Development of a Questionnaire to Measure Perceived Support during
Pregnancy, and its Relation to Coping Strategies and Outcome

by

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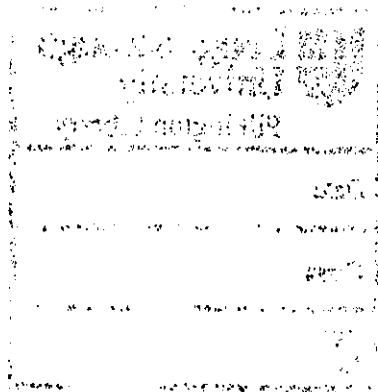Loughborough, Leicestershire. LE11 3TU.

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Dedication

I would like to dedicate this thesis to Allan, Kevin and Katie

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Thesis abstract

There is a considerable body of research examining the effects of social support factors, socioeconomic status (SES) and demographics on pregnancy outcome. However, there has been little research examining the effects of *perceptions* of social support on pregnancy outcome. The initial studies of this thesis examined the relation of scores on a *Support in Pregnancy Questionnaire* (SPQ) to pregnancy outcomes (n=68). It was found that the level of perceived support predicted lower infant birthweight and higher rates of obstetric complications (methodological issues of the complication measure are discussed). Furthermore, a small group of women who scored negatively on the questionnaire and received non-directive counselling were comparable to controls who had adequate levels of support.

These results prompted a large-scale study of the effects of perceived support on infant birthweight and complications (with amended complications measure). Such a study was designed, taking some account of SES and demographics. 501 women completed the SPQ during pregnancy and 264 (53%) completed postal follow-up questionnaires, after birth. Safety analyses suggest few differences between the SPQ scores of those who responded to follow-up and those who did not. These issues were discussed. However, those leaving out some of the questions of the SPQ seem to be a particularly vulnerable group.

Large-scale validation of the questionnaire via Principle Components Analysis with Varimax Rotation was highly successful, supporting the four hypothesized domains of perceived support. Split-half reliability was computed at r=.83.

Results suggested that *perceived support from partners* and *general support* are significant predictors of obstetric complications (when the number of complications is transformed to achieve normality). However, these effects were only observed when multiple regression analyses were used to remove the effects of smoking. Although alcohol intake did not seem to affect the outcome measures presented, greater use of alcohol was strongly related to negative responding on the SPQ (indicating perceived lack of support).

In those women who did not fully complete the SPQ but responded to follow-up (n=29), there was a direct relationship between maternal attitude *towards the pregnancy* and birthweight. This effect was not mediated by other variables. This result might indicate this group of women were a particularly vulnerable group.

A qualitative chapter, with case studies, provides evidence from a 17-year old and a 41-year old woman. Although pregnancy involved psychological change and difficulty for both women, the younger woman was more concerned with support from her partner, whereas the older woman was concerned about the effects of her age on her pregnancy and loss of paid employment. These findings support quantitative findings in previous chapters and are discussed. The final chapter (Chapter 11) discusses the limitations of the thesis. Particular attention is given to the the methodological problems associated with the obstetric complications, self-report smoking and alcohol measures.

In conclusion, the questionnaire has strong psychometric properties, is related to known negative coping strategies (alcohol and smoking), and has some predictive value on clinical outcomes. The phenomenological approach, used here, to understanding pregnancy related stress thus has good support in these findings.

KEY WORDS: PREGNANCY SUPPORT   STRESS   BIRTHWEIGHT

OBSTETRIC COMPLICATIONS   ANXIETY AND DEPRESSION

Acknowledgements

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Chapter 1

Pregnancy as a potentially stressful life event and transitional psychological state

1.1 Literature overview and statement of the problem

Frankenhauser (1988; in Gregory, 1988; pp.748), argues that environmental conditions for human beings are now less stressful than ever before. Stress now is predominantly psychological and social in nature. It is known that pregnancy is a particular life event which can, for some women, be stressful (Kennedy, Kiecolt-Glaser and Glaser, 1988) and can sometimes lead to negative outcomes in terms of the mother's and the infant's well-being (Elliott, 1990; Holmes, Reich and Pasternak, 1984). Although becoming a father may share many similarities with becoming a mother (Lemmer, 1987; Lewis, 1990; Osofsky, 1982; Scopesi and Repetto, 1990), the focus of this thesis is pregnancy and becoming a mother. The complexity of how pregnancy influences outcome should never be underestimated (Elliott, 1990). Both stress and support factors are influential in outcome. Despite evidence for a causal link between stress and negative outcomes in infrahuman studies (Peters, 1984) no such direct link has been found in humans (Istvan, 1986).

From previous findings, it is difficult to establish the effects of stress and support on outcome, because research methodologies vary widely (Istvan, 1986; Kremer, Treat and Hansen, 1993). Research is often written by diverse professionals who have their own professional grouping in mind, and thus infrequently finds access to the knowledge base of other disciplines (Nicholson, 1989).

Nevertheless, three themes can be observed in previous work. [1] Pregnancy appears to be a significant life event. [2] It is a life event which heralds psychological change ('becoming a mother'). [3] Women who lack social and material support are less likely to cope well.

However, it is rare for researchers to actually ask pregnant women about their perceptions of pregnancy (Fransella and Frost, 1982). When they have been asked, positive views are not always dominant. For example, Cobliner (1970) found that, once pregnant, up to 50% of women display ambivalence or open hostility towards the thought of having a child. Such negative views suggest that ambivalence is a feature of pregnancy. It may also be true that such ambivalence is part of a process of adjusting to pregnancy. Nevertheless, emotional factors may influence the health of the mother, foetus or both.

Health research generally indicates that emotional factors are influential in recovery from illness, and has stimulated notions that such factors may also influence physiological changes during pregnancy (McDonald, 1968). Verny and Kelly (1981) suggest that anxiety and stress-related hormones are the most obvious form of physiological communication from a pregnant woman to her child. However, it is only intense or continued maternal anxiety, rather than transient anxiety, which is most likely to be relevant. As Herbert and Cohen (1993) state, it is long-term, chronic and daily repeating stressors which are associated with reduced immune function. This may then influence both the health of the woman and her child (Kleiverda, Paarlberg, and Buitendijk, 1997).

Causal explanations for maternal feelings of ambivalence or anxiety include social pressure to become pregnant (Raphael-Leff, 1991), changes in hormones during the first trimester (Vance, 1985) (which was the period in which Cobliner's data was collected) pressure from grandparents and in-laws (Stein, 1967) and lack of partner support (Berkman, 1969).

Stress in pregnancy appears, therefore, to be part of the pregnancy experience. Furthermore, significant elevations in psychiatric symptoms in a sample of pregnant women, throughout pregnancy and the early post-natal period, have been found by, Coble, Reynolds, Kupfer, Houck, Day and Giles (1994). Previous psychiatric history was not associated with these symptoms, suggesting the changes were purely pregnancy related.

Rheingold (1964) has proposed that if a pregnant woman is emotionally disturbed, or harbours negative attitudes towards the pregnancy and future child, several negative sequelae may follow. Firstly, the foetus may be adversely affected; secondly, the initial mother-child interaction is likely to be a stressful one, and thirdly, the infant's life is launched with impaired developmental potentialities. These findings have been summarised in Field (1990). Rheingold therefore believes that the relief of maternal stress is of paramount concern, and whilst his case is convincing and still relevant (Field, 1990) it ignores the woman's perspective in all of this. As Pattison and Gross (1996) wryly comment, most researchers are concerned less with the mother's long-term psychological health, than with the physical effects of her psychological health on her infant. I would add that most researchers also appear less concerned with the mother's immediate physical and psychological health (i.e,. during pregnancy itself or the immediate postnatal period). To focus on either the mother or the foetus / child in isolation of the other is unwise (Field, 1990; Murray and Stein, 1989).

Several models of psychological stress can potentially be applied to pregnancy, if we are prepared to consider the effects of maternal stress as affecting both mother and child. For example, Fisher (1986) proposes that some women lose their *perceived sense of control over events* during their pregnancy, and that if this perception is not modified cognitively then the mother is at-risk for post-natal depression. Maternal post-natal depression can then have devastating effects on the mother - child relationship security (Murray, 1992) and the child's development (Murray and Stein, 1989). While focussing on this internal mechanism, Fisher also points to marital disharmony, social and financial resources, and a history of poor parenting in the parents as associated factors. The extra stress of the pregnancy itself appears to tip the balance in such cases.

Several models are available to explain how the balance can be tipped. Cox (1986) suggests that stress results from a perceived imbalance between demand and capability. Antonovsky (1987) suggests that stress occurs because certain situations cannot be made sense of (are not coherent). A sense of coherence can only be achieved by making sense of sources of 'tension' in one's life. Once this is achieved the individual can then regain control and avoid the stage of stress. Janis (1958, 1965) defines psychological

stress as the reaction to a physically dangerous event in which pain, bodily injury, or death is anticipated. Finally, Lazarus and Folkman (1984) offer the idea that psychological stress is a particular relationship between a person and the environment which they perceive as taxing or exceeding their resources and endangering his or her well-being.

Unfortunately, to date there is no coherent model which moves from the mother's perception of her situation, to coping mechanisms in response to any stress, to outcome variables. Within such a model, an account of social and support factors, the context, is necessary (e.g., Hickey, Cliver, Mulvihill, McNeal, Hoffman and Goldenberg, 1995)

To address the above outlined difficulties with current understanding of the stress process in pregnancy, two literature review chapters are presented. In the first of these, two major theoretical positions on pregnancy are presented, these explain how pregnancy may be viewed as a specific life event which is inherently difficult to negotiate and may cause stress. There is some discussion of attachment theory, which is not one of the major approaches. This is because, as will be demonstrated, this theory has clear relevance to understanding psychological processes during pregnancy.

This first chapter will suggest that a phenomenological perspective can effectively integrate traditionally opposed psychoanalytic and psychosocial research. This chapter will also highlight how several aspects of the mother's perceptions seem to have separate but related importance; (1) feelings of general well-being, (2) feelings of support from the woman's partner (if she has one), (3) feelings of support from parents (in the past and currently), and (4) the person's actual attitude towards the pregnancy, or feelings of support which are internal in origin, i.e,. self-support.

The second chapter examines how pregnancy-related stress affects outcome variables, how this is influenced by coping strategies, and the importance of actual versus perceived support. However the reader may view some overlap between chapters as writers seldom confine themselves to a pure examination of stress during pregnancy, and its effects on outcome and associated factors.

1.2 Pregnancy as a Life Event

Several authors have attempted to define just what a 'life event' is in psychological terms. All life events involve change / transitions. In discussing the life event of bereavement, Parkes (1972) emphasised this point. Parkes stated that it is the psychological change which takes place which is most important. Such psychological change will occur whenever people are faced with the need to undertake a major revision of their assumptions about the world. Pregnancy as a life event thus heralds change (i.e,. the transition to motherhood). However, Parkes believed that the meaning of the life event to the person would determine whether their coping was adaptive or maladaptive. He also emphasised how early attachment patterns may be influential in this adaptation process.

Life events need not be bizarre or catastrophic to have the potential to incur negative consequences (Meyer, 1951). Pregnancy is commonly perceived as a normal and positive life event, yet it is also one which is potentially stressful (Istvan, 1986). Pregnancy specifically heralds the transition to motherhood or new motherhood (for subsequent pregnancies). Friedman (1978, cited in Vance, 1985:22) states that pregnancy is also a critical and maturational phase because it heralds motherhood, with all the responsibilities and obligations this entails. Goodyer (1990) points out that the context of the life event and the consequent effects of the life event is what gives it its ultimate importance. But how does pregnancy compare with other significant life events in terms of its potential stress?

In the well-known study of the effects of life events on health, Holmes and Rahe (1967) included the effects of pregnancy. They developed the *Social Readjustment Rating Scale*, constructed from a list of life events from their clinical experiences. They then had hundreds of men and women of different backgrounds and ages rate the amount of adjustment each event would require. Holmes and Rahe used these ratings to assign values to each event. Pregnancy was rated as requiring a high level of social readjustment, and therefore was likely to be stressful; it was ranked as number 12 out of a possible 43.

Pregnancy has therefore come to be regarded as a significant life event by many and one which is distinct from actual delivery and motherhood itself (Cox, Paykel, and Page 1989; Elliott, 1989; Istvan, 1986). Furthermore, women themselves, see pregnancy as a separate event to delivery and motherhood, regardless of whether or not they themselves are mothers (Paradice, 1995). Thus it is important to ask women themselves how they perceive pregnancy.

Are there then particular groups who face this life event with a more bleak outlook than others? Apart from women with known quantities (i.e., those with previous negative pregnancy experiences), research suggests that pregnancy may be most stressful for younger women, already anxious women, and first time mothers (Dunston, Hall, and Thorne-Henderson, 1987; Snelson, 1990). Older mothers may also be at-risk (Peacock, Bland and Anderson, 1995; Berryman and Windridge, 1993), particularly older mothers expecting their first child. However, the risks have also been misunderstood and / or exaggerated in relation to older mothers (Berryman, Thorpe and Windridge, 1995).

Recent research has challenged the widely held belief that older mothers will necessarily experience more difficulties compared to younger mothers (Berryman and Windridge, 1991; Windridge and Berryman, 1996). Recent research has also questioned the validity of the widely held belief that younger pregnancies are problematic for younger women themselves (Phoenix, 1990). Berryman et al. (1995) and Phoenix (1990) may have obtained such knowledge because they took the time to ask women themselves.

Research by Reece (1995) found that for first-time mothers over 35 years of age the transition to parenthood was perceived by women themselves as stressful. This was especially true if they perceived the number of associated life changes as high. McClennan Reece (1993) states that because an older first time mother is at the extreme end of the normative age range, her experience is non-normative (the same may also be said for adolescent mothers, those aged 18 and under).

Research has demonstrated that older first time pregnant women have less positive

attitudes toward future mothering than younger women (Meisenhelder and Meservey, 1987). However, the older mother (35>) is also more likely to have increased medical intervention in her pregnancy than younger women (Katz-Rothman, 1986). This increased medical intervention and other factors (e.g., Down's syndrome and other known risk factors) clearly conveys to the older mother that she is at-risk and can result in harming the woman rather than calming her (Green, 1990a). Theoretically, this message could greatly influence attitudes in pregnancy and may even incur its own stress (Mansfield, 1988).

Given the above, we may assume that pregnancy and the transition to new motherhood may mean different things to different women. Pregnancy may also incur different effects for different women, either because they are at different stages of development (younger or older), or because of differences in personality factors (e.g., trait anxiety; cf., Parkes, 1972; or personality variables in general Miller and Lloyd, 1991; Younger, 1991).

One might then expect that the ability to predict which women are likely to experience the most difficulties during pregnancy and postnatally would be good. However, this is not the case. Even for known 'at-risk' groups prediction of poor outcome is poor (Hemminki and Starfield, 1978; Istvan, 1986).

One advantage of pregnancy is that outcome variables (e.g., infant birthweight) are easily measurable, though they are not without problems (these will be discussed further in relation to stress, see Chapter 2). Further, relationships between stress and outcome can be estimated. For example, low socioeconomic status (SES), which we can assume will be generally stressful, is associated with preterm delivery (Peacock et al., 1995; Stein, Campbell, Day, McPherson and Cooper, 1987). In fact, whilst many studies focus on the effects of work stress on pregnancy, they frequently forget to address the effects of non-work stress (i.e., being without paid employment) on pregnancy (Bramwell, 1997). It is possible that being in paid employment constitutes a perceived source of support, as low SES is commonly associated with decreases in infant birthweight (Wadhwa, Sandman, Porto, Dunherd-Schetter and Garite, 1993).

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The relationship between pregnancy-related stress factors and outcome will be more fully elaborated in Chapter 2.

There is much evidence presented to suggest that it is reasonable to consider pregnancy as a significant life event. Further, this life event will be stressful for women to varying degrees, and outcomes appear to bear some relation to this stress and support (Mercer and Ferketich, 1988). The perception of the stress however, is likely to be at least as important as the actual adversity of the person's circumstances, and may well prove to be a more productive way forward for research in this area (cf., Bramwell, 1997).

We are now in a position to examine two influential theoretical explanations for the special and potentially stressful nature of pregnancy. The first of these has developed from psychoanalytic perspectives and focusses on internal factors. It will be described here as the 'intrapsychic' explanation of pregnancy negotiation. The second explanation is based upon sociology as well as psychology, and examines external support factors available to the pregnant woman. This approach will be called the 'psychosocial' explanation of pregnancy negotiation.

1.3   The 'Intrapsychic' explanation of pregnancy negotiation

Although there are several psychoanalytic schools of thought, there are no substantial schisms on the relatively small psychodynamic literature on pregnancy. The basic assumption of the work presented below is that unconscious processes have as large an influence on outcome as conscious cognitive ones.

From a psychodynamic orientation, pregnancy is seen as a time when the past is commonly re-visited and reappraised in preparation for future motherhood (Raphael-Leff, 1991). This process may be conscious or not. Bibring, Dwyer, Huntington, and Valenstein (1961) comment that pregnancy, like puberty and the menopause, constitutes a revival of and unsettling of psychological conflicts of earlier developmental periods. Therefore, pregnancy is also seen as a developmental stage.

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<u>1.3.1 Historical positions</u>

In discussing the attitude of the pregnant woman to the child inside her, Deutsch (1947) suggested that the woman looks upon her child both as a part of her own self and as an object outside it. This approach focuses on the earliest relationships a person has with their parents (usually the mother). The pregnant woman repeats all these positive and negative feelings which she had towards her own mother. In this way the transitional state of pregnancy is used psychologically, as a time of preparation for future psychosocial changes. It may also be used as a time of resolution (reaching an acceptance of how things were, whether they be good or bad, and that the past itself cannot be changed but how one feels about it can). Part of the preparation aspect of pregnancy includes an attempt to reconnect with past experiences of being parented oneself. For those women whose childhoods were less than satisfactory such reconnection and the process of reflecting on their own parenting experiences may provoke anxiety (incur stress). For these women the process of resolution will also be problematic.

The psychodynamic perspective views pregnancy as a transitional state because it signifies approaching motherhood, and a developmental stage because it potentiates personality development (Benedek, 1959, 1970). Erikson (1965) suggested that should all go well, any developmental change (or challenge) will be positive and result in psychological maturation. If all does not go well, the change will be negative and result in a regression of personality or stunting of future personality growth.

Erikson (1965) contends that each developmental stage, which triggers a reconnection to other previous developmental stages, has the potential to incur its own unique crisis. However, a crisis need not occur if other developmental stages have been successfully negotiated and the transition from one stage to another has been well managed. In Bibring et al. (1961) and Erikson (1965) the challenge of pregnancy does not then necessarily mean all women will experience pregnancy as a crisis. If a woman does experience pregnancy as a crisis intervention to reduce this intrapsychic stress and help place 'development back on track' (Emde, 1988) may still be achieved. Indeed, it has

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been suggested that due to the specific nature of pregnancy the opportunity for positive intervention is actually heightened (Bibring et al., 1961; Raphael-Leff, 1991).

"The special nature of such acute disequilibrium may also be responsible for the readiness with which help of an understanding transference figure is accepted, and for the relative ease with which stabilisation may be achieved through brief psychotherapy in a number of cases"

(Bibring et. al., 1961: 12).

1.3.2 The contribution of Joan Raphael-Leff

In her book *Psychological Processes of Childbearing*, Raphael-Leff (1991) stresses the opportunistic time which pregnancy provides for personal growth, due in her view, to the hormonal changes incurred by pregnancy. Raphael-Leff introduced the term *Primary Maternal Persecution* to describe some of the more powerful and frightening feelings to which women may be reconnected during pregnancy and which thus incur stress (conscious or not). From her own experience as a psychotherapist, she describes common fears in pregnant women, including parasitic phantasies (the baby taking over the maternal body or sapping all energy), as well as strong themes of loss and abandonment.

Raphael-Leff argues that women who have had the most difficulties with their own early bonding experiences, or early environmental trauma, will find pregnancy most challenging. A psychoanalytic therapist will, therefore, try to facilitate an awareness of any conflict with the woman's own parents. Dream content can be used to draw out parasitic and persecutory phantasies of the baby against the maternal body, bringing these into conscious awareness so that the real baby (who is much less frightening) is identified. Psychoanalysts such as Raphael-Leff believe that connection to reality and the dissolution of persecutory phantasy leads to a reduction in the anxiety incurred by pregnancy. A reduction in such anxiety is seen to be beneficial to both mother and the developing foetus. In this she is proposing, as others have (e.g., Rheingold, 1964), that anxiety or stress is likely to have negative effects for mother and infant, a notion

which shall be examined in Chapter 2. However, the important point here is that she is suggesting that problematic early parenting experiences can cause anxiety and stress during pregnancy.

In summary, in the above section we have highlighted that pregnancy may either promote or inhibit the mother's psychological health and development (Bibring et al., 1961). Theories of bonding, attachment and loss (Bowlby, 1951, 1960, 1969) are clearly relevant here and will be examined more closely in the following section.

1.3.3 Attachment theory in relation to pregnancy and the transition to motherhood

Bowlby (1951, 1960,1969) conducted pioneering work on attachment, separation, and loss, and explained how infants become emotionally attached to their primary care-givers. He also highlighted how emotionally distressed infants can become when separated from their primary care-givers. Bowlby described different forms of disordered attachment. For example, children who made what he termed "anxious attachments" to their parents, and exhibited high levels of anxiety when separated from them. These children were considered more likely to develop future adult attachments, for example to marital partners, which were also insecure and / or overly dependent. But is there evidence to support Bowlby's theory?

A growing body of longitudinal studies has provided evidence of continuity of attachment styles from infancy into the early school years (Main, Kaplan and Cassidy, 1985; Ricks, 1985). Weiss (1982) suggests that attachment plays an important part in adult bonds, including romantic relationships. Hazan and Shaver (1987) have shown that variations in adult relationships were similar to those reported in studies of infants, and that persons endorsing different styles differed in their perceptions of early family relationships. These studies do appear to support Bowlby's hypotheses.

So, we might consider that past attachment patterns can influence a woman's level of ambivalence towards her own current pregnancy. However, and following Parkes (1972), the transitional process is not simply dependent upon external changes or even

internal ones, but upon the meaning these changes have for the individual. It may also depend upon the sense the individual can make of these changes.

Research examining attachment patterns during pregnancy appears to support the view that past experiences are influential. Fonagy, Steele and Steele (1991) examined a possible link between past experiences of being parented, current attitudes towards pregnancy and motherhood, and later mother-infant attachment styles. They measured the woman's relationship to her mother, father and alternative care-givers, in relation to their current parental relationships. They recorded any possible link between these factors and their projected and actual future parenting styles.

The measure of attachment to the mother's own parents and the hypothesised parenting style was based on self reports; the measure of their actual attachment with their own child was based on the Ainsworth Strange Situation Test (Ainsworth, 1978); the mother's state of mind during pregnancy was rated from interview transcripts which were judged and assigned to one of three categories, reflecting their overall organisation of thought concerning attachment. The attachment categories were (1) dismissing of attachment, (2) preoccupied with or entangled by past attachments, and (3) freely-valuing secure or autonomous. A further category was retrospectively assigned which concerned unresolved attachment. Importantly, they found that it was not the actual experiences of childhood which appeared influential in later parenting style, but how pregnant women globally represented these experiences. For example, whether they were still preoccupied with such experiences or not.

Results demonstrated that 75% of secure and autonomous mothers later had securely attached children, and 73% of mothers who were dismissing or preoccupied (ambivalent) had insecurely attached children. This study suggests that patterns of ambivalence towards motherhood may be transgenerational.

Fonagy et al. (1991) also observed that heightened maternal security in pregnancy was associated with infant insecurity at one year for a number of the dyads. One explanation for this finding is that ambivalent feelings are *denied* during the pregnancy, but are nevertheless sufficiently influential to impact on attachment and lead to insecure

attachment. This research makes clear that psychological processes during pregnancy do influence outcome (mother-infant relationships). This research thus makes clear that the role of 'mother' is also experimented with during pregnancy.

The role of 'mother' itself cannot only become prominent for women after delivery. Nor does depression magically appear after delivery. Cranley (1980, 1981) suggests that the mother is already forming concepts about the foetus long before delivery, and that this can influence later attachment behaviour. The psychological process of becoming a mother and what this means thus begins in pregnancy.

1.3.4 A brief critique of the psychodynamically orientated literature

The primary field of study for psychodynamically orientated writers such as Bibring et al (1961), and Raphael-Leff (1991) is the relation between mother and infant in the first year of life (Sayers, 1992; Segal, 1992). However other theorists point out that external factors are of equal importance (Chodorow, 1978, 1989; Oakland, 1995; Wright, 1992). They argue that when holding the more traditional psychodynamic perspective alone, it is difficult not to hold the mother totally responsible for the physical and emotional well-being of her infant.

" Its primary focus on pre-verbal infantile experience in the mother-child dyad and its consequent lack of attention to the network of signification in which both mother and infant move, also raise problems".

Wright (1992, pp. 277-299)

It has also been suggested that the role of mother itself may be at odds with female liberation and mental health (Gleve, 1987). Motherhood lacks measurable rewards such as financial remuneration (Kitzinger and Perkins, 1993). Even mothers who negotiate the transition from pregnancy to motherhood successfully, can lack a sense of achievement, and this can have nothing to do with 'unresolved intrapsychic issues' or issues of 'poor attachment'. The end of pregnancy causes disruption to a woman's career which, we know, is associated with increased risk for female mental health problems (Gleve, 1987). Others (e.g., Lerner and Galambos, 1985) have found

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evidence for maternal - infant attachment being associated with satisfaction /
dissatisfaction with the 'role' of mother itself. In this, a pregnant woman must be
aware, at some level, of her imminent loss of independent economic power associated
with her future role of mother (cf., Oakley, 1974). Oakley (1993) like others (Pattison
and Gross, 1996) suggests that society is really only interested in the child, not the
mother-child dyad.

*"[Can] a culture both be child-orientated and permit, or foster, the liberation of women
as individuals with non-motherhood identities?"*.

(Oakley, 1993:82)

There is therefore some inadequacy in the psychodynamic approach to pregnancy as a
life event. Specifically, there is often a lack of consideration of the 'network of
signification' in which the pregnant woman moves (cf., Wright, 1992), though
Rapahel-Leff (1991) does acknowledge social pressures placed on women to become
pregnant in the first place. The following section of this chapter will review more
'psychosocial' approaches to pregnancy which take account of social factors outside of
the woman's personal responsibility.

1.4 'Psychosocial' approaches to pregnancy negotiation

Three theories are presented which explain the difficult nature of pregnancy as
influenced by social factors, and focus on how stress is mediated by support. They
differ in emphasis, especially with regard to the degree to which they address
perceptions of support.

1.4.1 The 'social strain' model

This model can be seen to have developed from earlier work by Stein (1967). Stein
argued that relationships which were previously unstressful may become so in
pregnancy. For example, when future grandparents begin to exert demands and
expectations upon the pregnant woman which were not previously made (Rhodes and

Woods, 1995; Stein, 1967). This can raise the mother's level of anxiety during her pregnancy and may influence perceived levels of support (Dragonas, 1987).

The social strain model of stress in pregnancy has also been adopted by Pugh and De'Ath (1984). They suggest that many couples do not anticipate the full impact of parenthood on their lives, and do not fully consider the sheer hard work and inconvenience of parenting. In this model, pregnancy is viewed as a crisis point in a person's life which involves major losses (Oakley, 1993). For example, the loss of job, lifestyle, and control over one's body. These losses cannot be compensated immediately by the rewards of parenting, because the baby is initially very demanding.

Pugh and De'Ath further argue that hospital clinics are by their nature stressful to visit and constitute further social strain. They suggest that the gulf between the medical model of pregnancy and the pregnant woman's concept is very great. Medicine views pregnancy as an essentially biological process which must be kept 'on track' by their careful monitoring. The pregnant woman herself sees pregnancy as a unique and extraordinary personal and social process. The authors call the process of both medical and personal negotiation of pregnancy a 'multiple status passage'. The process is stressful *mainly because of the way the pregnancy is viewed by the woman herself and all those around her*. This is similar to Wright's (1992) 'network of signification' but expands this notion and specifically highlights the strain that social imperatives (attending ante natal clinics, undergoing technical medical procedures, and accepting medical intervention) place on the pregnant woman.

1.4.2 The contribution of Ann Oakley

In *Women, Medicine and Health* (1993) Oakley provides a sociologist's contribution to theoretical models of pregnancy as a potentially stressful life event. Oakley considers that social factors themselves are extremely influential in pregnancy outcome. She attaches particular importance to the overall negative position of women in society as compared to men. This gender disparity causes particular difficulties for pregnant women. First, she considers the economic and health policies of the last ten years. She

believes that these policies have caused a "dismantling of the welfare state, which was set up in part to protect the health of this vulnerable group" (Oakley, 1993, p.152). This, she argues, amounts to a reduction in social support.

Second, Oakley (1993) points to the demise of the traditional family in secular countries which also amounts to a reduction in social support. For many woman pregnancy may result in the loss of paid employment, perhaps with no right to maternity leave. This can further reduce social support and may incur real financial hardship. If a return to work following delivery is possible, child care then becomes an issue. Women are still largely responsible for arranging child care. Prohibitive costs of child care may force women to request help from grandparents. Such a request, from people who long ago felt they had 'done their bit', may be strongly resented.

Oakley also rightly points out that 'marital status' cannot now inform us about a woman's level of social support from any partner. Many couples today are unmarried and many married couples are living apart. The usual method of assessing social support in this area (via marital status) is no longer valid. Even if the woman has a partner or husband available to her this is no guarantee that she will receive support from them. As Oakley points out.

"The notion that behind every pregnant woman there is a supportive husband lurking ready to provide emotional companionship, domestic help and financial resources will increasingly be a piece of cultural mythology"

(Oakley, 1993, p.153)

It may also be argued that the notion of 'partner' can only be decided upon by the woman herself, and that this should not be dependent upon whether the partner lives with the woman or not. This line of argument leads us into the area of the pregnant woman's perception of what constitutes a partner. Of course this will not necessarily tell us anything about how supportive or not, such partners are or are perceived to be. The importance of perceptions of support will be addressed more fully in Chapter 2.

Oakley (1993) agrees with Pugh and De'Ath that medical care itself constitutes some of the stress influential in pregnancy outcome. She argues that obstetricians have to maintain an interventionist position, which has increased the desire of women to have their babies at home with only midwives in attendance. Indeed some authors (Tew, 1990) have gone so far as to argue that obstetricians are not even necessary. Tew argues that statistical analysis does not support their effectiveness in comparison to home deliveries with only midwives in attendance. Oakley and Tew and others (e.g., Day, 1980, 1982; Green, 1990a) argue that many intrusive procedures have been shown to be ineffective when subject to controlled trials. Such results challenge medics who simply *believed* their procedures to be helpful. Ironically, Oakley argues, it is social changes (i.e,. the consumer society) which has lead modern women to question these medical techniques and not science itself.

Overall, Oakley's theoretical contribution is to suggest that changes happening at the societal level are influencing the degree to which women are actually supported at the practical level, during pregnancy. However, she does not guess whether perceived support or actual support are crucial to outcome, rather she argues that increased social support is influential. Oakley identifies three support factors which have increased women's levels of stress during pregnancy, as follows; (1) the contraction of the welfare state, (2) the decreasing presence of male partners, and (3) the stress which medical procedures place on the pregnant women.

1.4.3 Personal construct psychology and pregnancy

Following Kelly (1955) and Fransella and Frost (1982), Smith (1995) has examined the pregnant woman's support network from a phenomenological perspective. Smith cites the case study of a young woman whom he calls Claire. Claire is in her mid twenties and this is her first pregnancy. Claire is said by Smith to be representative of many other pregnant women of her age and experiencing pregnancy for the first time. Claire wrote a great deal about her personal relationships during pregnancy. At three months pregnant she writes about how her pregnancy is likely to draw her closer to her own mother.

"I will have entered the elite, no not the elite, the band of women, if you see what I mean. Motherhood is very important to her [Claire's mother] and I think the fact that I will be sharing that experience will make a difference to her. It's almost as if actually having a child makes the relationship much more equal"

<div align="right">(Smith, 1995: 124)</div>

At six months gestation, Claire focussed on the importance of her partner's attendance at ante natal classes. She considered this a form of public acknowledgement that they were going through pregnancy together. Smith (1995) cites this and evidence from other case studies, to support his argument that the transition to motherhood is socially sanctioned and defined. Further, it is strongly connected with significant others. However, Smith highlights that it is the woman's perception of support from these significant others which is crucial.

Smith (1995) also emphasised the dynamic nature of change in pregnant woman, over the course of their pregnancy. For Claire, being pregnant was associated with the process of becoming a 'mother' as well as with how significant others supported her in pregnancy. She was particularly aware of her changed social status as a woman. At nine months, she made the following statement.

"I'm me but I'm one of two and I'm also one of three... and the emphasis is always changing... Sometimes you feel as though me is being lost or submerged... On the whole me is intact but I don't think I want to be me on my own entirely for ever any more anyway, I mean, how do you explain it? An irrevocable decision, the steps have been made that mean that my other identities, if you like, as a mother and as a partner make up that essential me now"

<div align="right">(Smith, 1995, p.124)</div>

Parental and partner relationships have long been dominant themes in the literature, as influential sources of support during pregnancy (e.g., Bibring et al., 1967; Stott and Latchford, 1976). Smith's work adds to this literature. For example, take the importance of parental support and affiliation during pregnancy (Bibring et al., 1961,

Raphael-Leff, 1991). For Claire, it was a central theme that she should not be alone during her pregnancy and that her partner should be actively involved. It was also important for her that her relationship with her mother become closer but more equal. The latter point provides some support for the psychodynamic postulate that pregnancy is also a 'maturational' stage. Smith's work, however, involves asking women themselves about how they view their pregnancy experiences. It thereby addresses some of the criticisms levelled at pregnancy research more generally (Fransella and Frost, 1982) whereby women's views were notably absent.

1.5 Do the intrapsychic and psychosocial approaches oppose one another?

Both major approaches presented here assume that the significant life event of pregnancy is potentially stressful and anxiety provoking. It is therefore reasonable to suppose that pregnancy-related anxiety has the potential to trigger an extreme stress response, and that this might feel like a crisis. However, most women negotiate pregnancy and the transition to motherhood, without any such crisis. Identifying those women for whom pregnancy will be problematic, and the factors which make it so, is important. These hypothesised factors could be explained in intrapsychic terms as the workings of the psyche, and in the psychosocial terms as social influences.

The difference in the approaches lies in the implied needs of the pregnant woman. As with traditional psychoanalytic models, the intrapsychic approach implies the need for change in internal representations, or concepts, of significant others in the person's life. The psychosocial approach implies that real changes in the woman's social situation is required to increase support (Oakley, 1993). However, Smith's (1995) model implies that the woman's internal construction is paramount. There is related empirical work (Fonagy et al., 1991) regarding transgenerational attachment patterns, to support a phenomenological model. However, such a phenomenological model would need to take careful account of both intrapsychic and psychosocial factors.

Both the major approaches presented above (the intrapsychic and the psychosocial)

imply that pregnancy always has the potential to become stressful or culminate in personal crisis. At the same time, there is the potential to use such a 'crisis' in a positive way, provided the woman's resources are not exceeded, or that she has adequate support to do so.

1.6 An integration of the intrapsychic and psychosocial approaches to pregnancy, and the role of perceived support

An integrative approach to pregnancy negotiation might suggest that social support factors, their perception and the resultant internal representations can be included in the same model. This has been achieved to some extent by Smith (1995) and Fonagy et al (1991). Clearly, important factors are the presence or absence of a supportive partner, negative internal views of the role of 'mother', and self-efficacy or belief in one's ability to cope. Any one of these factors might be sufficient to affect the outcome of the pregnancy, or on the other hand, all might have little effect, if there is a more influential further factor.

In fact, we do know that the presence of supportive partners is influential (Elliott, 1989; Gottlieb and Mendelson, 1995) in post-natal depression, but it is also important that the woman *perceives* that this type of support as helpful (Dragonas, 1987; Gottlieb and Mendelson, 1995).

Klaus and Kennel (1976) had suggested that the pregnant woman is simply more 'emotional' during pregnancy because she is experiencing hormonal changes. However, it could be argued that what really happens is that the pregnant woman becomes more sensitive to the support systems around her (e.g., Raphael-Leff, 1991; Stott and Latchford, 1976; Deutsch, 1944-45, 1947).

The intrapsychic approach suggests that normally intact 'defence mechanisms' are lowered because of hormonal changes (Raphael-Leff, 1991), but equally, the more sensitive pregnant woman will notice her poor social situation if it is unsupportive. Her perceptions then inform her in her usual self-questioning; how do I parent a child?

How do I cope with the responsibility? Will my partner and my parents help me? Will my relationships change? (cf., Smith, 1995).

So, part of pregnancy's challenge is that suddenly the degree of support others can give is very important to the woman (Kelly and Boyle, 1995). She is aware that she is about to lose certain things, at least temporarily, such as work, which is itself a source of support and provides personal growth and esteem (Kelly and Boyle, 1995). Loss of earning power itself is very important for many women. Nevertheless, home life provides roles which are also valued; for example, being a spouse, home-maker and mother, but these roles are not threatened by pregnancy (Kelly and Boyle, 1995) though they may generally be negatively valued by society (Oakley, 1974).

1.7 Conclusions

As a result of this chapter's review of the literature we have gone some way to achieving a theoretical synthesis. The theoretical position of this thesis is that adopting a phenomenological perspective will allow one to follow pregnant women, from the perception of support during pregnancy through to the pregnancy outcome. Whilst some appreciation of actual social support factors is crucial (e.g., Socio Economic Status, presence of a partner), it is the perception of the support, from different sources, which is hypothesised to be the important psychological influence on pregnancy outcome. For a general introduction to the phenomenological approach, or *personal construct psychology*, see Kelly (1955).

It is hoped that this position integrates the intrapsychic and the psychosocial approaches to the psychology of pregnancy. Hopefully it is clear that pregnancy is a specific kind of life event which, in common with other life events, is potentially stressful and is thus likely to require support to cope with any resultant stress. The emphasis of this thesis is on 'perceived' support.

Perceived support can be said to be based on the amount of support available to the individual and their satisfaction with this support. It can also be said to be based on

emotional and practical support and how the individual appraises these. It is logical to argue that perceptions of support will be based on what is really occurring in the external environment. However, perceptions of support are modified by individual differences (which include personality factors) and emotional factors. Perceived support will, therefore, be closely related to actual support. Further, perceived support has the added advantage of allowing for individual differences which can increase predictive power. Hobfoll (1988) maintains that a loss of support represents a major loss of a resource and hence is a major stressor. The effects of such a lack of support can be either direct or indirect (Cohen (1988).

It now becomes necessary to describe key findings linking psychological factors to pregnancy outcome (maternal depression, birthweight and obstetric complications) so that the reader may be sure that the subject is worthy of study.

Evidence is presented in the following chapter (Chapter 2) which examines the link between negative responses to pregnancy and coping strategies. This is important because these variables may well intervene in any relationship between perceived support and pregnancy outcome (Abel, 1985). Pregnancy is sufficiently long enough for adaptive or maladaptive behaviours between gestation and birth to occur.

In the next chapter, it will also be necessary to more closely define support, examine the evidence that psychological processes affect outcome in pregnancy, and examine the intervening effects of coping strategies.

Chapter 2

The nature of stress, perceived support, and coping in pregnancy

2.1 Introduction

In Chapter One, it was argued that pregnancy may be viewed as a life event which may be stressful if circumstances are poor, but crucially, if the mother perceives her circumstances to be poor. Because perceptions are so important, psychological intervention is therefore possible.

In this chapter, we need to more closely examine models of stress which were only briefly outlined in Chapter one. We will then closely examine the nature of stress in pregnancy and some of the outcomes associated with this stress. It will be argued that how a woman behaves between gestation and birth is important. Therefore some coping strategies which are often employed to cope with stress in pregnancy will be explored. Next, we need to examine the importance of perceived support and its effects on pregnancy outcome. It has been argued that support may be a mediator or 'buffer' against pregnancy-related stress (Fleming, Klein and Corter, 1992; Molfese, Bricker, Manion, Yaple and Beadnell, 1987; Vance, 1985). However, support factors may also constitute stressors themselves, for example, where support is perceived to be lacking, or where lack of support may even exacerbate existing stress (Fisher, 1986; Molfese et al., 1987; Stott and Latchford, 1976). Younger (1991) therefore suggests that a perceived lack of support may either [a] incur its own stress, [b] exacerbate existing stress, or [c] facilitate stress.

It will therefore be concluded here that *perceived support* is a construct which can be measured using a personal construct psychology approach. Following this approach measurements of perceived support may also be used to predict outcomes in pregnancy in terms of, post-natal maternal depression, infant birthweight and obstetric complications. It has been argued that many factors influence outcome (Georgas, 1984;

Kleiverda et al., 1997), and that the pathway to outcome is likely to be complex (Elliott, 1990). Kleiverda et al. suggest that real physical (including assault) factors can either directly influence outcome or precipitate depressive mood and chronic or acute stress. Some women may try to cope under adverse conditions via substance use (e.g., smoking). A lack of support in these circumstances, combined with increased behavioural risk taking (i.e,. smoking) can then indirectly influence adverse obstetric outcome (e.g., Petersen, Handel, Kotch, Podedworny and Rosen, 1992). Thus measures of Socio Economic Status (SES) and demographic factors are important as they represent objectively difficult social circumstances. These circumstances are likely to directly or indirectly influence pregnancy outcome. Kleiverda et al. suggest that SES may also be related to physical and sexual violence upon women during pregnancy (an area of research which has received little attention and which may confound outcome results).

The stress of pregnancy and how this stress, interacts with support and other variables and influences outcome is, at present, poorly understood. We can begin to understand some of the possible mechanisms involved in pregnancy related stress, however, by examining some general models of stress and how these may be or have been applied to pregnancy. It is accepted that in the following sections of this thesis which review models of stress, that definitions of stress itself can often appear contradictory (Vance, 1985). However, we can assume that stress itself is the consequence of some precipitating event (physical, psychological, or a combination of the two) which constitutes the 'stressor'. We can also assume that stress itself is the physiological and psychological response to such stressors (Bramwell, 1997).

2.2 The relevance of general models of stress

Selyé (1956) presented a model of stress which involves a three-stage reaction. In the first stage, there is an **alarm** reaction as the organism becomes aware of a specific noxious situation. The second stage is known as the **resistance** or adaptation stage, whereby the organism recovers a functional level. The third stage involves **exhaustion**; the organism's recovery processes are no longer able to cope under the

continuing assault of the stressor. This third stage will result in the most damaging physical and psychological outcomes for the organism. However, research into stress during pregnancy and outcome, and utilising the essential Selyé model, found few direct associations (Istvan, 1986; Vance, 1985).

Stress has also been clearly identified in terms of biochemical changes (Cannon, 1928); any agent or demand which produces the stress response is a stressor (Selyé, 1956), with psychological factors being the most frequent activators of stress. Purely psychological stress can thus also lead to physiological effects, including illness. It is then reasonable to expect similar consequences of stress in pregnancy. Furthermore, in pregnancy, the catecholamines present in the mothers bloodstream, once having crossed the placental barrier, can potentially produce a stress reaction or response in the foetus (Kruse, 1978). With the advent of new technology a greater understanding of how agents cross the placental blood barrier (witness the tragic consequences of thalidomide), and behavioural changes (including developmental ones) in foetal behaviour can now be measured (Hepper, 1993). Consequently, beliefs that the womb was a passive, unresponsive organism free from external environmental influences, has been challenged. So too have beliefs that learning only begins after birth (Hepper, 1993). The pregnant woman's behaviour (including psychologically driven behaviour) can thus directly influence the developing foetus.

Any noxious stimulus (e.g., a sudden loud noise or explosion) is capable of activating the perception of a stressful situation. This could lead to hypothalamic action, potentiating hormone release, and ultimately affect blood pressure, blood flow, metabolism and central nervous system functioning (that is, direct stimulation or mediation of emotional reactions) (Pearce, 1987).

Stress research has resulted in a common agreement that stress is influential in precipitating physical and psychological illness[es] and/or exacerbating these. Stress is well established as one cause of essential hypertension and has been associated with increases in blood pressure in post-natal women (Rofe and Goldberg, 1983).

Both Lazarus and Folkman (1984), and Cox's (1986) definitions of stress (Chapter 1) emphasise that what is 'stressful' is dependent upon individual perception and appraisals of the stressor. Nelson-Jones' (1989) provides a definition which suggests that anxiety and stress are related phenomena, which may be general or associated with specific people and situations. In essence the stress literature suggests that the environment stands for the individual's internal and external worlds.

Lazarus and Folkman (1984) have provided a cognitive appraisal model of stress. Cox's view of stress would merge the physiological, biochemical aspects with the social, cultural, and emotional. Other authors, e.g., Selyé, have emphasised physiological processes. Selyé may not have agreed with Lazarus and Folkman's (1984) appraisal hypothesis, implying that the impact on the organism is direct. Verny and Kelly (1981) make the point that stress in pregnancy is probably only problematic if it is intense and continuous. Short periods of stress in pregnancy are unlikely to be detrimental to foetal development.

Finally, Janis (1958, 1965) defines psychological stress as the reaction to a physically dangerous event in which pain, bodily injury, or death is anticipated. The way an individual psychologically handles the impending crisis during the pre-impact period is an important determinant for outcome. Janis postulated that a "work of worry" is essential for successful outcome. As we saw in Chapter 1, such work of worry during pregnancy is commonly observed.   ·

The difference between the above authors is primarily one of level of analysis. Some *unconditional* stimuli will directly affect individuals and set in motion physiological and biochemical processes. Other stimuli will only affect individuals and set in motion these physiological and biochemical processes, after cognitive appraisal. *Appraisal* is a thought process which perceives the stimulus as stressful. The stress response is activated in reaction to an essentially psychological source of stress.

The term *goodness of fit* (Cox, 1986) has also been used, and indicates the person's ability to cope with their current environment, which is dependent upon their ability to

manage a stressor (Cox, 1986). However, this does not necessarily mean avoidance of a stressor. Fitting well with the environment may have more to do with 'efficiency of reaction' to the stressor. For example, a person who 'fits' well may react to the stressor, but feel more of a stress response initially, than the person who does not fit and represses perception of the stressor.

Weinman (1981) argues that individuals will always attempt to employ coping strategies for stress, and the classic model of stress propounded by Selyé includes no allowance for this. We can surmise from Selyé's model that continued stress in pregnancy (like any other time) may lead to some form of exhaustion, notwithstanding coping strategies.

If Weinman (1981) is correct, then women who perceive their support to be poor, may attempt to reduce their resultant stress by other coping strategies. It is reasonable to expect that at least some of these coping strategies will be chosen because they can immediately reduce anxiety (e.g., smoking or alcohol consumption).

In the first instance, one must acknowledge that the association between anxiety, stress, and coping strategies is complex and suffers from differential definition (Istvan, 1986). However, one might surmise that anxiety is similar to the stage of resistance, and that depression is similar to the stage of exhaustion. Either outcome has the potential to negatively impact on both maternal and foetal / infant well-being.

2.3   The effects of stress in pregnancy

Early research examining the possible link between stress and negative outcome utilised pregnant primates. In essence, exposing animals to extreme stressors (e.g., a natural predator) leads to a higher probability of miscarriage, low birthweight and obstetric complications (for a review, see Istvan, 1986). However, infrahuman studies are no substitute for human ones (Istvan, 1986). Human research has also found evidence for a link between stress during pregnancy and important maternal and infant physical and psychological outcomes (e.g., Newton and Hunt, 1984; Newton, Webster, Binu ,

Maskrey and Phillips, 1979; Lagerstrom et al, 1989; Elliott, 1989). However, the process is somewhat more complex in humans. For example, paths from maternal personality variables and pregnancy specific stress, but not from labour and delivery stress, to future parenting stress have been found (Younger, 1991).

One major difference with humans is that the experience of stressful circumstances in pregnancy is subject to cognitive appraisal (Levy and McGee, 1975). There is no simple pathway from perception of stressor to specific negative outcome in human beings. Instead, anxiety provoked by the perception of stress in pregnancy associates with negative outcomes in a non-specific way and is associated with support factors (Kleiverda et al., 1997; Istvan, 1986; Vance, 1985). Therefore, measurement of stress in human beings is unsurprisingly complex. We cannot just assume that stress is dependent upon an observable behaviour (being attacked).

As previously stated, stress during pregnancy has been associated with negative physical outcomes for both mother and baby (e.g., low birthweight, obstetric complications and post-natal depression (Cohen, 1966; Holden, Sagovsky and Cox, 1987; Holden, 1991; Newton and Hunt, 1984; Newton et al., 1979; Oakley, 1988; Reese, 1988; Yerushalmy, 1967)). Stress has also been associated with support factors, and it has been suggested that support may be an important mediating variable in all pregnancy related stress (Kleiverda et al., 1997; Oakley, Grant, Rajan, Stone, Plewis and Robertson, 1988; White and Ritchie, 1984).

For example, Klaus, Kennell, McGrath, Robertson and Hinkley (1990) demonstrated that extra support during the delivery stage of labour resulted in measurable reductions in labour length and obstetric complication rates; Elliott, Sanjack and Leverton (1988), Elliott (1989) and Holden et al. (1987) demonstrated that measurable reductions in rates of post-natal depression could be achieved when prenatal support intervention programmes were implemented. Finally, some researchers have also linked a lack of support during pregnancy to later psychopathology (Kessler, Price and Wortman 1992). It has therefore become increasingly common for researchers to attempt to link measures of anxiety / stress and support during pregnancy with later outcomes. Often,

however, the methodology involved is wanting (Kleiverda et al., 1997; Istvan, 1986). For example, the extensive use of retrospective designs in the research, inadequate sample size to number of variables measured, lack of control for known confounding variables, and so forth.

One of the most commonly used anxiety rating scales in pregnancy research has been 'The State-Trait Anxiety Inventory' or STAI (Spielberger, Gorsuch and Lushene, 1970). The STAI measures both current levels of anxiety (state anxiety) and underlying stable anxiety (trait anxiety). Clearly the two interact.

Edwards and Jones (1970) administered an earlier version of the STAI to single mothers in their third trimester of pregnancy, and attempted to relate obtained STAI results to obstetric complications. Edwards and Jones (1970) considered any obstetric complication for the mother or child to be abnormal. This does not however necessarily relate to how women themselves would view such complications (Leiverda, Steen, Andersen, Treffers and Everaerd, 1991). Participants were also rated by hospital staff as either 'well adjusted to the pregnancy' or 'maladjusted to the pregnancy'. Again this is not necessarily a rating women themselves would agree with.

Nevertheless, Edwards and Jones' results demonstrated that 'normal' pregnancies were associated with relatively low levels of anxiety, though anxiety increased shortly before birth. Abnormal pregnancies demonstrated the opposite pattern. This observed increase in anxiety levels shortly before birth in the 'normal' group (their terminology) is also supported by the work of Beck, Siegel, Davidson, Kormeier, Breitenstein and Hall (1980) and Areskog, Uddenberg, and Kiessler (1984). However, there are problems with the design of this study. To categorise any obstetric complication of pregnancy as 'abnormal' is not necessarily valid. Furthermore, the staff ratings of adjustment to the pregnancy were not subject to any reliability check.

The above research does suggest that any measure of anxiety during pregnancy should avoid the later stages of pregnancy. Norbeck and Tilden (1983) were aware of the confounding effects of anxiety in late pregnancy. Norbeck and Tilden (1983) recruited

only women in their first and second trimesters of pregnancy. Again they administered the STAI. They also assessed the number of significant life events in each woman's history, as well as assessing tangible (received) support. None of the participating women had had a previous pregnancy and in this respect were comparable. However, this does not take account of differential experiences of pregnancy which have been acquired vicariously (i.e., listening to family and friends accounts of pregnancy). Results demonstrated that much life change, high STAI scores and low tangible (received) support predicted increased pregnancy and infant complications.

However, other studies have suggested the reverse and argue that psychological distress (rather than stressful events, and as measured via the General Health Questionnaire, Goldberg, 1972) late in pregnancy (30th week gestation) is associated with an increased risk of preterm delivery (Hedegaardm, Henriksen, Sabroe, and Secher, 1993). Mutale, Creed, Maresh and Hunt (1991) also found that life events were associated with low infant birthweight. However, in their research they also examined many other factors, including SES, demographic factors, smoking and alcohol consumption. They found that many factors interacted to influence outcome, and that smoking and reduced social support were independently related to the birth of 'small for gestational age' (SGA) infants. SGA is indicative of intrauterine growth retardation, commonly associated with maternal smoking during pregnancy. Others, Bryce, Stanley, and Garner (1991), argue that their research does not support the notion that social support factors are associated with preterm deliveries.

However, Mutale et al. (1991) would defend their position on the grounds that most research which does not support this link is not sufficiently sophisticated or multivariate in design to detect these influences.

Taken together, the above results suggest that late pregnancy may become a time of increased anxiety, some of this anxiety may be indicative of real difficulties, some of it may be indicative of imminent birth concerns. Thus in late pregnancy imminent birth concerns may constitute a confounding variable in any outcome research. It may, however, be reasonable to suggest that prior to 30 weeks gestation imminent birth

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concerns are unlikely to be prominent.

It is important to remember that premature birth or reduced infant birthweights are not the only negative outcomes associated with stress and anxiety during pregnancy. Outcomes which also affect pregnant women themselves are equally important.

Benson, Betsy, Little, Dewhurst, and Priest (1987) studied women who were admitted to an ante natal ward because of pregnancy complications. These women were given several standardised measures of anxiety and depression. Results demonstrated that 59% of the sample had high levels of anxiety. Of the 25 high scorers, 11 were unsupported by partners, whereas only two of the 17 women with normal scores were unsupported by partners. This research suggests that pregnancy complications are associated with high levels of maternal anxiety, itself associated with poor partner support. Unfortunately, measures of anxiety and partner support, whilst taken during pregnancy, were taken, retrospectively (i.e., once the women had been hospitalised for pregnancy complications, the outcome measure).

However, similar results have been found by O'Hara (1986) using a prospective design. O'Hara assumed stress on the basis of number of life events experienced by the pregnant women in his sample (similar to Norbeck and Tilden, 1983). The outcome measure in this study was maternal post-natal depression. O'Hara found that partner support was an important mediating factor in maternal post-natal depression.

However, the relationship between support and depression is just as likely to be from depression to perception of support as from perception of support to depression. To expand, it is possible that perceptions of support from others are influenced by pre-exisiting levels of depression, which may be due to enduring personality trait, or by concurrent depression as a result of some other factor not measured by O'Hara (1986). The methodology may have been improved if pre-existing or concurrent changes in women's circumstances (which may account for depression) taken and duly factored into any analyses.

Nevertheless, the above research by O'Hara (1986) highlights the point made earlier in this chapter, that human beings differ in that they 'perceive' events and appraise such events. For example, Slade, MacPherson, Hume and Maresh (1993) linked the ability to control panic during labour to personal satisfaction with labour in a UK sample, highlighting the importance of perceived control. Thus human beings do not simply react to events and stressors in the environment in a passive way (Weinman, 1981). Rather, human beings will attempt to employ strategies to manage and make sense of these events (Antonovsky, 1987; Fisher, 1986) and will look to others in their environment for support.

A central theme of this thesis is that coping strategies will affect the course of a stressful pregnancy, and it is unhelpful to simply hypothesise that stress affects pregnancy adversely in a direct fashion. It will, therefore, be helpful to now examine some coping strategies which may be employed to cope with stress during pregnancy.

2.4   Intervening factors in pregnancy-related stress and anxiety

On reviewing the literature specific to pregnancy issues in health psychology, Reading (1983) suggested that we can accept that undue levels of anxiety influence pregnancy outcome negatively. As a result of this review Reading (1983) suggests that some moderating factors in this process are (1) maternal attitudes towards pregnancy, (2) trait anxiety (as measured via the State-Trait Anxiety Inventory, Spielberger, et al., 1970) and (3) coping strategies.

Stress and resultant anxiety have also been linked to a sense of 'personal control' (e.g., perceived control, Fisher, 1986; Hobfoll and Lieberman, 1989a; 1989b, and coping ability generally). Women who have a strong sense of their own control over a situation, feel less stressed, and expect to have fewer problems than those who feel at the mercy of events.

In reviewing the effects of stress on health generally, Lamping (1985) also suggested that stress has strong effects, which can be ameliorated by several factors, such as

personality. Some forms of learned helplessness (Rosenhan and Seligman, 1987) may be negative coping strategies, developmentally acquired to deal with anxious and stressful situations.

Antonovsky (1987) suggests that thoughts and feelings of mastery over the situation can stop tension forming into stress. This notion can be linked to Hobfoll and Lieberman's (1989b) sense of mastery which can stop threatening situations becoming stressful in the first place. The stressor then becomes a *challenge* which is negotiable, and is not allowed to progress into a chronic stressor capable of potentiating severe anxiety or learned helplessness and depression (see also Hopkins, Marcus and Campbell, 1984; Cox, 1989; 1990).

In more detail, Hobfoll and Lieberman (1987) examined the importance of intimacy, autonomy, and self-esteem in relation to successful pregnancy negotiation. They interviewed over 200 Israeli women at birth and at three months follow-up. They found that high self-esteem curbed feelings of depression at birth, and was reflected in the three month follow-up. The level of intimacy of the womens' relationships with their partners demonstrated an inverse relationship with depression at birth, but not at follow-up. Women in this study viewed their own self-esteem as being 'exploitable' by others. Overall, high self-esteem proved to be an important factor in avoiding post-natal depression at birth and three months later. However, the study also suggests a recognition by these women that social pressure to conform to the female stereotype may compromise their well-being (see also Grist, 1986; Raphael-Leff, 1991).

There are some coping behaviours which seem to significantly affect outcome in pregnancy, and in order to gain a full appreciation of the nature of stress effects, these should be examined. Commonly-reported coping behaviours include substance use, denial or ambivalence towards the pregnancy, conforming to the female stereotype, and knowledge seeking. These will now be examined in turn.

Although coping strategies which may be viewed as negative (e.g., smoking), may be employed to ease anxiety during pregnancy, their negative nature implies that they have

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costs which make them less desirable than other positive coping strategies. However, some 'positive' coping strategies to ease anxiety during pregnancy (e.g., seeking knowledge) need not necessarily lead to positive health-related outcomes (Dawson and Van Doorninick, 1989). In short, the delineation between positive and negative coping strategies may be somewhat arbitrary.

2.4.1 Coping strategies: Substance use

The use of self-administered anxiety-reducing drugs as a method of coping with stress is well understood by most health-care professionals. The main anxiety-reducing drugs are alcohol and tobacco. The harmful effects of smoking on the developing child were commented on as early as the seventeenth century (Abel, 1984). In A review on the effects of smoking during pregnancy involving of over 1,000 papers, Abel (1984) concludes that smoking during pregnancy is associated with many adverse outcomes, including foetal and neonatal death, which are preventable. Certainly, smoking is strongly associated with reductions in birthweight (Verny and Kelly, 1981)

Excessive alcohol consumption is also known to cause birth defects, resulting in Foetal Alcohol Syndrome (FAS). Some reports also have shown that there are identifiable cognitive and behavioural deficits in children born to "social drinkers" (Streissguth , Barr and Sampson, 1990).

The mechanisms by which alcohol consumption and smoking affects foetal development are reasonably well understood (and will be more closely examined in the following section of this review). It is known that alcohol easily passes through the placenta to the developing foetus. Exactly how it affects the child will depend upon the stage of foetal development and whether consumption has been excessive or not. The most sensitive periods are between the twelfth to eighteenth week, when the brain grows most quickly, and the twenty-fourth to the thirty-sixth week.

At this point it is worth examining studies which have examined the prevalence rates of smoking and alcohol consumption during pregnancy and the relationship of these

behaviours to other factors and outcome. These studies can be very helpful in setting norms for samples of the population under study which can then usefully guide future more in-depth studies.

2.4.1.1 Examination of some important studies of smoking and alcohol consumption during pregnancy

It has long been known that women who smoke more than 10 cigarettes per day during pregnancy deliver, on average, infants that weigh less than 200g than infants of nonsmokers (Wilcox, 1993). However, rates of women giving up smoking during pregnancy, despite high profile media coverage of the adverse effects of such smoking on the infant, remains below government targets in Great Britain (set at 31 per cent reduction in smoking in women in England between 1990 and 2000 (Graham, 1993)). Why should this be?

Graham (1993) argues that smoking in Britain is increasingly linked to being a woman and to being working class. Further, whilst prevalence rates among men began to fall in the 1990's, it began to rise for women, especially women in the 16 - 19 and 20 - 24 age groups (Graham, 1993) the ages when the majority of women become pregnant for the first time. Graham also found that whilst in the 1950's there was no evidence of class bias in women's smoking habits in Britain, current trends shown a definite class bias. Today pregnant women who smoke predominantly belong to social class V (using the Registrar General's Classification system) which is the social class with the least financial resources. Further, this class bias is replicated in cessation smoking patterns during pregnancy. For example, in Graham's Nottingham based study mothers in social class 1 were six times more likely to give up smoking on learning that they were pregnant than mothers in social class V.

The above trends are extremely worrying for women's health generally and for their infants during pregnancy. These trends pose further concerns for certain groups of women. More specifically, those who have stressful life circumstances due to realistically and measurable lack of financial resources (i.e., being in social class V).

Graham (1993) also found that smoking prevalence among lone mothers in her study was higher than among married / cohabiting mothers. Graham argues that providing emotional support and securing material resources is necessary to counteract such stress and reduce the need for reliance on smoking. She clearly equates, as Oakley does (1993) smoking with realistic social stress. Smoking during pregnancy is thus an avoidable factor associated with low birthweight but one which is also associated with realistically stressful social circumstances.

Maternal age is also associated with variations in birthweight and has traditionally been associated with younger maternal age (Fox, Koepsell and Daling, 1994). However, Fox et al. (1994), using data obtained from birth certificate records in Washington (USA) between 1984 - 1988, found that the difference in mean birthweight between smokers and nonsmokers became larger as the age of the mothers increased. Adjustment for race, marital status, parity, prenatal care, and urban / rural residence tended to decrease the risk associated with smoking, especially for the older mothers (35 >). Suggesting that social circumstances, when more beneficial, may mask the effect of smoking with increased maternal age on lower birthweight.

Fox and colleagues found that adjusted relative risks still increased with maternal age even when other factors were controlled for. They suggested that these results point toward modification of smoking related risk by age which could be due to reduced cardiovascular reserve as maternal age increases (which may lead to hypoxia) or alternatively the body is less efficient at metabolising nicotine with increased maternal age.

Fox et al's results suggest that much of the negative effects of smoking on infant health are underestimated as the majority of pregnant women who smoke are younger. They argue that older women who smoke during pregnancy are in fact the most vulnerable group and should be specifically targeted for intervention. They suggest that many other study designs might miss this fact due to the masking effect of age (i.e., studies commonly find the relationship between reduced age, smoking and lower birthweight babies because it is initially the strongest observed relationship). They also express

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concern that because research suggests women increase the number of cigarettes they smoke over time, long term smokers suffer a cumulative effect of smoking on their physical health and ability to cope with pregnancy as well as exposing the developing infant to higher rates of smoking during and after pregnancy. Other research has found that women who can stop smoking at any point up to the 30th week of their pregnancy will have heavier infants than persistent smokers (Macarthur and Knox, 1988). If older women who smoke can be targeted for intervention during the early trimesters outcome could be significantly improved.

Further, Fox et al., suggest that it is also possible that older mothers report smoking status more accurately than younger mothers, which would mean that part of the observed increased risk (for younger mothers) could be explained by lower rates of self-reporting in many studies and thus misclassification of exposure (Fox et al., 1994).

Preterm delivery is a further area of concern connected to maternal smoking during pregnancy. For example, Peacock, Bland and Anderson (1995), in a study of some 1513 women who attended St George's Hospital, London, UK, found that smoking was related to very early delivery. Amongst women delivering early, the mean gestational age was lowest among a cluster of smokers over the age of 24 (giving some support to Fox and colleagues contention that older smokers are most at risk). Peacock and colleagues, also found that smoking did not seem to be a factor for preterm births of 32> weeks gestation. Smoking was strongly related to reduced foetal growth. There was no evidence for a relation of gestational age overall with smoking, alcohol or caffeine intake. However, as regards alcohol consumption, non-drinkers had the highest risk of preterm birth, and the heaviest drinkers had the lowest.

Peacock and colleagues study also found evidence for an association between very early preterm birth and several socioeconomic factors (social class, education, marital status, income, help from professional agencies, contact with neighbours). In all 7.5% of their sample delivered babies preterm. Sex of the baby was not significantly associated with gestational age. Teenage mothers were more likely to deliver preterm

but there was no significant linear trend with age. Maternal height was not related to gestational age (this was a white sample to exclude some genetic influences on birthweight). These latter results support suggestions made by Graham (1993) that social stress is influential (though in combination with smoking behaviour). Women who reported "trouble with nerves and depression" had a nearly twofold excess of preterm births but this was not significant. Standard indicators of anxiety and depression showed no significant relationship. Some measures of social support were also associated with increased risk.

Peacock et al. suggest that the direct mechanism through which stress might cause early labour is through catecholamine release and changes in other hormone concentrations. They found that cluster analysis indicated the presence of three subgroups of women delivering preterm. Two clusters were predominantly of low social status who smoked during pregnancy and the third comprised older women with higher social status who did not smoke. They did not find evidence, therefore to totally support Fox et al's (1994) findings.

Fox et al., concede that in their analysis they did not distinguish between low birthweight due to intrauterine growth retardation from that due to premature birth. They believe that the effect of smoking on birthweight is mediated more by growth retardation than by prematurity, although small decreases in gestational duration may be associated with maternal smoking. Further, they argue that the fact that adjustment for reported gestational age at birth did not alter the results of their analysis is suggestive that prematurity is not the dominant mechanism. Peacock et al's (1995) results provide evidence that the pathways are in any case different and that smoking is influential in prematurity for certain subgroups of pregnant women who smoke and for a further subgroup of pregnant women who do not smoke but are older and who have higher social status.

The effect of smoking in particular during pregnancy thus far appear far reaching and complex. DiFranza and Lew (1995:385) conclude from their own studies that "*Tobacco use is an important preventable cause of abortions, low birthweight, and deaths from*

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perinatal disorders and Sudden Infant Death Syndrome (SIDS)". DiFranza and Lew carried out a meta-analysis of over eighty English published medical studies in this area.

DiFranza and Lew (1995) found that studies relying on self-reports grossly underestimated the true prevalence of smoking during pregnancy. They believe that the lack of significant findings in some studies regarding early miscarriage may be due to very low levels of cigarette consumption in these studies. They also found the following associations with smoking consumption during pregnancy, after controlling for age, parity, previous miscarriages, alcohol consumption, ethnicity, education, and employment status. 1] low birthweight and maternal smoking, 2] maternal smoking and neonatal deaths, 3] increased risk of perinatal death (which they argue is primarily due to increased rate of placental abruption and an increased rate of delivering immature infants of low birthweight), and 4] maternal smoking on the risk of SIDS (which tripled for those who smoked during pregnancy - though they did not appear to consider the effect of smoking postnatally on this factor).

Blair, Felming, Bensley, Smith, Bacon et al. (1995) did however measure the effect of the postnatal environment on SIDS. They carried out a two year population based case control study involving 195 babies who died of SIDS and 80 matched controls. Their results revealed that more index than control mothers smoked during pregnancy. They also found that paternal smoking had an additional independent effect. The risk of death rose with increasing postnatal exposure to tobacco smoke, which had an additive effect among those also exposed to maternal smoking during pregnancy. Their results suggest that almost two thirds of of SIDS deaths could be avoided if parents stopped smoking. They also found that alcohol use was higher among index mothers than controls. Whilst alcohol consumption was strongly correlated with smoking it was not found to have any additional independent effect. Parental estimation of the infant's daily exposure to tobacco smoke as a postnatal marker for smoking, also remained significantly associated (after controlling for other factors) with SIDS.

In more detail, Blair et al (1995) found that the more the mother smoked during

pregnancy the greater the associated risk for SIDS, thus making it clear that risks associated with tobacco smoke are not restricted to an in utero effect. The risk of SIDS also increased with the increasing numbers of smokers in the household, increasing total number of cigarettes smoked a day, and increasing daily exposure to tobacco smoke. There was no significant difference found between the index and control partners regarding usual alcohol consumption or consumption of 3 or more units of alcohol within 24 hours of the final or reference sleep.

However, they found that the index mothers tended either to drink no alcohol or to drink more than 10 units a week. For those drinking more that 10 units a week, most index and control mothers decreased their alcohol consumption during pregnancy. Several other factors were associated with increased risk, these included younger mothers, mothers without a partner, high parity, multiple births, short gestation, and low socioeconomic status.

It should be borne in mind, however, that other factors have also been shown to be influential in SIDS (e.g., prone or side sleeping positions, Fleming, Blair, Bacon, Bensley, Smith et al., 1996).

Clearly the association between maternal cigarette and alcohol consumption during pregnancy has negative sequelae for the foetus and infant. For example, high levels of maternal alcohol consumption has been associated with the condition known as Foetal Alcohol Syndrome (FAS) discovered by (Jones, Smith, Ulleland, and Steissguth, 1973).

However, it has also been found that drinkers are less likely to have a preterm or low birthweight infant and have a higher mean birthweight than babies born to abstainers (Bell and Lumley, 1989). It should be noted that Heller, Anderson, Bland, Brooke, Peacock and Stewart (1988) found in their study, that a higher proportion of drinkers than non-drinkers were married, better educated, of higher social class and financial status. Therefore, women who have access to a generally more healthy environment consume more alcohol, though this does not appear to have any adverse effect on their

infant's health.

Finally, we need to consider support factors in maternal consumption of cigarettes and alcohol during pregnancy. Stephens (1985) pointed out some time ago that whilst many studies concentrated on the relationship between alcohol consumption during pregnancy and adverse infant outcomes, few focused on variables associated with alcohol consumption. For example, sociocultural variables such as perceptions of and actual available support.

Stephens (1985) argues that general population studies have long known that alcohol (like cigarettes) are commonly used to ease psychological discomfort and reduce stress. In her study she found that social support was significantly associated with alcohol consumption during pregnancy. Ninety percent of those with high total social support decreased alcohol consumption between 6 months prior to pregnancy and the first 4 months of pregnancy, compared to 61% of those with low total support. This difference was statistically significant at the p<0.001 level. The loss of the father's support (for various reasons) prior to the fourth month of pregnancy was identified as being significantly correlated with alcohol consumption prior to and during pregnancy. Of course this relationship does not clarify any causality.

Stephens (1985) also found that general support and pregnancy support were found to be working in opposite directions in accounting for the variance in alcohol consumption prior to pregnancy. General support (non pregnancy specific sources of support) showed a positive association with drinking. Only pregnancy support (support from those whom women felt they could discuss pregnancy specific issues and from whom they could gain support) continued to show a significant negative association with drinking during the first 4 months of pregnancy.

Stephens suggests that the results of her study imply that social support is not a unitary concept in association with alcohol consumption patterns prior to and during pregnancy and merits further investigation. Although research generally suggests that smoking patterns are established prior to pregnancy and socially reinforced we also know that

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failure to quit smoking in pregnancy is associated with socio-economic disadvantage (Graham, 1994). Further, high anxiety may induce stress reducing behaviours (such as smoking and alcohol consumption) or increase their use. Even when women have stopped smoking or drinking during pregnancy, perceived stress may trigger relapse. For women who continue to smoke in pregnancy (because of well formed behavioural patterns) perceived stress may increase their consumption to a level beyond that which their individual physiology can adequately cope. Support is, therefore, a further factor which is likely to influence the above behaviours.

It has been suggested that intimate social support during pregnancy is associated with improved foetal growth (Hoffman and Hatch, 1996). Thus support from a partner is twofold in importance. First it can potentially influence a woman's ability to quit smoking during pregnancy, secondly it may be directly related to foetal growth. Appleton and Pharoah (1998) aimed to measure the effect of partner support on cigarette consumption during pregnancy. They examined the number of smokers in the woman's social network, expecting that cessation would be less successful for those women with a higher number of social contacts who also smoked. The concept that 'perceived' support, or the belief that help would be available if needed, as contrasted with help that is actually received (e.g., Sarason, Pierce and Sarason, 1990) was seen to underlay their measure of support from partners. They note the clinically well known relationship between support and depression (beginning with the work of Bowlby, 1959, and 'attachment' styles). Appleton and Pharoah wanted to test whether depressive symptoms would be associated with higher levels of cigarette consumption, and decreased social support (Zuckermann, Amaro, Baucher and Cabral, 1989).

The Appleton and Pharoah study sample comprised 662 pregnant women (below 25 weeks gestation) who were current smokers, or had smoked until becoming pregnant. Of these 418 (63 per cent) completed follow up questionnaires (35 weeks gestation). Women's smoking behaviour was obtained from self-reported number of cigarettes smoked before pregnancy and self-reported number currently smoked. Partner smoking was assessed in the same way. Partners were also asked whether they had smoked during the last six months, and if so, whether they had increased, continued at the same

level, reduced, or stopped. The authors acknowledged questionable validity of self-report measures of smoking behaviour. However, they argued that the confidentiality of the questionnaires, and the fact that this was not an intervention study, reduced some of the pressure on participants to falsify reporting of cigarette consumption.

Socioeconomic status (SES) was assessed in this study. However, they chose not to use the Registrar General's criteria. Instead their data for socioeconomic status was based on womens' education (no education beyond secondary school vs. any further education), housing tenure (owner - occupier vs. non-owner-occupier) and income (on income support vs. not on income support) (Townsend, Phllimore & Beattie, 1988).

Appleton and Pharoah's results demonstrated that partner smoking reduction or cessation, higher emotional support from partner and lower social network smoking, were associated with current smoking status in early pregnancy. Non of the women quitted smoking when their partners increased theirs. Number of cigarettes smoked daily before pregnancy, perceived social support, parity, education, housing, income support and gestational age were all associated with current smoking status. All perceived support subscales were associated with current smoking behaviour and low perceived support was associated with failure to quit. However, emotional support, from partner or family members, was not found to be associated with smoking cessation in multivariate analyses. The number of smokers in the social network was associated with quitting status and the more contacts with smokers (after controlling for other factors) the more odds rates for failure to quit increased. Because perceived support was associated with quitting for early pregnancy, the authors suggest that women's expectations of social support are worthy of further examination in relation to smoking during pregnancy.

In the above study by Appleton and Pharoah (1998) support was defined in terms of support to give up smoking or continue with smoking cessation. This is a very precise definition of support based on behaviour (smoking). It is a useful study in highlighting how behaviour of others influences individual pregnant women. Whilst Appleton and Pharoah did use an Intimacy Scale (Hobfoll, Nadler and Leiberman, 1986; Hobfoll and

Leiberman, 1987; 1989) this scale was, nevertheless not specific to pregnancy. This and other studies examined do, however, demonstrate the interaction between stress, support, and known negative behaviours during pregnancy (e.g., smoking and drinking). It also highlights the complexity of the interactions between these factors.

Reading (1983) recognised long ago that the impact of stress during pregnancy would be moderated by a number of factors. He included such factors as trait anxiety, attitudes towards the pregnancy, appraisal of any stress, psychosocial support available and coping strategies implemented. He further suggests (as others have) that raised anxiety alone may have direct implications for uterine physiology and foetal health and development, as well as indirect effects through prompting behaviours which are contraindicated in pregnancy, such as smoking or alcohol consumption.

Reading's (1983) review identifies the fact that earlier studies did not always control for the confounding effects of smoking when examining the relationship between increased anxiety and complicated pregnancies. Further, he highlights the possibility that some pregnant women may become more anxious because their pregnancies are identified as problematic, not that they have problematic pregnancies because they have raised anxiety. Of course, it is entirely possible that known problems with the pregnancy can cause raised anxiety and may influence known negative behaviours such as smoking which further complicate the pregnancy and increase the risk of adverse outcome.

Like Istvan (1985), Reading acknowledges the many problems with retrospective and simplistic research in these and other issues of causality. Also like Istvan, Reading suggested that standard measures of anxiety only measured a fairly stable personality variable or general anxiety. Such measures would miss anxiety specifically related to pregnancy which would not be evidenced otherwise (i.e., when the woman was not pregnant).

Reading also placed 'appraisal' at the centre of an heuristic model of maternal anxiety on the the course and outcome of the pregnancy. He suggests this factor is important because it allows for individual differences and acknowledges the many complex

factors which influence pregnancy. Appraisal is an important psychological construct which is potentially measurable.

Identification of women 'at-risk' of problematic pregnancies is both a clinical and research issue. It is potentially amenable to psychological understanding, measurement and intervention. Deepening our understanding of 'why' some women continue to engage in known contraindicated behaviours during pregnancy, requires us to develop appropriate multivariate methodology. Epidemiological research is useful in defining parameters, but tells us little about 'why' observed relationships might occur. Such research is also limited in terms of it's predictive power. For example, whilst many factors (i.e., socioeconomic, demographic and others factors) can identify many women as high risk these factors only account for half of the perinatal morbidity and mortality (Reading, 1983).

2.4.1.2 Implications for smoking and alcohol consumption during pregnancy.

Smoking is likely to influence pregnancy progression by reducing the supply of oxygen available in the maternal bloodstream, a process also observed during exposure to high levels of anxiety. Without an adequate flow of oxygen in the blood, foetal tissue growth slows down. The amount of cigarettes a woman smokes per day is thus important to foetal development. However, and as has been suggested in the above section, smoking is also commonly used to manage real life stresses and anxiety (see also Snelson, 1990). Only around 20 per cent of women quit smoking during pregnancy and those who continue to smoke are associated with socioeconomic disadvantage (Graham, 1994). Further, a number of studies have shown that women who quit smoking during pregnancy are more likely to have a non-smoking partner than those who do not quit (e.g., Appleton and Pharoah, 1998).

Alcohol consumption and smoking during pregnancy are rightly considered by most authors to be damaging to the foetus (see also Maurer and Maurer, 1990, for a fuller review). However, smoking provides relief for the mother under stress (Tunstall, Ginsberg and Hall, 1985) as it lowers anxiety (Snelson, 1990). Advising pregnant

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women against smoking may appear to be a reasonable aim for those primarily concerned with foetal health, but how this is done requires careful consideration. Advice to women to give up smoking completely may cause more stress to the woman who uses such strategies to cope with difficult life circumstances. Some have argued that pressure to quit smoking during pregnancy for some women can actually lead to an increase in stress. This in turn can, ironically, damage the foetus just as much if not more than if the mother had continued to smoke because of the physiological process such raised anxiety sets in motion (Abel, 1985). Worse still would be the scenario where ill thought out advice to quit smoking because of the damage it causes to the foetus may not result in the woman giving up smoking but simply increase her anxiety. The result being the advice can make a bad situation worse.

In a review of the findings on the effects of smoking and alcohol consumption during pregnancy, Abel (1985) contends that the risk of causing anxiety must be balanced against the direct physical effects of the substance. Others disagree (Petersen et al., 1992) and argue that advice against smoking can be given without raising anxiety. Petersen et al. (1992) demonstrated that counselling support alongside advice about the negative effects of smoking, reduced substance intake rates without increasing / incurring anxiety. However, they did not consider the possibility that counselling itself may have reduced anxiety and therefore the need to use an anxiety reducing substance as a coping strategy. Future research in this vein could compare counselling women who smoke and are counselled to quit smoking with those who are simply counselled.

Jones, Chernoff and Kelly (1984) also challenged the traditional medical advice to give up alcohol consumption during pregnancy. In their study, pregnant women were divided into three groups: women who binged 1-3 times during their first trimester; those who drank consistently and heavily during this period; and those who drank less than 2 drinks per day. Infants of heavy drinkers were more likely to be miscarried, show decreased birthweight, and demonstrate Foetal Alcohol Syndrome (FAS).

The authors argue that it is unrealistic to expect women who drink less than two drinks per day to reduce this to nothing at all. However, there was no control group of women

in the study who did not drink at all. Such a group might conceivably have demonstrated better outcomes to their pregnancy than any of the groups included by Jones et al. (1984). Furthermore, long-term follow-up for infant development was not undertaken. Therefore there was no examination of possible development effects of light drinkers. Burgess and Streissguth (1991) suggests that such developmental consequences may be less obvious at birth (i.e., not identified as FAS) but no less serious as the child's long-term development is compromised (see Burgess and Streissguth for a fuller account).

The use of 'negative' coping strategies is therefore a complex issue and such coping strategies can interact with a woman's perceived support. For example, Albrecht and Rankin (1989) measured support, via the Personal Resource Questionnaire (PRQ) which is not specific to pregnancy, and anxiety, via the State-Trait Anxiety Inventory (STAI, Spielberger et al., 1970) during pregnancy. Results demonstrated that smoking was significantly correlated with alcohol consumption. Increased state anxiety was significantly negatively correlated with decreased social support. Higher trait anxiety was significantly negatively correlated with lower PRQ scores, and more drinks of alcohol per day was associated with decreased social support. These results suggest an interaction between support and the potentially negative coping strategies of smoking and alcohol consumption during pregnancy.

That substance use may be associated with the burden of caring in difficult social circumstances, rather than women's ignorance of its adverse reproductive effects, also requires some recognition (Loftus and Fries 1979; Abel, 1985). It is not in itself a malevolent act. As Oakley (1993) states.

"..while smoking may be considered a risk to the fetus, it is very often a mechanism by means of which the mother acts out her responsibility to that child, to her other children, and to everyone for whom she cares, as smoking helps her to cope and to claim some authentic activity and personal space in an otherwise crowded and impossible life".

(Oakley, 1993, p. 136)

We should not, therefore, expect alcohol and smoking during pregnancy to be a straightforward matter, nor should we expect the effects of these behaviours to be straightforward. Rather we should expect such behaviours to be associated with other important factors, such as support factors. We will now move to examine some other *coping strategies employed to cope with pregnancy*. We begin with maternal denial and ambivalence towards pregnancy.

2.4.2 Coping strategies: Maternal denial and ambivalence towards pregnancy

Rejection of pregnancy can be represented by the behaviour of seeking an abortion. Termination may constitute a practical coping strategy for a medically-complicated or unwanted pregnancy (Statham, 1990). However, termination, for whatever reason, may also incur its own psychological distress and can leave residual stress for a future pregnancy (Newstatter and Newson, 1986; Statham, 1990; Tollefson and Garvey, 1983). This type of withdrawal from pregnancy is qualitatively different to that which is the focus of this section of this thesis. We acknowledge the literature on the subject matter of termination, but it is not our focus here. Here we focus on pregnancies, which women have decided to continue with, but with which they have difficulties which result in their emotional withdrawal from the pregnancy.

Psychoanalytic writers suggest that maternal ambivalence during pregnancy may be related to past experiences of being parented oneself (e.g., Deutsch, 1947). This suggestion has some empirical support (e.g., Fonagy et al., 1991; see Chapter 1).

One finding from Fonagy et al. (1991) was that anxious-resistant and secure children had mothers who recalled their relationship with their own mothers as significantly more loving and less rejecting. This result suggests that some mothers may idealise their relationship with their own mothers, but the idealisation is unrealistic. Results showed no association between mother's demographic characteristics, and either her or her infant's attachment classification. We can therefore assume this is not an essentially social factor.

Deutsch (1944-45, 1947) had suggested that a woman with a hostile relationship towards her own mother may find that the identification with the role of mother is too difficult. This mother becomes ambivalent towards the role as a way of coping with the incurred intrapsychic stress. This conflict and ambivalence is then associated with the unborn baby, which could be regarded as unwanted or even rejected altogether. Others argue maternal ambivalence in pregnancy is not truly about the baby, but what the baby represents, which is deeper issues about the woman's past or current life concerns. The baby comes to represent these deeper issues. The positive aspect of this transference is that pregnancy becomes a unique window for therapeutic intervention (Klaus, 1990; Raphael-Leff, 1991).

However, if these coping strategies go unchallenged the consequences are that the woman emotionally 'withdraws' from her pregnancy. Such an emotional withdrawal can lead to post-natal depression (Deutsch, 1947; Walker, 1988). The psychological mechanism by which this occurs can only, at present, be hypothesised. It may well be that maternal ambivalence, if it represents an intrapsychic struggle, protects the woman from deeper issues which pregnancy has heightened. However, once motherhood arrives the physical and emotional demands exerted upon the woman mean she can no longer maintain her psychological defences. Pregnancy can lower such a defence in the first place. Motherhood can dismantle them completely. This leaves the woman in an extremely emotional vulnerable state and can result in severe distress (e.g., post-natal depression). Certainly, negative or ambivalent maternal attitudes during pregnancy have been associated with later post-natal depression (e.g., Affonso, Lovett, Paul, Arizmendi, Nussbaum, Newman and Johnson, 1991). Thus there is some support for our hypothetical psychological mechanism. Support may also be found in studies which have investigated maternal emotional withdrawal in pregnancy (due to other life events occurring at this time) and later infant sleep difficulties (e.g., Daws, 1990). These studies highlight a point made throughout this thesis that how a pregnancy is negotiated will influence both maternal and infant outcome variables.

In one study of twenty-nine mothers of infants with disturbed sleep patterns, Guedeney and Kreisler (1987) hypothesised that the disturbance would be related to a trauma in

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the mother's life. Most of the participants in their study reported that the pregnancy itself was usually characterised by a traumatic event which resulted in depression or anxiety in the mother (e.g., loss of a parent or partner, or some other major loss). Importantly, participants reported that they coped at the time by disengaging from the pregnancy.

Whilst the above study is somewhat speculative it is largely representative of such in-depth psychodynamically orientated case studies. However, in suggesting that emotional withdrawal may be appropriately employed to cope with internal distress, for a brief period, but may still have long-term negative sequelae, may be stretching the limitations of it's design. However, the conclusions are strengthened by a related study, that of Brown and Harris (1976), considered to be a 'benchmark' epidemiological study in depression. They found that one of the precipitating factors in female depression generally, was death of a parent before the age of eleven years. However, we cannot state that the exact same process occurs which influences adult well-being will be the same for the infant. We can suggest that maternal emotional withdrawal during pregnancy (temporary loss of mothers emotional attention), may have some effect on the infant (of which later infant sleep disturbance which be one). However, we need to be cautious here, particularly as Guedeney and Kreisler's study was a single case study of a retrospective design, and clearly influenced by one particular theoretical model. Further, infant and child sleeping difficulties are largely perceived as such because of the effect they are having on the parents sleep (see Pollock, 1992, for a fuller review).

However, the most extreme form of emotional withdrawal, lowered mood or clinical depression, can be measured either ante- or postnatally. More commonly it is measured postnatally (e.g., The Edinburgh Postnatal Depression Scale (EPDS), Cox, Holden, and Sagovsky, 1987). The EPDS has demonstrated its usefulness in detecting post-natal depression, and is superior to the BDI (Harris, Huckle, Thomas, Johns and Fung, 1989). The EPDS has also proved useful in prospectively identifying later post-natal (major) depressions. It has been less useful in screening for non-major depressions (Murray and Cox, 1990). These lesser types of post-natal maternal

depression can, however, be equally negative in terms of their negative effect on mother-child relationships (Murray and Stein, 1989) and also require detection.

Maternal depression is important to identify and alleviate as the consequences for mother and child can be devastating (Elliott, 1990). For example, it has long been associated with impaired maternal-infant bonding (Field, 1990; Gotlib, Mount, Cordy, and Whiffen, 1988; Murray and Stein, 1989). Gotlib, Whiffen, Wallace and Mount (1991) found that clinically depressed women are characterised by low parental caring and high over-protectiveness. Furthermore, these women appeared to have more negative relationships with their own parents than those who were not depressed.

It is difficult to measure denial of the reality of pregnancy and approaching motherhood as such. However, it is possible to measure maternal attitudes towards the pregnancy. These attitudes may then be interpreted. For example, women who want to deny the reality of their pregnancy may not fill in part or all of a questionnaire designed to measure her involvement with her foetus / infant. One such questionnaire has been devised, and purports to measure maternal-foetal attachment (The Cranley Maternal-Infant Attachment Scale, Cranley, 1981). This questionnaire assumes that lack of attachment indicates emotional maternal withdrawal from, or denial of the pregnancy and approaching motherhood. However, it may also be argued that maternal mood may also reflect these factors.

Anderson, Fleming and Steiner (1994) measured maternal mood during pregnancy as well as maternal attitudes towards parenting, in a sample of pregnant women in their third trimester. Results demonstrated that women with depressed mood also had more negative attitudes towards parenting. Further, they found that a naturally occurring improvement in mood, from the prenatal to the post-natal period (as measured by the Beck Depression Inventory, Beck, Ward, Mendelson, Mock and Erbaugh, 1961), commonly occurred.

Thus the research suggests that measures of maternal mood and attitudes towards pregnancy / future parenting / motherhood, may be one way of assessing emotional

involvement in pregnancy. The research suggests that a lack of such involvement may be detrimental to mother and child. The research further suggests that the consequences of such maternal emotional withdrawal are primarily emotional. This is in contrast to the consequences of smoking and alcohol consumption in pregnancy, which are primarily physical. In reality, outcomes of pregnancy are likely to be related to a more complex interaction of many factors (Elliott, 1990).

2.4.3   Coping strategies: conforming to the 'female stereotype'

The *female stereotype* can be understood as a pattern of behaviour which is compliant and submissive and not necessarily in the interests of the individual's psychological health (Broverman, Broverman, Clarkson, Rosenkrantz and Vogel, 1970). Comparatively little research has been carried out into this type of coping strategy. However, there is some evidence to suggest that such a strategy may incur short or long-term negative effects for the woman, rather than the infant. The most notable of these being maternal depression (though, as stated above, this can also affect the infant).

Elliott (1990) reminds us that "The 'Madonna and child' idealisation of motherhood and media images of young mothers which portray them as serene, beautifully made up ladies pampering their beautiful babies" is unrealistic. Such an image is at odds with the reality of motherhood. For example, where the woman has other children to care for and a husband who still expects the same level of care from his wife as before. A woman can be in full-time unpaid employment with little or no recognition for this role, whilst still being expected to conform to the female stereotype (the perfect wife, mother, lover, daughter, and so forth).

Attempting to live up to idealised images of pregnancy and motherhood can incur considerable stress for women. This stress may occur because the gap between the 'ideal' and actual reality cannot be made sense of (cf., Antonovsky, 1987). Unfortunately, women who have experienced the reality of motherhood are often unwilling to share their experiences with others (including other pregnant women).

This unwillingness is due to a fear of being seen as incompetent, which contrasts to the widely held perception that successful mothering is easy, instinctive, and joyous (Elliott, 1990). The fact that women who 'know' the reality of motherhood do not feel supported enough to share their experiences is of concern. The fact that many women do not find motherhood perfect in no way detracts from the experiences of many women who do find pregnancy and motherhood very rewarding. The problem is that for those who do not find pregnancy and motherhood rewarding there is little outlet for their feelings. This is because social pressure to conform to and collude in the idealistic myth of pregnancy and motherhood is great (Weaver and Ussher, 1997).

In a review of depression in women in general, Grist (1986) suggests that women in secular democracies are influenced from a very early age by social pressure to behave compliantly and submissively. Raphael-Leff (1991) also found that cross-cultural studies demonstrate strong pressure on women to conform to become mothers. Such social pressure can result in women believing motherhood is their destiny, it can also compromise a woman's sense of control over her life, and lower her self-worth (Oakley, 1993). As Cox (1990) suggests it is not then so surprising that 10% (the commonly agreed rate of post-natal depression) of pregnant women will experience post-natal depression, but that *only* 10% will!

The loss of measurable rewards which motherhood frequently brings; loss of a sense of achievement; loss of autonomy; and loss of independent identity (Gleve, 1987) can make the transition to motherhood unmanageable. For some women this transition is even more difficult because of the real practical and financial constraints. For example, those who have the lowest socioeconomic status and who are thus likely to have the least actual control over their lives (Gleve, 1987). For those pregnant women who have autonomy, a sense of control, a sense of achievement, and positive self identity, motherhood can be both manageable and rewarding.

Grist (1986) believes that increasing an individual's *sense of mastery and autonomy* can mediate the negative effects of social pressure, though it cannot change the social situation in which women live. Feeling 'in control' can help women cope with certain

environments and motherhood more effectively. Feeling in control may also decrease women's chances of becoming demoralised and depressed. In this sense feminist arguments for increased female power and control can, in theory, also increase their chances of enjoying motherhood. Thus there is much to be done, and which can be done, to positively intervene during pregnancy and early motherhood, as regards female stereotyping. Both practical and emotional support are likely to increase a woman's ability to cope (Elliott, 1990) and influence her sense of control. Without adequate emotional support a pregnant woman's sense of self worth and mastery is frequently compromised (Beele, 1982). Women need to be able to express any dissatisfaction with their roles in society, including that of mother, if they are to avoid feeling helpless, and so that they may discover ways of feeling more in control. To discover new ways of being does, however, require support at the individual and societal level (Wright, 1992), and support which allows psychological experimentation (Kelly, 1955).

In this section we have talked a good deal about how important it is for pregnant women to feel in control. Such a focus does not indicate that handing over control is necessarily a bad thing. The following section of this thesis will now examine this issue further.

2.4.4   Coping Strategies: Remaining in control or handing over control

Some coping strategies may involve being in control or giving over control (active or passive). Control is important, as we have discussed in the previous section. The consequence of not having control can be negative for the pregnant woman. For example, Green (1990b) found that in a study of 825 pregnant women, post-natal mood was related to the amount of information and control they had during birth. Green accepts that retrospective reporting of these events may be coloured by actual outcome.

However, there will be situations where control will need to be handed over to others in some form, during pregnancy and birth, for example, during a difficult delivery. The

important point is that a woman can still retain a 'feeling of being in control' in situations where actual control is handed over to others. It is the act of 'choosing' to hand over control which allows the woman to maintain her feeling of being in control. Not feeling in control, as Green (1990b) highlights, can prove detrimental to the woman's later psychological well-being. To retain a feeling of being in control whilst handing over control does, however, require that sufficient information to make a choice is available (i.e,. informed consent). Where such information is not given and where important obstetric decisions are taken away from the pregnant woman, a sense of 'loss of control' is likely to result. Such a sense of loss of control can, of course, lead to increased anxiety, stress and eventually helplessness, and even post-natal depression (Green, 1990b).

Thus handing over control must be achieved in a specific way and must be the choice of the individual woman. Krause and Campbell (1990) have found that in their sample of 65 'low risk' pregnancies, women's perceptions of locus of control in the mid trimester demonstrated a strong belief in powerful others (i.e,. physicians). Krause and Campbell suggest there is a need for further exploration of women's perceptions of their responsibility for, or control over, the health of their child and how this may interact with increased medical procedures. The implication being that if women perceive the health of their baby is largely in the hands of powerful doctors they may be less likely to ask questions, gather information, and develop their own knowledge base.

However, Slade, McPherson, Hune and Maresh (1990) appear to contradict the above findings. From their prospective study of 81 primiparous pregnant women, they conclude that women's expectations of labour are unrealistic because they expect to have too much control! They state that women's prior expectations of the need for medical intervention were much lower than reality. They also state that prior expectations regarding personal control in labour were unrealistically high compared to reality. For example, regarding levels of expected pain, women's ability to control their feelings of panic, and the efficacy of breathing exercises.

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The above research by Slade et al, may support the notion that women's expectations in relation to labour are unrealistically high, they may also suggest that current medical practice is failing women. More specifically, current medical practice is failing to adequately prepare women for the realities of labour. Our previous examination of the myth of pregnancy and motherhood, which appears supported by the results of Krause and Campbell (1990), suggests an alternative view. This being that a tendency to deny the reality of pain in labour is socially sanctioned. Without adequate knowledge a woman may come to believe she has more or less control over her pregnancy than she truly has. Without adequate knowledge we cannot expect women to know when it is appropriate to hand over control to others and when it is not. Unfortunately this area of the literature is relatively sparse. In such circumstances it is often useful to look to research which is more in-depth and usually of the case study type of design.

The importance of remaining in control, whilst handing over control, is exemplified in a case study by Gasper (1987). In this study a pregnant woman, who demonstrated persistent anaemia during pregnancy, was monitored to record relationships between her stressful condition and her chosen coping strategies. Gasper's results demonstrated six mutually-exclusive groups of responses were employed by her. The frequencies of these coping strategies were then calculated and comprised: conditional compliance (conditional upon her appraisal of the information given and complying with medical intervention) (34%); expressing affective states (24%); monitoring of health-status (23%); using support (11%); replenishing-resting (5%); and using knowledge (3%).

Conditional compliance is suggestive of autonomous and independent action, associated with high-mastery, and may be identified as an active-passive coping strategy (Echabe, 1992). Conditional compliance is also clearly handing over control without losing control and only after sufficient information has been obtained and appraised.

Expressing affective states to others implies a need to have an emotional outlet (e.g., with a partner, relative or friend who listen). This coping strategy is both active and passive. One can seek (active) support from others and then accept (passive) or reject

the support which is then given. The whole time, the woman is still in control, assuming emotional support is (as in this case) readily available from others.

Monitoring is an active coping strategy and is essentially being aware of one's current state of health, it is a strategy where the woman herself is very much in control. However, monitoring may rely on either others providing sufficient information for adequate monitoring to occur (i.e,. medical personnel). It may also rely on the individual's ability to seek out the information from other sources.

Replenishing appears to be both active and passive as it is an active decision to become inactive when this is the most appropriate course of action. Similarly, using knowledge can be seen as active and passive. It is active in the sense that the woman is making an active decision to seek and use existing knowledge (from whatever source), and passive in the sense that she can be accepting of this knowledge.

It would appear from Gasper's results that this pregnant woman was very much in control, even when she handed over control where appropriate. She was also very aware of the need to seek both intimacy and support, to help her cope. Whilst this case study is highly unlikely to be representative of all pregnant women it highlights some positive ways of coping, by handing over control, without being out of control. It also suggests that seemingly unrealistic behaviour by some pregnant women in some studies occurs due to lack of honest information which is delivered in a supportive environment. Gasper's study particularly highlighted, therefore, the importance of information. Related to this was the coping strategy of 'knowledge seeking' This coping strategy will now be examined in further detail in the following section.

2.4.5   Coping Strategies: Knowledge seeking

Knowledge seeking as a coping strategy shares many similarities with the previous section on control. Empirical studies suggest that seeking knowledge and gathering information, may act as a reducer of anxiety (Perez, 1983). Freda, Andersen, Damus, Poust, Brustman and Merkatz (1990) demonstrated that when pregnant women had

prior knowledge about hospital situations, they were more likely to deliver at term than controls. However, such women who seek out knowledge and information may be less likely to designate control to others or have blinding faith in them. They may also be women who cope better with such information (monitors) compared to those who would not (blockers, or women in denial).

Thus somewhat conversely, for some women seeking help and advice during pregnancy from health care advisers may actually lead to increased stress. It is not therefore, as suggested in the previous section, the knowledge / information per se which is important but how it is given and received. For example, with sufficient psycho-emotional support even negative information about pregnancies can be perceived as helpful (Fisher, 1986). The context in which information is obtained is crucial. In a supportive context the woman feels she is also being 'listened to', or in other words she perceives she is supported (e.g., Oakley et al., 1988). Thus a perception of support when a pregnant women is negotiating her pregnancy and attempting to cope with many changes becomes paramount. Even when a woman is actively seeking knowledge about her pregnancy she needs a supportive forum in which to discuss the implications of this knowledge. She also needs a supportive environment in which any new knowledge is given to her.

Of course, for some women who are already seen as 'high-risk' (e.g., because of previous miscarriage) this knowledge in itself can be stressful (Bielawska-Batorowicz, 1990). In such cases Bielawska-Batorowicz recommends that professional support should emphasise the positive as well as the less positive aspects of the current pregnancy, to prevent the development of fear and worry. They also stressed that where hospitalisation is necessary in such cases, this should be kept as brief as possible so that the women can return to their own networks of support.

Within all of the above outlined coping strategies the importance of feeling supported has emerged as a strong theme. Women's perceptions of others has also emerged, as it did so in Chapter 1, as a strong theme. Coping and perceptions of support thus appear to go hand in hand. With this in mind the following section of this thesis will now

examine the importance of perceived support.

2.5 The importance of perceived support

Perceived support is one of the few factors which is conceptually close to stress which has a strong effect on outcome. Given that coping strategies obscure the relationship between stress and outcome, perceived support may be important *because it is as close to coping strategies in conceptual terms as to stress*. This is in essence why one can argue that perceived support should be measured when looking at the psychological factors which influence pregnancy outcome.

For example Rothberg and Lits (1991) examined the effects of non-directive counselling, as a form of psychosocial support, for pregnant women who scored high on stress (according to the Social Readjustment Rating Scale of Holmes and Rahe (1967)). Results demonstrated significant increases in birthweights for the supported group. These results strongly suggest that real stress can be mediated by extra psychological support.

Central to contemporary health psychology is the assumption that social support from significant others is of major importance in coping with important life events, and that social support can reduce or eliminate the adverse consequences of these events upon health or well-being. However, support is not straight forward. Sometimes support has negative effects, sometimes stress itself can decrease the availability of support and often people believe they give more support than they receive (Buunk and Hoorens, 1992). All of which suggests that perceptions of support as supportive requires further examination.

Some studies have suggested that 'perceived' support will either buffer against stress during pregnancy (Molfese et al., 1987; Vance, 1985) or be a source of stress itself when it is perceived to be lacking (Molfese et al., 1987; Stott and Latchford, 1976; Vance, 1985). Psycho-emotional support has also been strongly related to the individual's ability to cope with stress during pregnancy (e.g., Rothberg and Lits

1991).

It was suggested in Chapter 1 that a changing welfare state and the breakdown in the traditional family might lead to a loss of social support which is very important to the pregnant woman (Oakley, 1993). Langer, Victora, Victora, Barros, Farnot, Belizan and Villar (1993) conducted an intervention programme to introduce social support networks. These networks included additional health worker contact, health education and access to health services. Combining their own results with previous studies in the Americas, the authors found the following. Women receiving this type of intervention used fewer painkillers, were more often accompanied to ante natal clinics, had lower anxiety, were more likely to breast feed, felt unwell less, and were less anxious about the newborn's health. In addition, there was a reduced chance of delivery via caesarean section. Birthweight and preterm delivery were not affected.

The above study was, however, concerned with *actual support*, i.e,. relatively objective 'support'. Whilst these factors are undoubtedly important, the pregnant woman's perception of her environmental circumstances is our central focus, following Raphael-Leff (1991), Cox et al. (1989), Stott and Latchford (1976) and Smith (1995). Psychological factors include real life challenges such as loss of professional life, financial constraints, and the realistic fear of labour (Areskog et al., 1984). It is important to remember, therefore, that anxiety, if present in pregnancy, need not be irrational, it often relates to meaningful events and can be reduced with appropriate insight (Sherr, 1989). Nevertheless adequate support may help a woman manage such anxiety (e.g., Klaus, 1990; Klaus et al., 1990).

So what is truly supportive? This is not an easy question to answer, because what is viewed as supportive by one woman may be viewed as stressful by another. Kelly (1955) offered some guidance.

"*Support* is a broad response pattern on the part of the therapist which permits the client to experiment widely and *successfully*."

(Kelly, 1955, p.657; his italics)

The personal construct approach proposes that the purpose of support is to facilitate *experimentation*. Experimentation is the process by which the person behaves to 'try out' different beliefs about the world. It follows that the person's preexisting beliefs are very important, and are unique and subjective (Kleiverda, Steen, Andersen, Treffers and Everaerd, 1991).

Kelly's theory allows us to account for the 'whole' of the person's environment (for example, financial support, partner support, parental support and peer support) through their perceptions. It assumes a subjective realism by which each of us interprets the world according to our construals of its possibilities. In terms of 'perceived support', we are aware of, or obtain knowledge of, others supportiveness through our senses and cognitions, resulting in a perception of support based on reality.

The phenomenological notion of support is not dissimilar to Janis' (1958, 1965) theory of how psychological stress is managed, if it is managed well. In Janis' theory anticipatory rehearsal or imaginative construction of future events serves to bind (or ground) anxiety. This binding process later functions to reduce uncertainty at impact of the feared event (i.e,. labour). This theory helps explain why anxiety may be appropriately raised in later pregnancy (e.g., Areskog et al., 1984).

However, as we have reviewed in earlier sections, some women may need to deny the reality of such impending events as childbirth, and may do so because they perceive their support to be lacking (Areskog et al., 1984). A phenomenological / Personal Construct approach to the measurement of support in pregnancy has the advantage of measuring 'individual' responses to a common experience (cf., Kelly, 1955; Fransella and Frost, 1982, Fransella, 1984).

An important part of the phenomenological theory of support is that one must reconstruct one's beliefs on the basis of experimentation. When a life event occurs, such as pregnancy, support helps the person adjust to impending change and manage the transitional stage. It also allows the person to feel safe in experimenting with their new way of being. For example, the pregnant woman is likely to 'construct' herself as

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a mother, whether or not she did before but she is also likely to wonder what she has lost in this new construction. She may not feel immediately obliged to give up her previous way of being, which may result in some ambivalence. If this ambivalence is accepted by those around her and she is not criticised for it her experimentation may safely continue.

Measurement of 'perceived' support is also able to capture something of the 'quality' of the support which cannot be detected when measuring actual support (Cooley and Unger, 1991). To illustrate this point we will briefly examine the work of Dragonas (1987) who evaluated 156 Greek women's needs, attitudes, and experiences in months immediately prior to and subsequent to the birth of their infants. Themes considered were their feelings and attitudes toward pregnancy, labour, and the expected infant; breast feeding; emotional and practical needs; experiences from perinatal care and relationships with medical care personnel and with the family; perceptions of physical and emotional stress; and their relationships with infant and partner. Findings show that these women wanted more personal care: more time, continuity of care, information about their pregnancy, and less distance from the doctor. They also expressed a need for emotional support. Anxiety was a central feature of their feelings during labour and delivery and was related to giving subsequent infant care. Perceived support from partners and family members was measured qualitatively and found to be valued by women. However, sometimes such support was viewed as intrusive, particularly when family members gave advice or tried to take over. The reader will note that such support is the opposite to that recommended by Kelly (1955) where listening and allowing the person to experiment to find their own solutions is seen as supportive. This work was expanded by Thorpe, Dragonas and Golding (1992a; 1992b) to include comparisons of Greek and British populations. In terms of depression Greek mothers had higher mean scores (Thorpe et al., 1992a).

Perceived support in the Thorpe et al. (1992a) study was measured utilising and expanding a measure originally developed by Dragonas' (1987) in her work. Unfortunately, as with many other studies, this measure was not specifically designed to measure 'pregnancy specific' support. Instead it was based on standard ideas of

perceived support (what may be termed here as perceived 'general support'). Whilst measures of perceived general support are undoubtedly important (as they usually reflect social network, peer, family and friendship support) they are nevertheless not specifically targetting issues solely relevant to pregnancy.

Results of the Thorpe et al. (1992a) study found that Greek women had more dissatisfaction with their perceived emotional support. Findings suggested that particularly for the British women social support worked favourably to act as a protective mechanism which buffered against poor emotional well-being. For the Greek women, the sole predictive variable was the experience of stressful life events which was positively related to poor emotional well-being. The second study by these authors (Thorpe et al., 1992b) also utilised the 'Edinburgh Postnatal Depression Scale' (EPDS). Results demonstrated no difference in emotional well-being for British and Greek mothers. In both cultures emotional well-being in pregnancy, social support and life events was related to postnatal depression scores, with social support and life events being the major predictors of depression.

Finally, Dragonas (1987) found that lack of perceived support was often associated with high levels of anxiety during pregnancy. Further, that increased levels of anxiety were associated with later observed decreases in maternal infant care. The first of these findings mirrors those which have also linked poor psychosocial support with raised anxiety (e.g., Vance, 1985).

A phenomenological or personal construct approach has the advantage of combining past experiences, stress factors and social support into a person's overall *environment* (Kelly, 1955). Kelly argues that the person's total environment, which includes the past, will influence their unique way of perceiving the world. We can assume that it will also influence the way the perceive their support, and that whilst perceived support is based on actual support it will also be based on individual life experiences.

Research (e.g., Fonagy et al., 1991) does appear to support the psychoanalytic view that one's past childhood experiences (of being parented oneself) can affect one's view

of pregnancy and motherhood. Bibring et al. (1961) cite the case of a young pregnant woman whose 'odd' behaviour disappeared when she was given supportive psychotherapy from a social worker. Their advice to the therapist was to assure the woman that her pregnancy was okay *as long as she felt it was*, and that there was no reason *other than her own belief* - learned in her past - that she would be a bad parent.

The macro skills of what is involved in being supportive is, therefore, relatively clear. For example, Kahn (1979) suggests that: affect, affirmation, and aid are involved in being perceived as being supportive. But what are the micro skills involved in being perceived as supportive? The work of Dragonas (1987) suggests that the micro skills of 'listening' without giving advice or taking control, are strongly implicated in being perceived as supportive. Oakley et al. (1988) also suggest that the skills of 'listening' are central. Giving directive advice, not taking adequate time, poor eye contact, and using up too much of the interaction are all unhelpful micro skills, which will result in a person being perceived as unsupportive. These "don'ts" of being supportive will be familiar to many counselling professionals. The Egan model of counselling, based on Rogerian or Client Centred therapy, exemplifies this supportive therapeutic approach (Egan, 1986).

Rasanen (1985) agrees that traditional counselling skills, such as those outlined by Egan, are important. These skills will involve empathy for the individual, unconditional positive regard towards them, and real interest in what they have to say (genuineness). However, Rasanen also suggests that some pregnancy experiences cannot be ameliorated by counselling (e.g., the decision to terminate the pregnancy). Phenomenological or Personal Construct Psychology was developed as a both a therapeutic method and substantive theory. In regards to its therapeutic aspects, it contains the skills of good listening as recommended by many counsellors. It is encouraging, therefore, that those features which are identified by other authors as supportive, are also to be found in the model which will be adopted here, the Personal Construct model. This model has the advantage of being capable of integrating the psychosocial and intrapsychic approaches to pregnancy reviewed in Chapter 1. Integrating the research in such a way that enables us to begin to develop a method for

measuring perceived support is important as research has demonstrated that a lack of such a support is widely implicated as a mediating factor in all pregnancy related stress. We will now proceed to examine some of the consequences of pregnancy related stress when support is poor. This examination will help to highlight why identification of those who perceive their support to be lacking is so important, particularly as others (e.g., Dragonas (1987)) have found that lack of perceived support is often associated with high levels of anxiety (i.e., stress) during pregnancy.

2.5.1 What happens when support is poor

One major study to examine the effects of poor support on infant birthweight measured actual, received 'social support' (Oakley et al., 1988). Oakley concedes that the term support is itself difficult to define; and has generally been used loosely and inconsistently (Oakley, 1993). Oakley (1990) suggests that we do not truly know what support is. We only know what it is not. She suggests it is not medical care or advice, partner relationship counselling, or health promotion advice. The literature generally concurs with Oakley and recognises the many difficulties involved in measuring social support, let alone support in pregnancy (Orth-Gomer and Unden, 1987).

Oakley et al. (1988) studied the effects of increased midwife visits to some women, with controls receiving routine ante natal care. Sample size was large (n >400). Midwives were instructed to listen and talk to these women about their needs and their circumstances and how these may have changes with the advent of being with child.

Results suggested that women receiving the extra visits positively appraised the skills of 'listening' above all else (80%). The intervention group demonstrated an average rise in birthweight of 50 grams, which is comparable to the effects of dietary intervention (40-50 grams) but not statistically significant. Furthermore, at seven year follow-up of these women's children, results demonstrated differences in health and development. The intervention group faring significantly better than controls (Oakley, Hickey, Rajan and Rigby, 1996).

Postnatal depression in relation to support has also been examined by several authors (e.g., Cutrona, 1982, 1984, 1986, 1989; Crokenberg, 1984). It is estimated that 10-20% of women develop a depressive syndrome following childbirth which lasts up to one year (Pitt, 1968; also Field, 1990). Some 50-80% of women experience depressive symptoms for only a few days, which is often termed 'baby blues' (Price, 1988). A small minority develop a psychotic illness or puerperal psychosis at a rate of about 1-2 per 1000 births. Most authors hold that this condition is due to physiological changes, as it is triggered by childbirth and not significantly associated with previous psychiatric history (Price, 1988).

However, in a study by Ballard, Davis, Cullen, Mohan and Dean (1994), they found that 9% of their sample (n = 200 post-natal couples) of fathers also had post-natal depression (as measured by the Edinburgh Postnatal Depression Scale; Cox et al., (1987)) at six weeks post-natal. These fathers were significantly more likely to be cases of depression if their partners were also cases. This suggests some form of adjustment difficulties for both parents which cannot be simply due to maternal hormonal changes.

Thorpe et al. (1992b) in a cross cultural study examining British and Greek women's pregnancies and adjustment to motherhood, found cultural differences. For Greek mothers life events, particularly those relating to family stresses were found to predict poor emotional well-being. For British mothers, social support was the strongest predictor of emotional well-being. Again such differences implicate psycho-cultural influences rather than biological factors in adjustment to pregnancy and motherhood.

Whiffen (1992) found that postnatal depression is predicted by the same variables that predict other types of depression. She also found that post-natal depressive episodes tend to be mild and to resolve quickly, which she suggests indicates that post-natal depression is best conceptualised as an adjustment disorder. The findings of Ballard et al. (1994) and Thorpe et al. (1992) would appear to support her in this conclusion. Taken together, the evidence from these studies suggests that post-natal depression cannot simply be due to hormonal changes, and that adjustment to parenthood is strongly suggested as a causal factor (for mothers and fathers).

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Nicolson (1990) examined the psychological characteristics of women who developed post-natal depression which lasted beyond a week. She found that women commonly have unrealistic expectations about motherhood which is in part drawn from cultural values and images. Suddenly the loss of career and the prospect of a twenty-year responsibility of care is upon them. So, the support they receive from partner and family is crucial. However, we may suggest that if fathers too are struggling to adjust to pregnancy and parenthood, their ability to support their partners will be somewhat reduced.

Kendell, Chalmers, and Platz (1987) examined precipitating factors in post-natal depression. They examined 470,000 women over twelve years. Women most at-risk for developing post-natal depression were those who were either unmarried, having their first baby, had delivered by caesarean section, or had previously experienced a perinatal death. Those who were unmarried may have been unsupported, but we cannot know this for sure, especially as some fathers whether present or not may be unable to be supportive (e.g., Ballard et al., 1994). Caesarean section and prior perinatal death are severely traumatic experiences and one would expect stress in such cases (Oakley et al., 1996).

Harker, Goodenough, and Greenwood (1995) replicated the study by Kendell et al. (1987). They confirmed Kendell et al.'s findings, and added that poor emotional well-being after birth was associated with having younger partners, experiencing a previous miscarriage, and having an unsympathetic partner or relatives. A younger partner may suggest that such a partner may be unable to be supportive due to their own lack of maturity (this is of course purely a hypothesis), as previously stated loss is likely to be a significant stressor, and an unsympathetic partner or relatives are likely to be perceived as unsupportive. Some of these suggested explanations have empirical support.

For example, Small, Brown, Lumley, and Astbury (1994) found that women experiencing post-natal depression commonly experienced the following; perceived lack of support from significant others, feelings of social isolation, physical fatigue, and

general ill health. When asked what advice they would give to other women in their position, the women suggested talking about their feelings, getting some 'time out' from mothering and 'getting out more' (Small et al., 1994). Time out from mothering could include some form of return to paid employment.

2.6   Conclusions

It has been argued that pregnancy is a life event with its own challenges. We can view pregnancy as a time of internal change, as psychoanalysts have done, or as a time when supportive social factors (understandably) become more important to the woman. It is argued that a personal construct approach takes account of both these views and thus the whole **environment** with which the woman faces her pregnancy and motherhood.

The increased vulnerability a woman feels during pregnancy is functional. She must look around her for those things which will support her, for example when her career is interrupted. She is also most likely to be the main person responsible for child care, and probably for some years to come. Should her partner be physically or emotionally absent, as often happens (Oakley, 1993), then she may look more to her parents for help. Parents may offer some degree of shared care and financial resources, but may also be unhappy about doing so (Oakley, 1993).

In the absence of a supportive partner, or supportive parents a woman can come to feel generally unsupported and view pregnancy and motherhood more negatively. However, even in these circumstances, poor pregnancy outcome is <u>not</u> inevitable. The woman's own positive attitude towards her pregnancy can rise above many adverse circumstances. A woman with high self-efficacy and high self-esteem may not need to feel that her partner and her parents will support her, her own positive view of her pregnancy and forthcoming motherhood may be enough (Stott and Latchford, 1976). Alternatively, negative maternal attitudes may change the way she views her whole environment. Viewing pregnancy and motherhood negatively may impact on perceptions of support from other sources (and no matter how good these other sources of support actually are).

Previous studies have commonly utilised existing measures of anxiety or depression, not specific to pregnancy (Levine, 1991) or altered existing measures (e.g., the EPDS, Cox et al., 1987). The difficulty with these measures is that they frequently tap normal pregnancy changes (e.g., restlessness, sleepless, worrying over nothing in particular, and lack of energy) and are thus likely to confound any subsequent analyses or conclusions. Those studies which aim to exclude such confounding measures frequently focus on only the aspect of pregnancy outcome, either maternal or infant outcome variables, but rarely both. Consequently, possible interactions between maternal and infant variables are missed. Furthermore, too many studies have been retrospective in design and have attempted to link stress, anxiety, or support factors with pregnancy outcome after the event (Istvan, 1986; Kleiverda et al., 1997; Vance, 1985).

The time is now right to develop a screening tool to prospectively identify those women most at-risk of experiencing pregnancy related negative sequelae (for themselves and their infants). We can assume from the literature reviewed here that a consistent factor which is likely to mediate all pregnancy related stress, is that of 'perceived' support. If we can identify those women who perceive their support to be poor, we can assume they are at risk. Once this has been achieved the possibility of positive intervention, during pregnancy itself, becomes viable. The literature has also consistently indicated that intervention during pregnancy is both possible and can positively mediate outcome. Having developed a screening tool based on the literature and the above assumptions, we may assess the extent to which such perceived support, along with other important mediating variables, influences outcome. We would not expect the pathways from perceived support to outcome to necessarily be direct. The literature reviewed here has clearly demonstrated that complex pathways, and interactions with coping strategies, such as smoking and alcohol consumption, are more likely to be evidenced.

The literature reviewed here suggests that measures of perceived support have the best chance of capturing the whole of the environment of the pregnant woman. A screening tool which is specifically designed to measure perceived support, specific to pregnancy and new motherhood, could prove invaluable. Such a tool would need to take account

of the literature which has identified the following support factors as important to pregnant women; **(1) general feelings of support (from family and peers), (2) feelings that a partner is supportive, (3) feelings that parents are supportive (both in the present and in the past), and (4) their own attitude towards the pregnancy and forthcoming motherhood.**

It is the purpose of this study to design and develop just such a screening tool, in the form of a self-administered questionnaire. This questionnaire will ask women themselves about their perceptions of support. It is also the purpose of this study to base this questionnaire on the literature reviewed here. To reiterate, this literature suggests that the following capture the main sources or domains of support important in pregnancy negotiation and the transition to motherhood: General Support, Partner Support, Parent Support, Maternal Support

It will also be important to take account of actual circumstances, following Oakley et al. (1988) and others (e.g., Kleiverda et al., 1997) as much as possible. This will allow some comparison between perceived support and actual support factors. Actual support factors are assumed to be associated with demographics and SES. These factors will be examined as predictors of outcome and as correlates of perceptions of support. Further, the coping strategies of smoking and alcohol consumption will be measured. These two coping strategies constitute behaviours which are known to have deleterious sequelae and are relatively easy to measure. Other coping strategies which were identified here are less easy to behaviourally operationalise and thus measure without incurring excessive demands on pregnant women. Where possible standardised measures of anxiety and depression will be utilised.

However, some of the identified coping strategies will be embedded within the support questionnaire and can be implied. For example, depression or withdrawal is likely to be associated with poor feelings of being supported generally (particularly the general support domain). Woman whose attitudes towards pregnancy and motherhood (the maternal support domain) are *too* positive may be assumed to be viewing pregnancy and motherhood in an unrealistic and idealistic way. In this sense they are conforming

to the female stereotype. Women whose attitudes towards pregnancy and motherhood are *too* negative may be assumed to be ambivalent or in denial.

Retaining or handing over control as a coping strategy is also not easily measured, without intensive observational techniques. We may, however, assume that women with an overly positive view of pregnancy and motherhood may have unrealistic expectations of others (doctors, parents and partners) and their ability to make pregnancy and motherhood pleasant. Women who wish to maintain control may be more cynical in their expectations of what others can do for them, and thus less likely to be either totally positive or negative in their views on pregnancy and motherhood.

As previously stated, knowledge seeking as a coping strategy has many links with retaining or handing over control, and is also potentially measurable via maternal attitudes (the maternal support domain). The notion of 'monitors' and 'blockers' was also introduced as relevant here. Monitors may seek to gain information and knowledge so that they can remain in control or choose when to hand over control. They are therefore unlikely to be overly positive about pregnancy and motherhood. Blockers on the other hand do not cope well with realistic knowledge and information. Their maternal attitude scores may again be just a little too positive. However, if they have been forced, or felt obliged, to receive such knowledge (e.g., the negative effects of smoking during pregnancy) they may become more anxious and unhappy (cf., Abel, 1985). Again, should this happen, the effects of this will be evidenced in their general support scores.

In the empirical studies which follow, attempts will be made to estimate the relationship of perceived support, the coping strategies of smoking and alcohol consumption during pregnancy, and outcome. Outcome will be measured in terms of maternal anxiety and depression both ante- and postnatally, infant birthweight, prematurity, and obstetric complication rates.

Chapter 3

Perceived support in pregnancy and pregnancy outcomes, and the effects of counselling intervention: Initial studies 1 and 2

3.1 Introduction

Viewing the literature (Chapters 1 and 2) it is clear that pregnancy is a life event which has the potential to incur stress. It was hypothesised that perceived support may be an important factor in pregnancy outcome. It was further hypothesised that a lack of perceived support could be a possible source of stress in itself, or exacerbate existing stress. We identified four major sources or domains of perceived support which will need to be included in any new measure of support during pregnancy. These were:

- parental support - past and current parental relationships
- partner relationships
- maternal attitudes towards the pregnancy and future motherhood (self support)
- general feelings of being supported (essentially from family and friends).

These four domains of perceived support formed the basis of a specific questionnaire developed by the author. The subsequent self-report questionnaire was named the Support in Pregnancy Questionnaire (SPQ).

3.1.1 Rationale for four domains of support

- **parental support** - we examined the area of relations with the woman's own parents. It was concluded that current perceptions of these past relationships (Fonagy et al., 1991) and perceptions of current relationships with parents could influence feelings about pregnancy and future motherhood (Smith, 1995). Thus a domain specifically measuring this aspect of perceived

pregnancy support was included. In line with the ethos of 'perceived' support, it should matter little whether women's parents are currently physically available to provide support for women. The important aspect of this domain was that women would be able to imagine how supportive their parents are or would be if they were still present. In other words, and in line with object relations theory, it is the perception of the 'internalised' parent/s which is being accessed here. The combination of past perceptions of support and current perceptions of support is aimed at capturing some measure of how supportive these relationships have been, currently are being (real or internalised) and how they may impact on pregnancy negotiation.

• **partner relationships** - Again the importance of partner support consistently emerged in the research reviewed here. Perceptions of current partner support specifically related to the pregnancy and future motherhood was highlighted (and in relation to smoking behaviour). Thus a domain specifically measuring this aspect of perceived pregnancy support was included.

• **maternal attitudes towards the pregnancy and future motherhood (self support)** - The literature reviewed here suggested that a woman's attitude towards the pregnancy is an important factor in pregnancy negotiation. Whilst ambivalence towards pregnancy may be a relatively normal and transient phenomenon of pregnancy, prolonged ambivalence may be problematic. Thus a domain specifically measuring this aspect of perceived pregnancy support was also included.

• **general feelings of being supported (essentially from family and friends)** - This domain was consistently identified in the literature as important to pregnancy negotiation and particularly where the woman's own emotional well-being was compromised. Many author's saw this particular source of support as providing a 'buffering' effect in such circumstances. For some groups of women, their social network (friends, peers, work colleagues etc.) may prove more important as sources of support than family or partners.

Thus this final domain of perceived pregnancy support was also included.

- The degree to which peer support is specifically addressed within this final domain is via Questions 1 and 15. For example, with regard to Question 15, this question allows each woman to include as "those close to me" anyone she defines as close and does not confine her to any specific person or group of people based on others assumptions of who is close to her.

The SPQ measures support as perceived by the pregnant woman, rather than inferring the perception of support from actual personal circumstances. The measure is intended to provide us with a window on the cognitive appraisal of the mother's perception of support. It is expected that perceptions of support are associated with 'received' support (e.g., absence of potentially supportive partner) or demographic factors (e.g., maternal age). However perceptions do not necessarily follow from actual circumstances. This empirical chapter provides details of the initial usage of the SPQ.

3.1.2 Psychological factors affecting pregnancy

Stress and anxiety during pregnancy influence the well-being of the infant and the mother for the worse. Stress and anxiety have been associated with low infant birthweight, increased rates of obstetric complications, and post-natal depression. Lifestyle factors such as smoking, alcohol and drug use are also related to both the risk of antenatal and intrapartum complications as well as to chronic or acute psycho-social stressors. The relative contribution of the behaviour and the stress is sometimes hard to distinguish (Kleiverda et al., 1997, p.282). Rothberg and Lits (1991) found that in their study increased social support for women who were assigned as stressed (according the the Holmes and Rahe scale) resulted in increased birthweight. They argued that this increase in birthweight was not due to prolonged gestation but to improved intrauterine growth.

In terms of current ability to medically predict which women are likely to have compromised infants, the available literature does not look promising. For example,

Hemminki and Starfield (1978) suggest that only 50% of cases of low birthweight and prematurity can be predicted by conventional prognostic indicators such as maternal age, diabetes, hypertension, or previous obstetric history. The remaining 50% has yet to be explained by other factors.

One of the most common negative outcomes of pregnancy is post-natal depression in the mother. In reviewing the available evidence, Cox et al. (1989) comment that it is also extremely difficult to identify those women who will suffer from post-natal depression beforehand. However, there is some evidence for a type of progression from sub-clinical depression in pregnancy to later post-natal depression (Murray and Cox, 1990; Green, 1998).

The management of post-natal depression via psychological intervention has proved promising. Holden et al., (1989) examined whether counselling by health visitors is helpful in managing post-natal depression. Sixty women were identified as 'depressed' at a six-week screening interview and at a 13-week psychiatric interview. Half of these women were counselled in eight weekly sessions by health visitors given a short course in counselling skills. Their improvement or deterioration was measured by standardised psychiatric interview and by a 10-point self-report scale. Results demonstrated an improvement in depression in 69% of the counselled group, compared to 38% of the women who were not counselled. Holden et al. (1989) conclude that counselling by health visitors is valuable in managing post-natal depression in the absence of psychotic symptoms.

However, the relationship between support and postnatal depression may be more complex (e.g., Fleming, Klein and Corter, 1992). Fleming et al. found in their study that social support did not alleviate maternal depression. In fact, they found evidence that such support may even be detrimental to some depressed mothers' self-confidence. Interestingly, however, social support did increase mothers' proximal attention to their infants. In this latter research support may not have been decidedly beneficial for depressed mothers but was beneficial to their relationship with their infants (as measured by proximal attention). The debate as to whether support can impact

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positively on pregnancy and pregnancy outcome measures is not, therefore, clear cut.

Nevertheless, issues of support have been strongly associated with stress in pregnancy and negative pregnancy outcomes (Istvan, 1986). Though some research has suggested that support is not associated with adverse outcome (e.g., Bryce, Stanley and Garner, 1991; in relation to preterm delivery). In the case of Holden et al.'s (1989) research, the added stress of depression during pregnancy appeared to respond well to supportive counselling intervention, of which listening plays a central role. Research has also shown that the supportive skills of listening (Oakley et al., 1988) which are basic skills in the development of any supportive relationship (Egan, 1986) may improve outcome in terms of infant birthweight.

Stress is potentially damaging for both mother and infant, but it appears that damaging effects can be mediated by support. Highly stressful circumstances may result in extreme negative outcomes, though with human beings it is always difficult to directly measure the effects of stress on relevant outcomes.

In infrahuman studies, it has been found that primates exposed to stressors in naturalistic settings (aggressors threatening to attack) demonstrated impaired placental development, an increased rate of spontaneous abortion, and lower birthweights (Myers, 1972). Other authors have suggested that low birthweight, morbidity and mortality in animals follows stress exposure over time (Anderson, Rhees and Fleming, 1985; Barlow, Knight and Sullivan, 1978, 1979). Unfortunately, the biological correlates of these results remain unclear and it is unwise to generalise such results to human beings (Istvan, 1986).

Thus, whilst there is a considerable body of evidence to suggest a link between stress during pregnancy and pregnancy-related outcome measures, it is the perception of stress in human beings, which is subject to cognitive appraisal, which is of importance. Humans may have positive or negative cognitive coping strategies to deal with stressful circumstances, as well as perceptions of support which may act as a type of buffer from stress.

The following studies were primarily aimed to examine the possible links between such perceived support and some important pregnancy related outcome measures. These are: obstetric complication rates; maternal anxiety and depression; infant Apgar scores; and infant birthweight. To avoid confounding influences of the fear of labour in the latter part of the third trimester (cf., Areskog et al., 1984; Norbeck and Tilden, 1983), or the influence of large hormonal changes in the first trimester, only women in second to early part of their third trimesters were recruited. The second aim of these studies was to examine the possible effectiveness of the SPQ (Support in Pregnancy Questionnaire) in identifying those women most at-risk for experiencing negative pregnancy related outcomes.

Thirdly, the following research aimed to examine the positive effects of 'counselling' in a subgroup of pregnant women who were identified as being unsupported (treatment group), when compared to a similar subgroup who did not receive counselling (unsupported controls), and a further group who did not rate themselves as 'unsupported' (supported controls), (following Oakley and colleagues work on the importance of listening skills).

3.2   Method

3.2.1   Questionnaires

(1)   Construction of the Support in Pregnancy Questionnaire

During construction of the SPQ, and subsequent revisions, guidelines provided by Moser and Kalten (1971) were considered. Specifically, they promote the need for simple language and relevance of the question content to the relevant population. Their recommendation that the more questions sound like ordinary conversation the better, was applied. The fact that ambiguous questions should be avoided was important as was the need for several simple questions to tackle a more complex issue. The need for pretesting and piloting were also recognised and several 'trial runs' of the SPQ, with academics and members of the population for whom the questionnaire was designed

were duly undertaken but are not reported here.

Rationale for development   The literature review (see chapter 1) clearly demonstrated that specific domains of perceived support were of significance. These were categorised by the author and incorporated within a specifically devised questionnaire to measure perceived support during pregnancy. These four categories of support are as follows:

[1]   General support.   This domain represents the degree to which a pregnant woman perceives she is supported generally, particularly from family and friends and others (e.g., peers / work colleagues).

[2]   Partner support.   This domain represents the degree to which a pregnant woman perceives her partner is supportive during the pregnancy and the degree of satisfaction with this source of support.

[3]   Parent support.   This domain represents the degree to which a pregnant woman perceives her parents have been supportive towards her in the past and in this pregnancy.

[4]   Maternal self-support (or attitude towards the pregnancy).   This domain measures how the pregnant woman herself perceives her pregnancy and approaching motherhood.

These four domains were all addressed via different questions within the SPQ. In the later version of the SPQ there were equal numbers of questions in each support domain. In the following reported early studies this was not the case.

In the initial version of the SPQ (see Appendix 3.1) there were 26 questions in all, with each question providing a seven point scale (see Table 3.1 and Appendix 3.2). The areas of parental support and general support were each addressed by 7 questions. Partner support and maternal attitude were each addressed by 6 questions. The SPQ yielded four scores, the average for each area of perceived lack of support. A score of 3.5 or more in any of the four categories was adopted as cutoff for the unsupported-supported distinction. Initial pilot testing of the questionnaire provided data for

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developing norms (n=94). This data demonstrated that around 20% of pregnant women scored above this point. As might be expected the distribution for this sample was positively skewed, with most women scoring in the low range, suggesting that around 80% of pregnant women who completed these pilot questionnaires were satisfied with their support.

Table 3.1 Criteria for scoring the Support in Pregnancy Questionnaire (Spring 1988 version)

Questions 1, 2, 3, 6, 8, 10, 12, 14, 16, 18, 19, 21, and 23 were given scores in ascending order from left to right. The scores were 0, 0, 0.5, 0.5, 0.5, 1, 1, for the seven points on the scale:-

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Questions 4, 5, 7, 9, 11, 13, 15, 17, 20, 22, 24, 25, and 26 were scored in a similar manner, but from right to left. The scores were 1, 1, 0.5, 0.5, 0.5, 0, 0, for the seven points on the scale.

Composite scores for each of the four categories of perceived lack of support were obtained by adding the scores for the 6 or 7 questions in each category.

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a)   **Partner support**:-

Questions 6,7,14,19,20, and 25.

b)   **Parental Support**:-

Questions 1,2,5,11,13,24, and 26.

c)   **General Support**:-

Questions 3,4,8,12,15,16, and 22.

d)   **Maternal Attitude**:-

Questions 9,10,17,18,21, and 23.

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(2)   *The Hospital Anxiety Depression Scale* (HADS; Zigmond, 1983).

(3)   *The State-Trait Anxiety Inventory* (STAI; Spielberger et al., 1970).

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The HADS and the STAI were used here as two measures of anxiety and depression which are well established and validated. The results from these questionnaires could be compared to results from the SPQ and may provide some concurrent validity for the effectiveness of the SPQ in detecting ante natal anxiety and depression. Further, the HADS was specifically included because it is less reliant on somatic signposts for anxiety and depression, and because it is easy to complete. The Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987) was considered as a possible measure in this research but rejected because it was originally designed to only measure levels of depression postnatally and because it does not measure anxiety. More recently the EPDS has been used to screen women antenatally for possible postnatal depression with some success (Murray, and Cox, 1990; Green, 1998).

The results of these studies strengthen the validity of using the HADS (which measures both anxiety and depression) here.

(4)   *Obstetric complications*

Outcome measurements of birthweight and complications were taken in both studies (from mothers and medical records). However, there is a sufficient body of evidence demonstrating that women have good recall of events related to pregnancy interventions (e.g., Martin, 1987).

Because obstetric complications are specific to an individual and vary in degree as well as type, ranking of a complication type provides a crude and unreliable method to assess outcome. Previous studies have utilised optimality/adversity indices in which a score is derived from tallying the number of abnormalities which have occurred (Gillberg and Gillberg, 1983, Touwen et al., 1980). This study utilised a form of this method by focussing on the presence or absence of ten key obstetric complications. At the time of this study, there was no definitive or reliable weighting/ranking system for obstetric complications available to the author (neither reliable or valid). Neither was there any system which had been validated against women's own views of what constituted important complications (Clement, Wilson and Sikorski, 1999). An attempt to address the latter by Clement et al. has been undertaken. Clement et al. criticise

previous research which have used measures which are not empirically tested and which either reflect the researchers' own views or that of medical professionals. Their research, (involving 1,714 participants) in contrast, sought to develop an intrapartum intervention score (ISS), based on perceptions of women who had actually experienced the intervention. Their results demonstrated that whilst women still rated a Caesarean section (not differentiated for elective or non-elective) and Forceps / Ventouse delivery highly and in the same way professionals commonly do, in most other categories there were significant differences between womens' ratings against those of a previous and commonly used and adapted scoring system (Oakley, 1980).

In the following research presented here, the contentious nature of an obstetric complication system was taken into account. It is accepted that different obstetric attitudes of professionals may also influence pregnancy outcome (Kleiverda, Paarlberg and Buitendijk, 1997) and thus the occurrence of obstetric complications will differ from one area to another. In the geographical area where this study was undertaken four obstetricians were responsible for all the hospital care of women in the area. Guidance from these four Consultants in Obstetrics and Gynaecology in defining ten major obstetric complications was sought as well as reference to the available literature. They confirmed the literature in that no standardised system of rating obstetric complications was available for use. Therefore the occurrence of an agreed ten important obstetric complications (see Appendix 3.2 presented in the original ranking order) were measured (for mother and foetus / infant). Originally, these ten obstetric complications were weighted by these consultants independently and then inter-rater agreement was reached in discussion. However, after lengthy consideration, it was decided that the measure in this form was unsafe and was duly abandoned. The ten obstetric complications were still used and measured, however the original ranking order was not utilised in subsequent analyses. In the following studies (1 and 2) obstetric complications are presented in visual form only. In the larger scale study, described in subsequent chapters, the total number of complications experienced were used in statistical analysis. Due to the small numbers involved, both in terms of the number of participants involved and the number of obstetric complications experienced, this methodology was not appropriate for studies 1 and 2.

Participants were recruited if they met the criteria of being in their second trimester, or the early stages of their third trimester of pregnancy. No women were included in these initial studies if they were over 28 weeks pregnant. This was to avoid gross hormonal changes known to be most marked during the first trimester and in the latter part of the third trimester. It was also to avoid problems related to birth anxiety during the final trimester (e.g., Areskog et al., 1984).

Participants' ages across studies 1 and 2 ranged from 15 to 41 years; mean age in years was 25. They were recruited during routine ante natal appointments in the West Midlands area, either via their own G.P. units or at the local maternity hospital. Women recruited for studies 1 and 2 were not selected for being either nulliparous or multiparous. No information pertaining to their status in this respect was collected in these early studies. Gender information and gestational length of infants was also collected (again from the women themselves and medical records). Gestation length was simply calculated from the expected delivery date (EDD) from actual date of delivery.

Counselling

Counselling was carried out by an experienced male counsellor (with over 5 years post diploma experience). A male counsellor was chosen to exclude the possibility that any observed differences were as a result of the counselling intervention and not female support.

A maximum of eight counselling sessions were offered to each woman, lasting in length from 30 - 50 minutes. Counselling was based on 'Stage - 1" of Egan's (1986) counselling model. Stage one involves the skills of attending, listening, empathic responding and probing (to encourage women to talk about their feelings towards the pregnancy and their support systems). As far as possible, the counsellor was non-directive, except where it was necessary to probe certain issues related to the pregnancy

(e.g., their partners' perceived attitudes towards the pregnancy and future birth).

Study one   Forty-one pregnant women in their second to third trimester of pregnancy provided the data for study one. The mean age of the mothers at the time of birth was 26 years (range 16 to 40). Of these 30 were married, 8 single, 2 divorced and 1 not stated; 38 were British or European, and 3 were Asian. All delivered live singleton births, 24 males, 14 females, and 4 not stated. On the basis of their SPQ scores these women were divided into unsupported versus supported groups. The unsupported group (N=11) had a mean age of 26, range 21 - 37. Of these 8 were married, 2 single, 1 divorced; 10 were British or European, and one was Asian. Of the 11 babies, 6 were male, 4 female and 1 not stated. The supported group (N=30) had a mean age of 26, range 15 - 40; 22 were married, 6 single, 1 divorced, and 1 not stated; 28 were British or European and 2 were Asian. Of the 30 babies, 18 were male, 10 female, and 2 not stated. The differences in the numbers of women in the supported / unsupported groups are due to the fact that the majority of women recruited were defined (on the basis of the SPQ) as supported. Due to time constraints it was not possible to continue to recruit only unsupported women so that numbers in each group were even.

Study two   Twenty-seven pregnant women in their second to third trimester of pregnancy comprised the sample for study two. The overall mean age of the mothers at the time of their babies' birth being 26 years, with a range of 16 - 41 years. Of the total participants recruited, 17 were married, 4 single, 5 cohabiting, and 1 separated; 26 were British or European and 1 Asian. All delivered live singleton births, 13 males, 8 females, and 6 sex not stated. Overall mean age of participants at the time of their babies' birth was 27 years, with a range of 16 - 41 years.

The SPQ together with Anxiety and Depression scales were administered. After the projected figure of 10 to 12 supported participants were recruited, recruitment concentrated on unsupported participants. The purpose of this was to minimise effort for the investigator in arranging completion of the more onerous Anxiety and Depression scales with supported participants. It proved difficult to recruit exactly equal

numbers of unsupported participants; eventually 16 unsupported participants were recruited.

On the basis of their SPQ scores, participants were thus divided into unsupported control versus supported control groups. A subgroup of unsupported mothers were selected as the treatment group.

The supported controls (N=11) had a mean age of 26 (range 17 - 41), 6 were married, 2 single, 2 cohabiting and 1 separated. All were British or European. Of the 11 babies, 3 were male, 2 female and 6 sex not stated. The unsupported control group (N=8) had a mean age of 25, range 16 - 36, 5 were married, 1 single, and 2 cohabiting; 7 were British or European and 1 Asian. Of the 8 babies, 5 were male, 3 female. The treatment group (N=8) had a mean age of 26 (range 21 - 38); 6 were married, 1 single, 1 cohabiting; all were British or European. Of the 8 babies, 5 were male, 3 female.

Whilst parity data was not specifically collected for all participants in studies 1 and 2, retrospective review of participants information demonstrated more complete detail for the counselled and unsupported group. Counselling notes yielded this information, as all women in counselling were asked (as a 'warm up' question) a question about number of other children. Two of these eight counselled women had previously delivered live singleton births. One woman had two other children (aged 7 and 3 years), the other had one (aged 22 years). There is no information regarding the other women.

3.2.3   Procedure

All participants were approached at ante-natal clinics in the local area by the investigator. Women were included in this study only if they were in their second trimester. Once delivery dates had passed, all participants were followed up for information regarding birthweight and complication rates. Contact was made by telephone. In study two, women were again recruited on the basis that they were in their second trimester of pregnancy. Participants who were identified as unsupported (N=16) were randomly divided into the unsupported control group (N=8) and the

treatment group (N=8). Randomness was achieved by simply sorting the unsupported questionnaires into two piles, as one would deal a deck of cards, until all unsupported questionnaires had been assigned to either counselled or non-counselled. Supported participants (N=11) constituted the supported and non-counselled control group.

After completion of all questionnaires, no further approach was made to the women in the unsupported control group, nor the supported controls, until 6 weeks postpartum, at which time a follow-up interview was arranged. The women in the treatment group were contacted and arrangements were made for them to begin the counselling sessions. Counselling was carried out by a male counsellor who was employed by the investigator. Counselling took place on a one-to-one basis with each session lasting for at least 30 minutes, and a maximum 50 minutes.

After counselling had ended, there was no further contact by the investigator until expected delivery dates had passed. In the first study, birth details were provided by the women themselves, their partners, or their mothers. In the second study, pregnancy and birth details (including obstetric complications) were recorded as before, but with corroboration from hospital consultants and general practitioners. No significant differences were found between these two sources of information (in fact only one discrepancy was found on this issue of forceps delivery. The medical source reported no assisted delivery whereas the women did. The medical source was agreed after discussion with the woman's mother. who attended the delivery, and who agreed with the medical version of events).

3.3 Results

It is necessary to show basic summary data for the groups. Summary findings can be viewed in Table 3.2 (significant differences are presented in following text). It will be seen that the lowest mean birthweights are observed in the unsupported groups, with the largest changes between pre- and post-measures occurring in the treatment group in the second study.

In terms of birthweight, no effect of gender on birth outcome data was found (though the sample size is small). Safety analysis were also undertaken to secure against the potential confounding effect of premature delivery on birthweight. Results are as follows.

In *study 1* - MANOVA yielded a significant result when all cases were included with $F(1,39)15.04$, $p<0.00$. When all premature cases (five in all) were excluded from initial analysis MANOVA still yielded a significant difference between the two conditions with $F(1,34)10.70$, $p<0.00$.

For *study 2* - MANOVA yielded a significant result when all cases were included with $F(2,24)=4.59$, $p>0.05$. Unfortunately, when all premature cases (four in all) were removed (all from the *unsupported and non-counselled* group) this left insufficient data (in one condition) for meaningful re-analysis. The following results should be viewed in the light of these safety analysis. Obstetric complication results remain unaffected (though the absence of complete parity data is acknowledged as a potentially confounding factor not controlled for).

Table 3.2 Means and standard deviations (in brackets) for the SPQ, birthweights, HADS and STAI anxiety and depression measures

First Study	SPQ(1)	Birthweight in kilograms
Unsupported (n=11)	8.59 (2.20)	2.68 (9.20)
Supported (n=30)	3.10 (1.49)	3.43 (0.42)

Second Study	SPQ(1)	Birthweight in Kilograms
Supported Controls (n=11)	4.54 (2.35)	3.35 (0.55)
Unsupported Controls (n=8)	11.56 (3.63)	2.48 (0.90)
Treatment Group (n=8)	9.31 (1.85)	3.23 (0.59)

	HADS				STAI			
	Anxiety		Depression		State		Trait	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Supported Controls (n=11)	6.45 (3.8)	5.64 (3.2)	5.27 (3.6)	6.81 (7.6)	33.7 (11)	31.5 (10)	39.1 (12)	35.8 (10)
Unsupported Controls (n=8)	9.88 (5.2)	9.57 (6.0)	6.62 (3.9)	5.42 (4.4)	44.0 (14)	42.6 (14)	48.8 (10)	46.0 (14)
Treatment Group (n=8)	11.38 (4.8)	6.38 (4.2)	6.62 (5.0)	4.62 (3.5)	52.9 (13)	35.5 (8)	50.6 (10)	35.6 (8)

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3.3.1 First study: birthweight and obstetric complications

To ensure that the findings were secure against the effects of a small number of unusual and overly influential observations (including very low and very high birthweights (regardless of prematurity), the data were screened for outliers during each analysis. An observation was flagged as an outlier if the corresponding externally studentised residual, considered as a t statistic, was associated with a two-sided probability of less than 0.01.

The birthweights for the participants in the first study are presented in Table 3.3. This table demonstrates that the mean birthweight for the unsupported group is lower than for the supported group. An analysis of variance suggested that the difference was significant ($F_{(1,39)}=14.93$, $p<0.01$). The birthweights 0.95 kg and 1.22kg in the unsupported group and 1.95kg in the supported group were flagged as outliers, but similarly low birthweights are present in the unsupported group in study 2 (1.27kg and 0.95kg) indicating that these very small babies are not rogue measurements with regard to the population being sampled. The difference between the two groups remained statistically significant when the three outliers were removed from the analysis (unsupported: mean=3.04kg, SD=0.358kg; supported mean = 3.48kg, SD=0.29; $F_{(1.36)}=14.88$, $p<0.005$).

Because of the lack of agreement regarding severity of obstetric complications, and therefore a standardised ranking system, obstetric complications rates are merely presented in table form. From this presentation it can be seen that fewer obstetric complications are experienced by the supported group (proportionally) compared to the unsupported group.

Table 3.3 First study: unsupported and supported groups (N=11, N=30 respectively) showing maternal age, babies' birthweights and obstetric complications. * = outliers.

	Maternal age	Babies birthweight (kgs)	Complications
Unsupported group			
	26	3.81	
	26	2.77	
	37	3.13	Induced/premature
	22	2.90	
	27	3.23	Forceps delivery
	26	1.22 *	Premature
	21	0.95 *	Premature/mortality
	30	2.77	Premature
	22	2.78	
	25	2.70	
	31	3.24	
Mean	26.63	2.68	
Range	21 - 37	0.95 - 3.81	
Supported group			
	26	3.54	
	26	3.22	
	24	3.50	
	24	3.50	
	28	3.68	
	27	3.80	
	30	3.79	
	23	3.72	
	31	3.32	
	29	3.16	
	35	3.36	
	32	3.22	
	22	4.04	
	23	3.72	
	16	3.77	
	40	3.68	
	25	3.90	
	20	3.40	
	22	3.45	
	22	3.40	
	32	2.78	Induced
	15	3.40	
	23	3.22	Forceps
	26	3.16	
	38	3.35	Caesarean
	30	3.81	Caesarean
	20	3.54	Caesarean
	24	3.00	
	29	3.63	
	27	1.95 *	Premature
Mean	26.30	3.43	
Range	15 - 40	1.95 -4.04	

Where prematurity is not indicated, but birthweight is low, it can be logically assumed that the baby is 'light-for-dates', indicative of 'Intra Uterine Growth Retardation'.

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3.3.2 Second study: Relationship between SPQ scores and HADS and STAI scores

Pearson correlations demonstrated a significant relationship between SPQ scores and ante natal HADS - Anxiety scores, with p = 0.543 (p< 0.00). However, no significant relationship was found between the SPQ scores and the HADS - Depression score (p = 0.316), Nor between STAI scores, either State or Trait (p = 0.422 and 0.467, respectively). However, a clear trend was observed between increases in SPQ scores and increases in HADS - Depression and STAI (both State and Trait) scores. These results provide some evidence for concurrent validity of SPQ. The reader is reminded that the SPQ was specifically designed to measure pregnancy related stress (via perceived lack of support) during pregnancy. Therefore, we might expect anxiety measures at lower levels (i.e., not at clinical levels which the HADS was specifically designed to measure) to be more readily associated with SPQ scores. However, the power of these results is limited by the small number of participants involved (n=29).

3.3.3 Second study: Birthweight, obstetric complications, Apgar scores, the effects of counselling

There were no significant differences in age between the three groups in the second study, ($F_{(2,24)}$=1.52, p=0.24). No relationship was found between HADS or STAI scores, and outcome as measured by birthweight, Apgar scores or obstetric complications.

Analysis of the birthweight data from the second study by ANOVA demonstrated significant differences $F_{(2,24)}$=4.59, p<0.05) between the groups. Tukey-Kramer tests showed that the differences lay between the supported controls and the unsupported controls (p<0.05). No differences were found between the supported controls and the treatment group (p=0.82), nor between the unsupported controls and the treatment group (p=0.10). These results should be treated cautiously due to the small numbers involved and obvious outliers (Table 3.4: Figure 3.1). Obstetric complications between unsupported and supported participants show that despite the higher numbers in the supported group there are fewer complications, with no mortalities and only one prematurity (Figure 3.2). This can be compared to the unsupported group which

included one mortality and three premature deliveries.

Table 3.4 Second study: supported controls, unsupported controls, and treatment group (n=11, n=8, n=8, respectively) showing maternal age, babies' birthweights, Apgar scores and obstetric complications. * = outliers.

Supported and non-counselled group

Maternal age	Babies birthweight (kgs)	Apgar	Complications
25	4.22	9 + 9	
24	3.31	8 + 9	
28	3.23	9 + 9	
17	3.69	9 + 9	
24	3.40	5 + 9	
28	3.23	8 + 9	Forceps
19	2.34	5 + 9	Toxaemia
25	3.00	9 + 9	Antep'm'Hospitali'n
31	2.95	8 + 9	Antep'm Hospitali'n
19	3.40	9 + 9	
41	4.15	9 + 9	
Mean 25.5	3.35	8 + 9	
Range 17 - 41	2.34 - 4.22	5-9 + 9	

Unsupported and non-counselled group

23	3.31	9 + 9	
27	2.81	9 + 9	Antep'm'Hospitali'n
24	2.33	3 + 9	Premature
25	2.54	5 + 8	Premature/toxemia
20	3.72	9 + 9	
36	2.95	5 + 8	Caesarean
29	1.27	3 + 8	Premature/mortality
16	0.95 *	3 + 8	Premature
Mean 25	2.48	5.75 + 8.5	
Range 16 - 36	0.95 - 3.7	3-9 + 8-9	

Unsupported and counselled group

31	2.78	9 + 9	
30	3.23	9 + 9	Induced
36	3.04	8 + 9	
25	3.15	9 + 9	
38	4.63 *	9 + 9	
36	3.27	7 + 9	
21	3.04	9 + 9	Antep'm'Hospitali'n
23	2.77	7 + 9	
Mean 30	3.23	8.25 + 9	
Range 21 -38	2.77 - 4.63	7 - 9	

Where prematurity is not indicated, but birthweight is low, it can be logically assumed that the baby is 'light-for-dates', indicative of 'Intra Uterine Growth Retardation'.

Significant group differences in Apgar scores were observed (F(2,24)=8.444, p<0.01).
A Tukey-Kramer test revealed differences between the treatment group and the
unsupported control group (p<0.01), and between the two control groups (p<0.01) but
no difference between the supported controls and treatment (counselled) group
(p=1.000). See also figure 3.3

Figure 3.1 Mean Birthweights in kilos across the groups
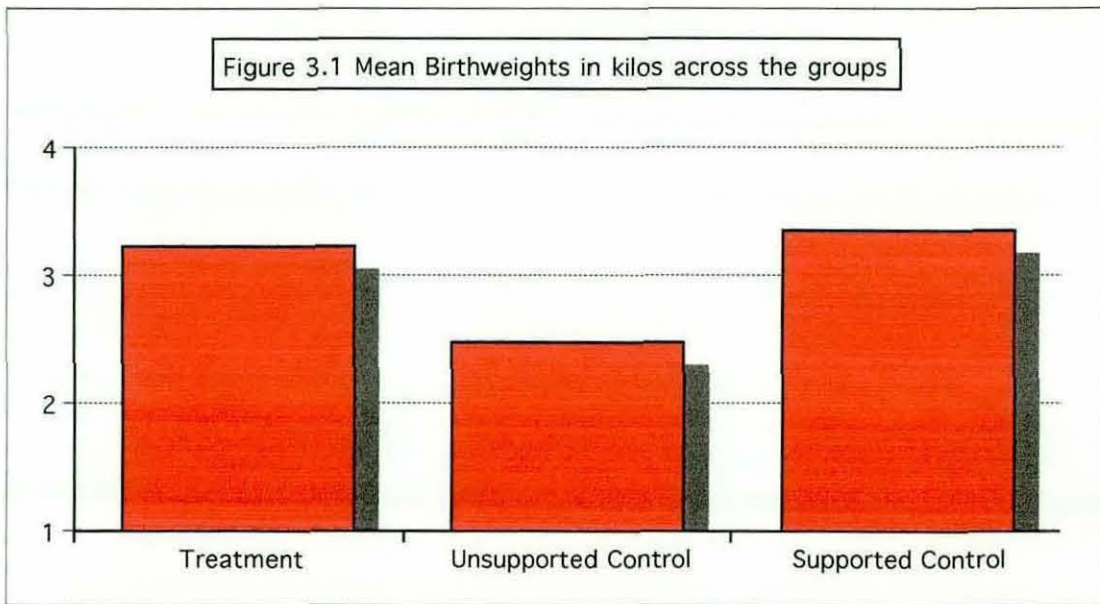
Because of the lack of agreement regarding severity of obstetric complications, and thus
a standardised ranking system, obstetric complications rates here were not subjected to
any statistical analysis. Descriptive results are presented in table form above (Table
3.4.) and Figure 3.2, below. From this it can be seen that fewer obstetric complications
are experienced by the unsupported and counselled group compared to both the
supported and non counselled and the unsupported and non counselled groups.

Figure 3.2 Complications across the three groups

Figure 3.3 Mean Five-Minute Apgar Scores
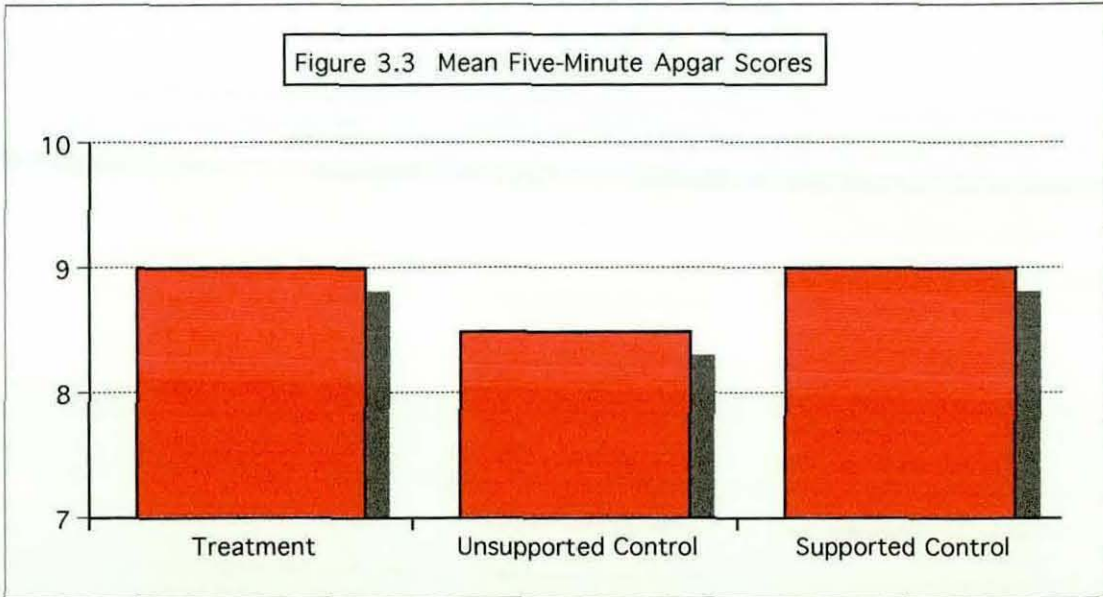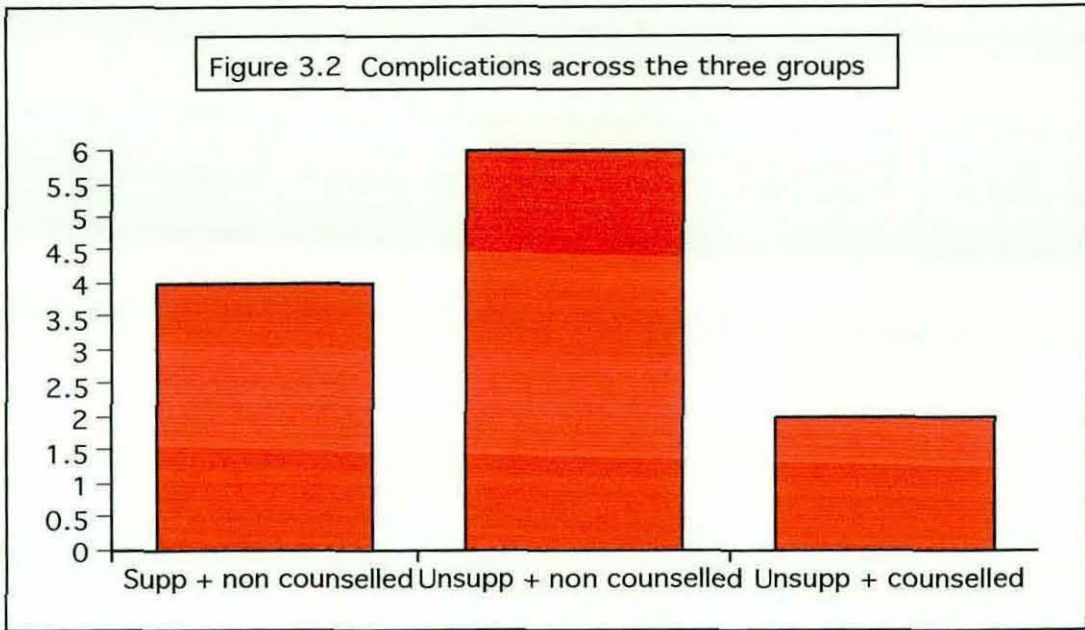
The unsupported controls were noticeably different to the supported controls, having one mortality, three premature deliveries and one caesarean section. It can be seen that the treatment group, and the supported controls appear more similar in the type of complications observed.

3.3.4   Studies one and two: combined analyses of birthweight data

Studies 1 and 2 were originally designed as two distinct studies. However, greater power can be obtained by considering the two data sets together in relation to birthweight. There were no significant differences in age between the five groups of women ($F_{(4,63)}=0.99$, $p=0.42$) over the two studies.

Combining the birthweight data from studies 1 and 2, an analysis of variance across all five groups was significant ($F_{(4,63)}=5.93$, $p<0.001$), but two outliers were flagged: the weights of 0.95kgs in the unsupported group of study 1 and 0.95kg in the non-counselled unsupported group of study 2. These, plus the other outliers detected during the analysis of the study 1 data, were removed prior to carrying out a series of planned contrasts. Four contrasts are of interest, so that using the Bonferroni method of controlling for multiple comparisons it is appropriate to set a significance level of 0.05/4 = 0.0125.

The contrast of the unsupported and supported groups in study 1 with the unsupported and supported controls in study 2 was not significant ($F_{(1,59)}=2.68$, $p=0.11$), as was the contrast carrying the unsupported-supported x study interaction ($F_{(1,59)}<1$). This finding supports the conclusion that, leaving aside the treatment (counselled) group, the two studies were comparable. The SPQ thus appears to distinguish between unsupported and supported pregnant women on the criteria of birthweight (see also figure 3.1).

The contrast of the supported groups in studies 1 and 2 with the treatment group in study 2 was not significant ($F_{(1,59)}=1.01$, $p=0.32$). The contrast of the unsupported controls in both studies with the treatment group in study 2 was not significant ($F_{(1,59)}=3.44$, $p=0.07$). The very heavy infant (4.63kg) in the treatment group may be primarily responsible for this group appearing heavier than the unsupported controls; this case was only just missed by the automatic outlier detection (studentised residual = 2.53, $p<0.05$). Removal of this case amplifies the contrast of the supported groups in both studies with the treatment group ($F_{(1,58)}=4.76$, $p<0.05$), so that the counselled

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group appears more like the other unsupported groups than the supported groups. There is thus conflicting evidence that counselling ameliorated the association between stress and birthweights.

3.3.5   Results of Anxiety and Depression Measures

HADS anxiety and depression results.   An ANOVA on prenatal and post-natal HADS anxiety measures across all three groups was significant ($F_{(5,48)}=2.36, p=0.05$). Tukey-Kramer tests demonstrated that the differences lay between the treatment group prenatally and the supported controls postnatally ($p=0.08$), non-significant, but perhaps demonstrating a trend.

We can see from Figure 3.4 and Figure 3.5 (below) that in all three groups there is a trend for anxiety measures to decrease postnatally from prenatal levels, though the reduction in the treatment (counselled) group is more noticeable than the other two groups. An ANOVA was then carried out for HADS anxiety measures pre- and postnatally, this time for the treatment (counselled) group alone, and also demonstrated a significant difference ($F_{(1,14)}=4.97$, $p<0.05$).

STAI anxiety results. ANOVA results for STAI **state** anxiety were significant ($F_{(5,48)}=3.81$, $p<0.01$). Tukey-Kramer test revealed that significant differences lay between the treatment group and supported controls prenatally ($p<0.05$), between the treatment group prenatally and the supported controls postnatally ($p<0.01$), and possibly within the treatment group across measures ($p=0.05$). ANOVA results for STAI **trait** anxiety were also significant ($F_{(5,48)}=2.96$, $p<0.05$). A Tukey-Kramer test revealed that the only observable differences lay between the treatment group prenatally and the supported controls postnatally (0.05), and possibly within the treatment group across measures ($p=0.08$).

Figure 3.4

HADS (Anxiety and Depression) Pre- and Postnatally

Figure 3.5

STAIs and STAIt Scores Pre- and Postnatally
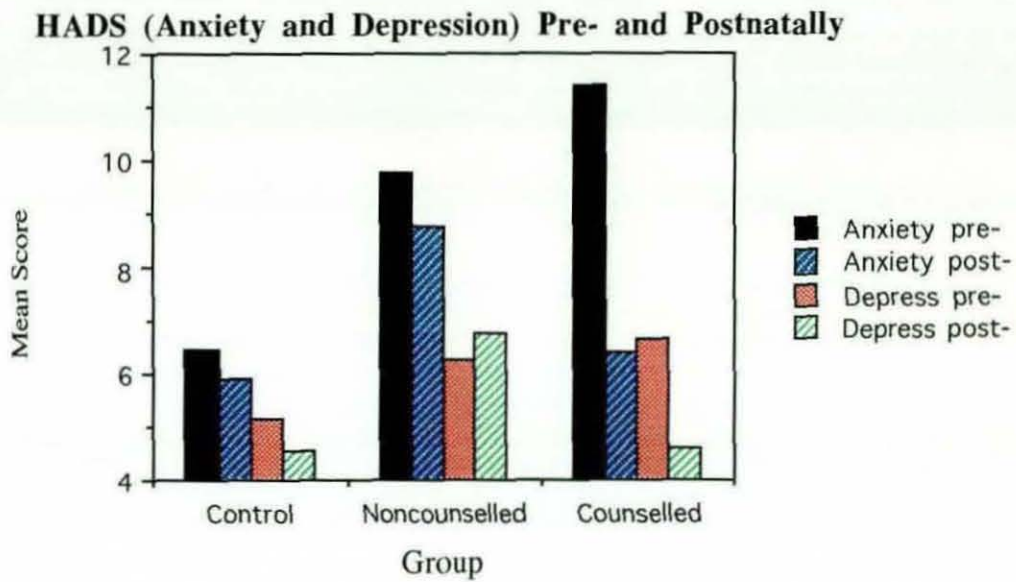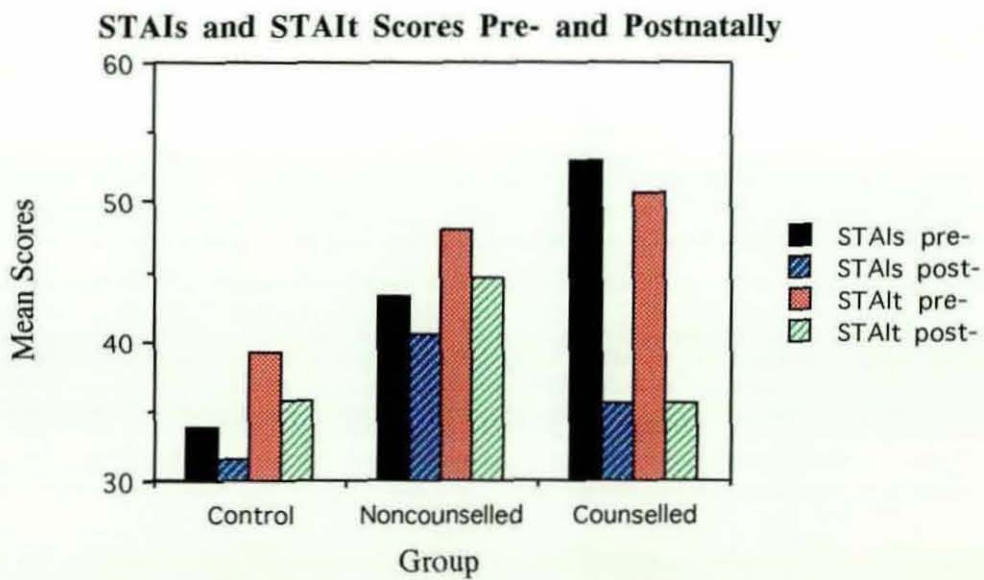
3.4 Discussion

There were three aims set out in 3.1. The first aim was to test for any link between a pregnant woman's perception of support and pregnancy outcome. Results suggest there are relationships between perceived support and outcome variables such as obstetric complications. However, these relationships have to be treated with some caution given that the obstetric complication measure was not statistically manipulated.

The second aim was to examine whether the Support in Pregnancy Questionnaire (SPQ 1) could identify (or flag) those women who were at risk of negative outcome. Certainly those women who rated themselves as 'unsupported' seemed more likely to have negative outcomes. The third aim was to examine the effects of counselling as an intervention for a subgroup of those identified as 'unsupported'. Some evidence from both the Support in Pregnancy Questionnaire and from the HADS and the STAI suggested that for those women who were both unsupported and did not receive counselling the outcome was less positive, though the evidence that counselling was beneficial was mixed.

Concurrent validity for the SPQ with the HADS and STAI was found. Pregnant women who scored higher on the STAI and HADS measures also scored higher on the SPQ. However, only the SPQ appeared capable of prospectively identifying those women most likely to experience less positive outcomes. In the second study we saw that no relationship between HADS or STAI scores, and outcome as measured by birthweight or Apgar scores was found.

3.4.1 Results for birthweights and obstetric complications

The results from both studies of this study clearly indicate that data from the SPQ is importantly related to birthweight and Apgar scores and may have some link with obstetric complications. Insofar as the SPQ was designed to measure perceived lack of support, the results comprise some initial evidence for the predictive validity of the SPQ.

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The results regarding the effectiveness of counselling as an intervention are to be treated with caution. Counselling alone did not dissipate the negative effects of perceived lack of support on birthweight. However the work of Oakley et al. (1988) has already demonstrated the difficulty in obtaining statistically significant differences in birthweight with support intervention, and Oakley et al. included over 450 participants.

The qualitative differences in obstetric complication rates demonstrate some possible mechanism whereby counselling is influential. If counselling or other intervention could be shown to reduce the association between this and low birthweight, this would be the clearest possible evidence that perceived lack of support was influential in causing low birthweights.

The statistical associations may have proved less than totally convincing due to a lack of statistical power, the particular form of counselling being inappropriate as an intervention in this context, or the lack of a direct causal link between perceived lack of support and low birthweights (witness the very low birthweight differences found by Oakley et al., 1988).

The third possibility appears one which is more plausible and is strongly suggested by the literature reviewed in Chapters 1 and 2. This third possibility thus requires rigorous statistical investigation with a large data set. The results of these early studies suggest that it is unlikely that any direct causal link between support and birthweight will be established, and it appears more likely that a complex and interrelated pathway will eventually emerge within which support is implicated. Physiological outcome is most likely due to a complex multivariate system.

3.4.2 Anxiety and depression results

The results obtained from the anxiety and depression measures, on the other hand, do strongly suggest that counselling is influential. Only the unsupported controls showed a post-natal increase in depression scores. The 'normal' trend would seem to be for the depression scores to decrease postnatally. Both the HADS and the STAI enjoy

considerable validity within the general population, and so it would seem likely that there is a positive influence of counselling on post-natal depression. This supports the findings of Holden et al. (1989). We might suggest that if we can effectively 'target' unsupported women for counselling during pregnancy, rates of post-natal depression would decrease considerably. The clinical relevance of the SPQ in achieving this targeting is clear. For example, the SPQ could then be used as an individual or group clinical tool to explore answers to the various questions further within a therapeutic environment.

3.4.3 Counselling results

Correlationary analysis (Spearman's rho) for study 2, demonstrated a positive relationship ($r = 0.83$, $p<0.05$) between increased birthweight and number of counselling sessions attended. However, these results need to be treated with caution because of the small numbers involved.

Qualitative results demonstrated that women reacted differently to the counselling sessions themselves. Most women were able to talk freely about their feelings. However, two of the women found it very difficult to focus on their thoughts and feelings towards the baby. These two women also attended the least number of counselling sessions and had the lowest birthweight babies (both were first time mothers and attended only 2 counselling sessions, in comparison to the other women who attended between 5 and 8 sessions).

3.5   Conclusion

These results are preliminary evidence of a subgroup of pregnant women who consider themselves to be 'unsupported'. This is worrying not only because of the likelihood of emotional disorder associated with the pregnancy, but also because the woman might influence the physical outcome for her child in terms of complications, or possibly birthweight. Fortunately it seems that counselling can have a positive mediating effect. For example, counselling could potentially prevent an escalation of depressive

symptoms, and thus intervene in possible future negative mother - infant interaction patterns (e.g., Murray, 1992). Such an intervention is thus beneficial for both the mother and infant.

However, multivariate models including the effects of lack of support and any form of possible intervention or mediation are necessary to fully explain the role of perceived support. These preliminary studies suffer from their small scale. Having said this, the antidepressant effects of counselling were rather more obvious, and present less of an unanswered empirical question, than the route from poor support to poor pregnancy outcome. This is particularly true because of the lack of large-scale studies examining biopsychological interactions, with the contrasting existence of studies examining counselling for post-natal depression (for a review, see Elliott, 1989).

However, the difference in attendance for counselling in study 2, requires closer examination. Some possible explanations for poorer attendance might realistically be expected to centre on difficulties with transport (for financial or other reasons) or because of child care difficulties. However, all women were offered transport to and from counselling, so this was not a factor. The two women who attended the least (for only two sessions) did so for a variety of reasons, ranging from problems in getting away from work to minor coughs and colds. Further, one of these women was a social worker, whilst the other was unemployed and living on benefits. Both of these women were first time mothers. From this available qualitative information no inferences can be drawn as to why these two women in the intervention group in comparison to other women in the intervention group attended for less of the counselling sessions.

Successful prospective identification of 'at-risk' pregnant women is ethically important in its own right. It is possible that with a pregnancy that is not going smoothly, the added stress of perceived lack of support could tip the balance as to the severity of obstetric complications. A lack of support could result in deciding whether or not a syndrome occurs or not (categorical effect) or it could determine the severity of the syndrome (amplification effect).

Future research will need to replicate some of the important results obtained here on a much larger scale. Birthweight and obstetric complications should remain as objective outcome criteria. However, given the difficulties with an established obstetric complications rating or ranking system a measure which is simply additive should be used, until such time as a widely agreed and validated rating or ranking system is developed.

Future research should also measure the effects of non-psychological influences on mother and child well-being, such as smoking, alcohol consumption, and important demographic and socioeconomic variables. These studies lacked such information. It remains unknown whether such variables may have had some invisible influence on outcomes in these studies, and we may have therefore wrongly attributed these outcomes solely to the influences of perceived lack of support. However, the link between SPQ scores and results cannot be ignored. Therefore, a large-scale study, which includes the above measures, and which aims to demonstrate construct validity of the SPQ itself, was planned. This study is introduced in Chapter 4.

Construct Validity of the The Support in Pregnancy Questionnaire (SPQ): Description of Data Collection and Principal Components Analysis (PCA) of Completed SPQ forms (n=501)

4.1 Introduction

By its nature, pregnancy is influenced by many worries and concerns not common in the general population. This indicates a need for a new way of assessing these concerns which is pregnancy-specific. So far it has been argued in this thesis that perceived lack of support during pregnancy, implying stress, can influence both mother and infant well-being. However, the measurement developed to measure such support has, thus far, only face and concurrent validity. Thus results obtained in Chapter 3, linking perceived support to outcome measures remains suspect. Establishing adequate validity of the construct of perceived support measured via the Support in Pregnancy Questionnaire (SPQ) is necessary. This would allow one to consider that the instrument in question measures what it purports to measure and establish a firmer basis for the results obtained in Chapter 3 and any future results.

It is hypothesised that the more a pregnant women perceives her support to be lacking the more 'at-risk' she is from pregnancy associated stress. Items within the SPQ are all relevant to pregnancy. Four domains of support were suggested in previous research, and these have been incorporated into the SPQ. They are:

- Partner support
- Parent support

- Maternal support
- General support

The question we will address in this chapter is whether participants' patterns of response correspond with these four domains of support, and thus whether the SPQ itself has construct validity. The most effective way to address this question is to use a representative sample of pregnant women and their response patterns on the SPQ via

Principle Component Analysis (PCA).

The next section of this chapter will describe the method of data collection. It will then be necessary to briefly review the nature of PCA and its applicability to the SPQ. Results of the validation exercise are then presented. A brief discussion then details the immediate implications of the PCA, following this analysis.

4.2 Method of Data Collection

4.2.1 Questionnaire Design

The Support in Pregnancy Questionnaire (SPQ), as described in Chapter 3, was revised for psychometric properties, ease of administration and clarification of constructs. This process involved several revisions of the original questionnaire used in the initial studies. Both the original (see Appendix 3.1) and this later version of the SPQ (see Appendix 4.1 and scoring criteria Appendix 4.2) are displayed together in Table 4.1a (below).

Informal piloting of each revision, prior to the final version, was undertaken and participant feedback utilised for each subsequent revision. It was decided that such participant feedback on the SPQ would continue to be incorporated in the planned large-scale testing of the SPQ (see Appendix 4.3). Table 4.1b (below) displays this feedback form alongside the planned follow-up questionnaire, which would be used should PCA prove satisfactory.

Table 4.1a   The Support in Pregnancy Questionnaires

Version 1

1. My close relationships are
   Many - - - - - - Few

2. My childhood memories are generally happy
   Generally unhappy - - - - - - - Generally happy

3. My family are there when I need them
   Generally this is true - - - - - - - untrue.

4. My family contacts are
   Few - - - - - - - Many

5. My relationship with my mother when I was a child was
   Very bad - - - - - - - Very good

6. My partner is very interested in this pregnancy
   Very interested - - - - - - - uninterested

7. My partner looks forward to the baby
   No, not at all - - - - - - - Impatiently

8. My friendships with my family are good
   Very good - - - - - - - No, very bad

9. My feelings towards this pregnancy are.
   Very negative - - - - - - - Very warm and positive

10. My feelings towards the babies arrival are.
    Very positive - - - - - - - Very negative

11. My Mother is looking forward to the new baby
    No, she is not - - - - - - - Yes, she can't wait

12. My family, in general, are very pleased about the baby
    Very pleased - - - - - - - Very displeased

13. My mother is very understanding generally
    Not understanding- - - - - - - very understanding

14. My pregnancy was very definitely planned
    Yes, it was - - - - - - - No, definitely not planned

15. Generally my emotional support is.
    Very bad - - - - - - - Very good

16. Generally my mood is one of being
    very happy - - - - - - - very unhappy

17. My reading on anything to do with babies is
    Non-existent - - - - - - - immense

18. Apart from the normal up's and down's in pregnancy my emotions are
    Very happy - - - - - - - Very unhappy

19. My relationship with my partner is
    Very close - - - - - - - Very distant

20. My partner looks forward to the birth
    Not at all - - - - - - - Very much

21. The thought of having a new baby is
    Very exciting - - - - - - - Very depressing

22. My partner's family can be relied upon in any crisis
    No, not at all - - - - - - - Yes, always.

23. My favourite game at the moment is talking about babies names.
    All the time - - - - - - -not really interested

24. My mother seems to be knitting/buying enough for a whole baby ward
    No, she does not seem that interested - - - - - - - Yes

25. My hopes are that the birth of the baby will change my partner for the better
    Yes, I hope so - - - - - - - No,I prefer him the way he is

26. My parents help can always be relied upon for any help
    Never - - - - - - - Always

Version 2

1. I have as many close friends as I need
   Strongly disagree __ __ __ __ __ __ __ Strongly agree

2. My childhood memories are very happy ones
   Strongly disagree __ __ __ __ __ __ __ Strongly agree

3. My family are always there when I need them
   Strongly agree __ __ __ __ __ __ __ Strongly disagree

4. I have many close family contacts
   Strongly agree __ __ __ __ __ __ __ Strongly disagree

5. My mother and I had a very good relationship when I was a child
   Strongly disagree __ __ __ __ __ __ __ Strongly agree

6. I feel very positive towards this pregnancy.
   Strongly disagree __ __ __ __ __ __ __ Strongly agree

7. My partner is looking forward to having a baby very much
   Strongly agree __ __ __ __ __ __ __ Strongly disagree

8. My friendships with my family are always good
   Strongly agree __ __ __ __ __ __ __ Strongly disagree

9. My partner is very interested in this pregnancy
   Strongly disagree __ __ __ __ __ __ __ Strongly agree

10. My feelings towards the baby's arrival are very positive
    Strongly disagree __ __ __ __ __ __ __ Strongly agree

11. My mother is/would have been, looking forward to the baby very much
    Strongly agree __ __ __ __ __ __ __ Strongly disagree

12. My family are very pleased about the baby
    Strongly agree __ __ __ __ __ __ __ Strongly disagree

13. My mother is/was very understanding
    Strongly disagree __ __ __ __ __ __ __ Strongly agree

14. My partner is very interested in me at the moment
    Strongly disagree __ __ __ __ __ __ __ Strongly agree

15. I have a lot of support from those close to me
    Strongly agree __ __ __ __ __ __ __ Strongly disagree

16. I feel very content at the moment
    Strongly agree __ __ __ __ __ __ __ Strongly disagree

17. My relationship with my partner is very good
    Strongly disagree __ __ __ __ __ __ __ Strongly agree

18. I feel very happy at the moment
    Strongly disagree __ __ __ __ __ __ __ Strongly agree

19. I have read/am reading a lot about pregnancy and babies
    Strongly agree __ __ __ __ __ __ __ Strongly disagree

20. My partner is looking forward to the birth very much
    Strongly agree __ __ __ __ __ __ __ Strongly disagree

21. The thought of having a baby is very exciting
    Strongly disagree __ __ __ __ __ __ __ Strongly agree

22. My family can always be relied upon in any crisis
    Strongly disagree __ __ __ __ __ __ __ Strongly agree

23. I am always thinking/talking about possible names for the baby
    Strongly agree __ __ __ __ __ __ __ Strongly disagree

24. My mother is/would have been very involved in the preparations for the baby
    Strongly agree __ __ __ __ __ __ __ Strongly disagree

25. I very much hope that the birth of the baby will change my partner for the better
    Strongly disagree __ __ __ __ __ __ __ Strongly agree

26. My parents can/could always be relied upon for help
    Strongly disagree __ __ __ __ __ __ __ Strongly agree

27. My partner and I talk to each other a lot about the baby
    Strongly agree __ __ __ __ __ __ __ Strongly disagree

28. I was a very happy child
    Strongly agree __ __ __ __ __ __ __ Strongly disagree

Table 4.1b Feedback and Follow-up Questionnaires

You may remember me from the ante-natal clinic when I asked you to complete a questionnaire on how you felt about your pregnancy. Thank you for your help in this.

We would like to follow-up a representative sample of the women who completed the questionnaire. For this purpose, it would be very helpful indeed if you would answer the following questions. These questions concern the outcome of your pregnancy and some background information to help us check how representative our sample is.

We hope the information we are collecting will significantly improve our understanding of how women feel about pregnancy and the support they receive.

Once you have completed the questionnaire please return it to us in the envelope provided, there is no need to attach a stamp, postage is pre-paid.

Once again, many thanks for your help and cooperation.

Elaine McWilliams.

Date...Tel.No......................
Name...
Address...
Date baby was born.............................Birthweight of baby......................

Please tick below if you experienced any of the following:-

Caesarian Section
       ( )
Diabetes
       ( )
Toxaemia
       ( )
High blood pressure
       ( )
Forceps delivery
       ( )
Induced delivery
       ( )
Hospitalisation during pregnancy
       ( )
Bleeding during pregnancy
       ( )

Number of previous pregnancies
1   2   3   4   more

Did you drink any alcohol during this pregnancy?

Yes ( )   No ( )
If Yes please place a tick in one of the boxes below to show how much you think you drank during this pregnancy increasing from very little to a lot.

Very little ( ) ( ) ( ) ( ) ( ) ( ) ( ) A lot

Did you smoke during this pregnancy?
Yes ( )   No ( )

If Yes please place a tick below, as before.

Very little ( ) ( ) ( ) ( ) ( ) ( ) ( ) A lot

Is your present accommodation (tick)
Owner occupied ( )   Rented ( )

Could you please state what your current/last job was:-
....

What job have you been trained for, if different from above, e.g. trained as Secretary but working as a shop assistant.
....

What age did you leave full-time education please tick a box
16/17   18/19 21/23 24/28 28/30 above ? - please state age
( )   ( )   ( )   ( )   ( )   ( )

Did you return to full-time education after this age?

Yes ( )   No ( )

Did you obtain any certificates, diplomas, degrees or any other qualifications as a result of this training?

Yes ( )   No ( )
If yes, please say below what these are:-

....

Could you please state your partner's current job (or tick box)

Partner Unemployed ( )   No Partner ( )

FEEDBACK FORM ON QUESTIONNAIRE

1/ If you have any general comments to make about the questionnaire, please write your comments/feelings in the space below.

2/ Did you find the Questionnaire interesting?

        Yes   No

3/ Did you find the Questionnaire easy to complete?

very easy   fairly easy   fairly hard   very hard

4/ Can you say why you responded in the way you did to the previous question?

5/ Were there any statements with which you had difficulties? If there were can you say which one/s and briefly explain why you had difficulties.

In the final version of the SPQ (see Table 4.1, above) there were 28 questions in all, compared to the original version which had only 26 questions. In this final version, as with the original version, each question provided a seven point Likert scale, moving from *strongly disagree* to *strongly agree*. Reversal of the presentation of the response format was utilised to avoid a 'response set' by participants and to facilitate more 'thoughtful' responses to the items. Such reversal is likely to slow down respondents' processing. This can lead to frustration, but is also likely to result in more carefully processing of the item.

As before the SPQ yielded four sub scale scores, one for each domain within the SPQ, as well as an overall SPQ score. An averaged score of 16 or more in any of the four domains or overall was adopted as the cutoff for deciding which respondents were 'supported' or 'unsupported' (this cut-off point was to be supported by subsequent PCA analysis and scrutiny of score distributions).

Table 4.2 Criteria for domain assignment of each question within the SPQ.

Domains of Support	Questions
Partner Support	7, 9, 14, 17, 20, 25, and 27
Parent Support	2, 5, 11, 13, 24, 26, and 28
General Support	1, 3, 4, 8, 12, 15, and 22.
Maternal Attitude	6, 10, 16, 18, 19, 21, and 23

Postal Follow-up Questionnaire.   This questionnaire was designed to obtain birthweight, obstetric complications during pregnancy, number of previous pregnancies, smoking and alcohol consumption during pregnancy, and general socioeconomic information (see Table 4.1). Because studies 1 and 2, demonstrated high reliability between women's self-reports of outcome measures (birthweight and obstetric complications) which concur with other researchers results (e.g., Martin, 1987) only a sample of women from this study (n-501) were cross-checked with

medical records (n=50). Results demonstrated, once again, high reliability between women's self-reports and medical records (e.g., no errors were found).

The SPQ did not ask for information regarding a woman's number of previous pregnancies.

Studies 1 and 2 did not demonstrate any significant influence of gender on outcomes, therefore this information was not collected in this large study, though it is an important measure (Kleiverda et al., 1997).

Only the total number of obstetric complications, regardless of type, were used for the following analyses, due to difficulties in obstetric complication measures discussed in Chapter 3. The reader is reminded that prematurity was also measured, as this has a strong influence on the birthweight measure (Kleiverda et al., 1997). Further, a measure of parity was also taken on follow-up, as this too influences rates of obstetric complications (as does age) (Kleiverda et al., 1997).

Smoking and Alcohol Consumption   A simple question addressing smoking and alcohol consumption during pregnancy was adopted here in line with the self-rated nature of this questionnaire. However, some discussion for the rationale behind this measure is required here.

Research measuring smoking and alcohol consumption in pregnant women is diverse in the range of methodologies used. In 1988 Condon and Hilton compared smoking and drinking behaviours in pregnant to address the question "who abstains and why?" In a sample of 112 pregnant Australian women 35 of whom smoked before pregnancy and 86 of whom drank alcohol before pregnancy. They comment that although considerable research efforts have focused on documenting the effects on the foetus, almost nothing, other than basic demographic characteristics, is known about the women themselves. In particular why some women abstain during pregnancy and some do not. Their research addressed these questions. Both smoking and alcohol consumption during pregnancy were assessed by a questionnaire on a five-point scale that represented: ceased; much decreased; slightly decreased; tried to cease or decrease but was unable to do so; and did

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not try to cease or decrease.

Condon and Hilton's methodology has some obvious flaws. However, their results demonstrated that there were significant differences between smoking and drinking patterns. Further women reported much more success in reducing their alcohol consumption than in reducing their cigarette consumption. One hundred per cent (86) reduced their drinking, only 57% (20) reduced smoking.

The authors acknowledge the methodological difficulties with their study; assessment of changes in smoking and drinking via a single self-reported question. They acknowledge that the tendency to underreport such behaviours, even in the absence of the additional stigma that is generated by pregnancy, is substantial. The suggest that even if a face-to-face interview setting was used it remains unproved that such a procedure would be superior in gaining accuracy. Their study also measured attachment to the foetus and smoking and drinking behaviours. Results suggest that reductions in alcohol consumption during pregnancy appears to be influenced much more strongly by attitudes towards the unborn child than does a reduction in tobacco consumption. Dependence on nicotine, they suggest, appears to override the effect of foetal attachment.

In a critique of methodological issues in substance use during pregnancy Day, Wagener and Taylor (1985) point out the following problems. They aimed to address two questions: 1] Whether the questions on use result in accurate assessment of use, and 2] Whether respondents report use accurately. They suggest that measurement should focus on frequency, quantity, and type of substance use. These three elements of measurement are discussed in turn.

Frequency   The standard method of collecting frequency data has been to present an ordinal ranking of frequency. There are several problems with this, including differences in individual interpretations. The alternative, to ask simply how much alcohol or how many cigarettes smoked, may seem a solution but unfortunately it too has problems as it is a mixture of measuring frequency and quantity. Asking for

information about behaviours as they occur or the diary method has been suggested as one solution. Again there are problems with this method, particularly in that it requires a high level of motivation from the participants to complete. More commonly, reports of frequency of use in terms of incidents per day, week, or month have been measured. Again the authors find problems with this method, in particular that frequency assessments are often limited in that the reported frequency will be the 'usual' frequency for that time period measured (or assuming that frequency is a constant).

Quantity   Asking about the number of cigarettes smoked or units of alcohol consumed each week may seem reasonable but it too has problems. In particular, we can never be certain that all cigarettes or units of alcohol are consumed by the individual, shared with others or wasted (particularly as both behaviours are also social ones). Biological measures are then perhaps more accurate ways of assessing consumption. However, they have drawbacks. It is not possible to determine pattern of use from a laboratory test because it only measures exposure at the time of testing and is labour intensive. Further, timing of increases or decreases in quantity with trimester and vulnerable periods of foetal development needs to be addressed. Measurement of consumption across the whole of the pregnancy might be the only solution, though the labour intensiveness of this methodology would preclude it for most researchers.

To overcome some of these problems Day et al (1985) used variants of traditional questions in their own research (e.g., volume variability scale and the Khavari Alcohol Test (Khavari and Farber, 1978) in a population of American women in relation to Marijuana use. There were difficulties with their format and revisions had to be made to take into account the way the women themselves organised their patterns of use. They were aware that even then answers may not reflect reality, because of deliberate misrepresentation or errors in recall. To tackle misrepresentation they led participants to believe that a laboratory assessment would verify their reports. This did not change reports of Marijuana but did increase reports of use of other illicit drugs. Further, they found that women were reluctant to report using any substance currently. However, when asked about use last month or some time in the past, they would respond. As a result they changed their methodology to interview in the fourth month about use during

the first trimester, in the seventh month about us during the second trimester, and at delivery to assess the third trimester.

As regards errors in recall they found that accuracy in reporting began to decrease with the passage of time and the period reported on. Women in late pregnancy reported approximately half the use of Marijuana compared to those reporting closer to the time of the first trimester, for use in the first trimester. This represents problems in accurately recalling consumption of substances some six months earlier. Because the first trimester of pregnancy is so crucial to foetal development these results are very important.

Type of substance   In essence this should not be too problematic so long as the researcher is specific about the substance under examination. However, many women who smoke or consume alcohol, may also take other substances. If information about other substances is not also collected results suggesting links between one behaviour and outcome may be misleading.

In this present research measures of smoking and alcohol consumption were obtained retrospectively and using a self-report scale moving from 'a little' to 'a lot'. The criticisms outlined above are therefore relevant to this chosen methodology. Firstly, data was collected retrospectively allowing for errors in recall. Secondly, the scales used were subjective and allowed for misrepresentation by the participants who completed the scale. Whilst collecting the data retrospectively may also have allowed women to be more open about their smoking and alcohol behaviours (cf. Day et al., 1985) the criticism regarding recall errors can not be dismissed.

It is accepted that it would have been more satisfactory to have interviewed the women themselves, during the pregnancy, to gain a more accurate assessment of their cigarette and alcohol consumption (e.g., English and Eskenazi, 1992). English and Eskenazi (1992) used five different levels of analysis for cigarette smoking. They categorised these as 1-4, 5-9, 10-19, 20-29, and >30 cigarettes per day. It is possible to see that these five categories approximate a likert scale of 'very little' to 'a lot'. Problems with

what is reported and what actually occurs (in terms of these two behaviours of smoking and alcohol consumption) remains an issue (Day, et al, 1985). Fortunately, because women in this study were not asked this information in conjunction with their medical treatment, there was no reason for them to deliberately distort these estimates (cf., Appleton and Pharoah, 1998).

Further, women were not asked to estimate how many cigarettes they smoked 'on average' across their pregnancy in this study. It was considered this may be difficult for them to remember exact amounts of cigarettes smoked or the exact units of alcohol consumed each day, average this for each week, and then average this across the whole of their pregnancy. Instead it was considered that the self-report measure which simply asked for an estimate of amounts of cigarettes smoked and alcohol consumed across the pregnancy, would be easier for them to complete, though the problems with this approach are acknowledged and the criticisms outlined above by Day et al. apply.

Many other studies have used self-report measures of smoking and drinking behaviours during pregnancy (e.g., Peterson, et al., 1992; Appleton and Pharoah, 1998). Condon and Hilton (1988) simply asked women to state, on a five-point likert scale the following; whether they had ceased smoking; much decreased smoking; slightly decreased; tried to cease or decrease but were unable to do so; and did not try to cease or decrease smoking. Berget and Weil (1988) classified smokers into just two categories; these being [1] light to moderate smoker (1-14 cigarettes per day) or [2] heavy smoker (>15 cigarettes per day). As regards alcohol consumption Rubin, Krasilnikoff and Lerenthal (1988) classified drinkers into three categories; these being [1] rare drinker (who either abstained or consumed alcohol on rare occasions), [2] moderate drinker (consuming 1-11 drinks per week), and [3] heavy drinker (consuming more than 11 drinks per week).

Like many other studies, a self-report measure of these behaviours was utilised here for largely pragmatic reasons. Where intervention or medical treatment is not an issue this approach may be acceptable. In this present study, the main focus was to develop and validate a questionnaire to measure perceived support during pregnancy, and then to relate this measure to coping strategies and outcome.

<u>4.2.2   The Sample (n=501) and Follow-up Sample (n=267)</u>

The sample was obtained during routine antenatal clinic visits at a large Midlands' maternity hospital. All women who attended four consultant's ante-natal clinics across 8 clinics (4 in the morning 4 in the afternoon) were given the opportunity of completing SPQ's. All women (n=501) who completed the SPQ did so during these routine ante natal visits. The follow-up subgroup comprised those participants who had completed the SPQ at the above ante natal clinics and also completed a second follow-up questionnaire by post (sent to all participants who provided postal information on the SPQ and once their 'Expected Date of Delivery' (EDD) had passed. Two of the women who completed the follow-up postal questionnaire were excluded from analysis due to their delivering twins, one woman was excluded due to the fact that her baby was stillborn and no birthweight data or other relevant information was forthcoming. It would have been insensitive in these circumstances to have pursued such data.

Because results from studies 1 and 2 did not highlight and significant differences related to gender information regarding sex was not collected. It is accepted that the small numbers involved are likely to be influential in this. However, even with over 500 participants in the following large-scale study it is unlikely to be sufficient to pick up differences based on gender (as would be the case in epidemiological studies which commonly involve thousands of participants).

In the following large-scale study no control for time of gestation was made. The rationale for this being that the focus of this part of the study was to attempt to validate the SPQ. The time involved to collect data which was both sufficient in number (for reasons of statistical power) and to be confined to only the second to early third trimester (to avoid complications surrounding the first and late third trimester) would have been beyond the remit of this research. A decision to sacrifice one to secure the other was made in favour of statistical power, given the focus of this large-scale study was primarily to provide construct validity for the SPQ.

Due to conditions of 'Medical Ethical Approval' for this research, participants who did

not complete follow-up questionnaires could not be further pursued. Permission was sought to contact these participants via telephone (where telephone information was provided) but this was refused. It was decided that if these women had wanted to participate further they would have demonstrated their willingness via completion of the follow-up postal questionnaire. Permission was also sought to access medical records to obtain birthweight information by the author or some other sanctioned person. This request was also refused.

There resulted three major data sets; the first were 501 completed SPQ forms, the second being 267 completed follow-up questionnaires, of which 264 provided full data, and the third being a combination of data from the 501 cohort together with their corresponding follow-up data (n=264).

Total data available for multivariate analyses of ante and post-natal measures (e.g., birthweight, obstetric complication rates, previous births, demographic and socioeconomic status information) were n=264. No attempt was made to collect ethnicity details in this phase of the research. Previous early studies confirmed the ratio of these groups in the sample sets corresponding to local population expectations (approximately 1%). Information on infant sex was also not requested in this phase as no important differences were established in the early phases, although this may have implications for birthweight (e.g., gender influence on birthweight, Kleiverda et al., 1997). Finally, women in all trimesters were given the SPQ to complete, there were two main reasons for this change. Firstly, as anxiety was not a pregnancy or outcome measure in this large study it was not thought important to control for the influence of this factor on trimester. Secondly, as the main focus in this large study was to obtain as many participants as possible (to establish construct validity of the SPQ) and within the time limit available; excluding women on the basis of trimester would greatly reduce the number of participants included. Thus either the length of data collection would have to be extended or the power of later analysis reduced. It was not possible to extend the length of time given to data collection (as this would necessitate further medical ethic approval as well as extending the length of designated research time). Reducing the power ratio of later statistical analysis would defeat the main objective of gaining

construct validity for the SPQ.

The Overall Sample. Participants' (n=501) ages ranged from 14 - 43, mean 27, median 27, and variance 29.95. Of these 392 self-assigned themselves as currently with a partner, 49 without and 60 did not respond to this question. On the question related to marital status results demonstrated that 344 women were married, 111 single, 14 divorced, 6 separated and 0 widowed; 36 women did not respond to this question. At the time of SPQ completion women were between 2 and 9 months pregnant, with a mean of 7 months, median 8. Participants who refused to complete the SPQ numbered 8. None of these refusers were members of an ethnic minority group. Some members of ethnic minority groups were given assistance by the author or their partners (if available) to complete the SPQ. Of the 501 completed SPQ forms, 485 provided postal address information. Thus only 485 of the original cohort of 501 could be sent postal follow-up questionnaires.

Responders to follow-up postal questionnaire. A subsequent 54% response to follow-up was achieved. Considering this was a sample with a large inner city component, this response rate is considered satisfactory (Mason, 1989). Participants' (n=264) ages ranged from 16 - 42, mean 27, median 27, and variance 30.409. Of these 216 self assigned themselves as currently with a partner, 25 without, and 23 did not respond. On the question related to marital status, 191 were married, 60 single, 4 divorced, 3 separated, and 0 widowed; 6 did not respond.

Non responders to follow-up postal questionnaire. Participants' (n=237) ages ranged from 14 - 43, mean 26, median 25, and variance 28.522. Of these 176 self assigned themselves as currently with a partner, 24 without, and 37 did not respond. On the question related to marital status, 153 were married, 51 single, 10 divorced, 3 separated, and 0 widowed; 23 did not respond. At the time of SPQ completion women were between 2 and 9 months pregnant, mean 7, median 8.

4.2.3 Ethical Approval and Implications for Follow-up Design

This phase, as with the earlier phases, of the research was given medical ethical approval to the author by the local Medical Ethical Committee. The committee were keen to support examination of SPQ construct validity and relationships examined between the SPQ and other important variables. Given resource limitations for large scale replication of studies 1 and 2 the committee's interest corresponded with the author's own understanding and awareness of the practical research limitations. For example, it was agreed that large scale complete replication of the early studies could only be undertaken with a 'team' of researchers.

Establishing the construct validity of the SPQ, was however, central to such an ambitious piece of research and would establish a firm base for any possible future studies which examined the effectiveness of targeted intervention. It could also potentially provide a sound basis for procurement of resource funds to carry out such a study.

4.2.4 Procedure

SPQ completion. The researcher approached potential participants in this study at a local maternity hospital during routine ante natal clinic visits. All the participants were informed that the researcher was currently carrying out research into women's feelings of support during pregnancy. They were asked if they would be willing to help with this research by completing the SPQ. If participants were not interested in completing the questionnaire they were asked if they would like any further information about the research. If they were interested in more information at this stage this was duly provided. If not interested they were simply thanked for their time and left alone. No attempt was made to keep a record of such interactions, though it was noted by the researcher that this type of exchange was minimal and most participants were happy to complete the SPQ (only 8 refused).

Some women requested assistance in questionnaire completion from the researcher, and

this help was always given. Sometimes this involved taking care of young children for a few minutes, sometimes this involved the researcher completing with the participant, usually requiring her to read aloud the questions so that the individual participant could verbally respond. This suggested that some women wanted to complete the SPQ but had some problem with reading. Therefore, such women may also have had difficulty with the follow-up postal questionnaire. However, only three women required such assistance and most participants appeared to complete the questionnaire with little difficulty. Some women sought permission to complete the questionnaire at home and return it at their next ante natal visit. This occurred in three cases and all three questionnaires were duly returned for collection by the researcher the same week. Finally, some participants were very keen to talk about the research with the researcher and gave their views freely. These women were always encouraged to also enter these views onto the feedback form of the SPQ. Although a 'not applicable' category was not provided in the SPQ questionnaire design (and this could have caused some problems for some women) no mention of this was made in the feedback on the SPQ questionnaire.

Attendance by the author at the ante natal clinics continued for approximately one year. Periods of 'rest' were built into this period to provide an opportunity for some mothers to deliver and new attenders begin. When the target number of 500 was achieved attendance ceased. It was decided beforehand that 500 respondents would be adequate for PCA analysis to be undertaken to secure adequate statistical power. All questionnaires were then coded and entered for data analysis.

Completion of Follow-up Postal Questionnaire. The follow-up postal questionnaires (see Table 4.1a, above) were delivered in accordance with women's Expected Date of Delivery (EDD). The response rate to these follow-up Postal Questionnaires (PQ) was satisfactory, with a 54% response rate from the 485 questionnaires posted. The reader is reminded that only 485 of the original 501 could be sent follow-up PQs because some respondents failed to provide postal information at initial contact. The reader is also reminded that constraints on the research because of medical ethical approval, this included not being allowed to administer reminders to

nonresponders. This constriction may have influenced the eventual response rate. For example, Thorpe (1992) increased her response rate by sending out reminders to nonresponders to follow-up. This method increased her response rate to a maximum of 67%. It is possible that if such an approach had been used here response rates may well have increased from 54%. However, it is also important to remember that within a sample with a large inner city component such a response rate may be seen as acceptable (Mason,1989).

A brief introduction to Principal Component Analysis (PCA) will now be provided, with particular reference to the appropriateness of this form of analysis for the data collected.

4.3   Principle Components Analysis (PCA)

Karl Pearson introduced the notion in 1901 describing a component as a line of closest fit to systems of points in space. The regression line indicates best **prediction** and the component line indicates best **association.** PCA means we are searching for quantitative associations between variables and the extent to which associations gather round common dimensions.

PCA is often used for measurement of test scales on questionnaire items that measure a common dimension associated in a components analysis and shares much in common with factor analysis. Spearman first presented the model of factor analysis. It was extended to multiple mental measurement factors by Thurstone several decades later. The factor analysis model expresses variation within the relations among observed variables as partly common variation among factors and partly specific variation among random errors (commonalities and specificities).

Principle component analysis is concerned primarily with disassociation (separateness between each variable). By implication those variables which are separate from others but not necessarily separate to each other will come to form main components. A clear theoretical distinction between PCA and Factor Analysis continues to be hotly debated. However, principle components are said to be weighted linear composites of observed

variables. Common factors are unobserved variables that are hypothesised to account for the inter correlations amongst observed variables. The common factor model is based on more unobserved parameters than observed data points.

Principle components are mathematical entities and will not necessarily be more theoretically meaningful than any other linear combination of variables. Consequently they can be used to reduce dimensionality by eliminating negligible variation and then rotate once more in the smaller dimensional space to achieve some meaningful criteria (as with factor analysis). In short, it is argued that with PCA we may take wide variability and reduce this to the main components without losing the meaning associated with the original wide variability. In the real world it is not unreasonable to expect factors which are designed to measure a primary construct (such as perceived support) will be correlated in some way (share variance) whilst also retaining some separateness or independence (Kline, 1991).

4.3.1 PCA versus Factor Analysis: A Theoretical Distinction

Dunteman (1989) suggests that explaining variation (via PCA) is the main point of such analysis. A linear dependency means that any one variable in the variable set can be written as an exact linear combination of one or more of the remaining variables. Latent roots = Eigenvalues = Characteristic roots. Since the principle components are uncorrelated, each one makes an independent contribution to accounting for the variance of the original variables. Thus discarding components with small variances is logical as these components are relatively unimportant, as are variables associated with them (Joliffe, 1986). Components with large variances between components are important and as a consequence are the variables associated with them. In essence, therefore, PCA decomposes the total variance, whilst Factor Analysis is concerned with explaining common variance, not the total variance. Kline (1991) states PCA is often used as an initial factoring method.

Factor analysis can produce results to guide us; in this sense they constitute neither falsity nor truth (Baird, 1987). Although factor analysis is sometimes seen to be

predictive by some people, Baird argues that we may also view it as earlier scientists viewed the microscope. That is, it is a useful tool capable of unmasking the less obvious but no less important discoveries.

In the same way PCA will tell us something about the main components within a set of data without specifying prior to analysis what these might be. PCA cannot, like exploratory factor analysis, tell us much more. For this we need to go further and associate domains or dimensions with some real and meaningful phenomena. If a questionnaire is well designed PCA can help us decide whether what we thought was there really is there. It does this by further associating the identified principle components with predetermined components (in our case the predetermined domains of support within the SPQ).

Kline (1991) suggests that the most important difference (ignoring that strictly speaking PCA is not factor analysis because it produces as many components as variables) is their treatment of the variance in the correlation matrix. PCA uses all the variance, including error variance; principal factors or principal axes analysis, however, excludes the error variance by estimating commonalities. This makes principal factors a more accurate method but in large matrices of more than 25 variables (as is the case here where there are 28 variables x 501 respondents) there is almost no difference in the factors. Given this, Kline suggest that the distinction is of little significance.

In essence using PCA in this study instead of Factor analysis is equivalent to 'pinning one's colours to the mast' at the outset. The end computational approach of correlating variables with either identified principle components or factors is almost indistinguishable. The important difference here is that PCA allows the principle components to be decided upon utilising all the data without an a priori prediction of which components (statistically speaking not theoretically speaking) will emerge. Only then can these can be measured against the preset components or factors using correlation 'loadings'.

This brief outline of 'PCA' and 'Factor Analysis' is not intended to be comprehensive,

nor does the author suggest that such analysis, or the inherent debates therein, are the main purpose of this chapter or thesis as a whole. The reader is recommended to Baird (1987), Dunteman (1989), Joliffe (1986) and Kline (1991) for fuller accounts of PCA and Factor Analysis.

4.3.2 Relevance of PCA to validation of the SPQ

The SPQ is theoretically measuring 'perceived support' during pregnancy, however within this there are four conceptually distinct domains of perceived support. High scores are negative scores and imply a lack of perceived support. Women with such high scores are potentially considered 'at-risk' from pregnancy related stress and negative sequelae.

The four specific domains (we may term these sub-constructs) have theoretical validity in their own right (see Chapters 1 and 2) and face and concurrent validity (see Chapter 3). Whilst we may expect associations between all questions, as they are all designed to measure perceived support, we should also expect separateness which results in component associations which correspond to the four specific domains of support within the SPQ.

In more detail, the 'General' support category is designed to measure current perceptions, mainly associated with family and friends, but not specifically associated with partner, parental or maternal support. We may expect, therefore, that the 'General" support domain will have strong overlap with the other three domains. We may also expect this domain to be a type of 'catch-all' domain likely to pick up dissatisfaction with support during pregnancy generally. This might be the case even when such dissatisfaction cannot (for whatever reason) be attributed to any other one source of support. One can also hypothesise that the 'General' support domain within the SPQ will be the domain which will account for the most variance.

<u>4.3.3 Hypotheses for the PCA</u>

With PCA we can now test our conceptual constructs within the SPQ statistically. As
we have designed the SPQ to contain four domains or sub-constructs of perceived
support the data from n=501 completed SPQs are suitable for PCA. We can also be
sure that the *variable-to-power ratio* is satisfactory here. A power ratio of between 10-
20 for each variable was necessary for PCA. There were 28 variables to 501 completed
forms. Including missing data the subsequent power ratio proved to be 17:1. We can
now test the following:

- that four principle components will be identified via PCA
- that PCA (via rotated loadings - amongst competing hypotheses the simplest
explanation is the best = Occam's razor) will identify four principle components which
may then be correlated with the four *a priori* theoretical support domains.

In summary, the degree to which the domains and the SPQ overall have construct
validity was to be tested using our representative sample of 501 pregnant women. The
participants in this study who are all pregnant women, for whom the SPQ was
designed, have provided us with the data with which to test its validity. We may then
associate these results with previously obtained 'face and concurrent validity'. If such
construct validity was established, further analyses of the SPQ with pregnancy-related
outcome measures may commence with some degree of confidence.

4.4   Results

Table 4.3 presents some basic descriptive statistics for the four SPQ support domains
utilising our eventual data pool of n=501 completed SPQ forms provided by pregnant
women across all trimesters of pregnancy.

Table 4.3   Descriptive statistics across the four SPQ support domains and SPQ overall

	General	Partner	Parent	Maternal	Overall
Minimum	7.00	7.00	7.00	7.00	28.00
Maximum	41.00	49.00	49.00	45.00	184.00
Mean	16.01	16.64	15.67	15.99	63.62
Variance	76.88	81.93	79.20	52.35	642.37
Std. Deviation	8.76	9.05	8.90	7.24	25.34

Split-half reliability was computed by simply summing the odd and even items on the questionnaire and correlating the two sums. Pearson's correlation coefficient was computed at $r=0.83$ ($p<0.01$), which is satisfactory for a clinical tool.

Overall there is response consistency across support domains. This information will help us to set a cut-off point for possible future dichotomising of supported from unsupported pregnant women on the criteria of perceived support. Initial scrutiny of the data therefore suggests that scores at or above 16 in individual support domains would be an appropriate arbitrary cut-off point. This corresponds well with the previously set cut-off point set for the initial studies reported in Chapter 3.

Figure 4.1 demonstrates the distribution of overall SPQ scores, with the majority of scores (approximately 80%) below the selected cut-off point of 64 (divided by 4 =16). The degree of skew present can be explained by a floor effect. However, logarithmic transformations revealed a more normal distribution for overall scores and for each support domain, which followed similar distribution patterns. On the basis of the cutoff, women at-risk of stress via perceived lack of support constitute approximately 20% of the sample population. We can see from Figure 4.1 that most of the sample population score below 64 (80%).

Each of the individual support domains were distributed in a similar way to the overall SPQ scores. This constitutes preliminary evidence that the overall score is a correct reflection of the individual domain scores. Although there does appear to be a degree of

skew in these variables, the high number of participants weakens the case for transformation. However, it will be important to examine residuals in any regression analysis involving the SPQ scores to avoid erroneous conclusions.

Figure 4.1 Distribution of Overall SPQ Scores

Overall SPQ Scores
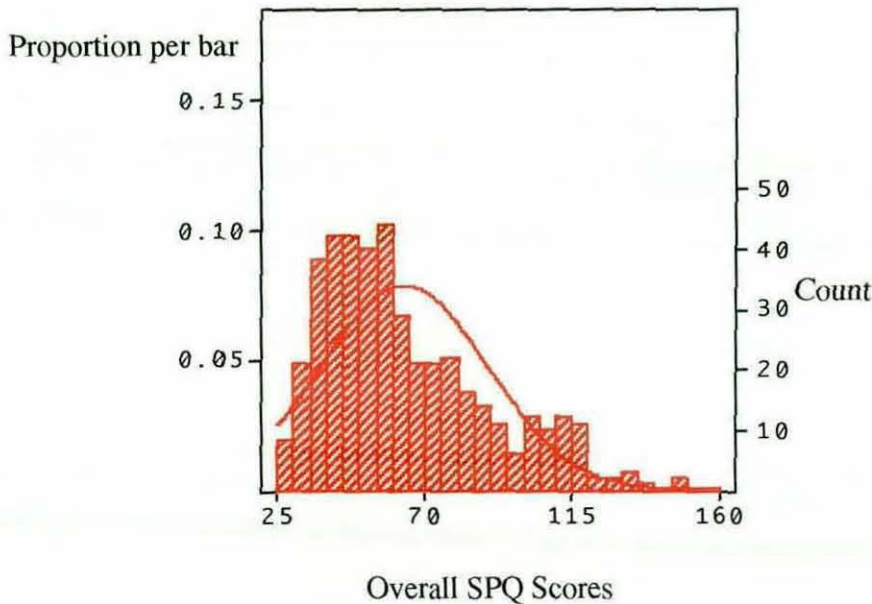
It is now possible to report the results of the PCA. As stated in the introduction to this chapter, it is important to rotate the principle components as is done in Factor Analysis. Like the original components the new axes are also defined by their correlations (loadings) with the original variables, but hopefully the pattern of loadings on the rotated coordinated axes will be more conceptually appealing, thus allowing for a simpler interpretation of the rotated components (Dunteman, 1989). Varimax rotation (Kaiser, 1958) is probably the most popular orthogonal rotation procedure and the most commonly used rotation, and was therefore utilised here.

The amount of variance which each domain could explain is displayed in Table 4.4. Since the principal components are uncorrelated, each one makes an independent contribution to account for the variance of the original variables. A scree plot of the

Eigenvalues (variances) demonstrated that after factor four, all other factors had no variance (Figure 4.2). The Scree Plot is held to be a valid method of selecting factors for subsequent rotation (Kline, 1991).

Figure 4.2   Factor Scree Plot of Eigenvalues demonstrating four major components

```
      -+---------+---------+---------+---------+---------+---------+-
  25 + A    [1]
     |
     |
  20 +
     |
     |
  15 +
     |
     |
  10 +   A    [2]
     |     A      [3]
     |      A   [4]
   5 +       A A A   [5-7]
     |        A A A A A A  [8-13]
     |          A A A A A A A A A A A A A A A  [14-28]
   0 +
      -+---------+---------+---------+---------+---------+---------+-
       0        5        10       15       20       25       30
```

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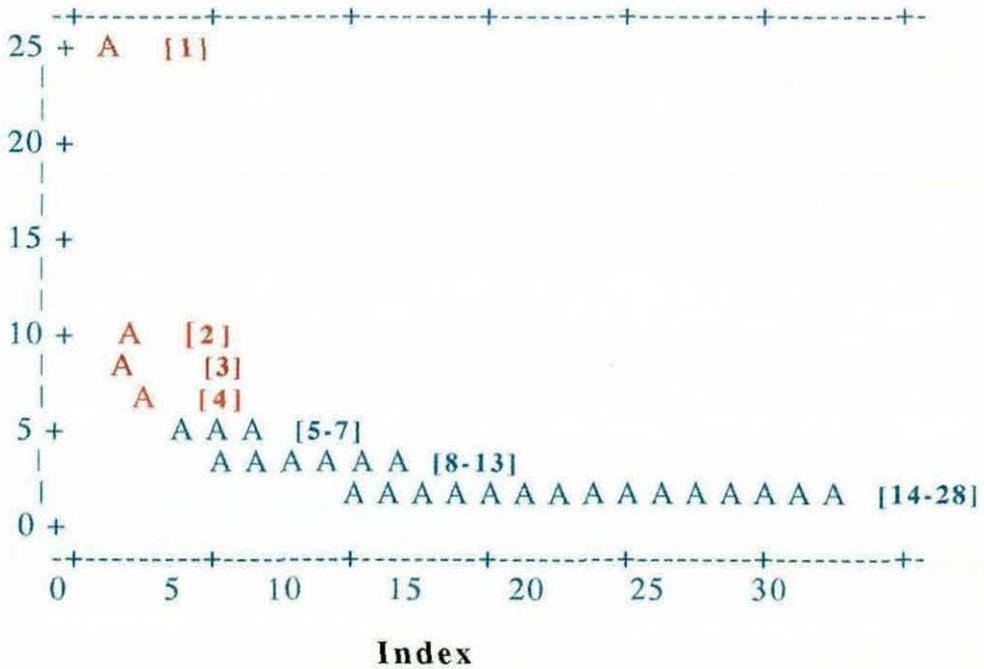
The first identified component (with the largest variance percentage) proved to be the General Support Domain. This is theoretically logical as this domain was designed as a 'catch-all' domain and we would therefore expect such a result. We would also expect loadings on this domain to correlate with questions in other domains. The percentage of total variance explained by the other domains reflects their equal contributions. Overall, total percentage of variance explained is 54% and variance explained by rotated components is 15%.

Table 4.4   Explained variance (n=501)

Variance explained by rotated components

1	2	3	4
5.343	3.009	3.802	2.919

Percent of total variance explained

1	2	3	4
19.082	10.746	13.578	10.426

Table 4.5 demonstrates loadings on each question following identification of the components, and corresponding canonical correlation coefficients for each domain within the SPQ. The reader should note that all correlations were carried out using listwise and pairwise comparisons to safeguard against the possible effect of missing data and other potential technical problems. Furthermore, non-parametric equivalent (Kendall's Tau) tests were carried out. These additional analyses did not differ significantly from the results presented here.

Canonical Correlations (see table 4.5. below) demonstrated that Q.25, within the partner support domain, is poorly correlated with all other support domains within the SPQ. It appears independent from all other domains, whilst remaining associated with the partner support domain. **However, the loading for this question within the partner support domain is satisfactory. As the SPQ is designed to measure four separate domains of support this in itself is not a rationale for excluding this question from the SPQ or from further analyses. Indeed, question 25 may well prove to have some special importance in relation to specific cohorts within the overall sample.**

Table 4.5 Canonical Correlation Analysis between the four domains of support

Support Domains	Question Numbers	Domain 1	Domain 2	Domain 3	Domain 4
General	Q12	**0.813**	0.132	0.244	-0.026
"	Q15	**0.793**	0.075	-0.013	0.033
"	Q3	**0.712**	-0.084	0.355	-0.071
"	Q8	**0.666**	0.057	0.244	0.148
"	Q4	**0.619**	-0.030	0.300	0.061
"	Q22	**0.111***	0.001	0.772**	0.111
"	Q1	**-0.041***	0.023	0.137	0.375**
Partner	Q9	0.092	**0.788**	0.113	0.247
"	Q14	0.036	**0.777**	0.110	0.256
"	Q17	0.077	**0.776**	0.147	0.208
"	Q27	0.405	**0.602**	-0.001	0.164
"	Q20	0.551	**0.560**	-0.053	0.179
"	Q7	0.642	**0.415**	-0.025	0.010
"	Q25	-0.048	**0.321**	-0.008	-0.137
Parent	Q13	0.075	-0.011	**0.771**	0.145
"	Q5	0.074	0.019	**0.756**	0.160
"	Q26	0.141	0.117	**0.726**	0.020
"	Q2	0.035	0.133	**0.608**	0.183
"	Q24	0.439	0.018	**0.575**	0.039
"	Q28	0.535	0.138	**0.463**	0.124
"	Q11	0.769**	0.028	**0.324**	-0.009
Maternal	Q18	0.125	0.234	0.083	**0.665**
"	Q6	0.021	0.087	0.110	**0.755**
"	Q10	0.100	0.070	0.201	**0.754**
"	Q21	0.159	0.154	0.087	**0.674**
"	Q16	0.573	0.092	-0.055	**0.494**
"	Q23	0.442	-0.154	-0.105	**0.313**
"	Q19	0.359**	0.145	-0.085	**0.104***

Asterisks (*) indicate questions with unexpected loadings (see text)

It can also be observed in Table 4.5. that loadings overall are satisfactory. There are, however some exceptions, e.g., Q.1 in the General Support Domain. This question appears to be better associated with maternal support. Another example is that of Q.19 which has a better association with the general support than with maternal support. There is, therefore, a case for exchanging these and other questions with similar problems to their more appropriate support domains, as demonstrated in Table 4.6.

Table 4.6. Suggested changes to SPQ on the basis of PCA - leaving 7 questions per support domain as per original design

Support Domains	Question Numbers	Domain 1	Domain 2	Domain 3	Domain 4
General	Q12	**0.813**	0.132	0.244	-0.026
"	Q15	**0.793**	0.075	-0.013	0.033
"	Q3	**0.712**	-0.084	0.355	-0.071
"	Q8	**0.666**	0.057	0.244	0.148
"	Q4	**0.619**	-0.030	0.300	0.061
"	Q19	**0.359***	0.145	0.085	0.104
"	Q11	**0.769***	0.028	0.324	-0.009
Partner	Q9	0.092	**0.788**	0.113	0.247
"	Q14	0.036	**0.777**	0.110	0.256
"	Q17	0.077	**0.776**	0.147	0.208
"	Q27	0.405	**0.602**	-0.001	0.164
"	Q20	0.551	**0.560**	-0.053	0.179
"	Q7	0.642	**0.415**	-0.025	0.010
"	Q25	-0.048	**0.321**	-0.008	-0.137
Parent	Q13	0.075	-0.011	**0.771**	0.145
"	Q5	0.074	0.019	**0.756**	0.160
"	Q26	0.141	0.117	**0.726**	0.020
"	Q2	0.035	0.133	**0.608**	0.183
"	Q24	0.439	0.018	**0.575**	0.039
"	Q28	0.535	0.138	**0.463**	0.124
	Q22	0.111	0.001	**0.772***	0.111
Maternal	Q18	0.125	0.234	0.083	**0.665**
"	Q6	0.021	0.087	0.110	**0.755**
"	Q10	0.100	0.070	0.201	**0.754**
"	Q21	0.159	0.154	0.087	**0.674**
"	Q16	0.573	0.092	-0.055	**0.494**
"	Q23	0.442	-0.154	-0.105	**0.313**
	Q1	-0.041	0.023	0.137	**0.375**

Asterik (*) denotes changes made following PCA and Canonical correlations (loadings)

Although Table 4.6 suggests how these changes could be made we cannot make these changes at this point in time, and subsequently interpret the data in the following results chapters in accordance with these changes. These are suggested changes for future use of the SPQ only, based on empirical support. For the purposes of this present thesis we will continue to analyse our data in accordance with the original question-to-support domain assignment criteria.

4.5   Discussion

The results of PCA have successfully supported the hypotheses that each set of domain questions would demonstrate separate variance from each other whilst retaining high levels of association overall. The overall construct of pregnancy-related perceived support was confirmed. PCA identified four principle components which were strongly associated with the four preset support domains (using canonical correlations). It can now be stated that the questionnaire has satisfactory levels of construct validity, bearing in mind the qualifications and recommendations for change.

Two main qualifications were identified via the PCA and canonical correlations:

• possible question substitution between Support Domains (see table 4.4.)
• Q.25 may have distinctive psychometric properties, though it has satisfactory loading within the partner support domain.

In conclusion, the results were positive regarding the questionnaire design and inherent constructs. The norms which have been set for cut-off between supported and unsupported participants also appear secure (although originally arbitrary). Looking at the distributions, it was clear that future data analysis results from this data set of n=501 are unlikely to be simply due to artifact (e.g., skewed distributions). This was further supported by logarithmic transformations of the data, overall and for each individual support domain.

We can now state that the questionnaire has good construct validity. Together with some face and concurrent validity obtained in the earlier studies, this allows a degree of confidence when analysing the relationship of SPQ scores to other variables, e.g., outcome variables. It can be stated that subsequent analyses are based upon reasonably secure statistical foundations. Having had a reasonable response rate to the follow-up questionnaire (over 50%), there is insufficient reason to question the validity of the analyses. However, it is also important to consider the possibility of differences between responders and non-responders, and this will be examined in the following chapter (Chapter 5) which links SPQ scores to other variables.

Chapter 5

Comparison of the SPQ scores of Responders to Follow-Up and Non-Responders

5.1   Introduction

This chapter will provide an overall profile of the original cohort of 501 women who completed the Support in Pregnancy Questionnaire (SPQ) during pregnancy. It is important to examine differences in questionnaire completion between those who completed a post-natal follow-up Postal Questionnaire [PQ] and those who did not. The SPQ contains items which lead to the support scores, but also asks for information on socioeconomic (SES) variables, demographics, and feedback on the Support in Pregnancy Questionnaire (SPQ) data. Thus **responders** (n=264) to a follow-up Postnatal Questionnaire (PQ) and **non-responders** (n=234) have provided comparable data sets for between-group analyses on specific measures.

The main reason for these comparisons is to investigate whether there are marked differences between responders and non-responders on the SPQ. If there are, then subsequent analyses including outcome variables must be viewed with caution. If there are no substantive differences, then there is no evidence from the SPQ that the groups differ. Whilst this would not be conclusive evidence that the follow-up data provided by the responders is also adequately representative of non-responders, it is consistent with this hypothesis.

Out of the original 501 sample, 485 provided their address. Three of the responders' to the follow-up Postal Questionnaire (PQ) had to be discarded as they included two sets of twins and one stillbirth (no data regarding the latter was given and it was deemed insensitive to pursue this).

5.2 SPQ Response Pattern for the original n=501 cohort

The overall profile of SPQ responses for all 501 pregnant women who completed the SPQ during pregnancy is presented in Table 5.1. It can be observed that Q.25 has a disparate mean compared to all other individual question means within the SPQ. An observably larger variance can also be observed for Q.25 and in comparison to all other question variances.

The mean of Q.25 may suggest that this question has elicited more negative responses from participants generally. However, the variance suggests the possibility of overly influential individual or sub-group responses.

Table 5.1 Mean, variance, standard deviations and median for each question for n=501

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Mean	2.35	2.38	2.33	2.88	2.21	1.91	2.12	2.63	2.02	1.76
Var	2.88	3.22	4.69	4.93	3.48	2.44	4.26	3.62	2.87	1.77
S.D.	1.69	1.82	2.16	2.22	1.86	1.56	2.06	1.90	1.69	1.33
Median	2.00	2.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00

	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
Mean	2.140	2.020	2.080	2.180	1.930	2.660	1.810	2.180	2.850	2.190
Var	3.850	3.380	3.270	3.430	2.870	3.680	2.840	2.660	4.350	3.630
S.D.	1.960	1.840	1.811	1.850	1.690	1.920	1.680	1.630	2.080	1.900
Median	1.000	1.000	1.000	1.000	1.000	2.000	1.000	1.000	2.000	1.000

	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28
Mean	1.890	1.800	2.750	2.750	3.870	1.840	2.510	2.440
Var	2.100	2.620	4.000	4.340	6.010	2.810	3.990	3.550
S.D.	1.450	1.610	2.000	2.080	2.450	1.670	2.000	1.880
Median	1.000	1.000	2.000	2.000	4.000	1.000	2.000	2.000

The reliability of each question in terms of participants' responses is demonstrated in Table 5.1. Consistency between individual question means and a largely homogeneous profile suggest adequate reliability. Question 25 is observably different in this respect

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and may measure some distinct dimension of partner support or non-intended aspect of support generally. Alternatively, it may be a contaminating influence within the questionnaire itself and may be potentially excluded from a future revised SPQ format.

5.3   Possible differences between responders and non-responders to postal follow-up via a Postnatal Questionnaire (PQ)

Tables 5.2 and 5.3 and Figure 5.1 details the profiles of SPQ question responses patterns for responders and non-responders. Due to the anomaly with Q.25 it is hypothesised here that differences between responders and non-responders may provide some answers. This hypothesis and other important differences will now be examined.

From these descriptive statistics, there appear to be no important differences between responders and non-responders to the PQ in terms of their SPQ responses overall (see table 5.3). There remains an important difference between responders and non-responders on Q.25 ($F_{(1,480)}=10.95$, p=0.001). It is worth reprinting the item to remind the reader:

Q.25. "I very much hope that the birth of the baby will change my partner for the better".

Table 5.2 Mean, variance, standard deviation and median for each question within the SPQ for responders (R) (n=264) versus non-responders (NR) (n=234).

	R	NR	R	NR	R	NR	R	NR	R	NR
	Q1	Q1	Q2	Q2	Q3	Q3	Q4	Q4	Q5	Q5
Mean	2.490	2.187	2.386	2.383	2.273	2.394	2.931	2.826	2.227	2.196
Var	2.620	3.127	3.059	3.630	4.534	4.895	4.616	5.307	3.218	3.791
S.D.	1.620	1.768	1.749	1.905	2.219	2.212	2.148	2.304	1.794	1.947
Median	2.000	1.000	2.000	1.000	1.000	1.000	2.000	1.000	1.000	1.000

	Q6	Q6	Q7	Q7	Q8	Q8	Q9	Q9	Q10	Q10
Mean	1.958	1.858	2.144	2.100	2.710	2.556	2.077	1.965	1.879	1.630
Var	2.384	2.510	4.233	4.317	3.678	3.570	2.805	2.959	1.985	1.512
S.D.	1.544	1.584	2.057	2.078	1.918	1.889	1.675	1.720	1.409	1.230
Median	1.000	1.000	1.000	1.000	2.000	1.000	1.000	1.000	1.000	1.000

	Q11	Q11	Q12	Q12	Q13	Q13	Q14	Q14	Q15	Q15
Mean	2.076	2.222	2.053	1.996	2.175	1.975	2.212	2.152	1.916	1.945
Var	3.333	4.440	3.419	3.360	3.114	3.455	3.300	3.599	2.672	3.103
S.D.	1.826	2.107	1.849	1.833	1.765	1.859	1.817	1.897	1.635	1.762
Median	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

	Q16	Q16	Q17	Q17	Q18	Q18	Q19	Q19	Q20	Q20
Mean	2.728	2.603	1.744	1.900	2.270	2.089	2.852	2.860	2.241	2.144
Var	3.553	3.842	2.541	3.177	2.671	2.649	4.142	4.614	3.392	3.913
S.D.	1.885	1.960	1.594	1.782	1.634	1.628	2.035	2.148	1.842	1.978
Median	2.000	2.000	1.000	1.000	2.000	1.000	2.000	2.000	1.000	1.000

	Q21	Q21	Q22	Q22	Q23	Q23	Q24	Q24	Q25	Q25
Mean	1.879	1.902	1.770	1.847	2.920	2.568	2.753	2.766	3.533*	4.267*
Var	1.970	2.268	2.370	2.904	3.928	4.034	3.584	5.223	5.664	6.161
S.D.	1.404	1.506	1.539	1.704	1.982	2.008	1.893	2.285	2.380	2.482
Median	1.000	1.000	1.000	1.000	3.000	2.000	2.000	1.000	4.000	4.000

	Q26	Q26	Q27	Q27	Q28	Q28
Mean	1.738	1.970	2.512	2.511	2.426	2.464
Var	2.370	3.293	3.780	4.269	3.169	4.008
S.D.	1.539	1.815	1.944	2.066	1.780	2.000
Median	1.000	1.000	2.000	1.000	2.000	1.000

Responders = blue

Non-responders = black

Differences between these two subgroups on individual questions = *

Table 5.3 Means, variances, standard deviations and medians (n=501) versus responders (n=264) and non-responders (n=234) to the PQ, for the four SPQ domains and SPQ responses overall.

501 cohort	General	Partner	Parent	Maternal	Overall
Mean	16.006	16.644	15.674	15.990	63.628
Var	76.883	81.931	79.197	52.353	642.938
S.D.	8.768	9.052	8.899	7.235	25.356
Median	13.000	14.000	13.000	14.000	57.000
Responders					
Mean	16.178	16.323	15.705	16.416	63.379
Var	75.026	80.041	69.324	53.267	595.595
S.D.	8.662	8.947	8.326	7.298	24.405
Median	13.000	13.000	13.000	14.000	57.000
Non-responders					
Mean	15.812	17.014	15.638	15.513	63.928
Var	79.241	84.238	91.223	51.124	703.191
S.D.	8.902	9.178	9.551	7.150	26.518
Median	13.000	14.000	13.000	14.000	58.000

Differences between responders and non-responders in the 'Partner' support domain of the SPQ were not significant. The reader is reminded that Q.25 lies within the 'Partner' support domain of the SPQ. Therefore, the only apparent difference between responders and non-responders on the SPQ scores is on Q.25, but this has not resulted in significant group differences in the 'Partner' support domain.

Rasanen (1985) suggests that younger pregnant women are less likely to have a stable relationship but more likely to be seeking to secure one via their pregnancies. Therefore, one needs to consider age and marital status as factors affecting Q.25.

Figure 5.1

Mean Scores for Individual Support Domains
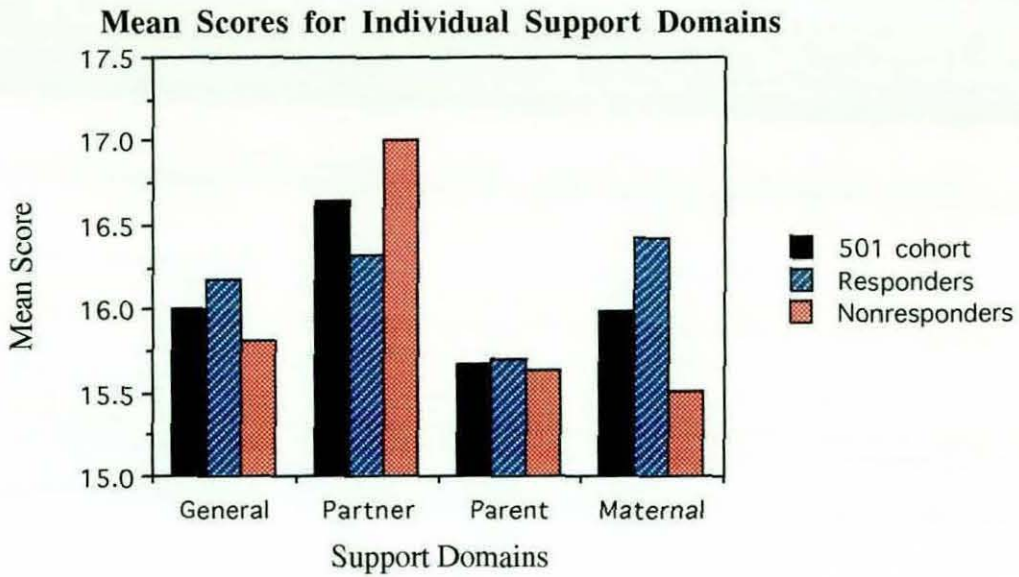
Question twenty-five may also have offended participants who see this question as insulting of their already secure and intimate relationship. It is worth examining differences between responders and non-responders in terms of their marital status, and then whether there were differences in Q.25 on the basis of marital or partner status. Marital status in itself is a poor indicator of the presence or absence of a secure and intimate adult relationship (Kleiverda et al., 1997); however, it at least suggests some crude measure of relationship stability.

On the SPQ women are asked to describe themselves as either single, divorced, separated, widowed or married, and as either currently 'with a partner' or 'without a partner'. The latter question was designed to look at possible differences between societal judgments of partner status (being married or not) compared to an individual's perception of partner status.

Some 475 women out of 501 completed the marital status question. Analysis revealed the following breakdown; 344 were married, 111 single, 14 divorced, and 6 separated. No participants were widowed.

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Of these 465 who completed the marital status question, 258 were responders to follow-up postal PQ. Analysis revealed the following breakdown; 191 were married, 60 single, 4 divorced, and 3 separated. For non-responders to the PQ, 217 completed the marital status question. Analysis revealed the following breakdown; 153 were married, 51 single, 10 divorced, and 3 separated. These figures are represented in percentages in Table 5.4. These results (except for the 'widowed' category) are also graphically represented in Figure 5.2.

Table 5.4 Percentages of women who responded to the marital status question on the SPQ, for whole cohort, responders and nonresponders.

	Married	Single	Divorced	Separated
Whole cohort	73%	23%	3%	1%
Responders	74%	23%	2%	1%
Nonresponders	71%	24%	4%	1%

Figure 5.2a Marital status for responders to follow-up

Marital status for Responders to follow-up

Married
Single
Divorced
Separated
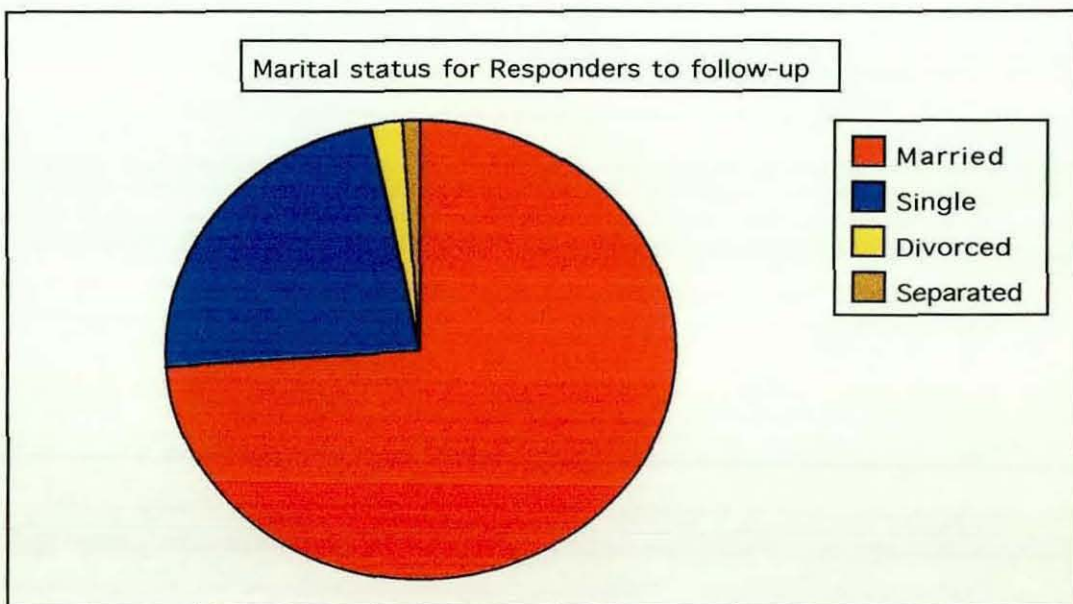
Figure 5.2b Marital status for nonresponders to follow-up

Marital status of nonresponders to follow-up
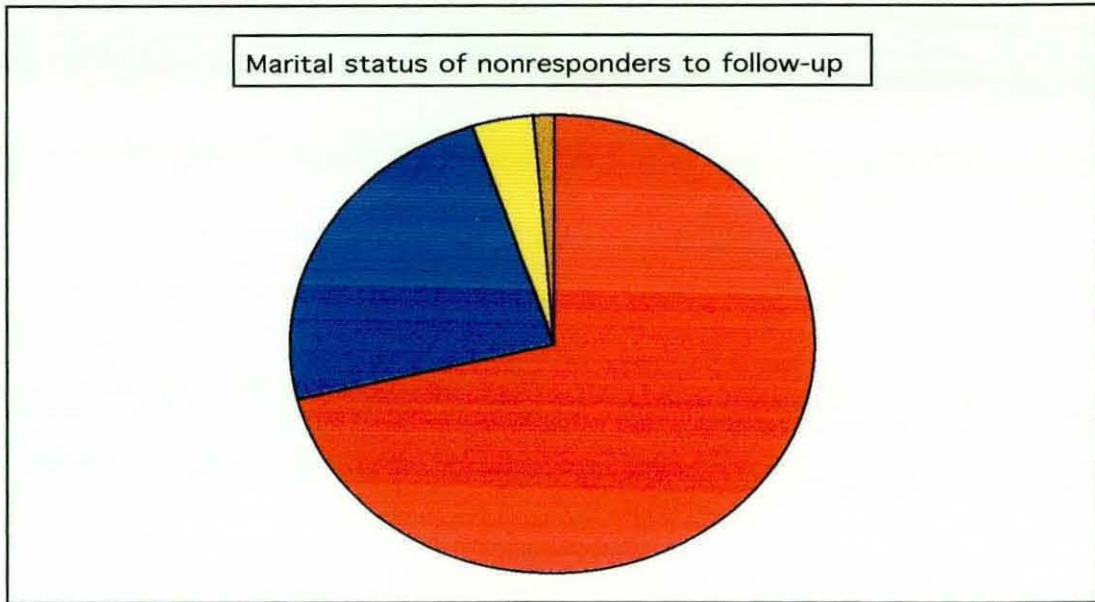
Analyses of the effects of marital and partner status on the answers to Q25 were all non-significant. A chi-square analysis of response to follow-up by marital status proved non-significant, ($\chi 2$= 3.893, 3df, n.s.). All of the non-married categories were then collapsed into one category now termed the 'single' category. A subsequent chi-square test was non-significant ($\chi 2$= 3.299, 1df, n.s.). Therefore the partner status of responders and non-responders seems similar, and Q.25 was unaffected by partner status itself. Therefore, although there was some initial concern over Q.25., this did not appear to be statistically significant in regards to marital or partner status between responders and nonresponders.

As regards the question which asked women to state whether they were currently with or without a partner during pregnancy, Table 5.5 provides percentage breakdown and Figure 5.3 graphically represents the responses. Whether women assigned themselves as currently with or without a partner followed the trend for marital status ($\chi 2$= 3.457, 1df, n.s.).

Table 5.5 Percentages of women who responded to the 'with or without' partner status question on the SPQ, for whole cohort and split for responders and nonresponders.

	No response to Q	With partner	Without partner
Whole cohort (n=501)	11.97%	78.24%	9.78%
Responders (n=264)	8.74%	81.74%	1.44%
Nonresponders (n=237)	15.61%	74.26%	10.12%

Figure 5.3a Partner assignment for responders

With or without partner for responders

- no response
- with partner
- without partner
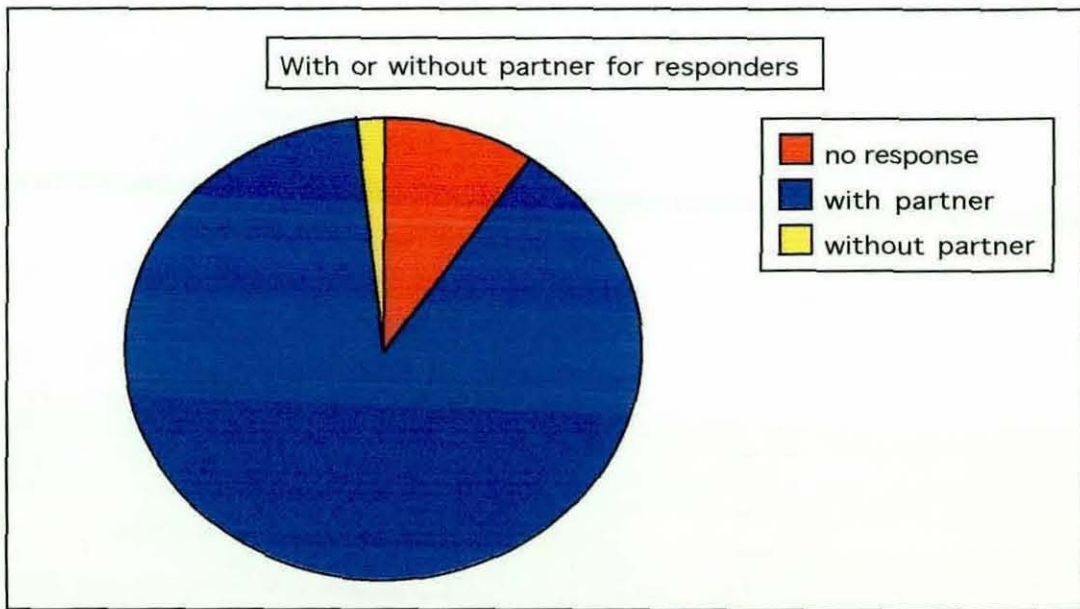
Figure 5.3a Partner assignment for nonresponders

With or without a partner for nonresponders

- no response
- with partner
- without partner
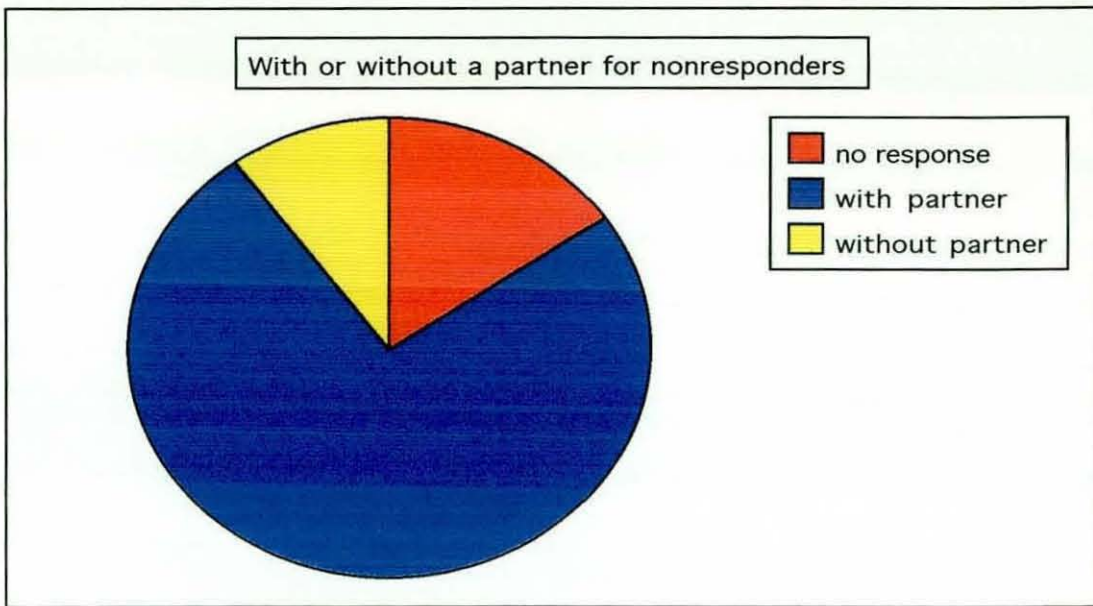
Overall, only a small percentage of participants did not respond to the question related to 'with or without' partner status (n=60). A chi-square analysis demonstrated that non-responders were generally more likely to nonrespond to this question ($\chi 2$= 8.72, 1df, p<0.01).

5.4 Feedback from participants regarding completion of the SPQ

The SPQ 'Feedback' questionnaire (attached to the back of the SPQ, see Table 41a in Chapter 4) was essentially concerned with whether women found the SPQ easy to complete. This questionnaire was made up of open-ended questions encouraging women to give their views on completing the SPQ. The data obtained is largely qualitative and will be examined more closely in subsequent chapters. Analysis of the feedback questionnaire was conducted by a second independent researcher.

As a consequence of this independent analysis, one relevant significant difference between responders and non-responders was found. Question three of the feedback questionnaire asked women to rate completion of the SPQ as either, very easy, fairly

easy, fairly hard, or very hard. Differences were non-significant. Question four invited women to elaborate as to why they responded in the way they had to question three. Non-responders proved significantly less likely to elaborate in this way ($\chi 2=11.21$, 1df, p<0.01). It would appear that non-responders are less likely to expand upon their views extensively, though they are happy to respond to relatively straightforward forced choice questions.

5.5 Response to follow-up Postal Questionnaire (PQ) and Age

A significant difference in age between responders and non-responders was found ($F_{(1,484)}=8.70$, p<0.01) demonstrating that non-responders were significantly younger than responders. A Pearson correlation of age and scores on Q.25 suggested that over the whole cohort (n=501) there was a significant negative relationship (-0.15, p<0.01), where the younger the woman the more likely they would score highly on this question. This result implies that younger women tended to record more negative responses to Q.25, although this effect yields a small coefficient of determination of only 0.02. For responders alone, age was not correlated with negative responses (r=-0.12, n.s.), whereas the small effect is maintained for non-responders when analysed alone (r=-0.15, p<0.05). Therefore the relationship only seems to exist for non-responders, though it is not a strong correlation.

We can therefore state that non-responders have the following characteristics which separate them from responders:

[1] they would like to see more change in their partners as a result of the baby's birth (implied via their negative response to Q.25)

[2] they are less likely to complete questions related to partner status

[3] they are less likely to provide additional information about their views on the SPQ

[4] they are significantly younger

[5] the younger they are, the higher their score on Q.25

5.6   Discussion

The initial results suggest that Q.25 may be problematic. However, further analyses
(regarding marital or partner status) suggested that Q.25 did not differentiate between
responders and nonresponders. Whilst Q.25 differed in relation to other questions
within the SPQ, the loadings on factor analysis for this question within the partner
support domain (which this question belonged to) were satisfactory. Further, Q.25 may
help identify some women who desire or hope for change in their partners, initiated by
the birth of a child. For these reasons Q.25 should be retained within the SPQ. All other
questions within the SPQ can be seen to reliably represent the general population of
pregnant women.

Even with Q.25 included, the four domain scores and overall scores did not differ
significantly between responders and non-responders to the follow-up PQ. These
results are consistent with the hypothesis that any relationships between the SPQ and
the variables reported in the follow-up PQ are also representative of the non-responder
sample. However, this is not conclusive evidence of that hypothesis, **46%** of the
potential follow-up PQ data was unavailable for analysis because of nonresponse.

Although the above analyses suggests that there were no great differences between
responders to follow-up and nonresponders, there may be many other variables to
account for the nonresponse to the follow-up postal questionnaire which were not
measured here.

Research on adolescent pregnancy (Rasanen, 1985) has indicated that many adolescent
pregnancies occur due to a desire for greater intimacy and commitment from their
partner. The results specific to Q.25 may be seen to support this finding. The results
suggest that non-responders to follow-up, who are also significantly younger, desire
substantial change in their partners as a consequence of parenthood.Younger women
are also over represented amongst non-responders. This, however, could be due to
many unknown factors or variables not measured here. For example, a house move and
subsequent loss of the prepaid envelope needed for a reply. Retaining Q.25 in the SPQ

will retain sensitivity to this issue. Although it is distinctive, it contributes adequately to the 'Partner' support factor identified in Chapter 4.

Following on from Rasanen's (1985) findings, it is possible that women will be disappointed should pregnancy and the birth of the baby not secure this form of attachment. Non-responders may well have less motivation to complete follow-up questionnaires because they look back on the pregnancy negatively. They may also be a group who find completion of questionnaires less intrinsically rewarding.
As results demonstrated a difference in age between responders and non-responders we may also take the view that Q.25 is a question which appears to significantly differ from other questions and interact weakly with age. This is further supported by the fact that no other question in the partner support domain significantly discriminated between responders and non-responders.

Question 25 was related to age but not to partner status. Thus, it may be related to a lack of *perceived* security or commitment in a partner, rather than their presence or absence per se. A reluctance to respond to questions regarding partner status is a potential confound, because those women who do not respond may be less likely to have a committed partner.

5.7   Conclusions

It was found that participants who did not respond to the PQ were not different to responders on the SPQ, with the exception of Q.25. Non-responders are a little younger, score higher on Q.25, are less likely to complete questions about partner status, and are less likely to provide extensive feedback on the SPQ. There was also some suggestion that the younger non-responders have even higher SPQ scores.

These womens' missing follow-up data is regrettable. Non-responders to follow-up (46% of the original 501 cohort who provided postal information) may be an especially vulnerable group. Within the remaining cohort of women who did respond to follow-up, it is possible to identify a comparable subgroup to these non-responders (e.g.,

younger, without partners and with marked perceived lack of support in the partner domain). With this subgroup, non-responder outcome might be estimated. Whilst this solution remains an inferior one compared to potential analyses of all participants' follow-up data, the general picture is of similarity on the SPQ between responders and non-responders to follow-up. We can thus look at the relationship between SPQ and outcome with some confidence.

Chapter 6

Initial Analyses of the SPQ and Outcome Variables and the effect of Missing Data

6.1 Introduction

Having now established that the SPQ has satisfactory construct validity and that there is reasonable similarity between responders and non-responders to the SPQ, outcome can be considered. This chapter will begin by examining the straightforward effects of SPQ scores on infant birthweight and complications. However, on inspection of the data it is clear that many women did not provide complete SPQ data sets. Therefore, it is also important to consider differences in follow-up PQ scores between complete and incomplete SPQ data sets, the relationship of non-response to the follow-up PQ and missing data. In addition, within-group analyses of the group with missing data shall be provided.

6.2 Simple Relationships of SPQ scores to Birthweight and Complications

The weighting system for perceived seriousness of obstetric complication was not used in any of the following analysis in this large scale study. The lack of agreement on what constitutes the 'most serious' to 'least serious' obstetric complication was reconsidered at this point in the study. It was decided that the safest way forward was to simply use total number of complications as the complications measure from this point onwards.

Initial Pearson Correlations failed to demonstrate straightforward linear relationships between the four support scores, overall SPQ scores and birthweight and complications. These results can be viewed in Table 6.1a. It can be seen that the largest correlation is between the maternal support domain and the logarithmically transformed complications variable (to ensure normal distribution), though this was still non-significant.

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Table 6.1a Pearson Correlation Coefficients of the Four Support Domains, Overall SPQ scores, Birthweight and Complications (n=264)

	General	Partner	Parent	Maternal	Overall
Birthweight	0.03	0.05	0.02	0.07	0.05
Complications	0.02	-0.04	-0.04	0.11	0.01

Table 6.1b, below, is presented to provide additional information to the reader, regarding basic descriptive results for the whole cohort on birthweight and complications.

Table 6.1b Descriptive Statistics for Birthweight and Obstetric Complications (not logarithmically transformed) for whole cohort (n=264)

	Birthweight in Kilograms			Obstetric Complications (non-transformed)		
Mean		3.365			5.777	
Median		3.401			4.000	
Standard Deviation		0.526			5.987	
Standard Error		0.032			0.368	
Range	[0.633	-	4.734]	[0.000	-	29.000]

On the basis of the results presented in Table 6.1, there is little evidence of a direct, linear relationship between SPQ scores and outcome variables. However, inspection of the data revealed a number of questionnaires containing missing data, and it is important to examine the effect of missing data on SPQ profiles and outcome variables, as well as other variables.

6.3 The Effect of Missing Data

6.3.1 Missing Data and SPQ Scores

In the first instance it is important to examine missing data in the context of the overall response pattern (n=501). Women with incomplete SPQ data sets scored significantly higher on the general support domain within the SPQ than women with complete SPQ data sets ($F_{(1,495)}$=8.18, P<0.01). Responders to the follow-up Postal Questionnaire (PQ) mirror the overall group trend for missing data on general support scores ($F_{(1,256)}$=16.17, p<0.01) whereas non responders do not ($F_{(1,227)}$=0.258, n.s.)

Table 6.2   F-Tests for the effects of complete or incomplete data sets on individual domains of support within the SPQ.

Overall Cohort	
Partner Support	$F_{(1,461)}$=2.35, p=0.13
Parent Support	$F_{(1,480)}$=0.04, p=0.84
General Support	$F_{(1,485)}$=8.18, p<0.01*
Maternal Support	$F_{(1,485)}$=0.43, p=0.51
Responders	
Partner Support	$F_{(1,246)}$=3.19, p=0.075
Parent Support	$F_{(1,259)}$=2.76, p=0.098
General Support	$F_{(1,256)}$=16.17 p<0.01*
Maternal Support	$F_{(1,255)}$=0.20, p=0.65
Non-responders	
Partner Support	$F_{(1,213)}$=0.20, p=0.65
Parent Support	$F_{(1,219)}$=1.43, p=0.23
General Support	$F_{(1,227)}$=0.26, p=0.61
Maternal Support	$F_{(1,228)}$=0.45, p=0.50

Women with missing SPQ data sets did not score more highly on partner support ($F_{(1,461)}$=2.35, n.s.). However, results show that the partner support domain had the most incomplete data for analysis overall (see Table 6.2).

6.3.2 Missing Data and Age

A significant negative correlation was obtained for number of missing questions and age ($r= -0.11$, $p<0.05$). Thus younger women have a significantly higher number of missing questions. Younger women were previously found to be significantly more likely to be non-responders to the follow-up PQ. They were also found to have increased Q.25 scores. Furthermore, they were found to have some differences in marital status (see Chapter 5). The relationship between missing data sets and being 'with or without' a partner (at the time of SPQ completion) warrants further investigation. Note in the above table, the partner domain of support also has the most noticeable decrease in participant responses overall (n=461).

6.3.3 Missing Data and Partner Status

There was a significant association between complete versus incomplete SPQ data sets for the complete cohort on the outcome criteria of 'with or without partner' (Pearson $\chi 2$ = 16.38, 1 df, $p<0.01$). These results suggest that women self-assigned as 'without' a partner over the complete cohort are likely to have associated missing SPQ data.

6.3.4 Missing Data and Outcome

One can examine differences in outcome variables which may be associated with the presence or absence of missing data. Further variables (smoking, no. of previous pregnancies (parity), alcohol consumption, and months pregnant at SPQ completion have also been included. No significant effects of missing SPQ data were found (see Table 6.3[1]).

The reader is reminded that both alcohol and cigarette consumption were ratings obtained from womens' self-reports from the follow-up PQ. On this questionnaire,

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[1]Again, 'complications' has been transformed to achieve normality in these analyses.

women were given a seven point scale and asked to rate their level of consumption, from 'very little' to 'a lot' across their pregnancy. Each point between these two poles, was then assigned a number (from 1 - 7). This data was then used in all calculations as continuous data, unless otherwise stated.

It should also be noted that this data is largely provided by the responders to the follow-up Postal Questionnaire (PQ), with the exception of 'months pregnant at SPQ completion', which was part of the the SPQ itself.

Table 6.3 F-Tests for the effects of complete or incomplete data sets on outcome variables

Overall Cohort

Weight	$F_{(1,261)}=0.00$, p=1.0
Complications	$F_{(1,262)}=1.05$, p=0.31
Number of Previous Pregnancies	$F_{(1,261)}=0.01$, p=0.92
Alcohol Consumption during Pregnancy	$F_{(1,261)}=0.17$, p=0.68
Smoking during Pregnancy	$F_{(1,261)}=0.11$, p=0.74
Months pregnant at SPQ completion	$F_{(1,489)}=1.54$, p=0.22

Responders (all results are equivalent to overall cohort except for below)

Months pregnant at SPQ completion	$F_{(1,262)}=0.38$, p=0.54

Non responders (results only available for months pregnant below)

Months pregnant at SPQ completion	$F_{(1,225)}=1.18$, p=0.28

6.3.5   Missing Data and SPQ Scores (within-group characteristics; n=71)

It is important to consider within-group characteristics of the women with missing data. Compared to the overall cohort (n=501; see Chapter 5), these women have higher means overall in the support domains of General and Partner support (see Table 6.4). On individual questions within the SPQ only Q.25, and Q.4 (belonging to the general support domain) were significantly different to all other questions within the SPQ.

As significant differences were previously found for the overall cohort on age between responders versus non responders, a possible correlation between the number of

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missing questions on the SPQ and age was investigated. No significant correlation was obtained (p= -0.153, n.s.). There was no difference between women who supplied follow-up and those who did not on age ($F_{(1,66)}=3.282$, n.s.).

Analysis of the effect of response to the PQ on the number of missing responses (n=71) was not significant ($F_{(1,69)}=0.485$, n.s.). That is, non responders with missing data (n=42) are not significantly more likely to provide incomplete data than responders with missing data (N=29).

These results suggest that although women with missing data are younger, and more likely to describe themselves as 'without a partner', they do not differ in outcome measures or in SPQ domain scores. They score more highly on Q.25 and Q.4. There are no important differences in SPQ scores between responders with missing data and non-responders with missing data.

Table 6.4 Mean, Median, Standard Deviation, and Variance of Individual Domains of Support, and Age for women with missing SPQ data sets (n=71).

501 Cohort

	General n=57	Partner n=33	Parent n=52	Maternal n=57	Age (range 14-41) n=68
Mean	19.105	18.970	15.904	16.579	25.544
Median	17.000	14.000	13.000	14.000	25.000
S.D.	9.973	12.312	8.180	7.986	6.468
Variance	99.453	151.593	66.912	63.784	41.834

Responders n = 29

	n=23	n=13	n=26	n=22	n=28 (range 16-40)
Mean	22.913	20.615	18.269	17.091	27.214
Median	23.000	16.000	15.500	15.500	25.500
S.D.	11.013	13.365	8.225	7.335	6.882
Variance	121.263	178.590	67.645	53.801	47.360

Non responders n=42

	n=34	n=20	n=26	n=35	n=40 (range 14-41)
Mean	16.529	17.900	13.538	16.257	24.375
Median	15.000	13.400	10.000	14.000	24.500
S.D.	8.425	11.809	7.564	8.459	5.973
Variance	70.984	139.463	57.218	71.550	35.676

However, in looking at response frequencies to individual questions, within the Partner support domain of the SPQ, the women with missing data show distinctive response patterns. The following frequencies were found:

Table 6.5. Frequency of response to Partner domain SPQ scores for women with missing data (n = 71)

Question Number		Percentage
Q7	=	57
Q9	=	60
Q14	=	60
Q17	=	59
Q20	=	60
Q25	=	52
Q27	=	57

Less than half of the non-responders with missing SPQ data (n=42) completed all questions related to the partner support domain (responses = 20). Only 26 responses were given to the parent support domain. This can be compared to the general (responses =34) and the maternal (responses =35) support domains. Therefore, this group of women had the most problems in relation to partner and parental support domains.

Similarly, less than half of the responders with missing SPQ data (n=29) completed questions related to the partner support domain (responses = 13), though all other domains showed a consistent profile; general (responses = 23), parent (responses = 26), and maternal (responses = 22). There is no effect of response to the PQ. The two questions which showed the most marked decrease in response rate for this latter group were Q.24 and Q.26 (both parental).

For responders with missing data, there was a significant effect of missing data on partner support $(F_{(1,22)}=6.861, p=0.015)$ and birthweight $(F_{(1,22)}=4.404; p=0.048)$. Analyses containing the same factors and the other domains of support as well as complications, alcohol and smoking ratings as outcome measures were not significant. Therefore, women with missing data who responded to follow-up demonstrated both

higher partner support scores, and their babies had lower birthweights.

6.4   Discussion

There are two major findings in this chapter. First, there is no evidence of a direct linear relationship between SPQ scores and infant birthweight and complications. Second, extensive evidence has been presented which shows some importance of missing data. Those women who did not fully complete the SPQ had the following characteristics:

- they constitute a significantly younger group of women
- they are significantly more likely to describe themselves as being 'without' a partner
- missing data is predominantly accounted for by missing data in the 'partner support' domain

Perhaps it is this latter point which is the most important. Stott and Latchford (1976) suggest that the perception of support from the partner is the most important stress factor in pregnancy. However, because there was no specific 'not applicable' category for women on marital or partner status, we do not know if women who did not complete these questions felt the question was either relevant to them or felt unable to complete the questions for other reasons. With hindsight such a category should have been included and should certainly be included in future versions of the SPQ.

Because women with missing data were also younger than women without missing data, it may be that the interaction of immaturity and poor partner support impact on SPQ scores the most. Indeed, birthweight was related (in correlationary terms) in women with missing data who were 'without' a partner.

Finally, the unwillingness to complete the the whole of the SPQ could actually be a behaviour which signals denial of some kind associated with partner support (Raphael-Leff, 1991), at least a denial that it is a problem. Certainly, completing the SPQ would require some consciousness of the level of partner support during a stressful period in one's life. This 'denial of poor support' by simply avoiding answering partner domain

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questions could also be a reason why women did not complete the follow-up questionnaire. However, participants who completed the SPQ but did not complete the follow-up PQ may simply have felt they had done enough in completing the SPQ (Belson and Duncan, 1962, provide a discussion of this phenomenon).

It is accepted that because data on infant gender, the height and weight of the parents (which are all influential factors on infant birthweight) was not be collected here, are potential confounders (Kleiverda et al., 1997). However, within the limitations of this study, all possible variables related to all outcome measures could not be measured. If a limit had not been set the increase in size and scope of the research would, potentially, take it beyond it's original purpose and increase the number of variables to power ratio to the point were reasonable levels of statistical power would be lost. Nevertheless, we cannot be entirely sure how much influence could be attributed to these variables. Other variables which are important to measure in relation to outcomes, such are substance use, socio-economic status and demographic factors (cf. Kleiverda et al., 1997), were measured here.

In the following chapter the relation of socioeconomic and demographic variables to the SPQ is described, which precedes examination of the effect of demographics on outcome. It is expected that complex relationships will be observed which need not be direct and linear.

Chapter 7

The Relationship of the SPQ to Demography, Socioeconomic variables, and Smoking and Alcohol Consumption

7.1 Introduction

The importance, in terms of relationships with negative outcome and negative behaviours (e.g., ratings of smoking and alcohol consumption), of socioeconomic status (SES) and demographic variables in pregnancy is well established (Barth and Schinke,1983; Rosin, 1985; Pagel, Smilkstein, and Regen, 1990). This chapter will examine the relationship of the SPQ to SES and demographic variables. Women's own ratings of smoking and alcohol consumption shall also be considered, since smoking and alcohol consumption have been traditionally linked to poor outcome in pregnancy.

The reader is reminded that the self-reported ratings of smoking and alcohol consumption used here are far from ideal (cf. Day et al., 1985). A pragmatic approach to these measures was taken due to limitations of time and resources. It was considered important that some measure of these behaviours should be taken even if the measures were imperfect. The limitations of these measures (discussed in Chapter 5) should be born in mind in the following sections of this chapter.

Measures also include maternal education level, job trained for, age women left full-time education, whether they returned to education, certificates, diplomas, degrees or any other qualifications obtained and so forth (see Appendix 4.4 for further detail). However, for purposes of comparison with other studies which have used the Registrar General's (RG) classification system (1970, 1980). The categories used here can be seen to be broadly similar to the RG system, though here they are somewhat simplified here in this study, see Tables 7.1 and 7.2 below.

Table 7.1 Registrar General / OPCS Social Classes and Classification system used
here.

Rank	Registrar General	Rank	Study's System
1	Professional, etc. occupations	1	Professional occupations
11	Intermediate occupations	2	Intermediate and skilled
111	Skilled occupations {N}non-manual {M}manual		occupations
1V	Partly skilled occupations	3	Partly skilled and unskilled
V	Unskilled occupations		

The standard 'Registrar General's' classification system for measuring SES was not
used here because it is not specific to women's income and status. Because this thesis is
about women's health, measures which related to women's education level and job
status were the main measures used here.

Table 7.2 Womens' educational level (n=263)

	Frequency	Percentages
Degree and above	35	13%
'A' level or Equivalent	76	29%
GCSE or Equivalent	71	28%
No formal qualifications	78	30%

However, if women had partners they were also asked to state whether these partners

were currently employed or not and to state their current job title. If both sets of information were available, as regards employment, the job with the highest status (e.g., manual vs professional level employment) were used for classification. As can be seen in Table 7.3, womens' work status and that of their partners' status often differed. However, the majority of the sample fell into Category 2, the intermediate and skilled occupation category.

Table 7.3 Percentage of women and their partners' employment status (using this study's classification system) for all women who responded to follow-up PQ and provided this information (n=238)

	Not stated	Category 1	Category 2	Category 3
Womens' work	0.76%	12.5%	50%	36.5%
Partners' work	21%	30%	30%	19%

The SPQ and follow-up post-natal postal questionnaire (PQ) measured SES and demographic factors, plus self-reported ratings of smoking and alcohol during pregnancy. SES data was therefore coded into three groups; unskilled with no formal qualifications, semi-skilled or vocational qualifications, and professional - possibly with higher education qualifications. The actual ability or the potential ability to earn a reasonable salary can have a strong influence on general health (Graham and Popay, 1989). Attention was given to the level of skills involved in any actual work women (or where relevant partners) were engaged in, formal training which women had undertaken, partners' work, and womens' qualifications.

Further data was obtained for maternal age, the age participants left full-time education, and their type of accommodation. A further demographic is whether the participant is experiencing their first pregnancy. First-time, younger mothers may be most at-risk for decreased infant birthweight and increased obstetric complication rates (Streissgarth et

al, 1987). Therefore, it is important to examine the relationship of the SPQ to this variable.

Alcohol and smoking consumption have been considered as coping strategies during pregnancy (e.g., Abel, 1985). It will be useful to estimate their relationship to the SPQ, because women without support might use these strategies to avoid negative feelings during the pregnancy. Measures of 'perceived' alcohol and cigarette consumption were taken from women themselves, using a self-rating system.

Therefore, the following non-categorical variables are being examined:

• women's age
• women's age at leaving full-time education
• women's self-assigned alcohol consumption amount
• women's self-assigned amount of cigarettes smoked
• months pregnant at SPQ completion
• SPQ domain scores and overall scores

Alcohol consumption and cigarette smoking rates were obtained via the self-administered follow-up Postal Questionnaire (PQ), which asked for self-ratings of these substances retrospectively, using a seven-point Likert scale for response. The limitations with these measures have already been discussed elsewhere and will not be reiterated here.

The following categorical variables are also being examined:

• SES (coded actual work, training, and qualifications; and partner employment or unemployment)
• type of accommodation
• number of previous pregnancies (parity)
• presence or absence of a partner

7.2 Results

There are two sets of results which follow. The first is a series of Pearson correlations between the non-categorical variables, and the second is a series of F-tests to examine the effects of the categorical variables on the non-categorical variables. Essentially, these are exploratory analyses looking for linear relationships between the SPQ and the other variables.

Table 7.4 demonstrates the significant correlations of the non-categorical variables. It can be seen that all of the SPQ scores were correlated with self-reported ratings of alcohol consumption. That is, the participants who retrospectively self-reported themselves as drinking more alcohol also scored significantly higher on all SPQ domain scores and overall scores. The largest correlations are in the partner support domain and overall scores. Interestingly, there was higher scoring in the maternal support domain by older women, and those women who left education late. As one might expect, those women leaving education later were significantly older. Higher self-reported ratings of smoking were correlated with Partner domain scores and overall scores. Younger women's self-reported ratings of smoking were higher than older women, and self-reported high-smokers also self-reported drinking more than self-reported low-smokers. Finally, partner support scores were significantly lower as pregnancy progressed.

Table 7.4 Pearson Correlations of SPQ scores and Non-Categorical Demographic Variables

	SPQ scores								
	General	Partner	Parent	Maternal	Overall	Age	Age left ed.	Alcohol	Smoking
age		-.20**	.19**						
age left ed.				.18**	.13*				
alcohol	.16*	.20**	.18**	.14*	.23**				
smoking		.23**			.15*	-.18**	-.25**		
months preg.		-.17*							

*p<0.05   **p<0.01

The two consistent findings between all data sets is the high correlation between self-reported ratings of smoking and alcohol consumption, and between self-reported ratings of smoking and partner support scores. The latter correlation could indicate some relationship between the SPQ and the self-reported coping strategy of smoking.

To examine the effects of SES, type of accommodation and parity on SPQ scores, a number of F-Tests were computed, and the significant results may be viewed in Table 7.5 (Non-significant results are not presented for the purposes of clarity and brevity). It can be seen that the woman's work, training and qualifications were related to her attitude towards the pregnancy (maternal support scores). Post-hoc Tukey's tests revealed that the significant differences were between each of the 'lower' SES groups and the 'higher' SES group. This may indicate that women in professional positions are less positive towards their pregnancy than other women. This does not indicate that they will be less satisfied with motherhood itself. These effects were not observed in women with missing data, but again it is unclear if the effects are too small to reach significance in such a small data set.

It can also be seen that partner unemployment affected all domains save the maternal support domain. This is evidence that perceived support is clearly associated with SES. Strong effects of the person's type of accommodation were also observed, with those in rented accommodation scoring more highly on all domains except maternal support scores.

It is interesting to note that parity did not affect support scores significantly. This would seem to indicate that perceived support during pregnancy is not influenced by previous experience of pregnancy. Further, there was no effect of months pregnant at the time of SPQ completion (trimester or gestational effect) on SPQ scores, except for the partner support domain. Suggesting, perhaps, some resolution of partner support as pregnancy progresses.

In contrast, the self-reported presence of a partner significantly affected partner support scores, and also parent support scores and scores overall. It is possible that the lack of

perceived partner support places an extra strain on other potential sources of support, i.e., the relationship between the woman and her parents. However, because no 'not applicable' category was not available for women on the SPQ, we cannot be sure exactly what their nonresponse to certain SPQ questions truly signifies.

All of the above correlations were replicated using Spearman rank correlations and all of the F-Tests were replicated using Mann-Whitney U Tests. These tests provide some protection for the effects of outliers, and confirmed previous visual inspections of the data which suggested satisfactory characteristics of the variables.

Table 7.5 Significant F-Tests for the Effects of SES (participant work, training, and qualifications, and partner employment), type of accommodation, parity and presence of a partner on SPQ scores

1. SES (i) actual work	Maternal	$(F_{(3,252)}=2.63,\ p=0.05)$
2. SES (ii) training	Maternal	$(F_{(3,252)}=2.24,\ p<0.01)$
3. SES (iii) qualifications	Maternal	$(F_{(3,252)}=4.20,\ p<0.01)$
4. SES (iv) Partner Unemployment	General	$(F_{(1,262)}=7.30,\ p<0.01)$
	Partner	$(F_{(1,259)}=31.41,\ p<0.01)$
	Parent	$(F_{(1,262)}=16.76,\ p<0.01)$
	Overall	$(F_{(1,262)}=19.75,\ p<0.01)$
5.Type of accommodation	General	$(F_{(1,254)}=4.25,\ p<0.05)$
	Partner	$(F_{(1,244)}=8.50,\ p<0.01)$
	Parent	$(F_{(1,257)}=8.58,\ p<0.01)$
	Overall	$(F_{(1,231)}=5.46,\ p<0.01)$
6. Parity	*No significant effects found.*	
7. A current partner	Partner $(F_{(1,257)}=25.2,\ p<0.01)$	
	Parent $(F_{(1,260)}=7.6,\ p<0.01)$	
	Overall $(F_{(1,260)}=6.6,\ p<0.01)$	

7.3 In more detail: The SPQ, self-reported alcohol and smoking, age and more education

Alcohol and smoking are stress-related coping mechanisms which can influence levels of anxiety. Essentially, they involve the intake of substances which depress awareness and therefore result in a calmer affect. This is a simplistic explanation, but it serves the function of offering a potential mediator(s) for a lack of perceived support during one's pregnancy. However, it should be remembered that smoking is also a learned and socially reinforced behaviour. As regards alcohol consumption, it is also worth noting that some authors have argued that British women's drinking in pregnancy is primarily socially motivated rather than a reaction to stress (Waterson and Murray Lyon, 1988 and Heller et al., 1989).

Before examining the effects of self-reported ratings of smoking and alcohol consumption in pregnancy on birthweight and complications in the next chapter, it is important to look briefly at the nature of their relation to the SPQ scores. In addition, the effect of education on maternal support scores needs further explanation, as do the significant relationships between maternal age at SPQ completion and Partner and Maternal domain scores.

7.3.1 The SPQ and Self-reported Alcohol

It is possible to examine the data on self-reported alcohol consumption in terms of three groups. The first group is simply those women who indicated that they did not drink alcohol at all during pregnancy (n=125). Amongst those who did drink, it is possible to split the data into self-reported 'low-alcohol' (n=90) and self-reported 'high-alcohol' (n=48) groups around the mean rating. The mean SPQ scores for each of these groups are presented in Figure 7.1.

Figure 7.1

Figure 7.1 Alcohol and Mean Overall SPQ Scores
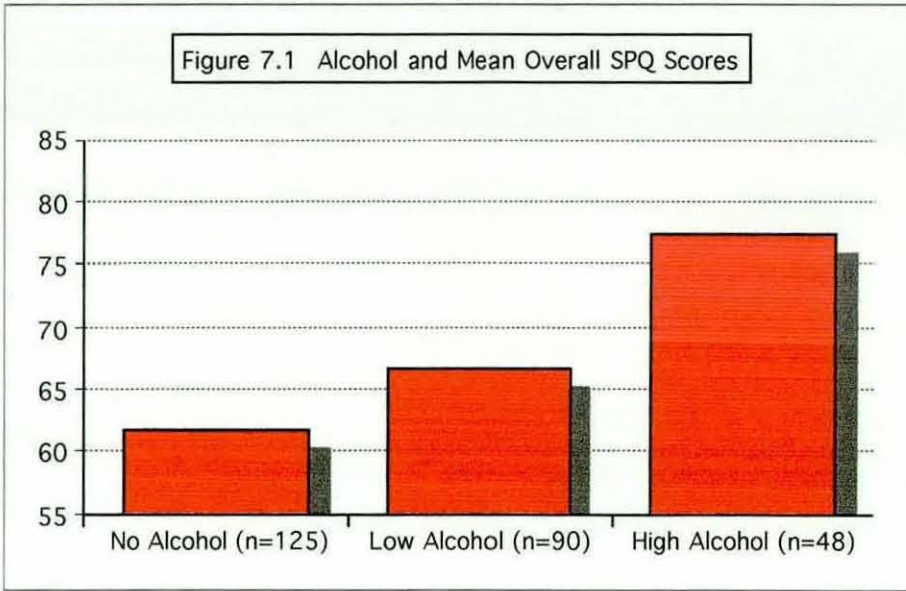
It can be seen that higher SPQ scores were recorded in the self-reported 'high alcohol' group. An F-Test found a significant difference on SPQ scores between the self-reported alcohol consumption categories ($F_{(2,260)}=3.23$, $p<0.05$). Post-hoc Tukey-Kramer test suggested these differences lay between the self-reported 'no alcohol' and self-reported 'high-alcohol' categories ($F_{(1,130)}=5.80$, $p<0.05$). Examining the individual support domains and self-reported ratings of alcohol consumption, the only significant difference lay in the parent support scores ($F_{(2,260)}=3.153$, $p<0.05$). A post-hoc Tukey-Kramer test found differences between the self-reported 'no alcohol' and self-reported 'high alcohol' groups ($F_{(1,130)}=4.71$, $p<0.05$) and between the self-reported 'no alcohol' and self-reported 'low alcohol' groups ($F_{(1,254)}=3.76$, $p<0.05$). On the basis of these findings, there appears to be a strong relationship between SPQ scores and self-reported alcohol consumption.

7.3.2 The SPQ and Self-reported Smoking

As with alcohol consumption, it is possible to split the women who responded to follow-up into three groups as regards self-reported ratings of their smoking. These are self-reported non-smokers (n=194), and amongst those who did smoke, there are those

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who self-reported their smoking below the mean (n=49), and those who self-reported their smoking above the mean (n=20). The mean overall SPQ scores for each of these groups is shown in Figure 7.2. It can be seen that higher SPQ scores were recorded by those women who self-rated themselves as 'high smokers'.

Figure 7.2

Figure 7.2 Smoking and Mean Overall SPQ Scores
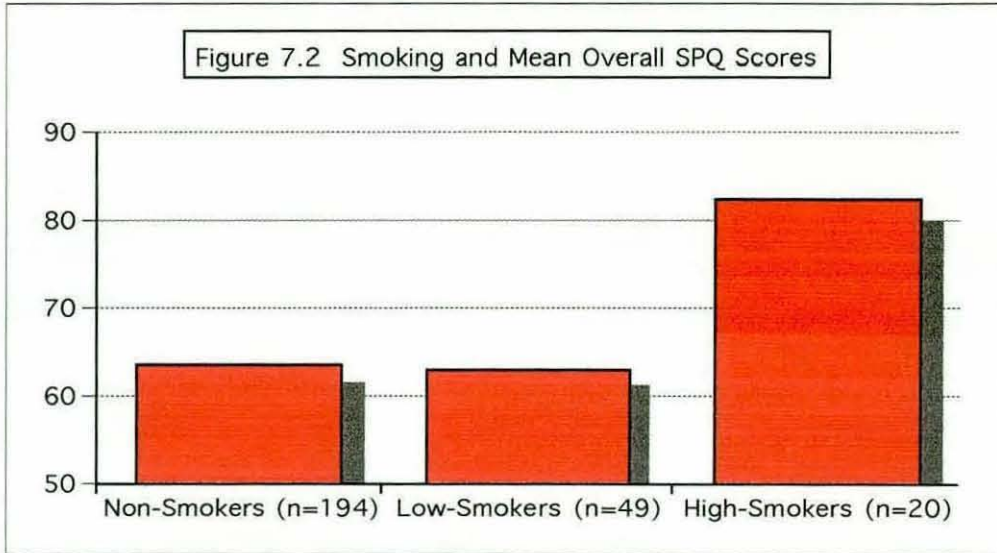
Self-reported ratings of smoking was significantly associated with SPQ scores ($F_{(2,260)}$=5.29, p<0.01). Post hoc Tukey-Kramer test revealed the differences lay between self-reported non-smokers and self-reported 'high-smokers', ($F_{(1,212)}$=10.52, p<0.01), and between self-reported 'low-smokers' and self-reported 'high-smokers' ($F_{(1,67)}$=6.95, p<0.01). Closer examination revealed that on 'general support' scores the differences were between self-reported 'low-smokers' and self-reported 'high-smokers', ($F_{(1,67)}$=5.94, p<0.05). On 'partner support' self-reported non-smokers had lower scores than self-reported 'high-smokers' ($F_{(1,209)}$=18.96, p<0.01), as did self-reported 'low-smokers' ($F_{(1,67)}$=8.548, p<0.01). In the parent and maternal support domains no significant differences were found. These particular effects can be observed in Figure 7.3.

On the basis of these findings, there appears to be a strong relationship between the SPQ and self-reported ratings of smoking. However, only those women who self-rated themselves as smoking relatively heavily, were shown to have higher SPQ scores.

Figure 7.3

Figure 7.3 Smoking and Mean Support Domain Scores
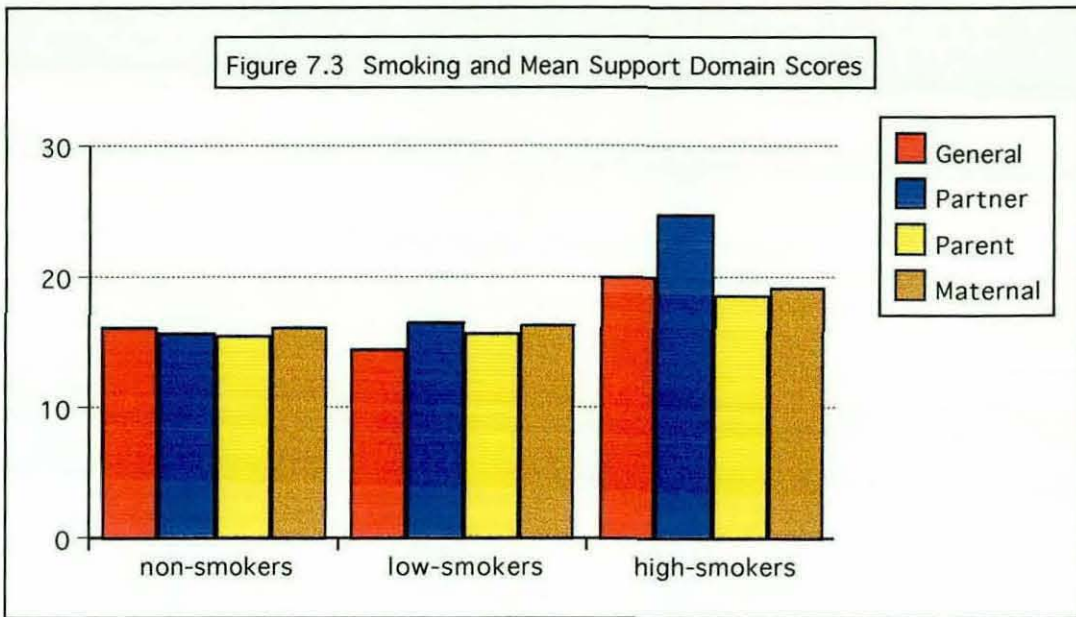
7.3.3 Age at leaving education and attitude towards the pregnancy

It is possible to examine more closely the effects of age at leaving full time education on maternal support, by examining discrete groups of school leavers. Some 164 of the 264 respondents left school at age 16-17 years, with 58 leaving at 18 years and 34 going on to college or university. It is reasonable to expect the latter group to earn higher lifetime incomes and therefore enjoy higher SES. Of course this is not necessarily the case.

Further by-group analyses failed to find significant differences on SPQ scores, although it can be seen in Figure 7.4 that those carrying on in education beyond 18 showed the highest overall SPQ scores. In Figure 7.5 it can be seen that the highest mean in the particular support domains was also demonstrated by this group, in the maternal support domain. On the basis of these results, it cannot be said that the women's age at leaving education is strongly related to their attitude towards their pregnancy, because by-group F-Tests failed to replicate the significant correlation. Nevertheless a small effect cannot be discounted.

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Figure 7. 4

Figure 7.4 Age Leaving Education and Mean Overall SPQ Scores

Figure 7.5

Figure 7.5 Age Leaving Education and Mean Support Domain Scores
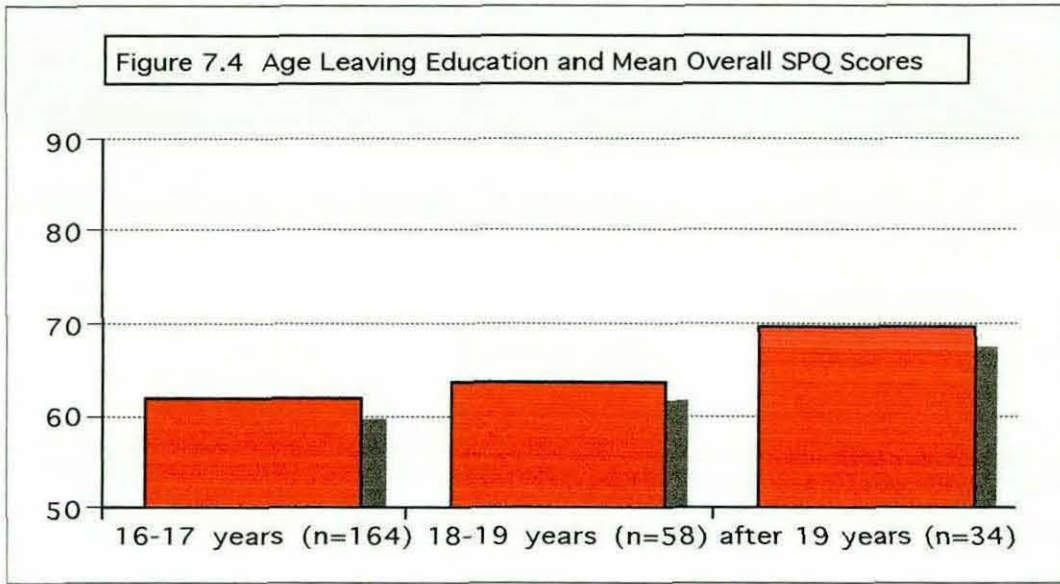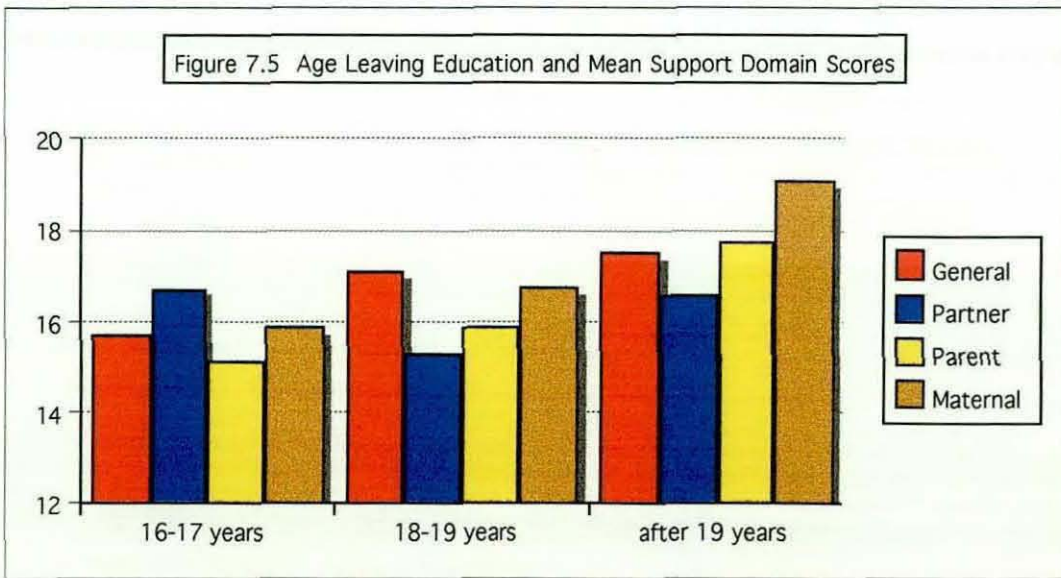
7.3.4 The SPQ and age

Interestingly, a negative correlation between the age variable and partner support scores was found, indicating that it is the younger women who feel most negatively about their

support from their partner. In contrast, a positive correlation between the age variable and maternal support scores was found, indicating that the older women held the most negative attitude towards the pregnancy. By splitting the women into four groups, they can be categorised as 18 and below (n=11), 19-24 years (n=91), 25-34 years (n=137) and those 35 years and over (n=23). The relationships between the different forms of perceived support and age can be seen in Figure 7.6.

Significant differences were found for age bands on support scores in the following support domains; in 'general' support significant differences were found between the 25-34 and the 35+ age bands ($F_{(1,158)}=5.56$, $p<0.05$); for 'partner' support, between the 18 and below and the 25-34 age bands ($F_{(1,145)}=8.12$, $p<0.01$), and between the 25-34 and 35+ age bands ($F_{(1,223)}=7.83$, $p<0.01$).

Differences were also found in the 'parent' support domain between the 25-34 and 35+ age bands ($F_{(1,158)}=11.26$, $p<0.01$), and in the 'maternal' support domain between the 18 and below and the 25-34 age bands ($F_{(1,146)}=4.91$, $p<0.05$), and between the 18 and below and the 35+ age bands ($F_{(1,32)}=5.94$, $p<0.05$).

Figure 7.6

Figure 7.6 Mean Partner Support and Maternal Support Scores and Age
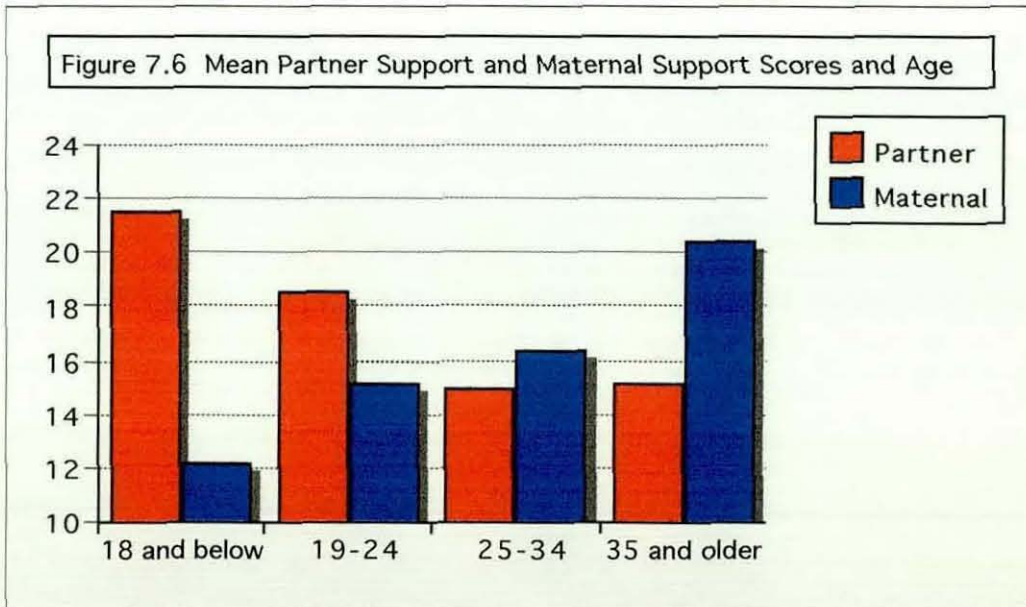
7.4 Discussion

The results presented in this chapter demonstrate important links between the SPQ and other pregnancy related variables, other than the outcome variables of infant birthweight and obstetric complications. In the first instance, there is a strong relationship between SPQ scores and self-ratings of alcohol consumption. It may be that those using alcohol perceive a lack of support during their pregnancy or alternatively, that they simply belong to social groups where alcohol consumption is more the norm. However, since the effect was observed in all domains and overall SPQ scores, there is good evidence to suggest that self-reported alcohol consumption and perceived lack of support should be further investigated. A research design which investigates this relationship in 'depth' might be most useful in elucidating what influences women's continued self-reported consumption of alcohol during pregnancy (even if this consumption is at low levels).

The relation of self-reported smoking during pregnancy to SPQ scores was also strong, but seemed less general in nature. Self-reported smoking was more associated with high overall SPQ scores, but further analysis demonstrated that of all the domain scores, only partner support was significantly associated. An initial interpretation of this result might be that those women who have problematic relationships with their partners during their pregnancy, are more likely to self-report smoking during pregnancy. However, self-reported low-smokers recorded low SPQ scores, and this might indicate that self-reported smoking a little ameliorates the lack of perceived support. That is,'a little' self-reported smoking has some positive psychological effects, but a lot of self-reported smoking does not help one feel more supported. Of course, smoking has other negative health effects as well.

The effect of age itself on SPQ scores is interesting. Self-reported smoking and age at SPQ completion are negatively correlated. Therefore, younger women who self-report they smoke more during pregnancy and are also more likely to have high partner support scores. There was no effect of age on overall SPQ scores, with women between the age of 19-24 years and women over 35 years scoring most highly. However, the younger women scored more highly on the partner support domain,

whereas the older womens' scores suggested more negative attitudes towards the pregnancy.

These findings suggest two groups with a marked lack of perceived support. First, there are relatively young women who feel inadequately supported by their partners, and who self-report that they smoke more. Second, there are older women who self-report that they smoke less but who feel more negative about the pregnancy (at least as measured by their SPQ scores).

There is also some data to suggest that poor maternal support scores are associated with higher SES. In both groups, it seems likely that there are financial imperatives. The younger group may worry about abandonment by their partner who may not be fully committed to them; this partner may have already left, or never have been interested in the pregnancy in the first place. At the same time the woman may not be employed herself or will be early in her career. The older group may have their own job and a long-standing partner, but they may be less positive or just more realistic about the future role overload future child-care may bring. However, as Berryman et al. (1995) have pointed out, older pregnant women are a diverse group. At least some of their ambivalence in early pregnancy (which may have been captured in this sample here) may be accounted for by their knowledge of the increased risks involved in older pregnancies. Berryman and colleagues have argued that it is this knowledge which may initially inhibit them from bonding with the unborn child, until they have safely passed certain important milestones (e.g., have received the results of certain tests or scans). The reader is reminded here that we are talking about womens' perceptions *during pregnancy* and not with their eventual satisfaction with motherhood (this is a separate research issue, not specifically examined here).

A significant correlation between maternal support scores and the age at leaving education was not supported by subsequent F-Tests for differences between different educational groups, but a small effect cannot be discounted. This further information may indicate that the group scoring highly on maternal support scores are also more highly educated, i.e,. a negative attitude towards the pregnancy is associated with being

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older, being more highly educated, and enjoying higher SES. However, maternal support scores were not higher when the partner was unemployed, as with the other support domains. These findings support the hypothesis that high maternal support scores are not influenced by partner status.

There are a number of other findings which will not be elaborated because they do not relate specifically to the SPQ. There was a correlation between the age at SPQ completion and age at leaving education, which may indicate that those women who gain high SES tend to have their babies later than those leaving full-time education early. This is unsurprising.

Younger women self-reported that they smoked more than older women. It is unclear whether this reflects a trend in the population generally, or whether the younger women are likely to give up smoking as they get older, or may simply reflect underlying demographics and social circumstance. It is possible that many of the self-reported non-smokers who filled out the SPQ have been smokers in the past, but there is little evidence that being an ex-smoker leads to different effects on pregnancy than never having smoked.

Interestingly, the strongest correlation of all was between self-reported alcohol and self-reported smoking themselves. That they go together may be no surprise (cf. Day et al., 1985), but it may suggest that those women who tend to cope with a lack of perceived support by using one psychoactive substance, are more likely to use others as well. However, smoking and drinking are habits which are formed and socially reinforced and the results may simply be an artifact of this phenomenon. Nevertheless, the fact that the are related to high SPQ scores requires further examination which may help us understand why such an association exists.

In the next chapter it will be important to examine the effects of variables other than SPQ scores on outcome. The intention is to compare the effects of variables traditionally associated with poor pregnancy outcome, on the outcome measures using the current data set. It is necessary to replicate those findings found elsewhere, in

particular, the negative effects of self-reported smoking and alcohol on outcome variables. Should these effects be found, it will become possible to hypothesise indirect relationships between SPQ scores and outcome variables.

Chapter 8

The Relationship of Demographic and SES Variables to Pregnancy Outcome

8.1 Introduction

To this point, the results presented have suggested that contrary to the findings of the initial studies, there is no simple direct relationship between SPQ scores and infant birthweight and obstetric complications. Women who responded to the follow-up PQ were similar to those who did not on SPQ scores, and those women with missing data on the SPQ were also similar on most of their scores to women who fully completed the SPQ. Therefore, there is insufficient evidence to suggest that the lack of relationships between the SPQ and outcome variables is due to missing data or a lack of response to the PQ.

In contrast, the SPQ is associated with certain demographic factors recorded by the PQ. In the previous chapter, it was found that SPQ scores were related to ratings of alcohol consumption and that partner support was related to self-reported ratings of smoking, as were overall SPQ scores. Generally, the higher the scores (less perceived support), then the more self-reported alcohol and smoking were used to cope. In addition, SES and age were demonstrated to affect scores on the maternal domain, and partner unemployment and being in rented accommodation appeared to elevate the SPQ scores on all of the other domains. The latter perhaps emphasising the real stress of coping with adverse social circumstances (Graham, 1993). Parity did not influence the SPQ scores.

The results suggest two possible groups of 'unsupported' pregnant women; older women in professional positions enjoying high SES, who self-reported smoking less, own their own house, and who showed high scores on the 'maternal' domain; and younger women who self-reported smoking heavily, have lower SES, rent their

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housing, are more likely to assign themselves as without a partner, and who score more highly in the 'partner' domain.

The literature reviewed here found that infant birthweight and obstetric complications are related to demographic factors. Perhaps the strongest of these are alcohol and smoking, which are known to be damaging to the foetus (Maurer and Maurer, 1990). However, they can also reduce anxiety. Anxiety itself can cause obstetric complications, and therefore the effects of alcohol and smoking are a double-edged sword (Abel, 1985; Chernoff and Kelly, 1984) where smoking is used to reduce anxiety.

It is hypothesised that self-reported alcohol consumption and smoking obscure the relationship between perceived support as measured by the SPQ, and infant birthweight and obstetric complications. Before examining this hypothesis in the next chapter, it is important to demonstrate straightforward links between these coping strategies and outcomes.

This chapter also includes the variables which were shown to have some relationship with SPQ scores; SES (coded actual work, training, and qualifications; and partner unemployment), type of accommodation, age at SPQ completion, and age on leaving education, as well as the presence of a current partner. Parity is also included. Although it was not shown to relate to SPQ scores, it is important in pregnancy outcome. Some research has found that first-time mothers may be most at-risk for decreased infant birthweight and increased obstetric complication rates (e.g., Streissgarth et al, 1987).

8.2   Results

As in the previous chapter, it is necessary to split the presentation of the analyses according to the nature of the particular variables. Those variables where correlations are possible are presented first, and the effects of categorical variables on outcome are examined second.

Preliminary analyses suggested that certain cases were bi-variable outliers and might

unduly influence Pearson correlations. Therefore, Spearman rank correlations are presented in Table 8.1.

Table 8.1 Spearman rank correlation coefficients (n=263) showing relationships between age, self-reported alcohol, self-reported smoking, and previous pregnancies, and birthweight and complications*1

	Age	Age left education	Alcohol	Smoking	Previous pregnancies
Birthweight	0.06	0.08	-0.02	-0.14*	-0.06
No. of complications	0.04	-0.04	-0.03	-0.20**	-0.13*

*1 Spearman rank correlations for the original and transformed variables are identical

*p<0.05

**p<0.01

It can be seen that self-reported alcohol consumption was not directly related to the outcome measures, whereas self-reported smoking was clearly related to both. Smoking has a negative relationship to birthweight and obstetric complication rates (the reader is reminded that complications here were simply added for number of complications).That is, those people who self-reported themselves as smokers had lower-birthweight babies (replicating well established research findings in this area) but also had fewer complications. It could be argued that reduced complications simply reflects age or parity (i.e., increased complications are commonly associated with younger or older women and first time mothers). Correlationary analysis did not demonstrate a significant relationship between age and complications only between parity and complications. However, age and parity were significantly positively correlated with each other (which is unsurprising).

It will be remembered that self-reported smoking was related to both partner domain scores and maternal domain scores on the SPQ, but in different directions; those scoring highly on the 'maternal' support domain self-rated themselves as smoking less, and those scoring highly on the 'partner' support domain self-rated themselves as smoking more.

It is also important to examine the effects of categorical variables reflecting demographics and SES. Significant F-Tests for the effects of these variables on birthweight and the transformed complications variable can be seen in Table 8.2. It can be seen that the only factor to be related to the outcome variables was parity, with significantly fewer complications in multiparous women. The Spearman correlation of number of pregnancies by the number of complications was significant (rho=-0.13, p<0.05), and so this result is not surprising.

Table 8.2 Significant F-Tests for the Effects of SES (actual work, training, qualifications and partner unemployment), age leaving education, type of accommodation and parity on Birthweight and the transformed Complications variable.

1. SES (i) actual work	*No significant effects found.*	
2. SES (ii) training	*No significant effects found.*	
3. SES (iii) qualifications	*No significant effects found.*	
4. SES (iv) Partner Unemployment	*No significant effects found.*	
5. Age on leaving education (6-17, 18-19, or older)	*No significant effects found.*	
6. Type of accommodation	*No significant effects found.*	
7. Parity	Birthweight	ns.
	Complications	$F_{(1,261)}=4.19$, p<0.05)
8. A current partner	*No significant effects found.*	

8.3 In more detail: self-reported smoking and birthweight, self-reported smoking and complications, and the effects of previous pregnancies

It is useful to examine the nature of the relationships between self-reported ratings of smoking and the outcome variables. As in chapter 7, it is possible to split the responders to the PQ into self-reported non-smokers (n=194), self-reported low-smokers (rating less than the mean of the smoking variable; n=49), and self-reported high-smokers (rating higher than the mean of the smoking variable (n=20). Figure 8.1 demonstrates the mean birthweights (in kg) for these three groups.

It can be seen that the relationship between self-reported smoking ratings and birthweight is in fact U-shaped, i.e,. low levels of self-reported smoking coincided with lower birthweight, but high levels coincide with similar birthweights to non-smokers. Statistically, the medians closely approximated the means, suggesting that the small group size of the self-reported 'high-smokers' was not suspect. An F-Test for the effect of self-reported smoking on birthweight was significant ($F_{(2,260)}=3.17$, $p<0.05$). A post-hoc Tukey's test revealed that the difference lay between the self-reported non-smokers and the self-reported low-smokers.
Figure 8.1

Figure 8.1   Smoking and Mean Birthweight
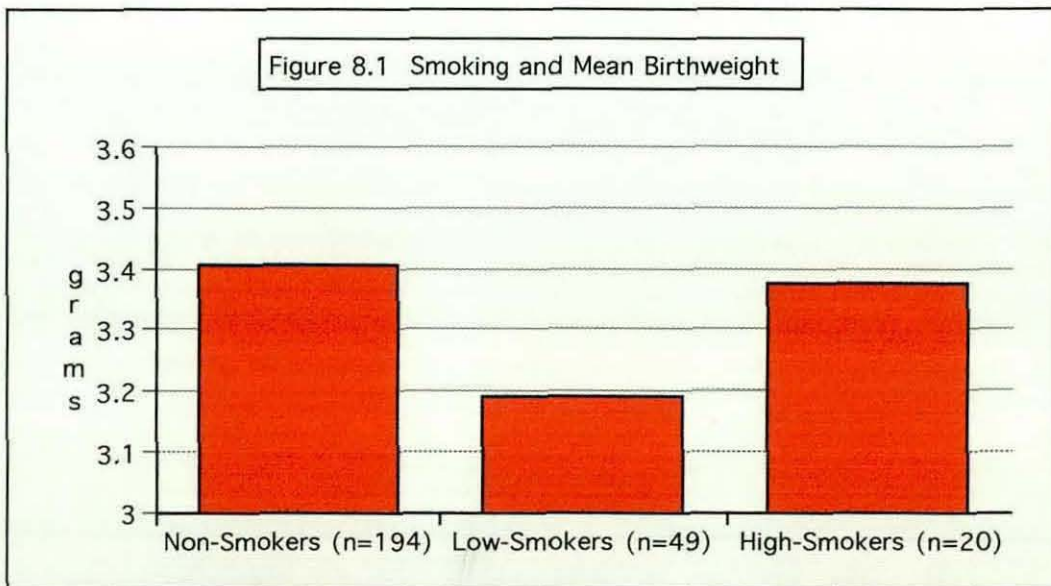
Of course, it is possible that women (who it will be remembered retrospectively rated their smoking and alcohol consumption) who experienced a complication (which the woman may know is related to smoking) may well underestimate her drinking and smoking during the pregnancy. However, it should also be remembered that this information was not supplied to any medical personnel, so there is less likelihood that these women would wish to present themselves in a favourable light to those who may be involved in their own or their babies future medical care. Further, they were guaranteed anonymity and knew they would have no further contact with the researcher in future, so there was little incentive to present themselves in a favourable light to her.

Figure 8.2

Figure 8.2 Smoking and Mean Complication Rates (transformed)
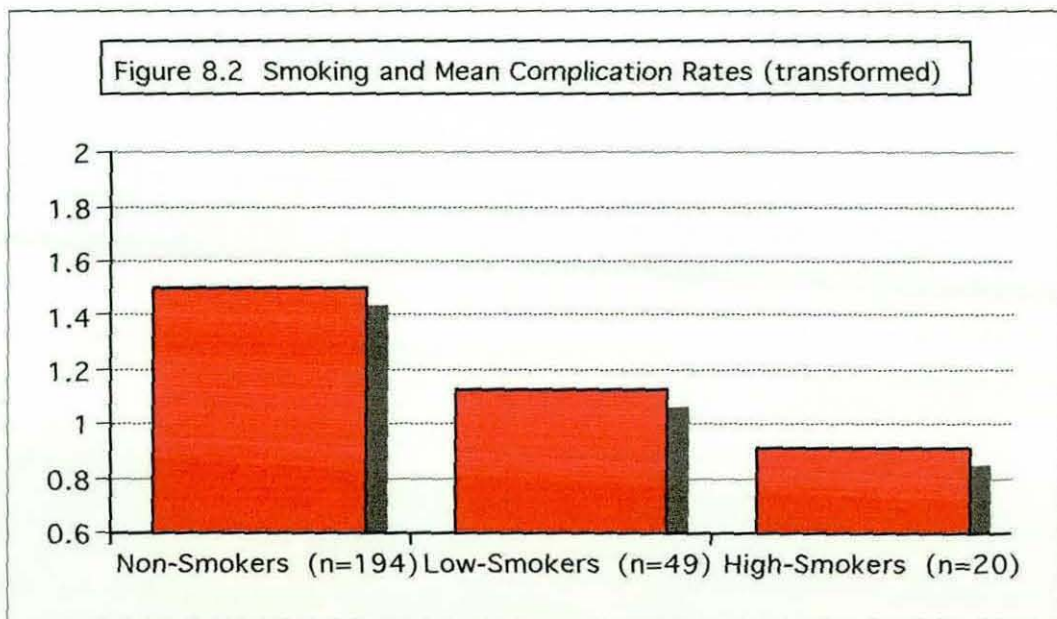
The sub-group means of the transformed complications variable can be observed in Figure 8.2. It is apparent that levels of self-reported smoking coincide with complication rates. An F-Test for the effect of self-reported smoking on the transformed complications variable was significant ($F_{(2,260)}=4.8$, $p<0.01$). A post-hoc Tukey's test revealed that the differences lay between self-reported non-smokers and self-reported 'low-smokers', and between the self-reported non-smokers and the self-reported 'high-smokers'. However, it is important to note that being a self-reported 'high-smoker' did not result in significantly fewer complications than if one self-reported as smoking more

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moderately.

Therefore, the findings suggest that low levels of self-reported smoking are associated with lower infant birthweight and fewer complications. High levels of self-reported smoking did not result in low birthweight, but was again associated with fewer complications than experienced by self-reported non-smokers. This latter effect was categorical, i.e,. whether or not someone self-reported as smoking reduced the probability of complications, not the extent of their self-reported smoking.

One further relationship requires further investigation. The effect of previous pregnancies was found to be associated with a reduction of the chances of obstetric complications. This relationship can be viewed in Figure 8.3.

It may, however, be inappropriate to report an overall F-Test because of the small group sizes of those who had experienced four and five pregnancies. In addition, one person had experienced six other pregnancies but this value was not included, because it is problematic to compare one case with a group. The observed effect is consistent with previous research, and requires no further comment, save that any regressions in the next chapter might include a parity variable.

Figure 8.3

Figure 8.3 Parity and Mean Complication Rates (transformed)

No. of Previous Pregnancies
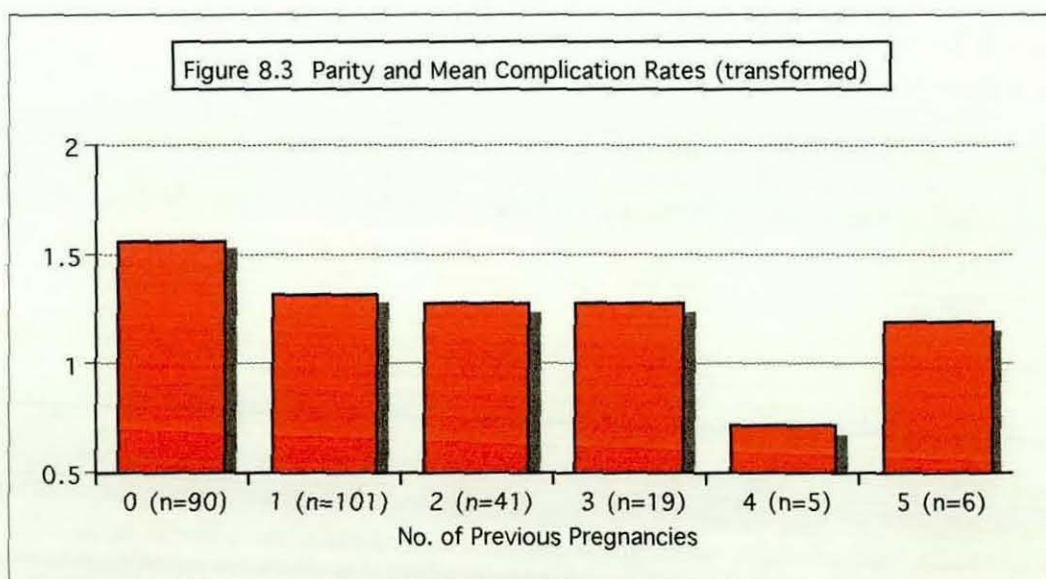
8.4   Discussion

At the beginning of this chapter, it was hypothesised that self-reported ratings of alcohol consumption and smoking would have significant effects on the outcome variables, namely infant birthweight and obstetric complications. In addition, demographic and SES variables were also analysed, to establish if they were significantly related to the outcome variables. It will be remembered that SPQ scores were associated with self-reported alcohol and smoking. Alcohol was strongly related to all domains, whereas smoking was related to overall scores and the 'partner' domain.

It is not surprising that a lack of perceived support during pregnancy is linked to self-reported alcohol consumption and self-reported smoking, given that anxiety is often observed in pregnant women and may be considered normal (McWilliams, 1994a; Areskog et al., 1984; Edwards and Jones, 1970). It is also common for pregnancy to result in some form of depression (see Cox et al., 1989, for a review), even if this is only what is termed as 'dysphoria' which is often attributed to hormonal changes. The link between dysphoria and depression is that both can be defined as meeting the DSM-111-R symptom criteria for depression. However, for dysphoria (transient disturbance in mood) the two-week duration criteria used for depression need not be met (Roberts and Gotlib, 1997). Depression itself affects more women than men, showing an approximate 2:1 female predominance (Weissman and Klerman, 1977). At any given time, approximately 8 per cent of mothers are clinically depressed (Weissman, Leaf and Bruce, 1987), with a peak depression in women aged between 20 and 40 who have children (Paykel, 1991). The use of substances such as alcohol and smoking has long been associated with anxiety and depression.

Medical research suggests that high levels of alcohol consumption during pregnancy can result in impaired growth, lowered IQ, and the small head, facial abnormalities and brain damage seen in fetal alcohol syndrome (FAS) (Abel, 1980). As FAS results from high levels of drinking, evidence of FAS is unlikely to have been found here, as indeed it was not. FAS is also associated with low birthweight (Shaffer, 1989). It should be noted that the variables recorded here do not correspond to those listed by Abel (1980).

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However, there is insufficient evidence to suggest that a relationship between SPQ scores and outcome was obscured by the effect of self-reported alcohol consumption.

In contrast, the effects of self-reported smoking suggest that the smoking variable should be included in further regressions to examine whether there is an indirect relationship of SPQ scores to outcome. Specifically, it will be important to examine the effects of overall SPQ scores, and 'maternal' and 'partner' support on both outcome variables. The results presented in this chapter suggest that the strongest relationships exist with the transformed complications variable.

The rationale for hypothesising that partner support will have an indirect effect on outcome is that self-reported smoking is related to birthweight and obstetric complications, and at the same time is significantly associated with partner support. Therefore, there might be an effect of partner support on outcome, which is obscured by self-reported smoking.

The rationale for hypothesising that maternal support will have an indirect effect on outcome is both theoretical and based on a further hypothesis. Stott and Latchford (1976) suggest that *attitude towards the pregnancy* can result in effects upon the foetus, including birth defects and miscarriage. Although self-reported smoking was not significantly associated with maternal support scores for the entire sample of responders, it is hypothesised that women with missing data (n=29) will demonstrate a strong association between self-reported smoking and maternal domain scores. If this is the case, then maternal support may be associated with outcome in a way which is obscured both by missing data and self-reported smoking. Careful analysis is therefore required.

The final quantitative results will be presented in the next chapter. There are two specific hypotheses to be tested. First, it is hypothesised that SPQ scores and particular domain scores (partner and maternal support) will be related to outcome, but these effects be obscured by the effects of self-reported smoking.

Secondly, it is hypothesised that women with missing data will demonstrate stronger associations between self-reported smoking and SPQ scores than the other responders, and that on removing those with complete data, a direct relationship between SPQ scores and outcome will be observed.

Chapter 9

The Relationship of SPQ scores to Infant Birthweight and Complications on Removal of the Effects of Self-reported Smoking and Missing Data

9.1 Introduction

In the introductory studies it was suggested that SPQ scores might be related to pregnancy outcome, both in terms of infant birthweight and in terms of obstetric complications (accepting the limitations regarding the obstetric complication measure). It was then possible to validate the questionnaire with the identification of principal components. The results suggested that the hypothesised domains of perceived support were distinct factors.

It was then possible to move on to the follow-up data including demographic, SES and outcome variables. Initial correlations found no relationship of SPQ scores to outcome variables. Since follow-up data was collected by postal questionnaire, it was important to test the effects of (1) response to follow-up and (2) missing data, in order to estimate their potential confounding influence. It was concluded that responders and non-responders showed similar scores on the SPQ, but missing data was associated with being younger and being without a partner. Therefore, analysis of the effects of the SPQ scores on outcome needs to take account of missing data.

Having established the importance of missing data, it was possible to examine the relationship of the SPQ to demographic and SES factors. Important relationships with self-reported alcohol and smoking ratings were demonstrated. Results demonstrated that these two behaviours were associated with different outcomes and socioeconomic and demographic variables, and therefore likely to be very different behaviours. However, for some women both behaviours will be exhibited (cf. Day et al., 1985).

In the previous chapter, self-reported smoking was shown to correlate with reductions in both birthweight and complications. However, self-reported alcohol was discounted

as a factor. Because smoking and alcohol are two different behaviours we can expect that different samples use different substances and the effects of this will be evident in the thesis (i.e., older women in the higher social category are more likely to rate their alcohol intake as higher compared to younger women and women in the middle social category).

The findings to this point allow one to test two specific hypotheses. The first hypothesis is that on removal of the effect of self-reported smoking, that relationships between SPQ scores and outcome will be apparent. It is reasonable to consider that women who feel least support will use either alcohol or tobacco or both together (cf. Day, 1985) to mitigate the stress that they feel about their pregnancy. In view of the findings that younger women self-reported smoking more than older women during pregnancy, and also show higher scores on the partner support domain, it is expected that partner support will show the strongest (indirect) relationship to outcome.

It might be argued that the SPQ design has some influence here, in terms of response categories. For example, the fact that no 'not applicable' category was provided within the SPQ limits the options available for women. However, women who did not respond to any particular support domain category of questions on the SPQ were more likely to obtain a 'low' SPQ score for that particular support domain than a 'high' (negative) score. Therefore this particular criticism is unlikely to influence results in the direction of increasing their negative support score, but will in fact have the reverse effect and thereby reduce the strength of analysis rather than increase it. We can, therefore, be reasonably sure that any high partner support domain scores are an underestimate of the strength of any observed relationship with other variables rather than an overestimate.

A second hypothesis is formed with respect to the finding that women with missing data seem to form a particular group of responders. It is hypothesised that there will be a strong relationship between self-reported smoking and SPQ scores in this group, and that removal of this effect will reveal an indirect effect of SPQ scores on outcome. It is expected that partner support will be rated as very poor in this group, but it is also

expected that attitude towards the pregnancy may be poor (via the maternal support domain of the SPQ).

9.2   Results

The results are split into two parts. First, there are regression analyses for each of the two outcome variables, in order to test for the relationship of SPQ scores to outcome independent of self-reported smoking and age at SPQ completion. Second, there are correlations of SPQ scores with self-reported smoking and self-reported alcohol and outcome for women with missing data. The two sub-sections correspond to the two hypotheses outlined at the beginning of the chapter.

9.2.1 Exclusion of the effects of self-reported smoking by Regression Analysis

The first hypothesis is that the effect of self-reported smoking obscures an indirect effect of SPQ scores on outcome variables. To test this hypothesis, two analyses were computed. Multiple Regressions were undertaken with (1) infant birthweight and (2) the transformed complications variable as dependent variables. The predictors entered into each analysis were general, partner, parent, maternal and overall support scores, self-reported smoking ratings and age. The results for infant birthweight can be observed in Table 9.1 and the results for complications can be viewed in Table 9.2.

It can be seen from Table 9.1 that following one stepwise deletion, only self-reported smoking remained as a significant predictor of infant birthweight. Therefore, on the basis of this analysis, there is no evidence that SPQ scores or age significantly predict outcome as measured by birthweight.

It can be seen from Table 9.2 that after six stepwise deletions, general support scores and partner support scores significantly predict the transformed complications variable. Parent support scores and self-reported smoking remain in the final regression analysis, but are no longer significant at the 5% level. These results support the hypothesis that SPQ scores are related to outcome (complications) on the removal of the effects of self-

reported smoking. As such these results confirm the first hypothesis. The particular prediction that *partner* support would be a significant factor is also confirmed, with the addition that the general feeling of well-being or *general* support is (indirectly) related to complication rates. The squared multiple r value is not large, indicating that these factors account for only a small amount of the variance in obstetric complication rates.

Table 9.1 Multiple Regression Analysis following one stepwise deletion with infant birthweight as dependent variable and overall, general, partner, parent, and maternal support scores, smoking and age entered as predictors.

Dependent Variable : Infant birthweight (n=264)
Minimum tolerance for entry into model = 0.010

Step :   0

Multiple r: 0.00
Squared multiple r: 0.00

Variable	Coefficient	Std error	Std coef	Tolerance	F	p(2 TAIL)
IN						

Constant						
OUT	Partial Correlation					

General	-0.02	-		.1E+01	0.15	0.70
Partner	0.03	-		.1E+01	0.30	0.58
Parent	0.01	-		.1E+01	0.01	0.92
Maternal	0.02	-		.1E+01	0.07	0.78
Overall	0.01	-		.1E+01	0.03	0.86
Age	0.05	-		.1E+01	0.56	0.46
Smoking	-0.10	-		.1E+01	1.82	0.09

Step :   1

Multiple r: 0.31
Squared multiple r: 0.10

TERM ENTERED: SMOKING

Variable	Coefficient	Std error	Std coef	Tolerance	F	p(2 TAIL)
IN						

Constant	2.00	0.13	0.00	.	248.70	0.00
Smoking	-0.05	0.03	-0.12	0.95	2.79	**0.05**

OUT	Partial correlation			Tolerance	F	p(2 TAIL)

General	-0.04			.1E+01	0.12	0.72
Partner	0.07			.1E+01	0.34	0.56
Parent	0.03			.1E+01	0.08	0.78
Maternal	0.04			.1E+01	0.08	0.77
Overall	0.03			.1E+01	0.08	0.78
Age	-0.05			.1E+01	0.16	0.69

The subset model contains the following predictors:
Constant
Smoking

Source	Sum-of-Squares	df	Analysis of Variance Ms	F	p
Regression	5.57	1	0.80	3.60	**0.01**
Residual	51.82	263	0.30		

Table 9.2 Multiple Regression Analysis including four stepwise deletions with the transformed complications variable as dependent variable and overall, general, partner, parent, and maternal support scores, smoking and age entered as predictors.

Dependent Variable : Weighted Complications (transformed: n=264)
Minimum Tolerance for entry into model = 0.010

Step : 0 — multiple r= 0.00
squared multiple r= 0.00

Variable IN	Coefficient	Std error	Std coef	Tolerance	F	p(2 TAIL)

Constant						

OUT — Partial Correlation

General	0.09			1E+01	1.44	0.23
Partner	-0.14			1E+01	3.63	0.06
Parent	-0.05			1E+01	0.39	0.53
Maternal	0.00			1E+01	0.00	0.96
Age	0.10			1E+01	1.75	0.19
Smoking	-0.16			1E+01	4.64	0.03

Step : 1 — multiple r= 0.16
squared multiple r= 0.02

TERM ENTERED: SMOKING

Variable IN	Coefficient	Std error	Std coef	Tolerance	F	p(2 TAIL)

Constant						
Smoking	-0.07	0.03	-0.16	.1E+01	4.64	**0.03**

OUT — Partial Correlation

General	0.10			0.99568	1.85	0.18
Partner	-0.11			0.96035	2.31	0.13
Parent	-0.03			0.98654	0.15	0.70

Table 9.2 (contd.)

OUT — Partial correlation

Maternal	0.04			0.95422	0.27	0.60
Age	0.07			0.97060	0.95	0.33

Step : 2 — multiple r= 0.19
squared multiple r= 0.04

TERM ENTERED: PARTNER

Variable IN	Coefficient	Std error	Std coef	Tolerance	F	p(2 TAIL)
---Constant						
Partner	-0.01	0.01	-0.11	0.96035	2.31	0.13
Smoking	-0.06	0.03	-0.14	0.96035	3.30	0.07

OUT — Partial correlation

General	0.15			0.86140	4.34	0.04
Parent	0.00			0.91181	0.00	0.97
Maternal	0.09			0.79536	1.57	0.21
Age	0.06			0.94302	0.54	0.46

Step : 3 — multiple r= 0.25
squared multiple r= 0.06

Table 9.2 continued

TERM ENTERED: GENERAL

Variable IN	Coefficient	Std error	Std coef	Tolerance	F	p(2 TAIL)

Constant						
General	0.01	0.01	0.16	0.86140	4.34	**0.04**
Partner	-0.01	0.01	-0.18	0.83084	4.80	**0.03**
Smoking	-0.06	0.03	-0.13	0.96027	3.29	0.07
OUT	Partial correlation					

Parent	-0.13			0.54221	2.83	0.09
Maternal	0.05			0.73520	0.51	0.47
Age	0.04			0.93266	0.28	0.60

Step :	4	multiple r= 0.28
		squared multiple r= 0.08

TERM ENTERED: PARENT

Variable IN	Coefficient	Std error	Std coef	Tolerance	F	p(2 TAIL)

Constant						
General	0.02	0.01	0.27	0.51224	7.21	**0.01**
Partner	-0.01	0.01	-0.17	0.82937	4.53	**0.03**
Parent	-0.01	0.01	-0.17	0.54221	2.83	0.09
Smoking	-0.05	0.03	-0.12	0.95288	2.78	0.10
OUT	Partial correlation					

Maternal	0.06			0.73517	0.53	0.47
Age	0.04			0.93224	0.32	0.57

The subset model contains the following predictors:
Constant
General Support
Partner Support
Parent Support (not significant at the 5% level)
Smoking (not significant at the 5% level)

Analysis of Variance

Source	Sum-of-Squares	df	Ms	F	P
Regression	6.57	4	1.64	3.60	**0.01**
Residual	80.30	259	0.46		

<u>NB</u>

In both analyses, residuals were examined for normality, and found to approximate normal distributions (Systat coefficients for skew and kurtosis < 1.0). This is important as regressions are based on linear assumptions.

9.2.2 The effect of missing data, SPQ scores and complications

Having demonstrated a link between the SPQ and outcomes which is mediated by the effects of self-reported smoking using those subjects with complete data sets, it is important to analyse the incomplete data set (n=29). It was hypothesised that women who did not complete the SPQ fully were more at-risk than those who did. Therefore, within-group correlations were computed to examine relationships between SPQ scores, self-reported smoking and self-reported alcohol, and outcome variables. The significant results can be viewed in Table 9.3. Missing data were largely to be found in the partner domain, and missing values were pro-rated in order to facilitate further analysis.

Table 9.3 Significant Spearman rank correlations for relationships between SPQ domain and overall scores and alcohol, smoking, infant birthweight and complications in responders to follow-up with missing SPQ data (n=29).

	General	Partner	Parent	Maternal	Overall
Alcohol			0.45**		
Smoking		0.40*		0.40*	0.36*
Birthweight Complications (transformed)				-0.41*	

*p<0.05 **p<0.01

It can be seen that self-reported smoking is again strongly related to SPQ scores, and self-reported alcohol is correlated with the 'parent' support domain. Interestingly, for women with missing data, significant linear relationships exist between the 'maternal' support domain and infant birthweight.

Therefore, these results suggest that in women with missing SPQ data, higher partner domain scores coincide significantly with smoking ratings. High maternal domain

scores coincided with lower infant birthweight, indicating a relationship between the SPQ and outcome, for this particular group of women. This was not expected, as these correlations do not exclude the effects of self-reported smoking as in multiple regression analysis.

A regression was computed with self-reported smoking and maternal support scores entered as predictors and with infant birthweight as the dependent variable. After one stepwise deletion, self-reported smoking was excluded, leaving maternal support scores as the significant predictor of birthweight ($F_{(1,27)}=4.74$, $p<0.05$). The squared multiple r was 0.15.

These results comprise evidence that missing data indicates a particular group of women whose psychological attitude towards the pregnancy is related to the infant's birthweight. Our second hypothesis was that on exclusion of self-reported smoking, SPQ scores would be related to outcome in this subgroup. This hypothesis has been supported by the data.

However, the question remains as to why missing data should be so important. One explanation is based on the finding (Chapter 6) that women with missing data are less likely to fill in answers on the partner domain. Inspection of the data found that whereas 7 of the 29 (24%) responders with missing data did not currently have a partner, only 1 of the women with complete data (less than 1%) did not have a partner. This is evidence that not responding to parts of the SPQ is due to the lack of a current partner.

A further finding is the strong correlation between self-reported alcohol and parent support scores. This may indicate that in the absence of a supportive partner, the support provided by parents is inversely related to the need for alcohol, i.e,. those women without a supportive partner or supportive parents are likely to drink more heavily.

9.3 Discussion

The two hypotheses set out at the beginning of this chapter were that (1) on exclusion of self-reported smoking, SPQ scores would be related to outcome, and (2) that women with missing data would demonstrate distinctive relationships between their levels of self-reported smoking, SPQ scores and outcome measures. Both hypotheses were supported by the data. Logarithmic transformations of the number of complications were related to partner support on the removal of the effects of self-reported smoking. In the women with missing data, infant birthweight was lower where maternal domain scores were high, and smoking was not a predictor in these cases.

Discussing the effects of substance use during pregnancy to reduce negative feelings, during pregnancy, Abel (1985) comments that "..the studies upon which recommendations for abstinence were based have been misinterpreted and/or have not been replicated..counselling women not to drink may result in stress-related effects on the newborn" (p.192). Although Abel's editorial is mainly about the use of alcohol during pregnancy, his argument applies to the data presented in these chapters. It should be noted here, that most authors commenting on alcohol consumption during pregnancy are talking about high levels of alcohol consumption (or excessive amounts). There is little evidence in the literature that small amounts of alcohol consumption (or social drinking) in pregnancy is detrimental. Some exceptions to this are researchers who have found some evidence that even social drinking can have negative long-term effects (Streissguth et al., 1990). Gestational timing of drinking and nature of drinking (e.g., binge drinking) will also be influential here. Finally, the effects of social drinking may not be manifest until later in infant development (Burgess and Streissguth, 1991). For studies, such as this one, which confine there outcome measures to the immediate antenatal and early postnatal period they will not be able to identify such outcomes.

Perceived support also appears to affect the rates of complications observed, but for the total responder sample, it was necessary to remove the effects of self-reported smoking. Our data suggests that self-reported smoking reduces birthweight (at least in 'low-smokers'), that it reduces the chance of complications, and that 'high-smokers' show

high overall SPQ scores, and high general and partner support scores. Because 'low-smokers' seem to have relatively low SPQ scores, it is inferred that smoking has modified negative feelings about the pregnancy. Of course it could also mean that women with good perceived support just do not need to smoke as much. The results could also suggest that women with good perceived support are being supported by their partners in engaging in a reduction in smoking during pregnancy. This support may be in the form of their partners also reducing their smoking. Graham (1993) noted that smoking in Britain is increasingly linked to being a woman and being working class and that the stress of being working class is influential here.

A major theme which has emerged from the findings of these chapters is that some pregnant women continue to self-report consuming alcohol and smoking, in spite of consistent advice from the medical profession to the contrary. Ironically, Abel's (1985) suggests that this advice may be too extreme for many women. If a woman is under considerable strain, e.g., if she is coping with poor social conditions, her partner intends to leave her, or has left, then low levels of smoking may reduce the chances of obstetric complications. However, if her obstetrician or General Practitioner advises her to give up smoking or drinking, her feelings at the time of birth might cause complications. This is Abel's point; but in our sample it seems to apply to smoking rather than alcohol, because only smoking affected our outcome variables. Indeed, it will be remembered that some research suggests that low levels of alcohol consumption during pregnancy may even incur some positive benefits as regards reducing preterm birth (Fox et al., 1994). It should be remembered, that self-reported levels of alcohol consumption in this sample were low. The main effects of excessive alcohol consumption are mainly malformations of various organs, Fetal Alcohol Syndrome (FAS), and effects on the CNS, such as lowered lifetime IQ (e.g., Burgess and Streissguth, 1991; Rossett, 1980). Delivery itself may be unaffected. Effects on birthweight are very small, requiring huge samples to detect, and are largely inconsequential for the individual cases (Abel, 1985).

An interim conclusion as regards self-reports of smoking, is that there is sufficient evidence to suggest that perceived support, as measured by the SPQ, has a relationship

to complications, which are moderated by self-reported smoking. When women with missing data show negative attitudes towards the pregnancy, this is related to observed lower infant birthweights. The amount of variance for which these effects account is not large, but one would not expect psychological factors to have very large effects in relation to physical factors such as nutrition or genetics. On the other hand, there remains a large amount of variance in outcome which has not been explained either here or in the literature.

High partner support scores had been negatively correlated with age, suggesting that partner support is more important to younger pregnant women. In contrast, attitude towards the pregnancy itself (maternal support) was positively correlated with age. While there is evidence high partner support scores (which are associated with being younger) may indirectly affect outcome, no such evidence was found that high maternal domain scores (associated with being older) affected outcome. It is possible that the combination of factors is much less severe for older women, who tend to enjoy higher SES. Their partners are more likely to be employed and committed, and in the long-term, many older women will continue to be employable, especially those with longer educations. Measures of smoking in this sample are confounded by the self-report nature of the smoking measure and are thus likely to be underestimates (DiFranza and Lew, 1995).

Although not the focus of this chapter, an important finding is that women with missing data and high 'parent' support scores self-report as drinking more heavily. The possible relationship between support, depression, alcohol consumption and poor attachment (cf. Bowlby, 1959) is highlighted here. The effects of alcohol on the fetus have been mentioned above (e.g., Abel, 1985), and the importance of alcohol may be greater than our highly specific outcome variables would suggest (e.g., beyond the immediate antenatal period).

Although the discussion here points towards causal explanations, it is acknowledged that many other explanations could be given. Much of the literature on pregnancy outcome, alcohol, smoking, socioeconomic, demographic and psychological variables

acknowledges the importance of smoking in outcome, but also acknowledges that other factors also play their part.. The association between smoking and outcome is well established and replicated here. The association between alcohol consumption (in excess) could not be measured here, as our sample did not demonstrate a high level of self-reported alcohol consumption. However, Stephens (1985) found an association between support and alcohol consumption. More specifically, she found that alcohol consumption and support worked in opposite directions. General support showed a positive association with drinking, while pregnancy specific support showed a negative association, confirming that support is not a unitary concept.

Even when women cease smoking or alcohol consumption during pregnancy, it is known that stress can reinstate these behaviours. Without adequate support these reinstated behaviours can become entrenched again. For example, support to quit smoking behaviour and sustain this, from partners, can be highly influential (Appleton and Pharoah, 1998). The reader is reminded that in the Appleton and Pharoah study no woman quitted smoking when their partners increased theirs and all their perceived support scales were associated with smoking. The number of smokers in the social network of the woman was also associated with her ability to quit and sustain cessation of smoking. All of which highlights the complexity of the interaction between stress, support and certain known negative behaviours. Clearly, measuring perceived support in relation to outcome and known negative behaviours, alongside socioeconomic and demographic variables will always yield complex results.

As Reading (1983) highlighted, the fact that women perceive their support negatively does not mean that this influences their negative behaviours, it could be equally true that their negative behaviours (and social circumstances) are influencing their levels of support and thus, presumably, their perceived support. However, at least with perceived support we are measuring some level of appraisal, which Reading believes is at the centre of how a woman negotiates pregnancy stress. This allows for individual differences and measurement of a construct (which acts like a filter, Kelly, 1955) which can potentially capture the essence of all other variables.

Furthermore, the role of socioeconomic disadvantages in limiting smoking cessation during pregnancy was confirmed here (Graham, 1994). Therefore, smoking behaviour may equally be more to do with the burden of caring in difficult social circumstances (Oakley, 1993), though the influence of perceived support remains important here and potentially influential (Albrecht and Rankin, 1989).

The explanations given here regarding possible causal relationships are reasonable, if tentative, given the data and also make some sense. This does not mean that these explanations are irrefutable. Indeed it will be the task of future research to confirm or refute these findings, as well as expand upon them.

The quantitative findings of this thesis will be discussed further in relation to the theories presented in the literature reviews, where it will be suggested that the evidence supports a social support model of pregnancy such as that of Oakley (e.g., 1990), and also supports the 'intrapsychic' explanation of the effect of psychological factors in pregnancy, proposed by Raphael-Leff (1991). Before this discussion it will be useful to examine the pregnancy of a younger woman, and that of an older woman, in order to find qualitative evidence of the findings presented so far. This is the topic of the next chapter.

Chapter 10

A qualitative examination of a relatively young and a relatively older pregnant woman: two cases within traditionally at-risk groups

10.1 Introduction

Two age-groups of pregnant women appear to have the most difficulties in pregnancy negotiation and adjustment to motherhood (e.g., Tew, 1990; Istvan, 1986). These women are either relatively young (18 years or younger) or older (35 years and above). This has traditionally been attributed to the physical process of being physically immature or more mature (Tew, 1990), but in fact psychological factors also seem to be more extreme for pregnant women in these age groups. Recent research has also questioned the validity of the widely held belief that younger pregnancies are problematic for younger women themselves (Phoenix, 1990). Others have argued that the issues are complex both for younger pregnant women (McWilliams, 1994b) and older pregnant women (Berryman et al., (1995)).

For example McWilliams (1994b) examined adolescent pregnancy using an in-depth qualitative and quantitative methodology. Results demonstrated that adolescent pregnancy is often sought to secure intimacy (as Rasanen, 1985, suggested) and to resolve developmental and family conflicts. Therefore adolescent women's perceptions of support and ability to negotiate pregnancy and early motherhood may be highly influenced by changes in current relationships with partners and parents. However, given the right kind of support, they can also use the pregnancy to resolve these conflicts successfully.

However, the risks have also been misunderstood and / or exaggerated in relation to older mothers (Berryman et al., 1995). Recent research has challenged the widely held belief that older mothers will necessarily experience more difficulties compared to younger mothers (Berryman and Windridge, 1991; Windridge and Berryman, 1996).

Others have found that for first-time mothers over 35 years of age the transition to parenthood was perceived by women themselves as stressful (Reece, 1995). This was especially true if they perceived the number of associated life changes as high.

Other earlier research suggested that older first time pregnant women have less positive attitudes toward future mothering than younger women (Meisenhelder and Meservey, 1987). However, the older mother (35>) is also more likely to have increased medical intervention in her pregnancy than younger women (Katz-Rothman, 1986). This increased medical intervention and other factors (e.g., Down's syndrome and other known risk factors) complicates the picture and may even be responsible in of itself (Green, 1990a).

Berryman et al. (1995) pointed out, older pregnant women are a diverse group. At least some of their ambivalence in early pregnancy (which may have been captured in the large sample in this study) may be accounted for by their knowledge of the increased risks involved in older pregnancies. Berryman et al. (1995) and others (e.g. Green, 1990a) provide some evidence that it is this knowledge which may initially inhibit them from bonding with the unborn child.

Nevertheless let us consider Figure 10.1, which demonstrates SPQ scores for the entire sample. This figure demonstrates that for our sample younger and older women demonstrated more negative responses.

Figure 10.1

Mean SPQ domain scores and age (n=501)

Age Bands
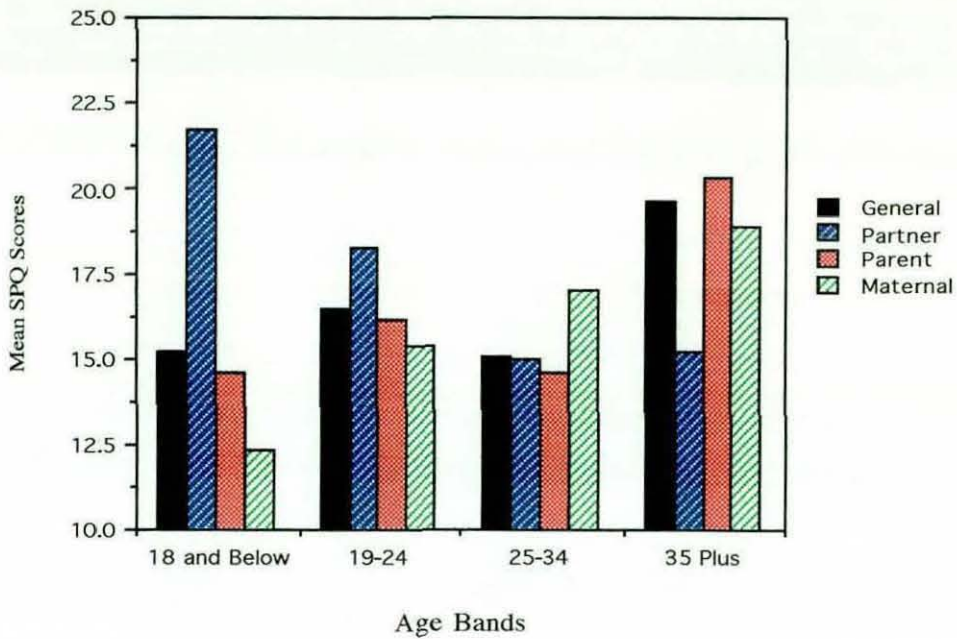
There were specific support domain differences between these two age-groups. For the younger women the **partner** support domain proved most negative. For the older women, **parent, general** and **maternal** support domains (in that order) were most negative, with little variation between these three. Partner support scores are lowest of all for older women. Partner support scores may decrease with age, and maternal support scores increase with age, but this is partly inference, because of the cross-sectional design.

These groups of younger and older pregnant women (below 19 and over 34 years) are smaller in number, but are potentially very informative. Little research has simply asked women how they view their pregnancies. It was therefore decided that the final study in this thesis should examine the views of two pregnant women, one of whom was younger than 19, and one who was older than 34. This might shed further light on what psychological support means *to them*.

The two women cannot be said to be strictly 'typical' of their age-groups. They were compared to other women from the large-scale study on variables such as age, partner status, socioeconomic status, and SPQ scores. Information from these two women during their pregnancies was gained via interview (for case study one) or via a written diary (for case study two). Their levels of anxiety and depression (pre- and postnatally) were also obtained.

It is necessary to briefly describe central health issues for each of these pregnant groups.

10.1.1 Younger Pregnancy (<19 years)

Adolescent pregnancy has been associated with observable increases in negative physical and psychological outcomes, though adolescents do not appear to significantly differ on measures of anxiety compared to non-adolescent pregnant women (Snelson, 1990). This has led many researchers to believe that increased risk of negative outcome is due to physical immaturity (Giblin, Poland and Ager, 1988; Dunston et al., 1987) although these authors did not discount psychological factors.

In previous chapters it was shown that participants who provided only partially completed SPQs were significantly younger and had significantly higher partner support scores. Missing data from the SPQ was mainly found in the partner support domain. Women with missing SPQ data, who also self-assigned themselves as being 'without' partners were generally younger. Furthermore, women with missing SPQ data delivered lower birthweight babies in comparison to those women with missing SPQ data, but who self-assigned themselves as being 'with' partners. Finally, alcohol consumption, increased smoking, and poorer socioeconomic status were significantly associated with younger pregnant women. These findings replicate previous findings (e.g., Boyce, Schaefer, and Uitti, 1985).

Adolescence itself is commonly viewed as a time of emotional turbulence and conflict, especially with parents and significant others, and is a specific life event and transitional

state in its own right (Erikson, 1950). Adolescence and pregnancy is therefore a double life event. Furthermore, adolescent parents are commonly part of families already under stress, and where limited physical and emotional resources are available to support them through pregnancy and motherhood (Cooley and Unger, 1991). A partner may seem to offer an emotional support where it is lacking from other sources.

Some authors suggest that adolescents are likely to face many more problems in their pregnancy than any other age-group (e.g., a greater number of obstetric complications). Nath, Borkowski, Whitman and Schellenbach (1991) found that adolescent mothers also commonly suffer many hardships, are typically low in self-esteem, and are 'unstable in identity'. High levels of perceived support might, therefore, strongly influence the course of the pregnancy (Colletta and Lee, 1983) which could be measured via the number of obstetric complications experienced. The reader is reminded that in studies 1 and 2 only complications were rated (and weighted from 1 - 10) according to degree of severity. In the large-scale study this was changed so that the number of complications experienced was used, because of recognised problems with the earlier methodology.

10.1.2 Older pregnancy (>34 years)

Recent birth statistics show that fertility rates for older women are rising rapidly (Registrar General, 1995). Thus whilst these women may be small in number at present, like the younger age-group they are on the increase. Cranley (1981) has previously demonstrated a negative correlation between perceived stress during pregnancy and reductions in mother's attachment behaviours, across all age-groups.

In the study reported here, older pregnant women have the most negative perceptions of support except in the partner support domain. They perceive their support most negatively in the parental, general and maternal support domains. The 'maternal support' domain measures attitude towards the pregnancy and may be related to attachment behaviour.

Some authors have examined possible reasons for negative attitudes in older pregnant

women. Berryman and Windridge (1993) hypothesised that there are special worries for the older pregnant woman, which result in disturbed attachment behaviour towards the infant. They utilised Cranley's (1981) Maternal-Fetal Attachment Scale (MFAS). In their study (n=40) they found a trend for impaired foetal attachment in the older members of their sample. However this tendency was non-significant and was limited to women expecting their first baby. These results suggest that older primiparous women are somehow different (see also Berryman et al., 1995). However, the overall sample was not large and a small- to medium-sized effect may still be present in the population.

Ironically, the knowledge that one's increased age increases risk of poor outcome can increase anxiety. Anxiety can cause these poor outcomes itself (e.g., Welles-Nystrom and de Chateau, 1987). Realistically, there is a greater risk of chromosomal abnormality, and it is routine that an older mother will have more medical screenings. Screenings might provide reassurance.

Berryman and Windridge (1996) argue that such screenings are special features of the older woman's pregnancy. Her knowledge of increased risk may make the pregnancy seem 'tentative' and disturb attachment. As the pregnancy progresses well, older pregnant women may begin to 'believe' in their pregnancy and may then allow themselves to bond with their foetus. In order to test this hypothesis, Berryman and Windridge (1996) administered the Cranley's MFAS at mid- and late pregnancy. As this scale has no independent validation (Muller, 1992), they also included Kumar, Robson and Smith's (1984) Maternal Adjustment and Maternal Attitudes questionnaire (MAMA) for later correlations. Between-measures correlations proved satisfactory.

Their results supported the study's main hypotheses. Women who were pregnant at age 35 and over expressed fewer feelings of attachment to their foetus than younger women in the mid-trimester period. This effect did, however, disappear by late pregnancy.

"...*she views her pregnancy more tentatively, in the earlier months, until she feels that her baby has been given the all-clear*" (Berryman and Windridge, 1996, p.142).

Older women were also less likely to indulge their fantasy about being a mother, reported fewer somatic symptoms, and had more positive perceptions of their bodies than younger women. Results presented in earlier chapters suggest that older women have more to give up in material terms than younger women, e.g., in terms of paid employment. An early reluctance to form an attachment may be due to factors not considered by Berryman and Windridge (1996); for example, loss of working role itself and financial independence.

In conclusion, many factors influence younger and older women's attitudes towards pregnancy and motherhood. In the first instance, there is a perception that they are abnormal, i.e,. outside the normative age range for pregnancy (McClennan-Reece, 1993). With so many potential factors, it is useful to simply examine the discourse of pregnant women in order to understand its personal meaning for them.

10.2 Case Study 1: A 17-year old single nulliparous woman

To aid the reader in interpreting the following psychometric measures, Table 10.1 gives the clinical norms for the Hospital Anxiety Depression Scale (HADS) (Zigmond and Snaith, 1983) and the State-Trait Anxiety Inventory (STAI) (Spielberger et al., 1970). These measures were used in both this and the following case study of an older pregnant woman.

Table 10.1 Clinical values for the HADS and STAI

	Clinical
HADS	8 >
STAI	45 >

Sonja (pseudonym) is a single seventeen-year-old woman who lives at home with her

mother and father. Both parents supported Sonja's decision to continue with her pregnancy. However, her partners parents were in favour of the pregnancy being terminated.

Sonja completed the Support in Pregnancy Questionnaire (SPQ) and the State-Trait Anxiety Inventory (STAI) throughout her pregnancy. Her mean SPQ scores at 12 weeks gestation were as follows; partner support = 49 (the maximum score possible, the minimum being 7, Likert scale ranged from 1 - 7 for each question), parent = 28, general = 29, and maternal support = 45. At 39 weeks gestation, and following counselling intervention, these scores reduced as follows; partner = no data available, parent = 14, general = 11, and maternal = 12.

Sonja's STAI scores at 12 weeks gestation were clinically significant with STAI-State = 76 and STAI-Trait = 45. By 39 weeks gestation these had fallen to 35 and 30 respectively and were no longer clinically significant. At 6 months post-natal follow-up these scores further reduced to 26 and 20 respectively. Counselling intervention (in line with the early studies presented in this thesis; see Chapter 3) reduced both SPQ and STAI scores across time.

At the beginning of her pregnancy Sonja was primarily concerned with her partner, the father of her baby. Sonja had known her partner for two years and had previously been engaged to him. He lived some distance from Sonja (approximately 3 hours drive) but had his own form of transport and was in full-time employment. Sonja and her partner had planned this pregnancy. Sonja and her partner ("Nathan") initially very much wanted this baby. However, once the pregnancy was confirmed her partner's attitude changed.

In line with other women in her age-group, Sonja's partner support scores were initially very high (i.e,. negative). A clear lack of support from her partner, once pregnancy was confirmed, accounts for Sonja's negative perceptions of her partner support. For example, at 12 weeks gestation Sonja commented;

"I feel as if I've lost him, and what's in his place is someone I don't know. I feel his family are controlling him now, his dad said tell her to get rid of the brat, 22 is too young to be a father. I think there would have to be a fairly major change in his attitude now, he needs to be independent of his family, but I'm not sure he will... I feel I could cope much better if I only knew where I stood."

From our sample of adolescent pregnant women (n=11) we find that partner support scores demonstrate a pattern of being either extremely positive or negative, where data is available. A very similar pattern of responding was also demonstrated by Sonja, though across the course of her pregnancy. At times her partner support scores were extremely negative, at other times they were extremely positive, and at times the questions were simply not answered. Sonja demonstrated a similar pattern of response to women of her own age-group, across the course of her pregnancy.

The pattern of response to partner support questions from our single case study suggests that perceived partner support is highly dependent on the current state of partner relationships. For example, during the 14 - 16 week gestation period Sonja and Nathan's relationship improved. At the same time her partner support scores dramatically decreased to a score of only 10 (the minimum being 7). Furthermore, her maternal support scores also dramatically decreased to a score of only 9. Both these scores were now extremely positive. Parent and general support scores also fell at this time but only by four points each. Sonja explained the change.

"Nathan has told his family that he wants to be a full-time father to his child and wants to try to patch things up with me. He just ignored his parents when they told him not to come over, he lost a day's pay too, and risked being given the sack just so he could come with me for the first scan of our baby. We both have a picture of the baby now! I'm really pleased he has stood up to his family and stood up for me. I feel I can really look forward to the baby now... It's perfect now, being pregnant is great, I can't wait to have the baby".

Clearly Nathan's change in behaviour and attitude influenced Sonja's attitude towards

pregnancy and motherhood. Sonja now appeared able to enjoy being pregnant and looked forward to motherhood. However, her attitude had become *extremely* positive, possibly somewhat unrealistic. In this change of attitude Sonja may be succumbing to the idealistic myth of pregnancy and motherhood. As one might expect in young people, her world view could change dramatically. Nevertheless, these changes also appeared to allow Sonja to turn her attention to her relationship with her mother (Smith, 1995). Sonja commented.

"I felt I was neglected as a child, coz mum had all these foster children, I felt sort of rejected and left out. Mum is really supportive now, she can't do enough, I think coz she knows what its like to be seventeen and pregnant, but I still think of the past. It's hard to forget how rejected I felt though when I was young and she had all these other foster kids to worry about."

A pregnant woman needs support from her partner, but also from other significant people in her life (Smith, 1995). The temporary respite from her overwhelming concern with her partner's support appears to have allowed her to focus on these other relationships. However, the positive change in Sonja's relationship with Nathan did not last. Sonja became very distressed when Nathan began to avoid contact with her again. Sonja commented.

"We talked a little about the future but he can't commit, he just don't know what he wants... No matter how bad things get I'll survive though...I suppose it will be hard with money and things but mum and dad will let me stay there until I get on my feet."

We can see from the above excerpt that Sonja had become aware of the real physical and psychological hardships of parenthood. She was aware that she could not depend upon her partner's support in either sphere. At 21 weeks gestation, Sonja decided to end her 'on-off' relationship with Nathan. Initially she obtained some relief from this decision, because at least now she knew where she stood. Her focus switched to her ability to cope with the pregnancy and motherhood on her own. She was somewhat bitter about this and commented on issues pertinent to pregnant women in general.

"I'm the one who is gonna be left to do the day-to-day hard work of motherhood and coping with the rest of this pregnancy. He will most probably just swan in and play the nice daddy whenever it suits him."

In the above excerpt we can see that Sonja was no longer idealistic about either pregnancy or motherhood. From 36 weeks' gestation onward, Sonja refused to complete any of the questions belonging to the partner support domain. She no longer felt she had a partner. In essence, Sonja's relationship with Nathan was extremely volatile and this was reflected in her partner support scores across the course of her pregnancy.

Younger women were largely responsible for missing SPQ data in the large-scale sample, and missing scores were mainly in the partner support domain. We may hypothesise that like Sonja, younger women refuse to respond to questions in the partner support domain because of real difficulties in obtaining partner support.

Sonja resolved many of her issues by ending the relationship. This did not necessarily imply that she was happier. Any positive benefit from such a resolution is only likely to occur after a period of adjustment and the right type of support to manage this adjustment period (i.e,. counselling). Initially, there was further emotional turbulence. For example:

"Oh yeah! It's completely different, you know, I wouldn't pee on him if he was on fire, I really wouldn't, I would just let him burn, I, I want nothing to do with him... Sometimes I still hope he will change... If I could only get the nice Nathan back, the one who looks after me and gives me compliments, the one who tells me I am really good looking and that I will make a great mother. But then I look at how things really are. I think he's already got another girlfriend."

The above excerpt contains a good deal of confusion, hope and despair. However, when Sonja finally gave up hope of any reconciliation with Nathan, her SPQ scores in all other support domains begin to decrease alongside her STAI scores, and continued

to do so until the end of her pregnancy. Sonja accepted that she was alone with the baby, but that she would cope. She commented.

"His power is gone now, you know, he has no power now, he just has to go through his solicitor... I don't want to wait around for him. I need to get on with my life and so does my baby".

The results presented in this thesis generally, and specifically from this case study suggest that failure to complete partner domain support questions implies real psychological issues, and the need for alternative support. However, given appropriate intervention (e.g., counselling) younger women can negotiate stressful circumstances. Once Sonja's relationship with her partner was over, this led to [a] a decision not to complete partner support questions within the SPQ, and in time [b] a significant decrease in SPQ and STAI scores. In fact Sonja's partner support scores and maternal support scores rose and fell with some synchrony. As Sonja comments (6 months postnatally).

"Yeah, I was just putting on an act back then, or just being someone which I ain't really, this gave me a lot of stress. It was like I needed him to say everything was gonna be okay for me to believe it. I was hoping we could have the whole pretty picture, you know me blooming, really enjoying pregnancy, him fussing over me ... Now I just feel as myself, this is me, I feel confident you know, less worried, I just wanna go out and live now me and the babe. We have a future"

Sonja's baby boy was born at term, weighing 7lbs 8ozs. He was delivered via caesarean section; Sonja was conscious throughout and demanded the operation. Sonja later found out that the baby's cord had been wrapped around his neck. If she had continued with a vaginal delivery he may have died. Her parents attended the birth, but Nathan did not.

10.3 Possible implications for adolescent pregnancy

This case study illustrates some of the stresses specific to adolescent pregnancy, which many authors attribute to psychological immaturity (Snelson, 1990; Giblin et al., 1988; Dunston et al., 1987). In particular, it showed a strong reliance on the partner for support.

Sonja, like the other younger pregnant women of her age, provided incomplete SPQ data, and later assigned herself to the 'without a partner' category. Her baby was of normal birthweight, although she experienced an obstetric complication, i.e,. caesarean section. However, the caesarean section was her choice. Sonja did not conform to a 'submissive female stereotype' in this regard. This raises questions about value judgments which researchers apply to obstetric complications (Kleiverda et al., 1997).

In the large-scale study, alcohol consumption, increased smoking, and poorer socioeconomic status were all associated with younger pregnant women, consistent with previous findings (for a review, see Boyce et al., 1985). Sonja did not smoke or drink during pregnancy, but did receive extra support via counselling during her pregnancy. She worked as a bank clerk, but described her background as 'working class'.

It was suggested that adolescence has its own psychological significance, a time of emotional turbulence and conflict, especially with parents and partners (Erikson, 1950). Although focussed on her partner, she was also concerned with her relationship with her mother. Sonja began to talk about her relationship with her mother and her belief that her own upbringing was inadequate. In the end, she felt closer to her mother.

The family needed to provide foster care to other children for financial reasons, which resulted in less time for Sonja to receive affection from her parents. She viewed pregnancy as a way of gaining affection, from another source, i.e,. Nathan. This may be a theme for other adolescent pregnancies.

Another feature of adolescent pregnancy is financial hardship (Nath et al., 1991). Certainly this contributed to ambivalent feelings shown by Sonja. However, she became unrealistically optimistic when Nathan briefly changed his attitude. It is possible to interpret this as a denial of the financial and emotional hardship following the birth of the baby. Therefore, it may be that the stressful environments adolescent mothers find themselves in are strong stress factors. In this case, it is possible that the extra support provided by counselling improved Sonja's self-esteem enough to mitigate against a very poor outcome (Colletta and Lee, 1983).

In conclusion, the previous research findings that adolescent mothers have an increased risk of physical and psychological problems were partly observed in this case. Certainly, she felt the pregnancy was difficult emotionally, and there was an obstetric complication. There was some evidence of denial of the difficulties inherent in bringing up a young child, and Sonja was sometimes ambivalent about the baby. However, she was assertive about her desire for surgery and did not conform to the 'submissive female stereotype' in this regard. This is relevant to the coping strategies described in Chapter 2.

To examine some of the psychological processes of a pregnant woman at the other end of the age range, the second case shall now be examined.

10.4 Case study 2: A 41-year-old multiparous woman

Counselling notes from the early studies in this thesis (Chapter 3) suggested that women older than 34 years were much less concerned with partner support, than with their own attitude to the pregnancy, or 'self-support'. This was especially true for first-time older mothers. Central among their concerns were fears of physically coping with the demands of a small infant, loss of a prestigious employment role (many holding professional positions), and fear of the baby incurring too many lifestyle changes. There was evidence of a more realistic view of motherhood than that held by younger women.

The case study presented here is that of a 41 year old woman, who is not 'atypical' of her age-group in socioeconomic terms. Beth was 40 years at the time of the study, married, and planning her second child. Beth holds a professional position in a bank and views her job as prestigious. Her husband Robert was 45 years of age and has also progressed in his employment as a design engineer. Both sets of grandparents are dead. Beth had her first (unplanned) baby at 39 years of age (Sean). Sean was delivered by emergency caesarean section due to abnormalities in the foetal heartbeat. The suspected congenital heart defect was confirmed at birth and he died four days later. This aspect of the background to the pregnancy is somewhat atypical.

Beth was planning to become pregnant again and agreed to keep a diary during this period and any subsequent pregnancy. She entitled the early entries in her diary as "Recollections of a Precious Pregnancy"

In January, 1996, Beth commented.

"I'm 40, I'm looking at the photo Robert took on my birthday, I thought I was coping well, but the eyes say it all - empty! I think of Sean and miss him. Never mind, things could be worse - you could be pregnant! PREGNANT, I need to be pregnant, I need to put things right, I can't bear Robert's sadness which only compounds my own".

Beth decided that a holiday might be a good way of coping with the loss of her baby. In February 1996 she set off with her husband and a party of ten others for a skiing holiday. It did not work out well, and she returned to focus on becoming pregnant again. She wrote.

"I cry for Sean, for me, for Robert, at cards received and phone calls received - it helps. Robert is hurt and confused - he didn't realise, he is very scared, he has lost Sean, will he lose me? I am the strong one, I always cope he tells Mary, he will make sure I get plenty of hugs - Mary says she thinks I will need more".

Beth began to focus more and more on how to get pregnant, and this seemed the only

way of putting things right. She was very concerned about her chances of conceiving at 40, and began to cope by seeking more information and medical knowledge generally. She wrote.

"I am reading a lot, anything really, I have started checking medical books, I'm 40, chances of getting pregnant become less as your body starts to age. I'm still off work, but feeling better, plenty of hugs and cuddles. Sex when I stop talking about babies is wonderful".

Later Beth records that she has started to monitor her reproductive cycle, but she soon realises this is unhelpful. In fact, it appeared to make her even more anxious.

"I've been tracking my monthly cycle something I've never done before. Mother Nature is being very cruel, 29 days, 31 days - 33 days! Bought a Home Pregnancy Kit - NOT PREGNANT! Failed! Perhaps I am starting the Menopause. God, get a grip woman, what's happening to you?"

At the end of April Beth became pregnant. The news was not well received by Robert, which Beth attributed to the stress of the previous year. However, she also became aware of the risks involved in being pregnant at 40, especially given her previous experience.

"I'm pregnant. I tell Robert, I'm so excited, I don't care that he has had a shit day, he is tired from the strain of it all, my news is not well received at that moment, it takes him a nights sleep to become jubilant! The next day he arrives home with flowers and a smiling face and a very big I'm sorry. I understand, I always understand, I seem to have this ability always to see both points of view. **** other people Mary says sometimes as we chat - why must you always think of others first, what about you? What about me? I'm 40 and I'm PREGNANT."

By May, Beth was coping well although she continued to grieve for her first baby. Beth attended a group for parents who have experienced infant death and found support

there.

"They all know having been there, the coming months will be a mixture of joy and sadness I am told."

By now she had returned to work and enjoyed it. She found support from her work, but wondered whether they truly understand. She also found the parallel feelings of grief and joy easier to integrate.

"Now I'm pregnant again, I smile a lot - most people don't know that I am pregnant and think I am just back to my old self again, feeling better. They want me well and I appreciate their thoughts in a way its easier to cope. No one finds death easy and when a child dies; it is more preferable not to talk about it and just get on. We are all getting on, but I do feel stronger. I also have this life inside me, renewing me, I am alive and I am glad, Beth girl you are making a comeback!"

Beth and Robert decided not to have their ante natal care and delivery at their local hospital, because of the painful associations with Sean. They were referred to a nearby hospital and were pleased to establish a good rapport with their new Consultant and nursing staff. Beth and Robert had already decided to have no special tests. They believed that babies do not come with guarantees.

"He is young for a consultant and very direct. Good, we can deal with that. He covers our background and speaks tenderly of Sean. We are offered various tests. He covers the risks of being a 40-year-old mother and so forth. I decline the offer of the tests, having first made eye contact with Robert. He smiles, he has accepted my arguments, we are pregnant, and what will be will be. Babies don't arrive with a Guarantee Label. We said this together as we said Goodbye to Sean. No label saying this baby is guaranteed for your lifetime. Mr E is very supportive and congratulates our decision, he tells me I have a 60% chance of a normal delivery. I say 'not good enough' and so an appointment is made for an Elective Section at 38 weeks."

Beth and Robert were happy to have ultrasound scans to monitor the development of the foetus. After one very important scan, which confirmed that all was well, Beth realised how much she wanted the baby. She was frustrated by the time she had to wait, but decided to cope by knitting. The baby became a reality for Beth, and she appeared to have become firmly attached to her foetus.

"Step one over, we smile, I get dressed and we go. I want this baby and I want it now. I decide to knit, I didn't knit for Sean, but I knit for this baby, it stops me from thinking too much. We don't talk about things going wrong, but after today's visit to the specialist hospital and the okay received on baby's heart, Robert says whatever happens he knows we are going to have this baby. Termination had been covered, if things had gone badly today - but they hadn't and now all thoughts of it can be ditched forever. Our baby is 19 weeks old today. I lay awake at night feeling the baby moving and relish the little kicks, we think it's a girl this time - I'm eating more sweet things and currently have this passion for custard".

However, in July 1996 there was a scare when during a routine visit to the GP, he could not find a heartbeat.

"They suggest a scan - in view of Sean, just a precaution. I phone Robert and ask him to come and get me. I try to keep my voice steady, its routine I say, I put the phone down and cry. They leave me and I wonder - not again! How will I cope this time? I can't go through the pain again".

An emergency scan was arranged. After going to a nearby hospital to save time, no-one seemed to know about their appointment, and they had to go back to the usual hospital. During this roundabout journey, Beth seemed somewhat unrealistically optimistic.

"An hour wasted! But even as we drive, we are calming down. We are sure everything is okay and .....will confirm this. Silence, stomachs churning, hands held, prayers said. Baby alive .... Baby is fine, cups of tea and sympathy this additional stress is not required...We wait, we remember Sean, we are tired but we are happy this baby is alive."

Possibly, Beth was denying the possibility of the baby's death. This is understandable given the loss of Sean, and may even be considered appropriate under the circumstances. In the event, the scan revealed that the baby's heartbeat was normal.

By August 1996 Beth had taken maternity leave. She contemplated the situation viz-a-viz her employment.

"I'm taking 40 weeks leave, but I have no intention of going back on a full-time basis. I have managed the R account for the past five years. BG, my chief, has asked me to consider part-time. I really can't think that far ahead, but I must admit it is a compliment as this is an unprecedented move on their part."

In September 1996 Beth began to consider her age, as the danger of losing the baby began to fade. At aqua-natal classes, she could not help but compare herself to the other women.

"I try not to stare, but I find myself comparing bumps. The age thing raises its ugly head. I could be one of the mum's mothers myself! Please let there be someone nearer my age. Well there was this week, the Midwife taking the class! Still I say hang loose girl, I enjoy myself, laughter crossing all age barriers. Had my hair cut and its a mess, will need a perm. Perm uck! Funny how some words even sound old. Having an OLD day."

Yet the issue seemed to go deeper than mere appearance. Beth began to contemplate the long-term future, even her own death.

"Robert tells me later that this age thing is all in my mind! M, M's first son had been asking his grandmothers if they were old. It strikes me that my daughter will not be able to ask these questions, both sets of our parents are now gone....C........ lost her mum when she was 16 years of age and understands all too well bringing up a child without the benefit of one's mother being on hand.... L....... was taken care of by her grandmother, when she was 4 years of age, after her mum died."

It is fitting to include some of Beth's words about Sean. Although this is a feature of her pregnancy which is somewhat unusual, and perinatal loss is a rare event. This short passage contains some of the feelings brought about by such a loss.

"The 20th of October. A Remembrance service for all the children who have died at the special hospital. We attend our second service. We thought it would be easier this year, and it was to a degree, but the pain is still raw. We are asked to remember our children not in death but in the life that was theirs and was shared with us for however long. These words bring comfort. All life should be celebrated and not mourned.

I am closing this diary now, as I am now at peace with myself. Any thoughts from now on, I want to keep to myself."

Beth and Robert's baby, Emma (pseudonym), was duly born on the 21st November, 1996, by elective caesarean and weighing a healthy 7lbs 11ozs. There were no problems.

10.5 Possible implications for older women's pregnancies

This case illustrates the special issues of pregnancy for the older woman. Beth was concerned about her own ability to bear the child in the first place, but she was also unsure of her ability to be a mother 'at her age'. She was acutely aware that her own parents would not be around to help as Emma grew up.

There were also issues of loss of employment and the associated loss of prestige. Oakley (1993) has argued that motherhood holds no inherent value in society and is not respected. Indeed the 'single mother' is often vilified. Although financially secure, Beth was considering part-time work and contemplated the many years' service she had given the company.

Unlike the adolescent pregnancy, Beth demonstrated little anxiety about her partner. He is shown in her writings to be physically available and generally emotionally

supportive, and he is unlikely to leave her to care for Emma alone.

The following sections describe HADS and STAI results. Beth's SPQ scores (taken at 30 weeks gestation to avoid problems of delayed attachment in older mothers, as suggested by Berryman & Windridge, 1996) were as follows. Maternal = 22, Partner = 28, Parent = 27 and General = 27. In all four domains and as a whole, Beth would be identified as 'at-risk'. Beth's ante natal STAI and HADS scores, also taken at 30 weeks gestation, were not clinically significant. These scores were as follows. STAI scores were - State = 21 and Trait = 25, and HADS scores were - Depression = 2, Anxiety = 4.

Beth's postnatal scores (taken at the six week postnatal period) were as follows. STAI - State = 32, STAI - Trait = 25, HADS Depression = 2, HADS Anxiety = 7. These scores clearly demonstrate an increase in anxiety scores from pregnancy to postnatally. Possible difficulties were flagged as a consequence of Beth's SPQ scores. The reason for these results may be complex but are likely to have some relevance to grief for Sean (her first child) which may have reemerged once Emma was safely delivered.

In terms of coping strategies, the scare following the GP appointment seemed to trigger a kind of 'denial' that there was anything to worry about. Indeed, mothers have very little awareness of the physical health of the fetus in cases of intrauterine death, other than the child stops 'kicking' (Nijhuis, Prechtl, Martin and Bots, 1982). Yet Beth seemed to believe that *she knew* everything was fine. This may be interpreted as denial, a coping strategy often seen in pregnancy (Raphael-Leff, 1991). This may or may not be related to the death of Sean.

Beth was also keen to read widely about becoming a mother at her age, and this indicates a coping strategy which might be called 'knowledge-seeking'. This is useful, because it provides a sense of self-efficacy and the feeling that one can make an informed choice if required to do so.

10.6   Conclusions

This chapter has provided qualitative information about the special features of perceived support needs in two pregnant women. It is also hoped that this chapter illustrates the *experience* of a pregnant woman, and is a fitting final study for this thesis.

Key quantitative findings shown in previous chapters were seen in these cases. In the case of the younger woman, partner support was shown to be central. It was apparent that the partner can be an alternative source of support, but if this support is not present, they can become a source of stress. Also, if the issue of partner support has been resolved, then the adolescent mother may begin to contemplate support available from the parents.

Similarly, the older woman was concerned about the effects of her age on the physical health of the baby, and her ability to care for the child in the long term. She was also contemplative regarding her employment, but this was less important than the health of the baby. Nevertheless, there appear to be special concerns for the older mother. This supports the findings in previous chapters and those of Berryman and Windridge (1993).

As with all case studies, there are those features which are atypical. Sonja was attending a counsellor which is not usually sought for pregnancy-related concerns alone. Despite opposition from medical professionals, she was able to insist on a caesarean section. Later, she said that she could not have done this without the counselling. Beth had suffered a bereavement with Sean, and this was the most atypical feature of her case. She was clearly revisiting this issue throughout her pregnancy with Emma.

Nevertheless, these cases provide evidence of coping strategies which do not easily lend themselves to quantitative analysis. In particular, there was evidence of denial and ambivalence towards the pregnancies, and in Beth's case there was knowledge-seeking. These coping strategies were described in chapter 2. There was less evidence of behaviour which might be called 'conforming to the female stereotype', except in that

Beth was concerned about her body shape and the effects on her body of being an 'old' mother. One might consider this evidence of the effects of media images of the pregnant woman (Oakley, 1993).

Both of these women survived their pregnancies, but both experienced a considerable amount of stress. Both were concerned about their perceived support, but perhaps from different sources. Despite wide variations in age and life experience, both cases show that pregnancy tends to be a time of psychological change, and some physical danger. The process may have been difficult but the ultimate outcome was satisfactory.

Chapter 11

General Discussion

11.1 Summary of findings

In the literature reviews, we found evidence that pregnancy is a life event with its own particular nature and risks. Two types of approach to psychological factors in pregnancy were identified (intrapsychic and psychosocial), and it was argued that there is no necessary opposition between these two explanations. A further personal construct approach offers a comprehensive psychology of pregnancy, following Kelly (1955) and Smith (1995). The second literature review found that pregnancy-related stress does not follow similar pathways in humans and non-humans (infrahuman studies), presumably because humans appraise stress differentially. A crucial difference is that humans use particular kinds of coping strategies to reduce feelings of stress, and so some account needs to be taken of this in empirical work. In spite of these confounds, some research suggests that infant birthweight and postpartum depression can be affected by poor social support (actual or perceived). Perceived support thus became an important psychological construct to study. The design of the Support in Pregnancy Questionnaire (SPQ) was therefore undertaken.

In the first two studies (Chapter 3), it was found that the SPQ may flag women at-risk of low birthweight and higher number of complications. Women who were categorised as having 'poor perceived support' had infants with lower birthweight and more complications. However, there were problems with the complications measure (discussed more fully in Chapter 3). Because of the lack of an agreed ratings system for obstetric complications, or even agreement between pregnant women and others (Clement et al., 1999) the inclusion of certain complications as important were limited. The complications included (see Appendix 3.3) were those suggested and agreed upon by four consultants in the geographical area in which the early and later studies were conducted. Therefore, the generalizability of the results in all of these studies, regarding obstetric complications, is limited. Until a standardised and well validated (for

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professionals, researchers and pregnant women themselves, cf. Clement et al., 1999) is developed, these issues will remain a problem for many studies in this area.

In the later large-scale study again the weighting system for obstetric complications was abandoned after due consideration of this problem. In the large-scale study only the total number of complications for each woman (regardless of type) were used in analyses. The reader is reminded that analysis using the data from studies 1 and 2 could not be performed in this way due to lack of power (low number of actual complications occurring in each condition).

However, this solution has its own problems (complications are not a unitary concept). In more detail, there was a lack of differentiation for procedures involved or for reasons for certain procedures within the list of ten complications. For example, with regards to the 'Caesarean' section complication, this was not differentiated for elective versus emergency. Clearly, there are differences in how an elective or an emergency Caesarean will be perceived by both professionals and women themselves, as well as the reasons and surrounding context for one versus the other. Another example is that of the complication 'Forceps' delivery, which was not clearly differentiated for traditional Forceps versus Ventouse delivery. The former is known to cause more tissue damage in women (Clement et al., 1999) and is, therefore, more likely to incur real physical and psychological distress for the woman (Clements et al., 1999).

Results from the early studies also demonstrated that the negative effects on birthweight and complications found in studies 1 and 2 were not observed in a group with high SPQ scores, but who received a non-directive counselling intervention. This is important, because it suggests that psychological factors are influential to pregnancy outcome (at least in part). This work has been published (McWilliams, 1994a). A further finding was that depression and anxiety were reduced by counselling. These studies constitute support for Oakley et al. (1988) and extend their findings. However, these findings are based on a very small sample size, which limits the generalizability of the results. These findings would need to be replicated using a much larger sample. However, these early studies did provide some 'face' and some limited 'concurrent'

(via the HADS and STAI scores) validity for the SPQ.

It was decided that the SPQ, having some 'face' and limited 'concurrent' validity now required large-scale validation or 'construct' validity (Chapter 4). The Principal Components Analysis (n=501) carried out to achieve this aim suggested four discrete factors which corresponded to the four hypothesised domains of support: General, Partner, Parent and Maternal support. This finding seems especially robust because Varimax rotation, which is a highly 'constrained' statistical procedure, rarely results in this many sizable factors with data from the social sciences (Dunteman, 1989), and assumes that the factors have a small shared variance when calculating vectors. Split-half reliability was estimated at 0.83, which is encouraging if the SPQ is to be used as a clinical and future research tool.

It is normal for clinical research to use a power ratio of around 5:1. The statistical power in these analyses was, however, superior to this and used the more conservative ratio of 10 - 20 per variable (or per question within the SPQ) to provide good statistical power. In this study the power ratio achieved was 17:1.

Care was required in analysing the follow-up sample (n=264). With the SPQ individual support domains now constituting 4 variables, these 4 variables and overall SPQ scores (the fifth variable) were used in comparison with some other 10-15 variables. With a reduced sample size for some analyses of only n=264, power was correspondingly reduced. However, even with these reductions the power ratio for all analyses at a satisfactory level. The lowest power ratio being 8:1.

Comparison of responders to follow-up and non-responders was also a potential problem. Careful analyses revealed no great difference on the main questionnaire, which allows limited confidence that the responders were representative of the pregnant population (Chapter 5). There does appear to be one anomalous question (Q25), but this question did not affect the overall domain scores, and provided a satisfactory loading within it's own support domain (partner domain). Further, this question provided some discriminatory power in relation to support in younger women. For all

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these reasons, its was decided that Q.25 should remain within the SPQ.

Initial results indicated that there was no direct correlation between the questionnaire scores and outcomes (birthweight and complications), accepting the earlier criticisms in relation to the obstetric complication measure. Missing data was found to indicate the lack of a supportive partner, and higher scores on the questionnaire (Chapter 6). This is consistent with Oakley's (1993) view that a lack of supportive partners radically reduces a woman's feeling of support, and that this is increasingly a feature of pregnant samples. These results also support Reading's (1983) view that pathways from support to outcome are unlikely to be direct.

It is worth noting here that there were problems with the birthweight measure. In particular, gender was not controlled for in the large scale study and gender is known to influence birthweight, thus it's absence in the large scale study is potentially confounding (cf. Kleiverda et al., 1997). The reason gender was not measured in the large scale study was that in studies 1 and 2 no influence of gender on birthweight outcome was found. On reflection, a lack of such a finding was probably due to the small sample size in these studies, which would have potentially have been overcome in the large scale study. Another important and potentially confounding variable not measured here was parental size, which again can strongly influence infant birthweight. The reader is reminded here that it was estimated (based on the data from the early studies) that 1% of the population were from non-white ethnic groups (mainly Asian), corresponding to local population expectations. Gestation, parity and prematurity were measured here and controlled for in relation to the birthweight outcome measure. However, measures on the SPQ were not confined to the mid-trimester (as they were in the early studies). We cannot be sure, therefore, that some of the variance in relation to infant birthweight may have been due to variables not measured here.

The SPQ was shown to relate strongly to self-reported ratings of smoking and especially self-reported alcohol consumption (Chapter 7), which have traditionally been associated with poor outcome in pregnancy (Abel, 1984; 1985). On the basis of this finding, it was hypothesised that there was an indirect relationship between the

questionnaire scores and outcome, obscured by coping strategies. Again, this is consistent with the failure of previous research to successfully apply infrahuman models of stress in pregnancy to humans (Istvan, 1985).

Having established that self-rated smoking was related to both outcome variables (Chapter 8), the final quantitative chapter (Chapter 9) entered the questionnaire scores, self-rated smoking, and age as predictors of outcome variables. Age had to be included because of the extensive literature that age affects pregnancy outcome. Tabachnick and Fidell (1996) suggest that with multiple regressions including seven predictors, the sample size should be at least n=106 (n=263), and the residuals should be normally distributed, which was the case here. After stepwise deletions, it was found that 'partner support' significantly predicted a complications variable (number of complications only) which was transformed to achieve normality. Although one must be careful when interpreting transformed data, this finding is preliminary evidence that partner support predicts some variance in complication rates.

Furthermore, there was a straightforward correlation between 'maternal support' (attitude towards the pregnancy, or self-support) and birthweight in those women who were without a partner, i.e,. those women who were alone in the pregnancy and who still had a positive attitude towards the baby had higher birthweight babies. Although this finding is based on a small sub-sample (n=29), it may indicate that in the absence of any other visible social support, self-support (e.g., high self esteem, high self-efficacy) can protect against poor outcome. This finding supports those of others (e.g., Molfese et al., 1987; Vance, 1985). Of course being without a partner may be less stressful, in some circumstances, than being with a partner who is perceived as unsupportive.

In the qualitative chapter (Chapter 10) evidence highlighted that partner support was indeed important to the young woman, and that issues of age and the loss of employment were important to the older woman. Although these women showed some features atypical of their age-groups, their words provided further evidence of coping strategies which the pregnant woman might use, but which are difficult to measure by

quantitative methods alone; e.g., denial, ambivalence, and knowledge-seeking. 'Stereotypical female behaviour' did not seem apparent, but this may have been due to the breadth of the term. This coping strategy has been more extensively examined in terms of adolescent pregnancy (McWilliams, 1994b) and found to be evident there. It may, therefore, be more specific to this younger age group.

11.2 Limitations of the research

Limitations to the research have been commented upon above and were identified within the research itself via the independent examination of data obtained from the 'Feedback Questionnaire'. This examination highlighted that the majority of respondents found the SPQ interesting, whilst others did not and commented that the SPQ was repetitive, which may have influenced their responses. However, similar statements were necessary in order to control for errors of interpretation and understanding.

The fact that no 'not applicable' category was given within the SPQ was a further potential problem. However, as discussed in Chapter 9, the fact that data may be missing because of this absent category was more likely to reduce the power of any observed relationships rather than increase them. In this sense the results are likely to be conservative in terms of the relationship between the SPQ and other measures. Nevertheless, the inclusion of a 'not applicable' category on future versions of the SPQ may be worthy of consideration. The fact that there was no 'not applicable' category for questions which asked about marital and partner status is also a problem. Some women may not have responded to these questions because they did not see the questions as relevant to their circumstances. It is recommended here that such a category on future versions of the SPQ should be included to account for this possibility.

There were significant problems with the self-rated smoking and drinking measures, discussed in more detail in Chapter 7. These measures were taken retrospectively via womens' self reported ratings of their smoking and drinking during their pregnancy. The subjective nature of these measures is problematic and estimates of frequency could have achieved a more appropriate compromise (i.e., number of cigarettes smoked per

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day and average number of units of alcohol consumed per week). The design would have been significantly improved if these measures had been taken during pregnancy, at regular intervals. Future research using the SPQ to examine perceived support and these known negative behaviours should ensure this methodological problem is rectified.

Further, the reliance of self-reports for smoking and drinking could result in serious underestimates of reported rates for various reasons (i.e., because they had actually experienced some negative outcome). However, because the women in this study were not being interviewed in person and the information they gave was confidential and retrospective (i.e., would not influence their medical treatment during pregnancy and no medical professionals would have access to this information) there was no pressure on the women to be untruthful in their estimates of smoking or alcohol consumption. Nevertheless, it remains possible that women who smoked or consumed alcohol during pregnancy and then experienced complications (during pregnancy, at the birth, or neonatally) may have given a more positive view of their cigarette and alcohol intake retrospectively.

The fact that the SPQ was found by the majority of respondents to be easy to complete was positive, as all questionnaires should be easy to complete. However, completion was undertaken within an ante natal waiting area, which may have influenced responses. The fact that the researcher met women on a one-to-one basis undoubtedly influenced the very high rate of compliance to participation in the study (only 8 refusals out of over 510 women approached). Lack of personal follow-up or telephone reminders also influenced the rate of postal questionnaire return (only 54%). However, the SPQ was designed as a screening tool. It was also designed to be potentially used in a more clinical and 'one-to-one' interaction, following screening, to explore answers more fully with individual women.

Furthermore, it would be very useful for future research to gain some measure of the average fluctuation of responses on the SPQ across the pregnancy (although analyses here did not demonstrate any significant differences on SPQ response patterns dependent upon gestational period, this need not be the case for individual women,

McWilliams, 1994b). This could be achieved by asking a large sample of women to complete the SPQ over several time periods during pregnancy. To some very limited extent this was achieved in the single case study within the research. In this single case study Sonja demonstrated that external events strongly influenced her perceptions of support and thus her responses on the SPQ. Thus, the SPQ appears capable of doing the job it purports to do (i.e., measuring perceived support which is strongly linked to actual received support). However, the SPQ is only a 'snapshot' in time and, as with any self-report measure, resultant data should be viewed with these limitations in mind.

Apart from the above, there were a number of other limitations to the research, which are apparent with hindsight. These shall now be examined in turn.

11.2.1 Postpartum depression

In the studies presented in Chapter 3, relative freedom from postpartum depression on the Hospital Anxiety and Depression Scale (HADS) was found (1) where SPQ scores were low and (2) where SPQ scores were high but where non-directive counselling was provided. Depression on the HADS was found to be higher when high SPQ scores were recorded and counselling was not provided. This finding is consistent with the findings of Oakley at al. (1988) who found that 'listening' by midwives could improve mother's perceptions of social support, but the effects of counselling and psychotherapy on rates of postpartum depression have only been evaluated in terms of clinical experience (e.g., Raphael-Leff, 1991; Smith, 1995). However, the small number of participants in study 2 limit the generalizability of these results and large scale replication of this study is required.

It is unfortunate that in the research no account of postpartum depression was taken during the later larger-scale study. Inclusion of depression measures would have required pregnant women to complete more questionnaires. It was thought that as the main focus for the large scale study was validation of the SPQ and gaining the required power ration to SPQ within a limited time period, any element which slowed this process down or reduced the number of potential participants was to be avoided.

Therefore, there was some trade-off of depression information for statistical power. It was also not considered appropriate to enclose a standardised depression measure with the follow-up questionnaire without a skilled interviewer present to manage any potential distress. It is conceivable that a tailor-made depression measure, perhaps such as the Edinburgh Postnatal Depression Scale, might be used in a future study, as this scale has since been administered successfully to a number of women both ante and postnatally. Alternatively, the Hospital Anxiety Depression Scale (HADS) could again be used. The advantage of this scale being that it also measures anxiety.

11.2.2 Effects on birthweight

The effects on birthweight which were reported in Chapter 3 were not replicated in the large-scale study. There are a number of reasons why this may have been the case. In the first instance, the questionnaire was modified somewhat for psychometric properties, including the development of equal numbers of questions for each domain of support.

Second, the samples in the first studies were not the same as the sample in the large scale study. The smaller samples were recruited in both hospital and General Practitioner (GP) clinics, whereas the large sample was purely hospital-based, mainly for ease of data collection. Possibly, those who attend hospital ante natal clinics are less likely to have difficulties, either psychological or physical, than those who attend GP clinics. Alternatively, it could be that the GP sample was anomalous in some way. It was noted that when asked informally, most mothers at GP clinics said they did not attend hospital clinics. Furthermore, it was possible to gain information on all of the women in the smaller samples, but a large number of women did not respond to the follow-up questionnaire in the large-scale component (46% and accepting the normal response rates of a sample with a large inner city component, cf. Mason, 1989). However, we have seen that responders and non-responders were only different on a very small number of questions and on none of the domains of perceived support. This does not mean that other factors, which were not measured here, could account for their non-response, or that outcome measures were definitely not influenced by this lack of

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data.

11.2.3 Non-responders

Despite having failed to find strong evidence that non-responders to follow-up had different profiles to responders on the SPQ, it was not possible to gain medical information on the birthweight and complications of these women. This information would have greatly strengthened the findings, but unfortunately it was not possible to gain medical support to access the data. Therefore, there remains the possibility that the non-responders differed from the responders in SES, demographic variables or outcome. A future study with increased medical support might overcome this problem and attempt to replicate the findings reported in this thesis. Further, as part of ethical approval, the researcher was not allowed to use common techniques for improving response rates (e.g., written or telephone reminders). It may be that nonresponders needed more encouragement and help in completing follow-up postal questionnaires.

11.2.4 The nature of obstetric complications

It might be argued that the complications variable was constructed from several medical conditions, which are extremely varied, and that this constitutes an unacceptable reductionism. However, Vance (1985) has argued that it is both necessary and statistically sound to combine complications into a single variable. Vance suggests that many studies have looked at particular types of complication, and can therefore miss small-to-medium-sized statistical effects where stress factors place the person at-risk for several types of complication. It is reasonable to suggest that several types of complication result from a unified stress response in human pregnancy. Nevertheless, some complications will be a result of such factors as height and so forth and some women will chose to have an obstetric complication. For example, an Elective Caesarean in order to minimise other possible complications (as was the case with Sonja and Beth).

The retrospective nature of collecting the obstetric complication measure is also a

potentially confounding factor here. However, there is a sufficient body of evidence demonstrating that women have good recall of events related to pregnancy interventions including birth details (e.g., Martin, 1987). This was also found here in the early studies.

The concentration in the literature on either maternal health (e.g., pre-eclampsia toxemia) or infant health (e.g., birthweight alone and/or premature delivery) in relation to obstetric complications results in a diverse literature with little common agreement. No definitive or reliable weighting/ranking system for important obstetric complications was available, even regarding women's own views of what constituted important complications (Clement et al., 1999), at the time this research was conducted (or to date) a compromise was reached. Different obstetric attitudes of professionals may also influence pregnancy outcome (Kleiverda et al., 1997) , including the four obstetricians who significantly contributed to the ten major obstetric complications measured here (see Appendix 3.3). The compromise made here resulted in a somewhat arbitrary and unitary construct of obstetric complications. Until a British standard for the measurement of obstetric complications, which hopefully integrates womens' perceptions of what is important (Clements et al., 1999) research in this area will remain imperfect.

Nevertheless, it was encouraging that the logarithmic transformation of the resultant complication variable resulted in a normal distribution, and that the residuals generated by the regressions were also normally distributed. Whilst this is more a point of reliability rather than validity, it is consistent with validity. Nevertheless, it is important to remember that data on both obstetric complications, and alcohol and cigarette consumption during pregnancy, was obtained from women retrospectively and self-rated. The possibility of demand characteristics influencing respondents retrospective reports cannot be ruled out here.

11.2.5 The need for very large samples

In the study by Oakley et al. (1988) several hundred women were recruited to take part.

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In spite of this, the mean difference between the treatment group and the controls on infant birthweight was small, 50 grams. This implies that effects of psychological factors on pregnancy are relatively small and require very large samples to detect. The significant effect found by the regression analysis in Chapter 9 has to be viewed in the context of a small multiple r. Having said this, dietary interventions are responsible for similar levels of birthweight change (Oakley, 1993; Oakley et al., 1988). This makes the point that the outcome data on the non-responders to the follow-up questionnaire would have been very valuable. It is possible that other small effects exist in the population, but these have yet to be detected. Increased sample size in future research using the SPQ would be potentially very useful in elucidating such effects.

11.2.6 Effects of alcohol in pregnancy

Alcohol can affect pregnancy, though the amount of alcohol consumed has to be at a high level before its effect on outcome measures such as birthweight and infant well-being can be observed (Abel, 1985; Streissguth et al., 1990). Alcohol consumption may also interact with perceived support and stress, as results here suggest. Alcohol ratings here did not seem to affect the outcome variables presented in the large-scale study. The known effects of heavy drinking on outcome include intrauterine growth retardation (IUGR), malformations of the face characteristic of Foetal Alcohol Syndrome (FAS), and CNS impairment, e.g., relatively low IQ (Abel, 1985). None of these are represented by the outcome variables which were used in the studies reported here. There may be a slight decrease in birthweight but this is only detected with extremely large samples (Rosett, 1980). Further, self-rated alcohol consumption was not specifically related to particular gestational points (e.g., between the twelfth to eighteenth and the twenty-fourth to thirty-sixth week, the most vulnerable periods of development). Further, the self-rated alcohol measure , as with the smoking measure had several methodological flaws, these will be explored in more detail.

Like the Condon and Hilton (1988) study, which assessed both smoking and alcohol consumption during pregnancy via self-report questionnaire, this study also used a self-report measure of smoking and alcohol consumption. The tendency to underreport such

behaviours, even in the absence of the additional stigma that is generated by pregnancy, is substantial in studies of this type (Condon and Hilton, 1988). However, Condon and Hilton suggest that even if a face-to-face interview (which may have improved accuracy, English and Eskenazi, 1992) setting was used it remains unproved that such a procedure would be superior in gaining accuracy. However, in a critique of methodological issues in substance use during pregnancy Day et al. (1985) point out that frequency and quantity are important elements to be measured. These elements were not precisely measured in this or the Condon and Hilton study. Whilst collecting the data retrospectively may also have allowed women to be more open about their smoking and alcohol behaviours (cf. Day et al., 1985) the criticism regarding recall errors can not be dismissed. Fortunately, because women in this study were not asked information regarding their substance use in conjunction with their medical treatment, there was no reason for them to deliberately distort these estimates (Appleton and Pharoah, 1998).

Many other studies have used self-report and / or likert scale methods of measuring smoking and drinking during pregnancy for largely pragmatic reasons (e.g., Condon and Hilton, 1988; Peterson, et al., 1992; Appleton and Pharoah, 19980.

In this present study, the main focus was to develop and validate a questionnaire to measure perceived support during pregnancy, and then to relate this measure to coping strategies and outcome. Two important variables in relation to pregnancy and outcome are that of smoking and alcohol consumption. Measurement of these variables was important. For pragmatic reasons a much simpler and retrospective methodology was used than would have been desired had the original focus of the research been different and had more time and resources been available. The imperfections of the smoking and alcohol consumption measures used in this study and the criticisms outlined above limit the generalizability of the findings.

With hindsight it is unsurprising that self-rated alcohol consumption did not affect the outcome variables, although it did correlate with all domains of support on the SPQ. Self-rated alcohol consumption may be a coping mechanism for pregnancy-related

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stress on the basis of these results. However, as discussed earlier, it may also be simply a feature of well established behavioural patterns for some groups of pregnant women. Further, as Heller, et al. (1988) discovered, a higher proportion of drinkers than non-drinkers were married, better educated, of higher social class and financial status. The fact that such women have access to a healthier environment which may or may not mask the full effects of alcohol consumption at lower rates. Future studies could include outcome variables which are known to be relevant to alcohol intake during pregnancy, e.g., IUGR, rates of FAS, and possibly follow-up studies of intellectual progress (Burgess and Streissguth, 1991). These measures could be analysed for interactions (given a satisfactory sample size) with known demographic and SES variables to examine more complex interactions. Further, the possible masking effect of such variables on outcome and pathways from support / stress to outcome could be more extensively examined.

11.3   Implications of the research

Notwithstanding the shortcomings indicated here, there are a number of implications apparent from the findings reported. It is possible to divide these into immediate clinical implications, and implications for theories of the effects of psychological factors in pregnancy.

11.3.1 Immediate clinical implications

The findings suggest that support for women with poor partner support is a priority. Oakley (1993) claims that the number of women who face pregnancy in the absence of a supportive partner is increasing. Since it was found in Chapter 3 that counselling coincides with better infant outcome and reduced anxiety and depression, then these interventions are indicated as ways of reducing the chances of difficulties. It is acknowledged here that the findings in the earlier studies need to be viewed some caution because of the small sample sizes involved. Complications can in most cases be resolved with medical intervention, but are costly for an increasingly thrifty health service.

In the large-scale study, the domain which predicted some of the variance in complications was partner support. It was also found that when there was no partner, maternal support was correlated with infant birthweight. Therefore, rather than being entirely non-directive, perhaps counsellors should aim to improve the mother's attitude towards the pregnancy, or self-support, when partner support is poor or partners are absent. This might be achieved by aiming for improved self-efficacy or self-esteem. Such an approach was successfully taken in one such study (McWilliams, 1994b).

A number of factors were associated with high scores / negative support about partner support. Women tended to be younger, have lower SES, live in rented accommodation, have unemployed partners or no partner, and to be heavier self-rated smokers and drinkers. Clinicians should be aware of these statistical relationships, and 'target' intervention as appropriate.

Age was also correlated with maternal support scores, although maternal support was not predictive of outcome. Nevertheless, it has been suggested by some authors that older women have higher rates of complications (e.g., Stott and Latchford, 1976; McDonald, 1968), though these rates have been more recently challenged (Berryman et al., 1995). The women who scored highly on maternal support also tended to drink more, leave education later, to have higher SES, and longer educations. They did not self-rated smoking more, which may be important, as smoking seems to affect outcome strongly. However, as previously stated, smoking and alcohol consumption are not parallel behaviours.

Even if there is no effect on outcome in terms of infant birthweight and complications, older women with high maternal support scores may be at-risk of postpartum depression. Further study of this hypothesis is required.

It is also possible that the attitude towards the pregnancy tends to be poorer in older women because of loss of professional status and SES. Again, this view may be challenged as it may more accurately reflect the older woman's reluctance to bond too early with a foetus which may be later compromised. Evidence from the case report

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presented in Chapter 10 supports this notion. Therefore, as regards older pregnant women, it may be advisable to measure their maternal (attitude) support later in the pregnancy.

All of the categorical SES factors predicted maternal support scores. However, other factors such as partner unemployment, parity, type of accommodation and even the presence of a partner did not affect maternal support. Therefore, it seems that self-support is more important to these women than those with high partner support. This is also consistent with Oakley (1993) who suggests that financial independence is supportive in itself.

Following Abel (1985), there would appear to be evidence from the literature that people who smoke and drink in small amounts should not necessarily be encouraged to stop altogether. The current findings suggest that those who self-report they smoke and drink a little do not perceive their level of support to be any worse than those who self-report that they do not smoke or drink. However, those who self-report that they drink a lot consider the support available from parents to be poor, and those who self-report that they smoke a lot have high general and partner domain scores. These findings appear to support the recommendations made by Abel (1985). On the other hand, those who self-report smoking and drinking excessively are more likely to have problems.

11.3.2 Implications for theories of psychological factors in pregnancy

Following Smith (1995), Oakley (1993), Stein (1967) and Pugh and De'Ath (1984), the present study set out to examine both the effects of actual circumstances, such as SES and partner unemployment, but also the perception of support resulting from these circumstances. Clearly, social factors are important, and are related to the SPQ. For example, partner unemployment was associated with higher general, partner, parent and overall domain scores on the questionnaire. However, SES and demographic factors were generally not related to the outcome variables.

It appears that the effects of these variables occur through *perceptions of perceived*

support. The pathway to outcome is not complete, however, until we also take account of coping strategies, such as self-rated smoking. Nevertheless, the presence of a partner seems to have a strong effect on a woman's support network, and if as Oakley (1993) suggests this is changing, then a greater number of problematic pregnancies can be expected. Oakley (1993) is correct to address the issue of 'lonely pregnancies', identifying the need for effective interventions such as active listening or counselling. It can be concluded that social factors have a role in understanding why certain pregnancies are problematic. A partner who is perceived as unsupportive may be just as problematic as no partner at all. We have evidence from our case example of Sonja that even when a partner is present they may not be perceived as supportive and this perception may be linked to actual behaviour. Also that once a woman decides she has no partner, as was the case with Sonja, she is unlikely to answer the partner support domain questions. In either case we have some evidence to suggest that because of a lack of partner support a woman may be 'at risk'.

It is important, however, to acknowledge here that parental size or sex of the baby were not measured in this study, though gestation and parity were. These factors are well known to influence eventual infant birthweight. The fact that some of these factors were not measured here has implications for the results presented subsequent interpretation of these results.

Of the demographic variables, the only clear relationship with outcome was due to parity. This is consistent with previous research (Streissgarth et al., 1987). However, the number of previous pregnancies does not seem to interact with perceived support in predicting outcome. This finding does remind us of the importance of physical factors in pregnancy (as discussed above), and the role of physical care. A further physical element of pregnancy is the influence of genetic factors, e.g., in increasing the likelihood of complications. In the future, it will be important to include both psychological factors and physical factors in a model of pregnancy outcome which could also include measures of anxiety and depression, including post-natal depression, infant birthweight and complications as outcome variables.

With regard to the intrapsychic approach to pregnancy, it does appear that some women have negative attitudes to the pregnancy (high maternal support scores), which is consistent with the views of Raphael-Leff (1991). Although the findings do not constitute direct evidence of *primary maternal persecution*, one might infer that these negative attitudes include such fears. Certainly both participants in the qualitative element of the research did not have wholly positive attitudes to their baby. Further, on an anecdotal level, one woman while filling out the SPQ, said "I feel like I'm hosting a parasite. The sooner this thing comes out of me the better". This comment would certainly fit with Raphael-Leff's *primary maternal persecution.*

It is worth stressing here that there are important elements to the psychology of pregnancy which do not lend themselves to quantitative description. Raphael-Leff (1991) attempts to describe the range of feelings women experience, but she tries to sum up her clinical sample in one phrase. The central theoretical conclusion of this thesis is that pregnancy means something different to each pregnant woman, and this is why a *personal construct psychology of pregnancy* is required (Smith, 1995). Measurement of actual support is helpful but it is the perception of the support which may influence what coping strategy a woman will choose.

Nevertheless Raphael-Leff's approach is liberating, because it implies that women should explore their feelings about their pregnancies, and admit their darker feelings to themselves if no one else. It allows a woman an opportunity not to conform to the female role stereotype and ask questions. Do I *want* this baby? Do I resent this baby because of what it will cost me in so many different ways? What does this baby *represent*? Of course, these questions may be included in a personal construct approach. Such an approach facilitates what has been termed as 'safe experimentation' (Kelly, 1955) or the important 'work of worry' described by Janis (1958; 1965) which allows the individual to manage perceived stress . In this way the individual is more likely to psychologically handle the future event (the pre-impact period is seen as an important determinant for outcome) better. The individuals ability to cope is also often seen as dependent upon their perceived ability to manage a stressor. This has been described by Cox (1986) as a 'goodness of fit'. Such a goodness of fit will be strongly

influenced by perceptions of support (Kelly, 1955). However, as we have argued here, individuals will attempt to cope with perceived unmanageable stress and/or lack of perceived support in other ways.

To revisit our coping strategies outlined in Chapter 2, we have seen that self-report ratings of substance use (alcohol and smoking) is an important element in the psychological process of pregnancy. Some 26% of the responder sample smoked while pregnant, and some 52% drank at least occasionally. These are common behaviours, and may not simply be as a result of habit (as many women give up both behaviours during pregnancy).

Other methods of coping may also be used. Denial and ambivalence towards the pregnancy are terms which we owe to psychoanalytic theory. They are difficult to measure directly, because by definition those in 'denial' will not demonstrate overt negative attitudes, and ambivalence should lead to the demonstration of non-extreme attitudes. We cannot say which members of our sample where 'in denial' or 'ambivalent' with any confidence, though high scores on the maternal support domain of the SPQ may certainly implicate ambivalence. Future studies may involve attempts to measure these elusive phenomena more precisely.

Similarly, the idea of 'conforming to the female stereotype' is not defined in terms of behaviour, and so we cannot tell which of our sample are engaged in this coping strategy. Nevertheless a significant sub sample of the women in the sample were unsupported by both partner and parents, had little in the way of employment opportunities, were younger and clearly did not intend to break out of these circumstances. Perhaps they could not. Further studies will need to define just what 'conforming to the female stereotype' is before measuring it as a coping strategy in pregnancy.

Information seeking was not measured directly, but informal observation suggested that those women with positive attitudes towards their baby were the most interested in the research and wanted to know more. It was also noted that these women tended to know

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more about pregnancy-related medicine. Of course, this is only anecdotal evidence, but it does indicate a factor which might constitute a coping strategy and could be included in a future study.

11.4   Conclusions

The central conclusion to be made is that perceptions of support may influence obstetric complications, but this effect is mediated by coping strategies. In addition, in some women who are currently without a partner they may be more at risk of lower birthweight babies. This is because such womens' attitude to their pregnancy, or self-support, is related to the birthweight of their baby. This is empirical support for the hypothesis of Oakley (1993) that social support is influential in pregnancy outcome.

However, it is also support for the clinical observations of Smith (1995) and Raphael-Leff (1991), insofar as *internal perceptions* were the important factors, rather than actual social support variables, e.g., the presence of a partner, or whether a person owns their own home. Women without partners, but who had positive attitudes to their pregnancy were not at the same risk.

Several risk factors for poor infant outcome have been found, either in the data presented or in the literature. These include smoking, alcohol, a low level of perceived support from a partner, nulliparity, and missing data on the SPQ. It was also found that those women who reported themselves as drinking the most showed poor perceived support from their parents. Perhaps alcohol (and smoking) provide a kind of support in themselves and highlight the fact that human beings will attempt to cope with stress actively.

Smith's (1995) clinical observations, using a *personal construct psychology* (cf. Kelly, 1955) of pregnancy, suggested that women perceive their support differentially. This might explain why infrahuman studies are not helpful in developing a human model of the stress response in pregnancy. Unfortunately Oakley and colleagues, who have conducted the most extensive research into the effects of social support in pregnancy,

have not examined perceived support directly.

A future study might involve both psychological and physical factors influencing pregnancy outcome further. Psychological effects may be relatively small, yet Tew (1990) observes that the last large effect on pregnancy outcome made by medicine was the advent of sterilisation. Nevertheless, it would be useful to examine the contribution of genetic abnormality to obstetric complications. Future studies are required to examine the effects of psychological interventions, such as counselling or active 'listening' as defined by Oakley et al. (1988). The role of such support is now being recognised in locally based projects around the country involving experienced women acting as contacts for younger and isolated pregnant women in their own area (The Coventry Project, currently underway). Finally, it is necessary to include post-natal depression as an outcome variable, not only as an end in itself, but also because of the negative effects on infant development which can be seen when a mother's depression is prolonged (for a review, see Field, 1990) and because earlier studies here suggested some important links between depression and SPQ scores.

The qualitative information in this thesis helped to expand the more quantitative aspects and helped identify some important clinical issues. For example, the value of getting women to speak about their experiences (cf. Small et al., 1994; Smith, 1995). Listening to those experiencing pregnancy also helped us make more sense of the quantitative data on younger and older mothers. The significant value of both receiving and providing support was clearly articulated in the two case examples and provided rich information about the importance of such support.

Thus, although it is possible to quantify certain elements of pregnancy, even whilst some of the feelings and changes brought about are essentially subjective in nature, we can not capture the whole experience in this way. Even a phenomenological approach, which is focused on subjective experience, has its limitations, and thus so too has this present research.

This research is, like most research, imperfect and thus has its limitations (expanded

upon above). It has tried to be aware of these limitations and address them were appropriate and possible. Nevertheless, the ultimate aim of this research was to advance our understanding of pregnancy so that it, along with the work of others, would help improve future care of all pregnant women, it is hoped this research has gone some way towards achieving its aim.

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<u>Appendix 3.1</u>

The Support in Pregnancy Questionnaire (version 1)

1. My close relationships are
   Many - - - - - - Few

2. My childhood memories are generally happy
   Generally unhappy - - - - - - - Generally happy

3. My family are there when I need them
   Generally this is true - - - - - - - untrue.

4. My family contacts are
   Few - - - - - - - Many

5. My relationship with my mother when I was a child was
   Very bad - - - - - - - Very good

6. My partner is very interested in this pregnancy
   Very interested - - - - - - - uninterested

7. My partner looks forward to the baby...
   No, not at all - - - - - - - Impatiently

8. My friendships with my family are good
   Very good - - - - - - - No, very bad

9. My feelings towards this pregnancy are...
   Very negative - - - - - - - Very warm and positive

10. My feelings towards the babies arrival are...
    Very positive - - - - - - - Very negative

11. My Mother is looking forward to the new baby
    No, she is not - - - - - - - Yes, she can't wait

12. My family, in general, are very pleased about the baby
    Very pleased - - - - - - - Very displeased

13. My mother is very understanding generally
    Not understanding- - - - - - - very understanding

14. My pregnancy was very definitely planned
    Yes, it was - - - - - - - No, definitely not planned

15. Generally my emotional support is...
    Very bad - - - - - - - Very good

16. Generally my mood is one of being...
    very happy - - - - - - - very unhappy

17. My reading on anything to do with babies is...
    Non-existent - - - - - - - immense

18. Apart from the normal up's and down's in pregnancy my emotions are
    Very happy - - - - - - - Very unhappy

19. My relationship with my partner is
    Very close - - - - - - - - Very distant

20. My partner looks forward to the birth
    Not at all - - - - - - - Very much

21. The thought of having a new baby is
    Very exciting - - - - - - - Very depressing

22. My partner's family can be relied upon in any crisis
    No, not at all - - - - - - - Yes, always.

23. My favourite game at the moment is talking about babies names.
    All the time - - - - - - -not really interested

24. My mother seems to be knitting/buying enough for a whole baby ward
    No, she does not seem that interested - - - - - - - Yes

25. My hopes are that the birth of the baby will change my partner for the better
    Yes, I hope so - - - - - - - No,I prefer him the way he is

26. My parents help can always be relied upon for any help...
    Never - - - - - - - Always

Obstetric Complications

Mortality

Prematurity

Post maturity

Caesarean section

Toxaemia

Forceps delivery

Breech delivery

Induced delivery

Antepartum hospitalisation

Antepartum bleeding

(in original ranking order from severe to less severe)

The Support in Pregnancy Questionnaire (Version 2)

This questionnaire involves a set of statements. Beneath each statement you will find a scale ranging from strongly agree to strongly disagree. Sometimes strongly agree is on the **LEFT** sometimes on the **RIGHT**. Depending on how much you agree or disagree with each statement mark the scale as shown in the example below. There are no right or wrong answers. Please go through the questionnaire as quickly as possible.

Example:- **I enjoy buying baby clothes**

If you strongly agree with the above statement, place your mark as below:-

Strongly disagree __ __ __ __ __ __ _X_ *Strongly agree*

If you strongly disagree with the above statement, place your mark as below:-

Strongly disagree _X_ __ __ __ __ __ __ *Strongly agree*

If you neither agree nor disagree place your mark as below:-

Strongly disagree __ __ __ _X_ __ __ __ *Strongly agree*

If you agree/disagree but not strongly, place your mark as below:-

Strongly disagree __ __ __ __ __ _X_ __ *Strongly agree*
Strongly disagree __ _X_ __ __ __ __ __ *Strongly agree*

If you mildly agree/disagree with the above statement, place your mark as below:-

Strongly disagree __ __ __ __ _X_ __ __ *Strongly agree*
Strongly disagree __ __ _X_ __ __ __ __ *Strongly agree*

All the information you give will be treated as strictly confidential. Some statements give you the option "My mother is/would be..." to allow for the fact that there will be some women whose mothers are not physically available, for various reasons. I'd also be grateful if you could complete the feedback form at the back of this questionnaire.

Name..
Address...
Telephone number
Home/Work...
Name of Consultant and/or G.P...

With a partner.......................Without a partner...............................

Single..............Divorced............Separated.........Widowed.........Married....

Your date of birth..

Date your baby is due...

1. I have as many close friends as I need

   Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

2. My childhood memories are very happy ones

   Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

3. My family are always there when I need them

   Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

4. I have many close family contacts

   Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

5. My mother and I had a very good relationship when I was a child

   Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

6. I feel very positive towards this pregnancy.

   Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

7. My partner is looking forward to having a baby very much

   Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

8. My friendships with my family are always good

   Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

9. My partner is very interested in this pregnancy

   Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

10. My feelings towards the baby's arrival are very positive

    Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

11. My mother is/would have been, looking forward to the baby very much

    Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

12. My family are very pleased about the baby

    Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

13. My mother is/was very understanding

    Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

14. My partner is very interested in me at the moment

    Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

15. I have a lot of support from those close to me

           Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

16. I feel very content at the moment

           Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

17. My relationship with my partner is very good

           Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

18. I feel very happy at the moment

           Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

19. I have read/am reading a lot about pregnancy and babies

           Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

20. My partner is looking forward to the birth very much

           Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

21. The thought of having a baby is very exciting

           Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

22. My family can always be relied upon in any crisis

           Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

23. I am always thinking/talking about possible names for the baby

           Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

24. My mother is/would have been very involved in the preparations for the baby

           Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

25. I very much hope that the birth of the baby will change my partner for the better

           Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

26. My parents can/could always be relied upon for help

           Strongly disagree __ __ __ __ __ __ __ *Strongly agree*

27. My partner and I talk to each other a lot about the baby

           Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

28. I was a very happy child

           Strongly agree __ __ __ __ __ __ __ *Strongly disagree*

The criteria for domain assignment of each question within the SPQ (amended version).

Domains of Support	Questions
Partner Support	7, 9, 14, 17, 20, 25, and 27.
Parent Support	2, 5, 11, 13, 24, 26, and 28.
General Support	1, 3, 4, 8, 12, 15, and 22.
Maternal Attitude	6, 10, 16, 18, 19, 21, and 23.

[A total score at 16 or above in each domain or overall is the cut-off point for women at-risk for stress / anxiety, due to a perceived lack of support (note that Maternal Attitude constitutes 'self-support'].

Questions are assigned a value of 1 - 7 on the seven point likert scale moving from 1 (strongly agree) to 7 (strongly disagree). The response pattern is mixed to avoid response bias). Question 25 is the only exception, here this question is scored in the same way but moving from 1 (strongly disagree) - 7 (strongly agree).

Appendix 4.3

<u>FEEDBACK FORM ON QUESTIONNAIRE</u>

1/ If you have any general comments to make about the questionnaire, please write your comments/feelings in the space below.

2/ Did you find the Questionnaire interesting?

     Yes   No

3/ Did you find the Questionnaire easy to complete?

     very easy   fairly easy   fairly hard   very hard

4/ Can you say why you responded in the way you did to the previous question?

5/ Were there any statements with which you had difficulties? If there were can you say which one/s and briefly explain why you had difficulties.

FOLLOW-UP QUESTIONNAIRE ON RELATIONSHIPS AND SUPPORT IN PREGNANCY

You may remember me from the ante-natal clinic when I asked you to complete a questionnaire on how you felt about your pregnancy. Thank you for your help in this.

We would like to follow-up a representative sample of the women who completed the questionnaire. For this purpose, it would be very helpful indeed if you would answer the following questions. These questions concern the outcome of your pregnancy and some background information to help us check how representative our sample is.

We hope the information we are collecting will significantly improve our understanding of how women feel about pregnancy and the support they receive.

Once you have completed the questionnaire please return it to us in the envelope provided, there is no need to attach a stamp, postage is prepaid.

Once again, many thanks for your help and cooperation.

Elaine McWilliams.

Date..Tel.No.....................

Name...

Address...

....

Date baby was born.................................Birthweight of baby..................

Please tick below if you experienced any of the following:-

Caesarean Section	( )
Diabetes	( )
Toxaemia	( )
High blood pressure	( )
Forceps delivery	( )
Induced delivery	( )
Hospitalisation during pregnancy	( )
Bleeding during pregnancy	( )

Number of previous pregnancies

| 1 | 2 | 3 | 4 | more |

Did you drink any alcohol during this pregnancy?

Yes ( )   No ( )

If Yes please place a tick in one of the boxes below to show how much you think you drank during this pregnancy increasing from very little to a lot.

Very little ( ) ( ) ( ) ( ) ( ) ( ) ( )   A lot

Did you smoke during this pregnancy?
Yes ( )   No ( )

If Yes please place a tick below, as before.

Very little ( ) ( ) ( ) ( ) ( ) ( ) ( )   A lot

Is your present accommodation (tick)
Owner occupied ( )   Rented ( )

Could you please state what your current/last job was:-

....

What job have you been trained for, if different from above, e.g., trained as Secretary but working as a shop assistant.

....

What age did you leave full-time education please tick a box
16/17 18/19 21/23 24/28 28/30 above ? - please state age
( )   ( )   ( )   ( )   ( )   ( )

Did you return to full-time education after this age?

Yes ( )   No ( )

Did you obtain any certificates, diplomas, degrees or any other qualifications as a result of this training?

Yes ( )   No ( )
If yes, please say below what these are:-

....

Could you please state your partner's current job (or tick box)

Partner Unemployed ( )   No Partner ( )