99)			
		dip, short	12	102	46.6	8.3				

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

For midwifery programme type, a statistically significant result was obtained for Likert GHQ scores using the data set with identified outliers removed. This result is notable because of the medium effect size ($\eta^2 \approx 0.06$). However, given that this result is inconsistent with the SF-12 MCS result and the Likert GHQ full data set result, that its *p*-value (at 0.048) is only just over the 0.05 threshold and that the *post hoc* REGW-Q analyses produces only a single homogenous subset, this result can be discarded. Interestingly, the descriptive finding of an appreciably higher caseness rate in the standard midwifery diploma was not reinforced by these results.

Figure 6.28 below contains CI plots for Likert GHQ and SF-12 MCS scores by nursing specialty. The CI plots imply that there are no statistically significant differences between the specialties on either of the stress measures, an observation consistent with the statistical tests undertaken and summarised in Table 6.21 (overleaf) but inconsistent with the descriptive finding that mental health and children's students had appreciably lower caseness rates.

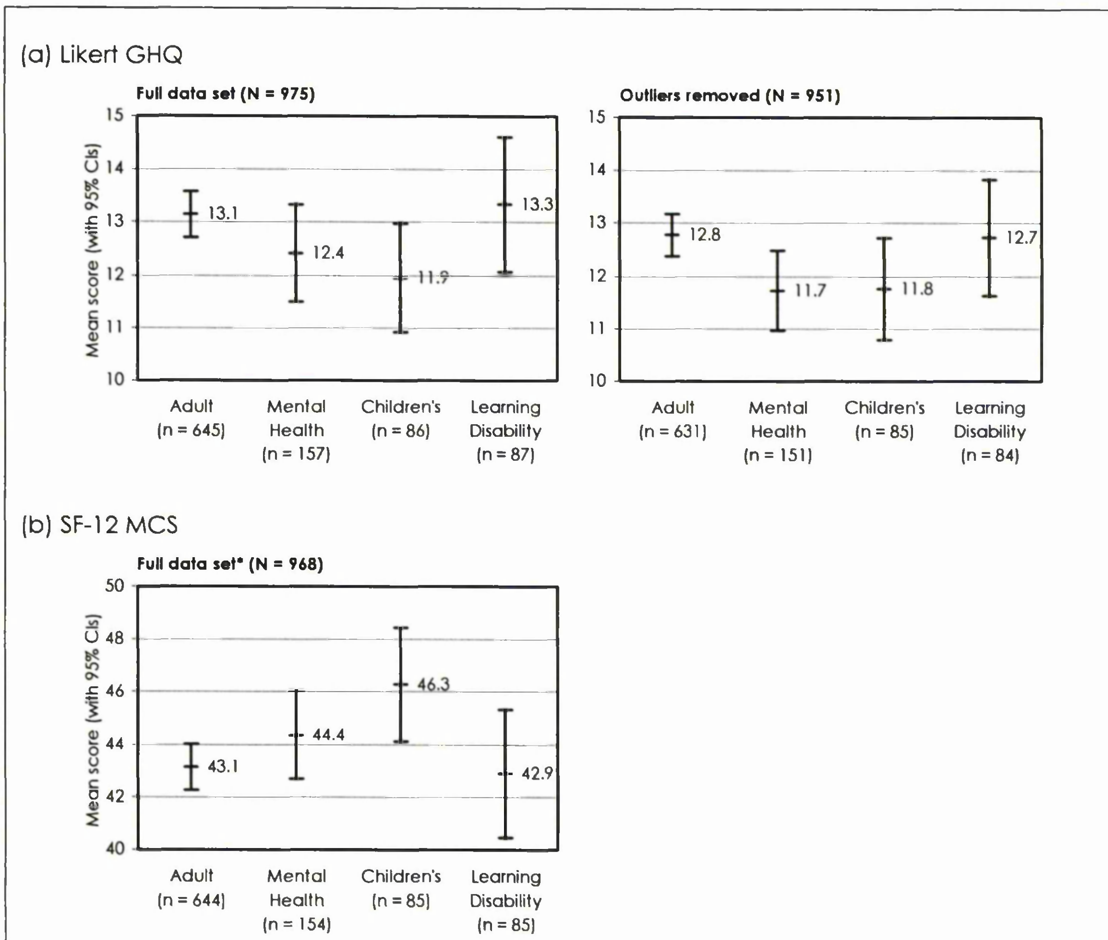


Figure 6.28 Nursing specialty: plots (with 95 per cent confidence intervals) for the two stress measures.

Table 6.21 Nursing specialty: summary of the analyses of variance undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2
Likert GHQ	**Full data set**	adult	645		13.1	5.6	1.817	0.142	ns
		mental health	157		12.4	5.8	(3, 971)		
		children's	86		11.9	4.8			
		learning dis	87	975	13.3	6.0			
	Outliers removed	adult	631		12.8	5.1	2.581	0.052	ns
		mental health	151		11.7	4.7	(3, 947)		
		children's	85		11.8	4.5			
		learning dis	84	951	12.7	5.1			
SF-12 MCS	**Full data set***	adult	644		43.1	11.3	2.373	0.069	ns
		mental health	154		44.4	10.5	(3, 964)		
		children's	85		46.3	10.1			
		learning dis	85	968	42.9	11.3			

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

Figure 6.29 below is more interesting. It contains CI plots for the Likert GHQ and SF-12 MCS scores by CFP vs. branch. The CI plots here suggest there are statistically significant differences between CFP and branch respondents on both stress measures, observations reinforced by the statistical tests undertaken and summarised in Table 6.20 overleaf.

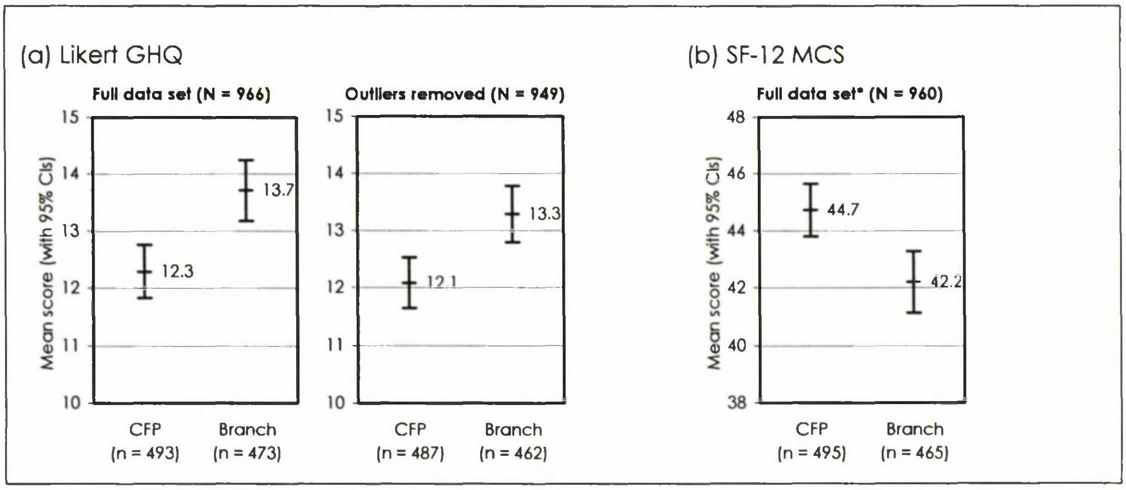


Figure 6.29 CFP vs. branch: plots (with 95 per cent confidence intervals) for the two stress variables.

Table 6.22 CFP vs. branch: summary of the t-tests undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Likert GHQ	**Full data set§**	CFP	493		12.3	5.3	−3.911	0.000	−1.4	0.252
		branch	473	966	13.7	6.0			(−2.1, −0.7)	
	Outliers removed	CFP	487		12.1	4.9	−3.591	0.000	−1.2	0.233
		branch	462	949	13.3	5.3			(−1.9, −0.5)	
SF12-MCS	**Full data set*§**	CFP	495		44.7	10.4	3.510	0.000	2.5	0.228
		branch	465	960	42.2	11.8			(1.1, 3.9)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

For CFP vs. branch, a consistent picture emerges from the t-tests undertaken in that the differences are significant (with a small effect size of ≈ 0.20-0.25 in each case) across all three comparisons undertaken. Branch students seem to have higher stress levels and poorer mental health than CFP students, an observation consistent with the descriptive finding that there is an appreciably higher caseness rate in branch students and an appreciably lower caseness rate in CFP students.

6.3.2.2 The standard demographic variable set

The stacked bar charts in Figure 6.30 overleaf illustrate the caseness rates for each of the comparisons within the standard demographic variable set. Again, there are some noteworthy observations that can be gleaned from these bar charts using the overall prevalence rate (34.6 per cent) as a benchmark.

In the intermediate age group (21-25) (Plot 6.30a), there was an appreciably lower caseness rate and there was also an appreciably lower caseness rate in males (Plot 6.30b). The prevalence rate was also appreciably higher among non-white respondents (Plot 6.30c), although no appreciable differences were evident in caseness rates for social class (Plot 6.30d). For those with a degree, the prevalence rate is appreciably lower than the benchmark; for those with a HE certificate or diploma, it is appreciably higher (Plot 6.30e).

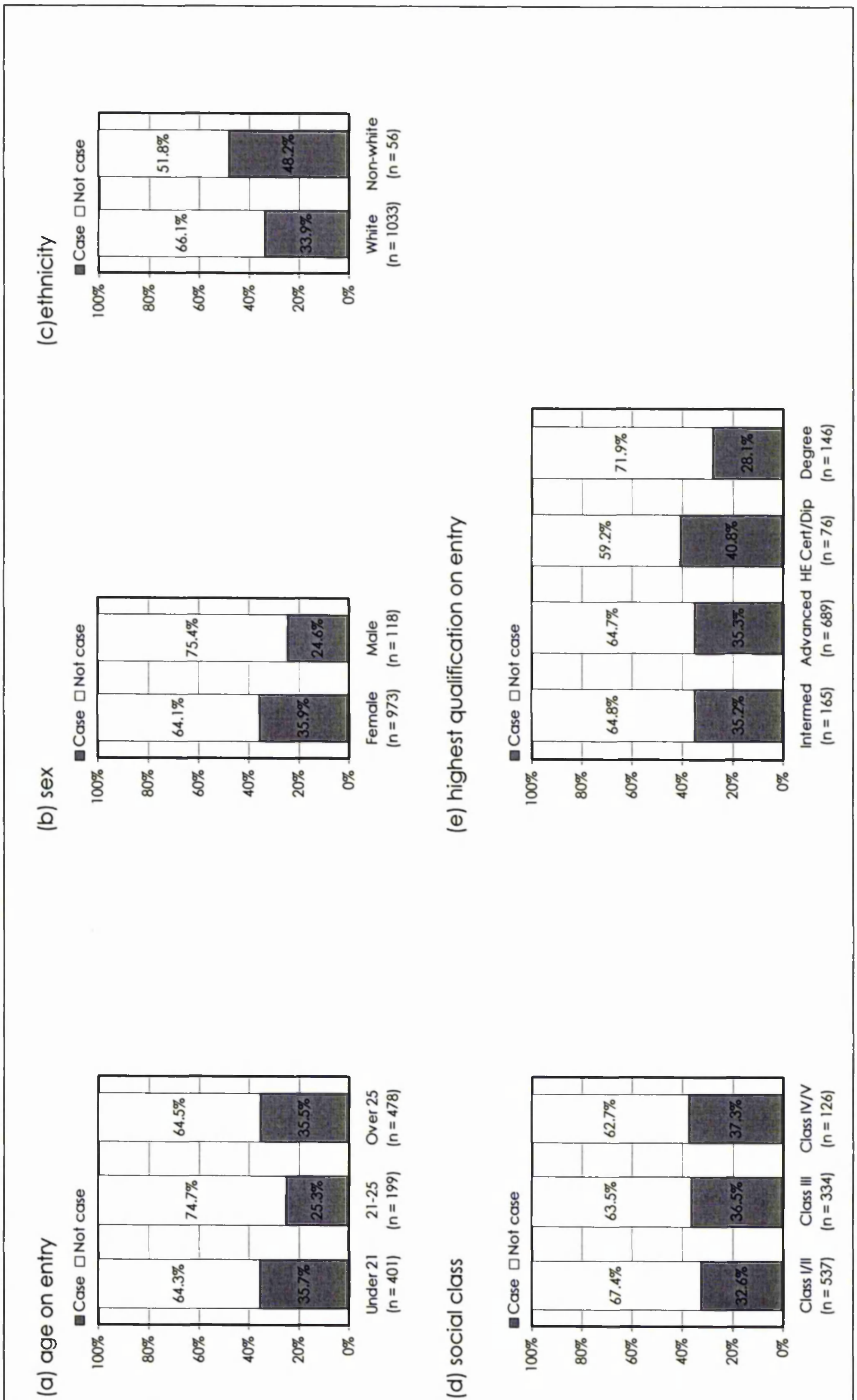


Figure 6.30 Stacked bar charts for GHQ caseness for the variables in the standard demographic variable set.

As with the primary variable set, in order to see whether the descriptive observations are generalisable to some wider population, inferential tests using the Likert GHQ and SF-12 MCS as dependent variables were undertaken.

Figure 6.31 below contains CI plots for the Likert GHQ and SF-12 MCS scores by age on entry (HE age groups). Given the overlaps in the plots, age on entry probably has no effect on either of the stress scores (although there may be an effect on the Likert GHQ score when identified outliers are removed). The results of the statistical tests undertaken for these comparisons are contained in Table 6.23 overleaf.

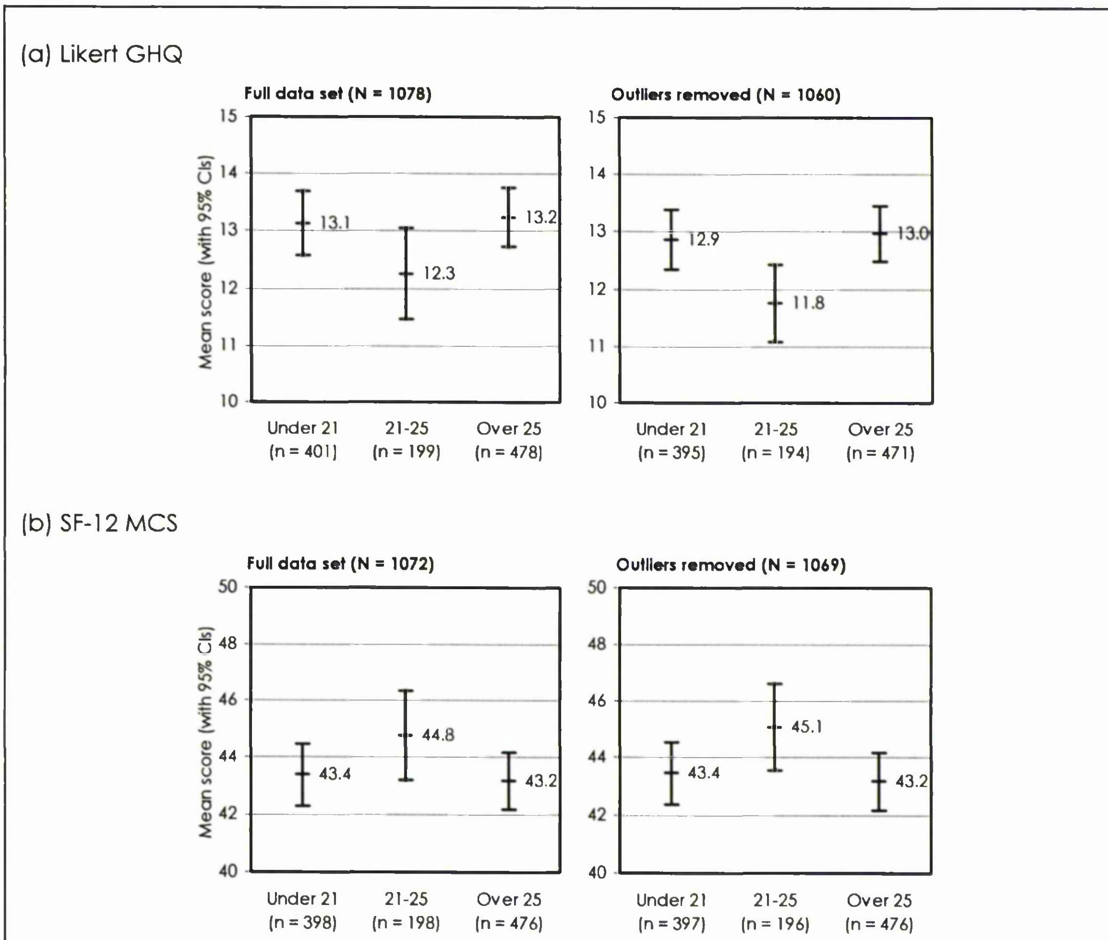


Figure 6.31 Age on entry: plots (with 95 per cent confidence intervals) for the two stress variables.

Table 6.23 Age on entry: summary of the analyses of variance undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping
Likert GHQ	**Full data set**	under 21	401		13.1	5.6	2.250	0.106	ns	
		21-25	199		12.3	5.7	(2, 1075)			
		over 25	478	1078	13.2	5.7				
	Outliers removed	under 21	395		12.9	5.2	4.041	0.018	0.008	A
		21-25	194		11.8	4.8	(2, 1057)			A
		over 25	471	1060	13.0	5.3				A
SF-12 MCS	**Full data set**	under 21	398		43.4	11.1	1.527	0.218	ns	
		21-25	198		44.8	11.3	(2, 1069)			
		over 25	476	1072	43.2	11.0				
	Outliers removed	under 21	397		43.4	11.0	2.201	0.111	ns	
		21-25	196		45.1	10.9	(2, 1066)			
		over 25	476	1069	43.2	11.0				

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §.

The only significant effect for age on entry is for the Likert GHQ scores when identified outliers are removed. However, as the effect size (at around 0.01) is small and as the *post hoc* REGW-Q procedure suggests that all three age groups form a single homogeneous subset on this variable, the result can be disregarded. Thus, despite the descriptive finding that the intermediate age group had appreciably lower caseness rates, age on entry seems to have no effect on stress levels.

Figures 6.32 and 6.33 (overleaf) contain CI plots for the Likert GHQ and SF-12 MCS scores by sex and ethnicity, respectively. Given the lack of overlap in the plots in Figure 6.32, a sex effect is suggested for both stress scores but, in each case, only when identified outliers are removed. As far as ethnicity is concerned, no effect is observable in the plots. The results of the statistical tests undertaken for sex and ethnicity are summarised in Tables 6.24 and 6.25 (p 223) respectively.

With regard to sex and consistent with the picture given in the CI plots, a statistically significant difference was found for both the Likert GHQ and SF-12 MCS scores when identified outliers were removed. With a small-to medium effect size of around 0.3 in both cases and good *p*-values, these results are noteworthy.

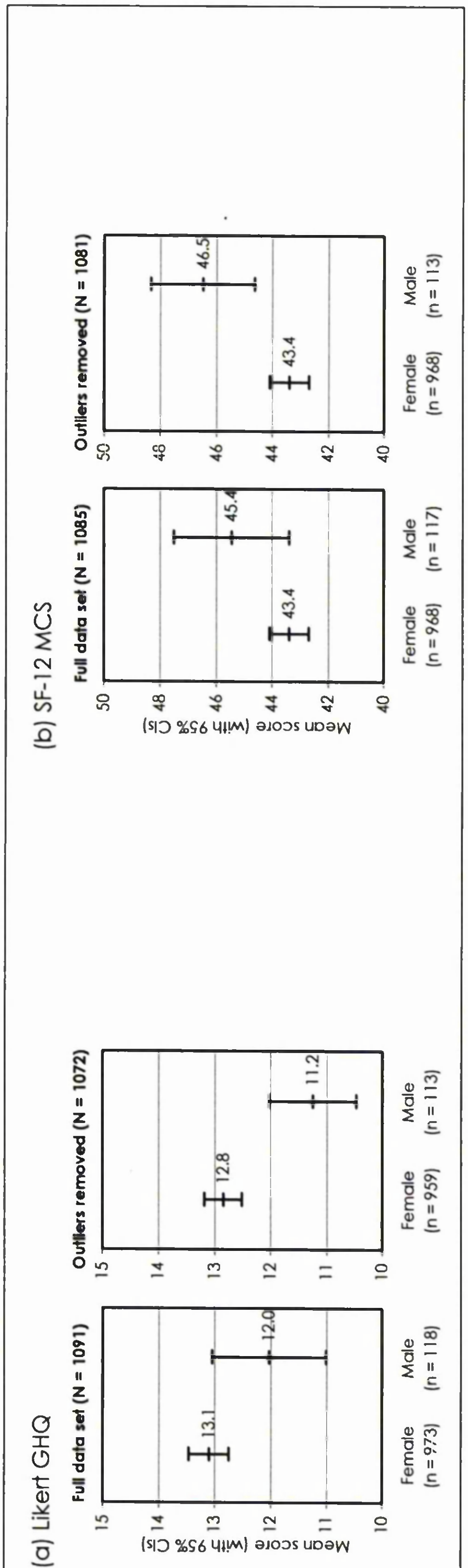


Figure 6.32 Sex: plots (with 95 per cent confidence intervals) for the two stress variables.

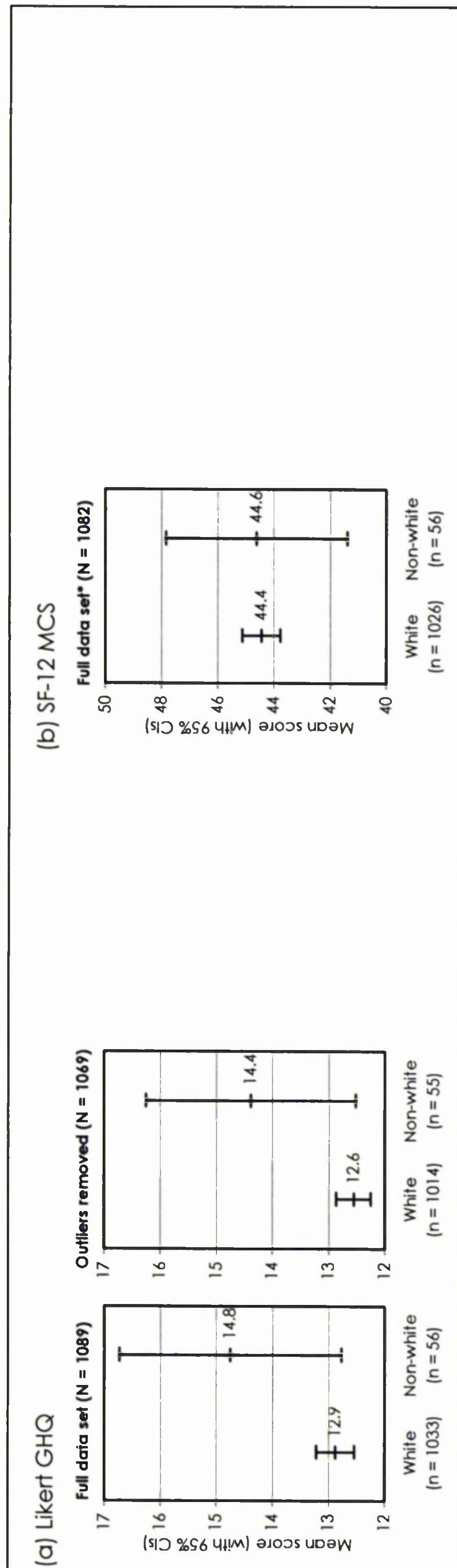


Figure 6.33 Ethnicity: plots (with 95 per cent confidence intervals) for the two stress variables.

Table 6.24 Sex: summary of the t-tests undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Likert GHQ	Full data set	female	973		13.1	5.6	1.971	0.049	1.1	0.192
		male	118	1091	12.0	5.6			(0.0, 2.2)	
	Outliers removed§	female	959		12.8	5.2	3.738	0.000	1.6	0.311
		male	113	1072	11.2	4.2			(0.8, 2.4)	
SF12-MCS	Full data set	female	968		43.4	11.0	−1.899	0.058	−2.1	ns
		male	117	1085	45.4	11.2			(−4.2, 0.1)	
	Outliers removed	female	968		43.4	11.0	−2.851	0.004	−3.1	0.283
		male	113	1081	46.5	9.9			(−5.2, −1.0)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §.

A statistically significant difference was also found for the Likert GHQ score when the full data set was analysed, although the *p*-value (at 0.049) was only just below the threshold for five per cent significance. Indeed, the full data set results for the Likert GHQ score differs little from the results for the full data set results for the SF-12 MCS except that the SF-12 *p*-value falls the 'wrong' side of the arbitrary alpha value of 0.05. These results imply that sex may well have an effect on stress (a result consistent with the descriptive finding of appreciably lower caseness rate in males) but that, in this sample, some extreme individual responses may have clouded the picture.

Table 6.25 Ethnicity: summary of the t-tests undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Likert GHQ	Full data set§	white	1033		12.9	5.5	−1.865	0.067	−1.9	ns
		non-white	56	1089	14.8	7.4			(−3.9, 0.1)	
	Outliers removed§	white	1014		12.6	5.0	−1.934	0.058	−1.8	ns
		non-white	55	1069	14.4	6.9			(−3.7, 0.1)	
SF12-MCS	Full data set*	white	1026		43.8	11.0	1.559	0.119	2.4	ns
		non-white	56	1082	41.4	12.0			(−0.6, 5.3)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

With regard to ethnicity, no statistically significant differences between white and non-white respondents were apparent on either of the stress variables, a result consistent with the CI plots in Figure 6.33 but inconsistent with the descriptive finding of appreciably higher caseness rates in non-white respondents.

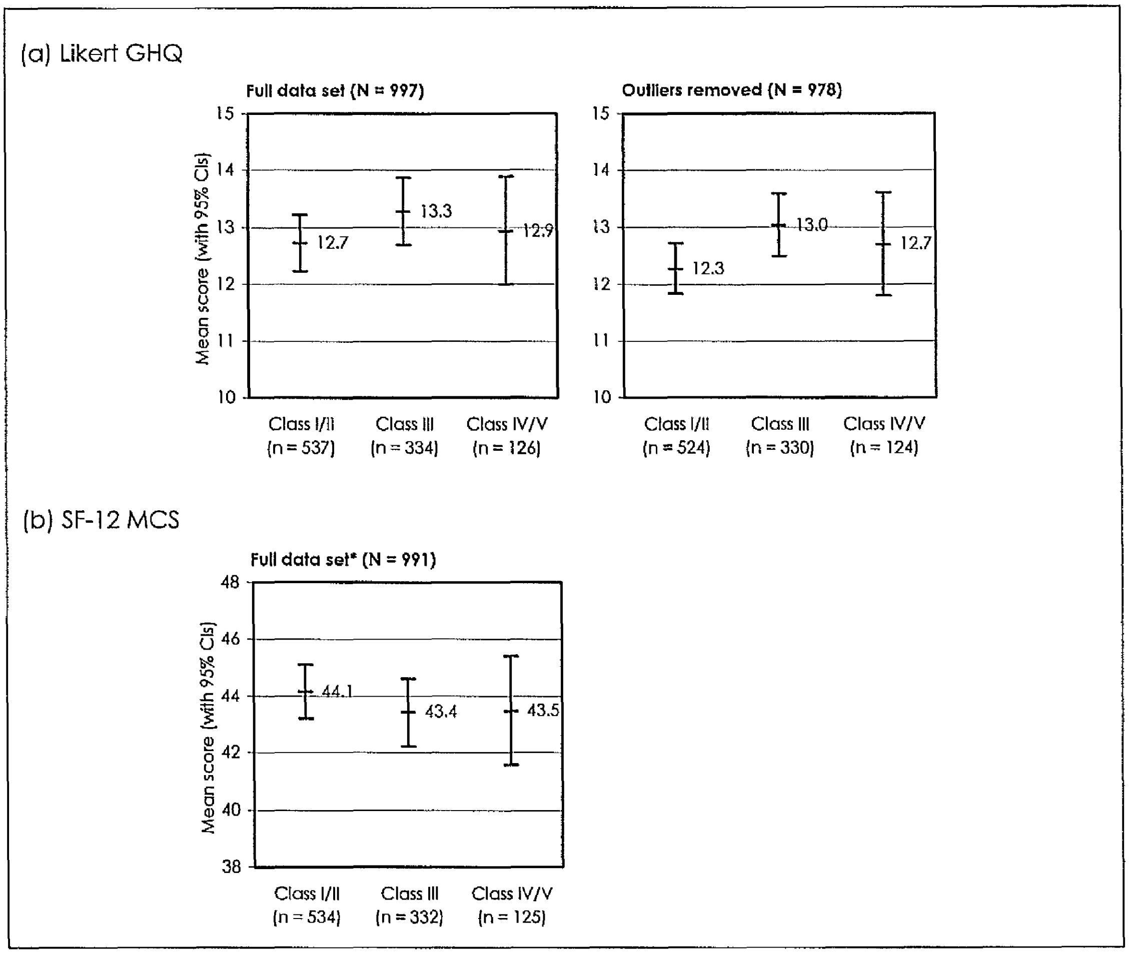


Figure 6.34 Social class: plots (with 95 per cent confidence intervals) for the two stress variables.

Table 6.26 Social class: summary of the analyses of variance undertaken for the two stress variables.

Stress variable	**Data set**	**Subgroups**	***n***	***N***	**Mean**	**SD**	**F value (df)**	***p***	η^2
Likert GHQ	**Full data set**	class I/II	537		12.7	5.8	0.984	0.374	ns
		class III	334		13.3	5.4	(2, 994)		
		class IV/V	126	997	12.9	5.4			
	Outliers removed	class I/II	524		12.3	5.1	2.340	0.097	ns
		class III	330		13.0	5.0	(2, 975)		
		class IV/V	124	978	12.7	5.1			
SF-12 MCS	**Full data set***	class I/II	534		44.1	11.0	0.521	0.594	ns
		class III	332		43.4	11.1	(2, 988)		
		class Iv/V	125	991	43.5	10.8			

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

Figure 6.34 (previous page) contains CI plots for the Likert GHQ and SF-12 MCS scores by social class. These plots suggest that social class has no effect on stress, a statement consistent with the statistical tests undertaken and summarised in Table 6.26 (previous page) and the descriptive caseness rate findings reported earlier.

Figure 6.35 below contains CI plots for the Likert GHQ and SF-12 MCS scores by highest qualification on entry. For the Likert GHQ scores, the plots suggest that there is no effect when the full data set is considered but that there may be an effect (with the degree group being responsible for that effect) when identified outliers are removed. For the SF-12 MCS, the plots suggest that there is no effect when either the full data set or the data set with identified outliers removed is considered. The results of statistical tests undertaken for these comparisons are summarised in Table 6.27 overleaf.

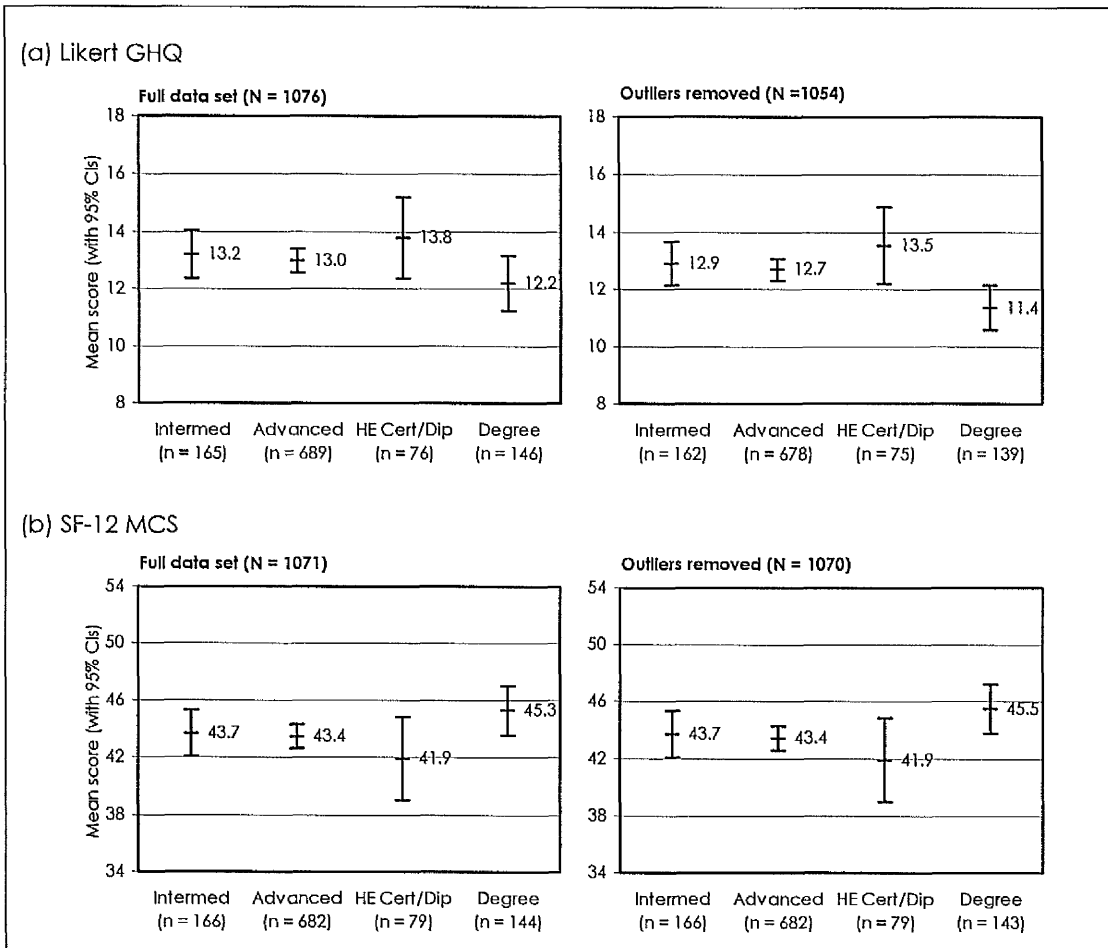


Figure 6.35 Highest qualification on entry: plots (with 95 per cent confidence intervals) for the two stress variables.

Table 6.27 Highest qualification on entry: summary of the analyses of variance undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping	
Likert GHQ	**Full data set**	intermediate	165		13.2	5.4	1.555	0.199	ns		
		advanced	689		13.0	5.5	(3, 1072)				
		HE cert/dip	76		13.8	6.2					
		degree	146	1076	12.2	5.9					
	Outliers removed§	intermediate	162		12.9	4.9	3.915	0.009	0.011		B
		advanced	678		12.7	5.1	(3, 1050)			A	B
		HE cert/dip	75		13.5	5.8					B
		degree	139	1054	11.4	4.6				A	
SF-12 MCS	**Full data set§**	intermediate	166		43.7	10.6	1.769	0.151	ns		
		advanced	682		43.4	11.0	(3, 1067)				
		HE cert/dip	79		41.9	12.9					
		degree	144	1071	45.3	10.6					
	Outliers removed§	intermediate	166		43.7	10.6	2.075	0.102	ns		
		advanced	682		43.4	11.0	(3, 1066)				
		HE cert/dip	79		41.9	12.9					
		degree	143	1070	45.5	10.3					

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §.

As expected, highest qualification on entry produced a significant result ($p = 0.009$) for the Likert GHQ data set with identified outliers removed, although the effect size, at around 0.01, is small. A *post hoc* REGW-Q test identified two homogenous subsets: A = {degree, advanced} and B = {intermediate, advanced, certificate/diploma}. The validity of this result is suspect, however, given that the comparison involved unequal sample sizes coupled with heterogeneous variances. The Kruskal-Wallis test undertaken as an alternative (Table 6.28) did not produce a significant result.

Table 6.28 Highest qualification on entry: summary of the Kruskal-Wallis tests undertaken for the Likert GHQ variable.

Stress variable	Data set	Subgroups	*n*	*N*	Mean rank	*H* value (df)	*p*	*Post hoc* grouping
Likert GHQ	**Full data set**	intermediate	165		559.29	6.684	0.083	ns
		advanced	689		541.88	(3)		
		HE cert/dip	76		572.45			
		degree	146	1076	481.38			

Despite the descriptive finding of appreciably higher caseness rates in those with an HE certificate/diploma as the highest qualification on entry and despite appreciably lower caseness rates in those with at least a first degree on entry, highest qualification on entry does not seem to have any impact on stress.

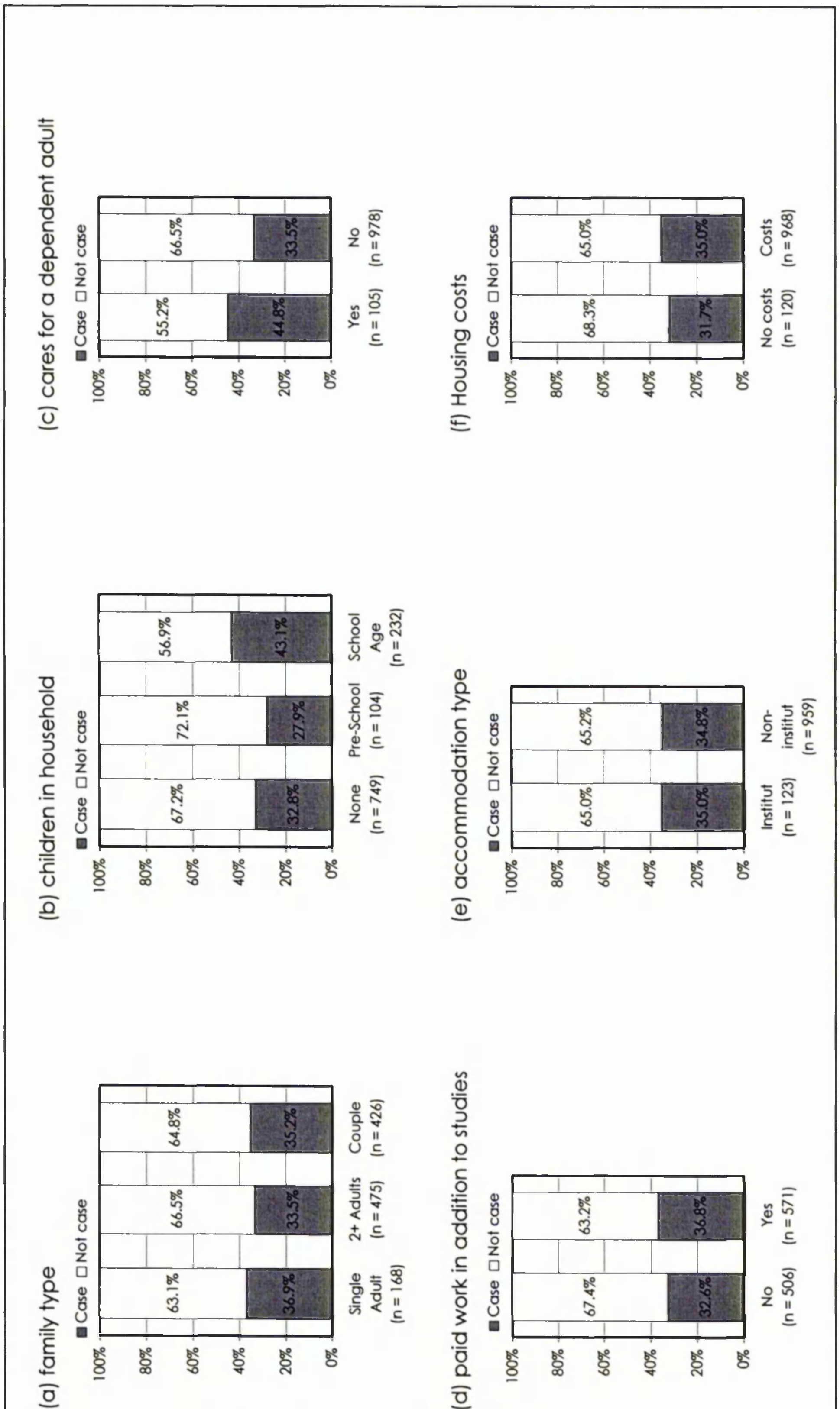


Figure 6.36 Stacked bar charts for GHQ casesness for the variables in the extended demographic variable set.

6.3.2.3 The extended demographic variable set

The stacked bar charts in Figure 6.36 (previous page) illustrate the caseness (prevalence) rates for each of the comparisons within the extended demographic variable set. In using the benchmark caseness rate to delineate appreciably higher and appreciably lower caseness rates, only two of the comparisons stand out: children in household (Plot 6.36b) and cares for a dependent adult (Plot 6.36c). The caseness rate for those with school age children is appreciably higher than the benchmark whilst for those with pre-school children it is appreciably lower and the caseness rate is appreciably higher in those who care for a dependent adult.

As with the primary and standard demographic variable sets, inferential tests were undertaken with the Likert GHQ and SF-12 MCS as dependent variables.

The CI plots in Figure 6.37 below suggest that family type has little or no effect on stress levels, an observation reinforced by the statistical tests undertaken (Table 6.29 overleaf) and consistent with the descriptive caseness rate findings.

(a) Likert GHQ

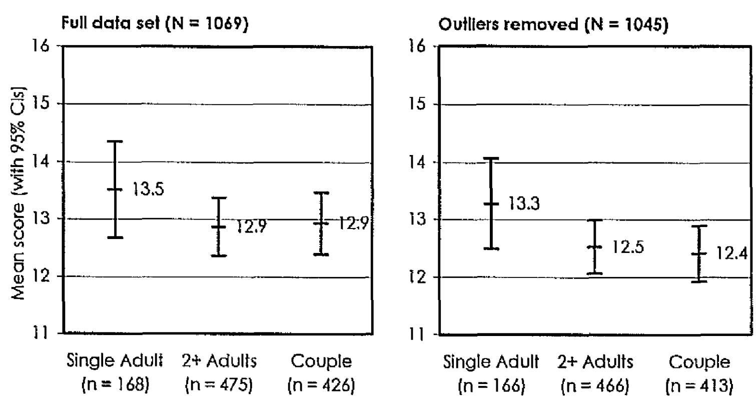


Figure 6.37 Family type: plots (with 95 per cent confidence intervals) for the two stress variables (continued overleaf).

(b) SF-12 MCS

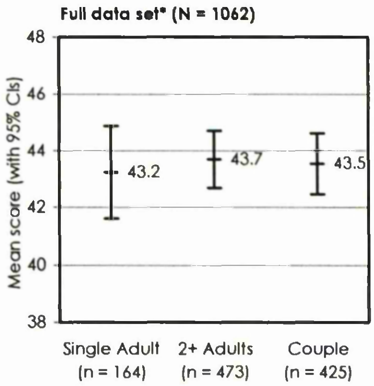


Figure 6.37 (cont.) Family type: plots (with 95 per cent confidence intervals) for the two stress variables.

Table 6.29 Family type: summary of the analyses of variance undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2
Likert GHQ	**Full data set**	single adult	168		13.5	5.5	0.838	0.433	ns
		2+ adults	475		12.9	5.6	(2, 1066)		
		couple	426	1069	12.9	5.7			
	Outliers removed	single adult	166		13.3	5.1	1.826	0.162	ns
		2+ adults	466		12.5	5.1	(2, 1042)		
		couple	413	1045	12.4	5.0			
SF-12 MCS	**Full data set***	single adult	164		43.2	10.6	0.104	0.901	ns
		2+ adults	473		43.7	11.1	(2, 1059)		
		couple	425	1062	43.5	11.3			

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

The CI plots for children in household (Figure 6.38 overleaf) give a different picture, however. These plots indicate that differences may well be present on the Likert GHQ scores for the full data set and that differences certainly exist (between those with pre-school and those with school age children) for the data set with identified outliers removed As far as the SF-12 MCS is concerned, the overlaps in the plots suggest that differences are not evident. The results of the statistical tests undertaken for these comparisons are summarised in Table 6.30.

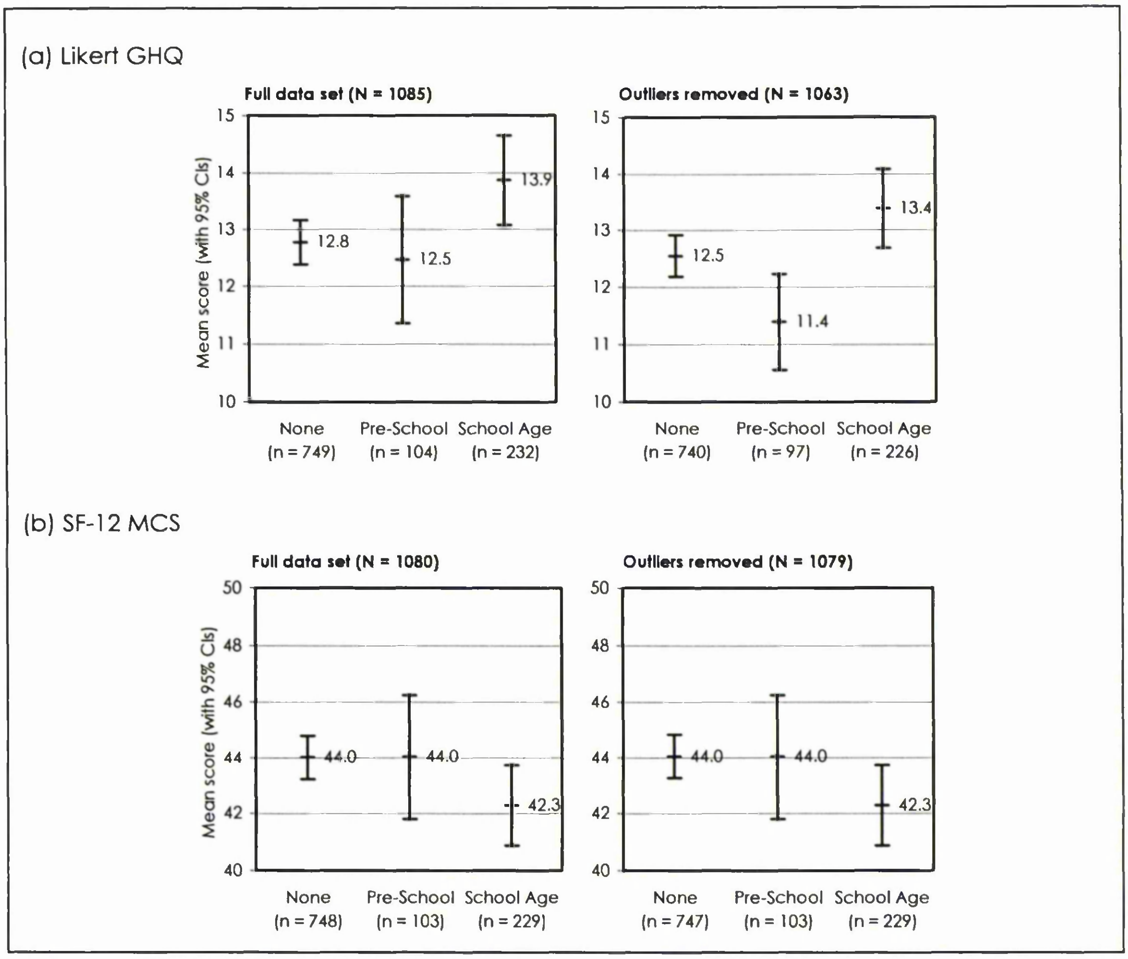


Figure 6.38 Children in household: plots (with 95 per cent confidence intervals) for the two stress variables.

Table 6.30 Children in household: summary of the analyses of variance undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping
Likert GHQ	**Full data set**	none	749		12.8	5.4	3.857	0.021	0.007	A
		pre-school	104		12.5	5.7	(2, 1082)			A
		school age	232	1085	13.9	6.1				A
	Outliers removed§	none	740		12.5	5.1	5.524	0.004	0.010	A B
		pre-school	97		11.4	4.1	(2, 1060)			A
		school age	226	1063	13.4	5.4				B
SF-12 MCS	**Full data set**	none	748		44.0	11.0	2.160	0.116	ns	
		pre-school	103		44.0	11.4	(2, 1077)			
		school age	229	1080	52.3	10.9				
	Outliers removed	none	747		44.0	10.9	2.271	0.104	ns	
		pre-school	103		44.0	11.4	(2, 1076)			
		school age	229	1079	42.3	10.9				

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §.

Although statistically significant results are evident for children in household on Likert GHQ scores, these results are far from spectacular. In both cases, the effect size is small (η^2 being less than or equal to 0.01). Moreover, the *post hoc* REGW-Q analysis for the full Likert GHQ data set indicated that all three categories of children in household formed a homogeneous subset. For the data set with outliers removed, however, the REGW-Q identifies two homogeneous groups: A = {none, pre-school} and B = {none, school age} implying that differences between the pre-school and school age categories may well account for the statistically significant effect. The validity of this latter result is suspect, however, given that the comparison involved unequal sample sizes coupled with heterogeneous variances. Although the Kruskal-Wallis test (Table 6.31) did produce a significant overall result, *post hoc* tests found no pairwise differences.

Table 6.31 Children in household: summary of the Kruskal-Wallis test undertaken for the Likert GHQ variable.

Stress variable	Data set	Subgroups	*n*	*N*	Mean rank	*H* value (df)	*p*	*Post hoc* grouping
Likert GHQ	**Full data set**	none	749		533.53	6.931	0.031	A
		pre-school	104		508.75	(2)		A
		school age	232	1085	588.91			A

Thus, with regard to children in household, although the descriptive findings regarding caseness rates are interesting, these findings are not reinforced by the statistical tests undertaken using the Likert GHQ and SF-12 MCS as dependent variables.

Unlike the inference gleaned from the stacked bar charts in Figure 6.36, Figure 6.39 (overleaf) suggests that caring for a dependent adult has no effect on either of the stress measures. Nor are any effects indicated for paid work in addition to studies (Figure 6.40). These sets of observations are largely backed up by the results of the statistical tests undertaken (Tables 6.32 and 6.33, p 233).

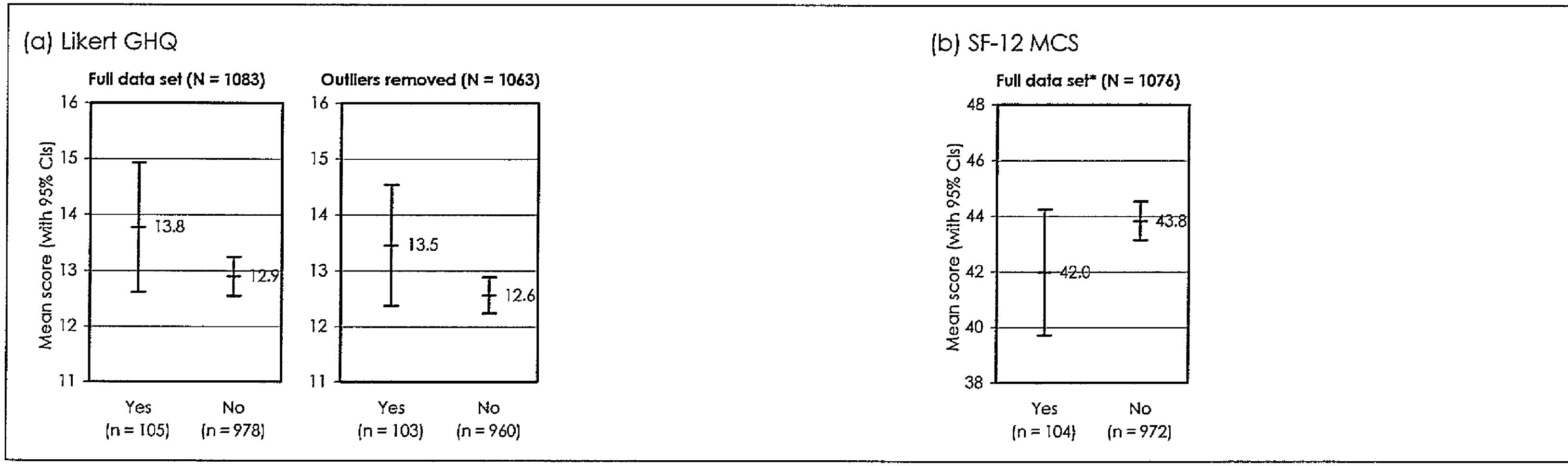


Figure 6.39 Cares for a dependent adult: plots (with 95 per cent confidence intervals) for the two stress variables.

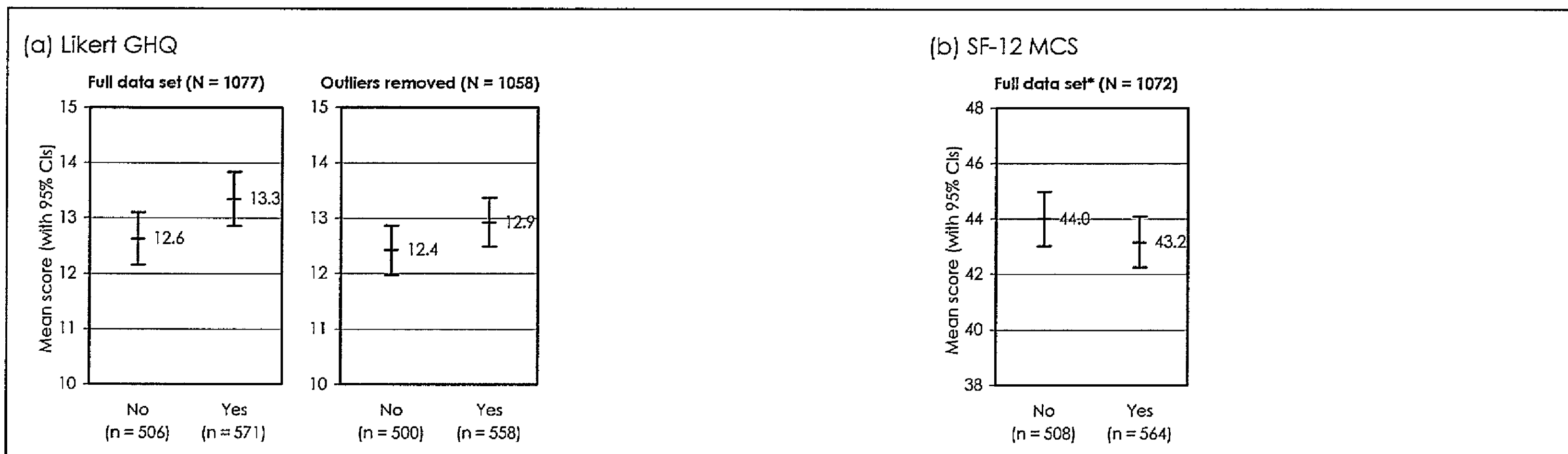


Figure 6.40 Paid work in addition to studies: plots (with 95 per cent confidence intervals) for the two stress variables.

Table 6.32 Cares for a dependent adult: summary of the t-tests undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Likert GHQ	**Full data set**	yes	105		13.8	6.0	1.516	0.130	0.9	ns
		no	978	1083	12.9	5.6			(−0.3, 2.0)	
	Outliers removed	yes	103		13.5	5.6	1.689	0.092	0.9	ns
		no	960	1063	12.6	5.1			(−0.1, 1.9)	
SF12-MCS	**Full data set***	yes	104		42.0	11.6	−1.631	0.103	−1.9	ns
		no	972	1076	43.8	11.0			(−4.1, 0.4)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

Table 6.33 Paid work in addition to studies: summary of the t-tests undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Likert GHQ	**Full data set**	yes	571		13.3	5.9	−2.081	0.038	−0.7	0.127
		no	506	1077	12.6	5.4			(−1.4, 0.0)	
	Outliers removed	yes	558		12.9	5.2	−1.582	0.114	−0.5	ns
		no	500	1058	12.4	5.1			(−1.1, 0.1)	
SF12-MCS	**Full data set***	yes	564		43.2	11.1	1.224	0.221	0.8	ns
		no	508	1072	44.0	11.1			(−0.5, 2.2)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §.

Although the results summarised in Tables 6.32 and 6.33 largely verify the pictures gleaned from Figures 6.39 and 6.40, there is one anomaly. A statistically significant result was obtained for paid work in addition to studies on the Likert GHQ score with the full data set. However, although statistically significant, the effect size at around 0.1 is rather small. There is a possibility that those who undertake paid work in addition to their studies experience higher stress levels, but the evidence is far from convincing.

Figures 6.41 and 6.42 (overleaf) contain CI plots for housing type (institutional vs. non-institutional) and housing costs, respectively. These plots suggest that housing type has no effect on stress levels. The picture is similar for housing costs, although the relatively small overlap for the Likert GHQ data set with outliers removed implies that there might possibly be an effect here.

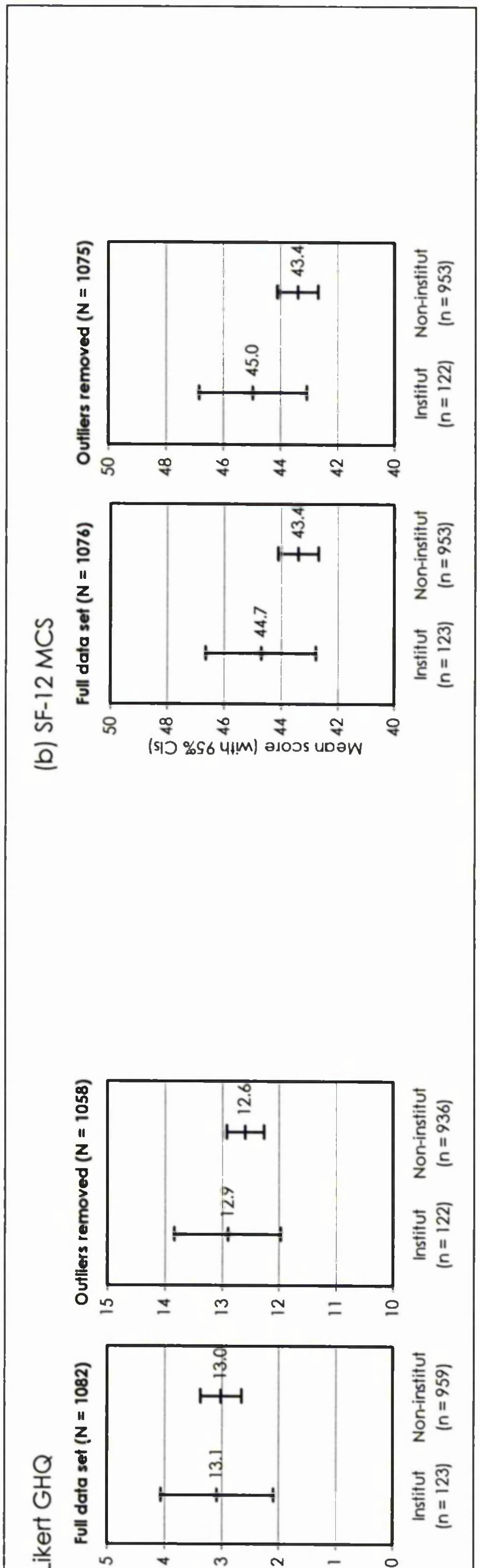


Figure 6.41 Housing type: plots (with 95 per cent confidence intervals) for the two stress variables.

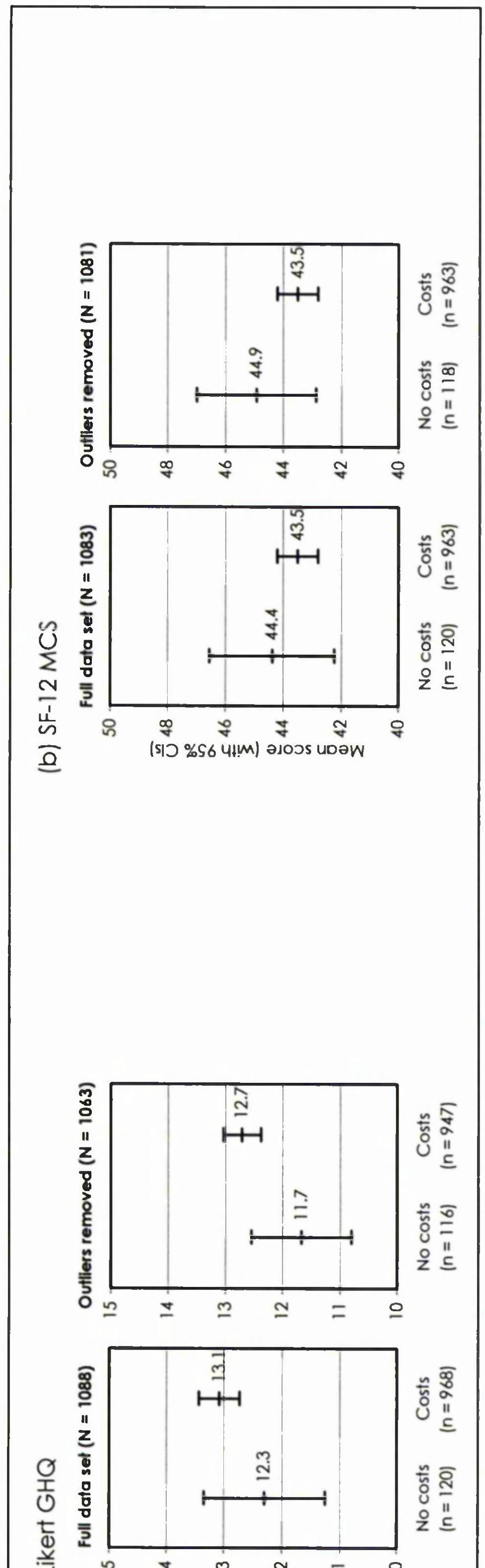


Figure 6.42 Housing costs: plots (with 95 per cent confidence intervals) of the two stress variables.

Tables 6.34 and 6.35 below contain summaries of the statistical tests undertaken for, respectively, housing type and housing costs.

Table 6.34 Housing type: summary of the t-tests undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Likert GHQ	Full data set	institutional	123		13.1	5.5	0.121	0.903	0.1	ns
		non-institut.	959	1082	13.0	5.7			(−1.0, 1.1)	
	Outliers removed	institutional	122		12.9	5.2	0.626	0.532	0.3	ns
		non-institut.	936	1058	12.6	5.0			(−0.6, 1.3)	
SF12-MCS	Full data set	institutional	123		44.7	10.8	1.241	0.215	1.3	ns
		non-institut.	953	1076	43.4	11.1			(−0.8, 3.4)	
	Outliers removed	institutional	122		15.0	10.5	1.478	0.140	1.6	ns
		non-institut.	953	1075	43.4	11.1			(−0.5, 3.6)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §.

Table 6.35 Housing costs: summary of the t-tests undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Likert GHQ	Full data set	no costs	120		12.3	5.8	−1.429	0.153	−0.8	ns
		costs	968	1088	13.1	5.6			(−1.9, 0.3)	
	Outliers removed§	no costs	116		11.7	4.7	−2.085	0.037	−1.0	0.205
		costs	947	1063	12.7	5.1			(−2.0, −0.1)	
SF12-MCS	Full data set	no costs	120		44.4	11.9	0.822	0.411	0.9	ns
		costs	963	1083	43.5	11.0			(−1.2, 3.0)	
	Outliers removed	no costs	118		44.9	11.3	1.324	0.186	1.4	ns
		costs	963	1081	43.5	11.0			(−0.7, 3.5)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §.

As expected, no statistically significant results were obtained for housing type on either of the two stress measures. With regard to housing costs, a statistically significant result was, indeed, obtained for the Likert GHQ data set with outliers removed, although the *p*-value is far from spectacular and the effect size, at around 0.2, is small. Nevertheless, it may be that those with housing costs have higher stress levels than those without.

6.3.2.4 The additional variable set

In this section, the variables from the additional variable set are considered with the notable exception of 'already a qualified nurse' which was excluded from further analysis because of a lack of variability (only 1.6 per cent of respondents were already a qualified nurse). In addition, as outlined in Section 5.3.6, only two of the original seven disability variables are considered, namely unseen disability and dyslexia.

The stacked bar charts in Figure 6.43 overleaf illustrate the caseness rates for each of the comparisons within the additional variable set. As with the other variable sets, there are some noteworthy observations that can be gleaned from the stacked bar charts.

Plot 6.43a is interesting in that seems to suggest that caseness decreases as familiarity with Manchester increases. Moreover, at the two extremes – unfamiliar and very familiar – caseness rates are, respectively, appreciably above and appreciably below the benchmark caseness rate. Assessment load – whether respondents had assessments or examinations due within four weeks of the date on which the questionnaire pack was completed – appears also to affect prevalence (Plot 6.43b). There is an appreciably lower caseness rate in the subgroup with no assessments due (low assessment load) and appreciably higher caseness rates in the subgroups with one to two or three or more assessments due (moderate-high assessment load). From Plot 6.43d, the caseness rates for difficulty travelling to academic base increase as the categories are crossed. In particular, the caseness rates are appreciably below and appreciably above the benchmark rates at the two extremes, no difficulty and a lot of difficulty. For difficulty travelling to clinical areas (Plot 6.43e), all of the categories with the exception of 'hardly any' have caseness rates appreciably above the benchmark. There is also an appreciably higher caseness rate in those with dyslexia (Plot 6.43c) and in those with an unseen disability (Plot 6.43f).

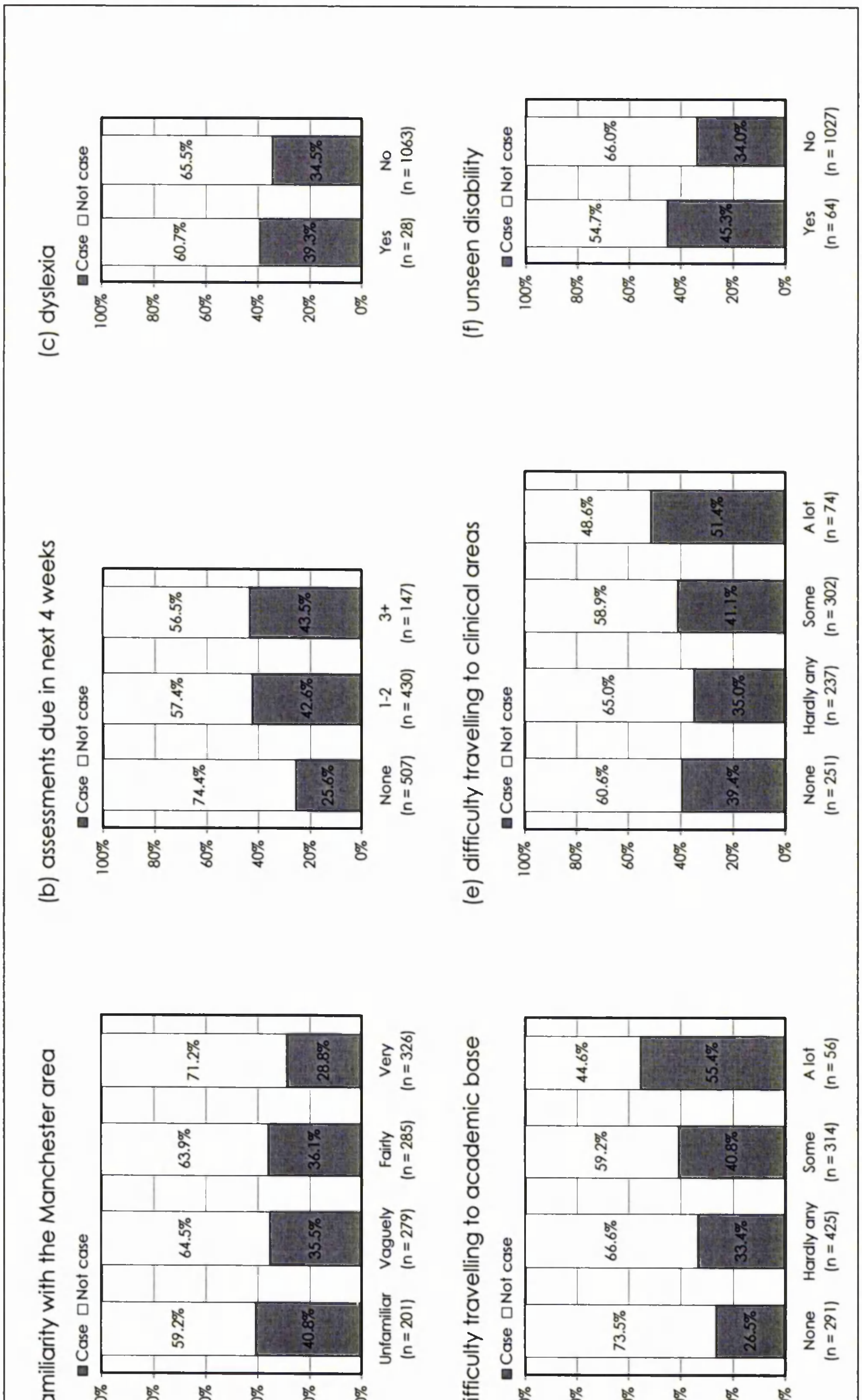


Figure 6.43 Stacked bar charts for GHQ caseness for the variables in the additional variable set.

As with the other variable sets, inferential tests were undertaken with the Likert GHQ and SF-12 MCS as dependent variables.

The CI plots in Figure 6.44 below are concerned with familiarity with the Manchester area. These plots suggest that differences probably exist between the unfamiliar and the very familiar groups on both the Likert GHQ data sets but that differences are not readily observable on the SF-12 MCS data set. These observations are consistent with the statistical tests undertaken, the results of which are summarised in Table 6.36 overleaf.

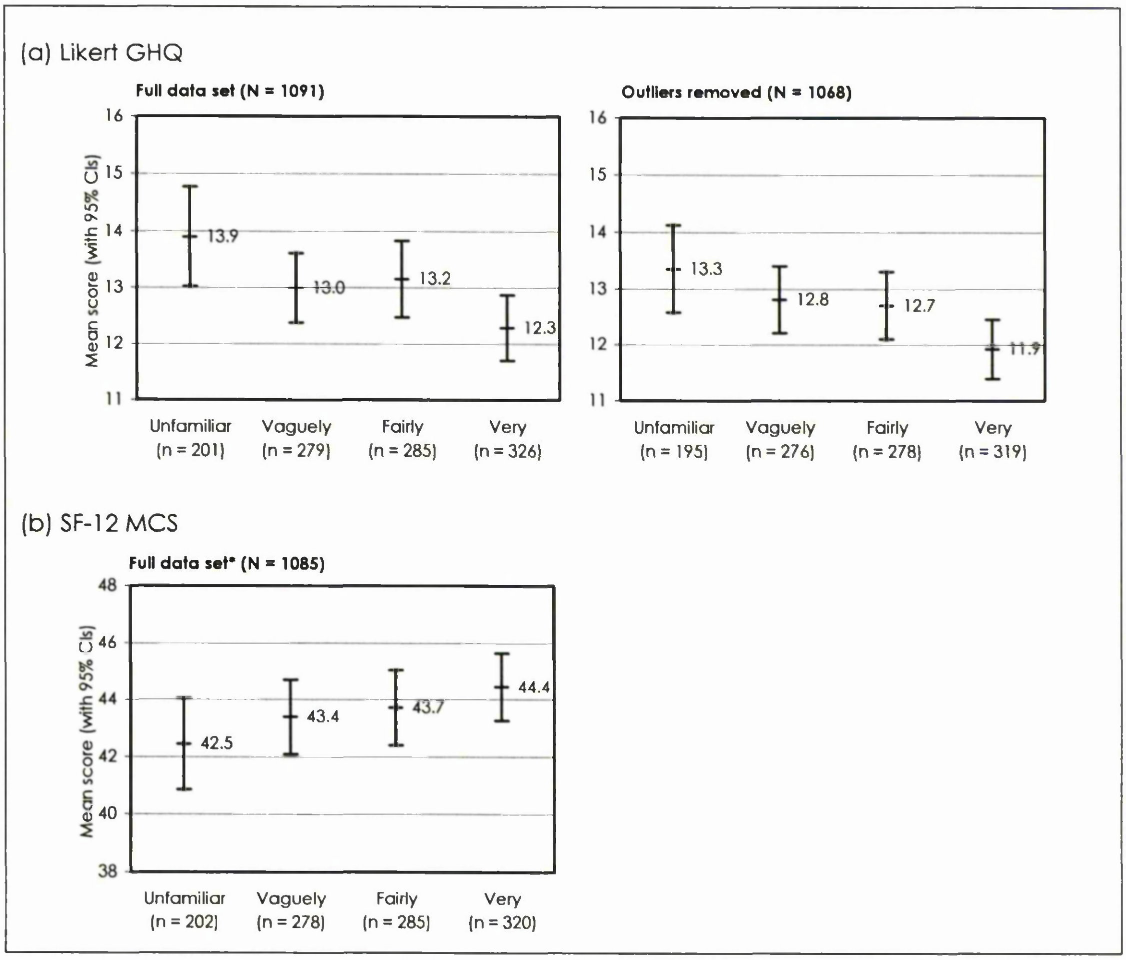


Figure 6.44 Familiarity with the Manchester area: plots (with 95 per cent confidence intervals) for the two stress measures.

Table 6.36 Familiarity with the Manchester area: summary of the analyses of variance undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping
Likert GHQ	Full data set	unfamiliar	201		13.9	6.2	3.513	0.015	0.007	B
		vaguely	279		13.0	5.3	(3, 1087)			A B
		fairly	285		13.2	5.8				A B
		very	326	1091	12.3	5.3				A
	Outliers removed	unfamiliar	195		13.3	5.5	3.497	0.015	0.010	B
		vaguely	276		12.8	5.0	(3, 1064)			A B
		fairly	278		12.7	5.1				A B
		very	319	1068	11.9	4.8				A
SF-12 MCS	Full data set*	unfamiliar	202		42.5	11.5	1.379	0.248	ns	
		vaguely	278		43.4	11.0	(3, 1081)			
		fairly	285		43.7	11.2				
		very	320	1085	44.4	10.7				

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

As expected, a statistically significant result was obtained for familiarity with the Manchester area for both the Likert GHQ data sets, although no significant findings were evident for the SF-12 MCS data. The effect size was small (η^2 of around 0.01) for both data sets and the *post hoc* REGW-Q tests pointed to two homogenous subsets of categories: A = {vaguely, fairly, very} and B = {unfamiliar, vaguely, fairly}. For both sets of Likert GHQ data, the effect may well lie in a difference between the very familiar and unfamiliar categories, an observation consistent with the descriptive caseness rate findings.

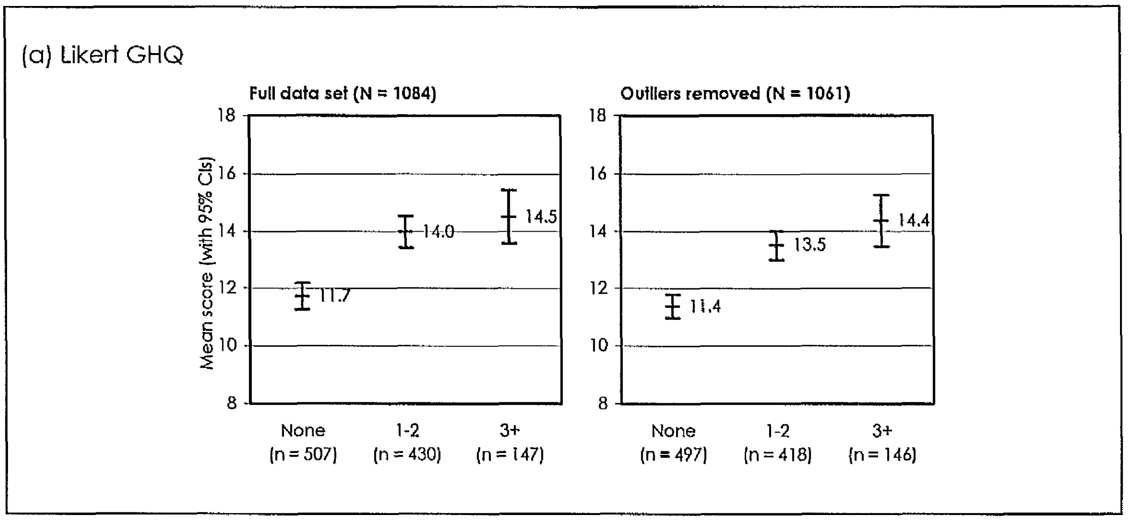


Figure 6.45 Assessment load: plots (with 95 per cent confidence intervals) for the two stress variables (continued overleaf).

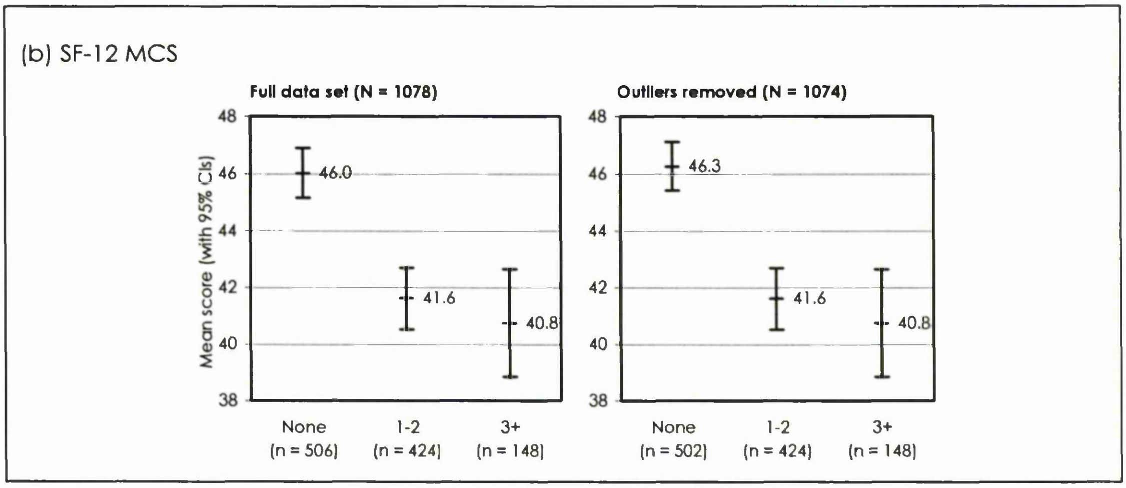


Figure 6.45 (cont.) Assessment load: plots (with 95 per cent confidence intervals) for the two stress variables.

The CI plots in Figure 6.45 (above and on the previous page) are concerned with assessment load. These plots are striking in that all four plots suggest a sizeable difference between those who have no assessments due and those who have at least one assessment due. Statistical tests undertaken on these datasets are summarised in Table 6.37 below.

Table 6.37 Assessment load: summary of the analyses of variance undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	F value (df)	*p*	η^2	*Post hoc* grouping
Likert GHQ	**Full data set**	none	507		11.7	5.3	25.563	0.000	0.045	A
		1-2	430		14.0	5.8	(2, 1081)			B
		3 or more	147	1084	14.5	5.7				B
	Outliers removed§	none	497		11.4	4.7	31.535	0.000	0.056	A
		1-2	418		13.5	5.1	(2, 1058)			B
		3 or more	146	1061	14.4	5.5				B
SF-12 MCS	**Full data set§**	none	506		46.0	10.0	24.966	0.000	0.044	A
		1-2	424		41.6	11.4	(2, 1075)			B
		3 or more	148	1078	40.8	11.7				B
	Outliers removed§	none	502		46.3	9.7	28.208	0.000	0.050	A
		1-2	424		41.6	11.4	(2, 1071)			B
		3 or more	148	1074	40.8	11.7				B

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §.

From Table 6.37, a small-to-medium effect size was evident for all four tests on assessment load (in each case, $\eta^2 \approx 0.04\text{-}0.05$). For all four data sets, *post hoc* REGW-Q tests identified none (no assessments) as a distinct homogenous subset. This implies that the statistically significant effect lies in a difference between those with no assessments due and those with at least one assessment due, a finding consistent with the descriptive caseness rate findings. The validity of these results are suspect, however, given that three out of four of the tests involved unequal sample sizes coupled with heterogeneous variances. However, the Kruskal-Wallis tests and the concomitant *post hoc* analyses that were run as alternatives yielded identical results (Table 6.38 below), both in terms of the *p*-values obtained and the inter-group differences deemed responsible for the effect.

Table 6.38 Assessment load: summary of the Kruskal-Wallis tests undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean rank	*H* value (df)	*p*	*Post hoc* grouping	
Likert GHQ	Full data set	none	507		470.75	51.570	0.000	A	
		1-2	430		596.68	(2)			B
		3 or more	147	1084	631.50				B
SF-12 MCS	Full data set	none	506		607.33	45.761	0.000	A	
		1-2	424		484.89	(2)			B
		3 or more	148	1078	464.04				B

The two travel difficulties variables are considered in Figures 6.46 and 6.47.

(a) Likert GHQ

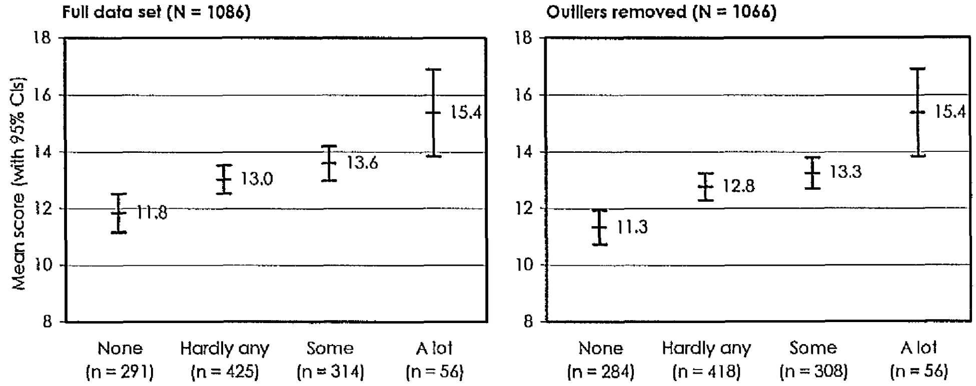


Figure 6.46 Difficulty in travelling to the academic base: plots (with 95 per cent confidence intervals) for the two stress variables (continued overleaf).

(b) SF-12 MCS

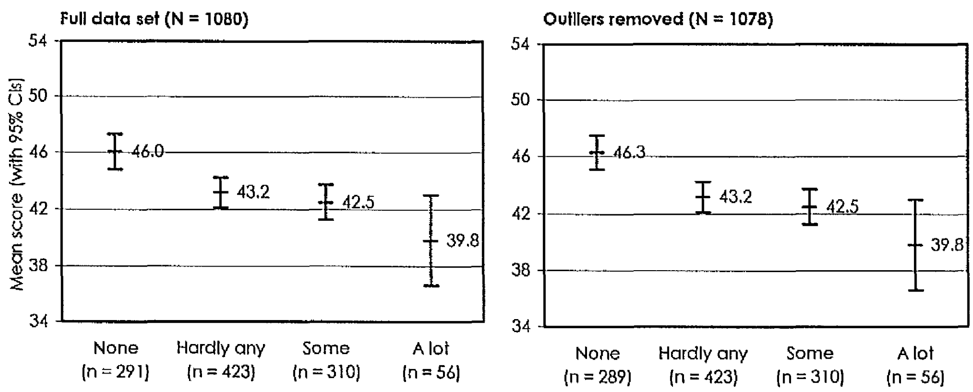


Figure 6.46 (cont.) Difficulty in travelling to the academic base: plots (with 95 per cent confidence intervals) for the two stress variables.

For difficulty travelling to academic base, the CI plots (Figure 6.46), suggest that there is, for all four data sets, a difference between the two extreme categories ('none' vs. 'a lot'). For difficulty travelling to clinical areas (Figure 6.47 below) the picture, although perhaps less clear-cut, implies a similar effect for the three data sets examined. Note that for difficulty travelling to clinical areas, the sample size is depleted because respondents early on in their programmes of study were unable to respond to this question because they had not had any clinical placements.

(a) Likert GHQ

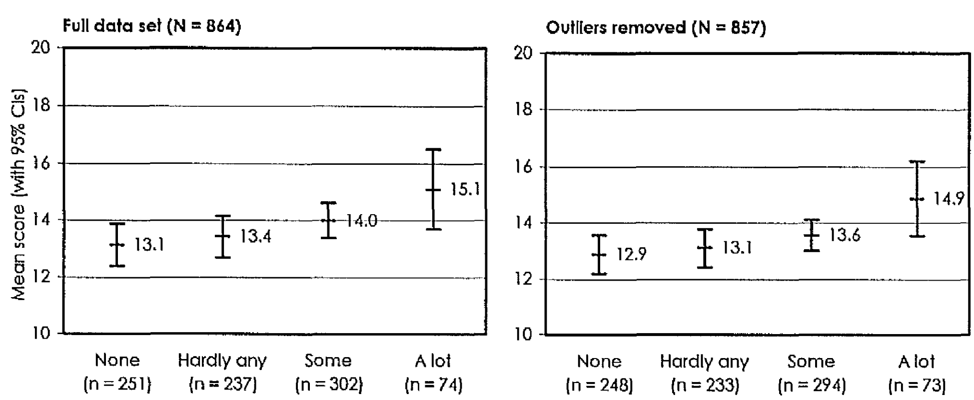


Figure 6.47 Difficulty in travelling to the clinical areas: plots (with 95 per cent confidence intervals) for the two stress variables (continued overleaf).

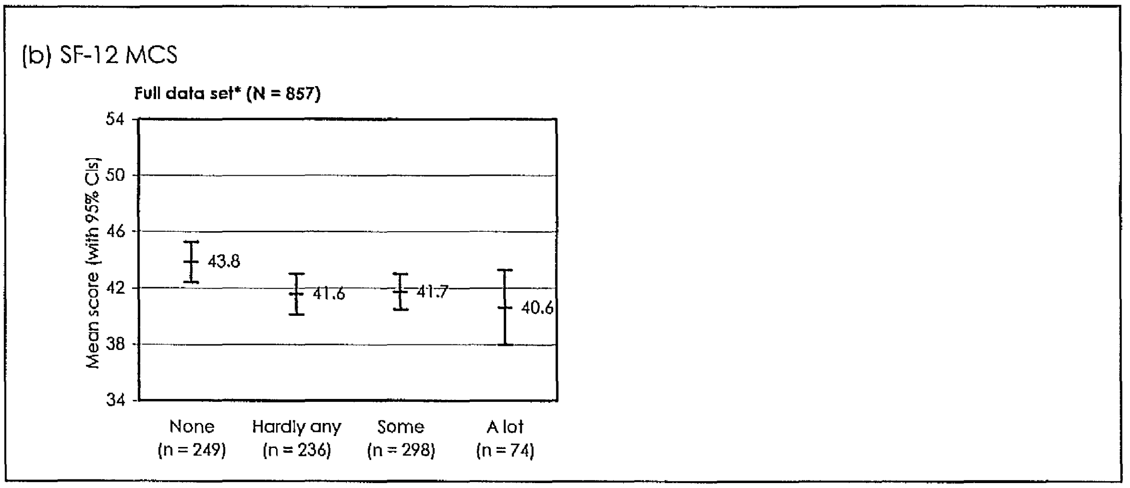


Figure 6.47 (cont.) Difficulty in travelling to the clinical areas: plots (with 95 per cent confidence intervals) for the two stress variables.

The results of the statistical tests undertaken for the two travel difficulty comparisons are summarised in Tables 6.39 (below) and 6.40 (overleaf).

Table 6.39 Difficulty in travelling to the academic base: summary of the analyses of variance undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping	
Likert GHQ	Full data set	none	291		11.8	6.0	8.801	0.000	0.024	A	
		hardly any	425		13.0	5.4	(3, 1082)			B	
		some	314		13.6	5.5				B	
		a lot	56	1086	15.4	5.7				B	
	Outliers removed	none	284		11.3	5.1	13.361	0.000	0.036	A	
		hardly any	418		12.8	5.0	(3, 1062)			B	
		some	308		13.3	4.9				B	C
		a lot	56	1066	15.4	5.7					C
SF-12 MCS	Full data set	none	291		46.0	10.7	8.301	0.000	0.023	A	
		hardly any	423		43.2	11.0	(3, 1076)			B	
		some	310		42.5	11.0				B	
		a lot	56	1080	39.8	11.9				B	
	Outliers removed	none	289		46.3	10.4	9.326	0.000	0.025	A	
		hardly any	423		43.2	11.0	(3, 1074)			B	
		some	310		42.5	11.0				B	
		a lot	56	1078	39.8	11.9				B	

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §.

The results for difficulty in travelling to academic base are consistent with the picture given by the CI plots in Figure 6.47. The *p*-values for all four data sets are good and the effect size in each case is small-to-medium (η^2 is between 0.02 and 0.04). For three of the four data sets (Likert GHQ, full data set; both SF-12 analyses), *post hoc* REGW-Q analyses identified the category 'none' as a discrete category. For the fourth data set (Likert GHQ with outliers removed), although the REGW-Q analysis identified 'none' as a discrete category (A), two homogenous subset were also identified: B = {hardly any, some} and C = {some, a lot}. Considering the overall pattern evident in these four data sets, it seems that the statistically significant effect may well lie in a difference between 'none' and the other three categories. Those who have no difficulty in travelling to their academic base appear to experience less stress than those who have some degree of difficulty, a finding consistent with the descriptive caseness rate data reported earlier.

Table 6.40 Difficulty in travelling to the clinical areas: summary of the analyses of variance undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping
Likert GHQ	Full data set	none	251		13.1	5.9	2.729	0.043	0.009	A
		hardly any	237		13.4	5.7	(3, 860)			A
		some	302		14.0	5.5				A
		a lot	74	864	15.1	6.0				A
	Outliers removed	none	248		12.9	5.5	3.015	0.029	0.011	A
		hardly any	233		13.1	5.2	(3, 844)			A
		some	294		13.6	4.8				A
		a lot	73	848	14.9	5.7				A
SF12-MCS	Full data set*	none	249		43.8	11.5	2.6222	0.050	0.009	A
		hardly any	236		41.6	11.3	(3, 853)			A
		some	298		41.7	11.1				A
		a lot	74	857	40.6	11.4				A

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

For difficulty travelling to clinical areas (see Table 6.40 above), a small effect was evident for all three tests undertaken (η^2 around 0.01 in each case). However, for all three data sets, the *post hoc* REGW-Q analyses consolidated all four categories into a homogeneous subset, rendering the results inconsequential.

The CI plots in Figure 6.48 and 6.49 overleaf are concerned, respectively, with the two disability variables for which sufficient data was available: dyslexia and unseen disability.

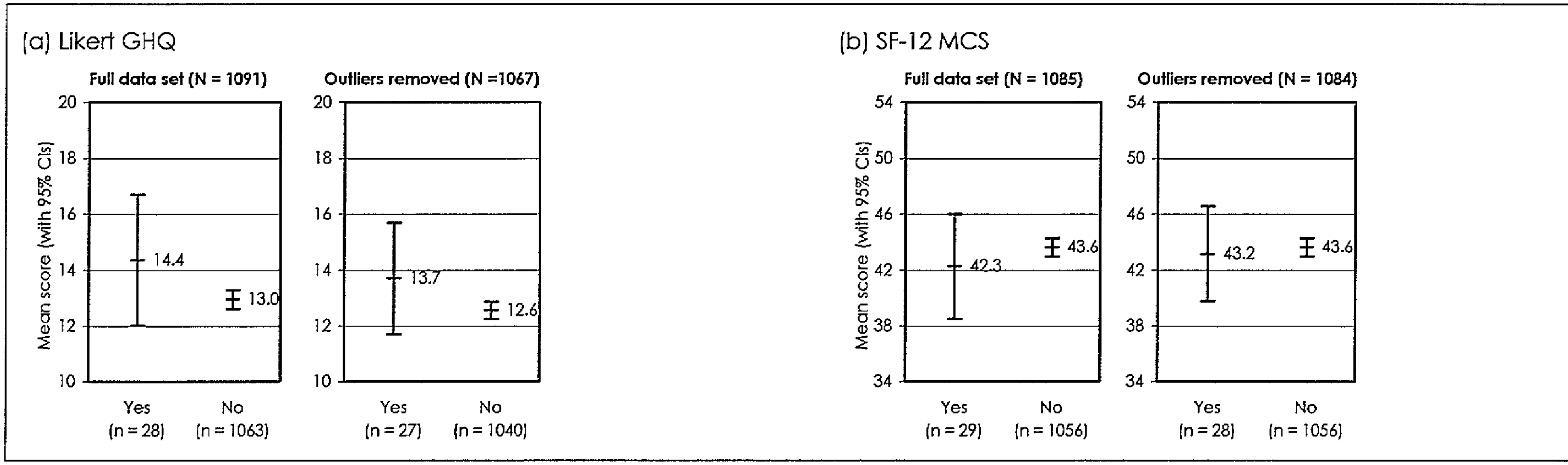


Figure 6.48 Dyslexia: plots (with 95 per cent confidence intervals) for the two stress variables.

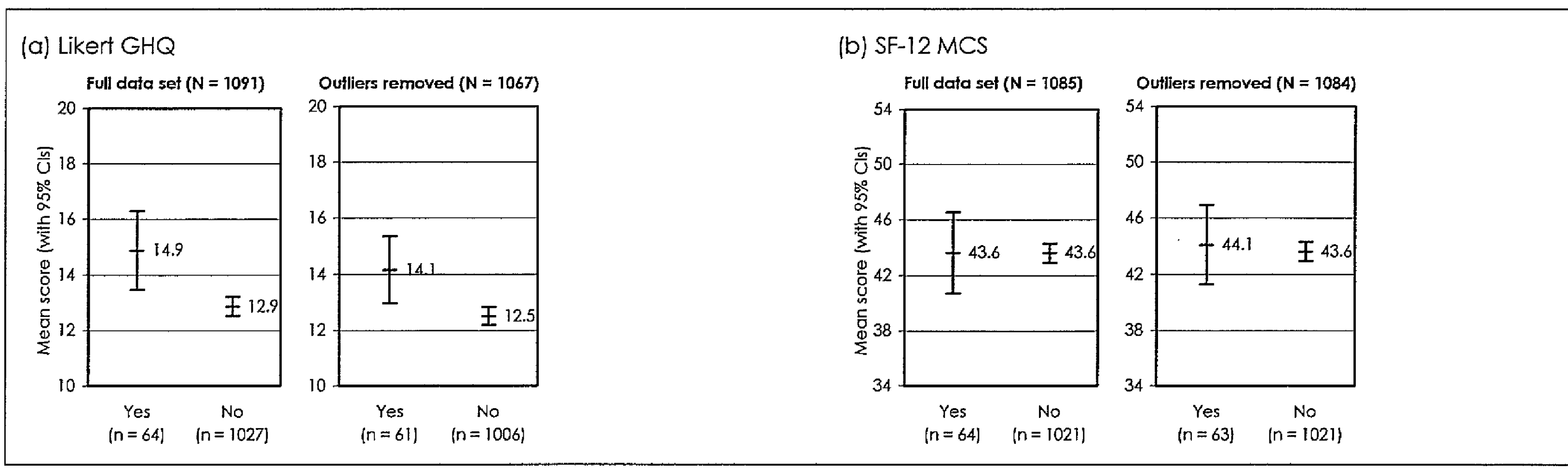


Figure 6.49 Unseen disability: plots (with 95 per cent confidence intervals) for the two stress variables.

From these plots, whether respondents had dyslexia or not appears to have no effect on stress levels, although there did seem to be an effect, at least with the Likert GHQ data sets, on unseen disability. Tables 6.41 and 6.42 below contain summaries of the statistical tests undertaken on the dyslexia and unseen disability datasets.

Table 6.41 Dyslexia: summary of the t-tests undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Likert GHQ	**Full data set**	yes	28		14.4	6.1	1.299	0.194	1.4	ns
		no	1063	1091	13.0	5.6			(−0.7, 3.5)	
	Outliers removed	yes	27		13.7	5.1	1.147	0.252	1.1	ns
		no	1040	1067	12.6	5.1			(−0.8, 3.1)	
SF12-MCS	**Full data set**	yes	29		42.3	9.9	−0.662	0.508	−1.4	ns
		no	1056	1085	43.6	11.1			(−5.5, 2.7)	
	Outliers removed§	yes	28		43.2	8.8	−0.278	0.783	−0.5	ns
		no	1056	1084	43.6	11.1			(−3.9, 3.0)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §.

Table 6.42 Unseen disability: summary of the t-tests undertaken for the two stress variables.

Stress variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Likert GHQ	**Full data set**	yes	64		14.9	5.6	2.763	0.006	2.0	0.356
		no	1027	1091	12.9	5.6			(0.6, 3.4)	
	Outliers removed	yes	61		14.1	4.7	2.464	0.014	1.6	0.325
		no	1006	1067	12.5	5.1			(0.3, 2.9)	
SF12-MCS	**Full data set**	yes	64		43.6	11.8	0.017	0.987	0.0	ns
		no	1021	1075	43.6	11.0			(−2.8, 2.8)	
	Outliers removed§	yes	63		44.1	11.2	0.345	0.730	0.5	ns
		no	1021	1084	43.6	11.0			(−2.3, 3.3)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §.

In line with the CI plots in Figure 6.48, none of the tests for the four dyslexia data sets produced statistically significant results despite the descriptive finding that appreciably higher caseness rates were evident in those with dyslexia. On the other hand, both the unseen disability Likert GHQ data sets produced statistically significant results, as predicted from the CI plots in Figure 6.49. In each case, the p-values (both at around 0.01) are good and the effect size at around 0.3-0.4 is small-to-medium. It seems that those with an unseen disability may have higher stress levels than those without such a disability, a finding consistent with the descriptive caseness rate finding.

6.3.3 Stress: summary of results

In addressing Research Question 2a, the overall prevalence of stress amongst pre-registration students, using a 3/4 GHQ threshold, is around one-third. It is also worth noting that respondents seem reasonably good at gauging their own stress levels.

When specific comparisons are made, appreciably higher or lower prevalence (caseness) rates compared to the benchmark rate give some hints as to which variables might play a role in eliciting or, indeed, protecting from stress. Judged against the benchmark prevalence rate of 34.6 per cent, appreciably higher prevalence rates were associated with: undertaking a midwifery programme (the standard midwifery diploma in particular), being in the branch, being non-white, entering the programme with a HE certificate or diploma as the highest qualification, having school age children, caring for a dependent adult, being unfamiliar with the Manchester area, having assessments due in the next four weeks, some or a lot of difficulty travelling (both to the academic base and to the clinical areas although having no difficulty travelling to the clinical areas was also associated with appreciably higher prevalence rate), having dyslexia and having an unseen disability, such as asthma, diabetes or epilepsy. Appreciably lower prevalence rates, on the other hand, are associated with: being a mental health or children's nursing student, being in the CFP, being in the intermediate (21-25) age group, being male, having at least a first degree on entry to the programme, having pre-school children, being very familiar with the Manchester area, having no assessments in the next four weeks and having no difficulty travelling to the academic base.

In addressing Research Question 2b, there are discernible differences in stress levels between subgroups. From the statistical comparisons, the variables that appear to have an effect on both the SF-12 MCS and Likert GHQ scores are listed below. Interestingly, for each of the four variables listed, the descriptive caseness rate data identified appreciably higher or appreciably lower caseness rates in one or more of the variable's categories.

- **CFP vs. branch:** branch students seem to have higher stress levels (Likert GHQ) and poorer mental health (SF-12 MCS) than CFP students.

- **Sex:** women seem to have higher stress levels and poorer mental health than men (although some extreme individual responses may have clouded the overall picture).

- **Assessment load:** those with no assessments due in the next four weeks seem to have lower stress levels and better mental health than those who have assessments due. This is a consistent result across all four data sets tested, with a reasonable effect size in each case.

- **Travel difficulties:** difficulty in travelling to the clinical area had no effect on stress levels or on mental health, but those with no difficulty travelling to their academic base seemed to have lower stress levels and better mental health than those who had some degree of difficulty travelling to their academic base.

In addition, the variables that appear to have an effect on Likert GHQ scores but not on SF-12 scores are:

- **Paid work in addition to studies:** those who undertake paid work in addition to their studies seem to experience higher stress levels than those who do not (although the effect size observed was rather small and no appreciably higher or appreciably lower caseness rates were evident in the variable's two categories).

- **Housing costs:** those with housing costs seem to have higher stress levels than those without (although no appreciably higher or appreciably lower caseness rates were evident in the variable's two categories).

- **Familiarity with the Manchester area:** those very familiar with the Manchester area seem to have lower stress levels than those who are unfamiliar, a result consistent with the descriptive caseness rate data.

- **Unseen disability:** those with an unseen disability seem to have higher stress levels than those without, a result again consistent with the descriptive caseness rate data.

It is appropriate at this point to consider one further GHQ comparison. As a crude means of measuring non-response bias, Borrill *et al.* (1986) compared the GHQ scores of those in the NHS study who responded unprompted with those who required intensive prompting. In a similar way, the Likert GHQ and SF-12 MCS scores of those in the current investigation who returned their completed questionnaire packs without a reminder (≡ unprompted) were compared with the scores of those who required a reminder (≡ prompted). The results of these comparisons are summarised in Table 6.43 below. No significant differences were found between the unprompted and promoted groups on either the Likert GHQ or the SF-12 MCS, suggesting that the two groups are similar.

Table 6.43 Unprompted vs. prompted respondents: summary of the t-tests undertaken for the two stress variables.

Stress variable	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	
Likert GHQ§	unprompted	1042		12.9	5.6	−1.780	0.081	ns
	prompted	49	1091	14.6	6.7			
SF-12 MCS§	unprompted	1036		43.7	10.9	1.425	0.160	ns
	prompted	49	1075	41.0	13.1			

Note: For each test, variances are homogenous unless marked §.

6.4 COPING AND SUPPORT

In this section, findings which attempt to address the research questions concerned with coping and support are considered. Specifically, Research Questions 3a to 3c are addressed:

3a. What coping styles do pre-registration students in the School employ?

3b. Are there discernible differences in coping styles between various subgroups of the study population?

3c. What roles do support services play?

Several sets of data helped provide a response to Research Question 3a. Firstly, descriptive analyses of the five 'direct attempts at coping' variables (derived from Questions 31-35, Part A of the questionnaire pack) and the eight 'substance use as coping' variables (derived from Question 36) provide some general information about specific behaviours used in coping. Secondly, the formal measure of coping – the CISS – gives some information about the specific coping styles employed by respondents.

The CISS summary variables are used in particular to address Research Question 3b. In considering Research Question 3b, naturalistic comparisons of the CISS summary variables by the subgroups of both the primary variable set and the standard demographic variable set were undertaken.

Information about support services (Research Question 3c) was obtained from responses to Question 37 of part A of the questionnaire pack which was concerned specifically with the support services available to respondents.

6.4.1 Direct attempts at coping

Questions 31-35 of the questionnaire pack asked, respectively, whether respondents had seriously thought of dropping out, had actually taken time out, had had significant absences from theory sessions or the clinical areas and whether they had missed submission dates or had asked for extensions. How respondents responded to each of these 'direct attempts at coping' variables is summarised in Figure 6.50 overleaf. Examining Figure 6.50, the reader will note that almost a third of respondents had thought about dropping out and almost 20 per cent had asked for extensions on assessed work or had had late submissions. Around ten per cent had actually taken time out of the programme. Interestingly, the proportion of respondents who admitted to significant absences from either the theoretical or the clinical aspects of the course was, at less than ten per cent, relatively small.

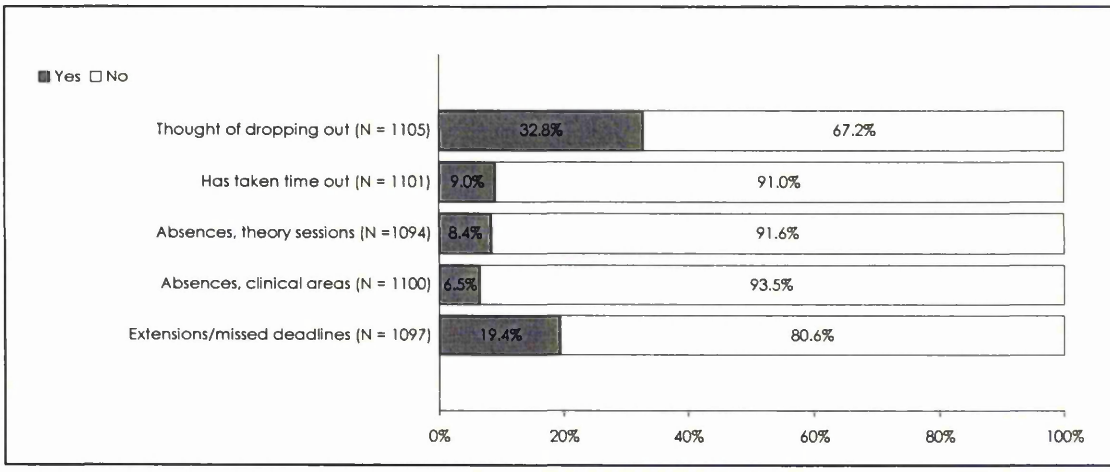


Figure 6.50 Stacked bar charts for the five direct attempts at coping (Q31-35) variables.

6.4.2 Substance use as coping

For each of the eight common substances listed in Question 36, Table 6.44 lists the proportion of respondents who said they were a user of the substance, together with the proportions (both overall and of users) who said they used each substance as a means of coping.

Table 6.44 Substance use as coping: descriptive statistics.

		Users		Used when stressed		
Substance	**Valid N**	*n*	%	*n*	% overall	% of users
Tobacco	1064	399	37.5%	274	25.8%	68.7%
Alcohol	1086	879	80.9%	228	21.0%	25.9%
Cannabis	1018	106	10.4%	34	3.3%	32.1%
Amphetamines	1020	21	2.1%	3	0.3%	14.3%
Other recreational drugs	1019	42	4.1%	6	0.6%	14.3%
Anti-depressants	1023	54	5.3%	26	2.5%	48.1%
Anxiolytics	1021	46	4.5%	30	2.9%	65.2%
Hypnotics	1025	96	9.4%	54	5.3%	56.3%

Some interesting observations arise from Table 6.44. Firstly, although over 80 per cent of respondents drink alcohol on a regular basis, alcohol is not seen as a means of coping by the majority of its users: only around a quarter of users used alcohol as a means of coping. In contrast, only around 40 per cent of respondents smoked, yet nearly 70 per cent of smokers used smoking as a means of coping.

Non-prescription drug use appears uncommon amongst respondents, with around ten per cent of respondents using cannabis, around two per cent using amphetamines and around four per cent using other recreational drugs. With around a third of users using cannabis when stressed, a sizeable minority of respondents see cannabis as useful in coping. Prescription drugs, on the other hand, are used more often as a means of coping than non-prescription drugs. Although only around ten per cent of respondents use hypnotics and although only around five per cent use anti-depressants and anxiolytics, a large proportion of users of these drugs see them as a means of helping them cope. That almost ten per cent of respondents use sleeping tablets (hypnotics) is in itself noteworthy. Note that low frequencies in the 'users' category of the variables amphetamines, other recreational drugs and anxiolytics (less than five per cent of the total used these substances) meant that there was insufficient variability in these three variables for more complex analyses, hence these variables were subsequently excluded from further analysis.

6.4.3 Coping styles: CISS summary variables

The CISS elicits five summary variables: three main variables – task, emotion, and avoidance – which reflect the extent to which an individual or particular group uses, respectively, task-oriented, emotion-oriented and avoidance-oriented coping and two supplementary variables – distraction and social diversion. Although all five variables are considered in the following sections, it is important – particularly when interpreting results – to remember that the two supplementary variables are actually components of avoidance. In other words, distraction and social diversion are merely types of avoidance-oriented coping.

Figure 6.51 overleaf contains a 'coping profile' for the entire sample set against the midpoints of each of the five CISS variables (a midpoint of 48 for the three main variables, 22 for distraction and 15 for social diversion). Raw scores rather than T-scores have been employed and the midpoint of each scale is used a reference rather than some normative population for the reasons outlined earlier in Section 4.7.2.1

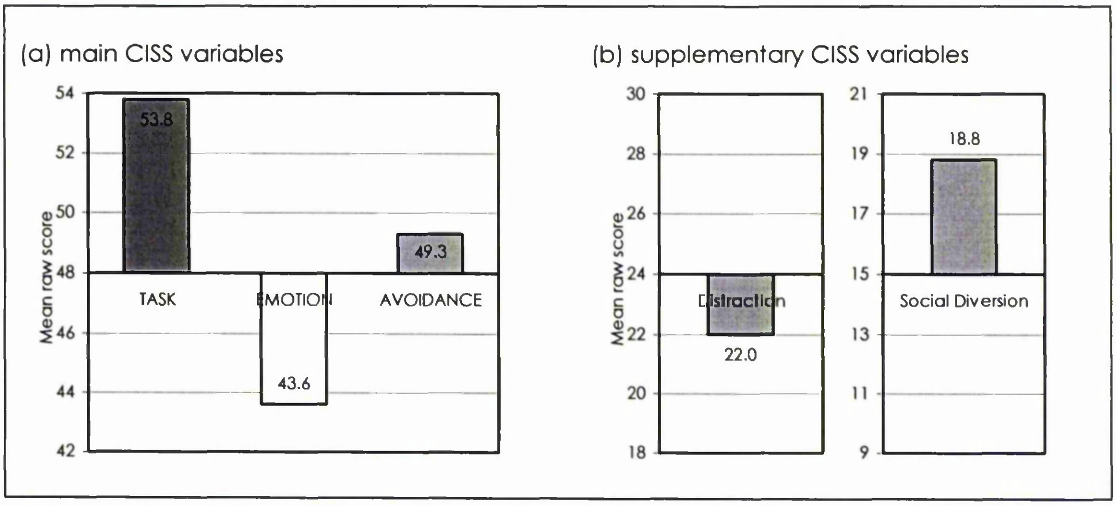


Figure 6.51 Bar charts of the mean raw scores of the three main and two supplementary CISS variables, using scale midpoints as a reference.

Overall, when compared to the midpoint scores, respondents in the main study tended to make greater use of task-oriented coping, and less use of emotion-oriented coping. Respondents also tended to use avoidance-oriented coping at rates slightly above the midpoint; this relatively nondescript observation, however, conceals the observation that respondents use social diversion at rates above the midpoint and distraction at rates below the midpoint.

Given the lack of a UK-specific normative population, these observations have somewhat limited utility. More meaningful information can be gleaned from naturalistic comparisons of the CISS variables, in particular those comparisons defined by the primary and standard demographic variable sets.

6.4.4 CISS variables

6.4.4.1 The primary variable set

Figure 6.52 (overleaf) shows CI plots for the three main CISS variables and Figure 6.53 (p 255) CI plots for the two supplementary variables by the top level comparison of the primary variable set, nursing vs. midwifery.

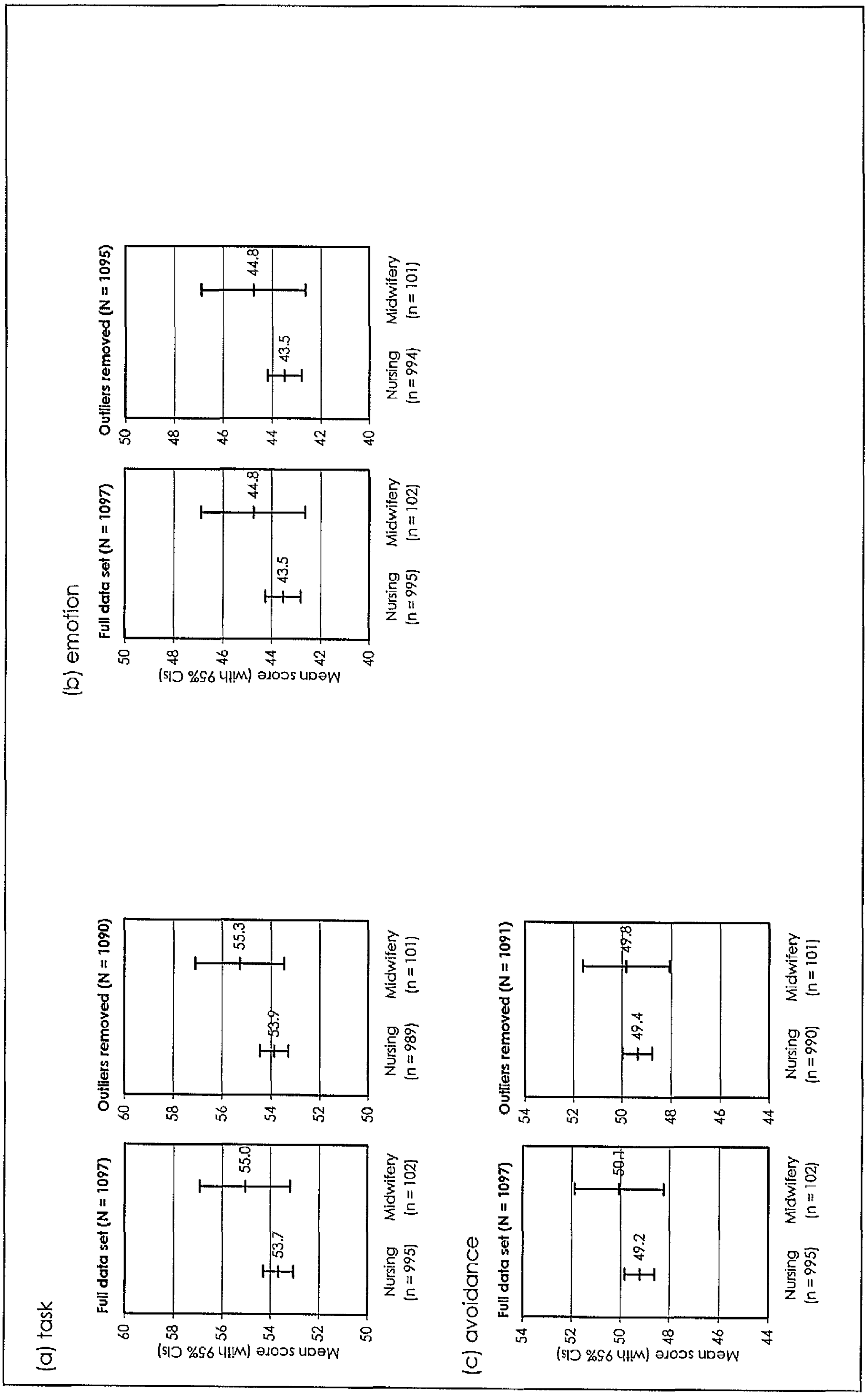


Figure 6.52 Nursing vs. midwifery: plots (with 95 per cent confidence intervals) for the three main CISS variables.

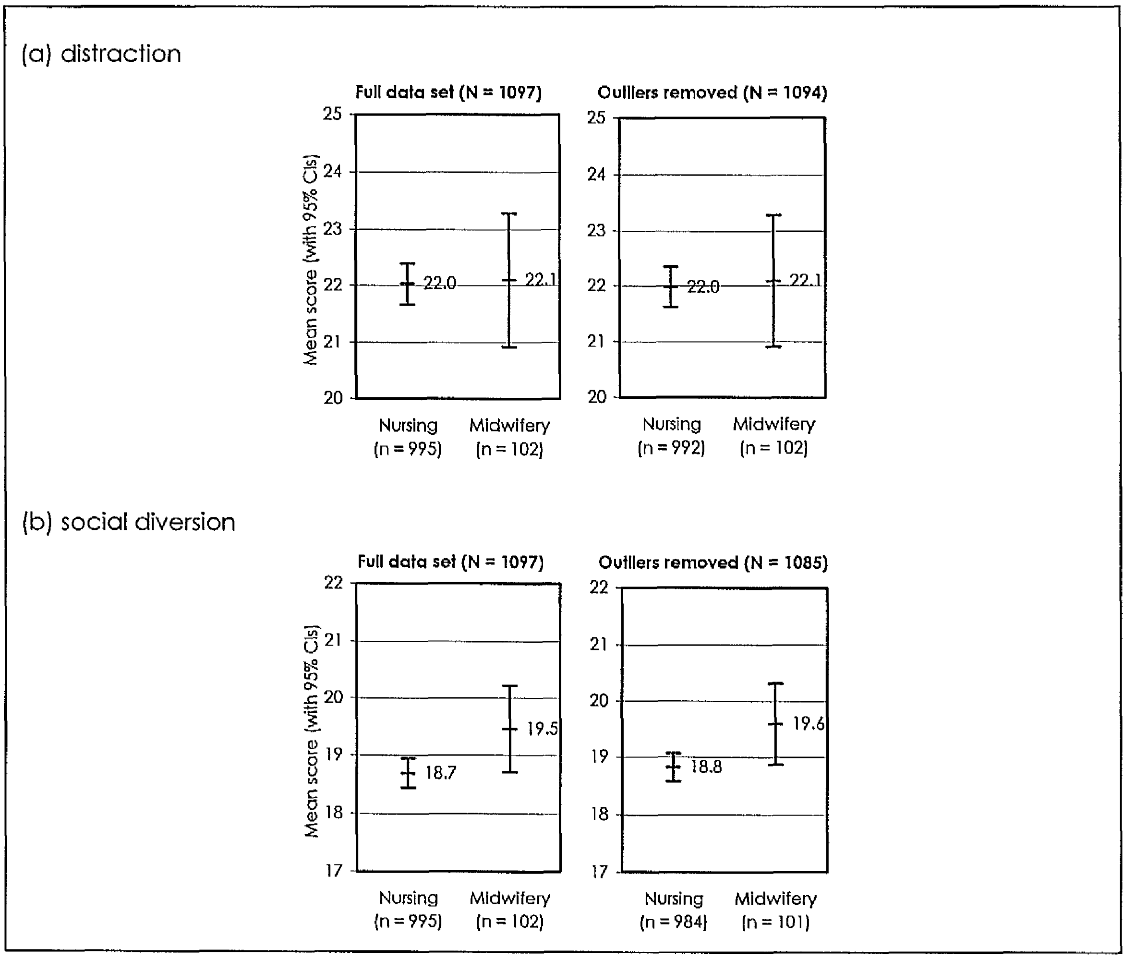


Figure 6.53 Nursing vs. midwifery: plots (with 95 per cent confidence intervals) for the two supplementary CISS variables.

As the confidence intervals overlap in all ten plots in Figures 6.52 and 6.53, no significant differences between nursing and midwifery should be expected on any of these variables, although the relatively small overlap in Plot 6.53b (outliers removed) may be indicative of a difference. Table 6.45 overleaf summarises the results of the statistical tests undertaken on these comparisons. As expected, no statistically significant results were returned.

Table 6.45 Nursing vs. midwifery: summary of the t-tests undertaken for the three main and two supplementary CISS variables.

CISS variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Task	**Full data set**	nursing	995		53.7	9.8	−1.348	0.178	−1.4	ns
		midwifery	102	1097	55.0	9.5			(−3.4, 0.6)	
	Outliers removed	nursing	980		53.9	9.6	−1.434	0.152	−1.4	ns
		midwifery	101	1090	55.3	9.2			(−3.4, 0.5)	
Emotion	**Full data set**	nursing	995		43.5	11.5	−1.038	0.300	−1.2	ns
		midwifery	102	1097	44.8	10.9			(−3.6, 1.1)	
	Outliers removed	nursing	994		43.5	11.4	−1.073	0.283	−1.3	ns
		midwifery	101	1095	44.8	10.9			(−3.6, 1.1)	
Avoidance	**Full data set**	nursing	995		49.2	9.7	−0.836	0.403	−0.8	ns
		midwifery	102	1097	50.1	9.2			(−2.8, 1.1)	
	Outliers removed	nursing	990		49.4	9.5	−0.475	0.635	−0.5	ns
		midwifery	101	1091	49.8	9.0			(−2.4, 1.5)	
distraction	**Full data set**	nursing	995		22.0	5.9	−0.107	0.941	−0.1	ns
		midwifery	102	1097	22.1	6.0			(−1.3, 1.1)	
	Outliers removed	nursing	992		22.0	5.8	−0.188	0.851	−0.1	ns
		midwifery	102	1094	22.1	6.0			(−1.3, 1.1)	
social diversion	**Full data set**	nursing	995		18.7	4.1	−1.832	0.067	−0.8	ns
		midwifery	102	1097	19.5	3.8			(−1.6, 0.1)	
	Outliers removed	nursing	984		18.6	3.9	−1.873	0.061	−0.8	ns
		midwifery	101	1085	18.9	3.6			(−1.6, 0.1)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §.

Figure 6.54 (overleaf) contains CI plots of the three main CISS variables and Figure 6.55 (p 258) contains CI plots of the two supplementary CISS variables for the second level comparison, nursing programme type. Each of the nine plots show overlaps across all four categories (the four main nursing programmes) implying that there are no differences between nursing programmes on any of the three main or two supplementary CISS variables.

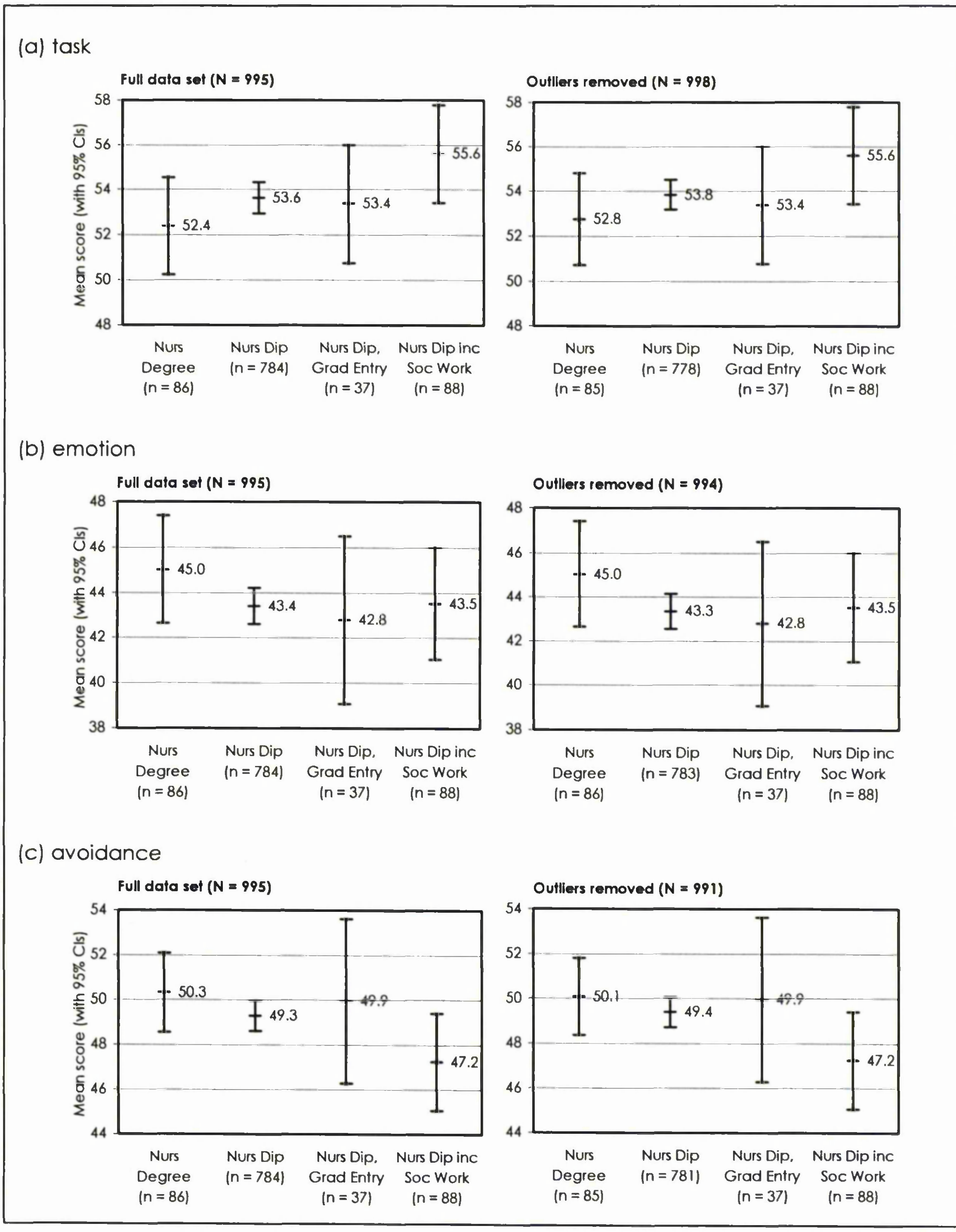


Figure 6.54 Nursing programmes: plots (with 95 per cent confidence intervals) for the three main CISS variables.

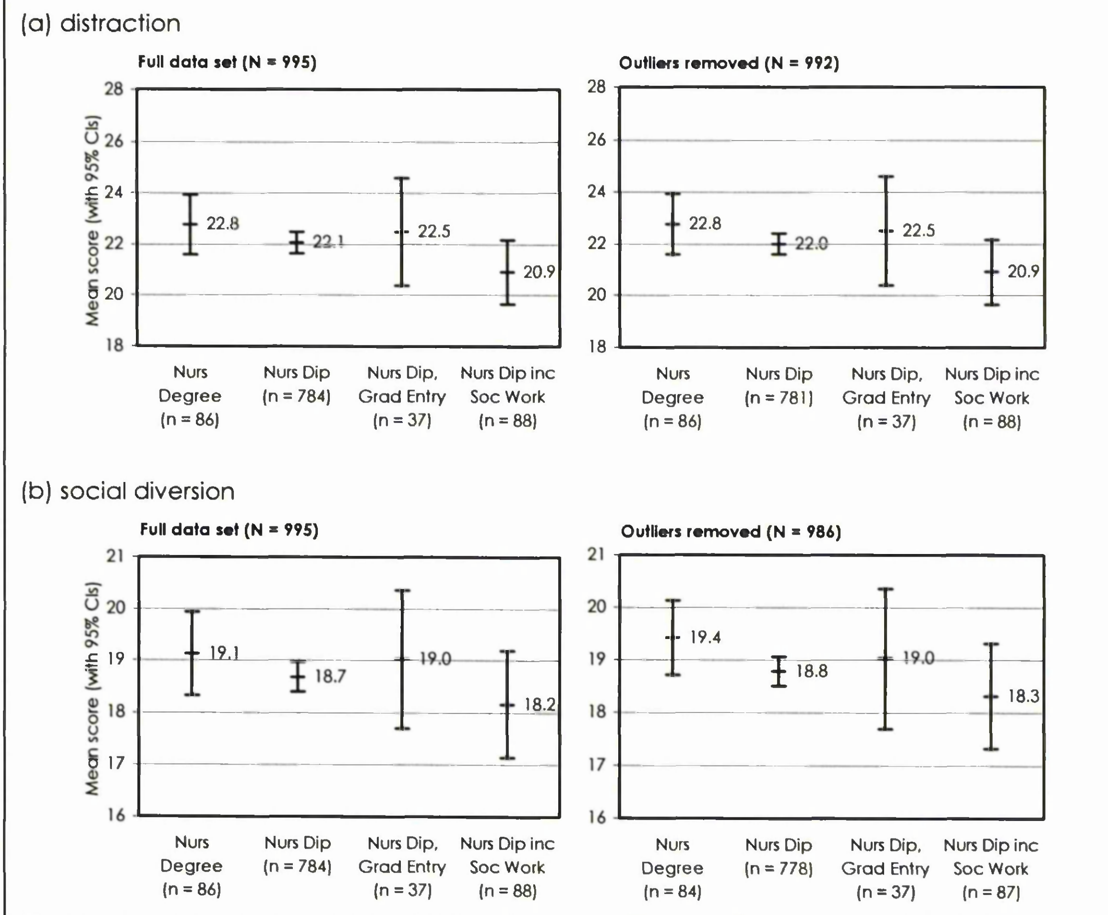


Figure 6.55 Nursing programmes: plots (with 95 per cent confidence intervals) for the two supplementary CISS variables.

As expected, statistical tests undertaken on these comparisons returned no statistically significant results (see Table 6.46 overleaf). However, the ANOVA of avoidance with identified outliers removed and the two social diversion ANOVAs are technically void as all three had heterogeneous variance coupled with unequal sample sizes. In these three cases, Kruskal-Wallis tests were run as alternatives (Table 6.47, p 260). The Kruskal-Wallis tests, however, like their parametric equivalents, found no significant differences between the various nursing programmes on either avoidance or social diversion.

Table 6.46 Nursing programmes: summary of the analyses of variance undertaken for the three main and two supplementary CISS variables (continued overleaf).

CISS variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2
Task	**Full data set**	degree	86		52.4	10.0	1.651	0.176	ns
		diploma	784		53.6	9.8	(3, 991)		
		dip, grad entry	37		53.4	7.9			
		dip inc soc work	88	995	55.6	10.3			
	Outliers removed	degree	85		52.8	9.4	1.396	0.243	ns
		diploma	778		53.8	9.5	(3, 984)		
		dip, grad entry	37		53.4	7.9			
		dip inc soc work	88	988	55.6	10.3			
Emotion	**Full data set**	degree	86		45.0	11.1	0.574	0.632	ns
		diploma	784		43.4	11.5	(3, 991)		
		dip, grad entry	37		42.8	11.2			
		dip inc soc work	88	995	43.5	11.7			
	Outliers removed	degree	86		45.0	11.1	0.604	0.612	ns
		diploma	783		43.3	11.4	(3, 990)		
		dip, grad entry	37		42.8	11.2			
		dip inc soc work	88	994	43.5	11.7			
Avoidance	**Full data set**	degree	86		50.3	8.2	1.668	0.172	ns
		diploma	784		49.3	9.8	(3, 991)		
		dip, grad entry	37		49.9	11.0			
		dip inc soc work	88	995	47.2	10.2			
	Outliers removed§	degree	85		50.1	8.0	1.617	0.184	ns
		diploma	781		49.4	9.6	(3, 987)		
		dip, grad entry	37		49.9	11.0			
		dip inc soc work	88	991	47.2	10.2			
distraction	**Full data set**	degree	86		22.8	5.5	1.597	0.189	ns
		diploma	784		22.1	5.9	(3, 991)		
		dip, grad entry	37		22.5	6.3			
		dip inc soc work	88	995	20.9	5.9			
	Outliers removed	degree	86		22.8	5.5	1.612	0.185	
		diploma	781		22.0	5.8	(3, 988)		
		dip, grad entry	37		22.5	6.3			
		dip inc soc work	88	992	20.9	5.9			
social diversion	**Full data set§**	degree	86		19.1	3.7	0.907	0.437	ns
		diploma	784		18.7	4.0	(3, 991)		
		dip, grad entry	37		19.0	4.0			
		dip inc soc work	88	995	18.2	4.8			
	Outliers removed§	degree	84		19.4	3.3	1.192	0.312	ns
		diploma	778		18.8	3.9	(3,982)		
		dip, grad entry	37		19.0	4.0			
		dip inc soc work	87	986	18.3	4.7			

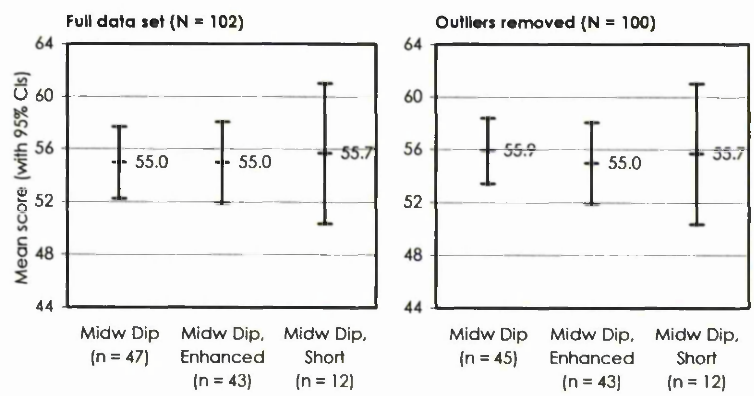
Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §.

Table 6.47 Nursing programmes: summary of the Kruskal-Wallis tests undertaken for two of the CISS variables.

CISS variable	Data set	Subgroups	*n*	*N*	Mean rank	*H* value (df)	*p*	*Post hoc* grouping
Avoidance	**Full data set**	degree	86		517.80	2.961	0.398	ns
		diploma	784		499.82	(3)		
		dip, grad entry	37		522.69			
		dip inc soc work	88	995	452.10			
social diversion	**Full data set**	degree	86		525.35	1.314	0.726	ns
		diploma	784		496.00	(3)		
		dip, grad entry	37		517.70			
		dip inc soc work	88	995	480.78			

Figure 6.56 (below and continued overleaf) contains CI plots for the three main and Figure 6.57 (overleaf) CI plots for the two supplementary CISS variables for the second level comparison, midwifery programme type.

(a) task



(b) emotion

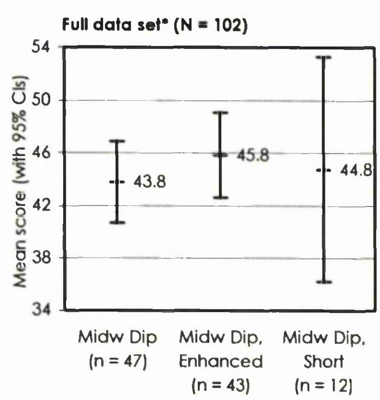


Figure 6.56 Midwifery programmes: plots (with 95 per cent confidence intervals) for the three main CISS variables (continued overleaf).

(c) avoidance

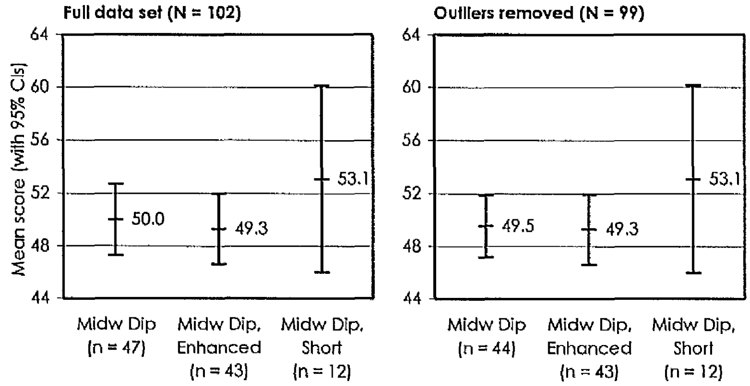
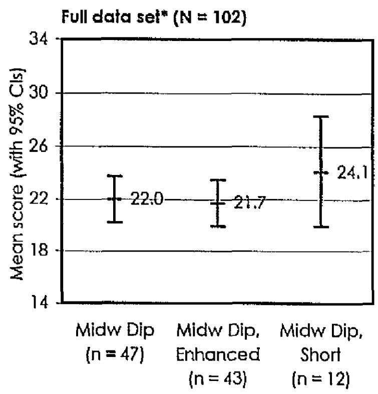


Figure 6.56 (cont.) Midwifery programmes: plots (with 95 per cent confidence intervals) for the three main CISS variables.

(a) distraction



(b) social diversion

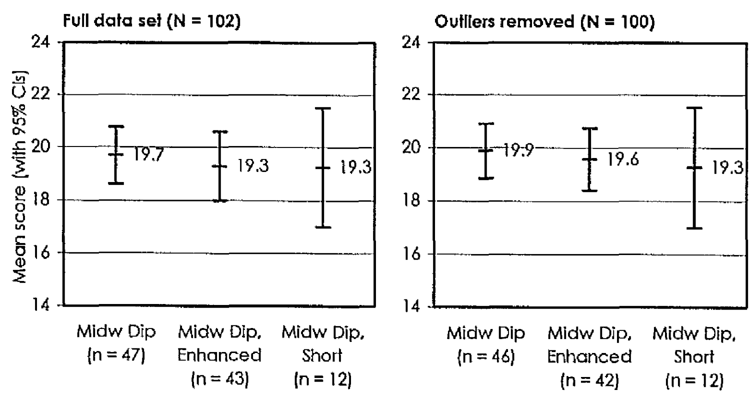


Figure 6.57 Midwifery programmes: plots (with 95 per cent confidence intervals) for the two supplementary CISS variables.

As with the plots for nursing programme type, each of the plots in Figures 6.56 and 6.57 has overlaps across all three categories (the three main midwifery programmes), suggesting that there are no differences between the various midwifery programmes on any of the five CISS variables. As expected, statistical tests undertaken on these comparisons (Table 6.48 below) returned no statistically significant results.

Table 6.48 Midwifery programmes: summary of the analyses of variance undertaken for the three main and two supplementary CISS variables.

CISS variable	Data set	Subgroups	*n*	N	Mean	SD	*F* value (df)	p	η^2
Task	**Full data set**	diploma	47		55.0	9.3	0.029	0.972	ns
		dip, enhanced	43		55.0	10.1	(2, 99)		
		dip, short	12	102	55.7	8.4			
	Outliers removed	diploma	45		55.9	8.3	0.118	0.888	ns
		dip, enhanced	43		55.0	10.1	(2, 97)		
		dip, short	12	100	55.7	8.4			
Emotion	**Full data set***	diploma	47		43.8	10.7	0.404	0.669	ns
		dip, enhanced	43		45.8	10.4	(2, 99)		
		dip, short	12	102	44.8	13.5			
Avoidance	**Full data set**	diploma	47		50.0	9.2	0.799	0.453	ns
		dip, enhanced	43		49.3	8.7	(2, 99)		
		dip, short	12	102	53.1	11.1			
	Outliers removed	diploma	44		49.5	7.7	0.974	0.381	ns
		dip, enhanced	43		49.3	8.7	(2, 96)		
		dip, short	12	99	53.1	11.1			
distraction	**Full data set***	diploma	47		22.0	6.0	0.756	0.472	ns
		dip, enhanced	43		21.7	5.9	(2, 99)		
		dip, short	12	102	24.1	6.6			
social diversion	**Full data set**	diploma	47		19.7	3.6	0.142	0.868	ns
		dip, enhanced	43		19.3	4.2	(2, 99)		
		dip, short	12	102	19.3	3.5			
	Outliers removed	diploma	46		19.9	3.4	0.170	0.844	ns
		dip, enhanced	42		19.6	3.7	(2, 97)		
		dip, short	12	100	19.3	3.5			

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

Figure 6.58 (overleaf) contains CI plots for the three main CISS variables and Figure 6.59 (p 264) CI plots for the two supplementary variables for the third level comparison, nursing specialty. Although most of the plots show overlaps across all four categories (the four nursing specialties), there is no overlap between nursing and mental health nursing on emotion (Plot 6.58b) both for the full data set and the data set with outliers removed. This suggests that there might be a difference on emotion-oriented coping between these two specialties. As far as avoidance-oriented coping is concerned, children's nursing seems to be distinct from mental health and, possibly, learning disability nursing (Plot 6.58c). This certainly seems to be the case when the supplementary variable distraction is considered (Plot 6.59a).

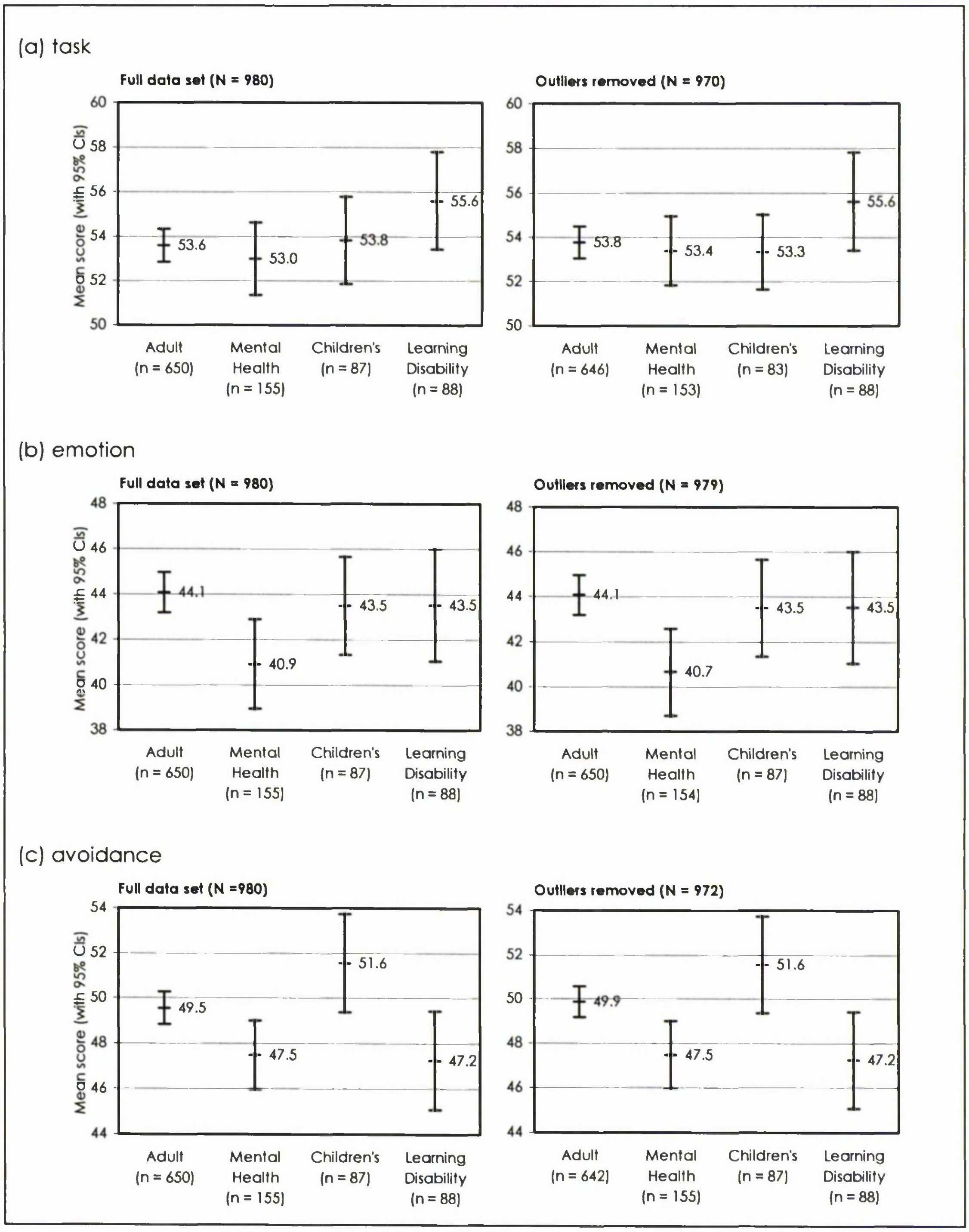


Figure 6.58 Specialty: plots (with 95 per cent confidence intervals) for the three main CISS variables.

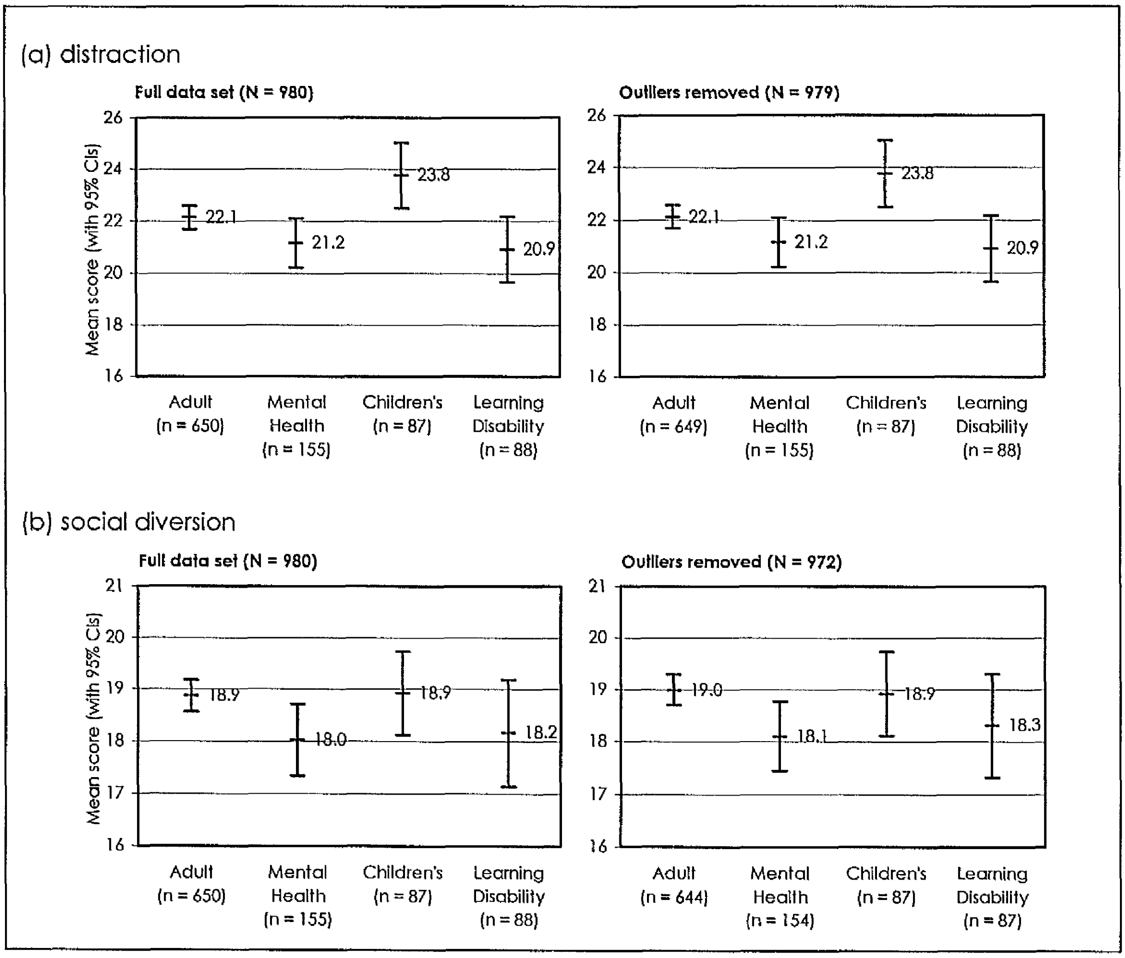


Figure 6.59 Specialty: plots (with 95 per cent confidence intervals) for the two supplementary CISS variables.

Statistical tests undertaken on the nursing specialty comparisons returned results generally consistent with the CI plots. These results are summarised in Table 6.49 overleaf. The ANOVAs for task (outliers removed) and social diversion (both data sets) were subject to violations (heterogeneous variance with unequal sample size) so Kruskal-Wallis tests were run as alternatives. Unremarkably, the results of the Kruskal-Wallis tests (Table 6.50, p 266) are consistent with their parametric equivalents in that no significant differences are evident for these two variables. Statistically significant differences were evident, however, for emotion, although for the full data set, the *post hoc* REGW-Q procedure resulted in only a single homogenous subset. With outliers removed, a difference was, as expected, evident between the adult and mental health specialties, although the effect size, η^2, at around 0.01 is small.

Table 6.49 Nursing specialty: summary of the analyses of variance for the three main and two supplementary CISS variables.

CISS variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping
Task	Full data set	adult	650		53.6	9.7	1.417	0.236	ns	
		mental health	155		53.0	10.4	(3, 976)			
		children's	87		53.8	9.2				
		learning dis	88	980	55.6	10.3				
	Outliers removed§	adult	646		53.8	9.4	1.230	0.298	ns	
		mental health	153		53.4	9.8	(3, 966)			
		children's	83		53.3	7.7				
		learning dis	88	970	55.6	10.3				
Emotion	Full data set	adult	650		44.1	11.3	3.149	0.024	0.010	A
		mental health	155		40.9	12.4	(3, 976)			A
		children's	87		43.5	10.1				A
		learning dis	88	980	43.5	11.7				A
	Outliers removed	adult	650		44.1	11.3	3.703	0.011	0.011	B
		mental health	154		40.7	12.0	(3,)			A
		children's	87		43.5	10.1				A B
		learning dis	88	979	43.5	11.7				A B
Avoidance	Full data set	adult	650		49.5	9.5	4.848	0.002	0.015	A B
		mental health	155		47.5	9.6	(3, 976)			A
		children's	87		51.6	10.3				B
		learning dis	88	980	47.2	10.2				A
	Outliers removed	adult	642		49.9	9.2	5.716	0.001	0.017	A B
		mental health	155		47.5	9.6	(3, 968)			A
		children's	87		51.6	10.3				B
		learning dis	88	972	47.2	10.2				A
distraction	Full data set	adult	650		22.1	5.8	4.825	0.002	0.012	A B
		mental health	155		21.2	5.9	(3, 976)			A
		children's	87		23.8	5.9				B
		learning dis	88	980	20.9	5.9				A
	Outliers removed	adult	649		22.1	5.8	4.820	0.002	0.015	A B
		mental health	155		21.2	5.9	(3, 975)			A
		children's	87		23.8	5.9				B
		learning dis	88	979	20.9	5.9				A
social diversion	Full data set§	adult	650		18.9	4.0	2.400	0.066	ns	
		mental health	155		18.0	4.3	(3, 976)			
		children's	87		18.9	3.8				
		learning dis	88	980	18.2	4.8				
	Outliers removed§	adult	644		19.0	3.8	2.576	0.053	ns	
		mental health	154		18.1	4.2	(3, 968)			
		children's	87		18.9	3.8				
		learning dis	87	972	18.3	4.7				

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §.

Significant results were also obtained for specialty on the avoidance subscale both with the full data set and with identified outliers removed but, again, the effect sizes are small (η^2 is between 0.01 and 0.02). *Post hoc* REGW-Q analyses pointed to the effect lying with, as expected, the children's speciality: the children's specialty seems to be sufficiently different from the mental health and learning disability specialties on avoidance, but not sufficiently different from the adult specialty. When the two supplementary variables are considered, the effect identified for avoidance seems to be down to distraction as the results (including those from the *post hoc* tests) mirror those for avoidance. In both of the distraction ANOVAs, the effect size is small ($\eta^2 \leq 0.015$).

Table 6.50 Nursing specialty: summary of the Kruskal-Wallis tests undertaken for two of the CISS variables.

CISS variable	Data set	Subgroups	*n*	*N*	Mean rank	*H* value (df)	*p*	*Post hoc* grouping
Task	**Full data set**	adult	650		487.31	4.145	0.246	ns
		mental health	155		471.06	(3)		
		children's	87		493.40			
		learning dis	88	980	545.46			
social diversion	**Full data set**	adult	650		502.11	5.129	0.163	ns
		mental health	155		447.02	(3)		
		children's	87		497.70			
		learning dis	88	980	474.23			

Table 6.51 CFP vs. branch: summary of the t-tests undertaken for the three main and two supplementary CISS variables.

CISS variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	d
Task	**Full data set**	CFP	495		54.0	9.7	1.150	0.251	0.7	ns
		branch	477	972	53.3	9.8			(−0.5, 2.0)	
	Outliers removed	CFP	491		54.3	9.4	1.262	0.207	0.8	ns
		branch	474	965	53.5	9.6			(−0.4, 2.0)	
Emotion	**Full data set**	CFP	495		43.1	11.6	−1.295	0.196	−1.0	ns
		branch	477	972	44.0	11.5			(−2.4, 0.5)	
	Outliers removed	CFP	495		43.1	11.6	−1.197	0.231	−0.9	ns
		branch	476	971	44.0	11.3			(−2.3, 0.6)	
Avoidance	**Full data set**	CFP	495		49.3	9.6	0.231	0.817	0.	ns
		branch	477	972	49.1	10.0			(−1.1, 1.4)	
	Outliers removed	CFP	493		49.4	9.5	0.219	0.827	0.1	ns
		branch	475	968	49.2	9.8			(−1.1, 1.4)	
distraction	**Full data set**	CFP	495		22.0	5.7	−0.242	0.809	−0.1	ns
		branch	477	972	22.1	6.1			(−0.8, 0.7)	
	Outliers removed	CFP	494		22.0	5.7	−0.152	0.879	−0.1	ns
		branch	475	969	22.0	6.0			(−0.8, 0.7)	
social diversion	**Full data set**	CFP	495		18.7	4.0	0.719	0.473	0.2	ns
		branch	477	972	18.6	4.2			(−0.3, 0.7)	
	Outliers removed	CFP	489		18.9	3.8	0.813	0.417	0.2	ns
		branch	472	961	18.7	4.0			(−0.3, 0.7)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §.

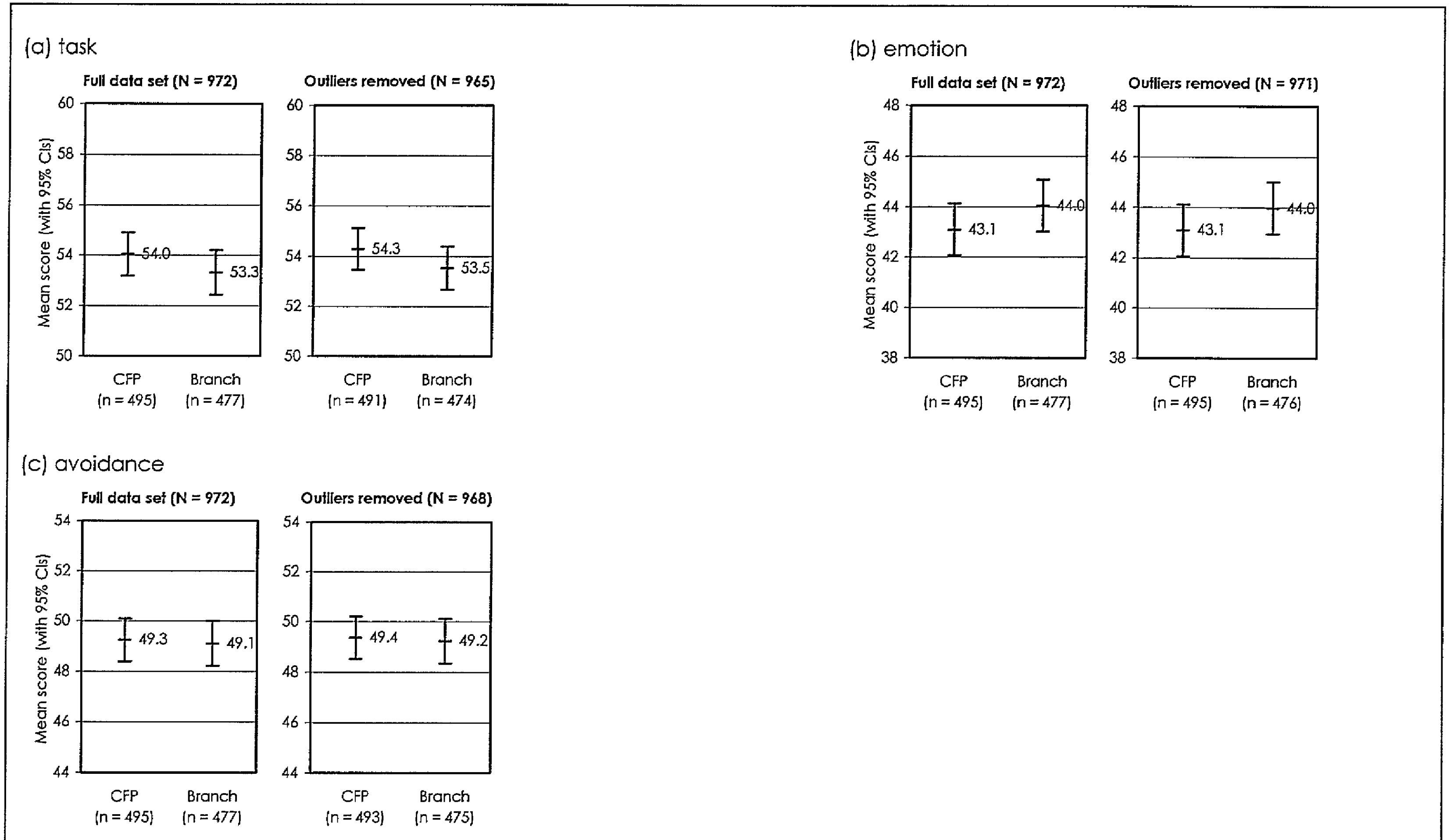
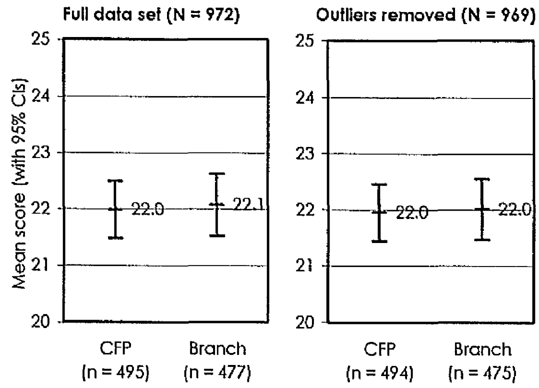


Figure 6.60 CFP vs. branch: plots (with 95 per cent confidence intervals) for the three main CISS variables.

CI plots for the last of the primary variable set comparisons, CFP vs. branch, are contained in Figures 6.60 (previous page) and 6.61 (below). Again, the degree of overlap in each of the plots implies that there are no significant differences evident on any of the CISS variables, an observation reinforced by the results of the statistical tests undertaken and summarised in Table 6.51 (presented earlier on p 266).

(a) distraction



(b) social diversion

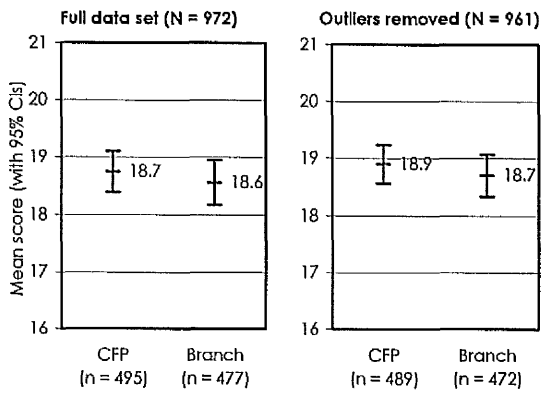


Figure 6.61 CFP vs. branch: plots (with 95 per cent confidence intervals) for the two supplementary CISS variables

6.4.4.2 The standard demographic variable set

The CI plots for age on entry (Figures 6.62 and 6.63) suggest that age on entry has an effect on all five CISS variables, with older entrants (those over 25) seeming to use more task-oriented and less avoidance-oriented coping than the under 25s. With regard to avoidance-oriented coping, this observation seems to hold true for both distraction and social diversion (Figure 6.63). With emotion-oriented coping, there appears to be a difference between older (those over 25) and younger (those under 21) entrants. These observations are supported by the statistical tests undertaken and summarised in Table 6.52 on p 271.

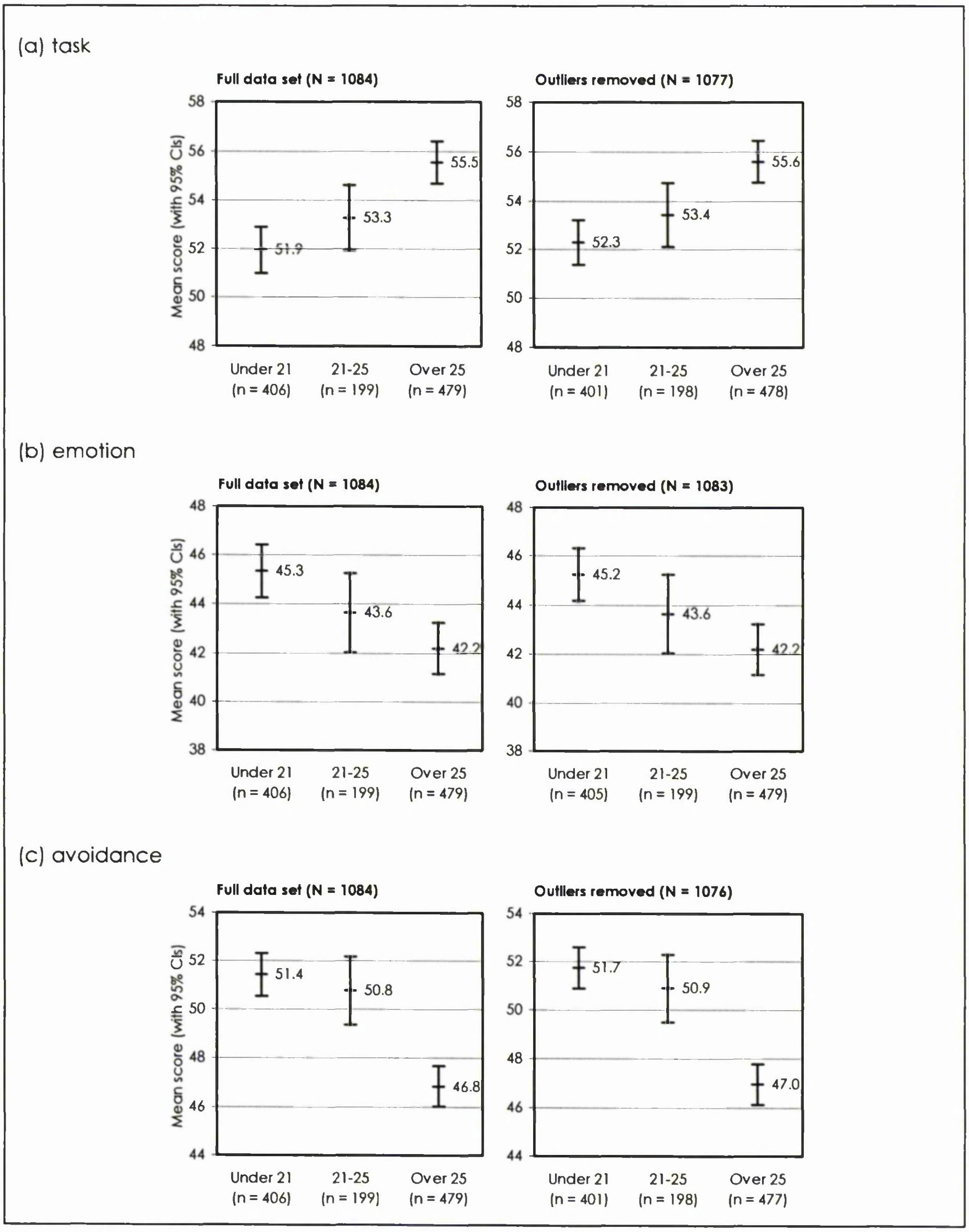


Figure 6.62 Age on entry: plots (with 95 per cent confidence intervals) for the three main CISS variables.

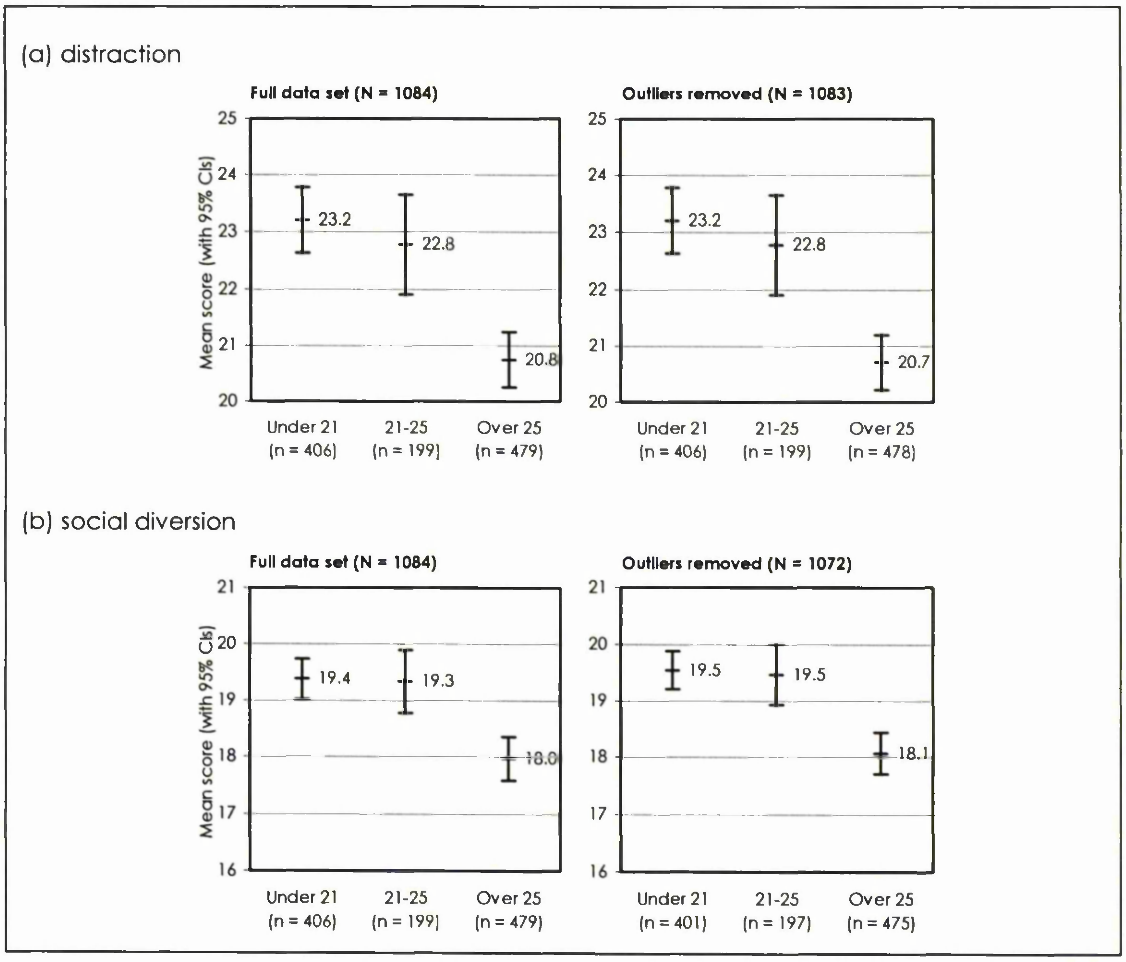


Figure 6.63 Age on entry: plots (with 95 per cent confidence intervals) for the two supplementary CISS variables.

The results in Table 6.52 (overleaf) are remarkably consistent in that age on entry had an effect on all five CISS variables regardless of whether the full data set or the data set with identified outliers removed was used. For all ten tests undertaken, the *p*-values are good. For emotion-oriented coping, the effect size is small (with η^2 around 0.01 for both data sets), whilst for task-oriented coping, the effect size is small-to-medium (η^2 is around 0.025 for both data sets). For avoidance-oriented coping, there is a medium effect size (η^2 is around 0.05 for both data sets), with a small-to-medium effect size for its two component variables, distraction and social diversion (η^2 is around 0.03-0.04 in the four tests undertaken).

Table 6.52 Age on entry: summary of the analyses of variance undertaken for the three main and two supplementary CISS variables (continued overleaf).

CISS variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping	
Task	**Full data set**	under 21	406		51.9	9.9	15.593	0.000	0.028	A	
		21-25	199		53.3	9.6	(2, 1081)			A	
		over 25	479	1084	55.5	9.5					B
	Outliers removed	under 21	401		52.3	9.4	13.873	0.000	0.025	A	
		21-25	198		53.4	9.3	(2, 1074)			A	
		over 25	478	1077	55.6	9.5					B
Emotion	**Full data set**	under 21	406		45.3	11.0	8.307	0.000	0.015	A	
		21-25	199		43.6	11.4	(2, 1081)			A	B
		over 25	479	1084	42.2	11.6					B
	Outliers removed	under 21	405		45.2	10.9	7.910	0.000	0.014	A	
		21-25	199		43.6	11.4	(2, 1080)			A	B
		over 25	479	1083	42.2	11.6					B
Avoidance	**Full data set**	under 21	406		51.4	9.1	29.259	0.000	0.051	A	
		21-25	199		50.8	10.1	(2, 1081)			A	
		over 25	479	1084	46.8	9.3					B
	Outliers removed	under 21	401		51.7	8.7	32.741	0.000	0.058	A	
		21-25	198		50.9	10.0	(2, 1073)			A	
		over 25	477	1076	47.0	9.2					B
distraction	**Full data set**	under 21	406		23.2	5.8	21.824	0.000	0.039	A	
		21-25	199		22.8	6.2	(2, 1081)			A	
		over 25	479	1084	20.8	5.5					B
	Outliers removed	under 21	406		23.2	5.8	22.640	0.000	0.040	A	
		21-25	199		22.8	6.2	(2, 1080)			A	
		over 25	478	1083	20.7	5.5					B
social diversion	**Full data set§**	under 21	406		19.4	3.7	16.285	0.000	0.029	A	
		21-25	199		19.3	4.0	(2, 1081)			A	
		over 25	479	1084	18.0	4.3					B
	Outliers removed§	under 21	401		19.5	3.4	18.841	0.000	0.034	A	
		21-25	197		19.5	3.8	(2, 1070)			A	
		over 25	475	1073	18.1	4.1					B

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

Because of heterogeneous variances and unequal sample sizes, the two social diversion ANOVAs are problematic. However, the Kruskal-Wallis test undertaken for social diversion produced identical results (Table 6.53 overleaf), both in terms of the statistical significance and the *post hoc* groupings obtained.

Table 6.53 Age on entry: summary of the Kruskal-Wallis test undertaken for social diversion.

CISS variable	Data set	Subgroups	*n*	*N*	Mean rank	*H* value (df)	*p*	*Post hoc* grouping	
social diversion	**Full data set**	under 21	406		585.91	28.409	0.000	A	
		21-25	199		590.56	(2)		A	
		over 25	479	1084	485.74				B

Overall, the *post hoc* analyses produce groupings that reinforce the speculations made on the basis of CI plots in Figures 6.61 and 6.62. For task-oriented coping and avoidance-oriented coping the over 25s are seen as a discrete category (the same holds true for the two component variables of avoidance: distraction and social diversion). For emotion, two homogenous subsets are identified, A = {under 21, 21-25} and B = {21-25, over 25}, suggesting that the effect for emotion may lie in the difference between the oldest (over 25) and youngest (under 21) groups. Age on entry certainly has an effect on coping: older entrants (those over 25) use more task-oriented, less emotion-oriented and less avoidance-oriented (both distraction and social diversion) coping strategies than younger entrants, particularly those under 21.

Figures 6.64 and 6.65 contain, respectively, CI plots for the two supplementary and three main CISS variables by sex (for reasons of space, the supplementary variables plot is presented first). The overlaps in the plots in Figure 6.65 (overleaf) suggest no sex differences for task, but a probable sex difference on both emotion and avoidance. With regard to avoidance, the difference seems to be evident for its two component variables as well (Figure 6.63 below).

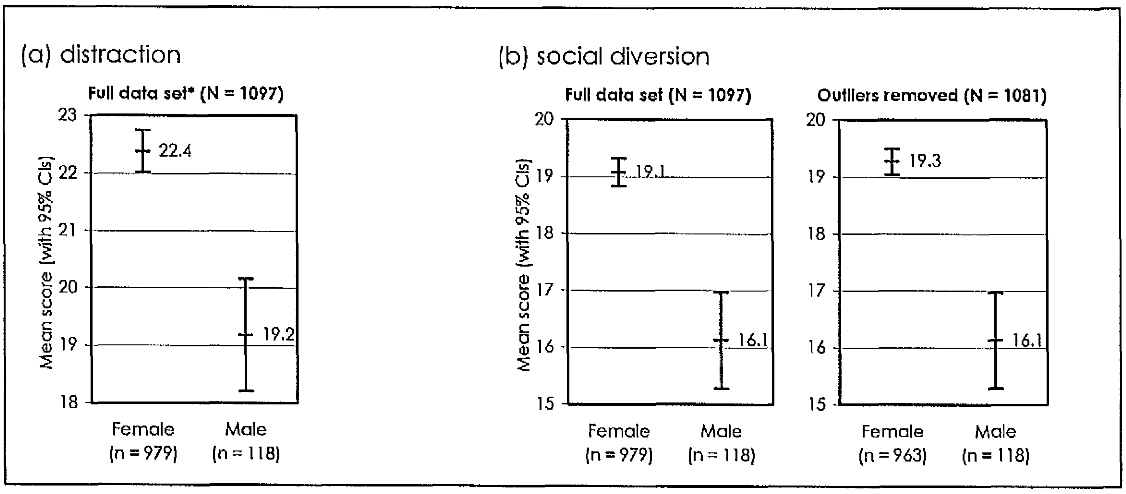


Figure 6.64 Sex: plots (with 95 per cent confidence intervals) for the two supplementary CISS variables

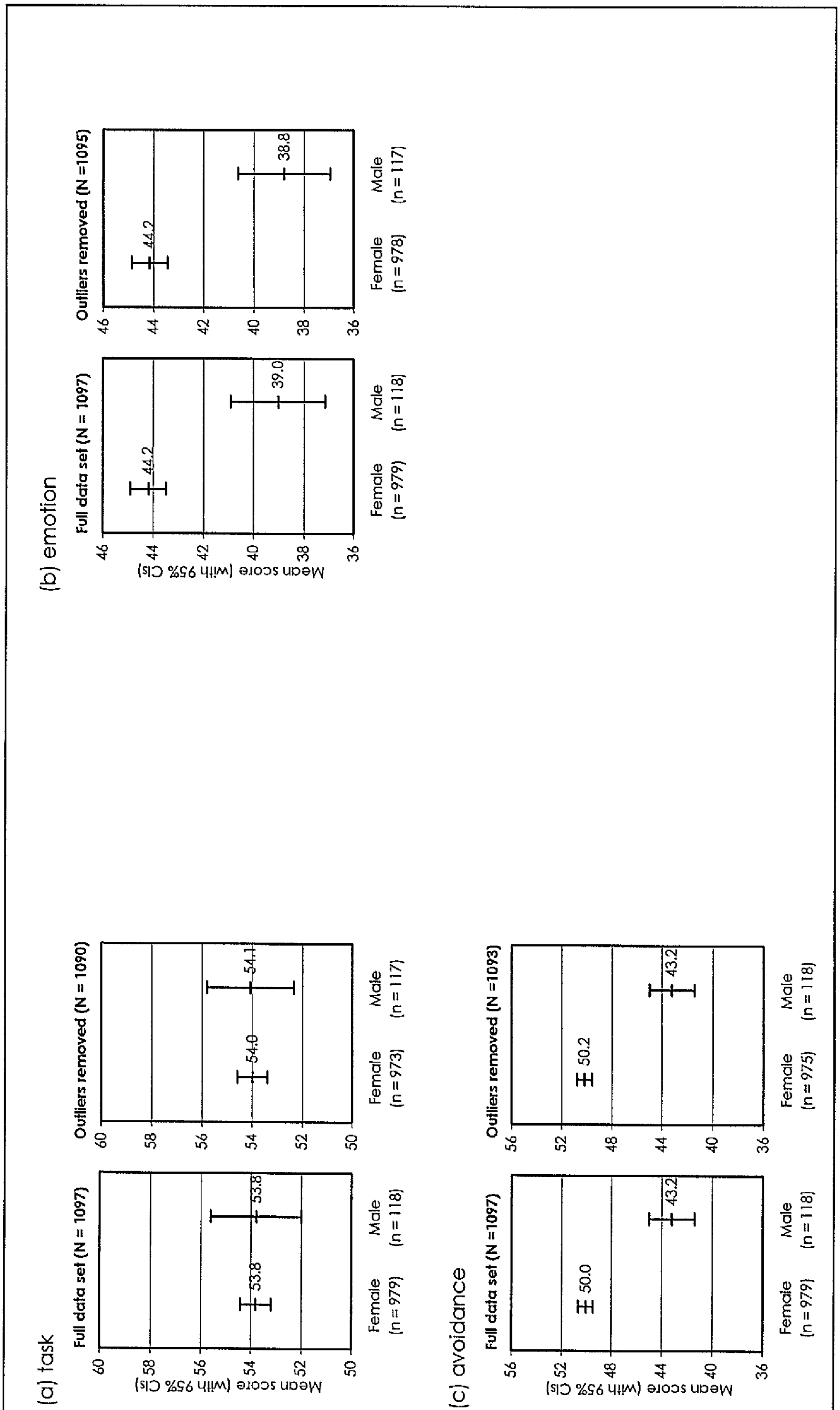


Figure 6.65 Sex: plots (with 95 per cent confidence intervals) for the three main CISS variables.

The results of the statistical tests undertaken for sex (Table 6.54 below) reinforce the observations from the CI plots. No differences were found for sex on task. For emotion, there is a consistent result regardless of whether outliers were included or not. In both cases, there is a medium effect size with *d* being around 0.5. There are similarly consistent results for avoidance and its two component variables. In all five tests, regardless of whether outliers have been included or excluded, the *p*-values are very good and the effect size is medium-to-large (*d* being between 0.5 and 0.8). Male respondents use less emotion-oriented and less avoidance-oriented coping (this applies also to the two avoidance components, distraction and social diversion) than female respondents.

Table 6.54 Sex: summary of the t-tests undertaken for the three main and two supplementary CISS variables.

CISS variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Task	**Full data set**	female	979		53.8	9.8	0.011	0.991	0.0	ns
		male	118	1097	53.8	9.8			(−1.9, 1.9)	
	Outliers removed	female	973		54.0	9.5	−0.087	0.931	−0.1	ns
		male	117	1090	54.1	9.4			(−1.9, 1.8)	
Emotion	**Full data set**	female	979		44.2	11.4	5.058	0.000	5.2	0.457
		male	118	1097	39.0	10.4			(3.2, 7.2)	
	Outliers removed	female	978		44.2	11.4	5.389	0.000	5.4	0.479
		male	117	1095	38.8	10.1			(3.2, 7.5)	
Avoidance	**Full data set**	female	979		50.0	9.4	7.397	0.000	6.8	0.721
		male	118	1097	43.2	9.7			(5.0, 8.6)	
	Outliers removed	female	975		50.2	9.2	7.655	0.000	6.9	0.746
		male	118	1093	43.2	9.7			(5.2, 8.7)	
distraction	**Full data set***	female	979		22.4	5.9	5.641	0.000	3.2	0.550
		male	118	1097	19.2	5.4			(2.1, 4.3)	
social diversion	**Full data set§**	female	979		19.1	3.9	6.670	0.000	2.9	0.743
		male	118	1097	16.1	4.6			(2.1, 3.8)	
	Outliers removed§	female	963		19.3	3.6	8.667	0.000	3.1	0.845
		male	118	1081	16.1	4.6			(2.3, 4.0)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

The CI plots (Figures 6.66 and 6.67) for ethnicity are interesting. For the three main CISS variables (Figure 6.66), ethnicity appears to have little effect on coping style – all six plots show overlaps between the white and non-white categories. However, there does appear to be a clear difference between white and non-white respondents on social diversion (Plot 6.67b). Again, these observations are reinforced by the results of statistical tests undertaken (see Table 6.55 on p 277).

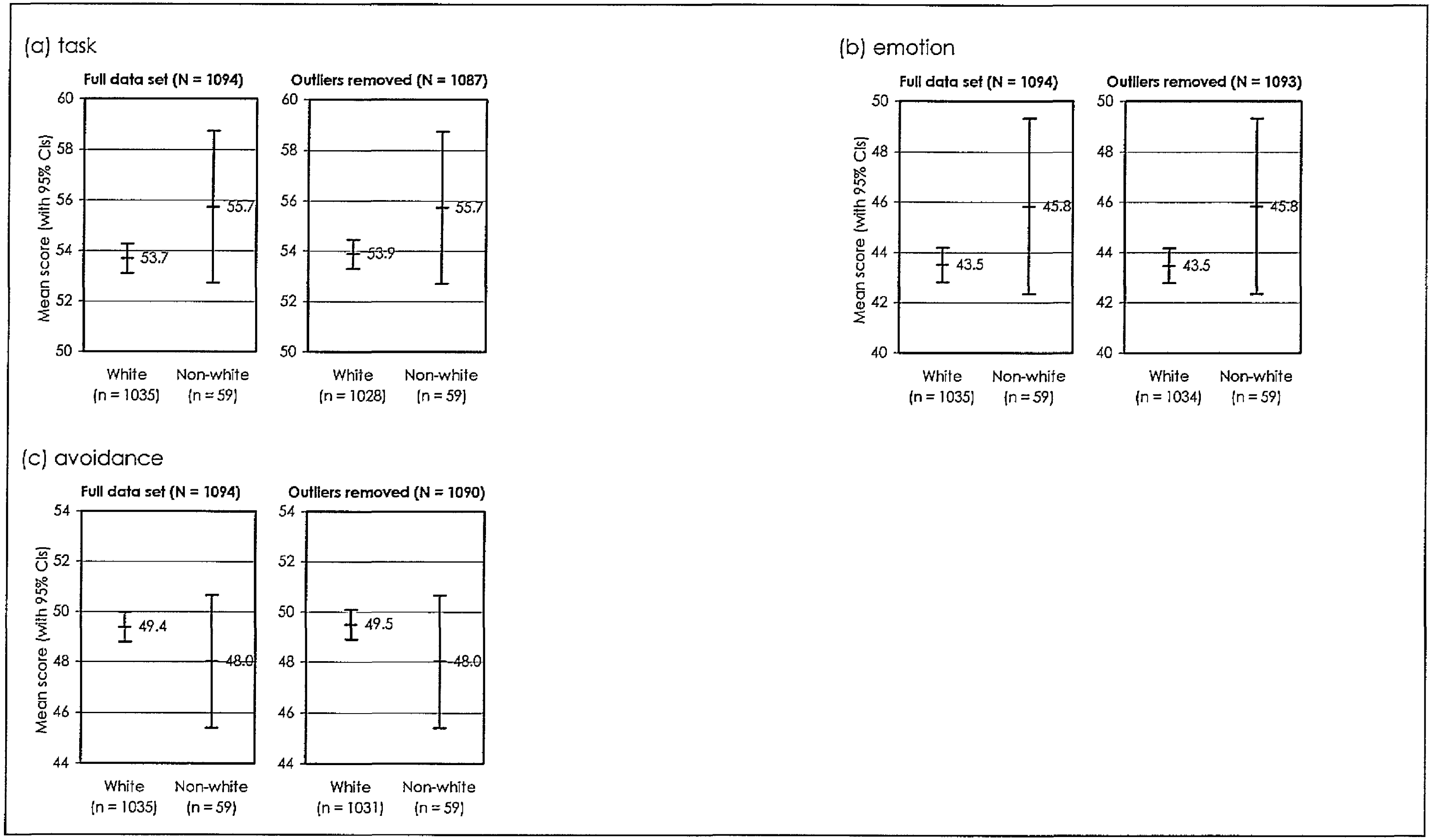


Figure 6.66 Ethnicity: plots (with 95 per cent confidence intervals) for the three main CISS variables.

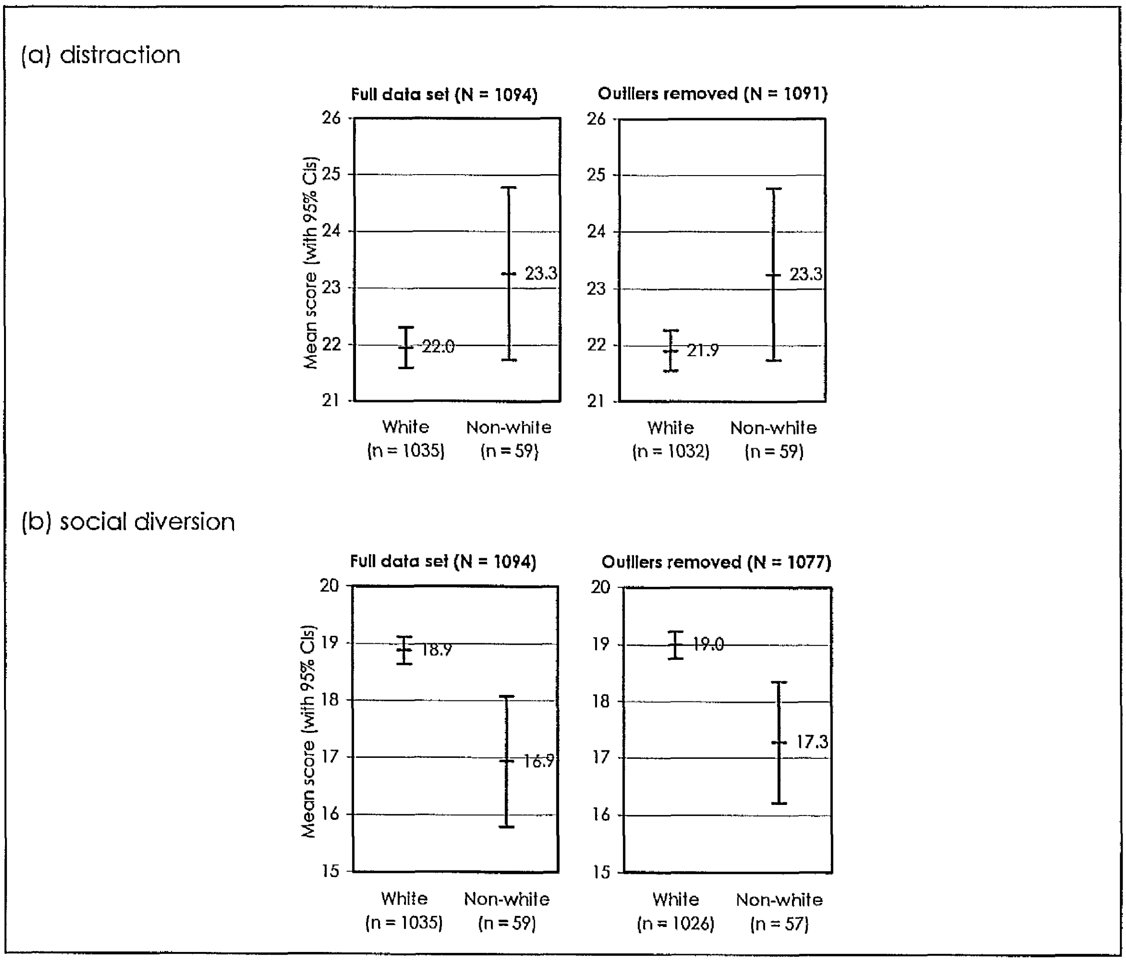


Figure 6.67 Ethnicity: plots (with 95 per cent confidence intervals) for the two supplementary CISS variables.

From Table 6.55, the *p*-values are very good for both of the social diversion tests undertaken. In addition, a medium effect size (*d* at around 0.5 in both cases) makes this result particularly noteworthy. White respondents seem to make greater use of social diversion than non-white respondents.

Table 6.55 Ethnicity: summary of the t-tests undertaken for the three main and two supplementary CISS variables.

CISS variable	Data set	Subgroups	*n*	*N*	Mean	SD	*t* value	*p*	Diff-means (95% CLs)	*d*
Task	**Full data set§**	white	1035		53.7	9.7	−1.333	0.187	−2.0	ns
		non-white	59	1094	55.7	11.5			(−5.1, 1.0)	
	Outliers removed§	white	1028		53.9	9.4	−1.442	0.150	−1.8	ns
		non-white	59	1087	55.7	11.5			(−4.3, 0.7)	
Emotion	**Full data set**	white	1035		43.5	11.3	−1.516	0.130	−2.3	ns
		non-white	59	1094	43.8	13.4			(−5.3, 0.7)	
	Outliers removed	white	1034		43.5	11.2	−1.546	0.122	−2.4	ns
		non-white	59	1093	43.8	13.4			(−5.3, 0.6)	
Avoidance	**Full data set**	white	1035		49.4	9.7	1.039	0.299	1.3	ns
		non-white	59	1094	48.0	10.0			(−1.2, 3.9)	
	Outliers removed	white	1031		49.5	9.5	1.143	0.253	1.5	ns
		non-white	59	1090	48.0	10.0			(−1.0, 4.0)	
distraction	**Full data set**	white	1035		22.0	5.9	−1.650	0.099	−1.3	ns
		non-white	59	1094	23.3	5.8			(−2.9, 0.3)	
	Outliers removed	white	1032		21.9	5.8	−1.724	0.085	−1.3	ns
		non-white	59	1091	23.3	5.8			(−2.9, 0.2)	
social diversion	**Full data set**	white	1035		18.9	4.0	3.607	0.000	1.9	0.483
		non-white	59	1094	16.9	4.4			(0.9, 3.0)	
	Outliers removed	white	1026		19.0	3.8	3.274	0.001	1.7	0.445
		non-white	57	1083	17.3	4.0			(0.7, 2.7)	

Notes: *d* is Cohen's *d*, the effect size measure. 'Diff-means' is the difference between the means; associated 95 per cent confidence limits (CLs) are supplied in brackets. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

The CI plots for social class (Figures 6.68 and 6.69) suggest that social class may have an effect on avoidance-oriented coping (Plot 6.68c) and that, specifically, the effect evident on avoidance may be down to the distraction component (Plot 6.69a). For avoidance, the difference appears to be between the lower social classes (category IV/V) and the other two social class groups (category I/II and category III); for distraction, the difference appears to be between the higher social classes (category I/II) and the lower social classes (category IV/V).

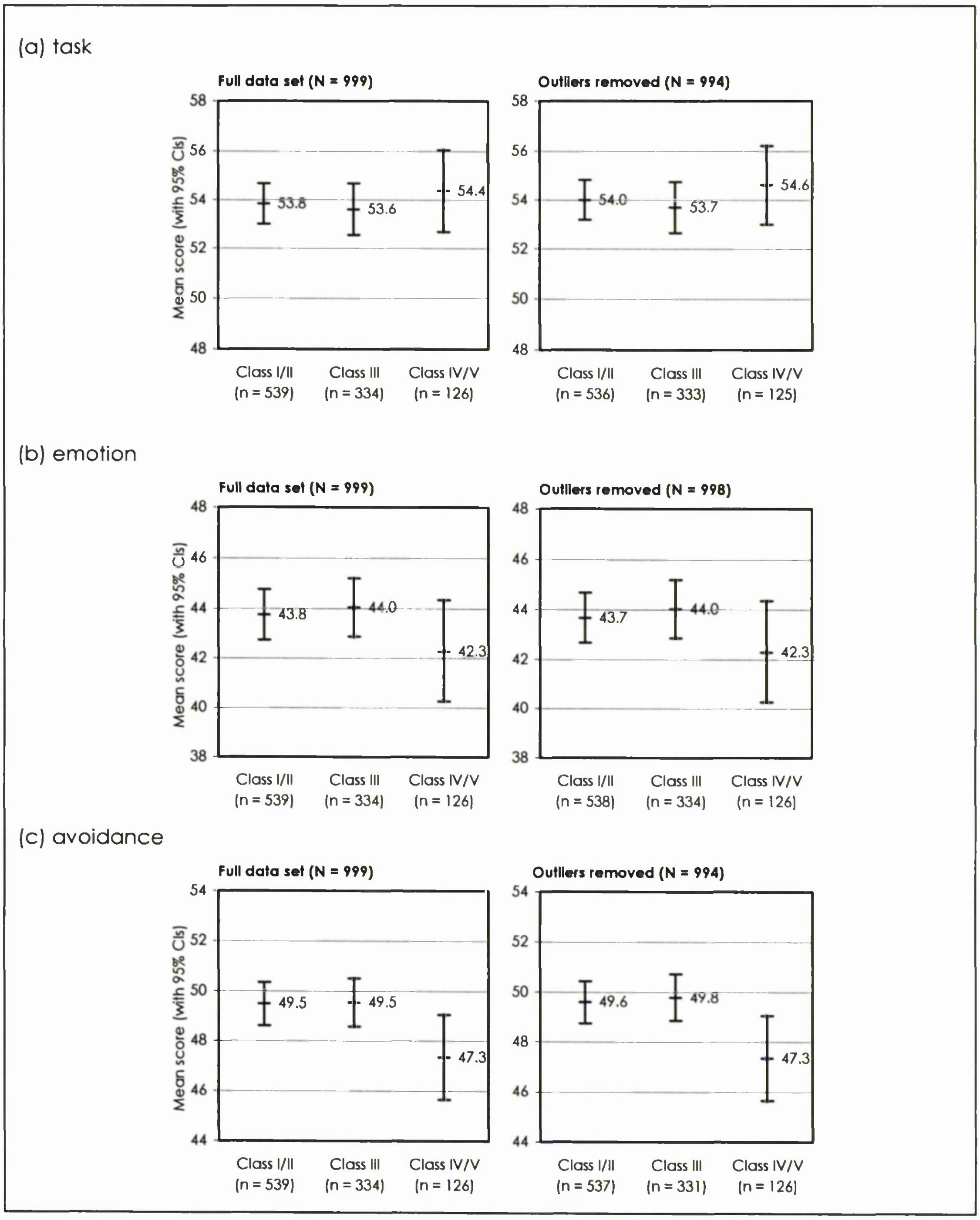


Figure 6.68 Social class: plots (with 95 per cent confidence intervals) for the three main CISS variables (continued overleaf).

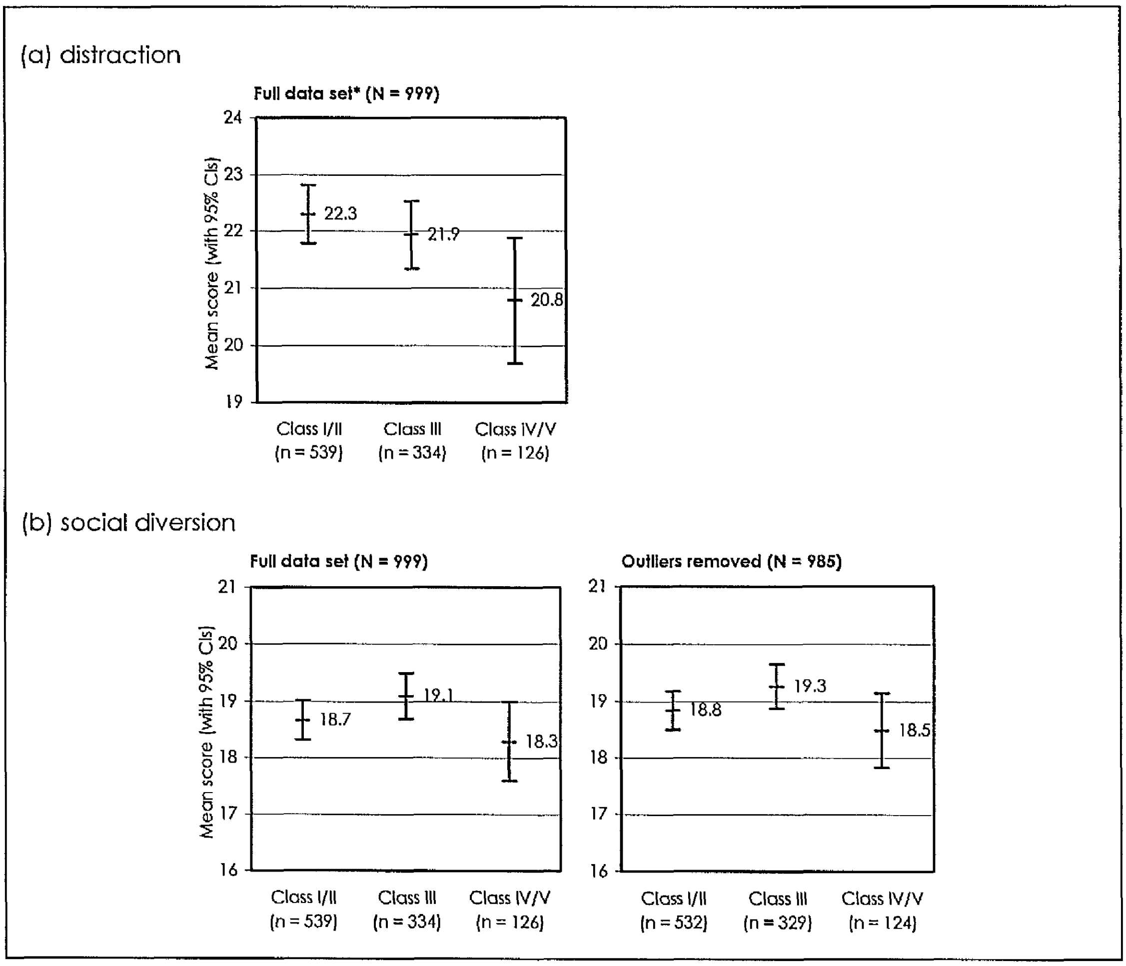


Figure 6.69 Social class: plots (with 95 per cent confidence intervals) for the two supplementary CISS variables.

The speculations made from the plots in Figures 6.68 and 6.69 are not wholly consistent with statistical tests undertaken (Table 6.56 overleaf). With avoidance, a significant result was obtained only when outliers were removed and, although the *p*-value is good, the effect size is small with $\eta^2 < 0.01$. For distraction, a significant result was obtained for the full data set (no outliers were identified in this set) but, again, the effect size is small. Moreover, the *post hoc* REGW-Q analyses undertaken for both avoidance and distraction indicated that all three categories of social class formed a single homogeneous subset. At this point, a sensible conclusion might be that social class has no effect on avoidance or distraction. However, the significant results arose from tests where there were violations of the underlying assumptions of ANOVA (heterogeneous variance with unequal sample size), rendering the conclusion drawn questionable. As such, Kruskal-Wallis tests were undertaken on these two variables, the results of which are summarised in Table 6.57 overleaf.

Table 6.56 Social class: summary of the analyses of variance undertaken for the three main and two supplementary CISS variables.

CISS variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping
Task	**Full data set**	class I/II	539		53.8	9.8	0.275	0.759	ns	
		class III	334		53.6	9.9	(2, 996)			
		class IV/V	126	999	54.4	9.5				
	Outliers removed	class I/II	536		54.0	9.6	0.413	0.662	ns	
		class III	333		53.7	9.7	(2, 991)			
		class IV/V	125	994	54.6	9.1				
Emotion	**Full data set**	class I/II	539		43.8	11.8	1.090	0.337	ns	
		class III	334		44.0	10.7	(2, 996)			
		class IV/V	126	999	42.3	11.6				
	Outliers removed	class I/II	538		43.7	11.7	1.079	0.341	ns	
		class III	334		44.0	10.7	(2, 995)			
		class IV/V	126	998	42.3	11.6				
Avoidance	**Full data set§**	class I/II	539		49.5	10.1	2.740	0.065	ns	
		class III	334		49.5	8.9	(2, 996)			
		class IV/V	126	999	47.3	9.6				
	Outliers removed§	class I/II	537		49.6	10.0	3.316	0.037	0.007	A
		class III	331		49.8	8.6	(2, 991)			A
		class IV/V	126	994	47.3	9.6				A
distraction	**Full data set*§**	class I/II	539		22.3	6.1	3.324	0.036	0.007	A
		class III	334		21.9	5.5	(2, 996)			A
		class IV/V	126	999	20.8	6.2				A
social diversion	**Full data set**	class I/II	539		18.7	4.2	2.141	0.118	ns	
		class III	334		19.1	3.8	(2, 996)			
		class IV/V	126	999	18.3	4.0				
	Outliers removed	class I/II	532		18.8	3.9	2.307	0.100	ns	
		class III	329		19.3	3.5	(2, 982)			
		class IV/V	124	985	18.5	3.7				

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §. Full data sets marked * are free from outliers.

Table 6.57 Social class: summary of the Kruskal-Wallis tests undertaken for two of the CISS variables

CISS variable	Data set	Subgroups	*n*	*N*	Mean rank	*H* value (df)	*p*	*Post hoc* grouping	
Avoidance	**Full data set**	class I/II	539		509.85	7.662	0.022	A	
		class III	334		509.17	(2)		A	
		class IV/V	126	999	433.53				B
distraction	**Full data set**	class I/II	539		514.71	7.099	0.029	A	
		class III	334		499.36	(2)		A	B
		class IV/V	126	999	438.75				B

Like their parametric counterparts, the Kruskal-Wallis tests on avoidance and distraction produced significant results. *Post hoc* analyses pointed to a difference between the category containing the higher (I/II) social classes and the other two categories (classes III, IV and V) as accounting for the difference. Unfortunately, no effect-size statistic (i.e. an analogue for η^2) exists for the Kruskal-Wallis test, so it is difficult to assess the magnitude of the findings presented in Table 6.57, although the School's statistician (Campbell 2003) suggests that the η^2 statistics obtained from the 'violated' ANOVAs be used to give a crude indication of true effect sizes. Given that the ANOVA effect sizes for avoidance and distraction were both small ($\eta^2 < 0.01$ in each case), an assumption will be made that they will be small for the Kruskal-Wallis tests as well. This assumption together with the fact that statistically significant results were found only when non-parametric tests were applied renders the findings regarding social class less robust than the findings relating to age on entry and sex.

The CI plots in Figures 6.70 and 6.71 suggest no effects for highest qualification on entry on any of the CISS variables apart from a hint that there may be a difference between advanced and degree students on social diversion (Plot 6.71b).

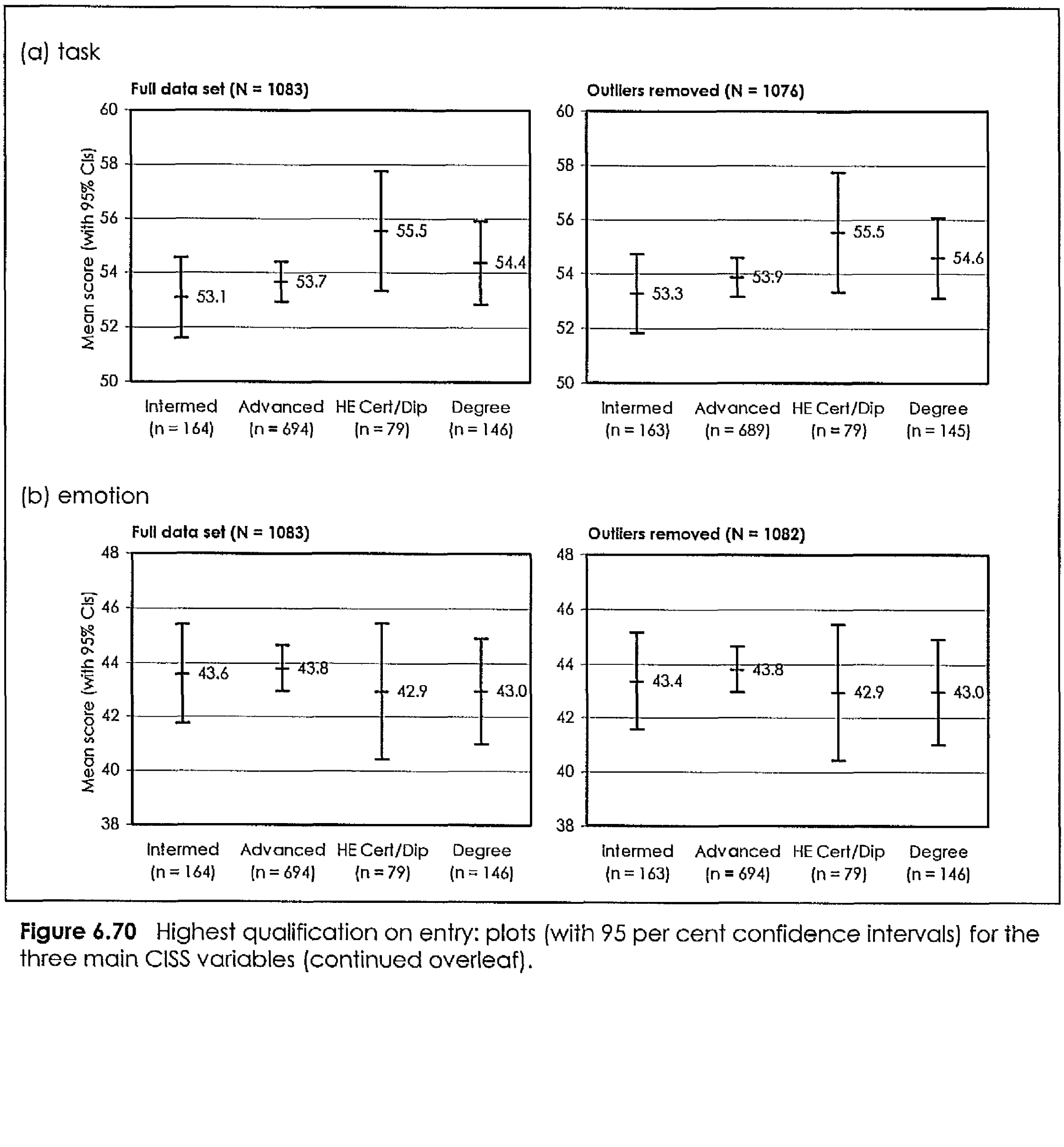


Figure 6.70 Highest qualification on entry: plots (with 95 per cent confidence intervals) for the three main CISS variables (continued overleaf).

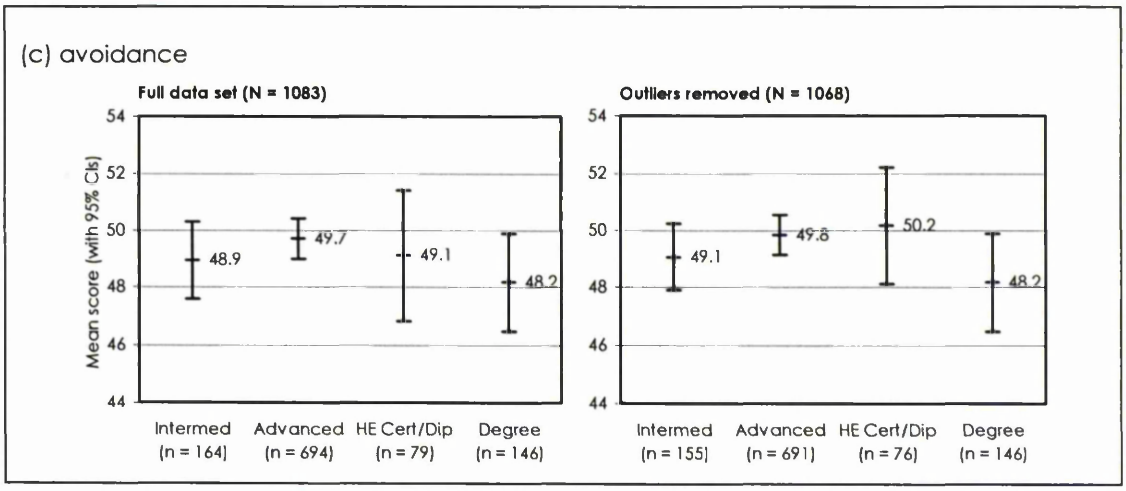


Figure 6.70 (cont.) Highest qualification on entry: plots (with 95 per cent confidence intervals) for the three main CISS variables.

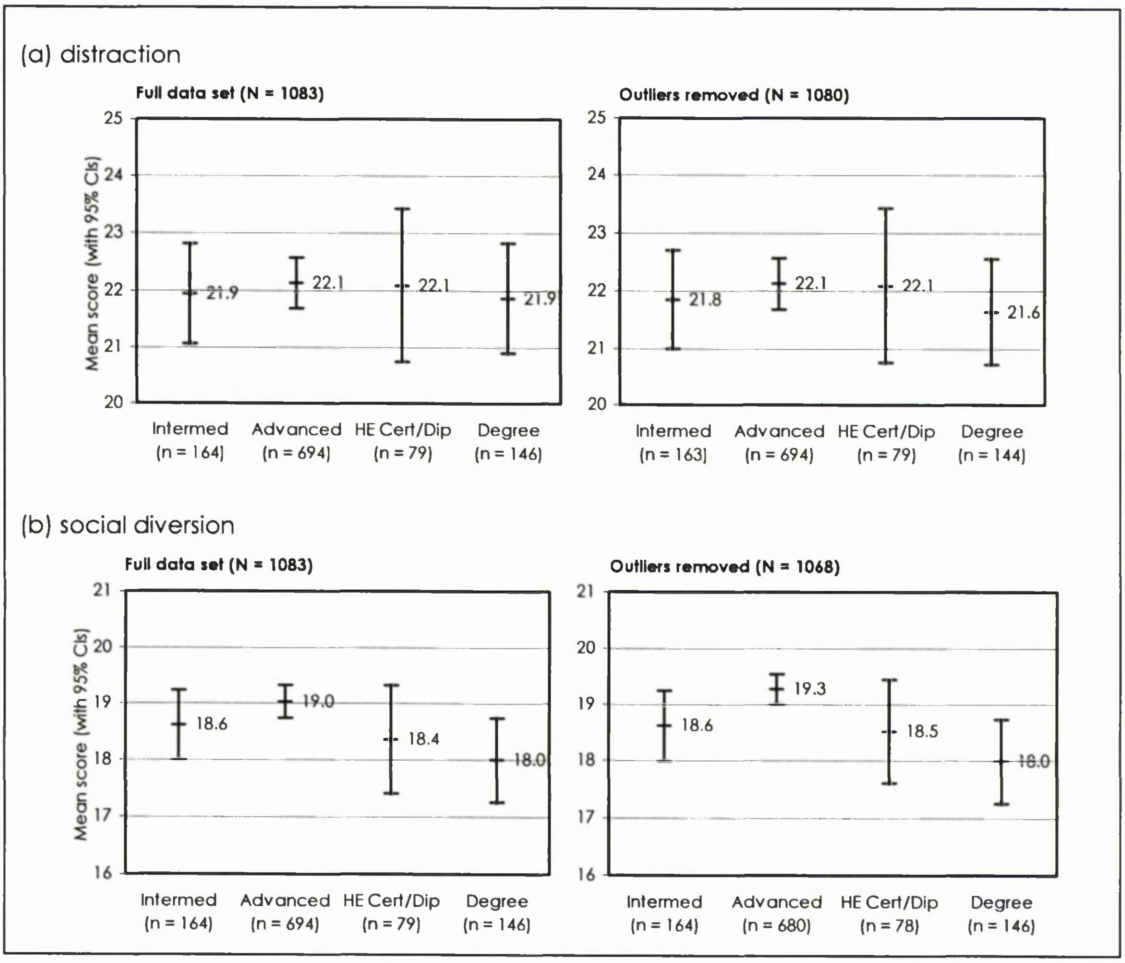


Figure 6.71 Highest qualification on entry: plots (with 95 per cent confidence intervals) for the two supplementary CISS variables.

Table 6.58 Highest qualification on entry: summary of the analyses of variance undertaken for the three main and two supplementary CISS variables.

CISS variable	Data set	Subgroups	*n*	*N*	Mean	SD	*F* value (df)	*p*	η^2	*Post hoc* grouping	
Task	**Full data set**	intermediate	164		53.1	9.6	1.323	0.265	ns		
		advanced	694		53.7	9.9	(3, 1079)				
		HE cert/dip	79		55.5	9.8					
		degree	146	1083	54.4	9.3					
	Outliers removed	intermediate	163		53.3	9.4	1.231	0.297	ns		
		advanced	689		53.9	9.6	(3, 1072)				
		HE cert/dip	79		55.5	9.8					
		degree	145	1076	54.6	9.0					
Emotion	**Full data set**	intermediate	164		43.6	11.8	0.308	0.819	ns		
		advanced	694		43.8	11.3	(3, 1079)				
		HE cert/dip	79		42.9	11.2					
		degree	146	1083	43.0	11.9					
	Outliers removed	intermediate	163		43.4	11.5	0.330	0.804	ns		
		advanced	694		43.8	11.3	(3, 1078)				
		HE cert/dip	79		42.9	11.2					
		degree	146	1082	43.0	11.9					
Avoidance	**Full data set§**	intermediate	164		48.9	8.7	1.159	0.324	ns		
		advanced	694		49.7	9.6	(3, 1079)				
		HE cert/dip	79		49.1	10.3					
		degree	146	1083	48.2	10.4					
	Outliers removed§	intermediate	155		49.1	7.4	1.548	0.201	ns		
		advanced	691		49.8	9.4	(3, 1064)				
		HE cert/dip	76		50.2	9.0					
		degree	146	1068	48.2	10.4					
distraction	**Full data set***	intermediate	164		21.9	5.7	0.107	0.956	ns		
		advanced	694		22.1	5.9	(3, 1079)				
		HE cert/dip	79		22.1	6.0					
		degree	146	1083	21.9	5.9					
	Outliers removed	intermediate	163		21.8	5.5	0.338	0.798	ns		
		advanced	694		22.1	5.9	(3, 1076)				
		HE cert/dip	79		22.1	6.0					
		degree	144	1080	21.6	5.6					
social diversion	**Full data set§**	intermediate	164		18.6	4.0	3.089	0.026	0.009	A	
		advanced	694		19.0	3.9	(3, 1079)			A	
		HE cert/dip	79		18.4	4.3				A	
		degree	146	1083	18.0	4.5				A	
	Outliers removed§	intermediate	164		18.6	4.0	5.419	0.001	0.015	A	B
		advanced	680		19.3	3.5	(3, 1064)				B
		HE cert/dip	78		18.5	4.1				A	B
		degree	146	1068	18.0	4.5				A	

Notes: η^2 is eta-squared, the effect size measure. For each test, variances are homogenous unless marked §.

The results of the ANOVAs undertaken for highest qualification on entry (Table 6.58 above) are consistent with the speculations made on the basis of the CI plots in that significant results were obtained for the two social diversion tests. However, the *post hoc* REGW-Q analysis for the full data set test resulted in a single homogenous subset. The results for the test with outliers removed are better (in terms of p-value and effect size) and the *post hoc* test confirms the speculation that the advanced and degree groups differ. The results of the social diversion ANOVAs (as well as the avoidance ANOVAs) are questionable, however, because of violations of the underlying assumptions of ANOVA. The Kruskal-Wallis tests run as alternatives (Table 6.59) found no significant differences for avoidance or, more importantly, social diversion. Overall, highest qualification appears to have no effect on coping style.

Table 6.59 Highest qualification on entry: summary of the non-parametric Kruskal-Wallis tests undertaken for two of the CISS variables.

CISS variable	Data set	Subgroups	*n*	*N*	Mean rank	*H* value (df)	*p*	*Post hoc* grouping
Avoidance	**Full data set**	intermediate	164		520.63	3.119	0.374	ns
		advanced	694		553.95	(3)		
		HE cert/dip	79		536.09			
		degree	146	1083	512.38			
social diversion	**Full data set**	intermediate	164		525.75	6.605	0.086	ns
		advanced	694		559.08	(3)		
		HE cert/dip	79		514.55			
		degree	146	1083	493.94			

6.4.5 Support systems

Information about support services (Research Question 3c) was obtained from responses to Question 37 of Part A of the questionnaire pack which was concerned specifically with the support mechanisms available to respondents. The original four categories available to respondents for each of the support systems listed was collapsed to two – 'might/would use' and 'would not use' – because of low frequencies in one or more of the original categories. The number and proportion of respondents who might or would use each of the 22 support systems available are contained in Table 6.60 overleaf. Note that the providers of support near the top are largely external to the School; the providers near the bottom are largely centrally-based and the providers in the middle, largely departmentally-based. Overall, respondents prefer to seek support from external sources (their friends and family, in particular), with School-based support mechanisms more likely to be used than centrally-based mechanisms. Interestingly, almost 90 per cent of respondents claimed they would use their personal teacher for support and around 80 per cent claimed they would use another teacher in the School. Over three-quarters of respondents would also use their General Practitioner as a source of support.

Table 6.60 Sources of support in order of likelihood of use.

Source of support	Provider	Valid *N*	Might/would use *n*	Might/would use %
Friends	External	1102	1088	98.7%
Family	External	1100	1049	95.4%
Peers	External	1095	1030	94.1%
Personal teacher	School	1105	983	89.0%
Other teacher in the School	School	1083	875	80.8%
General Practitioner (GP)	External	1096	841	76.7%
Clinical staff	External/School	1075	772	71.8%
School counsellor	School	1094	693	63.3%
Occupational health	School	1090	636	58.3%
Student council	School	1080	528	48.9%
External counsellor	External	1089	526	48.3%
Trade union	External	1086	500	46.0%
Student Liaison Officer	School	1077	434	40.3%
University counsellor	University	1089	374	34.3%
Student health centre	University	1079	348	32.3%
Student union	University	1081	320	29.6%
Religious organisation	External	1089	184	16.9%
Central Academic Advisory Service	University	1085	160	14.8%
Telephone helpline	University/External	1085	145	13.4%
Accommodation office	University	1084	120	11.1%
English Language Unit	University	1085	82	7.6%
International Society	University	1081	45	4.2%

6.4.6 Coping and support: summary of the results

With regard to Research Question 3a, three sets of results can be summarised here. Firstly, to summarise the results from analyses of the direct attempts at coping variables, nearly a third of respondents had thought about dropping out and almost 20 per cent had asked for extensions on assessed work or had had late submissions. Secondly, as far as substance use as coping is concerned, alcohol is not seen as a means of coping by the majority of users, unlike smoking. Prescription drugs are used more often as a means of coping than non-prescription drugs and non-prescription drug use itself is rare among respondents. That almost ten per cent of respondents use sleeping tablets (hypnotics) is noteworthy. Thirdly, with regard to coping styles, the overall profile of the sample (using the midpoint scores for each of the five CISS variables as baselines) is one that employs more task-oriented coping than the midpoint, less emotion-oriented coping than the midpoint and slightly more avoidance coping than the midpoint. Avoidance can also be examined in terms of its components, distraction and social diversion: respondents use less distraction yet more social diversion than the midpoint.

Regarding Research Question 3b, there are some discernible differences in coping styles between various subgroups of the study population. Significant differences were evident in only one variable in the primary variable set, nursing speciality. Although differences were found for CISS emotion, it took the removal of outliers to produce a statistically significant result. The results for avoidance (and its component distraction) are more credible in that all four tests produced the same finding: that children's nursing students are sufficiently different from mental health and learning disability students, but not sufficiently different from adult students, on the use of avoidance and distraction as coping styles.

The standard demographic variable set produced a more powerful set of results, with differences being found for age on entry, sex and ethnicity. Older entrants (those over 25) use more task-oriented, less emotion-oriented and less avoidance-oriented (both distraction and social diversion) coping strategies than younger entrants. Male respondents use less emotion-oriented and less avoidance-oriented coping than female respondents and white respondents tended to make greater use of social diversion than non-whites. There may also be a social class effect on avoidance and distraction but the evidence is not particularly impressive.

With regard to Research Question 3c, respondents prefer to seek support from external sources (their friends and family, in particular) rather than from School- or centrally-based support mechanisms although, encouragingly, teachers in the School are a primary source of support for respondents.

6.5 MODEL BUILDING: PREDICTING CASES

In addressing Research Question 4 ('what factors contribute to stress in nursing and midwifery students?'), logistic regression has been employed as the primary tool of analysis. As outlined in Chapter 4, regression is useful for building predictive models when data on some specific variable – in this case, stress – is available together with a range of other variables suspected of having an effect on this specific variable. Given, that logistic regression requires a dichotomous outcome variable, 'stress' was operationalised via the GHQ case/normal dichotomy.

Although the initial plans for analysis were to build a single model for all respondents, qualitative and quantitative differences between nursing and midwifery respondents – especially on the demographic variables considered in Chapter 5 – led to a decision that, for the purposes of model-building, the two professions should be considered separately.

6.5.1 Selecting predictor variables

In logistic regression, the first stage in model building is to decide which variables are to be entered in the regression equation. In line with the procedure outlined in Chapter 4, all potential predictor variables were individually tested against the dependent variable (GHQ case/normal dichotomy) and those with a *p*-value of 0.15 or less selected as 'first-stage' predictor variable. Table 6.61 on the next two pages summarises the results of tests on each of the available predictors for nursing and for midwifery.

In the case of nursing, 27 first-stage predictor variables were identified; for midwifery, 18 such variables were identified. These variable sets formed the preliminary regression models, Nursing Model 1 and Midwifery Model 1.

From these preliminary models, three further nursing models and four further midwifery models were considered. Specifics of the four nursing and five midwifery regression models are contained in Table 6.62 (p 290); details of the actual variables used in each of the models is summarised in Table 6.63 (p 291).

Table 6.61 Selecting potential predictor variables (continued overleaf).

				Nursing (N = 1005)					Midwifery (N = 102)				
	Variable	**Type**	**Test**	***n***	**Statistic**		***p***		***n***	**Statistic**	***p***		
Sources of stress	SNSI Academic Load	scale	t-test	742	−7.739	§	0.000	x	74	−1.702	0.093		x
	SNSI Clinical Concerns	scale	t-test	742	−3.827		0.000	x	74	−0.973	0.334		
	SNSI Personal Problems	scale	t-test	742	−11.681		0.000	x	74	−3.833	0.000		x
	SNSI Interface Worries	scale	t-test	742	−8.996		0.000	x	74	−2.357	0.021		x
	Self-report of pressure	ordinal	χ^2	988	180.449		0.000	x	102	34.66	0.000	†	x
Primary variable set	Programme type	nominal	χ^2	989	0.554		0.907		102	5.276	0.072		x
	Nursing specialty	nominal	χ^2	975	5.044		0.169		n/a	n/a	n/a		
	CFP vs. branch	nominal	χ^2	966	10.111		0.001	x	n/a	n/a	n/a		
Standard demographic set	Age on entry	scale	t-test	977	−1.627	§	0.104	x	101	0.145	0.885		
	Age at snapshot	scale	t-test	977	−1.056	§	0.291		101	0.379	0.705		
	Sex	nominal	χ^2	989	5.065		0.024	x	n/a	n/a	n/a		
	Ethnicity	nominal	χ^2	987	2.481		0.115	x	102	4.199	0.082	†	x
	Social class	ordinal	χ^2	901	2.349		0.309		96	0.429	0.801	†	
	Highest qualifications on entry	ordinal	χ^2	974	2.923		0.404		102	1.953	0.593	†	
Extended demographic set	Family type	nominal	χ^2	969	0.172		0.917		100	3,124	0.193	†	
	Children in household	nominal	χ^2	983	8.176		0.017	x	102	2.701	0.259		
	Accommodation type	nominal	χ^2	981	0.023		0.880		101	4.005	0.079	†	x
	Housing costs	nominal	χ^2	986	0.682		0.409		102	0.001	0.982		
	Cares for a dependent adult	nominal	χ^2	981	6.913		0.009	x	102	0.365	0.546		
	Paid work in addition to studies	nominal	χ^2	975	2.667		0.102	x	102	0.436	0.509		
	No. of paid hours worked per week	scale	t-test	975	−2.427	§	0.016	x	102	−0.756	0.452		
Additional variable set	Assessment index	scale	t-test	982	−5.637		0.000	x	102	−1.650	0.102		x
	Familiarity with the Manchester area	ordinal	χ^2	989	6.637		0.084	x	102	6.649	0.084		x
	Difficulty travelling to academic base	ordinal	χ^2	984	20.514		0.000	x	102	5.218	0.154	†	
	Difficulty travelling to clinical areas	ordinal	χ^2	763	6.943		0.074	x	101	2.745	0.432	†	
	'Unseen' disability	nominal	χ^2	989	4.034		0.045	x	102	0.021	1.000	†	

Table 6.61 (cont.) Selecting potential predictor variables.

				Nursing (N = 1005)				Midwifery (N = 102)				
	Variable	**Type**	**Test**	n	**Statistic**	p		n	**Statistic**	p		
Coping	CISS task	scale	t-test	981	6.050	0.000	x	102	2.429	0.017		x
	CISS emotion	scale	t-test	981	−13.314	0.000	x	102	−3.339	0.001		x
	CISS avoidance: distraction	scale	t-test	981	−0.688	0.504		102	0.374	0.709		
	CISS avoidance: social diversion	scale	t-test	981	−0.975	0.337		102	1.008	0.316		
Substance use as coping	Smokes cigarettes	nominal	χ^2	948	15.965	0.000	x	101	5.130	0.024		x
	Drinks alcohol	nominal	χ^2	969	0.754	0.385		102	0.266	0.606		
	Takes cannabis	nominal	χ^2	904	0.976	0.323		100	0.494	0.637	†	
	Takes anti-depressants	nominal	χ^2	911	21.195	0.000	x	100	5.754	0.029	†	x
	Takes hypnotics	nominal	χ^2	911	23,989	0.000	x	101	5.857	0.016		x
Direct attempts at coping	Thoughts of dropping out	nominal	χ^2	987	91.569	0.000	x	102	5.983	0.014		x
	Have taken time out	nominal	χ^2	983	1.207	0.272		102	5.555	0.041	†	x
	Absences from lectures/classroom	nominal	χ^2	985	18.989	0.000	x	102	11.471	0.001	†	x
	Absences from clinical area	nominal	χ^2	982	24.822	0.000	x	102	3.593	0.073	†	x
	Asked for extensions/missed deadlines	nominal	χ^2	983	16.477	0.000	x	99	2.175	0.171	†	
	Total number of variables selected						**27**					**18**

Notes: Values of t marked § have been adjusted because of heterogeneous variances. For chi-squared tests, Fisher's exact test has been used when marked † because there are cells with expected frequencies of less than 5 (SPSS Inc 2000).

Table 6.62 The logistic regression models considered for (a) nursing and (b) midwifery.

	(a) Nursing	(b) Midwifery
Model 1 (preliminary)	All predictors individually associated with the dependent variable with $p \le 0.15$.	All predictors individually associated with the dependent variable with $p \le 0.15$.
Model 2	[No Nursing Model 2 as no low cell frequencies for Nursing.]	As Model 1, but all predictors with low cell frequencies removed and self-report of pressure treated as a scale predictor to improve stability.
Model 3	As Model 1, but with the predictors accounting for the largest proportion of missing data (the SNSI measures and difficulty travelling to clinical base) removed in order to maximize the available sample.	As Model 2, but with the predictors accounting for the largest proportion of missing data (the SNSI measures) removed in order to maximize the available sample.
Model 4	As Model 1, but non-significant ($p \ge 0.05$) predictors removed.	As Model 2, but non-significant ($p \ge 0.05$) predictors removed.
Model 5	As Model 3 (maximising sample), but non-significant ($p \ge 0.05$) predictors removed.	As Model 3 (maximising sample), but non-significant ($p \ge 0.05$) predictors removed.

Nursing Model 3 arose because there was a problem with missing data on several of the predictors included in Nursing Model 1. The very nature of the SNSI summary variables and the variable 'difficulty in travelling to the clinical areas' meant that those respondents had been on their programmes of study for a relatively short time were excluded from the analysis (these variables were only valid for those who had had clinical placements prior to completing the questionnaire pack). Including these variables in the model was tantamount to losing over a quarter of otherwise eligible respondents, so these variables were excluded from Nursing Model 3 in order to maximise the available sample. Nursing Models 4 and 5 are merely re-runs of, respectively, Nursing Models 1 and 3 with predictors with non significant ($p > 0.05$) Wald statistics removed (as outlined in Chapter 4, this is a standard procedure in regression analysis).

Midwifery Model 2 arose because of problems with model stability. Midwifery Model 1 resulted in massive odds ratios and very large Wald statistics for some of the predictors. In these circumstances, the usual culprits are categorical predictors with categories containing fewer than five observations (Garson 1999; Hosmer and Lemeshow 1989; Howell 1997). These were easy enough to identify as they happened to be the variables needing a Fisher's adjustment when the first-stage predictor variables were being identified (see Table 6.61, pp 288-9). Removal of these predictors (six in all, see Table 6.63 overleaf) formed the basis of Model 2 for the midwifery population. To all intents and purposes, Model 2 has replaced Model 1 as the baseline model for midwifery. Midwifery Models 3 to 5 are thus equivalent of Nursing Models 3 to 5, although difficulty travelling to clinical areas did not have to be removed from Midwifery Model 3 as it was not originally identified as a first-stage predictor for midwifery.

Table 6.63 Predictor variables included in each of the nursing and midwifery logistic regressions.

		Nursing models				**Midwifery models**				
	Predictor	1	3	4	5	1	2	3	4	5
Stressors	SNSI Academic Load	x				x	x			
	SNSI Clinical Concerns	x		x						
	SNSI Personal Problems	x		x		x	x			
	SNSI Interface Worries	x				x	x			
	Self-report of pressure	x	x	x	x	x	x	x	x	x
Primary variable set	Programme type					x	x	x	x	x
	CFP vs. branch status§	x	x							
Standard demographic variable set	Age on entry	x	x							
	Sex	x	x							
	Ethnicity	x	x			x				
Extended demographic variable set	Children in household	x	x	x	x					
	Accommodation type					x				
	Cares for a dependent adult	x	x							
	Paid work in addition to studies	x	x							
	No. of paid hours worked per week	x	x							
Additional variable set	Assessment index	x	x			x	x	x		
	Familiarity with the Manchester area	x	x			x	x	x		
	Difficulty travelling to academic base	x	x							
	Difficulty travelling to clinical areas	x								
	Unseen disability	x	x							
Coping scores	CISS task	x	x	x	x	x	x	x	x	x
	CISS emotion	x	x	x	x	x	x	x		
Substance use as coping	Smokes cigarettes	x	x			x	x	x		x
	Takes anti-depressants	x	x			x				
	Takes hypnotics	x	x			x	x	x		
Direct attempts at coping	Thoughts of dropping out	x	x	x	x	x	x	x		
	Have taken time out					x				
	Absences from lectures/classroom	x	x			x				
	Absences from clinical area	x	x			x				
	Asked for extensions/missed deadlines	x	x							
	Total predictors	**27**	**22**	**7**	**5**	**18**	**12**	**9**	**3**	**4**

Notes: Predictors marked § apply to nursing respondents only.

6.5.2 Nursing models

Table 6.64 contains summaries of the results of the four logistic regression models undertaken for nursing.

Table 6.64 Nursing: summary statistics from the logistic regression models considered.

	Model 1	Model 3	Model 4	Model 5
valid *N*	611	822	731	973
number of variables	27	22	7	5
model stability	stable	stable	stable	stable
% correct – baseline	62.8	67.5	61.1	66.1
% correct – model	78.2	78.5	76.9	78.3
% improvement from baseline with model	15.4	11.0	15.8	12.2
sensitivity (% true cases identified)	86.5	89.0	84.1	88.8
specificity (% true normals identified)	64.3	56.6	65.5	57.9
Nagelkerke (pseudo) R^2	0.468	0.423	0.422	0.394
model χ^2	256.312	297.170	272.045	325.484
df	36	29	10	8
model *p*	0.000	0.000	0.000	0.000

Four all four nursing models, no influential points (defined, in Chapter 4, as those observations having a Cook's distance, *D*, greater than 1.00) were identified. There was also no evidence of multicollinearity (again, see Chapter 4) in any of the four models. All four models are significant and all have a large model chi-squared, which is indicative of useful variables in the regression equation (Afifi and Clark 1996). If Nagelkereke R^2 is used as a measure (albeit crude) of effect size, a large effect is present in all four models with all having around 40-50 per cent of the variance explained by the predictors.

As outlined in Chapter 4, choice of the best model is based on the principle of parsimony and on the 'best' trade-off between sensitivity and specificity. The principle of parsimony leads to Nursing Models 4 or 5 as candidates for the best model (having only eight and five variables, respectively, in the equation). Model 4 has better specificity than Model 5 with only a slight decrease in sensitivity. Although Model 5 identifies a larger proportion of respondents correctly as cases or normals compared to Model 4 (78.3 per cent versus 76.9 per cent) the improvement from the baseline is better for Model 4 than it is for Model 5. Model 4 also has a better Nagelkereke R^2 than Model 5.

Thus, the best model for nursing appears to be Model 4. The variables in the equation for Nursing Model 4 are summarised in Table 6.65 below. Variables with negative logistic regression coefficients (*B* values) can be seen as 'protective' factors in that the odds of being a case drop as scores on these variables increase. Conversely, variables with positive *B* values can be seen as 'risk' factors in that the odds of being a case increase as scores on these variables increase.

Table 6.65 Nursing Model 4: logistic regression results.

Predictor	*B*	Wald statistic	*p*	Odds ratio	(95% CLs)
SNSI Clinical Concerns	−0.033	2.139	0.144	0.967	(0.926, 1.011)
SNSI Personal Problems	0.186	35.665	0.000	1.205	(1.113, 1.281)
Self-report of pressure (overall)		41.621	0.000		
Slight vs. none†	−0.523	1.083	0.298	0.593	(0.222, 1.587)
Moderate vs. none†	0.228	0.219	0.640	1.256	(0.483, 3.265)
Considerable vs. none†	1.435	7.435	0.006	4.200	(1.497, 11.781)
Children in household (overall)		21.489	0.000		
Pre-school vs. none†	−1.166	8.897	0.003	0.312	(0.145, 0.670)
School age vs. none†	0.746	9.995	0.002	2.109	(1.328, 3.349)
CISS Task	−0.021	4.322	0.038	0.979	(0.960, 0.999)
CISS Emotion	0.064	38.643	0.000	1.066	(1.045, 1.087)
Thoughts of dropping out (Y vs. N)†	0.367	3.7.6	0.054	1.444	(0.993, 2.099)
Constant (intercept)	−3.798	18.475	0.000		

Notes: *B* is the logistic regression coefficient. † signifies a dummy variable.

Thus, for nursing, risk factors for GHQ caseness seem to be: having personal problems and interface worries; self-reporting moderate or considerable pressure; having school-age children; using emotion-oriented coping and having thoughts of dropping out. Protective factors seem to be: having clinical concerns; self-reporting slight pressure; having pre-school children and using task-oriented coping. However, before drawing any firm conclusions, it is important to consider the size of the odds ratio and the CIs for each of the predictors. Whether the predictors self-report of pressure (slight vs. none), self-report of pressure (moderate vs. none) and thoughts of dropping out have an effect on caseness is questionable as the value 1.0 is included in the confidence interval in all three cases (or, to put it another way, the *p*-value for each of these predictors is greater than 0.05). Self-report of pressure, however, is significant overall ($p = 0.000$), despite the non significance of two of its dummies. In addition, the odds ratios for SNSI clinical concerns, CISS task and CISS emotion deviate very little from 1.0, suggesting only a negligible effect for these predictors. With an odds ratio of around 1.2, SNSI personal problems is noteworthy but the odds ratio is still relatively small. More striking are the odds ratios for the self-report of pressure dummy 'considerable vs. none' and the two children in household dummies. For 'considerable vs. none', the odds ratio of around 4.2 (a medium effect) suggests that those who label themselves as under considerable pressure have more than four times the odds of being a case. For children in household, those with school age children have twice the odds (a small-to-medium effect) of being a case than those with no children and those with no children have around three times the odds of being a case (the reciprocal of 0.312 being 3.205) than those with pre-school children.

6.5.3 Midwifery models

Table 6.66 contains summaries of the results of the five logistic regression models undertaken for midwifery. All five midwifery models are significant and all have a relatively large model chi-squared, which is indicative of useful variables in the regression equation. If Nagelkereke R^2 is used as a measure (albeit crude) of effect size, a very large effect is present in all five models with all having between 50-70 per cent of the variance explained by the predictors. None of the midwifery models had any problems with multicollinearity.

Table 6.66 Midwifery: summary statistics from the logistic regression models considered.

	Model 1	Model 2	Model 3	Model 4	Model 5
valid *N*	72	73	101	102	101
number of variables	18	12	9	3	4
model stability	unstable	?	?	stable	stable
% correct – baseline	55.6	54.8	57.4	56.9	57.4
% correct – model	83.3	82.2	82.2	80.4	82.2
% improvement from baseline with model	27.7	27.4	24.8	23.5	24.8
sensitivity (% true normals identified)	87.5	87.5	86.2	84.5	89.7
specificity (% true cases identified)	78.1	75.8	76.7	75.0	72.1
Nagelkerke (pseudo) R^2	0.701	0.605	0.603	0.514	0.550
model χ^2	53.419	43.955	60.171	49.268	53.243
df	22	14	12	4	5
model *p*	0.000	0.000	0.000	0.000	0.000

Midwifery Model 1 turned out to be a particularly unstable model that was difficult to interpret due to large Wald statistics and massive odds ratios. There were also some very large values of *D* in this model, indicating problems with influential observations. As explained earlier, the likely reason for Model 1's instability lay in cells with an expected frequency of less than five. As a result, six of the predictors were eliminated from the model. A seventh – self-report of pressure – was treated as scale rather than a categorical variable, a strategy available when the underlying variable is ordinal in nature (Afifi and Clark 1996). Midwifery Model 2 (Model 1 with the six cell-frequency-problem predictors removed and self-report of pressure treated as a scale variable) was a little more stable in that the Wald statistics and odds ratios were not as troubling. Model 2, however, suffered from a number influential observations which when removed again led to an unstable model (hence the '?' in Table 6.66). Model 3 (the analogue to Nursing Model 3 – 'sample maximised') had similar problems with instability when influential observations were removed.

However, Models 4 and 5 (Models 2 and 3 with predictors with non-significant Wald statistics removed) both proved to be stable models free of influential observations. With regard to the best midwifery model, the choice has to be between Models 4 and 5 purely because of stability issues. From a parsimonious perspective, there is little to choose between the two models (three versus four variables). Sensitivity is slightly better with Model 5 than Model 4; similarly, the Nagelkerke R^2 of Model 5 is slightly better than that of Model 4. There is little to choose between the two models in terms of classification accuracy with improvements from the baseline being 23.5 and 24.8 per cent respectively. It is worth, therefore, exploring both of these models in a little more detail.

Tables 6.67 and 6.68 provide summaries of the logistic regression results for Models 4 and 5 respectively. With regard to predictors, the only difference between the two models is the inclusion of cigarette smoker (Y vs. N) in Model 5.

Table 6.67 Midwifery Model 4: logistic regression results.

Predictor	***B***	**Wald statistic**	***p***	**Odds ratio**	**(95% CLs)**
Self-report of pressure (scale)	2.336	22.271	0.000	10.336	(3.918, 27.267)
Programme type (overall)		10.646	0.005		
Midw dip, enhanced vs. Midw dip†	−2.070	10.559	0.001	0.126	(0.036, 0.440)
Midw dip, shortened vs. Midw dip†	−1.213	2.182	0.140	0.297	(0.059, 1.486)
CISS Task	−0.064	4.749	0.029	0.938	(0.885, 0.994)
Constant (intercept)	−2.206	1.341			

Notes: Self-report of pressure treated as a scale variable. *B* is the logistic regression coefficient. † signifies a dummy variable

Table 6.68 Midwifery Model 5: logistic regression results.

Predictor	*B*	Wald statistic	*p*	Odds ratio	(95% CLs)
Self-report of pressure (scale)	2.369	20.616	0.000	10.690	(3.844, 29.729)
Programme type (overall)		9.898	0.007		
Midw dip, enhanced vs. Midw dip†	−2.150	9.898	0.002	0.116	(0.031, 0.445)
Midw dip, shortened vs. Midw dip†	−0.930	1.245	0.265	0.395	(0.077, 2.020)
CISS Task	−0.079	6.019	0.014	0.924	(0.868, 0.984)
Cigarette smoker (Y vs. N)†	1.659	4.614	0.032	5.255	(1.156, 23.885)
Constant (intercept)	−1.831				

Notes: Self-report of pressure treated as a scale variable. *B* is the logistic regression coefficient. † signifies a dummy variable

For midwifery, risk factors for GHQ caseness seem to be self-report of pressure (both models) and whether the respondent is a smoker or not (Model 5 only). Protective factors seem to be the programme of study the respondent is undertaking and use of task-oriented coping. In both models, the odds ratio for CISS task deviates very little from 1.0, suggesting only a negligible effect for this predictor. With regard to programme of study, although the overall variable is significant in both models (*p*-values of 0.005 and 0.007, respectively), only the dummy variable 'enhanced midwifery diploma vs. standard midwifery diploma' is significant in both cases. Nevertheless, what both models imply is that the odds of being a case are increased for those undertaking the standard midwifery diploma (conversely, the odds are reduced for those undertaking the enhanced diploma and the shortened diploma). In both models, self-report of pressure has a large effect with odds ratios of around 10.0 in each case. This implies that a one unit change in self-report of pressure (from 'under no pressure' to 'under slight pressure', for example) results in a ten-fold increase in the odds of being a case. Smoking, considered only in Model 5, has a medium-to-large effect with an odds ratio of around 5.0, implying that there is five-fold increase in the odds of being a case for those who smoke.

6.5.4 Model building: summary of results

For nursing, it seems that self-report of pressure, whether or not the respondents have children in the household (more specifically, whether these children are pre-school or school-age) and, possibly, scores on the SNSI personal problems scale are the key predictors of caseness. Although several other variables are a necessary part of the regression equation, their individual impact on predicting caseness is less important in that large changes are required on these variables to produce appreciable changes in the odds of being a case.

For midwifery, the key predictors of caseness seem to be self-report of pressure, programme type and whether the respondent is a smoker or not. As with nursing, several other variables are a necessary part of the regression equation, although the individual impact of these variables on predictions of caseness is slight.

CHAPTER 7
DISCUSSION

7.1 CHAPTER INTRODUCTION

Overall, this investigation was concerned with a population that was predominantly young, white, female, of the higher social classes and educated beyond the minimum requirements for entry into nurse or midwife training. The investigation found examinations/assessments, fear of failing the course and managing bursary to be the major sources of stress. The overall prevalence of stress (caseness rate) was around one-third, and respondents appeared to be reasonably capable of gauging their own stress levels. Indeed, such self-assessments appeared to be predictive of caseness for both the nursing and the midwifery subpopulations.

In systematically comparing caseness rates and stress levels across subgroups of the population, tentative effects were evident for a range of variables although consistent and substantial differences were only evident on a few variables, namely CFP vs. branch, sex, assessment load, difficulty in travelling to the academic base, familiarity with the Manchester area and unseen disability. Paradoxically, none of these variables predicted caseness in either the nursing or the midwifery subpopulations. In addition to self-assessment of stress levels, whether respondents had children in the household and the ages of those children seemed to predict caseness in nursing; in midwifery, the key predictors of caseness seemed to be the particular midwifery programme being pursued and whether the respondent was a smoker or not.

Amongst all respondents, thoughts of dropping out and asking for extensions were common behaviours. Alcohol use was widespread amongst respondents but not necessarily as a coping mechanism; the converse seemed to be true for smoking. Illicit and prescription drug use was rare amongst respondents. With regard to the coping styles preferred by respondents, some differences were discernible on the comparisons by specialty, social class and ethnicity; age and sex differences were, however, clearly evident. Respondents preferred to seek support from external sources (their friends and family, in particular) rather than from School- or centrally-based support mechanisms although, encouragingly, teachers in the School were a primary source of support for respondents.

This chapter is primarily concerned with placing the principal findings of the investigation – the findings listed above – into context. As such, a discussion of these findings forms the bulk of this chapter (Sections 7.2-7.6).

As is the convention, methodological issues that could have a bearing on the validity of the findings are also considered. Although a variety of methodological issues are examined, it is worth mentioning in this brief summary of the findings that there are three issues that are particularly important. Firstly, there is the problem of 'concept confounding', a problem common in stress research (Edwards and Cooper 1988) where certain actions (e.g. ending a relationship or substance use) can be perceived as a source of stress, an outcome or even as an attempt at coping. Secondly, there are issues when studies – like the current investigation – rely entirely on self-report measures. In particular, the problems of 'response sets' and 'common method variance' (or 'monomethod bias') are associated with a reliance on self-report measures. Thirdly, there were some items in the questionnaire pack (specifically, the items contained in Q29–Q36) that have questionable psychometric properties given that they were not derived from formally validated instruments.

Methodological issues are discussed in detail in Section 7.7 following which, in order to bring the thesis to a close, a number of recommendations regarding stress and pre-registration nursing and midwifery education are also made (Section 7.8).

7.2 SAMPLE DEMOGRAPHICS

7.2.1 Standard demographics

The observation that the sample is predominantly young, white, female, of the higher social classes and educated beyond the minimum requirements for entry into nurse or midwife training is, at the same time, disappointing, reassuring and revealing. It is disappointing because, despite calls for a nursing and midwifery profile that better reflects the general population (Department of Health 1999a), the demographic profile of the two professions has changed little over the years (Hallam

2000). Further disappointments arise when additional findings are contrasted with recent policy statements. For example, only around one per cent of respondents were undertaking their programmes on a part-time basis and, although this figure is typical in that it matches the data from the RCN survey referred to in Chapter 5 (RCN 2001), it hardly fits in with the calls for flexible learning made by the Department of Health (1999a) and Brennan *et al.* (1999). Nevertheless, the observation is reassuring because, whilst hardly typical of the general population, it is typical (with the exception, discussed in Chapter 5, of ethnicity and the London schools of nursing) of the English and UK-wide nursing and midwifery student populations and so strengthens the case for generalising the findings to these populations. It is revealing because, firstly, it says a lot about the status of nursing and midwifery in society (on one level, nurses and midwives are privileged because they are predominantly white, middle-class and educated; on another level, they are underprivileged because they are predominantly female) and because, secondly, it dispels many of the myths held by nurse educators that nursing and midwifery students are somehow 'special' (see, for example, Snell 1995). Indeed, as the reader will discover later, if sex is taken out of the equation, there seem to be more similarities than differences when nursing and midwifery students are compared with generic university/college students.

Although the general demographic observation 'predominantly young, white, female, of the higher social classes and educated' holds regardless of the specific programmes and specialties considered, some noteworthy differences were evident and require comment. Regarding age, the mean age on entry for nursing degree (BNurs) respondents, at around 19½, was much lower than the overall mean of 26. In addition, the spread of age on entry for the BNurs was also relatively small, with the BNurs having a standard deviation of roughly three years compared with an overall standard deviation of around eight years. This discrepancy is relatively easy to explain in that the BNurs is a long-established degree programme that has typically recruited from the same pool of 18-year old school/college leavers as other degree programmes. Indeed, the age profile of the BNurs – 90 per cent under 21, ten per cent 21 and over on entry – is remarkably similar the University of Manchester's overall age profile for the same year (1999-2000 entrants): 92 per cent under 21, eight per cent 21 and over on entry (UCAS 2000). Importantly, other than this age discrepancy, there is little to distinguish the BNurs from the other nursing programmes (although it is worth adding that analyses of the 'familiarity with Manchester' responses imply that the BNurs tends to recruit from outside the local catchment area – Greater Manchester – whereas the other nursing programmes tend to recruit from within Greater Manchester). The shortened midwifery diploma students tended to be older than students on the other midwifery programmes, but this is hardly surprising given that these respondents were essentially undertaking training for a second career.

With regard to sex, the most obvious observation is that there were no male midwifery students. Historically, this is unsurprising given that there have been statutory attempts to block the admission of men into midwifery (McKenna 1991). Nursing has generally been more amenable to men in the profession. The higher proportion of men in both mental health and learning disability nursing is also probably down to history: both these specialities (learning disability nursing originally as a subspecialty of mental health nursing) developed from the asylums of the 19th century, institutions governed by largely custodial practices (Nolan and Chung 1996) that by their very nature tended to attract men.

The proportion of mental health, learning disability and, to some extent, midwifery respondents with a first or postgraduate degree is noteworthy although there is no clear cut reason why graduates should choose these specialities in favour of adult or children's nursing. Unfortunately, the degree discipline of graduates was not recorded. If it had been, and if a significant proportion of graduates choosing mental health or learning disability nursing had had social science degrees, then this observation could, in part, be explained in terms of the social science graduate 'surplus'.[29] These graduates, unable to pursue a first-choice career based on their degree discipline, may well see mental health and learning disability nursing as relevant to their degree discipline and a suitable alternative career. The proportion of midwifery respondents with a first or postgraduate degree is more difficult to explain.

[29] There appears to have been a major expansion in the number of social science graduates – figures from the British Psychological Society (2002) show that the number of psychology graduates alone has doubled in the last ten years – without an allied major expansion in career opportunities.

7.2.2 Extended demographics

The observation that more student midwives than nurses had childcare responsibilities and more student nurses than midwives lived alone with fewer student nurses seeing themselves as a couple suggests that midwifery tends to attract a greater proportion of 'traditional-role' women – married (or in a long-term relationship), settled and with children – although the fact that pregnancy and childbirth can be positive recruitment factors for midwifery (pregnant women have direct experience of midwifery after all) could also explain the higher proportion of traditional-role women in midwifery.

That one in eight respondents were caring for an adult dependant as well as undertaking a demanding academic programme is thought provoking. On one level, the actual caring responsibilities could well explain why some were drawn to the caring professions in the first place, although the proportion of respondents caring for an adult dependant exactly mirrors that of the UK as a whole (Department of Health 1999b) and is less than in the RCN survey. On the other hand, it is important to bear in mind that a substantial minority of respondents were involved in an extra-curricular activity known to be burdensome (O'Neill and Ross 1991). That twice as many women as men were undertaking this role is hardly surprising given that it is female family members who are responsible for the bulk of family care giving (Department of Health 1999b; Hoffman and Mitchell 1998; O'Neill and Ross 1991).

The finding that, out of all the various programmes, graduate entry and BNurs students were the most likely to use institutional accommodation is relatively unsurprising given that these two groups contain the individuals least likely to have embarked on a career (the BNurs by virtue of age, the graduate entry by virtue of a lack of opportunity). A significant number of BNurs (≈ 15 per cent) and standard DPSM students (≈ 20 per cent) lived in rent-free accommodation. With the BNurs students, this is probably explained by the reality of student finances. Like generic university/college students, but unlike DPSN and DPSM students, BNurs students did not have automatic financial assistance attached to their programme.[30] As such, it is conceivable that there would be more pressure on BNurs students to live at home or ask their parents to cover the costs of accommodation (the most likely reasons for their accommodation being rent-free) than there would be on other nursing students. This argument, however, does not hold for the standard DPSM students (who were bursaried) and there is no readily available explanation as to why there should be a significant proportion of this student group in rent-free accommodation, unless it is again an artefact of the women-in-a-traditional-role profile of midwifery hypothesised above (men, as breadwinners, cover all accommodation costs). This could also explain why midwifery respondents were, by and large, less likely to undertake paid work than nursing respondents. Interestingly, given that BNurs students do not have automatic financial assistance attached to their programmes, it is surprising that the pattern of additional work for BNurs students differs little from the other nursing programmes.

Focusing specifically on paid work in addition to studies, some comparison data is available from the RCN's survey (RCN 2001) and a few other sources. The RCN reported that, across the UK, around 60 per cent of nursing students undertook paid work averaging roughly 14 hours per week. Howard (2001) reported 50 per cent, and Ferguson and Cerinus (1996) 36 per cent, of students taking additional employment. With regard to generic university/college students, Roberts *et al.* (1999) reported that more than half of students were in paid employment for between 17 and 18 hours per week and that higher GHQ scores were related to working long hours outside the course – a finding that will be revisited later. These figures compare with around 55 per cent of nursing students in the current investigation, who averaged roughly 12 hours per week and 28 per cent of midwifery students averaging roughly 10 hours per week. Why a larger proportion of both mental health and learning disabilities students undertook paid work (with average hours per week above those of adult and children's nursing students) is difficult to explain, although the fact that these two student groups contained higher proportions of men could be a factor.

[30] DPSN and DPSM students received a tax-free, non means tested bursary of around £4,000 per annum, although *all* pre-registration nursing and midwifery students are exempt from university tuition fees.

The majority of respondents had little or no difficulty travelling to their academic base. The difficulty experienced in travelling to clinical areas experienced by BNurs students is understandable given that the nursing degree has, for historical reasons, used placements spanning a wider geographical area than the other programmes. For the DPSN and DPSM, students have traditionally lived near to, or have asked to be accommodated in, specific districts of Greater Manchester, the majority of their placements taking place in those districts. The BNurs, on the other hand, has not operated on a model of close links between its students and specific health districts with the consequence that BNurs students have often had to travel across the whole of Greater Manchester (and even beyond) rather than merely within a specific health district.

With regard to disability, comparative data is difficult to obtain because, as the National Audit Office (2002) point out, the student population tends to be younger than the working population and will, as such, have a lower prevalence of disability. Nevertheless, data provided by UCAS (1999) suggests that around one-and-a-half per cent of 1999-2000 university/college entrants had dyslexia, just under one per cent had an unseen disability and less than a tenth of one per cent had mental health problems. According to the British Dyslexia Association (2003), around four percent of the general population have severe dyslexia, a further six per cent having mild to moderate dyslexia. Thus, although still under representative of the general population, the School – with three per cent of students declaring dyslexia – fares better than the national picture for students. Unseen disability is interesting in that the School has six times as many students with diabetes, epilepsy or asthma than the national university/college student picture. This observation is perhaps not as surprising as it might seem as students with these conditions would undoubtedly have come in contact with nurses and other health professionals and it may be that interactions with these health professionals influenced career choice. On declaration rates alone there are ten times as many students in the School with mental health problems than there are in the national picture. There are two related points to bear in mind here. Firstly, as the National Audit Office (2002) point out, students will tend to under-declare disability if they fear discrimination and, secondly, there is an irony in the fact that, in the current investigation, less then one per cent of respondents declared a mental health problem despite more than a third of respondents being identified as GHQ cases.

7.3 STRESSORS

7.3.1 Major stressors in context

In addressing Research Question 1a ('what are the sources of stress among pre-registration students in the School?'), faced with a simple choice between the programme of study and other things going on in their lives, the respondents tended to attribute the programme as the primary source of stress. However, when examined in more detail (via the individual SNSI items), it seems that, overall, only two inter-related aspects of their programmes concerned the students: examinations/assessments and fear of failing the course (which is, of course, related to whether the student is successful in examinations and assessments). The third major stressor identified – managing bursary – relates more to the students' personal circumstances.

Putting these findings into context, and answering Research Question 1c ('how do the sources of stress identified ... compare with other populations?') in the process, these three sources of stress have been reported consistently in the literature. Examinations and assessments, in particular, have been identified as sources of stress to nursing, midwifery and other students by a plethora of authors (Baldwin *et al.* 1998; Basson and van der Merwe 1994; Beck and Srivastava 1991; Beck *et al.* 1997; Clarke and Ruffin 1992; Everly *et al.* 1995; Fisher and Hood 1987; Howard 2001; Jones and Johnston 1997; Kipping 2000; Lindop 1991; Snell 1995; Thyer and Bazeley 1993). Fear of failing the course has been identified by Parkes (1985) and Jones and Johnston (1997) and issues with finances by Baldwin *et al.* (1998), Beck and Srivastava (1991), Brown and Edelmann (2000), Jones and Johnston (1997), Kirkland (1998), Lo (2002), Snell (1995), Thyer and Bazeley (1993) and Timmins and Kaliszer (2002). Similar findings regarding finances have been reported in generic university/college students (Fisher and Hood 1987; Monk 1999; Monk and Mahmood 1999; University of Leicester 2002).

Although these same three sources of stress appear in the lists of major stressors for midwifery respondents, the sheer number of SNSI items identified as major stressors by midwifery respondents is perhaps more noteworthy than the actual items identified. That midwifery students identified three to four times as many major stressors as nursing respondents is difficult to explain although it may be no coincidence that the midwifery lists are, unlike the nursing lists, studded with stressors of a clinical nature. Regarding specific stressors, it is difficult to put the stressors identified in the midwifery list into context since there is only one piece of work that deals exclusively with midwifery students (Cavanagh and Snape 1997a, 1997b). Nevertheless, given that examinations/assessments was a top stressor for all three midwifery programmes, comments in an anecdotal piece (Anonymous 1998) citing assessments as the major source of stress for midwifery students may well have some credibility.

On the whole, the major stressors that are peculiar to particular subgroups of the population are relatively easy to explain. The fact that travelling time to placements is a major stressor to BNurs students is, as was mentioned earlier, likely to be an artefact of the BNurs historically employing a wider range of clinical placements than the other programmes. Lack of free time as a major stressor to BNurs students is harder to explain given that the BNurs has no more or no less scheduled classroom time than other nursing programmes although it may be related to the absence of 'managing bursary' as a major stressor. As mentioned earlier and unlike all other respondents, BNurs students were not entitled to automatic financial support and, as such, many BNurs students had to rely on private means or a means-tested grant to support them through their studies. That a sizeable proportion of BNurs students (more than 50 per cent of students in Years 1 to 3 and nearly two-thirds of Year 4 students) undertook paid work in addition to their studies – perhaps because they needed the income to survive – could account for the lack of free time. However, this speculation has to be viewed with caution given that similar proportions of students on the other nursing programmes undertook paid work yet lack of free time does not appear as a major stressor for these programmes. Moreover, far fewer midwifery students undertook paid work than BNurs students, yet lack of free time appears as a major stressor for all three midwifery programmes.

The fact that being assessed in the School's clinical skills laboratories was a major stressor to CFP respondents is unremarkable given that, at the time the data was collected, assessment via 'clinical skills examinations' was a summative component of the CFP. The absence of examinations/assessments as a major stressor for graduate entry students is also unremarkable, given that these students would already have had prior experience of university-level examinations and assessments. That the death of a patient is a major stressor in midwifery programmes is also readily explainable in that the death of a child (bearing in mind that, along with pre- and post-natal women, children and babies are midwifery's patients) is often seen as more traumatic than the death of an adult (Scullion 1994; Sheldon 1998). However, it is interesting to note that the same item was not a major stressor for children's nurses, as might be expected.

Perhaps the most interesting finding regarding sources of stress is a finding of omission. Despite previous findings to the contrary (see, for example, Jones and Johnston 1997; Kleehammer *et al.* 1991; Kipping 2000; Mahat 1996, 1998; Sellek 1982; Snape and Cavanagh 1995), hardly any of the major stressors identified by nursing respondents are related to the clinical experience although, as mentioned above, the list of major stressors identified by midwifery respondents is studded with clinical stressors. Generally speaking, however, the clinical aspects of the various nursing programmes were not particularly disconcerting to respondents (a finding similar to that of Howard 2001) perhaps because, clinical aspects are often a major source of *satisfaction* to students as (Kinsella *et al.* 1999) or seen as a *challenge* rather than a threat (Oermann and Standfest 1997). Howard (2001) also reported that nursing students seemed to be less stressed in practice than in college.

7.3.2 Discernible differences

In answering Research Question 1b ('are there discernible differences in sources of stress between various subgroups of the study population?'), the discernible differences on individual SNSI items have already been considered above. Here, the differences identified on the five SNSI summary variables are considered and placed into context.

With regard to the overall SNSI score, statistically significant differences were evident for nursing programme type, nursing specialty, age, sex and highest qualification on entry. Given that the overall SNSI score is, in essence, a stressor index, it seems that certain subgroups of the sample felt they were exposed to significantly more stressors than others and/or the stressors were of a greater intensity. Regarding the four subscales, no statistically significant differences were evident for personal problems on any of the comparisons made suggesting that the number and intensity of perceived personal problems is unrelated to any of the programme-specific or demographic factors. On (home-work) interface worries, statistically significant differences were obtained for comparisons by nursing specialty and by sex; for clinical concerns, differences were found on the comparisons by age on entry and sex. The greatest number of statistically significant findings applied to academic load, for which differences were evident on comparisons by nursing vs. midwifery, nursing programme type, nursing specialty, age on entry, sex, ethnicity and highest qualification on entry.

7.3.2.1 Programme-specific differences

The observation that midwifery respondents had significantly higher levels of academic load than nursing students is interesting but difficult to put into context, particularly since there is little work available that compares nursing and midwifery students. There are no aspects of the midwifery programmes that could account for a higher academic load that are not also aspects of one or more of the nursing programmes. Thus, whilst higher academic load could theoretically be accounted for by the additional academic demands of the enhanced DPSM (studying for an extra 60 level three credits), nursing also has a higher level programme – the nursing degree. Moreover, given that no differences were evident between the enhanced DPSM and the standard DPSM, it is unlikely that the academic demands of a programme are solely responsible for perceived academic load. More likely explanations, especially since it took the removal of outliers to establish the finding, is that the finding is simply down to a peculiarity in one or both of the midwifery subgroups[31] or that the finding is simply a result of chance.

This question of a peculiarity in one or other of the midwifery subgroups also crops up when the substantial difference between the two midwifery programmes on interface worries is considered. It is hard to speculate why the enhanced DPSM should have substantially more interface worries than the standard DPSM (as mentioned above, a greater academic load would not have been particularly

[31] Recall that only two midwifery programmes were compared using the SNSI summary variables as shortened midwifery respondents had not been on their programme long enough to generate valid SNSI scores.

intriguing, nor would have more clinical concerns given the discussion, in Section 7.3.1, on the major stressors identified by midwifery students). Again, since it took the removal of an outlier to establish this finding, it may be that the finding is down to a peculiarity in either the enhanced DPSM or the standard DPSM or that it is simply down to chance.

The finding that the academic load was significantly lower for graduate entry respondents is more straightforward. As graduates, these respondents would have had some kind of prior exposure to the nuances and processes of HE and it is likely that this experience will have tempered their perceptions of what is and is not a source of academic stress. A difference between graduate entry and joint nursing/social work students on total SNSI scores was evident when identified outliers were removed, but not for the full data set (all four programmes formed a single homogenous subset). Whilst these findings are difficult to interpret, the mean total SNSI scores for the graduate entry and the joint nursing/social work programme, being the lowest and the highest respectively, paint a picture that is relatively easy to understand. The mean total SNSI scores suggest that graduate entry students find the student experience to be the least stressful whereas the joint nursing/social work students find it to be the most stressful. Prior experience might explain the graduate entry students' position. On the other hand, studying for *two* academic awards (nursing and social work) at *two* universities (Manchester and Salford) might explain the position of joint diploma students.

With regard to nursing specialty, the mental health branch stands out: mental health students generally had a lower academic load than students from the other specialties and they had generally lower interface worries than the adult and learning disability students. Mental health students also had lower total SNSI scores than the adult and learning disability students. These findings could have been explained by the significant proportions of men and graduates in the mental health specialty (as will become apparent in the next section, sex and educational level appear to have an effect on academic load). Unfortunately, explanations in terms of sex and education fall down because the learning disability specialty – with similar proportions of men and graduates in its ranks – is different from, rather than similar to, the mental health specialty on these measures. In addition, Jones and Johnston (1997) – the architects of the SNSI – did not find any differences on sources of stress across the specialties. Still, with regard to perceived sources of stress, there does seem to be a hardy quality to mental health students that the other specialties lack (made more salient by the identification of merely one SNSI item – examinations/ assessments – as a major stressor), an observation that will be picked up again when stress itself is considered.

No statistically significant differences were found on any of the five SNSI variables between CFP and branch students. This is not a particularly remarkable finding but it is worth mentioning considering that, on the basis of responses to Q30, there was some speculation that the programme of study was increasingly seen as a source of stress as students progressed through the programme. If this had been the case, branch students should have exhibited higher scores on academic load and clinical concerns (variables indicative of programme-specific stressors) than CFP students. Conversely, branch students should have exhibited lower scores on personal problems and interface worries (variables indicative of 'other things').

7.3.2.2 Demographic differences

With regard to age on entry, a clear picture emerges in that younger students (those under 21 at entry, in particular) seem to find the student experience more stressful (in terms of total SNSI scores) than older students. Specifically, younger students experience a higher academic load and more clinical concerns than older students. These findings are consistent with the general picture that has emerged in the literature of the influence of age on the stress process and will, as such, be considered in more detail later with related findings relating to age and stress and age and coping.

As far as the current investigation is concerned, sex appears to play a consistent role in the stress process. However, unlike age, the picture in the literature is less clear. As far as sources of stress are concerned, men seem to find the whole student experience less stressful than women (as measured by total SNSI scores), experiencing a lower academic load, fewer clinical concerns and fewer interface worries. Given the traditional social roles assigned to men and women, these findings have some credibility, particularly where (home-work) interface worries are concerned. The evidence in the literature is, however, ambiguous. Whilst it is widely acknowledged that there are differences in the way men and women *respond* to stressors (Sutherland and Cooper 1990), Jenkins (1991) argues that there is no evidence that men and women experience life events or adversity at different rates. Davidson and Cooper (1983), however, found that certain stressors – those associated with the home-work interface, like support for working mothers and childrearing expectations – had more of an adverse effect on female than on male managers. Likewise, Billings and Moos (1984) found that women tended be concerned by stressors such as family strain and a negative home environment whereas men tended to be concerned by work and negative life events such as bereavement or divorce. A reasonable conclusion here, therefore, might be that men and women experience equivalent numbers of stressors but that there are differences in the types of stressor likely to have an impact. However, if this was so, no difference should have been evident on Total SNSI scores. The conclusion is also thwarted by findings such as those of Clarke and Ruffin (1992) who found no sex differences on the types of stressor experienced in Australian nursing students,

There may also be a difference on academic load with regard to ethnicity, with non-white students experiencing a higher academic load than white students. Again, this finding has some credibility, but it has to be balanced against the fact that the finding was established only after outliers were removed. The finding should also be tempered by the observation that there is a generally high participation of ethnic minorities in HE (National Audit Office 2002) and the findings that the sources of stress identified by African-American nursing students (Kirkland 1998) differ little from those identified by Caucasian students.

As far as highest qualification on entry is concerned, the finding that those who had higher qualifications on entry (chiefly those with degrees, but also those with HE certificates or diplomas) experienced lower academic load scores than those with lower qualifications is far from remarkable, for much the same reasons as those given in the earlier discussion on the graduate entry programme. (It is interesting to note that although midwifery students experienced a generally higher academic load than nursing students, midwifery had a higher proportion of graduates in its ranks – 16 per cent against 11 per cent). Regarding total SNSI scores, a difference was evident between respondents with degrees and those with 'advanced' qualifications like 'A' levels (but, ironically, not those with 'intermediate' qualifications like GCSEs) when identified outliers were removed. However, this difference was not evident in the full data set (all four categories of qualification formed a single homogenous subset). Whilst these findings are difficult to interpret, the mean total SNSI scores for those with degrees is substantially lower than those with lower qualifications, suggesting that graduates (regardless of the programme they are on) find the student experience to be less stressful than non-graduates.

7.4 STRESS

Although two stress measures – the GHQ-12 and the SF-12 – were employed in the investigation, the discussion in this section is biased towards the GHQ findings for no other reason than the lack of comparable studies involving the SF-12 (or, indeed, its parent the SF-36). It is important to remember that the GHQ-12 and SF-12 MCS measure similar but not identical constructs: as noted in the previous chapter, the GHQ-12 is a measure of psychological distress, the SF-12 MCS a measure of mental health/well-being. Thus, the finding that respondents in the current investigation are, according to the SF-12, generally less mentally well and generally more physically well than the normative US population, whilst relatively easy to explain (the relatively lower MCS scores because of the relationship between psychological distress and mental health and the relatively higher PCS scores because student populations tend to be younger than generic adult populations) is, at the same time, difficult to put into context because of the lack of comparable studies.

7.4.1 Prevalence rates in context

In answering Research Question 2a ('what is the prevalence of stress among pre-registration students in the School?'), recall that there is an overall prevalence of caseness among the respondents of around one-third. Putting this finding into context and so addressing, in part at least, Research Question 2c ('how do the levels of stress ... compare with other populations?'), the overall prevalence of stress (caseness rate) amongst the respondents is remarkably similar to that found in comparable populations. Using the GHQ-12 and the same 3/4 threshold employed in the current investigation, prevalence rates of around one-third have been found in qualified nurses (Borrill *et al.* 1996, 1998) and in medical students (Firth 1986; Guthrie *et al.* 1997). For qualified midwives, Mackin (1999) similarly reports a prevalence rate of around one-third although this figure may well be an overestimate due to the relatively low GHQ-12 threshold of 1/2 used. Regarding generic university/college students, Roberts *et al.* (1999) employed the GHQ-12, but did not provide caseness (prevalence) rates. Roberts *et al.* observed, however, that around 30 per cent of their respondents had GHQ-12 scores in excess of one standard deviation above the population mean for equivalent age and sex and cite a mean GHQ-12 Likert score of 13.7 (cf. a mean score of 13.0 in the current investigation).[32]

Higher prevalence rates were evident in the relatively recent Scottish studies involving nursing students (Baldwin *et al.* 1998; Jones and Johnston 1977), although this could well be an artefact of the different GHQ thresholds used. For example, the GHQ-12 prevalence rates for the two Jones and Johnston cohorts of around 35 and 44 per cent respectively are based on the GHQ-12 threshold of 1/2.[33] In any case, the GHQ-12 means cited for Jones and Johnston's two cohorts (12.9 and 13.8 respectively) do not radically depart from the overall GHQ-12 mean of 13.0 found in the current investigation. Baldwin *et al.*'s prevalence rates of between 32 and 55 per cent were obtained from the GHQ-28 using a threshold of 4/5, which like the threshold for the GHQ-30 is a typical, if rather liberal, threshold. The overall prevalence rate in the current investigation is, therefore, unremarkable in that it is typical of the prevalence rates in nursing and midwifery students reported elsewhere. It is also typical of the prevalence rates in qualified nurses and midwives and, moreover, typical of the prevalence rates found in students in general. Thus, given these findings and the findings on sources of stress discussed in the previous section, the investigator is inclined to side with Carter (1982) in stating that nursing and midwifery students are similar rather than different to students of other disciplines.

Nevertheless, the findings *are* noteworthy given that GHQ caseness rates for the general population are typically between 14 per cent (McManus *et al.* 1999) and 18

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[32] Since Roberts *et al.* obtain Likert GHQ-12 scores by using 1-2-3-4 scoring rather than the more conventional 0-1-2-3, the mean cited here is 12 lower than the actual mean (25.7) they cite.

[33] Jones and Johnston actually extracted their GHQ-12 data from the GHQ-30 and they do not specify what GHQ-12 threshold was used, but it can be assumed that they used the manual specified threshold of 1/2 (see Goldberg and Williams 1988) which is equivalent to the manual specified GHQ-30 threshold of 4/5 that Jones and Johnston used.

per cent (Borrill *et al.* 1998). Stress, therefore, is related to the status of being a student in higher education – *any* student that is and not specifically a student of nursing, midwifery, medicine, law or whatever. Moreover, Fisher and Hood (1987) speculate that it may simply be the transition from school leaver (or employee) that creates the psychological disturbance, a view reinforced by Carter (1982) who argues that student stress should be seen as a developmental rather than situational phenomenon.

7.4.2 Discernible differences

In answering Research Question 2b ('are there are discernible differences in levels of stress between various subgroups of the study population?'), the discussion is put into context by considering statistical differences between various subgroups and by considering differences in caseness against the benchmark prevalence (caseness) rate of 34.6 per cent.

7.4.2.1 Programme-specific differences

Judged against the benchmark caseness rate of 34.6 per cent, the appreciably higher caseness rate evident in midwifery overall was a likely consequence of the large proportion of cases (55 per cent) in the standard DPSM. No significant differences between nursing and midwifery on the Likert GHQ and SF-12 MCS scores were, however, evident, suggesting that the large proportion of cases in the standard DPSM could be down to a peculiarity of that particular programme. With regard to the nursing programmes, given that Youssef and Goodrich (1996) found that 'accelerated' students[34] show higher stress levels than standard nursing programme students, there was some prospect that similar findings might be found for the graduate entry nursing programme. However, no differences were discernible between the four nursing programmes on the descriptive caseness rate

[34] Graduate students undertaking a nursing programme, equivalent to the graduate entry students in the current investigation.

data, nor were any differences evident in the statistical comparisons using the Likert GHQ or SF-12 MCS data.

There were appreciably lower caseness rates in mental health and children's nursing students compared to adult and learning disability students. Given that Oermann and Standfest (1997) reported *higher* stress levels in those on children's courses, the finding for children's nursing students is puzzling. On the other hand, as far as mental health students are concerned, the findings are consistent with the earlier findings on sources of stress (fewer perceived sources of stress for mental health students). Moreover, relating these findings to the literature, they are consistent with findings of Dudley *et al.* (1988) who found that (Australian) psychiatric nursing students were 'better adjusted' than general nursing students, having lower levels of state and trait anxiety, neuroticism and depression. They are also consistent with the findings of both Carson *et al.* (1999), who found lower than expected rates of burnout in a population of qualified mental health nurses, and Ryan and Quayle (1999), who found lower than expected rates of psychological distress in an Irish population of qualified mental health nurses. These findings open up a question that has not been addressed in the literature to any great extent: whether the robustness observed in mental health nurses is down to the nature of mental health nursing or whether mental health nursing attracts hardy personalities. The findings regarding specialty have to be read with caution, however. Despite the descriptive caseness rate differences reported above, no significant differences on either the Likert GHQ or the SF-12 MCs were evident for specialty, results that are in keeping with the recent Scottish studies (Baldwin *et al.* 1998; Jones and Johnston 1997).

Appreciably lower caseness rates in CFP students and appreciably higher caseness rates in branch students were also evident. This finding is more powerful than the finding for nursing vs. midwifery and the finding for specialty in that it is reinforced by the statistical tests undertaken on both the Likert GHQ and SF-12 MCS data. Lower stress levels and caseness rates in CFP students are consistent with the findings of Lindop (1998, 1999), Oermann and Standfest (1997) and West and Rushton (1986) who all found that stress experiences become more intense as students progress through their training. Indeed, Baldwin *et al.* (1998) speculate on the basis of their evidence that the pattern could well be one of steadily increasing stress levels throughout the programme followed by a substantial reduction in stress levels in the early years of qualification.

7.4.2.2 Demographic differences

Judged against the benchmark caseness rate, appreciably lower caseness rates were evident in the intermediate (21-25) age on entry group. This observation contrasts with that of Baldwin *et al.* (1998) who found that age had no effect on caseness but is consistent the finding from the NHS study (Borrill *et al.* 1998) that the under 26 age group is one where lower stress levels are evident and the observation that one of the peak age ranges for mental disorder – in women at least – is 25-34 (Jenkins 1991). The findings are also consistent with those of Williams *et al.* (1995), who found, in female nursing students, that younger students were more vulnerable to symptoms of depression and Beaver *et al.* (1986), who reported that younger nurse-midwives seemed to have an increased risk of burnout. Importantly, this discussion has to be tempered by the fact that no statistically significant differences for age on entry were evident on either the Likert GHQ or the SF-12 MCS data. As such, the current investigation provides only very weak evidence to support the assertion of Sutherland and Cooper (1990) that age is a moderator of the stress process.

For several of the other variables considered, the outcome was similar to that of age on entry: descriptive differences on caseness rates between categories of the variable but no statistically significant differences on either the Likert GHQ or SF-12 MCS data. Furthermore, for the majority of these variables, there is insufficient literature available to establish a context for discussion hence, in most cases, only cursory comments are made. For a start, appreciably higher caseness rates were evident in non-white respondents. Although there is an intuitive ring to this finding, the lack of any hard statistical data, along with the comments made earlier when discussing sources of stress and ethnicity, render this finding somewhat immaterial. The position is similar for dyslexia: the finding that there were appreciably higher caseness rates in those with dyslexia compared to those without again has an intuitive ring to it. Again, the context in which to discuss this finding is lacking, although Hammond and Hercules (1999) claim, albeit anecdotally, that dyslexic students may be more susceptible to stress than other students. Appreciably lower caseness rates in those with a degree is consistent with the findings, discussed earlier, that those with a degree tend to experience a lower academic load than those with lower level qualifications.

Given that, for nursing, the logistic regression identified children in the household as a predictor of caseness, it is interesting to find that the Likert GHQ and SF-12 MCS comparisons did not support the descriptive finding of appreciably higher caseness rates in those with school age children and appreciably lower caseness rates in those with pre-school children. The implications of having children in the household (and whether those children are pre-school or school-age) is discussed in more detail when the regression findings are considered (Section 7.6.1) although it is worth considering some relevant literature here. For a start, the NHS study (Borrill *et* al. 1996; Wall *et al.*1997) found that respondents with children tended to have lower case rates; similarly, Tyler and Ellison (1994) found that (qualified) nurses with no children tended to have the highest stress scores and Hawton *et al.* (2002) claim there is an increased risk of suicide in women without children. Beaver *et al.* (1986), on the other hand, observe that nurse-midwives with children seem to have a higher risk of burnout. Birch (2001), in studying midwives, found that having children at home is associated with increases in stress.

The positions regarding sex, assessment load and travel difficulties are, however, rather more forceful. Regarding sex, the appreciably lower caseness rate in male respondents was also borne out by the statistical tests undertaken on both the GHQ Likert and SF-12 MCS data. These findings are intriguing in that although they seem to make intuitive sense, there is no consistent picture in the literature. For example, both the Scottish studies (Baldwin *et al.* 1998; Jones and Johnston 1997) found no sex differences on psychological distress and the figures from Mullarkey *et al.* (1999) show *higher* prevalence rates in qualified male than in female nurses. The findings are, however, consistent with those of Fisher and Hood (1987, 1988) on generic university/college students who report that generally female students were more disturbed than male students. The descriptive findings for assessment load – appreciably higher caseness rates in those with assessments due; appreciably lower caseness rates in those with no assessments due – is mirrored by the findings from the Likert GHQ and SF-12 MCS comparisons. Indeed, the Likert GHQ and SF-12 MCS comparisons yielded consistent results across all four tests undertaken (with and without outliers), with a reasonable effect size in each case. Moreover, given that examinations/assessments was identified as *the* major sources of stress for students these findings are remarkable in their simplicity. Examinations and assessments are clearly associated with stress. The third powerful set of results concerns travel difficulties. From the descriptive data, higher caseness rates were associated with difficulty in travelling (both to the academic base and to the clinical areas) whilst lower caseness rates were associated with having no difficulty travelling to the academic base. Although the findings for difficulty in travelling to the clinical areas were not mirrored by the Likert GHQ and SF-12 MCS comparisons, the findings for difficulty in travelling to the academic base were. Why difficulty in travelling to the academic base should be associated with higher stress levels and poorer mental health whilst difficulty travelling to the clinical areas is not is a difficult question to answer but it could be related to the city centre location of the School's two academic bases with the concomitant issues of parking and public transport.

The positions of the next two variables to be considered – familiarity with the Manchester area and unseen disability – are less forceful than those of discussed above but still important. They are less forceful only because the SF-12 MCS data does not back up the descriptive caseness rate and Likert GHQ findings (implying that the variables have some impact on psychological distress but not on mental health). Regarding, familiarity with the Manchester area, appreciably higher caseness rates are evident in those unfamiliar with the Manchester area whilst appreciably lower caseness rates are evident in those most familiar with the Manchester area. Similarly, the statistically significant difference found on the Likert GHQ comparison seems to be attributable to the difference between the 'very familiar' and 'unfamiliar' categories. There is little material in the literature to benchmark these findings against, although the work by Shirley Fisher on homesickness and the transition to university (see, for example, Fisher 1988; Fisher and Hood 1987, 1988) could have some bearing here. In particular, if unfamiliarity is seen as a risk factor in homesickness, then there is some consistency with Fisher and Hood's findings that the transition to university is (psychologically) worse for those who report homesickness. Regarding unseen disability, the appreciably higher caseness rates in those with an unseen disability such as asthma, diabetes or epilepsy and the statistically significant differences on Likert GHQ scores between those with and those without an unseen disability are relatively unsurprising given that physical illness has long been seen as a source of stress (Prugh and Thompson 1990). However, given that stress has also been postulated as a contributory factor in, if not a cause of, both asthma and diabetes (Bradley 1988; Rice 1999; Sutherland and Cooper 1990) there is a difficulty here in determining whether stress is a cause or a consequence of the unseen disability.

The final two variables to be considered – paid work in addition to studies and housing costs – are interesting in that whilst statistically significant differences exist between categories on the Likert GHQ scores, no differences were readily discernible form the descriptive caseness rate data. As with the previous two variables, no significant differences between categories were evident on the SF-12 MCS scores. With regard to paid work in addition to studies, those who undertake paid work in addition to their studies experience higher stress levels than those who do not (although the effect size for this observation was rather small). This observation is consistent with the findings that higher GHQ scores amongst British university students were associated with working long hours outside the course (Roberts *et al.* 1999) and it probably has a link to the findings, reported earlier, that financial issues are of particular concern to students. Another financial matter – housing costs – is the last variable to be discussed here and the finding that those with housing costs have higher GHQ scores than those with no housing costs can also be seen in the overall context of student finances.

7.5 COPING AND SUPPORT

7.5.1 Coping styles employed

Three sets of results are discussed in relation to Research Question 3a ('what coping styles do pre-registration students employ?): those relating to behaviours labelled 'direct attempts at coping', those relating to substance use and those concerning the overall coping styles employed.

7.5.1.1 Direct attempts at coping

Certain behaviours that are common amongst students – thoughts of dropping out, taking time out, submitting assignments late or being absent without permission – are considered here. Gaining some knowledge of the extent of these behaviours in the study population is, of course, useful to the School but the reader may ask why they are discussed in a section on coping or, indeed, why they have been labelled 'direct attempts at coping'. Each of these behaviours could, after all, be seen as an *outcome* of stress rather than an attempt at coping and some could even been seen as a source of stress. This 'confounding of concepts' is, however, common in the literature (Edwards and Cooper 1988) and Jenkins (1991) argues that, as such, research on stress needs to be clearly embedded in a specific theoretical model. In the transactional model that underpins the current investigation, these behaviours are best seen as coping strategies. Thinking about dropping out, for example, has affinity with wishful thinking and fantasy (emotion-focused strategies) whilst actually taking time out has affinity with problem-focused strategies. Missing lectures and classroom sessions or being absent from the clinical areas, on the other hand, have affinity with avoidance, as do late or missed submissions.

That nearly a third of respondents had thought about dropping out can be explored on two levels. On one level, the figures themselves say something: in informing an effective student support strategy (the main purpose of the investigation), some concrete facts are available to the School. On another level, the literature has some interesting things to say about students thinking of dropping out. For example, Roberts *et al.* (1999) found a link between thoughts of dropping out and higher GHQ scores and Williams *et al.* (1997) remark that talking to students thinking of dropping out can be revealing about stress. With regard to the reasons behind (thoughts of) dropping out, Baldwin *et al.* (1998) found that personal problems were as likely as the academic or clinical aspects of a programme to lead to students quitting.

The figures for extensions and late submissions have direct implications for the School in that there is bound to be an additional administrative burden in the School's examinations offices if almost a fifth of students are delaying assignment submission. With regard to absences, the finding that less than ten per cent of respondents had significant absences from either the theoretical or the clinical aspects of the course is (if it is an accurate representation) notable in that it dispels common misconceptions in the School about student attendance. Although late submissions and absences may simply be down to factors such as poor time management or the adoption of a stereotypical student lifestyle, there has been some speculation in the literature that these behaviours are typical of those under stress. For example, Hilbert (1987) claims that many aspects of 'academic fraud' in nursing (such as plagiarising others' assignments, doing assignments for someone else and ringing in sick when not) are down to academic stressors such as the pressure for good grades, the number and importance of assignments and a lack of time. (Not that these factors are exclusive to nursing: Hilbert adds that nursing students are similar to generic university/college students in these respects.) In a similar vein, Cavanagh and Snape (1997b) claim that feelings of disillusionment and a lack of control in midwifery students led some to deliberately miss lectures or placements, delay submission dates or avoid certain lecturers. With regard to generic students, nearly 40 per cent of students in the Leicester study (see University of Leicester 2002) missed lectures or tutorials because of personal or psychological problems and Fisher (1988) comments that homesickness can have an effect on concentration, attendance and late submissions.

7.5.1.2 Substance use as coping

As with the behaviours listed in the previous section, substance use can be seen as an *outcome* of stress rather than a coping mechanism. However, unlike these behaviours, substance use (particularly smoking and drinking) is frequently considered in the stress literature in terms of coping. The findings in the current investigation, although descriptive, are straightforward: alcohol use is common, but is not used by the majority of users as a means of coping; smoking is much less common, but is used by the majority of users as a means of coping; prescription drug use is rare (although almost ten per cent use sleeping tablets), illicit drug use even rarer.

Over 80 per cent of respondents drank alcohol on a regular basis, a finding similar to that reported in the US nursing students by Marion *et al.* (1996). Marion *et al.* also remark that these figures do not differ from those for the US college population as a whole. This observation, together with the finding that drinking amongst Project 2000 students dropped on qualification (Baldwin *et al.* 1998), suggests that alcohol use amongst nursing students serves a social, rather than stress-relieving, function. This conclusion could well explain why only a relatively small proportion of respondents in the current investigation stated they used alcohol to cope. Haack (1998) makes an interesting point about alcohol consumption in nursing students (that is equally applicable to smoking): that alcohol consumption seems to be impervious to the health-related education inherent in nurse training.

Just over a third of respondents smoked, a proportion comparable to that reported elsewhere in the literature (Baldwin *et al.* 1998; Hawker and Holtby 1988; West and

Hargreaves 1995) but above the 1998 rates for England of 28 per cent for men and 26 per cent of women (Department of Health/Office of National Statistics 2000). Interestingly, Elkind (1988) found that nurses were twice as likely to be smokers at the start of training compared to teachers. That smoking is an effective means of dealing with stress seems to be a myth; indeed, there is evidence that smoking – or at the very least, the lack of nicotine that drives smoking – is in itself stressful (Elkind 1988; Holtby 1988; West and Hargreaves 1995). Nevertheless, it seems to be an enduring myth given that almost 70 per cent of smokers in the current investigation used smoking as a means of coping with stress.

Some observations from the literature have intriguing implications when the midwifery regression model is considered (smoking being a predictor of caseness in midwifery students). Hawton *et al.* (2002), for example, in studying suicide among female nurses, found that there was a higher prevalence of smoking in those committing suicide. In female nursing students, drug use, smoking and alcohol seem to be directly linked to symptoms of depression (Williams *et al.* 1995) and, in generic university/college students, those thinking about dropping out also smoked more (Roberts *et al.* 1999).

The finding regarding the use of hypnotic medication (almost ten per cent of respondents used medication to help them sleep) is, at first sight, alarming. However, whether this alarm is justified is difficult to put into context as little information is available on, for example, prevalence rates of hypnotic medication use in the general population. Moreover, it is important to bear in mind that nursing and midwifery are 24-hour occupations and that the use of hypnotic medication could be related to the sleep disturbances often associated with shift work (Perkins 2001).

7.5.1.3 Overall coping profile

The overall profile of the sample (using the midpoints of each of the five CISS variables as a baseline) is one that employs more task-oriented coping than the midpoint, less emotion-oriented coping than the midpoint and slightly more avoidance coping than the midpoint. This result is consistent with the finding that nursing students prefer to employ problem-focused strategies over emotion-focused strategies (Brown and Edelmann 2000; Hamill 1995; Mahat 1998). Generally, the literature reports that coping strategies focussing on the problem or task at hand seem to be associated with lower stress levels and better mental health and that coping strategies focussing on emotions seem to be associated with higher stress levels and worse mental health (Basson and van der Merwe 1994; Billings and Moos 1984; Ceslowitz 1989; Endler and Parker 1990a; Jones and Johnston 1997). This observation begs the question of why there are such relatively high stress levels in the study population if respondents have a preference for task-oriented coping. Or does it? In actuality, the findings regarding overall coping styles are mundane. If they are standardised to either the US adult or college populations (using T-scores), all five CISS variables have overall mean scores within the range that Endler and Parker (1990a) call 'average'. In other words, an alternative view of the findings might simply be that nursing and midwifery students employed average levels of avoidance- (both types), task- and emotion-oriented coping. Nevertheless, a different perspective emerges if the focus shifts from the value of one coping style over another to an examination of the coping *repertoire*. After all, both problem-focused and emotion-focused coping can be adaptive (Steptoe 1991) and there is ample evidence that individuals often use a mixture of emotion- and problem-focused coping styles (Adejumo and Brysiewicz 1998; Parkes 1994). Indeed, the issue may be the circumstances in which specific coping strategies are used rather than the strategies themselves. For example, a consistent finding in the literature is that problem-focused coping strategies are more adaptive in situations where some degree of personal control is possible whereas emotion-focused strategies seem to have more utility in situations where control is difficult (Lazarus and Folkman 1984; Parkes 1990, 1994). This issue of different coping strategies in different circumstances is an important one and it is revisited in the next section.

7.5.2 Discernible differences

7.5.2.1 Programme-specific differences

In answering Research Question 3b ('are there are discernible differences in coping styles between various subgroups of the study population?'), there was only one set of programme-specific findings of note: those relating to specialty. There was some evidence of a difference between the mental health and adult specialties regarding emotion-oriented coping, with mental health students having the lowest emotion scores and adult students having the highest. Mental health students, along with learning disability students, also have the lowest avoidance scores with children's nursing students having the highest. This latter finding was replicated in the distraction subscale but not in the social diversion subscale (which did not find any significant effects) suggesting that the avoidance effect may have been down to its distraction component.

That mental health students should make less use of emotion-focused coping than adult students is consistent with the picture of the 'robust' mental health student alluded to earlier and it may be a product of mental health students' use of 'direct coping'. Although not measured specifically in this investigation, Parkes (1984) defines direct coping as the tendency to use problem-focused coping whilst at the same time avoiding the use of emotion-focused strategies. This certainly matches the coping profile of mental health students in the current investigation. Moreover, it should come as no surprise to find that direct coping is associated with lower stress levels (Jones and Johnston 1997). These speculations have to be tempered by several considerations, however. Firstly, a difference between mental health and adult students on emotion was only evident when identified outliers were removed and the effect size was very small. Secondly, there are only snippets of evidence in the current investigation to support the view of robustness amongst mental health students, e.g. appreciably lower caseness rates but no statistically significant differences evident on either Likert GHQ of SF-12 MCS scores. Finally, the only comparable work in the literature (Jones and Johnston 1997) found no differences in coping between the specialties.

That children's nursing students should have higher avoidance/distraction scores than mental health and learning disability students is harder to explain. The finding could be related to age: children's nursing students were generally younger on entry than students of the other specialities and it was found that younger respondents tended to have higher avoidance and distraction scores (this point is revisited below). On the other hand, it could merely be a chance finding.

7.5.2.2 Demographic differences

In comparing the CISS variables across the demographic variables, three main findings stand out: that age on entry, sex and, possibly, ethnicity have an impact on the coping styles employed.

With regard to age, older respondents (those 25 or above on entry) tended to make greater use of task-oriented and less use of emotion-oriented and avoidance-oriented coping than younger respondents (certainly those under 21 on entry). That an age effect was found is hardly surprising given that the CISS has different norms (indeed, different forms) for various age groups, specifically 13-15 and 16-18 year old US teenagers (the CISS-Adolescent), the US adult population (CISS-Adult) and the US college population (Endler and Parker 1990a). The picture from these norms is interesting: as individuals journey from adolescence into adulthood, they tend to use more task- and less avoidance-oriented coping whilst the tendency to use emotion-oriented coping is pretty stable over time. Although there is a discrepancy in the current findings in that older respondents tended also to use less emotion-oriented coping, the current findings are largely consistent with Endler and Parker's observations. One possible explanation for this age effect is that task-oriented coping may well be a consequence of maturity (or of the life experiences that come with maturity); similarly, avoidance-oriented coping may simply be down to immaturity or a lack of experience.

With regard to sex differences and coping, there are consistent reports in the literature that women seem to prefer emotion-focused strategies over problem-focused strategies whereas the opposite seems true for men (Billings and Moos 1984; Endler and Parker 1990b; Parkes 1990; Vingerhoets and van Heck 1990). There is speculation that these preferences may, in part, explain the higher proportion of mental distress amongst women (Jenkins 1991). With specific reference to the CISS, Endler and Parker clearly acknowledge that sex difference exist in all five CISS variables in that separate norms are available for men and women for each of the five variables. Like the findings reported above, Endler and Parker (1990b) report that women tend to score more highly than men on emotion and avoidance and that lower task scores are more prevalent amongst women. The current investigation provides some evidence to support the literature in that, although no sex differences were found on task-oriented (problem-focused) coping, statistically significant differences were indeed evident on emotion-oriented and avoidance-oriented coping. Endler and Parker explain higher avoidance levels in women in terms of social responsiveness. As a major component of avoidance is the seeking out of social support (social distraction) and as women tend to be more socially responsive than men, it is not surprising that they score more highly on avoidance. However, whilst this explains the sex difference in favour of women on overall avoidance score and on social diversion, it fails to explain why women should use more distraction (avoidance by focusing on a distracting task) than men. This discussion on sex differences and coping is revisited later in the discussion on social support.

The third demographic difference relates to ethnicity. The observation that white respondents tended to make greater use of social diversion (one of the avoidance subscales) than non-whites is difficult to put into context because there is hardly any literature around that considers coping and ethnicity. Still, it is possible to speculate that the difference may be down to white respondents having a cultural advantage in social responsiveness and opportunities for social support.

7.5.3 Support

In responding to Research Question 3c ('what roles do support services play?') a distinction needs to be made between support mechanisms that are largely institutional and those that are largely personal (social) in nature. This distinction is important because it is mirrored by the findings of the current investigation and because the literature is informative about the latter (social support), particularly in relation to coping.

7.5.3.1 Institutional vs. personal-social support

The two top sources of support in the current investigation – family (99 per cent would use) and friends (95 per cent would use) – match the findings reported elsewhere in the literature, both amongst nursing students (Brown and Edelmann 2000; Carter 1982; Lindop 1991, 1999; Hamill 1995; Mahat 1996, 1998; Lo 2002) and with other populations (e.g. Quine 1999; University of Leicester 2002). The third most popular source of support – peers (94 per cent would use) – also has parallels in the literature, its occupational equivalent being work colleagues, a major source of support identified by, amongst others, Mackin (1999) and Quine (1998). Indeed, Haack (1998) found that students who had frequent contact with peers were less depressed those who were more isolated. The University of Leicester study provides some interesting comparisons in that, although the order of support preferences differed little from that reported in the current investigation, the commitment to seeking support seemed less intense with the top sources of support (friends, family, personal teacher) attracting the interest ('would use') of only around 50-70 per cent of the Leicester students compared to over 90 per cent of students in the current investigation. One explanation for this discrepancy, which will be picked up later in the discussion on the relationship between coping and social support, is the view that nursing and midwifery students may be more integrated into society (Carter 1982), perhaps because they tend to be older than generic university/college students.

Overall, non-institutional sources of support were preferred to institutional (School- or centrally-based) sources of support. Why this should be the case is open to speculation, but Baldwin *et al.* (1998) also found a reluctance to consult formally and Carter (1982) found under-utilised organisational support services (although the term 'under-utilised' is something of a value-judgement because it falsely implies that services that are used only by a minority are of little merit). Certainly, concerns about confidentiality have been raised in the literature (Baldwin *et al.* 1998; Sutherland and Cooper 1991) but it could simply be that organisations have far higher expectations regarding support services than reality justifies. In other words, organisational thinking seems to take the perspective of 'stressed therefore needs help/support/counselling'[35] whereas reality – the individual's perspective – seems to be along the lines of 'stressed therefore will seek out/talk to family and friends, or maybe see someone formally if things don't change'. This perspective could also explain why few of the students who received follow-up letters made contact with the investigator or sought support from elsewhere in the School.[36]

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[35] This is certainly the view of the Royal College of Nursing in its *Working Well* initiative (see, for example, RCN 2002a).

[36] During the data collection period, the School's counselling and occupational health services did not receive any more referrals than usual.

In higher education, however, one institutional support mechanism that fares well is the teacher, in particular the personal teacher (Davis 1984; Mahat 1996, 1998; University of Leicester 2002). In the current investigation, over 90 per cent of respondents said they would use their personal teacher for support and over 80 per cent said they would use other teachers in the School, a finding that should be particularly reassuring given current HE quality demands (see, for example, QAA 2000b) and the University's own internal requirements (University of Manchester 2001). Furthermore, the personal teacher – as both a primary source of support and an agent of the institution – is ideally placed to take on board findings from the literature and from investigations such as this in order to enhance the overall quality of student support.

7.5.3.2 Social support, coping and stress

That family, friends and peers should feature so prominently in considerations of support is unremarkable when the relationship between social support – which is, after all, nothing more than support from family, friends, peers and work colleagues – and coping is addressed. In Chapter 1, it was mentioned that the 'buffering' view of social support sees social support merely as another way of coping when faced with specific stressors. Indeed, Carver *et al.* (1989) go so far as to suggest that social support 'for instrumental reasons' (e.g. asking for advice or assistance) is nothing more than problem-focused coping and that social support 'for emotional reasons' is nothing more than emotion-focused coping. Thoits (1986), on the other hand, prefers to see social support as 'coping assistance'. To Thoits, social support acts by '... assisting the person to change the situation, to change the meaning of the situation, to change his/her emotional reaction to the situation, or to change all three' (p 417). Nevertheless, regardless of the debate of whether social support is coping or coping assistance, the findings that respondents would rather seek support from family, friends and peers rather than from institutional mechanisms when under pressure does add some support to the buffering hypothesis of social support. It should be added, however, there was no way of telling in the current investigation whether social support also acted in a direct way (by, for example, boosting self-esteem) as no measures of self-esteem were included. Then again Thoits does claim that the growth, maintenance or restoration of self-esteem is a secondary rather than primary effect of social support.

The evidence in the literature clearly points to a relationship between social support and positive outcomes: as Sutherland and Cooper (1990) point out '... the consensus is that the deleterious effects of psychosocial stress may be lessened or eliminated by the presence of social support' (p 92). Having a partner or confidant is associated with lower stress levels, GHQ caseness and higher self-esteem (Baldwin *et al.* 1998; Maynard and Pearsall 1994; Tyler and Ellison 1994; Wall *et al.* 1997; Weinberg and Creed 2000). In addition, high levels of perceived social support are associated with lower levels of stress, depression, sickness absence, smoking and burnout (Cox 1992; Cox *et al.* 2000; Elkind 1988; Haack 1998; Parkes 1982; Parkes *et* al. 1994; Quine 1999; Schaufeli 1999).

Given the relationship between social support, coping and stress, there is some speculation that the sex differences in coping and stress identified in both the current investigation and the literature in general may be down to the different ways in which social support impacts upon, and is used by, men and women. This is a particularly important issue to contemplate when considering occupations such as nursing and midwifery that have a high proportion of female members. A crude way of summarising the situation is to say that, for historical and socio-cultural reasons, women seem to be better at accessing and facilitating social support than men and as such it is women that give the support whilst men receive it. Evidence to support this assertion is scattered throughout the literature. For example, both Maynard and Pearsall (1994) and Norton *et al.* (1998) found that male students tend to be more supported by their families than female students (interestingly, Maynard and Pearsall found that women tended to defer entry into HE until they were satisfied that their children no longer required their continuous presence at home). In a study on recovery from depression, Brugha *et al.* (1990) found that the number of friends mentioned and the overall satisfaction with social support was important for women, whereas for men it was whether they were married or not together with the number of secondary social contacts, such as work-colleagues. As mentioned earlier in the discussion on the CISS findings, women, being more socially responsive than men (Endler and Parker 1990b), will as such score higher on coping mechanisms – like social diversion – that involve a strong social component. Given that women tend to use more emotion-focused coping than men, it is hardly surprising to find, given the traditional social roles of men and women, that emotion focused coping is an adaptive strategy in the home environment but maladaptive for occupational problems (Pearlin and Schooler 1978).

7.6 PREDICTING CASENESS

Attempting to predict GHQ caseness is useful on both a personal and an organisational level. On a personal level it is useful because, in identifying risk factors, attempts can be made to protect individuals from experiencing extreme levels of psychological distress. On an organisational level, it is useful because there is a relationship between caseness and factors important to the organisation, such as sickness-absence (Borill *et al.* 1998).

Because of qualitative differences between the nursing and midwifery sub-samples, particularly on the demographic variables discussed in Chapter 5, separate regression models were considered for nursing and midwifery.

7.6.1 Nursing

For nursing, self-report of pressure, whether or not the respondents have children in the household (more specifically, whether the children were pre-school or school-age) and scores on the SNSI personal problems scale were the key predictors of caseness.

Although the finding that self-report of pressure predicts caseness is tantamount to stating the obvious, there is a deeper message contained in this finding, a message that is often, at best, unconsciously omitted or, at worst, deliberately ignored by those dealing with individuals under pressure. That message is that credence should be given to an individual's self-assessment of their personal circumstances.

Children in the household as a predictor of caseness would also be a relatively mundane finding if it was not for the paradox that having pre-school children in the household seemed to *protect* against caseness whilst having school-age children seemed to be a *risk* factor. To some extent, splitting children into these two categories – pre-school and school-age – can be seen as a breakthrough given that their assimilation into one category could explain the conflicting findings regarding children reported earlier in this chapter. Why should having pre-school children protect against stress and having school-age children be a risk factor? The answer may well be down to *child-care* issues rather than down to the simple issue of having children or not. Child-care is easier to arrange for pre-school children (particularly if one or more parents have taken a period of maternity or paternity leave) than it is for school-age children. Child-care for school-age children is, after all, subject to the organisational demands of the school day or the school year which can often be incompatible with the work schedules of parents. Indeed, if child care difficulties are taken out of the situation (i.e. those with pre-school children are compared with those with none), the situation regarding children makes a lot more sense in that it is compatible with the findings that having children is a positive factor in mental health (Borrill *et* al. 1996; Hawton *et al.* 2002; Tyler and Ellsion 1994; Wall *et al.* 1997) particularly (bearing in mind that nursing and midwifery tend to attract women of the higher social classes) in middle-class parents (Jenkins 1991).

That SNSI personal problems should be a predictor of caseness is also relatively unsurprising. The SNSI personal problems scale is a measure, after all, of the extent to which personal difficulties (such as relationship difficulties or difficulties with one's own health or the health of other family members) are perceived to be stressful. There is certainly work elsewhere in the literature reinforcing this finding. For example, ill health of a dependant and marital problems have been associated with caseness (Weinberg and Creed 2000) and Baldwin *et al.* (1998) report that personal problems rather than academic or clinical concerns seem to be implicated in decisions to drop out of nursing programmes.

7.6.2 Midwifery

For midwifery, the key predictors of caseness were self-report of pressure, programme type and whether the respondent was a smoker or not. As with nursing, several other variables were a necessary part of the regression equation, although the individual impact of these variables on predictions of caseness is slight.

Self-report of pressure has already been discussed above. With regard to the respondent being a smoker or not, it is not too difficult to see why this variable might act as a predictor. Earlier, in the discussion on substance use as coping, it was noted that smoking is associated in a variety of populations with negative outcomes such as suicide, depression and thoughts of dropping out. This is not to say that smoking *causes* negative outcomes such as these, rather that smoking may well be symptomatic of individuals unable to cope. Indeed, this makes sense if smoking is seen to be a palliative (i.e. emotion-focused) approach to coping (Elkind 1998). The use of emotion-focused strategies tends to be associated with higher stress levels and poorer mental health. Thus, the midwifery students in the current investigation may be smokers merely because they believe smoking will help them cope with high stress levels, and it is in this way that smoking becomes a predictor of caseness. The only difficulty with this explanation, however, is that smoking seems to be a predictor of caseness only within a single midwifery model (Model 5) and there is no logical reason – given that the work on smoking amongst midwives is practically non-existent – why smoking should be an issue for (student) midwives but not nurses.

There are no straightforward reasons either as to why being on the standard DPSM (rather than the enhanced or shortened DPSM) should be a risk factor for caseness although the investigator's suspicions are that it could well be down to a peculiarity of the programme's organisation rather than down to peculiarities within any one of the three cohorts constituting the standard DPSM group. These suspicions are based partly on informal comments made to the investigator by midwifery lecturers involved in the delivery of the programme and partly on evidence that the profile of midwifery students seems to have changed (perhaps in some subtle ways not readily observable from data in the current investigation) when the enhanced DPSM superseded the standard DPSM in February 1999. For example, the demographic results reported in Chapter 5 show that the standard DPSM was a relatively younger and less well educationally qualified group than the enhanced DPSM and one that was less familiar with the Manchester area than the enhanced DPSM.

7.7 LIMITATIONS AND METHODOLOGICAL ISSUES

Before concluding this thesis with a consideration of the implications of the investigation's findings, it is conventional to consider the methodological limitations of the investigation. These limitations (and a few other methodological issues) will obviously colour any conclusions that are subsequently drawn and it is important that the reader understands that the implications discussed and conclusions drawn are done so only within the boundaries of methodological validity. These limitations are discussed under three broad headings: issues concerning the design chosen, issues relating to measurement and issues concerning the role of the participants.

7.7.1 Issues with the design

Like most research designs, cross-sectional designs are not without their limitations. Some of the criticisms laid at the door of cross-sectional studies, however, are unfair in that it is not so much the design that should be criticised but what various investigators have attempted to do within the design. A case in point is the issue of trying to establishing causality between one or more components of the stress process (stressor, stress, coping, support, outcome, etc.) using simple correlational methods. As Liebert and Liebert (1995) point out, causality cannot be drawn from simple correlations because of the 'directionality' and 'third variable' problems. The directionality problem refers to the fact that in correlation it is often impossible to determine the direction of alleged causal relationships. Thus, for example, correlation cannot determine whether social support leads to a reduction in stress levels or whether high stress levels lead to an increased tendency to seek out social support. The third variable problem refers to the possibility that a third variable might be causing the changes in the two variables being correlated. Thus, increases in sickness-absence may not be a result of increases in stress levels, rather poor management might be responsible for increases in both sickness-absence and stress levels. Criticisms of cross-sectional studies (see, for example, Guthrie *et al.* 1997; Kasl 1987; Parkes *et al.* 1994) are justified, therefore, only if they are criticisms of the (ab)use of correlational methods not of the use of a cross-sectional design *per se*. Moreover, those criticising cross-sectional studies often seem to think the answer to the causality question lies in the use of longitudinal studies (or, as they are sometimes called, 'time series' designs). Frese and Zapf (1988), however, note that longitudinal studies are not necessarily any better at establishing cause unless measures of the dependent variable of interest (stress, for example) are taken prior to the introduction of, say, some stressor or new approach to coping and again at regular intervals. This is because there is a range of possible curves (representing the stressor-stress or coping-stress relationship) that could be fitted to the time series and the frequency with which observations are made can have an impact on whether the 'true' curve is correctly identified or not. Take, for example, a hypothetical U-shaped curve representing the coping-stress relationship over a six-month period. This curve would suggest that a new way of coping initially brings down stress levels but after about three months, stress levels begin to rise again reaching the same levels after six months. If the only time periods considered in a longitudinal design are T_0 at the start and T_1 six months later, the (false) conclusion drawn would be that the new way of coping has no impact on stress levels.

Thus, cross-sectional designs are not necessarily problematic so long as the investigator is aware of what can and cannot be done with such designs. The two main analytical procedures employed in the current investigation – naturalistic comparisons and logistic regression – are acceptable strategies to use in a cross-sectional design (indeed, they have provided perfectly adequate answers to the research questions posed in the current investigation) so long as those employing them and those considering the results understand that the questions relating to causality cannot be answered in a cross-sectional design.

One other limitation affecting all research designs is the limitation brought about by the 'demand characteristics' of the research situation. Introduced into the literature in the 1960s by Martin Orne (see Orne 1962), the demand characteristics of a research situation are those characteristics that arise as a result of being asked to take part – and subsequently agreeing to take part – in research but which also have an effect on the way in which participants behave. From an investigator's point of view, demand characteristics do not necessarily produce negative outcomes (they can play a part in obtaining high response rates); they do, however, open up some difficult ethical questions. For example, whilst the high response rates obtained in the current investigation (discussed in more detail shortly) are welcome, some of the demand characteristics of the situation (such as the teacher-student power imbalance or being 'trapped' in a classroom for an hour) could lead to charges of participant coercion. Another pertinent example of the ways in which demand characteristics can operate can be found in McManus *et al.* (1999). McManus *et al.* found that there appeared to be higher GHQ caseness rates when the GHQ is used in studies overtly associated with stress than when used in apparently unrelated studies (in McManus *et al.*'s study, the GHQ was included in a study on attitudes to the General Medical Council's performance procedures). Thus, the question has to be raised over whether the relatively high prevalence rates found in the current investigation are reflective of reality or of the demand characteristics of the investigation, bearing in mind that it was clearly described to participants as a 'student stress study'. All the same, whilst avoiding direct mention of the issue at heart (stress) may well have controlled for demand characteristics, it would have opened up the ethical issue of deceiving participants.

7.7.2 Measurement issues

In this section, issues pertaining to the specific tools employed in the current investigation as well as some general measurement issues are considered. With regard to the specific tools employed, only a number of minor comments need to be made given that all four tools utilised were selected on the basis of decent validity and reliability statistics. With regard to the SNSI, a trivial issue arose concerning its name. Although a student *nurse* stress index, some midwifery students felt strongly enough to delete the word 'nurse' from the SNSI's title replacing it with 'midwife'. Although this issue did not appear to have any impact on the number of midwifery students completing the SNSI, it does emphasise the importance of taking into account particular sensitivities when designing psychometric tools. A more serious issue with the SNSI, however, concerned the loss of a sizeable proportion of the sample (over a quarter) given that it could only be used with those who had been on their programme of study for at least six months. This meant that no measure of sources of stress was available for those at the beginning of their programmes. Whilst this was a limitation that did not have any serious impact on the current investigation, it makes the SNSI ineffective in longitudinal studies or in studies with neophyte students. However, given that the SNSI is a tool in development, this is an issue that may be addressed in future amendments or revisions.[37] In its current form, the SNSI is not a normative tool (it is not standardised against any population norms). Whilst this does not preclude its usefulness in the analyses that were undertaken, it does make it difficult to compare the overall mean scores obtained with some comparable population (although the GHQ is not a normative measure, the wealth of published studies employing the GHQ means that normative comparisons are relatively easy to obtain for the GHQ). To some extent an opposite problem occurred with the CISS. As a normative tool, it was relatively easy to compare overall mean CISS scores with the two normative (US adult and US college) populations available. However, as outlined in Chapter 4, some naturalistic comparisons were impossible to undertake using the normative scores (T-scores), so the raw scores were utilised instead of the T-scores. In particular, a 'within average range' emotion T-score for women will compare with a 'within average range'

[37] The SNSI data from the current investigation has been made available to the SNSI's author for this very purpose.

emotion T-score for men, hiding the fact that there are substantial differences in emotion-oriented coping between men and women. With regard to the GHQ-12 and SF-12 MCS, the only point that needs to be made concerns the fact that differences were sometimes found using the Likert GHQ as the dependent variable whilst, on the same comparisons, differences were not evident when SF-12 MCS scores were used as the dependent variable. This is to be expected given that, whilst there is a degree of concordance between the Likert GHQ and the SF12-MCS, the two tools do not measure exactly the same constructs.

All of the measures employed in the current investigation were self-report measures and this brings the discussion onto some general measurement issues. Whilst self-report measures offer practical and conceptual advantages over more objective measures (like blood pressure, sickness-absence and observer ratings) they are not without their limitations. Amongst the main concerns relating to self-report measures documented in the literature are the issues of 'response sets' and 'common method variance'. Response sets, as a feature of participants rather than tools, are discussed in the next section. Common method variance (also called monomethod bias) is a bias that results from using the same method to obtain measures of the dependent and independent variables (Cox *et al.* 2000; Kasl 1987; Parkes 1982; Razavi 2001). The bias stems from the fact that measures of the independent and dependent variables obtained using the same method have a tendency to be correlated. As such, trivial correlations become inflated to the point of excitement (a phenomenon Kasl (1978) has called the 'triviality trap') and correlations of a reasonable size become authoritative rather than suggestive. Common method variance seems to be a particularly acute problem when the independent and dependent variables are similar, a common problem in stress research (Jenkins 1991). Consider, for example, a situation where a stressor scale containing physical illness as a source of stress is employed alongside a measure of physical well-being as an outcome.

Some solutions to common method variance include ensuring that published rather than *ad hoc* measures of constructs are employed (Parkes 1982) and the use of 'methodological triangulation'(e.g. Cox *et al.* 2000; Jones and Johnston 1999; Parkes 1982), that is a mixture of self-report (subjective) and objective methods. Objective measures include measures such as work records, observer ratings and medical diagnoses. In the current investigation, whilst published measures were indeed employed, objective measures would have been extraordinarily difficult to obtain and would have raised other issues. For example, accessing medical records raises the issue of confidentiality. Directly observing the behaviour of, or taking physiological measures from, over 1,000 students raises resource issues, both in terms of the costs involved and the investigator's time. Using written records raises questions of accuracy (the sickness and absence records in the School are notoriously inaccurate, for example). Consequently, given the lack of objective measures in the current investigation, there remains the possibility that the results obtained from the logistic regressions may be due in part to common method variance.

One other measurement issue concerns the constructs that were actually measured in the investigation. To a large extent, the constructs considered in an investigation are subject to the theoretical model underpinning a particular investigation and the research questions driving that investigation – hence the choice of measures of sources of stress, stress and coping in the current investigation. Given that the transactional model underpinning the current investigation also includes individual differences, social support and outcomes as components, it is legitimate to ask why these constructs were not also subject to investigation. There are a number of rejoinders to this question. Firstly, social support has been considered, if only as a form of coping. Secondly, in the context of the transactional model employed in this investigation, 'outcome' means the long-term consequences of stress. Outcomes are, as such, only really relevant in longitudinal studies. Thirdly, with regard to individual differences, if all the recommendations contained in the literature were taken on board, then a plethora of personality and individual difference measures (measures of social desirability, negative affectivity, locus of control, Type A behaviour and neuroticism, for example) would have had to be included and, to protect against 'respondent burden' – a concept related to the length and degree of effort required as a survey participant (Sharp and Frenkel 1983) – a line had to be drawn given the already sizeable questionnaire pack. Indeed, Parkes (1994) takes a pragmatic view on questionnaire research arguing that some sort of compromise between questionnaire length, ease of administration, relevancy and freedom from response bias effects is nearly always required as it is difficult to achieve all of these demands at the same time.

7.7.3 Issues relating to the participants

The two main issues relating to the participants concerned specific biases. With regard to the first issue – response rates – the potential bias concerns the (self-)selection of those taking part. Regarding the second – response distortions – the potential bias concerns the individual responses made. However, before discussing these issues, a seemingly trivial, yet salient, point relating to the participants needs to be made: it is important to bear in mind that the participants in this investigation are *students* and not employees. Although this comment does not impact on the findings of the investigation, it does temper comparisons that are made with other studies in the occupational stress literature.

With regard to the response rates obtained, inter-related points need to be made about the relatively high response rates obtained and about whether response bias was likely to be an issue or not. Firstly, with regard to the relatively high response rates obtained a number of factors could have been at play. Students were given the opportunity to complete the questionnaire packs in the School's time rather than their own private time and the fact that the investigator left the room when students were given this opportunity (primarily to protect against experimenter effects) may also have helped. On the other hand, students could have felt obliged to take part because of demand characteristics such as the investigator (as a teacher) asking them to. Prior to completing the packs, however, participants were reminded that there was absolutely no obligation to take part. Thus, a more convincing explanation may well be that the students were genuinely interested in participating, especially since many students commented during the data collection sessions that a stress study amongst students was long overdue. The fact that participants did not seem overly concerned by the use of the ID number system (in only two cases were completed questionnaire packs returned with the ID number removed) may also have been indicative of a broadly supportive and interested population.

With regard to response bias, although the overall response rate was relatively high it was not sufficiently close to 100 per cent to rule out the possibility of response bias (Rosenthal and Rosnow 1969). If biases are present, however, they are likely to lead to *underestimates* rather than overestimates (Borrill *et al.* 1998; Wall *et al.* 1997). Wall *et al.* also comment that some indication of whether bias is present or not can be made by comparing the results with other studies. Regarding the current investigation, the results are largely consistent with those reported in the literature for similar populations, hinting that response bias may not be an issue. Another crude means of checking for non-response bias was to compare those who responded unprompted with those who required intensive prompting for a response (Borrill *et al.* 1996). As reported in Chapter 5, no significant differences were found between the GHQ and SF-12 MCS scores of those who returned their completed questionnaire packs without a reminder (unprompted) and those who required a reminder (prompted) further hinting that response bias may not be an issue.

The response rate for interrupters (those taking time out), at 24.6 per cent, was rather disappointing. That all of these students received their questionnaire packs by mail may be a contributory factor in that response rates are notoriously low for mailed surveys (Bourque and Fielder 1995). Some interrupters had been out of their studies for as long as a year and it may be that their current addresses did not match the ones on the School's central records. Another explanation for the low response rate for interrupters could lie in the motivation of these students. Being disassociated from the School and having surrendered their status as students (albeit on a temporary basis), interrupters were perhaps not as interested in issues relating to the School as those in day-to-day contact with the School might have been. Given the low response rate and the fact that taking time out of a programme is a qualitatively different experience to actually being on a programme, the questionnaire packs completed by the 15 interrupters were excluded from the study.

Response distortions are biases common in studies involving self-report questionnaires that arise because of conscious or unconscious attempts, on the part of the respondent, to project a certain impression. The two main response distortions are 'response styles' and 'social desirability'. Response styles include behaviour such as 'acquiescence' (generally agreeing with statements regardless of true beliefs or attitudes), 'dissension' (generally disagreeing with statements) and 'central tendency' (generally responding in a neutral manner to statements). In psychometrics, a common way of counteracting acquiescence and dissension is to ensure that the 'direction of agreement' on individual items in inventories of items is reversed on a frequent basis. For example, in a 20-item measure of mental health, poor mental health would be indicated by a high score of, ideally, ten of the items and a low score on the other ten. Central tendency can be reduced by having an even rather than odd number of responses. Parkes (1994) comments that response styles may be an issue with coping scales in particular as they rarely balance positive and negative loading items, a charge that can be directed at the CISS. The charge can also be directed at the SNSI, although not at the GHQ-12 or the SF-12 as these two tools do, indeed, balance positive and negative loading items. The GHQ-12 and SF-12 also tackle central tendency either through having an even number of responses available for each item (the case with the GHQ-12) or by having different numbers of responses available for different items (the case with the SF-12). Thus, as far as response styles are concerned, there may be an issue with the SNSI and CISS but there is unlikely to be an issue with the GHQ and SF-12.

Social desirability, however, may have been a greater problem in the current investigation. Socially desirable responses are responses that make respondents 'look good' (or even bad if the result is a positive outcome such as reduced workload) rather than responses that actually reflect true feelings or opinions. A number of instruments are available that control for social desirability, such as the Marlowe-Crowne Social Desirability Index (Crowne and Marlowe 1960) and their use is recommended by some authors (Jones and Johnston 1999, for example). No measure of social desirability was used in the current study, however. Several reasons underpinned this decision. Firstly, most of the social desirability measures are old (the Marlowe-Crowne one is over 40 years old). Secondly, including a social desirability measure would have increased the size of the questionnaire pack, which was undesirable. The main reason, however, for deciding not to employ a measure of social desirability is because the literature is split on its usefulness (Block 1990; Liebert and Liebert 1995; Razavi 2001). Liebert and Liebert, for example, argue that using a social desirability scale to adjust scores is a poor technique because it assumes that respondents respond in socially desirable manner to every question or item in an inventory. Razavi, moreover, reports a range of findings demonstrating that social desirability has little or no impact on the variables of interest in organisational research. Endler and Parker (1990) also point out that the simple act of assuring participants of the confidentiality of their responses can help to reduce social desirability.

7.8 IMPLICATIONS: INFORMING AN EFFECTIVE STUDENT SUPPORT STRATEGY

7.8.1 Revisiting the transactional model

In Chapter 1, a transactional model of stress specific to this investigation (but based in part on the work of other stress theorists) was presented as the model that underpinned the current investigation. At this point it is opportune to revisit this model in light of the current investigation's findings and the context in which these findings have been embedded. Figure 7.1 overleaf illustrates how the transactional model might specifically apply to nursing and midwifery students.

Nursing and midwifery students are typically plagued by demands such as assessments, finances and personal problems. Whether these demands get interpreted as stressors depends on a range of personal factors (individual differences) such as their age, sex, whether they have children and so on and whether the students feel they can cope. These are the main demands associated with student stress and whether they actually lead to the experience of stress is also dependent on a similar range of personal factors. A range of coping strategies are employed by students (again these are subject to a range of personal factors) and these coping strategies are augmented by support from family and friends and from personal teachers. With regard to outcomes, two possible pathways are available: faced with the same demands, some students will experience negative outcomes whilst others will experience positive outcomes. The two question marks on the two outcome pathways represent a key concern when discussing the implications of the current investigation – a concern relating to the factors that distinguish between positive and negative outcomes or, to put it another way, a concern that asks why some students thrive whilst others fail or leave (Sawatzky 1998).

Recall from Chapter 1, that the main purpose of the current investigation was to inform an effective student support strategy. In the context of nursing and midwifery education, it is the factors that distinguish between positive and negative outcomes that ultimately inform an effective student support strategy. These factors are drawn from two overlapping sets of data: the 'hard' data obtained from the empirical aspects of the investigation and the 'soft' data obtained from the literature consulted in the course of carrying out the investigation.

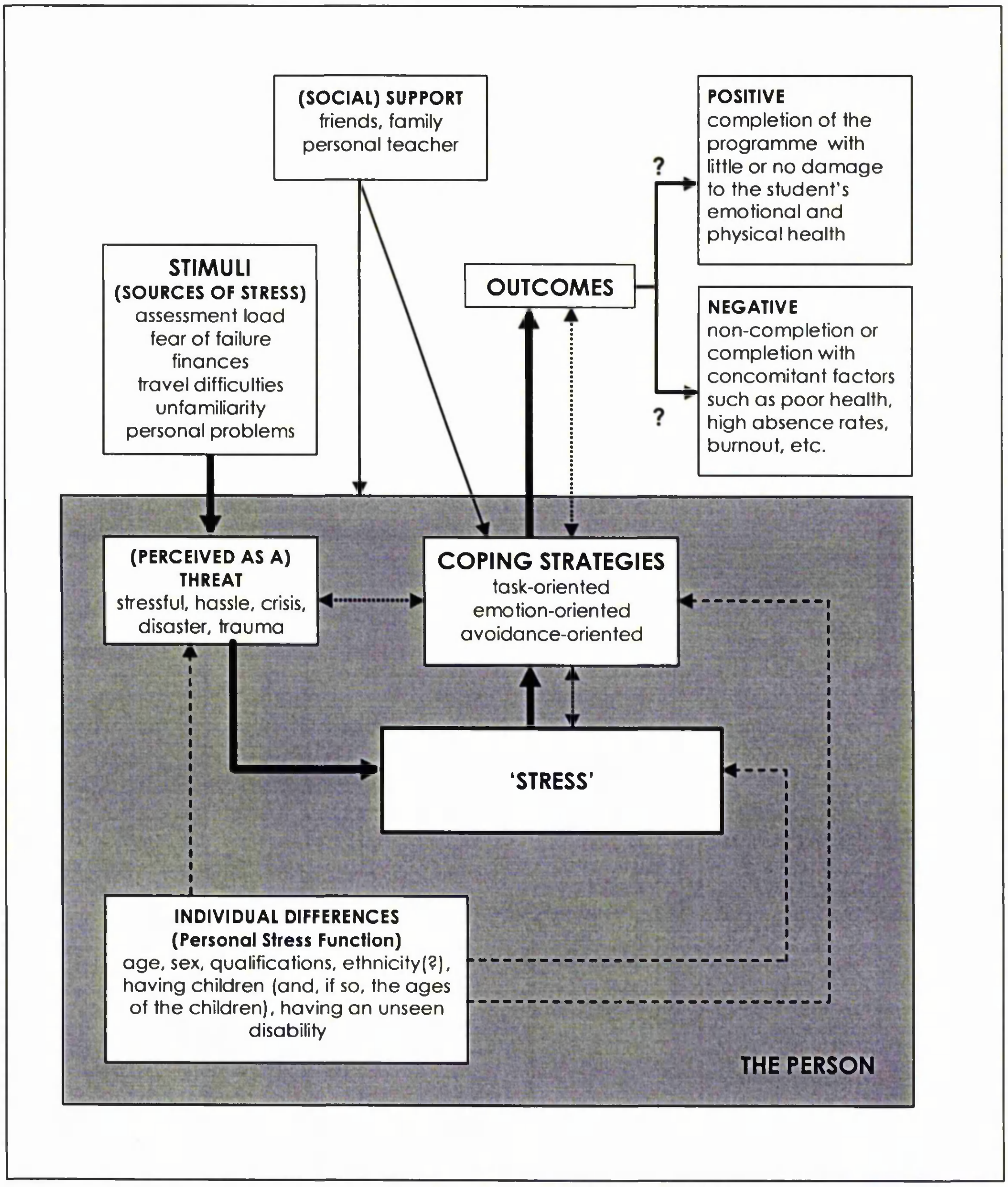

Figure 7.1 The transactional model revisited.

Thus, in informing an effective student support strategy, a set of specific and a set of general recommendations are made here that should, hopefully, lead to an increase in positive outcomes together with a concomitant decrease in negative outcomes. The specific recommendations stem from the hard data and are considered first. The general recommendations, considered afterwards, stem mainly from the soft data. Recall also from Chapter 1 that two subsidiary purposes were also identified: a local purpose and a wider purpose. To this end, the two sets of recommendations that follow are directed not only at the University of Manchester's School of Nursing, Midwifery and Health Visiting at the but also at university nursing and midwifery departments across England, the UK and possibly further afield.

7.8.2 Specific recommendations

7.8.2.1 Active listening and the importance of the personal teacher

'Active' listening is a term borrowed from the counselling literature. In counselling terms, it means listening attentively, taking in the implied as well as the spoken and it frequently demands some form of response (Tschudin 1995). Whilst not suggesting that counselling *per se* should be a routine activity in student support, the principles of active listening can be used to enhance student support, both on an organisational and an individual level. On an organisational level, active listening means taking heed of the findings of investigations (such as the findings of the current investigation and of those reported in the literature) and implementing those findings in educational practice. On an individual level, active listening is best considered in the context of the individual best placed to take on the role – the personal teacher.

The personal teacher is, in essence, the bridge between the institution and the student and the current investigation has certainly reinforced the value of this role. By adopting the principles of active listening, personal teachers can play a role in addressing many of the issues raised in the current investigation. Take self-report of pressure, for example. As a predictor in both the nursing and the midwifery regression models, self-report of pressure can be useful in assessing risk. It is of little use, however, if students are unable to communicate their perceptions to those best placed to guide the student or if their communications are ignored. What this means in practice is that opportunities to express feelings should be part of the personal teacher-student relationship and that, where feelings are expressed, they should be taken seriously. This is a particularly salient point where a fear of failure or thoughts of dropping out are evident. Fear of failure is, after all, a major stressor across the board and it may be that open discussion with personal teachers may go some way in reassuring students. Of course it also linked to anxiety about assessments, a point that will be taken up later. Regarding thoughts of dropping out, Lindop (1989) commented that many of those who left nurse training might not have left if they had been listened to and supported in the first place and Williams *et al.* (1997) have noted that talking about quitting with students can be revealing about stress. Baldwin *et al.* (1998) claims that the third year is a critical for student dropout and it may be that personal teachers need to give particular attention to students in the later stages of their programmes rather than assuming that those earlier in the course are the ones who require more support. Being aware of other pertinent factors such as disability, travel difficulties, financial problems and unfamiliarity or homesickness can also enhance the provision of support.

One characteristic that most teachers and lecturers in nursing and midwifery education possess is a generally high level of communication skills, acquired by virtue of their own experiences as qualified nurses and midwives. At the same time, however, it is a characteristic that can be both an advantage and a drawback when taking on the role of personal teacher. It is an advantage in that it readily facilitates the call for active listening made above; it is a disadvantage in that it is all too easy for personal teachers to adopt a 'caring-counselling' role (cf. clinical practice) rather than 'facilitative-supportive' role. Remember that the call for active listening is not a call for counselling. The investigation and the literature, after all, clearly suggest that family and friends are the primary choices for emotional support. Rather, parallels can be drawn with the role of the General Practitioner in primary care: the call is for a personal teacher who uses her or his knowledge and skills to support the student by actively listening and then directing the student to the appropriate support mechanisms from the repertoire available both within and outside of the institution.

7.8.2.2 Work-life balance in a predominantly female population

As both the literature and the findings of the current investigation have shown, there seem to be different demands on women than there are on men: women generally report higher stress levels and women seem to cope in different ways to men. The literature (e.g. Billings and Moos 1984; Davidson and Cooper 1983; Jenkins 1991; Maynard and Pearsall 1994) has speculated that much of this may be down the traditional social roles expected of men and women. Indeed, the following quote from a study on mature students is particularly pertinent to many nursing and midwifery students: 'While the men had given up their principal occupation when they entered higher education, this was ... impossible for the majority of women, since the demands of the home continued unabated throughout their academic lives' (Maynard and Pearsall 1994, p 238). These observations, together with the fact that having school-age children was a major predictor of caseness in nursing suggest that programmes like nursing and midwifery that claim a large proportion of women as students need some balance between university/college life and home life built into them. Indeed, Kipping (2000) laments the lack of studies considering this particular aspect of the stress equation. An important point needs to be made here about this balance. Often the literature has seen this balance in terms of the 'family friendliness' of an organisation, workplace, programme, etc. but there have been growing moves against the use of the term 'family friendly' because it is often perceived to apply only to those with children. 'Home-work' balance has been adopted as an alternative but as Cox (1992) points out this term is meant to cover not only the balance between work and domestic/family life but also the balance between work and life outside work. As such, the currently preferred term seems to be the more inclusive term 'work-life balance'.

7.8.2.3 Evidence-based programme design

Although programme design is often subject to constraints that are outside departmental or institutional control (governmental or regulatory body demands, for example), those involved in designing nursing and midwifery programmes might like to consider several issues that are recurrent themes in the student stress literature. Firstly, given the discussion above, curriculum planning and design needs to consider the work-life balance. This means addressing issues relating to some particular bugbears in nurse and midwifery education such as child-care, university vacations, travel difficulties and timetabling. Interestingly, these issues seem to be issues relating specifically to the academic components of programmes rather than clinical aspects. Why this should be the case is unclear but perhaps it is related to the fact that the clinical aspects of programmes are often seen in a better light than the academic aspects and maybe because there is more flexibility in the clinical areas. This latter point might seem paradoxical in that the clinical aspects of programmes elicit demands (such as shifts, weekends and night duty) that, on first sight, seem to counteract a satisfactory work-life balance but it could be that the flexibility inherent in shift work is the very flexibility that students need.

The second factor to consider in programme design is examinations and assessments. Given the central role that assessments and examinations play in student stress (the overall major stressor in the current investigation), it is as Beck *et al.* (1997) note worth looking at the nature and quality of assignments particularly since Brown (1997) notes that assessments that create undue anxiety are a barrier to deeper learning. Study skills training can help address the anxieties surrounding assessments and examinations and consequently help attenuate fears of failure (Beck *et al.* 1997; Clarke and Ruffin 1992; Lo 2002; Monk 1999). Study skills training is not merely concerned with examination technique, however, but considers a range of skills needed to survive and prosper in higher education (Maslin-Prothero 1997; Pryjmachuk 2001). Such skills include, for example, library and IT skills, an understanding of the strategies and techniques associated with studying and knowledge of the rules and protocols that operate in specific academic environments.

A third factor to consider in programme design is one that addresses issues relating to the transition from home or work to college/university such as homesickness and 'settling in' to a new, often unfamiliar, environment. It is recognised good practice in higher education to provide induction programmes to new students (Lo 2002; QAA 2000b) and most institutions provide some form of induction package to 'freshers' although too often induction merely applies to the programme rather than to the institution, city and geographical area in which the institution is based.

Ironically, many of the recommendations above – particularly those regarding the work-life balance and assessments – were taken on board by the School when devising its 'Making a Difference' pre-registration nursing curriculum (the curriculum that was to supersede the Project 2000 curriculum). Given that much of the planning for the Making a Difference curriculum occurred around the same time as the current investigation's data collection period (1999-2000), it is unrealistic to claim that the current investigation had a direct impact on curriculum planning, although it should be added that the investigator was a member of the curriculum planning team and, at the time, the investigator would have been informed by some of the issues (considered in this thesis) emerging from the literature. Nevertheless, quality assurance principles in higher education (see, for example, QAA 2000b) demand curricula that are dynamic rather than static. As such, the findings of this investigation will, hopefully, have an impact on future nursing and midwifery curricula, both within the School and further afield.

7.8.3 General recommendations

Cox *et al.* (2000) state that stress can be tackled on a primary, secondary or tertiary level, levels than can be loosely described, respectively, as prevention, timely reaction and rehabilitation. Alternatively, Jones and Johnston (2000a) regard them as interventions that deal with, respectively, the non-distressed, the distressed and those suffering the negative consequences of stress (such as psychiatric symptomatology or burnout). Considering additional recommendations to the specific recommendations outlined above in terms of these three levels provides the reader with a coherent way of understanding how stress might be tackled in nursing and midwifery education.

7.8.3.1 Primary approaches

Primary approaches to dealing with stress – prevention – generally involves what Cox *et al.* (2000) call 'hazard control', i.e. controlling particular sources of stress. Although it is often impossible to remove some stressors, concessions can sometimes be made. Indeed, many of the specific recommendations made in the previous section are primary approaches to stress management in that they are concerned with the control and attenuation of stressors. Reviewing the assessment load when designing curricula is, for example, one way of tacking the anxiety associated with examinations. Other considerations could include a reduction in unnecessary coursework (Brown 1997; Lo 2002; Monk 1999; Monk & Mahmood 1999) or the use of befriending or 'buddy' systems to help students settle in (Monk and Mahmood 1999). Occasionally, it is even possible to eliminate rather than attenuate a major source of stress as in the case of the 'clinical skills examinations' (a major source of stress to Project 2000 CFP students). The clinical skills examinations were abandoned in 2001 primarily because they had major staffing implications (they were very resource intensive in terms of staff time), but the decision to abandon them also had the effect of removing a major source of stress for CFP students. Hopefully, there may be a time when curriculum amendments and developments are made primarily for the benefit of students rather than staff.

7.8.3.2 Secondary approaches

Secondary approaches to dealing with stress – timely reaction – generally involve training programmes and initiatives designed to help individuals manage stress or the sources of stress. A generic term for these training programmes and initiatives is 'stress management' programmes but included in the discussion here are programmes and initiatives that tackle stress less directly (perhaps by teaching students how to attenuate a source of stress rather than manage the stress experience *per se*) and, as such, the investigator is inclined to make a distinction between 'direct' and 'indirect' stress management programmes.

With regard to direct stress management programmes, as reported in Chapter 1, the stress management studies involving nursing students have largely shown them to be beneficial, although Cox *et al.* (2000) are less enthusiastic, arguing that the jury is undecided on stress management training. Interestingly many direct work-based stress management programmes ignore factors outside of the work environment, an irony considering that individuals' private lives frequently spill over into their work lives (Cox 1993; Jones and Johnston 2000a; Weinberg and Creed 2000) and considering that the current investigation found that the number and intensity of personal problems may well be implicated in caseness. With regard to indirect stress management, a range of programmes have been recommended in the literature. Some, like study skills training, have already been discussed; others include time-management training (Beck *et al.* 1997; Clarke and Ruffin 1992), communication, interpersonal skills or assertiveness training (Clarke and Ruffin 1992; Mahat 1998; Price 1984; West and Rushton 1986) and financial management training (Brown and Edelmann 2000; Monk 1999). Any or all of these in combination may assist in dealing with such issues as late submissions and extensions, poor self esteem, communication difficulties (especially with senior clinical and academic staff), fear of failure, and money worries. Questions have to be asked, however, of the feasibility of building all of these – as well as specific direct stress management programmes – into already crowded curricula. Still, there are novel ways of tackling some of these issues. A case in point is the investigator's involvement with study skills training across the School: rather than add another twelve hours or more of teaching to each programme, a tailor-made self-directed study skills workbook (Pryjmachuk 2001) was developed that could be used across all programmes in the School.

7.8.3.3 Tertiary approaches

Tertiary approaches to dealing with stress – rehabilitation – are generally concerned with counselling or, in an occupational environment, with what are often termed 'employee assistance programmes' (EAPs). In terms of outcomes such as sickness-absence and self-reported psychological health, evaluations of EAPs/workplace counselling have generally been positive (Cox *et al.* 2000; McLeod 2001) although there has been little work into what the 'active ingredient' of these programmes might be. There have also been questions as to why these programmes frequently operate outside of an organisation's occupational health service (Baldwin *et al.* 1998; Wall *et al.* 1997) given that occupational health services have a remit for both physical and psychological health. Still, workplace counselling is generally seen to be a service for those with the highest levels of distress (McLeod 2001) – exactly what one would expect from a tertiary level service – and they are generally seen to be cost-effective in that the reductions in sickness-absence and concomitant increases in productivity more than cover the costs of the service (Cox *et al.* 2000; McLeod 2001).

With regard to nursing and midwifery education, there certainly appears to be a role for tertiary level stress management services. Questions that need to be asked, however, are whether these services are best offered at a departmental or an institutional level (or even outside of the institution altogether) and whether they should be operated via a standalone counselling service or via an occupational health service. There are no clear cut responses to these questions. In the current investigation, for example, the School's counselling service was preferred as a potential source of support to the University's counselling service[38] and to external counselling services but this could merely be because the location of the School's service was more convenient for the majority of students. However, the School's

[38] The School's counselling service is, in fact, a subdivision of the University's counselling service but it operates quasi-autonomously for logistical and historical reasons.

student occupational health service also fared reasonably well in terms of a potential support service (like the School's counselling service, around 60 per cent of respondents indicated that they would use the School's occupational health service) so, from a purely economic point of view, the question of why two separate services exist could be raised. Nonetheless, specialised counselling services (regardless of who operates them) do seem to be a valuable resource in an organisation's overall stress management strategy and they certainly have a place in nursing and midwifery education. Indeed, so long as an HE institution is sympathetic to change and to flexibility, coupling the provision of secondary and tertiary level services with an accessible personal teacher as first point of contact and 'gatekeeper' to these services is a pragmatic and powerful way of dealing with student stress.

7.8.4 Is it all about control?

One theme that runs across many of the recommendations made is that of *control*. There are two aspects to control that are pertinent to the discussion: the role of control in the experience of stress and the issue of control in the professions of nursing and midwifery.

Regarding the role of control in the stress experience, whether individuals feel they are in control or not seems to have an impact on both the experience of stress and the outcomes of stress. In Chapter 1 and earlier in this chapter, control has been associated with stress in a variety of guises: in Karasek's demands-decision latitude model, in personality variables such as locus of control, Type A behaviour and hardiness and in considerations of coping. Indeed, Cox *et al.* (2000) ask whether coping is really nothing more than control, going so far as to suggest that the construct of coping be replaced in future work on stress with the construct of control. As such, giving students some degree of control (or *perceived* control at the very least) may well have a positive impact on their progression. Indeed, Brown (1997), in a review of teaching in higher education, notes that giving students a sense of control over their own work (facilitating students to take responsibility for their own learning) helps make students more effective and successful learners. At the University of Miami, students are given some control by allowing them to choose their own clinical rosters (Carveth *et al.* 1996). This 'self-rostering' position has been adopted positively in several NHS clinical areas (Birch 2001; Paget-Wilkes 1997) and is recommended by the Royal College of Nursing in its *Working Well* initiative (RCN 2002b) although self-rostering may only be practicable in smaller clinical areas (Silvestro and Silvestro 2000).

Although recommendations regarding control can be made, implementation is another matter. The biggest constraint against the introduction of student self-control in nursing and midwifery education is what West and Rushton (1986) call the 'rule-bound and restrictive ethos' of nursing (p 31). It is beyond the scope of this thesis to account for the historical, cultural and social reasons behind this ethos but it is important to note that it is still in evidence, particularly – although not exclusively – in adult nursing and especially in terms of senior staff's attitudes towards junior staff and those in training (Baldwin *et al.* 1998; Kipping 2000; Lindop 1991; Pagana 1998). Moving forward may therefore require some degree of cultural change in nursing and midwifery, although the transition of nursing and midwifery education from the hospital-based schools to higher education (which has freedom – particularly academic freedom – rather than control at its core) may well help facilitate this change, as may the attendant change in status from employee to student.

7.8.5 Further research

A further recommendation that seems to crop up in the literature as a matter of course is the recommendation that more research be undertaken. Cox *et al.* (2000) claim there are 3 basic questions that need answering in work stress: (i) the nature of occupational stress, (ii) whether stress affects health, and if so, the manner in which it does so, and (iii) how stress can be managed effectively? To a large extent, the first two questions have been tackled comprehensively in the literature although, as this investigation has shown, there are certain populations for which these questions are still legitimate because of little existing work. In addition, given the discussion on control, it may be worth re-examining these questions with a particular emphasis on control. Some examples of how this might be achieved in research specific to nursing and midwifery include asking whether control can explain the apparent 'robustness' of mental health nurses or whether concepts such as 'determination' (Lindop 1999) and 'perseverance' (Everly *et al.* 1994) that seem to be associated with academic success are related to control. The key to future research, however, lies in the third of Cox *et al.*'s questions. Weighed against the other two of Cox *et al.*'s questions, there are few evaluations of stress interventions – be they primary, secondary or tertiary – in the literature and in these days of evidence-based interventions in health care, research targeting interventions has to be a priority. In particular, there are very few evaluations of primary level interventions – hazard control – and, given the recent introduction of Making a Difference curricula that have a statutory obligation for flexibility, it could well be opportune that these programmes are examined to see whether addressing issues such as assessment load, work-life balance and control have an impact on overall stress levels.

The recommendation that future work focus on interventions is made without any reference to specific designs or methods mainly because, as the investigator outlined in Chapter 2, it is possible to examine the same phenomena using different paradigms, designs and methods. So, for example, descriptive studies of interventions and process research (research that tries to identify the variables responsible for 'successful' interventions) can be as valuable in determining an overall picture of evidence-based practice in stress research as much as randomised controlled trials, although this statement has to be balanced by the political, economic and social constraints that impact on research at any given time.

7.9 CONCLUDING COMMENTS

With regard to sources of stress, stress and coping amongst pre-registration nursing and midwifery students, the investigator is inclined to side with Carter (1982) in declaring that nursing and midwifery students seem to have more in common with students of other disciplines than they have differences. Being a student – regardless of academic or professional discipline – can, however, be a stressful experience.

In informing an effective student support strategy, the investigator has suggested a range of interventions, which cut across primary, secondary and tertiary approaches to stress management – interventions that may well have an impact on students' perceptions and experiences of stress. Indeed, the investigator recommends that investigations of these interventions should form the bedrock of the next generation of research into student stress.

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APPENDICES

APPENDIX 1

Pilot Questionnaire Pack

CONFIDENTIAL

1	2	3	4	5

THE UNIVERSITY of MANCHESTER

School of Nursing, Midwifery & Health Visiting

STRESS AND PRE-REGISTRATION STUDENT NURSES AND MIDWIVES STUDY

Instructions:

Please complete this questionnaire in its entirety, answering each question in sequence and carefully following any instructions given.

To ensure the results are accurate, please answer the questions honestly. Remember the responses you give are confidential.

Try not to write anything in the areas marked 'Office use'.

Note:

Any reference to 'programme of study' simply means the course you are undertaking here in the School of Nursing, Midwifery and Health Visiting.

THANK YOU FOR TAKING PART

TODAY'S DATE

Office use

Q1. Firstly, please write in today's date below

______ / ________________ / 19_____
day month year

6 7 8

SECTION 1: ABOUT YOU

Q2. Your gender? (tick one box)

☐1 Female ☐2 Male

10*

Q3. Your age? (write in) __________ years

11 12

Q4. Which of the following best describes your ethnic origin?
(tick one box only)

☐1 White	☐4 Black, other	☐7 Asian, Pakistani
☐2 Black, African	☐5 Chinese	☐8 Asian, Bangladeshi
☐3 Black, Caribbean	☐6 Asian, Indian	☐9 None of these

13 14

Q5. Is English your first language? (tick one box)

☐1 Yes ☐2 No

15

Q6. As far as your programme of study is concerned, does your ability in English cause you any worries? (tick one box)

☐1 Yes ☐2 No

16

SECTION 2: CISS & GHQ QUESTIONNAIRES

Before continuing, please complete the two questionnaires - the 'CISS-Adult' (blue) and 'General Health Questionnaire' (orange) - which are attached to this questionnaire booklet.

The CISS-Adult is an American instrument that explores the ways in which people deal with stressful situations. Ignore the data on the back of this questionnaire.

The General Health Questionnaire (GHQ-12) is a standard instrument for measuring general health.

Please follow the instructions given on each.

CISS – Adult

by Norman S. Endler, Ph.D., F.R.S.C. & James D.A. Parker, Ph.D.

Name:________________________ Age:_____ Sex: M F Date:____/____/____

Occupation: ____________________ Education:______________ Marital Status:____________

Instructions: The following are ways people react to various difficult, stressful, or upsetting situations. Please circle a number from 1 to 5 for each item. Indicate how much you engage in these types of activities when you encounter a difficult, stressful, or upsetting situation.

Not at All				Very Much	
1	2	3	4	5	1. Schedule my time better.
1	2	3	4	5	2. Focus on the problem and see how I can solve it.
1	2	3	4	5	3. Think about the good times I've had.
1	2	3	4	5	4. Try to be with other people.
1	2	3	4	5	5. Blame myself for procrastinating.
1	2	3	4	5	6. Do what I think is best.
1	2	3	4	5	7. Become preoccupied with aches and pains.
1	2	3	4	5	8. Blame myself for having gotten into this situation.
1	2	3	4	5	9. Window shop.
1	2	3	4	5	10. Outline my priorities.
1	2	3	4	5	11. Try to go to sleep.
1	2	3	4	5	12. Treat myself to a favorite food or snack.
1	2	3	4	5	13. Feel anxious about not being able to cope.
1	2	3	4	5	14. Become very tense.
1	2	3	4	5	15. Think about how I solved similar problems.
1	2	3	4	5	16. Tell myself that it is really not happening to me.
1	2	3	4	5	17. Blame myself for being too emotional about the situation.
1	2	3	4	5	18. Go out for a snack or meal.
1	2	3	4	5	19. Become very upset.
1	2	3	4	5	20. Buy myself something.
1	2	3	4	5	21. Determine a course of action and follow it.
1	2	3	4	5	22. Blame myself for not knowing what to do.
1	2	3	4	5	23. Go to a party.
1	2	3	4	5	24. Work to understand the situation.
1	2	3	4	5	25. "Freeze" and not know what to do.
1	2	3	4	5	26. Take corrective action immediately.
1	2	3	4	5	27. Think about the event and learn from my mistakes.
1	2	3	4	5	28. Wish that I could change what had happened or how I felt.
1	2	3	4	5	29. Visit a friend.
1	2	3	4	5	30. Worry about what I am going to do.
1	2	3	4	5	31. Spend time with a special person.
1	2	3	4	5	32. Go for a walk.
1	2	3	4	5	33. Tell myself that it will never happen again.
1	2	3	4	5	34. Focus on my general inadequacies.
1	2	3	4	5	35. Talk to someone whose advice I value.
1	2	3	4	5	36. Analyze the problem before reacting.
1	2	3	4	5	37. Phone a friend.
1	2	3	4	5	38. Get angry.
1	2	3	4	5	39. Adjust my priorities.
1	2	3	4	5	40. See a movie.
1	2	3	4	5	41. Get control of the situation.
1	2	3	4	5	42. Make an extra effort to get things done.
1	2	3	4	5	43 Come up with several different solutions to the problem.
1	2	3	4	5	44. Take some time off and get away from the situation.
1	2	3	4	5	45. Take it out on other people.
1	2	3	4	5	46. Use the situation to prove that I can do it.
1	2	3	4	5	47. Try to be organized so I can be on top of the situation.
1	2	3	4	5	48. Watch TV.
Not At All				Very Much	

GENERAL HEALTH QUESTIONNAIRE GHQ-12

NFER-NELSON
INFORMING YOUR DECISIONS

Please read this carefully:

We should like to know if you have had any medical complaints, and how your health has been in general, *over the past few weeks*. Please answer ALL the questions simply by underlining the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those you had in the past. It is important that you try to answer ALL the questions.

Thank you very much for your co-operation.

HAVE YOU RECENTLY:

1	- **been able to concentrate on whatever you're doing?**	Better than usual	Same as usual	Less than usual	Much less than usual
2	- **lost much sleep over worry?**	Not at all	No more than usual	Rather more than usual	Much more than usual
3	- **felt that you are playing a useful part in things?**	More so than usual	Same as usual	Less useful than usual	Much less useful
4	- **felt capable of making decisions about things?**	More so than usual	Same as usual	Less so than usual	Much less capable
5	- **felt constantly under strain?**	Not at all	No more than usual	Rather more than usual	Much more than usual
6	- **felt you couldn't overcome your difficulties?**	Not at all	No more than usual	Rather more than usual	Much more than usual
7	- **been able to enjoy your normal day-to-day activities?**	More so than usual	Same as usual	Less so than usual	Much less than usual
8	- **been able to face up to your problems?**	More so than usual	Same as usual	Less able than usual	Much less able
9	- **been feeling unhappy and depressed?**	Not at all	No more than usual	Rather more than usual	Much more than usual
10	- **been losing confidence in yourself?**	Not at all	No more than usual	Rather more than usual	Much more than usual
11	- **been thinking of yourself as a worthless person?**	Not at all	No more than usual	Rather more than usual	Much more than usual
12	- **been feeling reasonably happy, all things considered?**	More so than usual	About same as usual	Less so than usual	Much less than usual

Published by The NFER-NELSON Publishing Company Ltd, Darville House, 2 Oxford Road East,
Windsor, Berkshire SL4 1DF, UK.
This edition first published 1992.

Code 4075 07 4

SECTION 3: ABOUT YOUR HOUSEHOLD

Office use

Please read these notes concerning 'household':

> The term 'household' refers to the people who live with you.
>
> If you live alone, then you alone constitute the household.
>
> If you live with other people, the household includes yourself and those people living with you (whether you're related to them or not). However, for these other people to form part of your household, they must either (a) share daily meals with you, or (b) share common living accommodation (e.g. a living or sitting room) with you.
>
> For the purposes of this study, 'head of the household' is the person you deem to be the head. If there is more than one person you consider to be the head of the household, please think of only one of these people when answering Q7 and Q8.

Q7. Think about your household immediately before you entered your current programme of study here at Manchester.

At the time you entered your programme of study, what was the employment status of the head of your household? (tick one box and follow the instructions given)

- ☐ In full or part time employment → **Answer Q8**
- ☐ Retired → **Answer Q8**
- ☐ Unemployed → **Go straight to Q9**
- ☐ Entirely dependent on benefits → **Go straight to Q9**

Q8. Please give details of the head of the household's occupation (or former occupation, if retired) below.

Full job title ______________________________

____

Other details about the head of the household's occupation (tick all that apply and, if you can, provide additional information where asked)

- ☐ Full-time ☐ Part-time
- ☐ Self-employed/own business, no other employees
- ☐ Self-employed/own business, other employees (how many? _______)
- ☐ Managerial/supervisory position (number of people managed? ______)

☐ 20*

Q9. Now think about your current household.

Including yourself, how many adults (aged 16 and above) are there in your household? (tick one box and follow the instructions given)

- ☐$_1$ 1 (i.e. just you) → **Go straight to Q11**
- ☐$_2$ 2 → **Answer Q10**
- ☐$_3$ 3 or more → **Answer Q10**

☐ 21

PTO

Q10. Are any of the adults who live with you dependent on you (e.g. financially dependent or dependent on you for care needs)? (tick one box)

Office use

☐1 Yes ☐0 No

22

Q11. How many children under 5 are there in your current household? (tick one box)

☐0 None ☐1 1 ☐2 2 ☐3 3 or more

23

Q12. How many children aged 5 to 15 are there in your current household? (tick one box)

☐0 None ☐1 1 ☐2 2 ☐3 3 or more

24 25 26

Q13. In what type of accommodation are you living at the moment? (tick one box)

☐1 Nurses' Home
☐2 University Halls of Residence
☐3 House or bungalow
☐4 Flat or maisonette
☐ Other accommodation type (specify ____________________)

27

Q14. And in which of these ways do you occupy this accommodation? (tick one box)

☐1 You (or you and your spouse/partner) own it outright
☐2 Your are buying it with a mortgage or loan
☐3 Through a 'shared ownership' scheme (part rent/part mortgage)
☐4 You pay rent or board (whether to a landlord, relatives or friends)
☐5 You live rent free (but not squatting)
☐6 You squat

28

SECTION 4: ABOUT YOUR PROGRAMME OF STUDY

Q15. Please supply the following three pieces of information about your programme of study: (tick one box in each column)

(a) its length	(b) its level	(c) your branch/specialism
☐ 18 months	☐ Diploma	☐1 Adult
☐ 2 years	☐ Degree	☐2 Children's
☐ 3 years		☐3 Learning disabilities
☐ 4 years		☐4 Mental health
		☐5 Midwifery
		☐6 Not yet decided (this option for BNurs students only)

30* 31

Q16. THIS QUESTION FOR NURSING STUDENTS ONLY. MIDWIFERY STUDENTS GO STRAIGHT TO Q18.

Office use

What's your current status in your programme? (tick one box)

- ☐1 I'm in the CFP (first 18 months of your programme)
- ☐2 I'm in branch (second 18 months of your programme)
- ☐3 I'm in Year 4 of the BNurs

☐ 32

Q17. THIS QUESTION FOR BNURS YEAR 4 STUDENTS ONLY. ALL OTHER STUDENTS GO STRAIGHT TO Q18.

What additional specialism are your pursuing during your final year? (tick one box)

- ☐1 Community Psychiatric Nursing
- ☐2 District Nursing
- ☐3 Health Visiting

☐ 33

Q18. **At the time of entry to your current programme of study, which of the following educational qualifications did you possess?** (tick all that apply and specify how many of each qualification you have, if asked)

- ☐ GCSE/O Level passes (include CSE grade 1s) (how many? ______)
- ☐ SCE Ordinary/Standard (include Higher Band D) (how many? ______)
- ☐ GCE AS Levels (how many? ______)
- ☐ SCE Higher Grades, Band A-C (how many? ______)
- ☐ GCE A Levels (how many? ______)
- ☐ Open University Credits (how many credits in total? ______)
- ☐ Pass on the UKCC DC test
- ☐ 'Kitemarked' Access to Higher Education Course
- ☐ NVQ/SVQ Level 3 or GNVQ Advanced Level
- ☐ Existing Nursing/Midwifery qualification (Registered or Enrolled)
- ☐ National Certificate or Diploma (e.g. ONC/OND/HNC/HND)
- ☐ Diploma of Higher Education (DipHE)
- ☐ Overseas Baccalaureate
- ☐ First degree (Bachelors Degree)
- ☐ Higher degree (Masters or Doctorate)
- ☐ Any other qualifications (write in below)

____

☐☐ 34 35

Q19. ANSWER THIS QUESTION ONLY IF YOU WERE ALREADY ON THE UKCC REGISTER WHEN YOU STARTED YOUR CURRENT PROGRAMME OF STUDY.

For approximately how many years have you practised as a qualified nurse? (write in) __________ years

☐☐ 36 37

PTO

Q20. The date you started your current nursing/midwifery programme here at Manchester? (write in)

Office use

BNurs students: 19____ (year) **All other students:** ________ (month) /19____ (year)

38 39

Q21. Are you <u>**currently**</u> **taking time out (for whatever reason) from your programme of study?** (tick one box and follow the instructions given)

☐ Yes → **Go straight to Q25**
☐ No → **Answer Q22**

Q22. Cohorts (intakes) in the School are identified by the month and/or year of entry (e.g. Aug 96, Feb 99, BNurs 1997). On some occasions, students find themselves attached to cohorts that <u>do not</u> reflect the actual date they started their programme of study.

Does the name of the cohort you are <u>**currently**</u> **attached to for lecture and placement purposes accurately reflect the date you started your programme of study?** (tick one box and follow the instructions given)

☐ Yes → **Go straight to Q25**
☐ No → **Answer Q23 and Q24**

Q23. What's the name of the cohort (intake) you are <u>**currently**</u> **attached to?** (write in)

BNurs students: 19____ (year) **All other students:** ________ (month) /19____ (year)

40 41

Q24. Why is the cohort (intake) you are currently attached to different from your start date given in Q20 above? (tick the box that <u>best</u> describes your circumstances)

☐1 I took time out and joined another intake when I recommenced my studies
☐2 I am a 'fast track' graduate entry student who has tagged on to an existing branch intake
☐3 I am already a qualified nurse/midwife and have joined a branch programme to gain another nursing/midwifery qualification
☐4 I undertook part of my studies at another institution and have 'transferred in' to a programme at Manchester
☐ Another reason not listed (specify ______________________________)

42

Q25. Are you a registered as a full or part time student? (tick one box)

☐1 Full time ☐2 Part time

43

Q26. Think about the journey from your current address to your <u>lectures and classroom sessions</u>.

Office use

<u>In general</u>, how much difficulty have you experienced getting to your lectures/classroom sessions? (tick the most appropriate box)

- ☐4 A lot of difficulty
- ☐3 Some difficulty
- ☐2 Hardly any difficulty
- ☐1 No difficulty at all

☐ 44

Q27. Have you had any clinical placements yet? (tick appropriate box and follow the instructions given)

- ☐ Yes → **Answer Q28**
- ☐ No → **Go straight to Q29**

Q28. Think about the journey from your current address to your <u>clinical placements</u>.

<u>In general</u>, how much difficulty have you experienced getting to your clinical placements? (tick the most appropriate box)

- ☐4 A lot of difficulty
- ☐3 Some difficulty
- ☐2 Hardly any difficulty
- ☐1 No difficulty at all

☐ 45

Q29. Which of the following statements best describes your familiarity with the Manchester area <u>prior</u> to you undertaking your current programme of study? (tick the most appropriate box)

- ☐4 I was very familiar with the Manchester area
- ☐3 I knew the Manchester area fairly well
- ☐2 I had a vague knowledge of the Manchester area
- ☐1 I didn't know the Manchester area at all

☐ 46

Q30. Think about the <u>assessed</u> tests, examinations, presentations, essays or assignments you have to complete as part of your programme of study.

Are any of these assessments due within the <u>next 4 weeks</u>? (tick one box and follow the instructions given)

- ☐ Yes → **Answer Q31**
- ☐ No → **Go straight to Q32**

PTO

Q31. What assessments are due within in the next 4 weeks?

Office use

Write the name(s) of the assessment(s) below. Space is provided for up to three entries. Include Vivas (oral examinations). In each case, indicate whether it is a first or second/third attempt by ticking the appropriate box.

Name of assessment	Attempt	
1. ____________________	☐ 1st	☐ 2nd/3rd
2. ____________________	☐ 1st	☐ 2nd/3rd
3. ____________________	☐ 1st	☐ 2nd/3rd

47 48

Q32. Do you undertake any paid work in addition to your studies? (tick one box and follow the instructions given)

☐ Yes → **Answer Q33**
☐ No → **Go straight to Q34**

Q33. On average, approximately how many hours per week do you undertake paid work in addition to your studies? (write in) __________ hours

49 50

Q34. If you have any of the following disabilities/special needs, please tick the boxes below. (tick all that apply)

☐ Dyslexia
☐ Significant hearing impairment
☐ Significant visual impairment (other than just wearing glasses)
☐ Mental health difficulties
☐ Diabetes, epilepsy or asthma
☐ Mobility difficulties

51-52
53-54
55-56

SECTION 5: ABOUT THE PRESSURES IN YOUR LIFE

Q35. To what extent would you say you were under pressure at this moment in time? (tick the box that best describes you)

☐4 I am under considerable pressure
☐3 I am under moderate pressure
☐2 I am under slight pressure
☐1 I am under no pressure at all

60*

Q36. During the past week, has anything worried you enough to distract you, or make you unable to concentrate or function as well as you normally would? (tick one box and follow the instructions given)

☐ Yes → **Answer Q37**
☐ No → **Go straight to Q38**

Q37. What single thing has worried you the most in the last week? (write in)

____

____

61 62

QUESTIONS 38-42, PLEASE ANSWER BOTH PARTS

Office use

Q38. Have you thought seriously of giving up the course because of pressures arising from...
(a) the course itself? ☐ Yes ☐ No
(b) other things going on in your life? ☐ Yes ☐ No
63

Q39. Have you actually taken time out from the course because of pressures arising from...
(a) the course itself? ☐ Yes ☐ No
(b) other things going on in your life? ☐ Yes ☐ No
64

Q40. Have you had significant absences from classroom sessions or lectures because of pressures arising from...
(a) the course itself? ☐ Yes ☐ No
(b) other things going on in your life? ☐ Yes ☐ No
65

Q41. Have you had significant absences from the clinical area because of pressures arising from...
(a) the course itself? ☐ Yes ☐ No
(b) other things going on in your life? ☐ Yes ☐ No
66

Q42. Have you missed submission dates or asked for extensions because of pressures arising from...
(a) the course itself? ☐ Yes ☐ No
(b) other things going on in your life? ☐ Yes ☐ No
67

SECTION 6: DEALING WITH THE PRESSURES IN YOUR LIFE

Q43. Please indicate, by ticking the appropriate box in each case, the extent to which you currently...

	NEVER	RARELY	SOMETIMES	FREQUENTLY	Office use
...smoke cigarettes	☐1	☐2	☐3	☐4	80*
...drink alcohol	☐1	☐2	☐3	☐4	81
...use cannabis/marijuana	☐1	☐2	☐3	☐4	82
...use amphetamines ('speed')	☐1	☐2	☐3	☐4	83
...use other 'recreational' drugs	☐1	☐2	☐3	☐4	84
...take anti-depressants	☐1	☐2	☐3	☐4	85
...take anti-anxiety medication	☐1	☐2	☐3	☐4	86
...use medication to help you sleep	☐1	☐2	☐3	☐4	87

Q44. When under pressure, do you use any of the following to help you cope? (tick appropriate box in each case)

Office use

...cigarettes	☐1 Yes	☐0 No	90*
...alcohol	☐1 Yes	☐0 No	91
...cannabis/marijuana	☐1 Yes	☐0 No	92
...amphetamines ('speed')	☐1 Yes	☐0 No	93
...other 'recreational' drugs	☐1 Yes	☐0 No	94
...anti-depressants	☐1 Yes	☐0 No	95
...anti-anxiety medication	☐1 Yes	☐0 No	96
...medication to help you sleep	☐1 Yes	☐0 No	97

Q45. Below is a list of sources of support available to you as a student.

Go through the list and indicate, by ticking the box to the left of the item, which sources of support you have used since starting your programme of study.

Then, for each source of support you've used, rate (by ticking the appropriate box) how helpful you've found that particular source of support.

USED?	HOW HELPFUL? extremely	somewhat	a little	not at all	
☐ Your personal tutor/teacher	☐4	☐3	☐2	☐1	100*
☐ Any other teacher in the School	☐4	☐3	☐2	☐1	101
☐ A member of the clinical staff	☐4	☐3	☐2	☐1	102
☐ International Society	☐4	☐3	☐2	☐1	103
☐ The student council (Gateway House)	☐4	☐3	☐2	☐1	104
☐ The student union (Oxford Road)	☐4	☐3	☐2	☐1	105
☐ Student Liaison Officer	☐4	☐3	☐2	☐1	106
☐ Accommodation Office	☐4	☐3	☐2	☐1	107
☐ Trade union (RCN, RCM, Unison)	☐4	☐3	☐2	☐1	108
☐ Your friends	☐4	☐3	☐2	☐1	109
☐ Your peers/other students	☐4	☐3	☐2	☐1	110
☐ Your family	☐4	☐3	☐2	☐1	111
☐ The School's counsellor (Gateway House)	☐4	☐3	☐2	☐1	112
☐ A University counsellor (Precinct Centre)	☐4	☐3	☐2	☐1	113
☐ Any other counsellor/therapist	☐4	☐3	☐2	☐1	114
☐ Occupational Health (Gateway House)	☐4	☐3	☐2	☐1	115
☐ Occupational Health (Oxford Road)	☐4	☐3	☐2	☐1	116

list continued opposite

USED?	HOW HELPFUL? extremely	somewhat	a little	not at all	Office use
☐ The Student Health Service (Oxford Road)	☐4	☐3	☐2	☐1	☐ 117
☐ Your GP	☐4	☐3	☐2	☐1	☐ 118
☐ Religious organisation/priest/vicar	☐4	☐3	☐2	☐1	☐ 119
☐ English Language Teaching Unit	☐4	☐3	☐2	☐1	☐ 120
☐ Nightline/Samaritans/Telephone Helpline	☐4	☐3	☐2	☐1	☐ 121
☐ Central Academic Advisory Service	☐4	☐3	☐2	☐1	☐ 122

Q46. To what extent would you consider consulting each of the following for support in the future? (in each case, tick the appropriate box)

	CONSIDER CONSULTING IN THE FUTURE? definitely	probably	might	would not	
Your personal tutor/teacher	☐4	☐3	☐2	☐1	☐ 130*
Any other teacher in the School	☐4	☐3	☐2	☐1	☐ 131
A member of the clinical staff	☐4	☐3	☐2	☐1	☐ 132
International Society	☐4	☐3	☐2	☐1	☐ 133
The student council (Gateway House)	☐4	☐3	☐2	☐1	☐ 134
The student union (Oxford Road)	☐4	☐3	☐2	☐1	☐ 135
Student Liaison Officer	☐4	☐3	☐2	☐1	☐ 136
Accommodation Office	☐4	☐3	☐2	☐1	☐ 137
Trade union (RCN, RCM, Unison)	☐4	☐3	☐2	☐1	☐ 138
Your friends	☐4	☐3	☐2	☐1	☐ 139
Your peers/other students	☐4	☐3	☐2	☐1	☐ 140
Your family	☐4	☐3	☐2	☐1	☐ 141
The School's counsellor (Gateway House)	☐4	☐3	☐2	☐1	☐ 142
A University counsellor (Precinct Centre)	☐4	☐3	☐2	☐1	☐ 143
Any other counsellor/therapist	☐4	☐3	☐2	☐1	☐ 144
Occupational Health (Gateway House)	☐4	☐3	☐2	☐1	☐ 145
Occupational Health (Oxford Road)	☐4	☐3	☐2	☐1	☐ 146
The Student Health Service (Oxford Road)	☐4	☐3	☐2	☐1	☐ 147
Your GP	☐4	☐3	☐2	☐1	☐ 148
Religious organisation/priest/vicar	☐4	☐3	☐2	☐1	☐ 149
English Language Teaching Unit	☐4	☐3	☐2	☐1	☐ 150
Nightline/Samaritans/Telephone Helpline	☐4	☐3	☐2	☐1	☐ 151
Central Academic Advisory Service	☐4	☐3	☐2	☐1	☐ 152

PTO

NOW PLEASE COMPLETE THE BECK & SRIVASTAVA STRESS INVENTORY BELOW

The BSSI is an American instrument, designed specifically for health care workers. For each of the 44 items listed, rate how much the item affects you by circling a number from 1 to 5 (where 1=not stressful and 5=extremely stressful).

Office use

MODIFIED BECK & SRIVASTAVA STRESS INVENTORY (BSSI)

Adapted with permission. ©Beck & Srivastava 1992.

Below is a list of items that may be associated with stress among students such as you. For each item, please circle the rating that applies to YOU.

	ITEM	NOT STRESSFUL				EXTREMELY	Office use
1	Amount of classwork/material to be learned	1	2	3	4	5	160*
2	Difficulty of classwork/material to be learned	1	2	3	4	5	161
3	Examinations/assessments	1	2	3	4	5	162
4	Competition with or from peers	1	2	3	4	5	163
5	Attitudes/expectations of other professionals towards nurses	1	2	3	4	5	164
6	Long hours of study	1	2	3	4	5	165
7	Lack of free time	1	2	3	4	5	166
8	Departmental (the School's) responses to student needs	1	2	3	4	5	167
9	Flat/house/room mate relationships	1	2	3	4	5	168
10	Boy/girlfriend relationships	1	2	3	4	5	169
11	Alcohol usage*	1	2	3	4	5	170
12	Drug usage*	1	2	3	4	5	171
13	Cigarette usage*	1	2	3	4	5	172
14	Reconsiderations/doubts about nursing as a proper career choice	1	2	3	4	5	173
15	Reconsiderations/doubts about going to University	1	2	3	4	5	174
16	Fear of being removed from the course because of failure	1	2	3	4	5	175
17	Financial responsibilities	1	2	3	4	5	176
18	Pressures arising from marriage	1	2	3	4	5	177
19	Pressures of child care responsibilities	1	2	3	4	5	178
20	Pressures due to personal habits (procrastination, perfectionism, over commitment, tardiness, etc.)	1	2	3	4	5	179
21	Actual personal health problems	1	2	3	4	5	180

*Whether you find alcohol/drug/cigarette usage stressful, not the extent to which you use these substances.

	ITEM	NOT STRESSFUL			EXTREMELY		Office use
22	Physical health of other family members	1	2	3	4	5	181
23	Relationships with your parents	1	2	3	4	5	182
24	Other personal problems	1	2	3	4	5	183
25	Atmosphere created by teachers/lecturers	1	2	3	4	5	184
26	Relations with teachers/lecturers	1	2	3	4	5	185
27	Relations with other School staff	1	2	3	4	5	186
28	Too little responsibility	1	2	3	4	5	187
29	Too much responsibility	1	2	3	4	5	188
30	Lack of timely feedback about your performance	1	2	3	4	5	189
31	Difficulty in finding supportive academic/practice role models	1	2	3	4	5	190
32	Inadequacy of housing arrangements	1	2	3	4	5	191
33	Loneliness	1	2	3	4	5	192
34	Sex-related problems	1	2	3	4	5	193

The last ten items are to be answered by those students involved in clinical experiences.

	ITEM	NOT STRESSFUL			EXTREMELY		
35	Coping with illness and death of patients/clients	1	2	3	4	5	194
36	Talking to patients/clients about personal problems	1	2	3	4	5	195
37	Patient/client care responsibilities	1	2	3	4	5	196
38	Patient/client's attitude towards me	1	2	3	4	5	197
39	Patients/client's attitudes towards nursing	1	2	3	4	5	198
40	Atmosphere created by placement areas	1	2	3	4	5	199
41	Relations with staff in the clinical area	1	2	3	4	5	200
42	Feelings of adequacy related to clinical performance	1	2	3	4	5	201
43	Difficulty in learning clinical skills/procedures	1	2	3	4	5	202
44	Differences between the School's values and practice placement values	1	2	3	4	5	203

NOW PLEASE COMPLETE THE SF-12 BELOW.

The SF-12 is a standard measure of physical and psychological health. Please follow the instructions given.

Office use

SF-12 HEALTH SURVEY
(UK SF-12)

INSTRUCTIONS: This questionnaire asks for your views about your health, how you feel and how well you are able to do your usual activities.

Please answer every question by marking one box. If you are unsure about how to answer, please give the best answer you can.

1. In general would you say your health is:

☐5	☐4	☐3	☐2	☐1	☐
Excellent	**Very good**	**Good**	**Fair**	**Poor**	210*

The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	Yes, Limited A Lot	**Yes, Limited A Little**	**No, Not Limited At All**	
2. **Moderate activities**, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐1	☐2	☐3	☐ 211
3. Climbing **several** flights of stairs	☐1	☐2	☐3	☐ 212

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	YES	**NO**	
4. **Accomplished less** than you would like	☐1	☐2	☐ 213
5. Were limited in the **kind** of work or other activities	☐1	☐2	☐ 214

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	YES	**NO**	
6. **Accomplished less** than you would like	☐1	☐2	☐ 215
7. Were limited in the **kind** of work or other activities	☐1	☐2	☐ 216

8. During the past 4 weeks, how much did pain interefere with your normal work (including both work outside the home and housework)?

☐5 Not at all	☐4 A little bit	☐3 Moderately	☐2 Quite a bit	☐1 Extremely

Office use

☐ 217

These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks –

	All of the Time	Most of the Time	A Good Bit of Time	Some of the Time	A Little of the Time	None of the Time	Office use
9. Have you felt calm and peaceful?	☐6	☐5	☐4	☐3	☐2	☐1	☐ 218
10. Did you have a lot of energy?	☐6	☐5	☐4	☐3	☐2	☐1	☐ 219
11. Have you felt down--hearted and blue?	☐1	☐2	☐3	☐4	☐5	☐6	☐ 220

12. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

☐1 All of the time	☐2 Most of the time	☐3 Some of the time	☐4 A little of the time	☐5 None of the time

☐ 221

FURTHER RESEARCH

Some further research in this area is planned. In order to find out more about students' experiences of stress, some group interviews (focus groups) are planned (an external researcher, independent of the School, will conduct these interviews). The School is also considering setting up and evaluating some stress management training, and further questionnaires like this may also be sent out at a later date.

Would you be willing to participate in further research? (tick appropriate box, and follow the instructions given)

☐ No → **Return the questionnaires in the envelope provided. THANK YOU VERY MUCH FOR TAKING PART.**

☐ Yes → **Complete the slip below before returning the questionnaires in the envelope provided. THANK YOU VERY MUCH FOR TAKING PART.**

I'm interested in participating in: (tick all that apply)

☐ focus group/interview research
☐ stress management training research
☐ further surveys like this one

Office use

This page office use only

GHQ Method	230* 231	
CGHQ Method	232 233	
CISS Task subscale	234 235	236 237
CISS Emotion subscale	238 239	240 241
CISS Avoidance subscale	242 243	244 245
CISS Avoidance (Distraction)	246 247	248 249
CISS Avoidance (Social Diversion)	250 251	252 253

APPENDIX 2

Example of the Record Keeping Spreadsheet

Student Name	Current Cohort	ID No	1st req date	Methd	Back	2nd req date	Del Type	Compl Type	LA Out	LB Out	Outcome/Notes
		XX 001	08-May	IP		12-Jun					
		XX 002	08-May	IP	x	---	Dir	OwnT			
Student names and cohort		XX 003	08-May	IP	x	---	Dir	OwnT			
have been removed to		XX 004	08-May	IP	x	---	Dir	OwnT			
maintain confidentiality		XX 005	08-May	IP		12-Jun					
		XX 006	08-May	IP	x	---	Dir	OwnT	30-May		
XX in ID No list is a		XX 007	08-May	IP	x	---	Dir	OwnT			
two-figure number that		XX 008	08-May	IP	x	---	Dir	OwnT			
respresents a specific		XX 009	08-May	IP	x	---	Dir	OwnT	30-May		
cohort		XX 010	08-May	IP	x	---	Dir	OwnT		24-May	Seen - advice given
		XX 011	08-May	IP		12-Jun					
		XX 012	08-May	IP	x	---	Dir	OwnT	30-May		
	~~Discontinued~~	~~XX 013~~			---	---					
		XX 014	08-May	IP		12-Jun					

NOTES

1st req date = date of first request to take part
2nd req date = date of second request
LA/LB Out = Letter A/B sent, with date

Methd = delivery method (IP = in person)
Del Type = direct vs. indirect delivery

Back = completed return marked 'x'
Compl Type = completed in school vs. own time

APPENDIX 3
Final Version of the Questionnaire Pack

PART A Strictly Confidential

1	2	3	4	5

THE UNIVERSITY of MANCHESTER

School of Nursing, Midwifery and Health Visiting

STUDENT STRESS STUDY

Instructions:

This questionnaire pack contains two parts: Part A (this part), which contains questions specific to this particular study, and Part B which contains some standard questionnaires that are often used in stress research.

Please complete both parts, answering each question in sequence and carefully following any instructions given.

To ensure that the results are accurate, please answer the questions honestly. Remember that the responses you give are confidential: your responses will not be given to anyone under any circumstances.

Try not to write anything in the areas marked 'Office use'.

Any reference to 'programme of study' simple means the course that you are undertaking here in the School of Nursing, Midwifery and Health Visiting.

THANK YOU FOR TAKING PART

TODAY'S DATE

Office use

Q1. To begin, please write in today's date: ____ day ________ month ____ year

6 7

ABOUT YOUR PROGRAMME OF STUDY

Q2. Listed below are some details about your programme of study (course) and the cohort/group you are attached to for teaching and placement purposes.

STICKER CONTAINING PRECODED INFORMATION GOES HERE

Please check these details. In most cases they will be correct. However, if they are incorrect in any way, please alter the details accordingly.

8 9

☐ **Please tick here if you are currently interrupting your studies (taking time out) and the details above do not indicate this.**

10 11

Q3. Are you registered as a full time or part time student? (tick box)

Office use

☐1 Full time ☐2 Part time

12

Q4. What branch/specialty are you are pursuing? (tick box)

(If you are a final year BNurs student, indicate instead which branch you completed at the end of Year 3.)

☐1 Adult
☐2 Mental Health
☐3 Children's
☐4 Learning Disabilities
☐5 Midwifery
☐6 Not yet decided (BNurs students only)

13

Q5. <u>At the time of entry</u> to your current programme of study, which of the following educational qualifications did you possess? (tick <u>all</u> that apply and specify how many of each qualification you have, if asked)

☐ GCSE/O level passes (include CSE grade 1s) (how many? ______)
☐ SCE Ordinary/Standard grades (include Higher Band D) (how many? ______)
☐ GCE AS levels (how many? ______)
☐ GCE A levels (how many? ______)
☐ SCE Higher grades Bands A-C (how many?______)
☐ International Baccalaureate
☐ Open University credits (how many credits in total? ______)
☐ Pass on the UKCC DC test
☐ Kitemarked Access to Higher Education course
☐ NVQ/SVQ level 3 or GNVQ advanced level
☐ Existing nursing or midwifery qualifications
☐ Ordinary National Certificate/Diploma (ONC/OND)
☐ Higher National Certificate/Diploma (HNC/HND)
☐ Diploma of Higher Education (DipHE)
☐ First (Bachelor's) Degree
☐ Postgraduate qualifications (e.g. Masters Degree, PGCE)
☐ Any other qualifications (write in below)

14 15

____

Q6. Think about the jouney from your usual point of departure (your current address) to your <u>lectures and classroom sessions</u>.

<u>In general</u>, how much difficulty have you experienced getting to your lectures/classroom sessions? (tick the most appropriate box)

☐1 No difficulty at all
☐2 Hardly any difficulty
☐3 Some difficulty
☐4 A lot of difficulty

16

Q7. Have you had any clinical placements yet? (tick box and follow the instructions given)

☐ Yes → **Answer Q8**
☐ No → **Go straight to Q9**

Q8. Think about the jouney from your usual point of departure (your current address) to your placement areas.

In general, how much difficulty have you experienced getting to your placement areas? (tick the most appropriate box)

☐1 No difficulty at all
☐2 Hardly any difficulty
☐3 Some difficulty
☐4 A lot of difficulty

Office use

17

Q9. Think about the assessed tests, examinations, presentations, essays or assignments you have to complete as part of your programme of study.

Are any of these assessments due in the next 4 weeks? (tick box and follow the instructions given)

☐ Yes → **Answer Q10**
☐ No → **Go straight to Q11**

Q10. What assessments are due in the next 4 weeks?

List the assessment(s) due below. Space is provided for up to 4 entries. Don't forget to include Vivas (oral examinations) and Clinical Skills Examinations if any are due. In each case, indicate whether it is a first or second/third attempt (resit/retake) by ticking the appropriate box.

Name of assessment	Attempt	
1. ____________	☐ 1st	☐ 2nd/3rd
2. ____________	☐ 1st	☐ 2nd/3rd
3. ____________	☐ 1st	☐ 2nd/3rd
4. ____________	☐ 1st	☐ 2nd/3rd

18-19
20-21
22-23
24-25
26-27
28-29
30-31
32-33
34-35

ABOUT YOU

Q11. Your gender? (tick box)

☐1 Female ☐2 Male

41*

Q12. Your age? (write in) __________ years

42 43

Q13. Which of the following best describes your ethnic origin? (tick box)

Office use

☐1 White ☐4 Black, Other ☐7 Asian, Pakistani
☐2 Black, African ☐5 Chinese ☐8 Asian, Bangladeshi
☐3 Black, Caribbean ☐6 Asian, Indian ☐9 None of these

44 45

Before proceeding, please read these notes concerning 'household':

The term 'household' refers to the people who live with you. Your current household refers to your usual living arrangements whilst studying here, i.e. your term-time arrangements.

If you live alone, then you alone constitute the household.

If you live with other people, the household includes yourself and those people living with you, (whether you're related to them or not). However, unless these people either (a) share daily meals with you, or (b) share common living accommodation (e.g. a sitting or living room) with you, you should count yourself as living alone.

For the purposes of this study, the 'head of the household' is the person you deem to be the head.

Q14. Now think about your household immediately before you commenced your current programme of study here in Manchester.

Write below the occupation of the head of your household at the time. If they were retired or not in paid employment at the time, write in their most recent occupation instead.

Occupation of the head of the household ______________________

____

Q15. And do any of the following apply to that person? (tick all that apply)

☐ self-employed/the owner of a business, with no paid employees
☐ self-employed/the owner of a business, with paid employees
☐ a supervisor/foreman/chargehand
☐ a manager

46

Q16. How many adults (persons aged 16 or above), including yourself, are there in your current household? (tick box and follow the instructions given)

☐ 1 (i.e. just yourself) → **Go straight to Q19**
☐ 2 or more adults → **Answer Q17 and Q18**

Q17. Does your spouse/partner (husband, wife, girlfriend or boyfriend) form part of your current household? (tick box)

☐ Yes ☐ No

Q18. Do any of the adults in your current household wholly or partly depend on you for care needs? (tick box)

☐1 Yes ☐2 No

47

Office use

Q19. Are there any children (aged 15 and under) for whom you are wholly or partly responsible in your current household? (tick box and follow the instructions given)

☐ Yes → **Answer Q20**
☐ No → **Go straight to Q21**

Q20. Are any of these children of pre-school age? (tick box)

☐ Yes ☐ No

48 49

Q21. In what type of accommodation are you living at the moment? (tick box)

☐1 Nurses' home
☐2 University halls of residence
☐3 House or bungalow
☐4 Flat or maisonette
☐5 Some other accommodation type (specify ______________________________)

50

Q22. And in what way do you occupy this accommodation? (tick box)

☐1 You own it outright
☐2 You are buying it with a mortgage or loan
☐3 Through a 'shared ownership' scheme (part rent/part mortgage)
☐4 You pay rent or board (whether to a landlord, relatives or friends)
☐5 You live rent free (but not squatting)
☐6 You squat

51

Q23. Which of the following best describes your familiarity with the Manchester area prior to you undertaking your current programme of study? (tick box)

☐4 I was very familiar with the Manchester area
☐3 I knew the Manchester area fairly well
☐2 I had a vague knowledge of the Manchester area
☐1 I didn't know the Manchester area at all

52

Q24. Do you undertake any paid work in addition to your studies? (tick box and follow the instructions given)

☐ Yes → **Answer Q25**
☐ No → **Go straight to Q26**

Q25. On average, approximately how many hours per week do you undertake paid work in addition to your studies? (write in) __________ hours per week

53 54

Office use

Q26. Were you already on the UKCC register (i.e. already a qualified nurse) prior to undertaking your current studies? (tick box and follow the instructions given)

☐ Yes → **Answer Q27**
☐ No → **Go straight to Q28**

Q27. For approximately how many years have you practised as a qualified nurse? (write in) __________ years

55 56

Q28. If you have any of the following disabilities/special needs, please tick the appropriate boxes below. (tick all that apply)

57-58
59-60
61-62
63

☐ Dyslexia
☐ Mental health difficulties
☐ Significant hearing problems
☐ Diabetes, epilepsy or asthma
☐ Partially sighted
☐ Mobility difficulties
☐ Some other disability (specify ______________________________)

ABOUT THE PRESSURES IN YOUR LIFE

Q29. To what extent would you say you were under pressure at this moment in time? (tick box)

☐1 I am under no pressure at this moment in time
☐2 I am under slight pressure at this moment in time
☐3 I am under moderate pressure at this moment in time
☐4 I am under considerable pressure at this moment in time

71*

Q30. Since starting your programme of study, what proportion of the pressures in your life have arisen directly from your programme of study and what proportion have arisen from other things going in your life? (tick box)

☐1 All of the pressures have arisen from my programme of study
☐2 Most of the pressures have arisen from my programme of study
☐3 The pressures have arisen equally from my programme of study and from the other things going on in my life
☐4 Most of the pressures have arisen from the other things going on in my life
☐5 All of the pressures have arisen from the other things going on in my life

72

Q31. Since commencing your programme of study have you seriously thought of dropping out from the programme? (tick box)

☐1 Yes ☐2 No

73

Q32. Have you actually taken time out from your studies since you commenced your programme of study? (tick box)

☐1 Yes ☐2 No

74

Q33. Have you had significant absences from classroom sessions or lectures since you commenced your programme of study? (tick box)

☐1 Yes ☐2 No

75

Q34. Have you had <u>significant</u> absences from <u>the clinical area</u> since you commenced your programme of study? (tick box)

☐ 1 Yes ☐ 2 No

Office use

76

Q35. Have you <u>missed submission dates or asked for extensions</u> on any of your assessments since commencing your programme of study? (tick box)

☐ 1 Yes ☐ 2 No

77

Q36. <u>When under pressure</u>, to what extent do you use the following... (tick the most appropriate box in each case)

	HOW MUCH YOU USE WHEN UNDER PRESSURE				Office use
	not at all	no more than usual	a lot more than usual	to a great extent	
...cigarettes?	☐ 1	☐ 2	☐ 3	☐ 4	78
...alcohol?	☐ 1	☐ 2	☐ 3	☐ 4	79
...cannabis/marijuana?	☐ 1	☐ 2	☐ 3	☐ 4	80
...amphetamines ('speed')?	☐ 1	☐ 2	☐ 3	☐ 4	81
...other 'recreational' drugs?	☐ 1	☐ 2	☐ 3	☐ 4	82
...anti-depressants?	☐ 1	☐ 2	☐ 3	☐ 4	83
...anti-anxiety medication?	☐ 1	☐ 2	☐ 3	☐ 4	84
...medication (other than alcohol) to help you sleep?	☐ 1	☐ 2	☐ 3	☐ 4	85

Q37. Below (and continued overleaf) is a list of the support mechanisms available to you as a student.

At this point, I don't want to know if you've actually used any of these support mechanisms, but the <u>likelihood</u> of you using each of them if you found yourself under pressure in the future. In each case, indicate the likelihood of use by ticking the appropriate box.

	LIKELIHOOD OF USING IN THE FUTURE				Office use
	would not	might	probably would	definitely would	
Your <u>current</u> personal teacher	☐ 1	☐ 2	☐ 3	☐ 4	86
Any other teacher in the School	☐ 1	☐ 2	☐ 3	☐ 4	87
A member of the clinical staff	☐ 1	☐ 2	☐ 3	☐ 4	88
The Student Council (Gateway House)	☐ 1	☐ 2	☐ 3	☐ 4	89
The Student Union (Oxford Road)	☐ 1	☐ 2	☐ 3	☐ 4	90
The Student Liaison Officer	☐ 1	☐ 2	☐ 3	☐ 4	91
Your friends	☐ 1	☐ 2	☐ 3	☐ 4	92
Your peers/other students	☐ 1	☐ 2	☐ 3	☐ 4	93
Your family	☐ 1	☐ 2	☐ 3	☐ 4	94
The School Counsellor (Gateway House)	☐ 1	☐ 2	☐ 3	☐ 4	95

Q37. (continued)

	LIKELIHOOD OF USING IN THE FUTURE				Office use
	would not	might	probably would	definitely would	
A University Counsellor (Oxford Road)	☐1	☐2	☐3	☐4	☐ 96
Any other counsellor/therapist	☐1	☐2	☐3	☐4	☐ 97
Occupational Health (Gateway House)	☐1	☐2	☐3	☐4	☐ 98
Student Health Centre (Oxford Road)	☐1	☐2	☐3	☐4	☐ 99
Your GP	☐1	☐2	☐3	☐4	☐ 100
Religious organisation/priest/vicar	☐1	☐2	☐3	☐4	☐ 101
The International Society	☐1	☐2	☐3	☐4	☐ 102
English Language Unit	☐1	☐2	☐3	☐4	☐ 103
Nightline/Samaritans/Telephone Helpline	☐1	☐2	☐3	☐4	☐ 104
Central Academic Advisory Service	☐1	☐2	☐3	☐4	☐ 105
Accommodation Office	☐1	☐2	☐3	☐4	☐ 106
Trade Union (RCN/RCM/Unison)	☐1	☐2	☐3	☐4	☐ 107

FOLLOW-UP SUPPORT

Q38. The School has an obligation to support its students, particularly those who are under undue pressure or who are struggling to cope. It is possible, from some of the questions in this study, to identify such students.

If your responses indicate that you are under undue pressure or are struggling to cope, I will contact you <u>in absolute confidence</u> to discuss the support options available, <u>unless you indicate otherwise below</u>.

☐ 108

☐ **<u>Important</u>: Tick here if you <u>do not</u> wish to be contacted in these circumstances.**

☐ 109

FURTHER RESEARCH

Q39. In order to find out more about students' experiences of stress, some further research in this area may take place.

Would you be interested in taking part in further research on student stress?

☐1 Yes ☐2 No

☐ 110

☐ 111

THANK YOU FOR COMPLETING PART A.
NOW COMPLETE PART B OF THIS QUESTIONNAIRE PACK.

PART B | **Strictly Confidential**

School of Nursing, Midwifery and Health Visiting

THE UNIVERSITY of MANCHESTER

STUDENT STRESS STUDY

PART B: FORMAL MEASURES

Inside this part, you will find 4 formal measures for you to complete. These measures are frequently used in stress research.

The GHQ-12 (gold)

The General Health Questionnaire (GHQ-12) is a standard instrument for measuring general health.

The CISS-Adult (blue)

The Coping Inventory for Stressful Situations (CISS-Adult) is an American instrument that explores the ways in which people deal with stressful situations.

The SF-12 (pink)

The SF-12 is a standard measure of physical and psychological health.

The Student Nurse Stress Index (green)

The Student Nurse Stress Index is a tool designed specifically for measuring the stresses that affect student nurses and midwives.

PLEASE FOLLOW THE INSTRUCTIONS GIVEN ON EACH.

RETURNING THE QUESTIONNAIRES

Once you have completed these questionnaires, seal Part A and Part B in the envelope provided.

If it is not collected in person, hand it in to Reception at your base site (Gateway House or Coupland III). Alternatively, it may be sent Freepost via the Royal Mail. No stamp is required.

THANK YOU VERY MUCH FOR YOUR TIME

THIS PAGE IS INTENTIONALLY BLANK

GENERAL HEALTH QUESTIONNAIRE

GHQ-12

Please read this carefully:

We should like to know if you have had any medical complaints, and how your health has been in general, *over the past few weeks*. Please answer ALL the questions simply by underlining the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those you had in the past. It is important that you try to answer ALL the questions.

Thank you very much for your co-operation.

HAVE YOU RECENTLY:

1	- been able to concentrate on whatever you're doing?	Better than usual	Same as usual	Less than usual	Much less than usual
2	- lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
3	- felt that you are playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less useful
4	- felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less capable
5	- felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
6	- felt you couldn't overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual
7	- been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual
8	- been able to face up to your problems?	More so than usual	Same as usual	Less able than usual	Much less able
9	- been feeling unhappy and depressed?	Not at all	No more than usual	Rather more than usual	Much more than usual
10	- been losing confidence in yourself?	Not at all	No more than usual	Rather more than usual	Much more than usual
11	- been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
12	- been feeling reasonably happy, all things considered?	More so than usual	About same as usual	Less so than usual	Much less than usual

CISS – Adult	**by Norman S. Endler, Ph.D., F.R.S.C. & James D.A. Parker, Ph.D.**

Instructions: The following are ways people react to various difficult, stressful or upsetting situations. Please circle a number from 1 to 5 for each item. Indicate how much you engage in these types of activities when you encounter a difficult, stressful or upsetting situation.

	Not at all				**Very Much**
1. Schedule my time better.	1	2	3	4	5
2. Focus on the problem and see how I can solve it.	1	2	3	4	5
3. Think about the good times I've had.	1	2	3	4	5
4. Try to be with other people.	1	2	3	4	5
5. Blame myself for procrastinating (putting things off).	1	2	3	4	5
6. Do what I think is best.	1	2	3	4	5
7. Become preoccupied with aches and pains.	1	2	3	4	5
8. Blame myself for having gotten into this situation.	1	2	3	4	5
9. Window shop.	1	2	3	4	5
10. Outline my priorities.	1	2	3	4	5
11. Try to go to sleep.	1	2	3	4	5
12. Treat myself to a favorite food or snack.	1	2	3	4	5
13. Feel anxious about not being able to cope.	1	2	3	4	5
14. Become very tense.	1	2	3	4	5
15. Think about how I solved similar problems.	1	2	3	4	5
16. Tell myself that it is really not happening to me.	1	2	3	4	5
17. Blame myself for being too emotional about the situation.	1	2	3	4	5
18. Go out for a snack or meal.	1	2	3	4	5
19. Become very upset.	1	2	3	4	5
20. Buy myself something.	1	2	3	4	5
21. Determine a course of action and follow it.	1	2	3	4	5
22. Blame myself for not knowing what to do.	1	2	3	4	5
23. Go to a party.	1	2	3	4	5
24. Work to understand the situation.	1	2	3	4	5
25. "Freeze" and not know what to do.	1	2	3	4	5
26. Take corrective action immediately.	1	2	3	4	5
27. Think about the event and learn from my mistakes.	1	2	3	4	5
28. Wish that I could change what had happened or how I felt.	1	2	3	4	5
29. Visit a friend.	1	2	3	4	5
30. Worry about what I am going to do.	1	2	3	4	5

PTO

CISS – Adult (continued)

	Not at all				Very Much
31. Spend time with a special person.	1	2	3	4	5
32. Go for a walk.	1	2	3	4	5
33. Tell myself that it will never happen again.	1	2	3	4	5
34. Focus on my general inadequacies.	1	2	3	4	5
35. Talk to someone whose advice I value.	1	2	3	4	5
36. Analyze the problem before reacting.	1	2	3	4	5
37. Phone a friend.	1	2	3	4	5
38. Get angry.	1	2	3	4	5
39. Adjust my priorities.	1	2	3	4	5
40. See a movie.	1	2	3	4	5
41. Get control of the situation.	1	2	3	4	5
42. Make an extra effort to get things done.	1	2	3	4	5
43. Come up with several different solutions.	1	2	3	4	5
44. Take some time off and get away from the situation.	1	2	3	4	5
45. Take it out on other people.	1	2	3	4	5
46. Use the situation to prove that I can do it.	1	2	3	4	5
47. Try to be organized so that I can be on top of the situtaion.	1	2	3	4	5
48. Watch TV.	1	2	3	4	5

Office Use

SF-12 HEALTH SURVEY
(UK SF-12)

INSTRUCTIONS: This questionnaire asks for your views about your health, how you feel and how well you are able to do your usual activities.

Please answer every question by marking one box. If you are unsure about how to answer, please give the best answer you can.

1. In general would you say your health is:

☐5	☐4	☐3	☐2	☐1	
Excellent	**Very good**	**Good**	**Fair**	**Poor**	☐ 251*

The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	Yes, Limited A Lot	**Yes, Limited A Little**	**No, Not Limited At All**	
2. **Moderate activities**, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐1	☐2	☐3	☐ 252
3. Climbing **several** flights of stairs	☐1	☐2	☐3	☐ 253

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	YES	**NO**	
4. **Accomplished less** than you would like	☐1	☐2	☐ 254
5. Were limited in the **kind** of work or other activities	☐1	☐2	☐ 255

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

		YES	NO	Office use
6.	**Accomplished less** than you would like	☐$_1$	☐$_2$	☐ 256
7.	Were limited in the **kind** of work or other activities	☐$_1$	☐$_2$	☐ 257

8. During the past 4 weeks, how much did pain interefere with your normal work (including both work outside the home and housework)?

☐$_5$	☐$_4$	☐$_3$	☐$_2$	☐$_1$	
Not at all	**A little bit**	**Moderately**	**Quite a bit**	**Extremely**	☐ 258

These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks –

		All of the Time	**Most of the Time**	**A Good Bit of Time**	**Some of the Time**	**A Little of the Time**	**None of the Time**	
9.	Have you felt calm and peaceful?	☐$_6$	☐$_5$	☐$_4$	☐$_3$	☐$_2$	☐$_1$	☐ 259
10.	Did you have a lot of energy?	☐$_6$	☐$_5$	☐$_4$	☐$_3$	☐$_2$	☐$_1$	☐ 260
11.	Have you felt down--hearted and blue?	☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$	☐$_6$	☐ 261

12. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

☐$_1$	☐$_2$	☐$_3$	☐$_4$	☐$_5$	
All of the time	**Most of the time**	**Some of the time**	**A little of the time**	**None of the time**	☐ 262

STUDENT NURSE STRESS INDEX

Office use

Below is a list of items that may be associated with stress among students such as yourself.

Think of real events which have occurred in the past month in your role as a student. For each item, please circle the rating (1=Not Stressful and 5=Extremely Stressful) that applies to YOU.

	ITEM	NOT STRESSFUL				EXTREMELY STRESSFUL	Office use
1	Amount of classwork material to be learned	1	2	3	4	5	271*
2	Difficulty of classwork material to be learned	1	2	3	4	5	272
3	Examinations/assessments	1	2	3	4	5	273
4	Peer competition	1	2	3	4	5	274
5	Attitudes/expectations of other professionals towards nursing	1	2	3	4	5	275
6	Lack of free time	1	2	3	4	5	276
7	The School's responses to student needs	1	2	3	4	5	277
8	Fear of failing the course	1	2	3	4	5	278
9	Actual personal health problems	1	2	3	4	5	279
10	Physical health of other family members	1	2	3	4	5	280
11	Relationships with parents	1	2	3	4	5	281
12	Other personal problems	1	2	3	4	5	282
13	Relations with other professionals	1	2	3	4	5	283
14	Too much responsibility	1	2	3	4	5	284
15	Lack of timely feedback about performance	1	2	3	4	5	285

Answer the following questions from your reflections on your clinical experience

	ITEM	NOT STRESSFUL				EXTREMELY STRESSFUL	Office use
16	Patient/client attitudes towards me	1	2	3	4	5	286
17	Patient/client attitudes towards my profession	1	2	3	4	5	287
18	Atmosphere created by teaching staff	1	2	3	4	5	288
19	Relations with staff in the clinical area	1	2	3	4	5	289

Other academic and related items:

	ITEM	NOT STRESSFUL				EXTREMELY STRESSFUL	Office use
20	I am not sure what is expected of me	1	2	3	4	5	290
21	I have no time for entertainment	1	2	3	4	5	291
22	I do not have enough time for my family	1	2	3	4	5	292

STUDENT NURSE STRESS INDEX (continued) | Office use

Additional items:

	ITEM	NOT STRESSFUL				EXTREMELY STRESSFUL	Office use
23	Worries regarding clinical competence	1	2	3	4	5	293
24	Interpersonal conflict with other nurses on placement	1	2	3	4	5	294
25	Lecture material delivered too quickly	1	2	3	4	5	295
26	Not being able to understand clinical charts on the wards	1	2	3	4	5	296
27	Having an outside job	1	2	3	4	5	297
28	Parking difficulties	1	2	3	4	5	298
29	Having no idea of future career prospects	1	2	3	4	5	299
30	Receiving clinical instruction in School	1	2	3	4	5	300
31	Living away from home	1	2	3	4	5	301
32	Being assessed in the School's clinical skills laboratories	1	2	3	4	5	302
33	Administering medication on placement	1	2	3	4	5	303
34	Travelling time to placements	1	2	3	4	5	304
35	Death of a patient	1	2	3	4	5	305
36	Lack of control of class by lecturer	1	2	3	4	5	306
37	Forgetting to carry out an important clinical procedure	1	2	3	4	5	307
38	Performing certain clinical procedures	1	2	3	4	5	308
39	Having to move residences	1	2	3	4	5	309
40	Administering injections	1	2	3	4	5	310
41	Interpersonal problems with patients	1	2	3	4	5	311
42	Crowded classrooms	1	2	3	4	5	312
43	Problem based learning	1	2	3	4	5	313
44	Working with HIV and AIDS	1	2	3	4	5	314
45	Fear of carrying out a clinical procedure incorrectly	1	2	3	4	5	315
46	Speaking in class	1	2	3	4	5	316
47	Timetable errors	1	2	3	4	5	317
48	Talking with medical staff on placement	1	2	3	4	5	318
49	Managing bursary	1	2	3	4	5	319
50	Settling into new clinical placements	1	2	3	4	5	320
51	Specific administrative issues in School	1	2	3	4	5	321
52	Supernumerary status on placement	1	2	3	4	5	322

STUDENT NURSE STRESS INDEX (continued)

Office use

	ITEM	NOT STRESSFUL				EXTREMELY STRESSFUL	
53	Not understanding medical terms in the clinical setting	1	2	3	4	5	323
54	Concerns regarding the care given to patients	1	2	3	4	5	324
55	Not being able to finish everything I need to do	1	2	3	4	5	325
56	Insufficient time in curriculum for biosciences material	1	2	3	4	5	326
57	Being accepted by peers	1	2	3	4	5	327
58	Not understanding biosciences material	1	2	3	4	5	328
59	Feelings of getting in the way when on placement	1	2	3	4	5	329
60	Lack of emotional support from the School	1	2	3	4	5	330
61	Group work learning	1	2	3	4	5	331
62	Lack of knowledge regarding a clinical speciality	1	2	3	4	5	332
63	Dealing with the School administration	1	2	3	4	5	333
64	Not being able to contact own relatives for support	1	2	3	4	5	334
65	Not knowing what a patient should be told regarding their treatment/condition	1	2	3	4	5	335
66	Not being able to hear lecturer	1	2	3	4	5	336
67	Not knowing what to expect in a clinical placement	1	2	3	4	5	337
68	Travelling time to the School	1	2	3	4	5	338
69	Causing pain to a patient	1	2	3	4	5	339
70	Finding suitable accommodation	1	2	3	4	5	340
71	Living in residences	1	2	3	4	5	341
72	Conflict between work and home	1	2	3	4	5	342

This page office use only

Raw GHQ scores (Likert)		201* 202
		203 204
		205 206
		207 208
		209 210
		211 212
CISS Task subscale	Adult	221* 222
	College	223 224
CISS Emotion subscale	Adult	225 226
	College	227 228
CISS Avoidance subscale	Adult	229 230
	College	231 232
CISS Avoidance (Distraction)	Adult	233 234
	College	235 236
CISS Avoidaince (Social Diversion)	Adult	237 238
	College	239 240

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APPENDIX 4

Participant Information Leaflet

(Participants received this text as a blue four-sided A5 booklet. Certain personal information has been blocked out merely for reasons of confidentiality.)

University of Manchester
School of Nursing, Midwifery & Health Visiting

STUDENT STRESS STUDY

Spring 2000

INFORMATION FOR PARTICIPANTS

(Please keep this leaflet)

Who's carrying out the study?

I am <u>Steven Pryjmachuk</u>, a Mental Health Teacher at Gateway House.

I am carrying out the study in my role as a PhD student (the study is my PhD research project), not in my role as a Nurse Teacher. The study is being supervised by Dr David Richards and Professor Tony Butterworth and has the backing of the School's senior management. The study has also received ethical approval.

Why is the study taking place and why should I take part?

There is some suggestion that student nurses and midwives are increasingly finding themselves under pressure. Unfortunately, little research evidence exists to back up this suggestion. This lack of research and the School's commitment to the welfare of its students have given rise to the study.

By taking part in the study, you can help the School discover the extent to which its students are under pressure, the causes of these pressures and, importantly, whether the support mechanisms the School provides are both appropriate and adequate. You can help shape the future of nurse and midwifery education at this University and possibly further afield. Your views and experiences will lead to enhancements in student support and may even result in changes in the way programmes are delivered.

Do I have to take part?

<u>No</u>, though I hope the information in this leaflet will persuade you of the value of taking part. The School wants as complete a picture as possible; consequently, all pre-registration student nurses and midwives are being asked to take part. The more students who take part in the study, the clearer the picture will be.

Are my responses confidential?

<u>Absolutely</u>. Your individual responses will remain confidential to the study and will not be released to <u>anyone</u> under <u>any</u> circumstances. Nor will your responses be associated with your course records in any way.

Are my responses anonymous? Can I be identified?

Though your name is not required, you will see, in the top right-hand corner of Part A of the questionnaire, a 5-figure ID number. A list exists that enables me to identify you from this number if the need arises. <u>I am the only person in the School allowed to have access to this list</u>. A condition of the study is that I have to keep this list separate from the questionnaires and it has to be stored securely under lock and key.

<u>In short, your responses are - and will remain - anonymous unless I alone need to identify you</u>.

Why would you want to identify me?

So I can contact you again if I need to. I may need to contact you again if:

- your responses suggest that you are under a great deal of pressure or that you are struggling to cope.

In these circumstances, I would like to be able to check that the School is doing as much as it can to support you. Any such contact will be in <u>absolute confidence</u> and with the sole aim of ensuring that you're aware of the support services available to you. <u>I will not contact you, however, if you indicate on the questionnaire that you do not wish me to</u>.

- you've expressed an interested in taking part in further research.

You will be asked, at the end of Part A, if you're interested in participating in further research. If you agree, I may write to you in the future offering you the chance to take part.

What happens to the questionnaires once they're returned?

Your responses will be coded and the coded data entered into a computer. Though I can identify you from your ID number, I am not allowed to store you name or contact details on the computer. At the end of the study (some time during 2001), the questionnaires and the ID number list will be destroyed.

How can I find out more?

If you've any further questions or want to find out more about the study, please don't hesitate to contact me.

You can find me in Room [redacted], Gateway House.

Telephone: [redacted]

Pager: [redacted]

E-mail: [redacted]

Finally, remember that if, at any time, you feel under undue pressure, you can always speak, <u>in absolute confidence, to your personal teacher, your</u> GP, the School's Counsellor ([redacted], 0161 [redacted]), the University Counselling Service (0161 275 2864) or Occupational Health (0161 237 2919).

APPENDIX 5

Follow-up Letter A

(Originally on official School of Nursing, Midwifery and Health Visiting notepaper. Certain personal information has been blocked out merely for reasons of confidentiality.)

Direct Dial [redacted]
E-mail [redacted]

Date:

Dear

Student Stress Study

Thank you very much for taking part in the student stress study.

When you completed the questionnaires, your responses suggest that you may well have been under a lot of pressure and/or having some difficulty coping at the time. However, you also indicated that you have someone to turn to when under pressure – whether it's a member of your family, one of your friends, your GP, or someone in the School or the University (like a member of staff or a counsellor).

I am glad that you have identified someone to whom you can turn to and, as a consequence, I will not contact you again unless you decide that you would like to speak to me directly about the levels of stress you are, or have been, experiencing. If so, I am more than willing to make some time for you. My contact details are given below.

Please get hold of me if you want to discuss things further. Alternatively, you can always speak, in confidence, to your personal teacher, your GP, the School's Counsellor ([redacted], 0161 [redacted]), the University Counselling Service (0161 275 2864) or Occupational Health (0161 237 2919).

As a final point, although it is normal practice to keep a copy of letters sent to students in their student records, the confidentiality of this study means that a copy of this letter will <u>not</u> be lodged in your student records, nor seen by anyone else.

Thank you again for taking part.

Best wishes

Steven Pryjmachuk
PhD Student

Room [redacted], Gateway House
Telephone: [redacted]
E-mail: [redacted]

APPENDIX 6

Follow-up Letter B

(Originally on official School of Nursing, Midwifery and Health Visiting notepaper. Certain personal information has been blocked out merely for reasons of confidentiality.)

Direct Dial [redacted]
E-mail [redacted]

Date:

Dear

Student Stress Study

Thank you very much for completing the student stress questionnaires. After having a look at your responses, it seems that you may be under quite a lot of pressure and/or having some difficulty coping.

People deal with pressures in all sorts of different ways and it may be that you're managing as you are or that you've sorted out your own support. However, if you are wondering what to do or where to turn, then I am more than willing to have a confidential chat with you over the telephone or in person. Alternatively, you can always speak in confidence to your personal teacher, your GP, the School's Counsellor ([redacted], 0161 [redacted]), the University Counselling Service (0161 275 2864) or Occupational Health (0161 237 2919).

On the tear-off slip below, you'll see a number of options. It would be most helpful if you'd indicate which of the options you want to take and return the slip to me (using the Freepost address given below) as soon as you can. This slip will also serve as confirmation that you have received this letter.

Finally, although it is normal practice to keep a copy of letters sent to students in their student records, the confidentiality of this study means that a copy of this letter will not be lodged in your student records, nor seen by anyone else.

Thank you again for taking part.

Best wishes

Steven Pryjmachuk
PhD Student
Room [redacted], Gateway House. Telephone: [redacted]. Pager: [redacted]
E-mail: [redacted]

Return to Steven Pryjmachuk, SoNMHV, University of Manchester, FREEPOST MR4736, Gateway House, Piccadilly South, MANCHESTER M60 7LP. *No stamp is needed.*

Name .... Study ID No: ....

Tick one box only

☐ I don't need to speak to you as I'm managing things my own way.
☐ I'd like some advice/support, please ring me on the following no. .... (insert your tel. no. here)
☐ I'd like some advice/support and have noted your contact details, but leave it up to me to contact you*.

** If you choose this option and I haven't heard from you in one month's time, I will write to you again.*

APPENDIX 7

Covering Letter for Mailed-out Questionnaire Packs

(Originally on official School of Nursing, Midwifery and Health Visiting notepaper. Certain personal information has been blocked out merely for reasons of confidentiality.)

Direct Dial [redacted]
E-mail

Spring/Summer 2000

Dear Student

Student Stress Study

I am a Nurse Teacher in the School, but am writing to you not in my capacity as a member of staff, but in my capacity as a PhD (research) student.

For my PhD, I am conducting research into stress among pre-registration students in the School. To gain an accurate picture, I am asking all pre-registration students to take part. I have managed to ask most students to take part whilst they were actually on school premises but, for one reason or other, I have been unable to ask you in person.

To this end, I enclose a set of questionnaires that I would ask if you would be kind enough to complete. The questionnaires are self-explanatory and should take you no more than half-an-hour to complete. Once completed, return them to me in the Freepost envelope provided (there is no need to put a stamp on this envelope as the postage will be paid for you).

Please read the enclosed blue information leaflet, which tells you more about the study. If you have any further questions, do not hesitate to contact me.

Complete these questionnaires even if you are interrupting your studies (taking time out). If you have left the course for good, there is no need to fill in or return the questionnaires though I would be grateful if you would return the slip below to me (you can use the Freepost envelope supplied) so that I can update my records.

Thank you very much for your time.

Yours sincerely

Steven Pryjmachuk
PhD Student

Enclosures

Complete and return this slip only if you are no longer a pre-reg. nursing student in the School of Nursing, Midwifery & Health Visiting.

Name ______________________________ Former Cohort ______________________

APPENDIX 8
Reminder Letter

(Originally on official School of Nursing, Midwifery and Health Visiting notepaper. Certain personal information has been blocked out merely for reasons of confidentiality.)

Direct Dial 0161 [redacted]
E-mail [redacted]

Spring/Summer 2000

Dear Student

Student Stress Study

You should have received from me a while ago a pack of questionnaires relating to the above study. If you haven't yet completed and returned the questionnaires, I'd be most grateful if you could try and find the time to complete them. I do appreciate that your time is at a premium, but it is important that as many students as possible complete the questionnaires. The more students who take part, the more accurate the findings will be. With accurate findings I will be able to argue for changes in the student experience – changes that will, hopefully, lessen the burden on students.

If you haven't received, or have mislaid, the questionnaire pack and would like another, let me know by returning the slip below to me at Gateway House or, alternatively, by e-mailing me or telephoning me. My details are given below. If you use the Freepost address given below, there's no need to put a stamp on the envelope.

If you want futher details about the study, do not hesitate to contact me.

Many thanks.

Steven Pryjmachuk
PhD Student

Return to Steven Pryjmachuk, SoNMHV, University of Manchester, FREEPOST MR4736, Gateway House, Piccadilly South, MANCHESTER M60 7LP. *No stamp is needed.*

Alternatively, e-mail [redacted] or telephone [redacted] for a pack.

Please send me a Student Stress Study Questionnaire Pack.

Name ________________________________

Current address ________________________________

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