

**Communication and confiding in mothers (and others):
Relationships with anxiety and somatic symptoms among
children aged seven to eleven**

Jennifer Gibb

2014

PhD Thesis

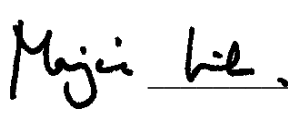
Institute of Education, University of London

Statement regarding submission of work done in conjunction with candidate's supervisor and fellow research workers

The data presented in this thesis were collected as part of a broader project, 'Stress in Children', led by Professor Marjorie Smith and funded by the Department of Health. I was employed as a research officer, working on the project alongside two others, and contributed to each stage of the funded research. I worked with a colleague and the project director – my doctoral supervisor - to design and pilot questionnaires. I was responsible for developing questions on communication, and the inclusion of these in the child questionnaires. I was involved in all aspects of fieldwork and data management. This included the design and piloting of fieldwork materials; contributing to the analysis required to sample families for the interview stage; responsibility for contacting a third of the families and conducting a third of all interviews. I was jointly responsible, with colleagues, for entering, checking and cleaning the data, and for analyses.

I was responsible for the choice of thesis topic, hypotheses, literature review, and development of the new communication scale, and I conducted and reported all the analyses in the current thesis. While enabling my data-gathering, and providing an expert supervisor in the project director, the Stress in Children study had a broad remit which limited the extent to which communication issues could be explored, and its pace dictated the speed with which I developed measures.

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I hereby declare that, except where explicit attribution is made, the work presented in this thesis is entirely my own.

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Word count (exclusive of appendices and bibliography): **82107 words**

Abstract

Problems in family interaction have long been identified as risk factors for child anxiety disorders. Communication and confiding, more specifically, appear relevant to both anxiety and somatisation. There is a substantial literature linking parent-child communication to healthy development, for example regarding language and regulation of emotion. Conversely, there is evidence, chiefly from work among adolescents and adults, that secrecy or inhibited disclosure is associated with adverse physical and psychological outcomes. It appears plausible that, among preadolescents, too, expression of feelings may alleviate anxiety, while inhibited communication may exacerbate stress and somatic symptoms. As few studies have explored these relationships in community samples, the present study set out to do so, under the aegis of a larger piece of research among 7-11 year olds. The two-stage study involved administration of questionnaires to 2566 children and 1368 parents, followed by interviews with a subsample of primary caregivers and children in 145 families.

Based on a review of the literature, it was hypothesised that levels of child communication would be associated with anxiety and somatic symptoms, after taking into account other relevant child and family factors, but that the strength of these relationships would vary by gender, and the aspect of communication in question. A new scale, suitable for 7-11 year olds, was developed in order to measure different aspects of communication.

As anticipated, aspects of communication were associated with anxiety and somatic symptoms, and contributed to explaining variance in somatic symptoms for both sexes, even after controlling for anxiety and other relevant factors, including parental control and child depressive symptoms. In line with hypotheses, inhibition was more strongly associated with symptoms than was open communication, as was perceived caregiver responsiveness. Girls reported higher levels of communication than boys, but also slightly higher levels of inhibition, which was a stronger predictor of anxiety for girls than boys. These results are discussed in the context of previous studies, and in terms of their implications for practice. Limitations of the study are discussed and suggestions made for future research.

Acknowledgements

I would like to thank all those who supported this research. Firstly, the Department of Health, who funded the Stress in Children (SiC) study at the Thomas Coram Research Unit (TCRU) which framed this thesis. Secondly, the school staff who facilitated the fieldwork, including senior management, class teachers and administrators. Most importantly, I am grateful to the children and parents who returned questionnaires and took part in interviews.

I would also like to thank Professor Marjorie Smith, the principal investigator on the SiC study and my PhD supervisor. I learned a great deal from her about many aspects of research, benefitted immensely from her support around balancing paid work and study, and appreciated her understanding, good humour and encouragement. Thanks too to my co-researchers on the SiC study – Katie Quy and Lenny Neil – who shared all aspects of the fieldwork and helped make it feasible as well as fun. Going above and beyond her role as my line manager at NCB, Helena Jelcic also gave generously of her time to provide advice on statistics at a crucial stage.

Finally, this thesis would not have been possible without the support of my friends and family. In particular, I would like to thank my parents, Margaret and Jim, and my stepmother, Elspeth, for putting up with being de-prioritised, and for providing peaceful havens on my fleeting visits north. Thanks to my nephew Lewis and step-nephew Conor for arriving in the world and offering a huge dose of perspective. Thanks to Adam Quinn, for not talking me out of embarking on a PhD in the first place, and for believing I could finish it, and to Claire Bennett and Lucy Sheaf for empathising and making me laugh. Finally, I would like to thank John Everett for being extremely patient and providing a safe bunker with enough distraction, fun and restorative hugs to get me through writing up.

Thank you very, very much.

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Chapter 1

Review of the literature: Part 1

1.1 Introduction

There is widespread concern about the levels of anxiety experienced by children (Layard and Dunn, 2009; Twenge, 2011), with evidence of increasing rates, particularly in adolescents (Collishaw *et al.*, 2010; Sigfusdottir *et al.*, 2008; Tick, van der Ende and Verhulst, 2008). There is also evidence of a rise in the incidence of physical symptoms in children, such as headache and recurrent abdominal pain (Anttila, Metsähonkala and Sillanpää, 2006; Santalahti *et al.*, 2005; Tick, Van Der Ende and Verhulst, 2007). These symptoms may cause distress and impair functioning in the short-term, and are also associated with heightened risk of internalising disorders and health problems in adolescence and adult life (Fearon and Hotopf, 2001; Walker *et al.*, 2010; Walker *et al.*, 1995).

Genetic factors appear to account for a substantial proportion of the variation in vulnerability to anxiety, though estimates vary (Gregory and Eley, 2011). There is, however, a clear imperative to further understanding of environmental risk factors which are more amenable to change. Problems in family interaction, broadly understood, have been identified as risk factors for anxiety disorders and as a focus for intervention (Wood *et al.*, 2003; Wood *et al.*, 2006). Communication and confiding, more specifically, appear relevant to both anxiety and somatisation on several grounds. Firstly, that communication can aid adjustment is a key tenet of 'talking' therapies. The benefits of talking in this context are held to stem from: expression rather than effortful inhibition of emotion; reduction in obsessive or ruminative thinking; improved self-awareness and understanding through verbalising feelings; a sense of being supported through being listened to; and validation, feedback and assistance from others (Pennebaker, 1985). Secondly, while a minority will access therapy, it is considered normal for children to talk about their feelings with parents, particularly mothers, and especially to confide in them when distressed (Brown and Dunn, 1992). Even as children spend more time apart from family, popular guidance for parents presents communication as vital in addressing problem behaviour (Byron, 2010) and child anxiety (Rapee *et al.*, 2008), through improving parents' awareness of stressors and enabling them to validate feelings yet provide reassurance.

There is a substantial literature linking parent-child communication to healthy development, for example regarding language learning and vocabulary (Rowe, 2012), social skills (Black and Logan, 1995) and regulation of emotion (Denham, 2007). Conversely, there is increasing evidence, chiefly from studies among adolescents and adults, that secrecy and inhibition of disclosure are predictive of adverse physical as well as psychological outcomes (Finkenauer and Rime, 1998a; Frijns, Finkenauer and Keijsers, 2013; Rodriguez and Kelly, 2006). It appears plausible that, among preadolescents, too, satisfactory expression of feelings may alleviate anxiety, while inhibited communication may exacerbate stress and somatic symptoms. Nevertheless, few studies have explored the links between these factors in community samples. Accordingly, the present study explores this area, under the aegis of a larger piece of research on anxiety and somatic symptoms in 7-11 year olds.

This chapter and the next review the relevant literature. The remainder of Chapter 1 reviews findings on patterns of child communication and on levels of anxiety and somatic symptoms, considering the broader family and other factors implicated in their development. Chapter 2 then considers the existing evidence on relationships between child communication, anxiety and somatic symptoms. Section 1.2 first outlines the scope of the review, in terms of conceptualisations of communication.

1.2 Conceptualisations of child communication

Communication can be conceptualised widely, to include all forms of interaction between people; or more narrowly. A complete review of the literature on every form of children's interaction with others is beyond the scope of the present study, which is particularly concerned with children's verbal communication and confiding with parents or peers. Even verbal communication has been conceptualised in different ways, however, in different research contexts, reflecting theories about the relevance of distinct aspects of communication to the outcomes of interest. Fundamentally, it entails using words to convey a message. It can be oral or written, but the present study focuses on the former as more pertinent to parent-child and peer interaction. While some studies measure the amount of talk, vocabulary employed, or verbal communication skills, others focus on communication of particular types of information, attitudes towards communication, or the role of communication partners in eliciting or responding to what children say.

Of particular relevance to the present study is work focusing on the following aspects of communication: disclosure (sharing of thoughts, feelings, information or experiences); confiding or self-disclosure (with emphasis on personal thoughts and feelings); parental knowledge (awareness of the child's activities or experiences, gained primarily through child disclosure, as well as supervision or monitoring) and 'secrecy', or actively withholding information. In addition, two relevant constructs involving disclosure by both parties are 'intimate exchange' (mutual confiding or self-disclosure) and 'co-rumination' (discussion dwelling on problems or negative feelings). Finally, children's experiences of communication and perceptions of their confidantes are also of interest.

Where possible, the review focuses on findings concerning child reports of communication, as previous studies have shown weak associations between parent and child reports of child disclosure, with mothers tending to report higher levels than do children themselves (Barnes and Olson, 1985; Guilamo-Ramos *et al.*, 2006; Hartos and Power, 2000a). Priority is also given to material of direct relevance to the age-group in question: 7 to 11 year olds. Certain sections, however, consider the developmental role of communication in infancy and disclosure among adolescents, as much of the relevant published work in these areas involves younger or older children. A small number of studies among adults are mentioned where there is limited evidence on a particular topic. In each case, findings are discussed with reference to the constructs employed. Much of the research endeavour in this area has been descriptive in nature, but there are theories, for example relating to attachment, coping and gender, which are clearly relevant. These are discussed further in Section 1.7.

1.3 Communication and confiding: prevalence and patterns

This section focuses on the extent and scope of children's communication with particular confidantes. Due to variation in the measures employed, results are not always strictly comparable across studies. Nevertheless, some common patterns emerge.

1.3.1 Communication with mothers and fathers

Some measures of parent-child communication distinguish between mothers and fathers as recipients of disclosure. With few exceptions, older children and adolescents have been found to talk to mothers more often than fathers, and to do so about a wide range of

issues, including personal matters and when seeking advice or guidance (Diiorio, Pluhar and Belcher, 2003; Jiménez, 2008; Monck, 1991; Smetana *et al.*, 2006). A meta-analysis focusing on mothers' and fathers' verbal interactions with children from infancy to adolescence reinforced these findings. Across studies, mothers talked more with children than did fathers, and used more socio-emotional language, including supportive language (indicating approval or agreement) and negative language (signalling disapproval or disagreement). In contrast, compared to mothers, fathers used more instrumental language (being informative or directive) (Leaper, Anderson and Sanders, 1998).

Consistently, adolescents report their mothers as being more open to conversations, more likely to initiate them, and more receptive to their opinions, compared to fathers (Heller *et al.*, 2006; Jackson *et al.*, 1998; Noller and Callan, 1990). For example, one study in Italy involving 276 families found that adolescents reported more open and less problematic communication with mothers than fathers, on the Parent-Adolescent Communication Scale (PACS) (Rosnati, lafrate and Scabini, 2007). The PACS (Barnes and Olson, 1982) is a well-validated 20-item measure covering, for example, ability to talk about being 'in trouble', difficulty sharing feelings, and perceptions of parents as 'good listeners'. Parent reports, on parallel items, reinforced the picture painted by children: compared to fathers, mothers considered interactions with their children more open and less problematic.

Compared to the evidence on communication with mothers versus fathers in adolescence, that pertaining to younger children is more limited. One early study in the United States among 9-19 year olds ($N = 120$) suggested that mothers functioned more often as intimate confidantes than did fathers, although the relevant measure touched on joint activity as well as communication. Specifically, the four-item scale covered: self-disclosure (I like to talk to my mother/father about my problems), empathy (My mother/ father knows how I feel about things), consensus (When my mother/ father and I disagree, we talk it over and come to an agreement) and companionship (When I need someone to do something with me, I ask my mother/ father to do it with me) (Hunter and Youniss, 1982). More recently, Lambert and Cashwell (2004) also found that 10-13 year old pupils ($N = 100$) reported more open and less problematic communication with mothers than fathers, on the PACS.

Although mothers overestimate their children's disclosure (Smetana *et al.*, 2006), work on parental monitoring has found that mothers know more than fathers about the daily lives of their preadolescent children (Crouter *et al.*, 1999; Crouter *et al.*, 1990) and those of their

older offspring (Bumpus, Crouter and McHale, 2001; Waizenhofer, Buchanan and Jackson-Newsom, 2004). For example, in a detailed study involving interviews with parents and 6 to 13 year olds from 198 families, Crouter *et al.* (1999) found that mothers were more aware than fathers of children's experiences during the day at school, based on questions about worries, disagreements with friends and activities.

Patterns such as these may be expected, given the predominance of mothers as main carers (Craig, 2006; Hurrell and Davies, 2005). Indeed, in a mixed-methods, multi-informant study, Waizenhofer *et al.* (2004) compared parents' sources of knowledge about their 10-17 year old children ($N = 95$) and found that, whereas mothers were more likely than fathers to glean information through supervision or adolescent disclosure, fathers more frequently received updates via their partners. Where differences fail to appear in levels of communication with mothers and fathers, it may reflect the indicators used. For example, in one US study, among second and fifth grade children aged on average 7.5 and 10.4 years, there were no differences in the extent to which they shared 'secrets' with mothers and fathers (Buhrmester and Furman, 1987). 'Secrets', however, may tend to be kept from both parents equally. Overall, the available data suggest that, in middle childhood as in adolescence, children talk more frequently and openly with mothers than fathers.

1.3.2 (Non) disclosure and secrecy

Further studies have explored reasons for sharing or withholding information. Some of these relate to feelings about the issues, and others to expected reactions. For example, in a questionnaire sample of college students ($N = 527$), describing experiences which they had shared and kept private, the latter involved more shame, guilt and perceived personal responsibility (Finkenauer and Rime, 1998b). Focusing on confiding with parents, Yau *et al.* (2009), confirmed that, among adolescents ($N = 489$) avoidance of disclosing 'prudential' behaviour (effectively, violating rules) was associated with likely parental disapproval. In contrast, those who avoided disclosing feelings or personal experiences argued that the issues were private, or that their parents would not listen or understand. Smetana *et al.* (2006) also found that, in a sample of 249 families, although parents felt children were more obliged to disclose information than did the adolescents themselves, both groups saw less of a duty to divulge personal issues than information about rule-governed behaviour.

Last and Aharoni-Etzioni (1995) sought to explore developmental trends in the content of secrets and reasons for keeping them, within a younger sample aged 8-12 ($N = 180$). They found age differences in the nature of secrets, with a shift from those concerning possessions in younger children to those about rule-violation and relationships. Reasons for secrecy also varied; younger children stressed the need for exclusiveness (for example, for fear of losing a possession) whereas older children emphasised interpersonal, social factors. In another relevant study, focusing on factors influencing emotion expression, 7-12 year olds ($N = 192$) were presented with hypothetical scenarios and asked whether they would show the emotion evoked by each situation, and why. Their primary reason for inhibiting both anger and sadness was self-protective : fear of a negative reaction, such as rejection, ridicule or a reprimand (Zeman and Garber, 1996). In both cases, the second most common reason was concern about causing distress or harm to others. Other reasons included that the emotion was not intense enough to express, or that they could minimise it through keeping quiet. Reasons for disclosure varied, but social support was a common theme: the most frequently cited reason for expressing anger was expectation of practical help or non-interpersonal benefit, while the most common reason for expressing sadness was anticipation of positive interaction. A minority felt they would express anger or sadness simply because they lacked the skill to control or mask it.

To summarise, children's reasons for non-disclosure include avoiding angry reactions or causing distress, and a wish to downplay unimportant or uncomfortable issues. They also describe disclosing their feelings or experiences for a range of reasons; generally anticipating a positive response, sympathy or assistance, but sometimes feeling unable to contain their emotions. Variations in communication by age group, mentioned briefly in this section, are considered further in the next.

1.3.3 Confiding with parents and peers across age groups

A number of studies have considered patterns of children's confiding with parents and friends, reporting variation by age or stage of development.

Parental knowledge about children's activities and experiences has been found to be greater regarding younger than older children, within and between families, as in the aforementioned study by Crouter *et al.* (1999). Longitudinal work also demonstrates a decrease in parental awareness of children's activities as they grow older and more

independent (Masche, 2010). This may partly reflect that older children are less subject to supervision. However, child disclosure has been shown to make a greater contribution to parental knowledge than behavioural control or solicitation of information, certainly among adolescents (Stattin and Kerr, 2000). Voluntary disclosure must also underpin parental knowledge about the experiences of younger children who spend time apart from their families at school, as well as awareness of their thoughts and feelings.

Not surprisingly, intimacy and self-disclosure with friends relative to parents appears to increase with age. This is consistent with theories of emotional distancing (Steinberg, 1988) and suggestions that with the onset of puberty, adolescents experiencing greater autonomy and parent-child conflict feel more need to confide in those who are experiencing similar developmental changes (Papini *et al.*, 1990). For example, on the Inventory of Parent and Peer Attachment (IPPA-R), focused on confiding about worries and problems, younger children (aged 9-11; $N = 118$) were found to score significantly higher than adolescents (aged 14-15; $N = 163$) on communication with parents. Conversely, adolescents scored higher than younger children on communication with peers (Gullone and Robinson, 2005). Further studies have directly compared levels of confiding with family members and friends, focusing variously on secrets, problems, worries and feelings in general. Consistently, they have reported that, whereas preadolescents report higher levels of confiding with mothers than friends, by mid adolescence, the position was reversed (Buhrmester and Furman, 1987; Hunter and Youniss, 1982; Monck, 1991; Papini *et al.*, 1990).

One further study, involving a large US sample of 9 -13 year olds ($N = 1004$) also showed clear differences between preadolescent and older groups, with respect to preferred confidants and levels of confiding about worries. Among 9 year olds, a third reported typically talking to parents and a quarter to friends, whereas among 13 year olds, just one in ten turned to parents and more than a third to friends. In addition, the oldest children were almost twice as likely as the youngest to keep worries entirely to themselves (30 per cent compared to 17 per cent). Notably, the question about their typical behaviour followed items probing worry about peer relations, their appearance and school grades, and highlighting these issues may have made children more likely to envisage talking to friends. A further question, concerning the 'best' source of advice when worried, produced results more in favour of family: overall, 42 per cent nominated parents, and just 17 per cent friends. Only among the oldest children were friends chosen as frequently as parents (Brown *et al.*, 2006).

In summary, the evidence suggests that parents (particularly mothers) remain key confidantes for children until early adolescence, when friends assume greater importance. This conclusion is reinforced by work taking a wider perspective on communication of emotion. For instance, Zeman and Garber (1996) explored expression of anger, sadness and pain among 7-12 year olds ($N = 64$), who reported greater inhibition among peers than with parents. As discussed further below, however, it appears that peers become preferred confidantes for girls at an earlier stage, and that in other respects, too, there are gender differences in child communication.

1.3.4 Gendered patterns of communication

It is well-established that, compared to men, women talk about feelings to a greater extent, more readily disclosing sadness, anger and anxiety to friends, partners and strangers (Dindia and Allen, 1992; Murstein and Adler, 1995; Ptacek, Smith and Zanas, 1992; Snell, Miller and Belk, 1988), reflecting that confiding is more central to the formation of relationships for women than for men (Leaper, Anderson and Sanders, 1998). There is also evidence of similar, if less stark, gender differences among school-age children, which may have roots in much earlier interactions with parents during infancy. Most of the relevant literature focuses on disclosure of personal experience or emotion. Accordingly, much of this section does likewise, though other topics are considered where evidence permits.

Emotion talk, emotion socialisation and gender

Research has shown that, in middle childhood, use of internal-state talk (about thoughts and feelings) varies independently of verbosity and the capacity to describe such thoughts and feelings (Meins *et al.*, 2006), indicating that other factors contribute to individual differences in expressiveness. Observational studies with younger children suggest that they begin to learn display rules – norms about whether, how and when to express emotion - from caregivers, in advance of their first birthdays (Malatesta and Haviland, 1982). Parental talk about emotions has been demonstrated to predict pre-school children's emotion understanding (Denham, Zoller and Couchoud, 1994; Dunn *et al.*, 1991) and also patterns of communication. For example, on the basis of extended observations in family homes ($N=37$), Jenkins *et al.* (2003) found that cognitive and feeling talk by family members when children were two years old predicted their cognitive and feeling talk at age four, after controlling for baseline talk and language ability.

In light of parents' role in scaffolding child communication, it is notable that studies have found differences in the ways parents talk to sons and daughters. In their meta-analysis of mothers' language with sons and daughters, Leaper, Anderson and Sanders (1998) found that mothers used more supportive language with daughters than sons, talked more with preschool girls than boys, and used more directive speech with school-age daughters than sons. As the authors hypothesise, mothers may be encouraging independence in sons by using fewer directives, and building closeness in relationships with daughters through supportive comments. Observational studies since have since reinforced these findings. For example, Fivush *et al.* (2000) analysed discussions between 21 children (aged 40-45 months) and their parents at home, focusing on events in which the child had experienced happiness, anger, sadness and fear. They found that mothers and fathers used more emotion language and discussed the causes of sadness more with girls, and that compared to boys, girls used more emotion words when talking about scary events. Girls and boys may thus learn different ways of dealing with emotion, with girls discussing sadness in more elaborated ways, and boys less likely to talk about fear. While their study involved white, middle-class families in the USA, a similar but cross-cultural study involving mothers and pre-school children from China ($N = 25$) and the USA ($N = 22$) found that mothers from both cultures provided more explanations for daughters' than sons' emotions (Wang, 2001).

Longitudinal studies focused on naturally occurring behaviour in the home (Dunn, Bretherton and Munn, 1987) and involving discussion tasks (Adams *et al.*, 1995; Kuebli, Butler and Fivush, 1995) have also found mothers' references to emotion more frequent and varied with pre-school daughters than sons. These patterns were reflected in gender differences at follow-up, such that, compared to boys, girls more frequently referred to emotions, and used more unique terms for feelings. In contrast, there is evidence that parents talk more about science with preadolescent boys than girls, providing greater encouragement for sons to focus on science (Crowley *et al.*, 2001; Tenenbaum *et al.*, 2005).

Leaper *et al.* (1998) found that gender effect sizes with respect to parent-child communication were greater for studies conducted in home, as opposed to laboratory, settings, and using less structured tasks. Where studies fail to find differences in parent talk with boys and girls, these factors may play a part. For example, Gentzler *et al.* (2005) employed a laboratory discussion task with 75 children (aged 9-11) and their parents, in which the mother-child and subsequently father-child dyad (or vice versa) were instructed to talk about an event upsetting to the child. During these discussions, neither parental

encouragement of the child's emotional expression, nor the child's openness, varied by child gender. However, children also completed vignette-based measures exploring whether they would confide in parents when upset, anxious, and angry. On these measures, girls reported more 'affective sharing' with mothers and fathers than did boys. This suggests that parent-child discussions about upsetting events may be less likely to take place for boys, without the stimulus provided by a research task.

Research in which parents respond to hypothetical scenarios has also suggested that they are more receptive to distress communicated by daughters than sons (Birnbaum and Croll, 1984). Girls also appear more likely than boys to expect empathy from parents when upset. Dino *et al.* asked 8-12 year olds ($N = 76$) to consider scenarios involving girls or boys disclosing distress, and to predict whether their parents would react in expressive or instrumental ways (for example, sympathising or suggesting solutions). Overall, children rated daughters as more likely than sons to receive expressive responses and sons more likely than daughters to receive instrumental responses (Dino, Barnett and Howard, 1984). Similarly, Fuchs and Thelen (1988) asked 6-11 year olds ($N = 125$) how understanding their parents would be if a friend made them angry or sad. Compared to boys, girls expected more sympathetic responses, and while less likely to anticipate confiding in parents about anger, they were more likely to anticipate sharing sadness.

Gender and levels of communication and confiding in parents

Much of the evidence on gender differences in parent-child communication concerns adolescents, with girls reporting higher levels of communication than boys. For example, Papini *et al.* (1990) found that among 12-15 year old students ($N = 174$), girls reported significantly more self-disclosure than boys, with parents as well as peers, on a 40-item measure tapping confiding about emotions including happiness, anxiety, jealousy and anger. Studies within the monitoring literature have also consistently reported that, compared to adolescent boys, girls disclose more to parents about personal issues (Finkenauer, Engels and Meeus, 2002; Lichtwarck-Aschoff *et al.*, 2012) and activities, whereabouts and schoolwork (Crouter *et al.*, 2005; Smetana *et al.*, 2006; Soenens *et al.*, 2006; Stattin and Kerr, 2000). Research involving parents has confirmed these patterns. For example, in a careful study involving 10-17 year olds ($N = 95$), comparing parent and child reports of children's activities, parents knew more about daughters than sons, and

described gaining more information about girls than boys through their voluntary disclosure (Waizenhofer, Buchanan and Jackson-Newsom, 2004).

Focusing on preadolescents, a similar picture emerges. Bumpus and Hill (2008) found that, among 8-10 year old pupils ($N = 203$), girls reported more disclosure to parents than did boys concerning their whereabouts, activities and experiences. In the previously cited study by Buhrmester and Furman (1987), 7-13 year old girls reported confiding in others more often, and considered it more important than did boys. As noted above, Gentzler *et al.* (2005) found that, compared to boys, 9-11 year old girls anticipated more confiding in parents when distressed. Broader studies of coping have also concluded that girls are more likely than boys to talk about their problems (Broderick, 1998; Carlson and Grant, 2008). A recent study involving 10-17 year olds ($N = 516$) found that, in each year group, and on child and parent reports, girls engaged in more intensive discussion, or co-rumination, with mothers than boys, about their own problems and about mothers' (Waller and Rose, 2010).

A number of studies have examined differences in levels of communication with each parent according to child gender. Children of both sexes appear to talk more with mothers than fathers, although girls talk more than boys with mothers, and boys more than girls with fathers. For example, Lambert and Cashwell (2004) found that, among 10-13 year olds ($N = 100$), children's reports of communication were most positive for mother-daughter dyads, followed by mother-son, then father-son, and finally father-daughter dyads, using the PACS. In a study of 13-17 year olds in Australia ($N = 296$), girls reported talking more to mothers overall, and about interests, relationships and problems. Compared to girls, boys talked more with fathers about shared interests and sexual issues, yet also reported speaking to mothers more than fathers about their own interests and problems. Although boys were equally satisfied with maternal and paternal conversation, girls preferred talking with mothers (Noller and Callan, 1990). A distinct body of work on communication about sex has also found that although boys were more likely than girls to discuss sex-related topics with fathers, it was more common for boys as well as girls to talk about most of these issues with mothers (Diiorio, Pluhar and Belcher, 2003).

Exceptionally, one study, by Gullone and Robertson (2005), found that boys scored higher than girls on a measure of confiding in parents. This anomalous result, however, appears to reflect an imbalance in the profile of their sample. Younger children, who scored higher on communication, dominated the sample of boys, with 91 from primary and just 33 from

secondary schools, whereas just 27 girls were from the former and 130 from the latter. Accordingly, while boys' scores may have been biased by younger children's greater openness with parents, girls' may be skewed by adolescents' tendency to turn to friends. Overall, the studies reviewed in this section suggest that gender differences in disclosure with parents are apparent by middle childhood, with girls communicating more than boys.

Gender and secrecy from parents

Despite the apparent gender gap in levels of child communication, the extent to which girls and boys actively conceal information has not always been found to differ. This may reflect that researchers have focused on secrecy about different topics. Smetana *et al.* (2006) explored withholding of information about personal, school and peer issues, among 14-18 year olds ($N = 276$), and found that boys reported more secrecy from parents than girls in relation to personal issues. The relevant items mainly concerned behaviour around activities with peers and spending, however. In another recent study, pupils ($N = 309$) responded to two items on keeping secrets from parents about their activities (Keijsers *et al.*, 2010). Only in year four of the study, when participants were aged 16, was there a significant gender difference, with boys reporting slightly more secrecy than girls. Neither Finkenauer *et al.* (2002) nor Frijns *et al.* (2005) found gender differences in adolescent concealment of feelings from parents, using Larson and Chastain's (1990) Self-Concealment Scale. Finkenauer *et al.* did find that girls reported higher levels of confiding, however, reinforcing the finding that talking more may not mean concealing less.

Similar results have been published regarding middle childhood. For example, in the above-mentioned study by Bumpus and Hill (2008), there were no gender differences among 8-10 year olds on a two-item measure of secrecy, focused on avoiding disclosure about school and activities. Most studies in this area have asked children how often they withhold information in particular categories. In contrast, Last and Aharoni-Etzioni (1995) asked 8-12 year olds ($N = 180$) about any 'significant and important' secrets that they were keeping. Compared to girls, boys more frequently described secrets about "moral transgressions" (such as lying or disobedience), whereas girls were more likely than boys to mention family issues (for example, parental conflict). There were no gender differences in the proportions of secrets concerning social issues, such as peer problems or shyness. The study did not measure levels of secrecy overall. However, it suggests that, where gender differences arise, this may be because boys are more likely to be hiding 'bad' behaviour. In contrast,

whereas girls generally confide more about feelings or stressors, they appear no less likely than boys to keep some of these issues from their parents.

Gender and confiding with friends

As noted in Section 1.3.3, confiding in peers relative to parents tends to increase with age. There is also evidence that, compared to boys, girls confide in friends earlier, and to a greater extent.

Consistently, studies among adolescents show that girls report more self-disclosure with friends than boys (Buhrmester and Furman, 1987; Camarena, Sarigiani and Petersen, 1990; Raja, McGee and Stanton, 1992; Rose, 2002; Shulman *et al.*, 1997). As suggested by Buhrmester and Furman (1987), boys may achieve mutual validation through joint activities, rather than interpersonal disclosure. Support for this theory comes from observational research involving semi-structured interactions in same-sex pairs of adolescents ($N = 128$). Although both sexes demonstrated similar levels of shared affect, indicating closeness, and increasing levels of self-disclosure between the ages of 14 and 16, such confiding was more prevalent among girls, with boys tending to discuss activities (McNelles and Connolly, 1999). This is consistent with research on adolescents' online interaction with peers, as reviewed by McQuillan and O'Neill (2009), in that internet gaming is more common among boys, with girls more likely to share information about their relationships and emotions.

In general, the evidence suggests that communication with friends is also gendered among preadolescents (Hunter and Youniss, 1982; Parker and Asher, 1993a). One early US study which showed varied results depending on the topic was conducted by O'Neill *et al.* (1976) among 7-13 year olds ($N = 307$). On a broad range of subjects (including fears, schoolwork, classmates and secrets), girls reported disclosing more to friends than did boys, with the overall difference approaching significance. There were significant and more pronounced gender disparities in disclosure of fears, worries, embarrassment, shame, and distress, with girls sharing more than boys in each case. This is consistent with results of the previously cited study by Brown *et al.* (2006), which found that one in three girls, compared to fewer than one in five boys, confided in friends about worries. Similarly, focusing on negative feelings, secrets and 'private things', Rose (2002) found that 8-10 year old girls ($N = 284$) reported more disclosure with friends than did boys, though the gender difference was larger among adolescents ($N = 324$).

Observational research also suggests that by middle-childhood, girls confide more in friends than do boys, and engage in more social conversation. For example, Ladd (1983) observed free play at school among children aged 7-10 ($N = 48$) and found that girls talked more to peers – a finding replicated in a larger sample of 167 children aged 6-10 (Moller, Hymel and Rubin, 1992). Likewise, Lansford and Parker (1999) observed 56 triads of 8-10 year olds in structured tasks and free play, and reported that girls exchanged more information overall, and more intimate information, than boys.

Co-rumination with friends also appears more prevalent among girls than boys, on the basis of scores on Rose's 27-item scale, which measures the frequency with which problems are discussed; mutual encouragement to do so, and speculation focused on negative feelings (Jose, Wilkins and Spindel, 2012; Rose, 2002; Rose, Carlson and Waller, 2007; Tompkins *et al.*, 2011). Of note, Rose's original study (2002) included those aged 8 to 15, ($N = 608$), and girls reported more co-rumination than boys in the younger group (8 to 11 year olds) as well as the older one. While adolescent girls reported more co-rumination than younger girls, there was no such pattern for boys. These results were replicated in a separate sample ($N = 813$) spanning the same age range (Rose, Carlson and Waller, 2007).

Further studies suggest that the gender gap in levels of confiding with friends increases through middle childhood. For example, Zabatany *et al.* administered Parker and Asher's intimate exchange items to 10-12 year olds in fifth and sixth grade ($N = 188$), and found a significant gender difference only among the older year group, with girls disclosing more than boys (Zabatany, McDougall and Hymel, 2000). Buhrmester and Furman (1987) explored confiding of secrets and feelings among 417 children, and found no gender difference in disclosure among 7 year olds, a marginally significant gap among 10 year olds, and a robust difference among 13 year olds, with girls reporting higher levels of confiding.

In summary, levels of communication and confiding in parents and friends appear to differ for boys and girls, with girls generally more communicative. This may be due in part to gendered socialisation of expression within the family.

1.3.5 Family and relationship factors in child communication

Several factors other than age and gender have been associated with child disclosure or parental awareness. The following sections briefly review the relevant evidence.

Socio-economic status, education, employment and income

Bernstein's early research on social class differences found that, compared to working class parents, middle class parents employed a broader vocabulary and engaged children in extended discussion (Bernstein, 1975). As reviewed by Rowe (2008), more recent literature demonstrates consistent associations between socioeconomic status (SES), parents' child-directed talk, and young children's language skills. For example, careful observational research with 63 two-year olds and their parents found that low SES mothers (with school-level qualifications, in unskilled, semi-skilled or service-sector roles) talked less and used less varied vocabulary with their children than high SES mothers (college-educated, in professional or managerial occupations). Mothers' vocabulary and mean length of utterance mediated the relationship between SES and child vocabulary development. In other words, children from more advantaged backgrounds had superior language skills, which appeared to be accounted for by the speech they heard at home (Hoff, 2003).

Compared to the evidence on SES and communication in the early years, little has been published regarding later childhood (Smetana *et al.*, 2010). Studies have, however, explored relationships between SES and parental monitoring or knowledge. In line with findings linking SES and parenting (Bradley and Corwyn, 2002; Conger and Donnellan, 2007), greater mother-reported monitoring was linked with higher SES in a large study of 440 families with adolescents (Pettit *et al.*, 2001), and the previously cited study by Crouter *et al.* (1999) found that better-educated fathers tended to know more about children's experiences. Likewise, among a large community sample of adolescents ($N = 2374$), those with more highly educated mothers considered them more aware of their activities – presumably in part due to their own disclosure (Bumpus and Rodgers, 2009).

Higher levels of child communication might be expected within more educated and affluent households. A recent survey among 12-17 year old students ($N = 4746$) found that lower SES was associated with inability to discuss problems with parents (Ackard *et al.*, 2006). Conversely, Smetana *et al.* (2006) found no significant relationships between adolescent disclosure or secrecy and parental education, occupational status, ethnicity or marital status. Their sample of adolescents (aged 13-18, $N = 276$) was predominantly lower middle-class, however, limiting the study's power to detect differences by SES.

Crouter *et al.* (1999) explored various demographic influences on parental knowledge, including parental employment patterns. They found that mothers' knowledge of children's activities and experiences was unrelated to the hours they worked outside the home. Although fathers' work hours were also unrelated to their levels of parental knowledge, they did know more when their wives worked longer hours. As suggested by other studies since, this may reflect their own greater involvement in childcare (Bonney, Kelley and Levant, 1999). More recently, Waizenhofer *et al.* (2004) found no differences between dual and single-earner families in terms of parental knowledge of 10-17 year olds' activities ($N = 95$). However, efforts to find out about the child's day (by asking the child or someone else, or through involvement in their activities) did predict knowledge for fathers, and for mothers employed for 15 hours a week. This suggests that active engagement, rather than working hours *per se*, make the difference.

Culture and ethnicity

It is well-established that there are cultural differences in non-verbal communication, for example, relating to personal space and physical contact, which are reflected to some extent in patterns of verbal communication (Lustig and Koester, 2012). It has been suggested that, in traditional Eastern cultures, the value accorded to social harmony is associated with avoidance of expressing emotions such as sadness or anger, whereas Western cultures encourage voicing such feelings and see doing so as conducive to developing individuality (Kitayama, Mesquita and Karasawa, 2006) and even cementing relationships (Collins and Miller, 1994). There is some evidence that patterns of disclosure to parents and peers vary by ethnicity or culture, within and across countries. For example, Wilson *et al.* (2012) found that 6-9 year old White American children ($N = 60$) were more likely to report expressing their feelings of anger, sadness and pain than were children in either rural or suburban India (each $N = 60$), with Indian children more likely to cite maintaining social norms as a reason to inhibit emotional expression. Similarly, cross-national research, focused on help-seeking behaviour in Tokyo and Washington among 11-16 year olds, found that American pupils ($N = 1222$) were more likely to approach parents when upset than were their Japanese counterparts ($N = 919$), who more frequently turned to friends (Crystal *et al.*, 2008). In a US study involving 489 adolescents ($M = 16.37$ years) from three different cultural groups, Chinese American adolescents also disclosed less about feelings than those of European or Mexican ancestry, being more likely to consider

the issues too personal, and that parents would fail to sympathise (Yau, Tasopoulos-Chan and Smetana, 2009).

Yau *et al.* also found that disclosure about rule-governed behaviour was higher among European American than Mexican American adolescents, who more frequently cited parental disapproval as a deterrent. In another large school-based study involving adolescents ($N=2374$, aged 12-17), African American students considered their parents less knowledgeable about their activities and reported lower levels of disclosure than their European American peers. Race, however, did not predict perceived parental knowledge after controlling for family structure (Bumpus and Rodgers, 2009). Similarly, others have found that among young adults, African Americans disclose less about feelings within intimate relationships than European Americans, but that the differences disappear after controlling for income (Consedine, Sabag-Cohen and Krivoshekova, 2007). It appears, therefore, that some observed differences in communication relating to ethnicity may be attributable to factors such as income, family structure, or parenting.

Family structure

Most studies of parent-child communication have focused on two-parent households (Crouter *et al.*, 2005; Crouter *et al.*, 1999; Kerr and Stattin, 2000; Waizenhofer, Buchanan and Jackson-Newsom, 2004). Where disclosure or parental knowledge have been compared across family types, results have been mixed, with children and parents tending to paint a different picture. Pettit *et al.* (2001) reported that, controlling for socioeconomic status, lone mothers described themselves as less aware of children's activities and friendships than those in two-parent households, in a sizeable US sample of families with 13 year olds ($N = 440$). On the basis of adolescent reports, however, perceived maternal knowledge was unrelated to family type. Padilla-Walker *et al.* also found that, compared to those in two-parent families, and controlling for income, lone mothers reported lower levels of disclosure from their children (mean age 11.5 years), whereas across the sample of 500 families, children's self-reported disclosure about school, friends and activities did not differ by family type (Padilla-Walker, Harper and Bean, 2010).

In one study involving younger as well as older children (aged 7-17, $N = 238$), and adjusting for age, Dunn *et al.* (2001) found that confiding was more frequent with biological than step parents. However, like the abovementioned studies, they also found that those in lone-

parent families confided in mothers when worried or upset as often as those from intact two-parent households. In contrast, Bumpus and Rogers (2009) found that, after controlling for maternal education, adolescents in both lone-parent and stepfamily households reported lower levels of disclosure and parental solicitation than those in intact two-parent families. However, the study, involving 2364 adolescents ($M = 14.0$ years), relied on single-item measures of solicitation and disclosure (about plans with friends). As the authors suggest, lower levels of disclosure among those in lone-parent and stepfamily homes may have reflected higher rates of problem behaviour.

In short, findings regarding family structure vary depending on the measures employed, and on whether mothers or children report on communication. That children confide more in biological parents than stepparents is not unexpected, and may reflect relationship warmth or closeness, as discussed further below. In contrast, while lone mothers may believe they hear less from their children than do mothers in couples, child-report data tends to dispute this. As discussed below, there is some evidence that, compared to mothers in couples, divorced mothers share more of their own problems with their children, which may reflect continuing parental conflict and/or their limited access to other confidantes (Dolgin, 1996). This suggests that, while children may confide in their mothers regardless of whether their father lives with them, various aspects of communication patterns may differ according to family relationships.

Marital quality, conflict and confiding in children

Marital disharmony may affect parent-child communication, though there is more evidence of its impact on family interaction, broadly defined (Krishnakumar and Buehler, 2000; Sturge-Apple *et al.*, 2003). Couples whose relationships are close appear to be more positive with their children, and show them greater warmth (Cox *et al.*, 1989; Wong, McElwain and Halberstadt, 2009). Of more direct relevance are findings from a detailed interview-based study involving dual-earner families with children aged 10-11 ($N = 181$). Where marriages were unhappy and fathers had demanding jobs, fathers, and to some extent mothers, knew less about children's activities and experiences. Among those content in their relationships, however, parental knowledge was not affected by fathers' work demands. As the authors suggest, this may reflect the quality of child-focused communication between parents, and/or that a combination of fathers' work stress and relationship problems triggers parental withdrawal from children (Bumpus, Crouter and

McHale, 1999). Marital tension may also make children uncomfortable about confiding in parents (Crouter *et al.*, 2005).

One way in which marital conflict may affect communication involves 'parentification' or role-reversal, such that the child nurtures and acts as a confidant for the mother or father. Studies have found that some mothers do tell children about adult issues such as parental disputes (Koerner, Jacobs and Raymond, 2000), and money worries (Lehman and Koerner, 2002). Parentification appears more common in the context of divorce (Jurkovic, Thirkield and Morrell, 2001) and marital conflict. For example, in one study of families with a pre-school child ($N = 128$), parents were observed in problem-solving tasks focused on disagreements, and then a year later, during storytelling with the child. Each parent's conflict behaviour (for instance, criticism or sarcasm) predicted the other's role reversal, such that they encouraged the child to meet their needs, or failed to take charge (Macfie *et al.*, 2008). In older children, too, role-reversal has been associated with marital conflict. In a community sample of 83 couples and their children ($M = 15.3$ years), Peris *et al.* (2008) found that maternal reports of marital conflict correlated positively with adolescent reports of mothers' and fathers' emotional reliance upon them, on a measure comprising 18 items, such as "*I give my mother a lot of advice about how to handle the problems in her life*".

Some studies have found adolescent reports of maternal self-disclosure to be positively related to their own levels of confiding in mothers (Lichtwarck-Aschoff *et al.*, 2012; Waller and Rose, 2010). However, Waller and Rose found stronger relationships between maternal self-disclosure and adolescent engagement in co-rumination on mothers' problems, and co-rumination with mothers was also robustly linked to enmeshment, on a validated measure including items such as '*We spend too much time together*' (Olson, 2002). It remains unclear whether parental confiding about problems, as opposed to more neutral topics, inhibits child disclosure, particularly in younger children. There is certainly evidence associating marital conflict with limitations on parents' emotional availability (Kitzmann, 2000; Sturge-Apple *et al.*, 2012; Sturge-Apple, Davies and Cummings, 2006), and linking marital dissatisfaction with lack of responsiveness to child distress (Nelson *et al.*, 2009). In summary, parental conflict has negative implications for parent-child interaction. Children may be exposed to parents' problems, and potentially find it harder to raise their own.

Maternal mental health

Maternal depression has been linked to passive interaction with preschool children, delay in their language development (Cox *et al.*, 1987), and impairment in their understanding of emotion (Raikes and Thompson, 2006). Not all studies report such relationships, however (Sohr-Preston and Scaramella, 2006), and there is evidence that they are mediated by maternal responsiveness (Field *et al.*, 2003). For example, a carefully designed study involving observation of mother-infant dyads ($N = 49$) found that, compared to well mothers, depressed mothers were less sensitively attuned to their children, and that poor quality interaction mediated the link between postnatal depression and later cognitive outcomes (Murray *et al.*, 1996a; Murray *et al.*, 1996b). Research involving older children has also found depressed mothers to display more negative parenting behaviours (Foster, Garber and Durlak, 2008; Lovejoy *et al.*, 2000) and to talk with children in a less positive and more hostile manner than well mothers (Chiariello and Orvaschel, 1995; Jacob and Johnson, 1997). Murray *et al.* (2006) reported that, within a sample of 100 mothers and their 8 year-old children, current and recent maternal depression were associated with more coercive control, less emotional support and less promotion of mastery during observed interactions at home. In another recent US study involving 277 mothers of 7-15 year-olds, maternal depressive symptoms were related to lower levels of perceived knowledge about children's activities and experiences (Jones *et al.*, 2003). This may reflect lower levels of child disclosure – or, potentially, depressed mothers' perceptions of limited disclosure.

Other studies have found maternal anxiety as well as depression to have negative implications for parent-child communication. Longitudinal research in the US among mothers of 8-11 year olds ($N = 673$) linked histories of anxiety disorder and depression with lower levels of parental knowledge, on self-report measures (Chilcoat, Breslau and Anthony, 1996). Maternal anxiety has also been associated with more critical and controlling interactions with children (Hirshfeld *et al.*, 1997; Pape and Collins, 2011; Schneider *et al.*, 2009; Whaley, Pinto and Sigman, 1999) - behaviour which has been linked to lower levels of child communication, as detailed below. Notably, one study concerning maternal depression and parenting stress, by Ponnet *et al.* (2013), considered child and parent perspectives on communication. In their sample of 196 families with children aged 10-18, mothers' depressive symptoms were associated with less open *father*-child communication (on both father and child reports of the PACS). In contrast, mothers' parenting stress was negatively associated with mother-child communication (on mother and child reports). As

the authors acknowledge, bi-directional influences may be involved. In addition, unlike maternal depression, parenting stress by definition entails tension related to children, thus might be expected to show stronger links with parent-child communication.

Relationship factors

Previous sections highlighted parental modelling as influencing child communication, and that studies investigating other factors have implicated parents' behaviour. In particular, child disclosure has been associated with parental responsiveness and lower psychological control (Roth, Ron and Benita, 2009; Soenens *et al.*, 2006), authoritativeness (Almas, Grusec and Tackett, 2011; Darling *et al.*, 2006) and children's satisfaction with parent-child relationships (Monck, 1991; Papini *et al.*, 1990). Kerr and Stattin emphasised the role of parental acceptance and warmth, drawing on findings concerning adults; people who disclose more are liked by others; people disclose more to those they like, and, after disclosure, they like them more (Collins and Miller, 1994; Kerr and Stattin, 2000). Moderate associations ($r = .38$) have been found between adolescent reports of parental warmth and knowledge of their activities, among 14-18 year olds ($N = 2568$) (Fletcher, Steinberg and Williams-Wheeler, 2004). Longitudinal research involving 131 US families also found that maternal warmth was associated with disclosure among 11 year olds ($r = .50$), and predicted higher disclosure a year later (Salafia, Gondoli and Grundy, 2009).

Stattin and Kerr (2000) disputed that child disclosure was merely a proxy for good parent-child relationships, highlighting that the former explained twice as much variance in norm-breaking as the latter, on an adolescent-report measure of relationships tapping mutual understanding, arguments, pride, acceptance, irritation, disappointment and support. In addition, relationship quality failed to moderate longitudinal associations between disclosure and delinquency (Kerr, Stattin and Burk, 2010). This may reflect that, regardless of how well they get on with their parents, children may hide activities of which they believe their parents will disapprove. Relationship quality might be a stronger determinant of disclosure about feelings, however, with children more amenable to confiding in loving, supportive parents about problems or worries. In a careful US study involving 489 adolescents ($M=16.37$ years), Yau *et al.* compared associations between self-reported closeness and disclosure to parents about different topics, finding stronger associations between closeness and disclosure of personal feelings ($r = .44$) than 'prudential' activities (such as drinking; $r = .25$). Armsden and Greenberg (1987) reported even stronger

correlations between the IPPA subscales labeled Trust (mutual understanding and respect) and Communication (of worries or distress) among adolescents ($r = .76$), and preadolescents ($r = .67$) (Gullone and Robinson, 2005). Admittedly, and as discussed further in Chapter 2, several items on the Trust subscale are linked to the concept of communication, for example '*My mother considers my point of view*'. Further studies using different measures have confirmed cross-sectional links between closeness or warmth and confiding in parents about personal issues (Smetana *et al.*, 2006; Snoek and Rothblum, 1979) as well as activities (Vieno *et al.*, 2009).

Not surprisingly, children's perceptions of their parents as confidants, rather than parents' own perspectives, appear key to their patterns of communication. For example, one study focusing on disclosure about behaviour asked 12-14 year olds ($N = 668$) about their mothers' advice, trustworthiness and accessibility (Guilamo-Ramos *et al.*, 2006). There were weak relationships between adolescent perceptions of mothers and how mothers believed they were perceived (for example, on items such as '*My daughter finds my advice helpful*'). Whereas adolescent reports of mothers' advice, trustworthiness and accessibility were all positively associated with their self-reported disclosure, mothers' were not.

A number of studies have reported gendered associations between relationship factors and either disclosure or parental knowledge. Within a sample of early adolescents and their mothers ($N = 657$), Vieno *et al.* (2009) found that using data on closeness from mothers and children, mothers' closeness to girls, but not boys, predicted child reports of maternal knowledge. Keijsers *et al.* (2010) observed that concurrent and longitudinal links between parent-child relationships and secrecy about activities were stronger for girls than boys ($N = 309$). They argue that because confiding is more normative for girls than boys, secrecy is less likely to reflect relationship problems among boys. This is consistent with work by Herman and McHale (1993) on coping strategies in 9-11 year olds ($N = 152$), in response to negative interactions with parents. For girls only, there was a positive link between child-reported relationship warmth and talking to a parent, though for both sexes, warmth was positively associated with problem-solving – also seen as a healthy, constructive response.

Child disclosure to siblings has also been positively associated with relationship warmth (Howe *et al.*, 2001) while friendship closeness has been linked to disclosure to peers. For example, in one study involving 227 adolescents, disclosure was greater among 'best friends' than 'good friends'. The effect of closeness was strongest for intimate topics, such

as family problems, and weakest for issues such as favourite films (Dolgin and Kim, 1994). Previously mentioned studies have also reported strong associations between peer-focused IPPA Trust and Communication scores, among both adolescents ($r = .76$) (Armsden and Greenberg, 1987) and younger children ($r = .79$) (Gullone and Robinson, 2005).

Overall, there is a wealth of evidence linking relationship warmth and communication. However, the two do not appear to be indistinguishable either conceptually, or potentially, in terms of predictive power regarding children's symptoms. Links between communication and warmth may also differ across situations and between groups, including by gender.

Child characteristics and interactions with parenting factors

The previously cited study by Crouter *et al.* (1999) found that fathers' knowledge of children's activities was more closely linked to child characteristics than was mothers'. Fathers knew more about children rated high on 'expressiveness' (referring to qualities such as sensitivity); the same was true for mothers, but only regarding second-born children, whose scores ranged more widely. As argued by the authors, fathers may be drawn to talk to sociable children who volunteer information, whereas mother-child communication may be initiated by mothers more routinely, even with less forthcoming children. Stattin and Kerr (2000) also highlighted that sociable or 'easy' children were likely to be more communicative and less prone to poor adjustment. As discussed further in Chapter 2, this is in line with research among adults indicating that socially anxious individuals are less likely to self-disclose and express emotion (Alden and Bieling, 1998; Davila and Beck, 2002; Meleshko and Alden, 1993).

More recently, Tilton-Weaver *et al.* (2010) identified interactions between personality traits and perceived parenting in predicting disclosure about activities among adolescents ($N = 982$). Parents' negative reactions (anger and rejection) were associated with adolescents feeling more controlled by, and less connected to, their mothers and fathers – feelings which predicted increased secrecy. However, these pathways were not apparent for adolescents high in psychopathic traits, which may reflect their relative insensitivity to punishment.

There is evidence that, even after controlling for relevant child characteristics, parenting factors associated with child disclosure are distinct from those linked with secrecy or

avoidance of disclosure. For example, in a community sample of 10-12 year olds and their mothers ($N = 140$), Almas, Grusec and Tackett (2011) found that mothers' self-reported authoritativeness (based on items including '*I give my child reasons why rules should be obeyed*') positively predicted child-reported disclosure about friends, school and activities - even controlling for child compliance. Mothers' dispositional anger was not associated with disclosure, but did predict greater secrecy about activities and whereabouts.

While interactions between child characteristics and parenting should be acknowledged as influencing levels of communication, it is likely that, for most children, anticipated reactions from others are important. Bi-directional associations between communication and anxiety are considered further in Chapter 2. First, the following sections provide an overview of the prevalence and patterning of child anxiety and somatic symptoms.

1.4 Anxiety in middle childhood

The term anxiety typically refers to a set of emotional reactions – worry, apprehension and distress – to anticipation of real or imagined threats (Fonseca and Perrin, 2011). It may, however, entail three components: subjective or cognitive; physiological (autonomic arousal); and behavioural, involving avoidance of situations or exhibiting distress within them (Lang, 1968). Studies focus variously on (diagnosed) anxiety disorders and anxiety symptoms more broadly. Both are of interest to the present study. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM) (American Psychiatric Association, 2000), one anxiety disorder is specific to children: separation anxiety disorder. Others which affect children and adults include panic disorder, agoraphobia, specific and social phobia, obsessive-compulsive disorder (OCD), post-traumatic stress disorder (PTSD), acute stress disorder, general anxiety disorder, anxiety disorder due to general medical condition and substance-induced anxiety disorder. Though it is considered normal for children to experience some symptoms of anxiety at times, those with phobias or anxiety disorders experience more severe symptoms which are out of proportion to stressors, and interfere to a greater extent with daily life.

1.4.1 Prevalence of child anxiety disorders and anxiety symptoms

Identified prevalence rates for 'any anxiety disorder' in children vary substantially between studies. Among the lowest reported were rates of 3.19% and 3.05%, for 5-7 year olds and 8-

10 year olds respectively, in a large representative British sample, based on structured interviews with children, parents and teachers, reviewed by clinicians (Ford, Goodman and Meltzer, 2003). A recent meta-analysis of epidemiological studies involving data from 19 countries (Costello *et al.*, 2011) found a mean estimate for the proportion of 6 to 12 year olds having any anxiety disorder of 12.3% ($SE = 5.4\%$), with the most common being specific phobias ($M = 6.7\%$, $SE = 3.6\%$), followed by separation anxiety (3.9%, $SE = 1.5\%$), social phobia (2.2%, $SE = 2.2\%$) and generalised anxiety disorder (1.7%, $SE = 1.2\%$).

Prevalence estimates from community data using scores on scales such as the Child Behaviour Checklist, which are not equivalent to a clinical diagnosis, tend to be higher. For example, as highlighted in a review by Cartwright-Hatton *et al.* (2006), Sugawara *et al.* (1999) reported that, within their sample of Japanese 7-9 year olds ($N = 114$), 41.2% had some form of anxiety disorder, but this was based on information from either the parent or child indicating presence of a disorder on a translation of the Child Assessment Schedule which showed low internal consistency. The next highest rate, of 23.8% (in a larger Dutch sample of 6-8 year olds, $N = 1317$), was based on parent-reports on the Child Behaviour Checklist and interviews with a subsample of parents ($N = 403$) (Kroes *et al.*, 2001). In neither study was impairment taken into account.

Variation in prevalence rates of anxiety symptoms may be partly explained by whether or not evidence of impairment is required (Cartwright-Hatton, McNicol and Doubleday, 2006). However, children can suffer distress and impaired functioning because of symptoms below the threshold for diagnosis (Angold *et al.*, 1999), and such children may be at risk of future pathology. Chavira *et al.* (2004) concluded that if a 'mild to moderate' impairment criterion was applied instead of a disorder-specific cut-off, 35% as opposed to 17% of their community sample (aged 8 to 17, $N = 714$) would be considered affected.

1.4.2 Patterning of anxiety: age, gender and other demographic factors

Age differences

Different types of anxiety disorder tend to emerge at different developmental stages. Data from one large US study providing onset dates for disorders by the age of 21 (the Great Smoky Mountains Study) showed that the mean age at onset for any anxiety disorder was 8

years of age. Separation Anxiety Disorder (SAD) had the earliest average age of onset (age 6 years), with 50% of cases emerging between 4 and 9 years. There was greater variation in relation to specific phobias and generalised anxiety, while the appearance of panic disorder was rare before mid-adolescence (Costello *et al.*, 2011).

Focusing on subclinical symptoms, studies have also shown variation in the nature or focus of anxiety according to age. For example, one Dutch study involving detailed interviews with pupils aged 4-12 ($N = 190$) found that fears and nightmares were fairly common among 4-6 year olds, but were significantly more prevalent among 7-9 year olds than younger or older children. Worry, however, including about performance at school, was more prevalent among all those aged 7-12 than among younger children (Muris *et al.*, 2000b). Another Dutch study involving self-report data from 8-18 year olds ($N = 882$) also found that fears of physical harm and punishment decreased with age, whereas those relating to social evaluation (for example, being criticised) and achievement (such as failing tests) were more common among older groups (Westenberg *et al.*, 2004).

Gender differences

Most studies suggest that girls experience more anxiety than boys. Girls consistently report higher levels of anxiety and fear than boys on standardised rating scales, including in preadolescence (Ollendick, King and Muris, 2002; Spence, 1998). Clinical data also suggest that girls are more likely to have an anxiety disorder (Costello *et al.*, 2011). In line with this, some large community studies in the US and Holland have found gender differences in rates of anxiety disorder prior to adolescence. On the basis of retrospective self-report data from adolescents ($N = 1221$), Lewinsohn *et al.* (1998) calculated that by the age of 6, girls were twice as likely as boys to have experienced an anxiety disorder. In a longitudinal study involving 1580 children, Roza *et al.* (2003) also found that the gender gap in anxiety disorders (based on parent-reports in diagnostic interviews), was apparent before the age of five, though larger among adolescents. Not all studies report such gender differences, however. For example, Ford *et al.* (2003) found that, among British 5-15 year olds ($N = 10,438$) assessed using structured interviews which tapped impairment as well as distress, rates of anxiety disorder were not significantly higher in girls than boys. Data from the US Great Smoky Mountains study suggested that the only disorder significantly more common in preadolescent girls than boys was separation anxiety, though social phobia and GAD were more prevalent among girls during adolescence (Costello *et al.*, 2011).

Ethnicity and socio-economic status

There is limited evidence of variation in childhood anxiety by ethnicity. On the basis of their meta-analysis of 55 community studies, covering 2-21 year olds in 19 different countries and from a wide range of ethnic and cultural backgrounds, Costello *et al.* found the highest rates of anxiety disorders in various contexts: in Holland, Mexico and the USA, involving White, African American and American Indian participants. They highlight that while none of the studies with the highest rates of disorder came from Asia, this could reflect cultural reluctance to report symptoms, and highlight the shortage of studies with diverse samples to support within-study comparisons (Costello *et al.*, 2011). Of particular note, one large UK study which did compare levels of disorder among children (aged 5-15, $N=8772$) from different ethnic groups, found that while linked to life events, anxiety was not independently associated with ethnicity or neighbourhood disadvantage, low SES, parental unemployment or poverty (Ford, Goodman and Meltzer, 2004).

Turning from disorders to anxiety symptoms, some studies have found that children from Hispanic American/ Black South African backgrounds report higher levels than their White counterparts (Muris *et al.*, 2006; Varela *et al.*, 2004). Similarly, in the Netherlands, 10-18 year olds ($N = 1340$) from minority ethnic groups reported higher scores on a standardised measure of anxiety than their White peers (Hale *et al.*, 2005). As Ford and colleagues demonstrated (2004), these patterns may be partly explained by stressors associated with socioeconomic factors. In the South African study cited above (Muris *et al.*, 2006), Black children tended to live in poor areas characterised by deprivation and violence. While another recent study, involving a large sample of British adolescents ($N = 1348$), found that both ethnicity and SES independently contributed to levels of test anxiety, this did not take into account life events. Scores were significantly higher among both Asian and Black pupils, compared to their White peers, and among those from lower compared to higher SES backgrounds, based on parents' occupational status (Putwain, 2007). As Putwain suggests, high expectations at home as well as past experiences of failure may increase anxiety; as an underperforming group, Black pupils may have been affected by the latter, while Asian pupils, who tend to outperform others, may feel more pressure to succeed.

As noted in a recent review, results with respect to SES have not been strong or consistent (Rapee, Schniering and Hudson, 2009). Similarly, a systematic review by Reiss (2013) found that associations between socioeconomic disadvantage and mental health problems were

stronger with respect to externalising than internalising symptoms, and that comparisons between study findings were complicated by the fact that not all had controlled for possible mediating factors such as parenting or maternal mental health. These, and other risk factors for childhood anxiety, are discussed further in Section 1.7, following consideration of the prevalence and patterning of somatic symptoms – the other main outcome variable for the present study.

1.5 Somatic symptoms in middle childhood

This review focuses on somatic symptoms, rather than somatisation disorder. The former refers to physical symptoms which may or may not have an underlying medical cause; the latter to a clinical diagnosis that symptoms are without organic cause (American Psychiatric Association, 2000). One theoretical explanation for these symptoms is that they are expressive of, or exacerbated by, psychological distress, and there is evidence that somatisation is associated with parent and clinician-identified psychopathology (Campo *et al.*, 1999). The terms somatisation and functional (medically unexplained) somatic symptoms, however, have also been used in studies where symptoms have not been medically assessed (Campo, 2012; Campo and Fritsch, 1994; De Gucht and Heiser, 2003) but which provide relevant data on their prevalence and patterning.

1.5.1 Prevalence of somatic symptoms in children

As with anxiety, the reported prevalence of somatic symptoms varies across studies. This may be partly explained by sample composition, definitions of symptoms, and the severity or frequency of occurrence considered relevant (Steinhausen and Metzke, 2007). Unfortunately, few studies have involved children of primary school age, as opposed to adolescents or a combined sample. Some focus on particular symptoms, such as headaches, though others consider a broader range. A number have done both, for example, among children with recurrent abdominal pain (RAP), measuring other symptoms on the somatic complaints subscale of the Child Behaviour Checklist (Dufton, Dunn and Compas, 2009). Given this variation, comparing findings is difficult (Campo, 2012).

Overall, the evidence suggests that somatic symptoms are common in childhood. Consistently, the most commonly reported complaints are headaches and stomach/abdominal aches, followed by nausea, fatigue and sore muscles or limbs (Garber, Walker

and Zeman, 1991; Litcher *et al.*, 2001; Meesters *et al.*, 2003). In Garber *et al.*'s US study, more than half of the children (aged 7 to 18 years, $N = 540$) reported having suffered from at least one somatic symptom within the previous two weeks, while 15.2% reported four or more severe complaints (bothering them 'a lot' or 'a whole lot'). Also focusing on the previous fortnight, more than half of 9-13 year olds in a smaller Belgian study ($N = 193$) reported at least one form of physical pain which bothered them a lot. Specifically, 19% had suffered from headaches, 12% abdominal pain, 10% limb pain and 8% nausea or upset stomach (Vervoort *et al.*, 2006). Similarly, a large Greek study of seven year olds ($N = 8130$) found that 7% reported having headaches, abdominal pain or limb pain at least once a week (Bakoula *et al.*, 2006).

Studies focusing on particular symptoms reinforce that substantial numbers of children are affected. For example, a majority of the 11 year olds surveyed for a longitudinal study in Scotland ($N = 2586$) reported having stomach aches (60 %) and headaches (50%) over the past month (Sweeting and West, 1998). A recent UK study involving 7128 six year olds also reported that, over three months, 12% had three or more episodes of RAP which caused some impairment (Ramchandani *et al.*, 2007). Likewise, a broader systematic review (covering European and US studies) identified a median prevalence rate of 8.4% for RAP in children and adolescents (Chitkara, Rawat and Talley, 2005).

1.5.2 Patterning of somatic symptoms: age, gender and other demographic factors

Age differences

Findings vary, but tend to show that preadolescents report fewer distinct types of somatic symptom, typically abdominal pain and headaches, with multiple symptoms more common in adolescence (Campo, 2012; Campo *et al.*, 1999; Kelly *et al.*, 2010; Offord *et al.*, 1987). Studies using clinical assessments, or focusing on chronic pain, have found symptoms to increase with age during childhood. For example, in a study involving data from general practitioners on 5-15 year olds ($N = 21,065$), Campo *et al.* (1999) found that less than 1% of 4-5 year olds, compared with 1.7% of 6-10 year olds, and 2.5% of 11-15 year olds, were classified as somatisers with unexplained symptoms. Similarly, Perquin *et al.* (2000) found, in a study of Dutch children aged 0 to 18 ($N = 5423$), that the prevalence of chronic pain

(recurrent or continuous for 3 months) increased with age, and was most frequently reported by 12-15 year olds, using self-report data, except for pre-schoolers.

Contrasting findings have emerged from work using the Children's Somatization Inventory (CSI), a self-report scale measuring how much children have been 'bothered' by various symptoms over two weeks (Walker and Greene, 1989). For example, in a US study among 7-18 year olds ($N = 540$) Garber *et al.* found no main effects of age group on levels of symptoms (Garber, Walker and Zeman, 1991). In a further study using the CSI among adolescents in England (aged 11-16, $N = 1173$), those aged 13-14 also scored lower than 11-12 year olds (Vila *et al.*, 2009). As the authors suggest, this may reflect that the younger group were experiencing stress-related symptoms whilst adapting to secondary school.

Gender differences

Several studies suggest that somatisation is more common among girls than boys, but that substantive gender differences appear only after puberty (Berntsson and Kohler, 2001; Campo *et al.*, 1999; Garber, Walker and Zeman, 1991; Steinhausen and Metzke, 2007) when hormonal changes may play a part (Ordaz and Luna, 2012; Rhee, Holditch-Davis and Miles, 2005). For example, the aforementioned study by Garber *et al.* found that among high school students, girls had significantly higher CSI scores than did boys, but that this was not the case among younger children. Whereas there were no significant age-group differences in levels of symptoms among girls, high school boys had significantly lower CSI scores than those aged 7-11 (Garber, Walker and Zeman, 1991).

With the exception of the study by Garber *et al.*, these studies have focused on psychosomatic complaints or disorders, as opposed to simply somatic symptoms. Other large studies, however, have identified gender differences in levels of symptoms among younger children. For example, in the abovementioned study by Perquin *et al.* (2000), chronic pain was more common among girls, except in the youngest group (0-3 years), though the gender difference was larger among 12-18 year olds. Data from parents of Greek 7 year olds also suggested that 8.8% of girls but just 5.7% of boys experienced weekly headache, abdominal pain or limb pain (Bakoula *et al.*, 2006). Similarly, a Danish study of 5-7 year olds ($N = 1327$), involving parent-reports of symptoms causing substantial discomfort, impairment, absence from school and/or use of health services, found a one-year prevalence rate in girls of 27.6%, compared to 18.8% in boys (Rask *et al.*, 2009).

Ethnicity and socio-economic status

To date, there is little evidence of variation in levels of childhood somatic symptoms by ethnic group. One recent British study involving adolescents ($N = 1173$), found no significant differences between scores on the CSI among those from White British and other backgrounds (Vila *et al.*, 2009). Others have reported differences by ethnicity or culture. One such study, involving 6 to 11 year olds ($N = 1208$) from Colombia and the United States, found that Colombian girls had higher levels of somatic symptoms than European American girls on parent-report measures. On teachers' ratings, Colombian and African American boys were more symptomatic at school than Euro-American boys (Brewis and Piñeda, 2001). Importantly, however, data on SES was not collected for American children, and it is unclear how far this explained the findings. Of note, a further study among 7-15 year olds ($N = 786$), using self-report and parent-report data, found that somatic symptom scores for White children (in Rhode Island) and Puerto Rican children (in Puerto Rico) were lower than for their Rhode Island Latino counterparts. After controlling for socioeconomic variables, however, White children's scores did not differ significantly from either Latino group (Vasquez *et al.*, 2009).

Several studies suggest that lower socio-economic status (variously measured) is associated with higher levels of somatic symptoms (Berntsson and Kohler, 2001; Fearon and Hotopf, 2001; Grøholt *et al.*, 2003; Santalahti *et al.*, 2005; Vasquez *et al.*, 2009; Walker, Garber and Greene, 1991). However, the associations between symptoms and SES have generally been weak, and other large studies have found no such relationships (Bakoula *et al.*, 2006; Vila *et al.*, 2009) with one actually reporting that higher maternal education appeared to be associated with higher rates of parent-reported RAP in children (Ramchandani *et al.* 2006). This particular finding may reflect a tendency for adults with lower levels of educational qualifications to under-report chronic health conditions (Mackenbach, Looman and van der Meer, 1996). Overall, studies which have reported differences in levels of symptoms by SES tend to have assessed SES as household income and/or used child-reported symptoms. Conversely, in the studies by Ramchandani *et al.* and Bakoula *et al.*, parents reported on children's symptoms, and Vila *et al.* focused on occupational status. This is consistent with the finding by Reiss (2013) that household income was a stronger predictor of both internalising or externalising problems in children than was parents' occupational status .

1.6 Comorbidity: anxiety, somatic symptoms and depression

This section reviews evidence of comorbidity between childhood anxiety and somatic symptoms, and their respective associations with depression in the relevant age group.

1.6.1 Associations between anxiety and somatic symptoms

Recent studies suggest that there is a strong association between anxiety and somatic symptoms in children. As reviewed by Campo (2012), most research with community samples has found children with functional somatic symptoms (FSS) more likely than their peers to report symptoms of anxiety and depression. Equally, higher than expected rates of somatic symptoms have repeatedly been found in those suffering from anxiety disorders, with FSS associated with greater severity of disorder (Campo, 2012). Research into psychological factors associated with particular somatic symptoms also suggests similarities in the profiles of children concerned. For example, in an Italian sample of 4 to 18 year olds ($N = 220$), comprising headache and RAP patients alongside healthy controls, both headaches and abdominal pain were associated with anxiety on the Child Behaviour Checklist (Galli *et al.*, 2007).

These associations appear moderate to strong. For example, Garber *et al.* reported a correlation of .43 between scores on the Children's Somatization Inventory and the Spielberger Trait Anxiety Scale with somatic items removed, in a US sample of 7 to 18 year olds ($N = 540$) (Garber, Walker and Zeman, 1991). A Dutch study involving the same age group ($N = 617$) found a near-identical association of .42 between CSI scores and those for anxiety on the Revised Children's Anxiety and Depression Scale (van der Veek, Nobel and Derkx, 2012). In a sample with a lower upper age limit (8 to 15 year olds, $N = 233$), Lavigne *et al.* report a stronger correlation of .57 between scores on the CSI and the trait version of the State-Trait Anxiety Inventory (STAI), which may reflect the inclusion on the STAI of items tapping physical symptoms such as raised heart rate (Lavigne, Saps and Bryant, 2012).

1.6.2 Co-morbidity with depression

Rates of depression among children are low, in comparison with anxiety and somatic symptoms. One large UK study of 5-15 year olds ($N = 10,438$) found prevalence rates for any anxiety disorder of 3.8%, compared to 0.9% for depression. Focusing on 5-10 year olds, the contrast was even starker: 3.1% were assessed as having an anxiety disorder and just 0.2% depression (Ford, Goodman and Meltzer, 2003). Nevertheless, both anxiety and somatic symptoms have consistently been associated with depression cross-sectionally (Campo, 2012) and also linked to depression in later years (Costello *et al.*, 2003; Janssens *et al.*, 2010; Zwaigenbaum *et al.*, 1999). A meta-analysis of comorbidity within community samples of children and adolescents (Angold, Costello and Erkanli, 1999) reported a median odds ratio of 8.2 for comorbidity between anxiety and depression. Whether anxiety or somatic symptoms relate more strongly to depression varies between studies, and may reflect decisions to include or exclude somatic items in the relevant measure of depression. For example, Garber *et al.* (1991) reported correlation coefficients between depressive symptoms (on the Children's Depression Inventory with somatic items removed) and anxiety and somatic symptoms of .62 and .37 respectively, among 7-18 year olds. Using the same measures, but including all CDI items, with 8-15 year olds), Lavigne *et al.* (2012) report a stronger correlation of .53 between somatic symptoms and depression.

1.7 Risk factors for anxiety and somatic symptoms

This section outlines theories and evidence regarding risk factors for anxiety and somatic symptoms in three broad, interconnected, areas: genetics and temperament, stressors and coping; and parenting and relationships. It provides important context for material reviewed in Chapter 2, on links between symptoms and patterns of communication.

Models of child anxiety focusing narrowly on either inherited traits or particular aspects of parenting have explained limited variance in child symptoms. Accordingly, it is argued that the development of anxiety in childhood is a complex process involving many different factors. A developmental psychology perspective proposes that external (familial, social and environmental) and internal (genetic and cognitive) factors all play a part, and that the role of particular risk or protective factors may vary, depending on the context in which they occur, including the presence of other such factors. Some may be more important in the development of symptoms, and others their maintenance (Wood *et al.*, 2003).

1.7.1 Genetics and temperament

Both anxiety and somatisation disorders run in families, as discussed further in Section 1.7.3. Children of anxious parents are more likely to be anxious (Beidel and Turner, 1997; Hettema, Neale and Kendler, 2001; Rapee, 2012), while parents of children with functional abdominal pain suffer more frequently from somatic symptoms than controls (Campo *et al.*, 2007; Rapee, 2012; Schulte and Petermann, 2011; Walker, Garber and Greene, 1991). Twin and adoption studies have attempted to gauge the proportion of variance attributable to genetic as opposed to environmental influences. One recent Italian study of twins aged 8–17 ($N = 398$ pairs), found that genes accounted for 54% of the variance in anxiety, assessed on a DSM-oriented scale (Spatola *et al.*, 2007). Estimates vary, however, depending partly on the measures employed, with reviews concluding that genes contribute between 23% to 62% in relation to internalising symptoms of either anxiety or depression (Vendlinski *et al.*, 2011). The mechanisms by which genes exert their influence are outwith the scope of this review, and remain unclear, with most research on anxiety focused on the serotonergic system (Gregory and Eley, 2011).

There is growing evidence that common genetic factors underlie anxiety and depressive disorders (Eley and Stevenson, 1999; Kertz and Woodruff-Borden, 2011) and apparent genetic influences on somatisation may also reflect inherited predisposition to neuroticism or general distress, including heightened awareness of, and attentiveness to, physical symptoms (Deary, Chalder and Sharpe, 2007). There is also some evidence that the immune system can become sensitized in response to non-immune stressors, or to immune stressors in early life (Dantzer, 2005), and even the higher estimates of the variance explained by genes suggest that environmental influences on child symptoms are also important. Of note, familial effects in transmission of anxiety are likely to be not only direct, through genetic heritability, but also indirect, through exposure to parents' anxious behaviour (Franic *et al.*, 2010). Although family and twin studies have shown that gene-environment interactions may play a part, the main effects of genetic and environmental risks –as discussed below - appear far greater (Vendlinski *et al.*, 2011).

As outlined in a recent review (Degnan, Almas and Fox, 2010), longitudinal data links child anxiety, particularly social anxiety, to earlier behavioural inhibition (BI) - a temperamental tendency to show fearfulness or reticence when facing unfamiliar people or situations. For example, in one careful US study, BI predicted the onset of social anxiety (but not other

anxiety disorders) after five years, among children of parents with and without mood or anxiety disorders ($N = 215$, mean age 9.6 years at follow-up). Among those unaffected at baseline, 22.2% of inhibited versus 8.0% of non-inhibited children developed social anxiety (Hirshfeld-Becker *et al.*, 2007). A recent Dutch study found that BI predicted separation anxiety and social anxiety over a two-year period, within a slightly younger community sample of 196 children, aged 6.1 years on average at baseline (Broeren *et al.*, 2012). As noted previously, neuroticism - a tendency to experience negative affect - has also been strongly implicated in a range of internalising outcomes, including depression, anxiety and unexplained physical symptoms (De Gucht, Fischler and Heiser, 2004; Deary, Chalder and Sharpe, 2007; Muris, de Jong and Engelen, 2004).

1.7.2 Stressors, coping and emotion regulation

While children may inherit temperamental predispositions to stress, experience of negative life events is also associated with anxiety (Allen, Rapee and Sandberg, 2008; Legerstee *et al.*, 2010; Letcher *et al.*, 2012; Willemen *et al.*, 2008) and somatic symptoms (Murberg, 2012; Schulte and Petermann, 2011). In a Greek study comparing 8-13 year olds with RAP or tension-type headaches and a control group without either condition ($N = 129$), those with RAP or headaches also reported more negative life events than controls over the past year (Liakopoulou-Kairis *et al.*, 2002). Several studies have reported that somatic symptoms are associated with lower levels of academic attainment (Egger *et al.*, 1999; Eminson *et al.*, 1996), and to difficulties in peer relationships (Taylor *et al.*, 1996). There is evidence from studies controlling for levels of anxiety that some children respond 'somatically' as well as emotionally to daily stressors, including at school. For example, one recent survey of 419 school children in Norway (aged 6-16) found that academic problems and loneliness were associated with anxiety. Perceived lack of help in class was associated with stomach ache, and loneliness with headache (among girls), even after controlling for anxiety and other factors including age (Løhre, Lydersen and Vatten, 2010). Others have found that among adolescents ($N = 327$), those who experienced greater school-related stress reported more somatic symptoms, even after taking neuroticism into account (Murberg and Bru, 2007).

Studies using diary and experimental methods have reinforced these findings. For instance, in a week-long diary-based study involving patients and healthy controls aged 8 to 15, children with recurrent abdominal pain ($N = 154$) reported significantly more daily hassles than their well peers ($N = 109$), while the relationship between stressors and somatic

symptoms more broadly was stronger for the RAP group (Walker *et al.*, 2001). In a further study involving 67 children aged 9-16, those with RAP responded differently from well children to a task in which success and failure was controlled by the researcher. On failure, they reported greater increases in (non-gastrointestinal) somatic symptoms than the comparison group. They also had lower performance expectations in the first place, implying lack of confidence in their ability to cope with the task (Puzanovova *et al.*, 2009).

In line with this, anxious children report lower self-efficacy in relation to managing emotions. For example, in a small study involving 8-12 year olds with anxiety disorders and healthy controls ($N = 52$), the former reported difficulty coping with worry, sadness and anger, and lacked confidence in their ability to regulate what they experienced as intense emotional arousal (Suveg and Zeman, 2004). Further studies demonstrate that this is reflected in their physiological reactions. Compared to less anxious children, those reporting higher levels of anxiety were found to react with faster heart rates to stimuli designed to elicit stress, for example, anxiety-provoking films, in a well-designed study involving 49 children ($M = 11.1$ years) (Weems *et al.*, 2005), and in speech tasks, in more recent research with nine year olds ($N = 20$) (Hannesdóttir *et al.*, 2010).

The specific strategies children use for coping with stressors – such as problem-solving, support-seeking, rumination, escape, and distraction – have also been associated with variation in levels of symptoms. As outlined in a recent review, there is typically a differentiation of coping behaviours in middle childhood, with emergence of adaptive cognitive strategies including mastery-related problem-solving, complex distraction techniques, and the capacity to focus on positive features of stressful situations (Zimmer-Gembeck and Skinner, 2011). Although researchers have classified sub-types of coping differently, problem-focused and engagement coping have generally been associated with better adjustment, and some forms of emotion-focused coping and disengagement with less favourable outcomes (Compas *et al.*, 2001). For example, in one careful study of 9 to 11 year olds, involving anxious patients ($N = 131$) and non-anxious controls ($N = 452$), those with anxiety disorders reported more frequent catastrophizing and rumination, and less frequent positive reappraisal and planning than the other children, even after adjusting for experience of negative life events (Legerstee *et al.*, 2010).

Few studies have investigated links between coping strategies and somatic symptoms. However, one thorough study using a daily diary interview procedure with 8-15 year olds

found that compared to well children ($N = 104$), those with recurrent abdominal pain ($N = 143$) were less likely to use accommodative strategies, that is, accepting or adapting to situations in response to daily stressors (Walker *et al.*, 2007). In a more recent study in which self-report questionnaires were administered to 7-18 year olds, including a clinical sample of 114 children with functional abdominal pain, and control groups recruited from schools (235 children without abdominal pain and 407 reporting some abdominal pain over the previous fortnight), those without any abdominal pain reported using avoidant coping strategies less often than either of the other groups. In this case, however, group differences were small, and there were no such differences in use of other strategies (van der Veek *et al.*, 2012b). It is possible that more accurate data on coping was gathered by Walker *et al.*, using diary methods and focusing on specific stressors, than in this case, where children responded to more general statements beginning '*When I have a problem*', but in any case, results of the two studies are not readily comparable.

The causal role of coping in relation to anxiety or somatic symptoms remains unclear. As highlighted by Compas *et al.* (2001), in some cases, items purporting to measure aspects of coping (referring for example to ruminating about the issue, or physically lashing out), may in fact be tapping internalising or externalising symptoms. To some extent, such measurement issues reflect differing conceptualisations of coping. Some theorists characterise all responses to stress – including involuntary reactions - as coping (e.g. Coyne and Gottlieb, 1996). Others, following Lazarus and Folkman (1984), consider coping as the subset of self-regulatory processes involving conscious efforts to regulate emotion, cognition, behaviour, physiology and the environment, in response to stressful events or circumstances. Nevertheless, even if the focus is confined to effortful or intentional coping strategies, some of which may be associated with lower levels of symptoms, it is also possible that high levels of physiological and emotional reactivity, or distress, may lead to greater reliance on certain types of coping responses, and inhibit the effectiveness of others (Compas *et al.*, 2001).

As highlighted in Section 1.3.5, whether children respond to stressors by confiding in parents may be influenced by their experiences at home. Some of these experiences are also associated with stress and somatic symptoms, as detailed below.

1.7.3 Family environment, relationships and parenting

Several aspects of the family environment and parent-child relationships have been identified as risk factors for anxiety and somatic symptoms. Parental mental health is one key factor, as noted in relation to genetic inheritance. Others include parent-child attachment, parental conflict, parenting styles and modelling of behaviour.

Insecure attachment

Attachment theory suggests that one important precursor of anxiety in children may be lack of a secure parent-child bond, or attachment, thought to derive from early experiences with unresponsive or unpredictable caregivers (Bowlby, 1999). It is argued that insecure attachment relationships hamper infants' developing abilities to regulate their own emotions, in a number of ways. Fundamentally, young children without secure attachments are held to lack confidence in caregivers' availability or ability to relieve distress. Without that 'secure base', they are more likely to avoid new experiences or environments, become socially withdrawn or cling to the caregiver, and remain anxious even in safe situations (Esbjörn *et al.*, 2012). In addition, responsive caregivers' mirroring of, and feedback on, children's internal states is considered key to developing their abilities to represent, differentiate and regulate their emotions themselves (Fonagy, Gergely and Target, 2007).

Whereas secure base behaviour in infants is routinely observed in separation and reunion procedures, there is no standard indicator for older children (Kerns, 2009). It is generally held important, however, that parents are perceived as responsive, accessible, and open to communication (Kerns *et al.*, 2001; Nickerson and Nagle, 2005).

Several studies focusing on middle childhood and early adolescence have indeed found anxiety to be associated with insecure attachment. Most have used self-report measures tapping beliefs about caregivers' availability, and the extent to which children derive support from them in times of stress (Brown and Whiteside, 2008; Brumariu and Kerns, 2010; Brumariu and Kerns, 2008; Muris *et al.*, 2000a; Papini and Roggman, 1992; Roelofs *et al.*, 2006; van Brakel *et al.*, 2006). A recent meta-analysis which focused on a wider age range, spanning infancy to adolescence, and including studies using a variety of measures, also found insecure attachment to be moderately related to child anxiety (Colonnesi *et al.*, 2011).

A smaller body of research has linked insecure attachment with somatisation or physical symptoms, mainly on the basis of retrospective reports of childhood attachment (Stuart and Noyes, 1999) and relationships among adults (Waller, Scheidt and Hartmann, 2004). Insecure attachment to romantic partners was also associated with somatic symptoms in a large community sample of adolescents (aged 13-19, $N = 2052$) on the basis of self-report questionnaires, although it was more strongly linked to general anxiety and depression (Cooper, Shaver and Collins, 1998). In a smaller community sample of 10-12 year olds ($N = 87$), insecure (disorganised) attachment on interview measures was associated with somatic symptoms and a measure of school phobias on which two of four items referred to headaches and stomach aches (Brumariu and Kerns, 2010). It is unclear, however, whether these associations with physical symptoms would have held, after controlling for anxiety.

Parental conflict and relationship difficulties

There is evidence that children are affected not only by relationships with their parents, but by parents' relationships with each other. As reviewed by Rapee (2012), research has found modest links between problems in parents' relationships - particularly conflict or violence - and internalising symptoms in children. For example, data from a large longitudinal study in the US, involving 1,640 children aged 6-14, showed that parental divorce, and to a greater extent conflict, predicted later child anxiety. Notably, children whose parents divorced two years previously showed relatively low levels of anxiety, whereas those whose parents remained together but reported high levels of conflict showed the greatest anxiety. This suggests that while living with conflict is associated with (state) anxiety, it need not lead to enduring (trait) anxiety (Jekielek, 1998).

The impact of parental conflict or break-up also appears to differ by age. In one US study which followed children for ten years from age five ($N = 194$), parental separation or divorce by age 11 predicted internalising symptoms by age 15, as reported by teachers and parents on the Child Behaviour Checklist. Later experience of parental separation, among 12-15 year olds, however, was more strongly related to deteriorating academic performance (Lansford *et al.*, 2006). Similarly, in a review focusing on a broader range of parental relationship factors, stronger effects on levels of internalising symptoms were found among younger than older children (Teubert and Pinquart, 2010). This may reflect that older children are more able to draw support from peers, and less likely to fear abandonment. Indeed, research has suggested that, for children, perceived threat and self-

blame in such situations are associated with internalising symptoms (Atkinson *et al.*, 2009; Dadds *et al.*, 1999) or specifically, anxiety (Grych *et al.*, 2000).

As reviewed by Troxel and Matthews (2004), further studies have linked parental divorce and/ or conflict with self and parent-reported somatic symptoms, as well as measures derived from medical records or observed physiological responses. For example, Gottman and Katz (1989) found that, among 56 families with 4-5 year olds observed at home and during laboratory sessions, unhappily married couples tended to have a negative parenting style: cold, unresponsive and angry. Children from these families had higher levels of (parent-reported) physical symptoms which appeared to reflect chronic stress, as indicated by elevated levels of stress-related hormones. Further studies considering family functioning as well as marital status have found the former a stronger predictor of children's emotional and physical health outcomes (for example, Sweeting and West, 1995). This reinforces findings concerning internalising symptoms more broadly, and suggests that parental conflict may affect children's physical health via adverse effects on parenting and heightened emotional distress. While marital conflict is associated with maternal mental health problems, there is evidence that both factors contribute independently to explaining internalising problems in children (Hanington *et al.*, 2012).

Parental mental health

A large body of research links maternal and child anxiety, as reviewed by Beidel and Turner (1997), and others since (Hettema, Neale and Kendler, 2001; Micco *et al.*, 2009; Rapee, 2012). Although some studies have found that maternal depression also heightens the risk of child anxiety, findings are less consistent, depending partly on whether comorbidity has been taken into account (Colletti *et al.*, 2009). A meta-analysis by Micco *et al.* (2009), however, showed that parental anxiety disorder and major depressive disorder both increased the odds of children developing anxiety disorders. Without taking account of comorbidity, offspring of parents with anxiety disorders had almost four times the odds (3.91) of developing anxiety disorders as offspring of healthy controls. Odds ratios for children of parents with anxiety disorders only, major depressive disorder, and both were similar, and did not differ significantly from one another.

Compared to mothers of healthy children, mothers of those with functional abdominal pain have been found to have higher levels of depression, anxiety, and somatic symptoms

(Campo *et al.*, 2007; Garber, Zeman and Walker, 1990; van der Veek *et al.*, 2012a; Walker, Garber and Greene, 1991). There is evidence too, from the Avon Longitudinal Study of Parents and Children, that parental anxiety before the child's first birthday predicts (parent-reports of) child functional abdominal pain by age 6 (Ramchandani *et al.*, 2006), with maternal anxiety at 33 months predicting further pain and school absence at age 7 (Ramchandani *et al.*, 2007). Studies have also found that parents' own symptoms predict whether children are presented for treatment, over and above the level of discomfort reported by children. For example, Levy *et al.* (2006) found that, among 8-15 year olds ($N = 334$), clinic visits were independently predicted by mothers' psychological distress, on a composite measure of anxiety, depressive symptoms and somatization. Subsequently, a study by Czyzewski *et al.* (2007), involving 123 families, reported that parental somatisation as well as parent reports of child impairment distinguished healthy 7-10 year olds from those presenting to clinicians with RAP without identifiable organic cause, while children's own reports of somatic symptoms and impairment did not differ between groups.

That parent reports of children's symptoms have shown weak relationships with children's own accounts reinforces the importance of consulting children about their own experiences. Nevertheless, parents' mental health has been found to influence levels of child symptoms - on child as well as parent reports. Alongside evidence of a strong genetic component to the transmission of symptoms, anxious and depressed mothers' interactions with their children have also been implicated (McLeod, Wood and Weisz, 2007), and as outlined in Section 1.3.4, parenting behaviour appears, at least partly, to mediate relationships between mothers' and children's symptoms. For example, using data from the Great Smoky Mountains study on 9 to 16 year olds ($N = 1420$), Shanahan *et al.* (2008) found that although maternal depression was associated with anxiety disorder in children, this was no longer the case after controlling for factors including experience of violent events and intrusive parenting.

Parenting styles

Several thorough reviews demonstrate that anxiety disorders in children have consistently been associated with parental overprotection and control - involving high levels of parental decision-making and low autonomy granting - and less strongly linked to parental rejection or lack of warmth (McLeod, Wood and Weisz, 2007; Rapee, 2012; Rapee, 1997). There is also some evidence that parenting styles may shape children's somatic symptoms.

For example, reinforcing the findings of Gottman and Katz (1989), cited above, which connected negative parenting with child stress and physical symptoms in a community sample, Liakopoulou-Karis *et al.* (2002) drew similar conclusions from work with a clinical sample of 69 preadolescents with RAP or tension type headache, and 60 healthy controls. On well-used, validated measures, mothers of children with RAP and headache were more critical and controlling than the rest of the sample.

Experimental data also shows that controlling behaviour on the part of parents can rapidly elicit anxious responses from children. For example, mothers primed to act in a protective, controlling fashion whilst their children prepared to deliver a speech increased levels of overt anxiety in their children, relative to others whose mothers acted in a supportive way with minimal intervention, both in studies of 7-13 year olds ($N = 26$) (de Wilde and Rapee, 2008) and 4-5 year olds ($N = 24$) (Thirlwall and Creswell, 2010). In line with the argument that overprotected children become anxious as a result of believing themselves helpless within a threatening environment, one recent study involving mothers and their 6-14 year old children ($N = 75$) found that child-reports of maternal controlling behaviour predicted child external locus of control and anxiety, and that child external locus of control mediated the relationship between maternal control and child anxiety (Becker *et al.*, 2010).

Increasing attention is being paid to bidirectionality in these relationships, with acknowledgement that anxious children may elicit protective or restrictive behaviour (Drake and Ginsburg, 2012; Eley *et al.*, 2010). Longitudinal work has provided some evidence of a reciprocal relationship in preschool children ($N = 638$), with maternal overprotection predicting child anxiety, and child anxiety predicting maternal overprotection one year later, albeit on parent-report data (Edwards, Rapee and Kennedy, 2010). In a further study, using observational measures, mothers' controlling behaviour with their children at age 7 ($N = 176$) predicted later social anxiety in adolescents with historically high behavioural inhibition (BI), but not among those with low or less consistent BI across childhood. Furthermore, BI did not predict later social anxiety in children whose mothers exhibited less controlling behaviour, suggesting that children with BI are at particular risk for subsequent anxiety when mothers are overcontrolling, and that lower levels of controlling behaviour may be protective (Lewis-Morrarty *et al.*, 2012).

Parental modelling, reinforcement and information-transfer

In line with previous points concerning parental symptoms and behaviour, Field *et al.* (2008) argue that, for example, rather than a 'blanket transfer' of anxiety processes, anxious parents may provide both anxiety-specific verbal information and observational learning opportunities for their children – both of which are hypothesised to play a causal role in development of child anxiety (Field, Lawson and Banerjee, 2008; Murray *et al.*, 2007).

Parental modelling, reinforcement of anxious or avoidant behaviours, and threat-related information transfer have all been implicated in the development of child symptoms (Fisak and Grills-Taquechel, 2007). Studies show positive associations between child reports of parents modelling anxiety, or lack of sociability, and their own anxiety symptoms (Bögels *et al.*, 2001; Roelofs *et al.*, 2006), and between child-reported fearfulness and parent reports of displaying anxious feelings or behaviours in front of them. For example, among 9 to 12 year olds ($N = 40$), Muris *et al.* (1996) found that, even controlling for mothers' trait anxiety and fearfulness, the extent to which they exposed children to such feelings accounted for unique variance in children's self-reported fearfulness. A recent meta-analysis focusing on parents' physical symptoms found that parents of children reporting RAP reported more physical symptoms than parents of healthy children (van der Veek *et al.*, 2012a). Although the overall effect size was relatively small ($d = .36$), and the studies involved were cross-sectional or retrospective, this suggests that children complaining of physical pain may be more likely than their peers to observe parents doing likewise, in other words, that parental modelling may play a part in explaining levels of symptoms.

Parents may reinforce children's anxious behaviour by assisting them to avoid feared situations (such as school activities), or rewarding expressions of distress with attention or treats (Whitehead *et al.*, 1994). Retrospective studies with adults provide some evidence of parents reinforcing panic symptoms or 'sick role' behaviours (For a review, see Fisak and Grills-Taquechel, 2007). There is little evidence focusing on children's reports of symptoms, however. A systematic review by Van der Veek *et al.* (2012a) considered whether parental responses exacerbated children's abdominal pain, specifically. Unfortunately, just seven studies met their criteria for review, including that symptoms be clinically assessed, and they found insufficient evidence to evaluate parents' role. One study included in the review is of particular interest, however, as it involved RAP patients and well children, yet focused

on experimentally-induced symptoms, and therefore causal effects. Specifically, 9 to 16 year olds ($N=223$) were given a water load task which created mild discomfort by requiring them to drink until 'completely full'. While some parents were given no guidance, others were instructed to attend to children's symptoms or distract them. Verbal symptom complaints by both RAP patients and well children nearly doubled in the attention condition and reduced by half in the distraction condition, compared to the no instruction condition (Walker *et al.*, 2006), demonstrating clear effects of solicitation and distraction.

In contrast, in a recent questionnaire study by Jellesma *et al.* (2008), focusing on somatic symptoms in a community sample of 9 to 12 year olds ($N = 564$), parental solicitousness was unrelated to somatic complaints, regardless of whether parents or children reported on parents' behaviour. Whereas Walker *et al.* demonstrated an increase in verbal complaints in response to solicitous behaviour, Jellesma *et al.* asked children how often they had experienced – as opposed to communicated – particular symptoms. Arguably, some actions considered by Jellesma *et al.* as indicators of solicitation, such as letting the child do favourite activities, could in fact encourage them to focus on other things and forget their symptoms, as in the 'distraction' condition in Walker *et al.*'s experiment.

Despite their differences, both of the above studies reported gendered results. Walker *et al.* (2006) found that parent attention increased symptom complaints more among girls with RAP than boys with RAP, or well children of either sex. As they suggest, the reinforcement value of empathy may be stronger for girls than boys, who may resist suggestions of weakness, and girls with RAP may be more comfortable than their well peers with a 'sick role'. In line with the evidence on gender socialisation in Section 1.3.3, Walker *et al.* also reported a trend among parents in their 'no instruction' control group to attend more to symptoms of daughters than sons, and to make more distracting statements to boys than girls. Likewise, Jellesma *et al.* (2008) found that girls reported higher levels of parental solicitousness than did boys.

Factors other than gender may affect levels of parental solicitation in this area. Insofar as parental concern reflects perceptions of symptom severity, an association between the two is to be expected. This may partly explain the finding of Walker *et al.* (2002) that, among 8 to 18 year olds with RAP, child reports of parental attention and activity restriction, as a consequence of symptoms, predicted their maintenance over two weeks. Notably, these effects were stronger for those rating their self-worth and academic competence as low,

and the authors argue that children's success in their normal social roles may affect whether they find the 'sick role' a rewarding alternative (Walker, Claar and Garber, 2002).

It is clear from experimental studies that verbal threat information can affect children's levels of fear, alongside physiological components of anxiety such as heart rate (Askew and Field, 2008; Askew, Kessock-Philip and Field, 2008; Field, Lawson and Banerjee, 2008; Field and Schorah, 2007). In addition, there is evidence that parents may communicate their own avoidant tendencies and encourage children to interpret ambiguous situations as threatening. For instance, in discussion tasks involving 7 to 14 year olds ($N = 205$) and their parents, Barrett *et al.* (1996) observed that clinically anxious children perceived more threat in ambiguous situations, and their suggested responses became more avoidant, after family discussion. In contrast, non-anxious children became more prosocial through discussion with their parents. These contrasting reactions were linked (by the same team in another paper) to parents of anxious children being more likely to reciprocate avoidance, while parents of others were more likely to listen to and agree with prosocial plans (Dadds, Barrett and Rapee, 1996). In a further study involving ambiguous scenario questionnaires, 6-11 year olds whose interpretations involved threat also anticipated that their mother would interpret situations in a similar way. While accepting that perceptions may be driven by children's own interpretive biases, the authors point out that expectations of mothers' threat-related behaviour were related to mothers' self-reported anxiety, not – as might be expected - to children's own symptoms (Lester *et al.*, 2010).

1.7.4 Gender

As outlined in Section 1.4.2, girls report higher levels of anxiety symptoms than boys, and are more likely to be diagnosed with anxiety disorders. The reasons for this remain unclear, but a number of plausible theories have been put forward. These tend to involve biologically determined differences between the sexes, and/ or differences in their social roles and experiences (Lewinsohn *et al.*, 1998).

Biological theories

Theories such as that of the extreme male brain (Baron-Cohen, 2002) have implicated high levels of testosterone in delayed neural maturation, externalising problems associated with disinhibition and lack of empathy, and the preponderance of disorders such as autism in

boys. Conversely, based on existing findings linking maturation of the prefrontal cortex with impulse control and threat-perception (Rosso *et al.*, 2004; Yurgelun-Todd and Killgore, 2006), and evidence of more rapid maturation of the pre-frontal cortex in girls compared to boys, Zahn-Waxler *et al.* (2008) hypothesise that early maturation in infancy, influenced by low testosterone and other possible biological abnormalities, may play a role in girls' susceptibility to internalising problems. As reviewed by Hines (2011), studies have shown that levels of testosterone exposure prior to birth influence sex-typed play in childhood, gender identity and personality traits such as empathy - typically higher in girls, as discussed below. Moreover, gender role orientation (lower levels of masculinity) and (more advanced) pubertal development have been found to be related to higher levels of anxiety in children of both sexes (Carter, Silverman and Jaccard, 2011). Biological systems, however, may be reinforced by experience (for a review of recent research on the effects of parenting on children's brain development, see Belsky and de Haan, 2011).

Theories of socialisation and emotion regulation

The gender-intensification hypothesis (Hill and Lynch, 1983) suggests that, from adolescence, girls are increasingly socialised towards stereotypically feminine behaviours: dependent, relationship-driven, restrained, passive and self-sacrificing. Particularly in the context of risk factors such as parental depression or marital conflict, such behaviours, reflecting high levels of empathy, may confer increased risk of internalising problems (Zahn-Waxler, Shirtcliff and Marceau, 2008).

Sex differences in behaviour are clearly apparent long before adolescence. As reviewed by Maccoby (1998), the literature suggests that, despite differences between families, parents tend to treat their sons and daughters in similar ways, for example in terms of warmth or responsiveness. However, in addition to the evidence that they talk more about emotions with girls, as outlined in Section 2.7, there also appear to be tendencies for parents to provide sex-typed toys, to react more approvingly when children engage in 'sex appropriate' play, and to put pressure on boys not to be 'effeminate', for example by crying when upset. Expression of fear and anxiety can be considered incompatible with the male gender role, and indeed there is also some evidence that parents believe inhibited and withdrawn behaviour to be less acceptable for boys, but not girls, as children age (McLean and Anderson, 2009). Maccoby suggests that, although child temperament is likely to influence parents' behaviour, parents' greater frequency of emotion-focused talk with

daughters could encourage them at an early stage towards the more other-oriented, conflict-mitigating interaction later shown with their same-sex peers. To the extent that such styles of behaviour are modelled by mothers, or female siblings, observation within the family will provide reinforcement (McHale, Crouter and Whiteman, 2003).

Whilst acknowledging the likely roles played by biology and parental socialisation, Rose and Rudolph (2006) offer a model of peer socialisation as (further) influencing girls' and boys' emotional and behavioural development, informed by a thorough review of relevant research. In middle childhood, children spend more time with same-sex than opposite-sex peers. Rose and Rudolph suggest that exposure to same-sex peers strengthens sex-typed relationship processes, including peer relationship styles and coping behaviours. For girls, some of these relationship processes are hypothesised to strengthen intimate relationships and inhibit antisocial behaviour, but heighten vulnerability to internalising problems. As highlighted in Section 1.3.4, compared to boys, girls engage in more conversation and mutual disclosure with peers. As summarised by Rose and Rudolph (2006), there are also sex differences in other aspects of peer relationships. For example, compared to boys, girls are: more likely to value connection-oriented or pro-social goals and less likely to emphasise self-interest; more sensitive than boys to others' distress, and to the status of their friendships; exposed to a wider variety of stressors within their friendships and peer groups; and more likely to ruminate, express their emotions or seek support, but less likely to use humour, in response to stress. They are also less likely than boys to engage in physical and competitive play, which, as Rose and Rudolph point out, may promote positive mood and buffer boys against emotional problems. Of note, there is also some evidence that girls are sympathetic to their same-sex peers displaying somatic symptoms, and judge them more deserving of relief from responsibility, than they do boys reporting comparable symptoms, even though in vignettes, boys' symptoms were judged by both sexes as more severe (Guite *et al.*, 2000). As the authors suggest, this is in line with the notion that physical illness is more socially acceptable among women.

In line with this, one theory is that some observed gender differences in coping or emotion regulation strategies account for girls' elevated levels of anxiety (for a review focusing largely on adults, see Nolen-Hoeksema, 2012). In particular, as noted previously, girls report more frequent rumination and co-rumination than boys, both of which have been associated with anxiety (as detailed further in Section 2.6). A tendency to seek social support, as opposed to relying on personal coping resources, may also decrease girls' self-

efficacy (Craske, 2003) and thereby increase avoidant behaviour (McLean and Anderson, 2009). As highlighted previously, the direction of effects with regards to coping strategies and symptoms remains unclear, but it is conceivable that girls' use of these less successful strategies reinforces existing anxiety - developed through bidirectional interactions between biological vulnerabilities and environmental factors.

1.8 Summary

This section draws out key messages from the (mostly) separate literatures on patterns of communication, and on children's anxiety and somatic symptoms. This brief summary acts as a bridge to Chapter 2 which reviews studies which have explored connections between communication and symptoms.

One clear message from the literature is that family members, and particularly mothers, are important communication partners for children in middle childhood. This holds with regard to communication about varied topics and emotions, including worry and distress, as well as activities with friends and experiences at school. Children talk more to mothers than fathers, in general, and mothers appear to know more about their daily lives than do fathers – even in two-parent households. In seeking, therefore, to measure the extent of communication and confiding, and assess its relationship with symptoms, it is expedient to focus primarily on mother-child interaction – or that between children and their primary caregivers¹, who are likely to be mothers in most cases. Disclosure with friends becomes more frequent with age, however, and may play a more significant role for 11 year olds than 7 year olds.

The literature reveals a number of influences on the nature and extent of communication with mothers (and others). One key factor is gender. Although findings are not uniform, and their interpretation is complicated by the range of measures used, girls do appear to confide more than boys in parents as well as peers, and to talk more about emotions, problems and activities. Exploration of links between child communication and outcomes

¹ For the purposes of this study, 'primary caregiver' was defined as the parent or carer who acts as the child's main carer and spends most time looking after them.

should take this into account, and consider whether the salience of confiding as a predictor of levels of symptoms also differs by gender.

There is evidence that such gender differences stem partly from socialisation of communication at home, with emotion talk, in particular, encouraged more in girls, although parents' behaviour has been shown to affect language development and expressiveness in children of both sexes. Compared to levels of disclosure, levels of 'secrecy' appear to differ less consistently by gender. This may reflect that measures of secrecy have been more open to interpretation, masking that some children are hiding distress, and others 'bad' behaviour. Given that anxiety is a key concern for this study, it appears desirable to include items which focus clearly on withholding, as well as sharing, of worries.

There is mixed evidence with regard to whether demographic factors such as socio-economic status or ethnicity affect levels of communication. Children have been found to confide more in biological parents than stepparents, but in general, the evidence suggests that parenting styles and the quality of parent-child relationships are more closely linked to patterns of disclosure than is family structure. Expected parental reactions are one important consideration for children, in deciding whether or not to share their experiences, although in some cases they report wishing to downplay what they consider uncomfortable or unimportant issues. As children's experiences of communication and perceptions of confidants' receptiveness may affect both their propensities to talk, and the benefits derived from doing so, it is important that research taps these factors, as well as the frequency of communication.

Prevalence rates for anxiety disorders and (functional) somatic symptoms vary substantially, depending in part on whether evidence of impairment or clinical assessment is required. Nevertheless, community studies suggest that a large minority of children are affected by symptoms of both types. As with communication, it appears that gender is a factor, with girls reporting higher levels of symptoms than boys.

While exploration of genetic factors lies outwith the scope of this study, it is important to acknowledge their important role: anxiety clearly runs in families, and at least part of this link is explained by biology. Alongside physiological susceptibility to stress, negative or traumatic life events also appear to play a part, as do deficiencies in emotion regulation or

coping skills. Although rates of depression among children are relatively low, there is substantial comorbidity between child anxiety, somatic symptoms and depression. This suggests that depressive symptoms should be taken into account when exploring the role of communication in relation to other types of symptom.

Overall, there is more evidence to suggest that parent –child relationships and other parenting factors, rather than socioeconomic status or family structure, influence symptoms among the age group in question. Insecure attachment has been linked to anxiety, and to some extent somatic symptoms, on measures which focus on obtaining support from parents in times of stress – in part, through confiding about worries. In order to explore whether communication *per se* plays a part in explaining either anxiety or somatic symptoms, it is important to consider factors such as parental warmth and control as possible mediators of relationships.

It appears crucial to seek children’s own reports of both their communication patterns and symptoms. Parents may be the more reliable reporters in relation to some aspects of children’s lives, and determine whether their symptoms receive medical attention. They have been found to overestimate child disclosure, however, while their own symptoms appear to influence their perceptions of those of their children. Moreover, children’s own perspectives, however partial, shape their behaviour.

Chapter 2

Review of the literature: Part 2

2.1 Introduction

Chapter 1 considered patterns of child communication, influences upon the nature and extent of confiding, and the prevalence and key predictors of anxiety and somatic symptoms. Of primary interest to this thesis, however, are associations between communication and outcomes for children. Accordingly, this chapter reviews existing research linking the two. Material is drawn from studies underpinned by a range of theories and concerning the role of child disclosure in the monitoring literature; open and problem communication in family systems; attachment in middle childhood; co-rumination with friends and family; socialisation and regulation of emotion; and alexithymia, or 'lack of words for feelings'. Particular attention is given to the measures employed in each case.

2.2 Parental monitoring, knowledge and child disclosure

Numerous studies suggest that parental monitoring or knowledge of children's activities plays a protective role in relation to child outcomes. Although this body of work focuses mainly on externalising behaviour in adolescence, it offers useful insights regarding the importance of child disclosure to parental knowledge and child outcomes, and raises some important issues around the measurement of communication.

2.2.1 The importance of children's voluntary disclosure

Links between parental monitoring and child adjustment are said to reflect that parents who know more about their children's lives are better placed to provide discipline, support and guidance. Reviewing the literature, however, Stattin and Kerr (2000) highlighted that consistent associations between adjustment and 'monitoring' were based on measures conflating three routes to knowledge: spontaneous disclosure by children; parental solicitation; and control, or imposition of rules and supervision. Moreover, they demonstrated the relative significance of child disclosure in predicting parental knowledge and externalising outcomes (Kerr and Stattin, 2000; Kerr, Stattin and Trost, 1999; Stattin and Kerr, 2000), drawing similar conclusions from child and parent reports, and both cross-sectional and longitudinal data (Kerr, Stattin and Burk, 2010). Further studies which

differentiate routes to parental knowledge have reinforced these findings (Smetana, 2008; Soenens *et al.*, 2006).

2.2.2 Disclosure, behaviour and symptoms within the monitoring literature

Levels of disclosure are, not surprisingly, associated with the nature of what is disclosed. Stattin and Kerr acknowledged that delinquency is likely to be concealed - thus associated with more limited disclosure (Kerr, Stattin and Burk, 2010). This is supported by other studies linking the content and extent of communication. For example, Laird and Marrero (2010) had mothers and children ($N = 218$, $M = 12$ years) report on children's levels of disclosure and concealment (omitting details, secrecy or lying). As expected, more disclosure and less concealment were associated with less rule-violation. Similar results, indicative of children avoiding censure by keeping parents 'in the dark', are reported elsewhere (Darling *et al.*, 2006; Darling *et al.*, 2009). Importantly, delinquency predicts decreased parental knowledge over time (Laird *et al.*, 2003), with stronger increases in delinquency linked to a more pronounced decline in disclosure through adolescence (Keijsers *et al.*, 2009).

The strength of associations between disclosure and outcomes may depend partly on the measures involved. Particularly where these concern disclosure of potentially rule-breaking activities, it is likely that lack of openness is predicted by externalising or anti-social behaviour. Arguably, Stattin and Kerr's five-item scale provides a good example. Alongside items about school performance and relationships with teachers, it asks children whether they 'keep a lot of secrets' and 'hide' their free time activities (Stattin and Kerr, 2000). While for most children, achievements at school might not incur parental disapproval, it is not surprising that secretiveness about activities is strongly associated with externalising outcomes. Whether studies have employed activity-based or other measures of communication is also a relevant factor when considering links with internalising symptoms. 'Good' but anxious children might readily disclose facts about their day; confiding about feelings is a different matter. Just as parents may struggle to discipline offspring who successfully hide 'bad' behaviour, their ability to help stressed or unhappy children depends to some extent on children's willingness to verbalise thoughts and feelings (Eisenberg, Cumberland and Spinrad, 1998).

A key study by Kerr and Stattin (2000), attending to internalising as well as externalising symptoms among adolescents ($N = 1186$), found that the association between disclosure and depressed mood ($r = -.27$) was indeed weaker than those between disclosure and deviancy ($r = -.37$) or school problems ($r = -.48$). As argued previously, this might be expected, given the focus of their measure of disclosure. Laird and Marrero (2010), whose measure of disclosure concerned misbehaviour or broken rules, reported similar results among 12-year olds ($N = 218$).

A number of studies have argued in favour of distinguishing disclosure and secrecy as separate constructs, with secrecy alone explaining links with adverse outcomes. Although the two clearly overlap to an extent, secrecy is conceptualised as intentional concealment, and disclosure as freely sharing information. Bumpus and Hill (2008), for example, examined associations between disclosure, secrecy and adjustment, in a two-stage study among preadolescents ($M = 9.4$ years, $N = 203$). Disclosure and secrecy were assessed using items from Kerr and Stattin (2000), supplemented by others on secrecy, for example, *'Sometimes I decide NOT to tell my parents about what I do with my friends'*. Baseline secrecy, but not communication, predicted Year 2 adjustment, based on teachers' ratings of externalising behaviour. In a later four-wave study among adolescents ($N=309$), Frijns *et al.* (2010) found that secrecy about activities, but not disclosure to parents, was a longitudinal predictor of not only (self-reported) delinquency, but also depression on the Children's Depression Inventory. Unlike delinquency, depression did not predict secrecy, in line with previous points on the direction of causation between symptoms and disclosure about behaviour. Nevertheless, Frijns *et al.* conclude that the negative impact of secrecy, rather than benefits of disclosure, affect wellbeing. While the nature of secrets may influence outcomes, it is suggested that suppressing information may cause psychological and physiological stress, as well as prevent children from gaining external support.

Few studies within the monitoring literature consider associations between disclosure and internalising symptoms. The exceptions tend to assess depressed mood rather than anxiety and maintain a predominant focus on externalising behaviour, reflected in the selection of measures of disclosure, and the results reported. Nevertheless, this body of work suggests that lower levels of disclosure, and to a greater extent higher levels of secrecy, are linked to internalising symptoms among children and adolescents.

2.3 Self-disclosure, secrecy and internalising symptoms

Moving away from studies of delinquency, researchers in other fields have focused less on disclosure of activities and more on self-disclosure, about thoughts, feelings and personal experiences. They have also considered a wider range of internalising outcomes, including anxiety and somatic symptoms. As research attending to both communication and internalising symptoms has tended to involve adults or adolescents, this section considers key findings among both of these groups, as well as among younger children.

2.3.1 Self-disclosure, secrecy and symptoms among adults

Among adults, depression and, to a lesser extent, anxiety have been associated with avoidance of verbal self-disclosure (Kahn and Garrison, 2009). As might be expected, given that fear of rejection or humiliation is characteristic of social anxiety, adults with this disorder, in particular, are less likely to self-disclose (Alden and Bieling, 1998; Cuming and Rapee, 2010; Meleshko and Alden, 1993) and more likely to avoid expressing emotion (Davila and Beck, 2002; Grant *et al.*, 2007). Not surprisingly, anxiety specifically about self-disclosure predicts active self-concealment (Endler *et al.*, 2002).

Paralleling distinctions between secrecy and lack of disclosure about activities, self-concealment has been found to carry greater variance than lack of confiding with respect to internalising symptoms, in a range of studies using well-validated self-report measures. One early study by Larson and Chastain (1990), for example, found that within a community sample ($N = 306$), concealment of personal information was distinct from lack of disclosure, and positively related to anxiety, depression and bodily symptoms. Self-concealment independently predicted symptoms after controlling for trauma, social support and self-disclosure. Finkenauer and Rime (1998a) also found that emotional secrecy independently predicted poor physical health among students ($N = 377$), even after accounting for negative affect. In a similar student sample ($N = 552$), 'secret keeping' and 'ambivalence about expression' were related to anxious arousal, whereas emotional expression was not (Barr, Kahn and Schneider, 2008).

Reinforcing this self-report data, experimental research has demonstrated physical effects of suppressing emotion expression. For example, in a careful study involving 180 students, Gross and Levenson (1997) found that, unlike controls, those instructed to suppress

emotion while watching sad and amusing (but not neutral) films showed clear physiological reactions, with increased sympathetic activation of the cardiovascular system.

2.3.2 Self-disclosure, secrecy and symptoms among children and adolescents

Following earlier studies among adults, secrecy has been linked to depression, stress and physical complaints among older children and adolescents, using measures focused on self-concealment. For example, Finkenauer *et al.* presented adolescents ($N = 227$) with items such as '*My secrets are too embarrassing to share with my parents*', and found that secrecy independently predicted physical symptoms, whereas disclosure and relationship satisfaction did not (Finkenauer, Engels and Meeus, 2002). Likewise, a large 2-wave study with 10-14 year olds ($N = 1173$) found that keeping thoughts and feelings from parents was associated with current and later depression and stress, whereas possible confounding variables including open communication and perceived parental support were not (Frijns *et al.*, 2005). More recently, Frijns and Finkenauer (2009) found that, among 13-18 year olds ($N = 278$), keeping secrets from parents predicted depression after six months, whereas confiding in them about secrets predicted decreased depression and greater self-control. In a larger cross-sectional study with 14-19 year olds ($N = 790$) which considered a range of possible confidants, physical complaints and depressive symptoms were also associated with having private, not shared, secrets – more so among girls than boys. Of note, the importance adolescents attached to their secrets accounted for some of the variance in symptoms (Frijns, Finkenauer and Keijsers, 2013).

Taking a somewhat different approach, Smetana *et al.* (2009) explored disclosure, non-disclosure and lying to parents regarding specific topics, among 12 to 16 year olds ($N = 118$). Although most items concerned traditional 'monitoring' issues, such as involvement in proscribed activities, a set of seven labelled 'personal' covered disclosure about friends' lives, romantic 'crushes', use of pocket money, free time activities, conversations with friends and moods, or 'true feelings'. Full disclosure with respect to all topics was associated with better quality parent-child relationships and, as in previous studies, with less depressed mood. Notably, lying about 'personal' issues was significantly associated with depressed mood ($r = .41$), whereas lying about rule-governed or 'prudential' issues (such as parties, smoking or drinking) was not. As noted in previous sections, others have reported strong associations between secrecy about activities and externalising behaviour.

Taken together, these findings confirm the varying relevance of particular topics, when measuring associations between communication and different types of symptoms.

Finally, a number of studies have considered associations between self-disclosure with friends, mainly about problems, and internalising symptoms. For example, in research involving paired discussions among 14-15 year olds ($N = 158$), Landoll *et al.* (2011) found that observed disclosure about personal problems predicted fewer depressive symptoms six months later, but only for boys, whose levels of disclosure were lower than girls'. While self-reported avoidance of disclosure may have been associated with symptoms for both sexes, the authors suggest that talking to friends may not be a particularly effective coping strategy for girls, and that the nature of discussion may be more salient than its extent – an important issue discussed further in Section 2.6.1. Another relevant study considered relationships between self-disclosure and somatic symptoms among younger children (aged 10-11, $N = 688$) (Jellesma, Rieffe and Meerum Terwogt, 2008). Disclosure was assessed using items from the Friendship Quality Questionnaire (Parker and Asher, 1993b), such as '*We always tell each other our problems*'. Thus measured, disclosure was not associated with somatic symptoms, except that for boys without reciprocated best friends, it was associated with higher levels of symptoms. This may reflect that exclusive friendships and confiding are more normative among girls, whereas among boys, high levels of personal disclosure signal unusually high levels of emotional issues and confiding behaviour which may not be welcomed by peers. In this case, too, it is unclear whether avoidance of disclosure would have been associated with symptoms, had this been measured.

Overall, these findings provide further evidence of links between aspects of communication and internalising symptoms, at least in older children and adolescents, and particularly in relation to communication, or secrecy, with parents. As with the monitoring literature, the studies reviewed in this section have focused primarily on depression, as opposed to anxiety or somatic symptoms, with the exceptions considering one or the other, rather than both.

2.4 Open or problem communication and internalising symptoms

A substantial body of work which has explored aspects of communication and their relationships with symptoms has employed the Parent-Adolescent Communication Scale or

PACS (Barnes and Olson, 1982; Olson, Sprenkle and Russell, 1979). Underpinning the measure is a broad conceptualisation of family communication: as well as self-disclosure, it encompasses clarity and speaking skills, listening skills (empathy and attention), as well as respect and regard, considered affective features of communication (Olson, 2000).

Studies based on the PACS – some previously cited in Chapter 1 - are of particular interest, as the scale gives equal weight to open and problem communication; has been administered in parallel forms to parents and children; and has been used to consider associations between communication and anxiety. Designed for those aged 11 and above, it consists of two subscales, each with ten statements (Barnes and Olson, 1982). Example items include, for Open Communication: *'My mother is always a good listener'*, and *'I can talk to my mother without feeling restrained or embarrassed'*. Problem Communication items include: *'I don't think I can tell my mother how I really feel about some things'* and *'My mother insults me when she is angry at me'*. The scale focuses firmly on experiences of verbal communication, rather than the extent of communication on particular topics. Matched items are presented to parents, for instance *'My child is always a good listener'*.

In one of the first relevant studies, Hartos and Power (1997) investigated links between communication on the PACS, maternal awareness of stressors, and adolescents' scores on the Child Behavior Checklist (Achenbach, 1991). Results revealed that mothers generally underestimated the levels of stress experienced by their adolescent children (aged 13 – 15, $N = 161$). Awareness of adolescent stress, in relation to eight broadly-defined stressors, was positively associated with adolescent reports of communication, and negatively associated with anxious/ depressive symptoms on the CBCL. Essentially, adolescents who reported more open and less problematic communication with mothers, and whose mothers were more aware of their stressors, reported better adjustment. In a second study, among lone parent families, the same authors found that mothers were aware of their offspring experiencing stress in only half of the areas reported by adolescents (Hartos and Power, 2000b). Once again, adolescent reports of communication were negatively correlated with their and their mothers' reports of anxious/depressed behaviours (respectively, $r = -.24$ and $r = -.27$). There were also relatively strong associations between mothers' reports of adolescent communication and internalising symptoms ($r = -.41$), such that mothers who reported more satisfactory communication with their children considered them less symptomatic.

Using the PACS with older adolescents ($M = 18$ years, $N = 502$), Landman-Peeters *et al.* (2005) examined relationships between parent-child communication and separate measures of anxiety and depression, whilst also considering the potentially moderating role of social support. As hypothesised, total PACS scores (with openness rather than problem items reverse-scored) were significantly related to depressive symptoms ($r = .31$) and, to a lesser extent, anxiety, on a measure dominated by panic symptoms ($r = .17$). Although social support partly mediated the association with depression, it made no independent contribution to predicting anxiety, over and above communication. The authors conclude that social support appears less relevant than communication to the development of anxiety. However, their measure of social support asked adolescents to indicate how many people provided support and their satisfaction with it. Had they focused specifically on parental support, results may have been different. In addition, some of the PACS problem communication items may themselves be tapping perceptions of critical or controlling parenting, and therefore relationship factors which are particularly relevant to anxiety.

Herrero *et al.* explored relationships between communication with parents, one particular stressor - victimisation at school - and distress (on a composite measure of stress and depression), among 11-16 year olds ($N = 973$). The PACS was split into 'Open Communication' and (unusually) 'Hostile Patterns' and 'Topics Avoided' subscales, which showed similar associations with stress ($-.43$, $.35$ and $.46$) and depression ($-.37$, $.30$ and $.45$). Both communication and victimisation contributed independently to explaining levels of distress, although it is unclear what contribution communication might have made over and above stressors other than victimisation, which were not measured in the study (Herrero, Estévez and Musitu, 2006). Another recent study using the PACS found that adolescent anxiety was similarly related to communication with healthy, but not ill, parents, in a small sample with chronically ill mothers or fathers ($N = 38$, $M = 15$ years). Associations between scores on the Revised Children's Manifest Anxiety Scale and Problem Communication (reverse scored), Open Communication and Total PACS scores were all moderately strong at $-.38$, $-.44$ and $-.48$. Plausibly, the authors suggest that reluctance to express negative feelings about very ill parents may explain the lack of any link between anxiety and reported communication with them (Houck, Rodrigue and Lobato, 2007).

Further relevant studies using the PACS have confirmed associations between perceptions of parent-child communication and internalising symptoms other than anxiety. One such study involved adolescents presenting to accident and emergency departments for self-

inflicted injuries, and hospital-based controls (aged 14-19, $N = 52$). Lacking a confidant within the family was strongly associated with self-harm, as was poor parent-adolescent communication, even after controlling for factors including family cohesion, locus of control and depression (Tulloch, Blizzard and Pinkus, 1997). The authors acknowledge potential bi-directional influences, such that depression may affect communication, as well as perceptions of it. In another recent study using a community sample, adolescents ($N = 336$) reported lower levels of satisfaction with health, self-esteem, and problem-solving, if they perceived less open communication between themselves and their parents. This was the case regardless of whether their parents reported low or high levels of communication. This is interpreted as confirming that child, rather than parent, perceptions of their interactions are more important to child adjustment, because these perceptions are conducive to wellbeing and/or because adjustment problems lead children to avoid disclosure (Xiao, Li and Stanton, 2011). As with results reported by Tulloch *et al.*, and indeed any studies demonstrating such links, they could also reflect that internalising problems predispose respondents to negative evaluations of their interactions with others.

In summary, the cross-sectional studies discussed in this section indicate that open, uninhibited, and problem-free communication about thoughts and feelings with parents perceived as responsive, is associated with lower levels of internalising symptoms, including anxiety, in adolescence. These studies generally fail to clarify whether perceived communication contributes independently to predicting anxiety, after taking into account other aspects of relationships with parents. In some cases, however, they suggest that communication makes a contribution distinct from that of other factors such as parental support.

2.5 Attachment, confiding and internalising symptoms

A further set of studies concerning communication, broader parent-child relationships and internalising symptoms is informed by attachment perspectives. As outlined in Chapter 1, insecure attachment has been associated with anxiety and somatic symptoms. Of interest here is the fact that measures of attachment in middle childhood, such as the Security Scale (Kerns *et al.*, 2001), devote considerable space to items covering confiding behaviour, such as '*Some kids do not really like telling their mom what they are thinking or feeling, but other kids...*'. Unfortunately, communication items are rarely scored separately from those concerning other aspects of behaviour or relationships.

One measure of attachment developed for this age-group does formally distinguish communication from other factors. The Inventory of Parent and Peer Attachment-Revised (IPPA-R) (Gullone and Robinson, 2005) was adapted for 9-11 year olds from the IPPA, designed for adolescents aged 16-20 (Armsden and Greenberg, 1987). As noted in Chapter 1 (Section 1.3.5), communication is considered one aspect of attachment relationships, alongside trust (understanding and respect) and alienation, with each scored on separate subscales. Items relating to communication with parents include *'I like to get my parents' view on things I'm worried about'* and *'If my parents know that I am upset about something, they ask me about it'*. Unfortunately, studies of links between symptoms and attachment based on the IPPA or IPPA-R tend to report only total scores, obscuring the distinct contributions of each subscale (for example: Costa and Weems, 2005; Mothander and Wang, 2011; Papini and Roggman, 1992). There are exceptions, however, which consider links with anxiety, albeit among adolescents rather than younger children. For example, Muris *et al.* (2001) found that, among 12-14 year olds ($N = 155$), while scores for Trust and Alienation were associated with anxiety on the SCAS, those for Communication were not. As highlighted previously, however, there is a great deal of conceptual overlap between subscales. At face value, communication is being tapped by all three. For example, alongside more clear-cut 'alienation' items, such as *'I wish I had different parents'*, several items on this subscale pertain to confiding or reluctance to do so, such as *'It does not help to show my feelings when I am upset'*, *'Talking over my problems makes me feel ashamed or foolish'* and *'I get upset more than my parents know about'*. Likewise, several 'trust' items consider parents' listening skills during conversations, for example, *'When we discuss things, my parents consider my point of view'* (Gullone and Robinson, 2005). Hale *et al.* reported that, among 12 – 19 year olds ($N = 1106$), scores for Alienation, but not Communication, were moderately associated with anxiety, on the Screen for Child Anxiety Related Emotional Disorders, or SCARED (Hale, Engels and Meeus, 2006). In their abbreviated version of the Alienation subscale, however, Hale *et al.* included *'My parents have their own problems, so I don't bother them with mine'* and *'Talking over my problems with my parents makes me feel ashamed or foolish'*. On this basis, two of five items representing Alienation measured 'problems communicating problems'. Conversely, of three Communication items, just one directly concerned child disclosure: *'I tell my parents about my problems and troubles'*. Accordingly, despite these studies suggesting that confiding is not of relevance to anxiety, closer examination of the IPPA subscale items suggests otherwise.

To summarise, while measures of attachment which accord an important role to child communication have been linked to anxiety and somatic symptoms, communication has rarely been measured in such a way as to enable distinguishing its contribution from that of other aspects of relationships. In particular, several items on other subscales of the IPPA(R) appear to tap secrecy or discomfort with disclosure. In addition, these measures of attachment have not been used to explore links between communication and either anxiety or somatic symptoms among preadolescents. Finally, on account of their concern with safe-base behaviour, these studies focus on confiding around stressors or distress, rather than disclosure in a broader sense.

2.6 Co-rumination and internalising symptoms

In most of the relevant literature, child disclosure or confiding is presented as healthy or beneficial, with others' responses as one factor affecting its nature or extent. The term co-rumination has more negative connotations. Whereas it is possible to study parental responses separately – for example, measuring mothers' dismissing, validating or challenging talk to their children – co-rumination emphasises the content of their interaction. The sections below consider studies relating symptoms to co-rumination with friends and mothers, as well as the linked phenomenon of maternal confiding in children.

2.6.1 Co-rumination with friends

In 2002, Rose developed a measure of co-rumination, described as 'extensively discussing and revisiting problems, speculating about problems, and focusing on negative feelings'. The 27-item scale includes items such as *"When we talk about a problem that one of us has, we usually talk about that problem every day even if nothing new has happened"* (Rose, 2002). Co-rumination was contrasted with 'normative' self-disclosure, assessed using five items from Parker and Asher's (1993b) Friendship Quality Questionnaire, including *'We talk about the things that make us sad'*. Arguing that co-rumination involves a form of disclosure indicative of close relationships, but also emotional difficulties, Rose hypothesised that the construct would relate both to high quality friendship but also problematic adjustment. Indeed, in a large sample of 8-14 year olds ($N = 608$), co-rumination was linked to friendship quality but also aspects of depression and anxiety, on a composite measure using items from the CDI (Kovacs, 1992) and the Revised Children's Manifest Anxiety Scale: RCMAS (Reynolds and Richmond, 1997).

Rose found that, although girls reported higher levels of both co-rumination and internalising symptoms than boys, co-rumination significantly predicted internalising symptoms even after controlling for gender. The association between self-disclosure and co-rumination was relatively high ($r = .61$). However, self-disclosure was more predictive of friendship closeness than was co-rumination. Conversely, although disclosure was positively associated with internalising symptoms, when entered into regression analyses alongside co-rumination, only co-rumination was a significant predictor. This suggests that the positive relationship between disclosure and symptoms was accounted for by shared variance with co-rumination, and that disclosure at 'normative' levels does not elevate risk (Rose, 2002). Arguably, given that items on each measure refer to negative emotions, 'disclosure' could partly tap the extent of children's problems, and 'co-rumination' their preoccupation with them – which is also consistent with results as reported.

Subsequently, in a larger sample of 8-14 year olds ($N = 813$), followed over 6-months, Rose *et al.* found that, for girls, co-rumination with friends predicted increased depressive (CDI) and anxiety symptoms (RCMAS) on separate measures, as well as increased friendship quality over time. In turn, friendship quality, depression and anxiety symptoms predicted increased co-rumination. For boys, however, although co-rumination predicted increased friendship quality, it did not predict increased depression or anxiety (Rose, Carlson and Waller, 2007). Plausibly, the authors suggest that co-rumination may be a stronger risk factor for depression and anxiety in girls if their interaction involves (re)framing problems in such a way as to exacerbate them. This is in line with evidence that girls are more likely to take personal responsibility for failures and make internal attributions about problems (Pomerantz and Ruble, 1998), and with findings concerning (solitary) rumination, a tendency towards which has consistently been linked to increased depression and anxiety scores over time (Nolen-Hoeksema, Parker and Larson, 1994; Roelofs *et al.*, 2009). Tompkins *et al.* (2011) also found that co-rumination was positively correlated with anxiety/ depression on the Youth Self-report subscale (Achenbach and Rescorla, 2001), in a cross-sectional study involving adolescents ($N = 146$, $M = 16.8$ years). Co-rumination accounted for unique variance in internalising symptoms, albeit a small amount, even after controlling for gender and other factors including secondary control or engagement coping strategies (such as acceptance, cognitive restructuring, distraction and positive thinking).

Both Rose's initial study (Rose, 2002) and that of Tompkins *et al.* (2011) used composite measures of internalising symptoms. While Rose *et al.* (2007) measured anxiety and

depression as distinct constructs, they did not examine relationships between co-rumination and anxiety while controlling for depression. Another study, albeit in a small sample of 13 year old girls ($N = 83$), found that initially, co-rumination was associated with depressive symptoms but unrelated to social anxiety. Following control for depressive symptoms, however, there was a negative relationship between co-rumination and social anxiety (Starr and Davila, 2009). As the authors point out, co-rumination involves a focus on problems, but where those problems are not overwhelming, and for those without tendencies towards depression, co-rumination may entail problem-solving and beneficial effects. In this context, co-rumination is more akin to mutual self-disclosure. They also suggest that the lack of a positive association between social anxiety and co-rumination may also partly reflect tendencies for socially anxious adolescents to have fewer (intimate) friendships (La Greca and Lopez, 1998) and thus lack opportunities to disclose as well as be reluctant to do so, fearing negative evaluation. Co-rumination, involving prolonged discussion of problems with friends, may therefore be more weakly associated with social anxiety than, for example, general anxiety. Indeed, Jose *et al.* found that co-rumination (on a short 9-item version of Rose's scale) did not predict social anxiety over six months, in a study involving adolescents aged 13-16 ($N = 575$). Social anxiety, however, indirectly predicted co-rumination, in that Time 1 social anxiety predicted (solitary) rumination at Time 2, which in turn predicted co-rumination at Time 3. These relationships were more robust for girls, who, compared to boys, reported higher levels of symptoms, rumination, and co-rumination (Jose, Wilkins and Spindel, 2012).

Others have demonstrated that co-rumination can lead to physical symptoms of stress, albeit among adults. Byrd-Craven *et al.* (2008) used an experimental task to elicit and measure effects of co-rumination among female students in friendship pairs ($N = 48$; $M = 19.9$ years). After controlling for self-reported co-rumination (on Rose's 2002 measure) and baseline cortisol, they observed that co-rumination was associated with a significant increase in cortisol levels in the experimental group, indicating heightened anxiety. A later study by the same authors involving 44 female friendship pairs ($M = 20.0$ years), extended these findings by measuring activity of both 'stress systems': the hypothalamic-pituitary-adrenal axis (via salivary cortisol) and sympathetic nervous system (via salivary alpha-amylase, sAA). As before, observed co-rumination predicted increased cortisol responses, while negative affect focus during problem discussion predicted increases in both cortisol and sAA (Byrd-Craven, Granger and Auer, 2011). The authors suggest, on this basis, that co-rumination can amplify hormonal responses to stress, with dual system activation or

hyperarousal indicating use of emotional rather than cognitive coping strategies, and being one physiological pattern linking co-rumination to internalising symptoms, even in the context of high-quality friendships.

2.6.2 Co-rumination with mothers and maternal confiding in children

Although there has been more research on co-rumination with friends than with family, of particular relevance for the current study is previously cited work by Waller and Rose (2010) on co-rumination with mothers, in a sample of 10-16 year olds ($N = 516$). Children reported on co-rumination concerning their and their mothers' problems, both parties' 'normative' self-disclosure, and internalising symptoms on the Youth Self-Report anxious/depressed subscale (Achenbach and Rescorla, 2001). Unlike self-disclosure, or co-rumination about their own problems, co-rumination about mothers' problems was a significant independent predictor of internalising symptoms in children, although co-rumination about mothers and children's problems were strongly related ($r = .63$). It may be that when mothers are pre-occupied with their own problems, they engage in particularly negative or unproductive co-rumination with their children, but when they are not, prolonged discussion of the child's problems may at times be constructive. Of note, Waller and Rose did not distinguish symptoms of anxiety and depression. In another study to consider the issue, albeit among undergraduate students ($N = 345$) rather than children (Calmes and Roberts, 2008), co-rumination with parents was significantly associated with anxiety, but not depression. In this case, the authors state that relationships with anxiety were the same regardless of whether the focus was on co-rumination about parents' (typically mothers') problems, or those of their offspring. As in Waller and Rose's study, the two were closely linked: $r = .66$).

These findings are consistent with work on 'parentification', demonstrating that inappropriate maternal confiding, whereby children provide, rather than receive, emotional support, impacts negatively on their wellbeing (Katz, Petracca and Rabinowitz, 2009; Peris *et al.*, 2008; Waller, 2006). It is reasonable to expect that mothers who suffer from depression or anxiety may have, and therefore potentially disclose, more difficulties. As reviewed in Chapter 1, there is abundant evidence that mental health problems in mothers impact directly on family interaction and are associated with internalising symptoms in children (Foster *et al.*, 2008; Lim, Wood and Miller, 2008; Lovejoy *et al.*,

2000). However, there are also indications that deficits in mothers' confiding relationships with other adults carry risks additional to those posed by maternal symptoms. Goodyer *et al.* found that mothers' poor confiding relationships, distress and recent stressful life events focused on children were all independently associated with anxiety and depression in a sample of 7-16 year olds, including 100 children suffering from anxiety or depression, and 100 community controls (Goodyer, Wright and Altham, 1988). Koerner *et al.* also found that daughters' reports of maternal disclosure regarding financial problems and negativity towards ex-partners were associated with psychological distress (on a scale tapping depression, anxiety and somatic symptoms), in a sample aged 11 to 17 years ($N = 62$) (Koerner, Jacobs and Raymond, 2000). As reported elsewhere, the same study found that, in addition to the direct relationship between financial hardship and adolescent distress, hardship was found to be indirectly related to daughters' distress through maternal disclosure (Lehman and Koerner, 2002).

One other recent study is of interest, despite its focus on depression, because it examined relationships between maternal self-disclosure and child symptoms for girls and boys separately. On the basis of longitudinal research with 428 children ($M = 13.4$ years) and their parents, Lichtwarck-Aschoff *et al.* (2012) found that child reports of maternal self-disclosure at baseline were linked with higher levels of depression among boys, but lower levels among girls, four years later. This was the case even after controlling for the severity of maternal depression and the quality of parent-child relationships. Maternal disclosure was also cross-sectionally associated with lower levels of depression among girls, while there was no cross-sectional association with boys' symptoms. Plausibly, the authors suggest that acting as maternal confidants sits uneasily with masculine gender roles, and that as a result of gendered socialisation, boys may feel overwhelmed by a degree of maternal disclosure which might be welcomed by girls.

In summary, it appears that parent, as well as child, disclosure matters: inappropriate maternal confiding about adult problems – like co-rumination – is associated with adverse outcomes for children, including an elevated risk of anxiety. Though few studies have investigated gender differences in the effects of maternal disclosure (inappropriate or otherwise), there is some recent evidence that maternal self-disclosure about thoughts and feelings is associated with positive outcomes for girls, but higher levels of internalising symptoms among boys.

2.7 Emotion socialisation, communication and anxiety

Whereas much of the work discussed in this chapter has tended to involve older children or adolescents, a number of studies have explored links between socialisation of emotion, family talk about feelings, and outcomes including anxiety in younger children. As thoroughly reviewed by Gentzler *et al.* (2005), there are various theoretical bases for a link between parent-child emotion talk and constructive coping. These include expectations that parents who discuss emotions openly – but without the relentlessly negative focus implied by co-rumination – serve as positive role models, teaching children to recognise, label, talk through and ultimately regulate their own feelings. As a result of open discussion, children may receive constructive suggestions from parents about dealing with challenges. Being able to broach sensitive topics, and acknowledge distress, they may also be more able to access support – consistent with theory and findings relating to secure attachment and ‘safe base’ behaviour, as outlined above.

As highlighted previously in Section 1.7.3, there is evidence from observational studies that family discussions can influence the style of children's problem-solving, encouraging either avoidant responding or pro-social behaviour in anxious children (Barrett *et al.*, 1996; Dadds, Barrett and Rapee, 1996). Although coping rather than anxiety was measured, work by Gentzler *et al.* (2005) among a community sample of parents and their 9-11 year old children ($N = 75$) is also of relevance. In this case, parent-report, child-report and observational measures were used. Parents reported on their reactions to children's emotions and on children's coping strategies, and children on the extent to which they shared negative feelings. Child openness was coded, as was the degree to which parents accepted children's feelings and encouraged their expression. Open communication, as reported by parents and children, and as observed during discussion of an event which had upset the child, was linked to children's coping behaviour. Specifically, openness was associated with greater reliance on support-seeking, cognitive decision-making or problem-solving and less reliance on avoidance or aggression.

Suveg *et al.* (2005) also found that, compared to mothers of non-clinical controls, those of children with an anxiety disorder were more discouraging of discussion around emotion. Their study involved 52 mothers and their children, aged 8–12 – half of whom had diagnosed anxiety disorders. Each dyad was asked to discuss occasions when the child had felt worried, sad and angry, and all participants completed the Expressiveness and Control

subscales of the Family Environment Scale (FES). Self-report measures reinforced observer ratings, with non-clinical children and their mothers observed to be more open to discussion of emotion, and reporting significantly more expressiveness in their families. In a subsequent study, involving children with anxiety disorders and a control group aged 8-13 ($N = 56$), along with both parents, fathers of anxious sons engaged in less explanatory talk about emotion and were more likely to discourage discussion of anger than those of non-anxious sons. Mothers of anxious, compared to non-anxious, boys were less likely to engage in discussion of anxiety. Comparing behaviour across scenarios - which in this case involved times when children had felt anxious, angry, and happy - mothers exhibited more negative affect discussing anger with girls, whereas with boys they showed more negative affect talking about anxiety (Suveg *et al.*, 2008). These findings suggest that anxious children may come from homes in which voicing their feelings is discouraged, and reinforce previous research, reviewed by Cassano *et al.*, demonstrating parental socialisation of emotion to vary by child gender (Cassano, Perry-Parrish and Zeman, 2007).

These studies further implicate limitations on emotional expression within the family, as well as negative parental reactions to child communication, in the development or maintenance of child anxiety.

2.8 Alexithymia, emotion communication and somatic symptoms

Bodies of work reviewed in previous sections have concentrated primarily on links between communication and anxiety, or internalising symptoms more broadly. Relatively greater attention has been paid to somatic symptoms in work on alexithymia – inability to identify, understand or describe emotional experience. Alexithymia has been theorized as a potential factor in somatisation, or the expression of psychological problems through physical symptoms, initially on the basis of clinical observations of adult patients with psychosomatic disorders (Parker *et al.*, 1993). It has been argued that inability to recognise and express emotions heightens the risk of experiencing somatic symptoms because it intensifies and prolongs physiological reactions, which can cause organic damage (Rieffe, Meerum Terwogt and Bosch, 2004). Consistent with theories of emotion socialisation, it is suggested that children may “learn the language of bodily symptoms” (rather than that of emotion), with the nature of symptoms influenced by physiological vulnerabilities and history of illness within the family (Carr, 2006).

In a meta-analytic review of research using the Toronto Alexithymia Scale (Parker *et al.*, 1993), De Gucht *et al.* (2003) found that scores on the subscales 'Difficulty Identifying Feelings' and, to a lesser extent, 'Difficulty Describing Feelings', were associated with higher levels of somatic symptoms in adults. Total alexithymia scores were also linked to symptom reports, with moderate to large effect sizes. For the most part, these studies were based on self-report data, without verification of whether or not symptoms had an organic cause. However, a later study, involving 377 adults screened by GPs, found a relationship between alexithymia and medically unexplained symptoms – with 'Difficulty Identifying Feelings' independently predicting symptoms even after controlling for negative affectivity (De Gucht, Fischler and Heiser, 2004).

Although the validity and internal reliability of the Toronto Alexithymia Scale (TAS-20) and derived forms for children have been defended (Parker *et al.*, 1993; Parker, Taylor and Bagby, 2003; Rieffe *et al.*, 2007; Rieffe, Oosterveld and Meerum Terwogt, 2006), some have questioned the overlap between measures of alexithymia and other constructs. Among adult patients ($N = 106$), Müller *et al.* (2008) found high correlations between social insecurity and the subscales 'Difficulty Identifying Feelings' and 'Difficulty Describing Feelings'. Similarly, Suslow *et al.* (2000) suggest that the TAS-20 may tap shame, or unwillingness to describe emotions, rather than inability to do so. Indeed, in their own adult sample ($N = 68$), 'Difficulty Describing Feelings' was associated with shame and embarrassment/ shyness. Alexithymia scales, therefore, may measure communication difficulties, but caution needs to be exercised in attributing these to problems with emotion understanding or language, as opposed to interpersonal factors.

In recent years, research has been undertaken with measures developed from the TAS-20 for children: the Emotion Expression Scale for Children, or EESC (Penza-Clyve and Zeman, 2002), and the Alexithymia Questionnaire, later modified as the Emotion Awareness Questionnaire (EAQ), (Rieffe, Oosterveld and Meerum Terwogt, 2006; Rieffe *et al.*, 2008). Several studies have found significant relationships between scores on these self-report measures of alexithymia and somatic complaints, in community samples (Jellesma *et al.*, 2009; Penza-Clyve and Zeman, 2002; Rieffe, Oosterveld and Meerum Terwogt, 2006; Rieffe *et al.*, 2008). At face value, these findings suggest that children who have difficulty identifying, understanding or describing emotion may be more prone to somatic symptoms, but – as with results of studies with adult samples - other interpretations are possible. For example, in one study using the EESC, Penza-Clyve and Zeman (2002) found

significant associations between reluctance to express emotion and both trait anxiety (on the STAIC; $r = .45$) and somatic symptoms (on the CSI; $r = .20$) among 9-12 year olds ($N = 208$). Notably, the 'Expressive reluctance' items do not refer to a particular audience or confidant, and mention nonverbal as well as verbal sharing, e.g. *'When I get upset, I'm afraid to show it'*. Some items concern others' reactions, for example *'People don't like it when you show how you really feel'*. Scores on another subscale, 'Poor awareness', were even more strongly related to anxiety and somatic symptoms ($r = .61$ and $r = .42$, respectively). However, at least three of eight items – e.g. *'I know I should show my feelings but it is too hard'* – could also reflect inhibition, rather than inability to articulate feelings.

Among 9-15 year olds, scores for 'Difficulty identifying feelings' and 'Difficulty describing feelings' on Rieffe *et al.*'s Alexithymia questionnaire predicted symptoms on an 8-item Somatic Complaints List, more so in primary ($N = 400$) than secondary school groups ($N = 340$) (Rieffe, Oosterveld and Meerum Terwogt, 2006). In this case, the authors acknowledge that their scale could tap non-disclosure relating to shame. Endorsing items such as *'It is difficult for me to say how I really feel inside, even to my best friend'* and *'I find it hard to say how I feel about other people'* could also implicate a broader range of considerations, around the receptiveness of confidantes or consequences of disclosure. In addition, it is not surprising that somatic complaints were associated with items referring to physical sensations, e.g. *'I feel things in my body that even doctors don't understand'*. Like the EESC, this measure appears to deviate from a conceptualization of alexithymia as difficulty with emotional understanding or articulacy.

In a later study using the Emotion Awareness Questionnaire, Rieffe *et al.* (2008) found that a 3-item measure of 'Verbal Sharing', focused on disclosure with friends, was negatively associated with anxiety and somatic symptoms, as was 'Not Hiding' (emotion), among children and adolescents ($N = 665$). As with the subscale 'Expressive reluctance' on the EESC, however, the EAQ 'Not Hiding' items refer to neither friends nor family, and may tap behaviour in public as much as in close relationships (e.g. *'When I am upset, I try not to show it'*). 'Verbal sharing' and 'Not hiding' independently predicted lower levels of anxiety, but not somatic symptoms. Subscales which did independently predict somatic symptoms included 'Differentiating emotions', 'Bodily awareness' and 'Analyses emotions'. The first covers confusion about the causes and nature of feelings, which may encompass physical sensations (e.g. *'I am often confused or puzzled about what I am feeling'*) and the second focuses on links between mind and body (e.g. *'When I am scared or nervous, I feel*

something in my tummy'). As with the earlier Alexithymia questionnaire items referencing physical symptoms, it is not surprising that these EAQ items predict somatic complaints. That avoiding reflection on emotion (e.g. *'When I am angry or upset, I try to understand why'*) should also predict somatic symptoms is, however, consistent with evidence outlined in Section 2.3.1 that suppression of emotion (expression) causes physiological strain.

Importantly, there is evidence from research using methods other than self-report questionnaires that children with high levels of somatic symptoms experience no more difficulty than their peers in relation to understanding or identifying emotions. For example, Rieffe, Terwogt, and Bosch (2004) selected 8-12 year olds ($N = 52$) with either high or low levels of somatic symptoms from a broader community sample, presented them with 16 emotion-evoking vignettes, and asked how they would feel. Those with high levels of somatic symptoms were equally able to identify emotions (happiness, fear, sadness and anger) as children with few symptoms or none. They did, however, report experiencing anxiety more often, and more intensely. These findings were reinforced and extended by a more recent study by Jellesma *et al.* (2009), which considered a wider range of measures among those reporting high and low levels of symptoms ($N = 67$) from a similar sample (aged 8-13). Children completed the EAQ scales 'Differentiating emotions' and 'Verbal sharing', as well as tasks assessing their tendency to attend to emotions (using pictures of people with different facial expressions in various situations); their ability to describe their own emotions (by probing recent experiences); and their ability to differentiate and explain emotions in mixed emotion situations (using vignettes). As in previous studies, scores for 'Differentiating emotions' were associated with somatic symptoms. However, highly symptomatic children showed no deficiencies in their abilities to identify and describe emotions on any of the tasks. They did differ from the others in describing more intense sadness and fear – both in their own recent experience, and on behalf of those depicted in vignettes. Overall, the EAQ items which best discriminated between the most and least symptomatic children were *'I am often confused or puzzled about what I am feeling'* and *'I find it hard to talk to anyone about how I feel'*. As suggested previously, the first item could refer to physical feelings, and the second to inhibition around confiding. It is noteworthy that this item, indicating difficulty talking to anyone, distinguished the groups better than those which focused on communication with friends.

Interestingly, in light of the potential importance of interpersonal factors in somatisation, Walker *et al.* found that, among children aged 6-18 with recurrent abdominal pain, higher

levels of (stressful) life events were associated with more somatic symptoms, but only among children with low levels of (self-reported) social competence (Walker, Garber and Greene, 1994). They suggest that ability to obtain peer support could buffer children from the negative health effects of family stressors. Equally, it could be hypothesized that confiding in parents and gaining their support could mitigate physical effects of stress at school or among peers.

Some evidence that those who communicate less about feelings with parents experience more physical symptoms has emerged from work using the Familial Emotional Expression Scale (FEECHA). This measure contains items such as '*I talk about my worries with one of my parents*' and '*I find it difficult to tell anyone at home that I feel distressed*', but emphasises non-verbal communication: on the subscale 'Expression of sadness and worries', for example, three of ten items refer to crying. Osterhaus (1999) found that, in a sample of healthy adolescents ($N = 356$) and headache patients ($N = 101$) aged 12-20, the latter reported more limited expression of worries and sadness than did healthy controls. It is not entirely clear, however, whether group differences arose in relation to verbal, as opposed to non-verbal, communication, or regarding disclosure or inhibition.

Although studies reviewed in this section have reported significant relationships between communication of emotion and somatic symptoms, it appears that the salient issues may be inhibition and interpersonal issues around disclosure, rather than difficulty identifying or describing emotion, in line with critiques of the adult TAS (Suslow *et al.*, 2000). They also provide some evidence that while sharing feelings with friends may not show clear associations with somatic symptoms, feeling able to confide in someone may be important. In line with Osterhaus's findings among adolescents, it may be that expressing emotion to parents minimises somatisation in younger children.

2.9 Communication in the context of other aspects of relationships

A small number of studies concerned with parent-child interaction, but not previously mentioned, have compared associations between symptoms and measures of communication, on the one hand, and further relationship factors, on the other.

In one such study, for example, Vazsonyi and Belliston (2006) measured communication, conflict, closeness and support, and their associations with anxiety and depressive symptoms among adolescents (aged 15-19: $N = 809$). Support and conflict were most consistently linked to internalising problems, in the expected directions, whereas communication and closeness were positively associated with anxiety, albeit weakly. The authors suggest, plausibly, that high scores with regard to closeness may reflect over-involvement or parental intrusiveness. The results relating to communication appear to contrast with those of other studies, discussed previously in this chapter. Key variables were assessed using the Adolescent Family Process Measure, or AFP (Vazsonyi, Hibbert and Blake Snider, 2003), which includes five communication items, including '*How often do you talk to your mother about problems you have at school?*' As items were scored on a five-point scale, with options 'never' to 'very often', the frequency of talking about problems may be linked to their occurrence, inflating correlations with anxiety in a way that other phrasings of the question could have mitigated – for example, beginning '*When you have problems...*'. Echoing issues with the IPPA, items pertaining to verbal communication appear on other AFP subscales; for example, the set of four labelled 'Support' includes '*Sometimes my mother won't listen to me or my opinions*'. Accordingly, the results are consistent with those from previous sections, suggesting that being listened to – and feeling able to confide – does matter.

In another study of adolescents' emotional wellbeing, Ackard *et al.* (2006) surveyed 12-17 year olds about connectedness and communication with parents. Communication was measured using just one item, repeated for each parent: '*How much do you feel you can talk to your mother (father) about your problems?*', as was perceived caring: '*How much do you feel your mother (father) cares about you?*' Equal proportions of girls and boys (a quarter) reported feeling unable to talk to their mother about problems more than 'a little', while over half of girls and a third of boys felt as restricted with fathers. Fewer reported such low levels of caring (around 5% of boys and girls regarding mothers; 13% of girls and 10% of boys regarding fathers). Although no measure of anxiety was involved, valuing friends' over parents' opinions and feeling unable to talk to mothers or fathers about problems were significantly and strongly associated with low self-esteem and depression, controlling for year group, socioeconomic status, ethnicity and family structure. The odds of reporting emotional problems when reporting low parental care were higher than for those reporting low levels of communication (Ackard *et al.*, 2006).

Unfortunately, Ackard *et al.* do not report associations between communication and care, nor between communication and outcomes controlling for perceived caring. It is conceivable, however, that while reporting lack of care – which was rare – is more strongly associated with emotional difficulties, inability to talk about problems, even with ‘caring’ parents, may present as a distinct cause for concern. Even in these studies, which at face value compare the importance of communication and other aspects of relationships, it is difficult to draw conclusions about the distinct role, if any, played by communication in relation to symptoms among adolescents, far less younger age groups.

2.10 Summary and implications for the present study

On various theoretical and empirical grounds, communication and confiding, as aspects of children’s friendships and parent-child relationships, can be considered relevant to levels of stress and somatic symptoms. It has been more common, however, for studies to consider associations between communication and internalising symptoms more broadly, or depression specifically. With regard to the variables of interest, more has been published on the basis of adult and adolescent than preadolescent samples, and there is scope for further research with younger children in light of findings with older age groups.

Considering the evidence across different bodies of literature reveals some common patterns. For example, to an extent, the relationship between IPPA Alienation and Communication items parallels that between ‘Problem’ and ‘Open’ subscales on the PACS; and Secrecy and Disclosure within the monitoring literature, with findings reinforcing a general picture of communication ‘problems’ having a stronger link with internalising and somatic symptoms. Importantly, where studies have considered communication about activities and more personal issues, as did Smetana *et al.*, in relation to adolescent depression (Smetana *et al.*, 2009), it has been withholding information in relation to personal issues which has been associated with symptoms. On this basis, it appears desirable that measures of communication within the present study incorporate reference to limitations on, or difficulties with, confiding with parents – as opposed to adopting a narrow focus on the amount of interaction. In addition, particularly where measures simply tap the frequency of discussion about worries or stressors, there is a risk that the distribution of responses is skewed by the frequency with which they are experienced. Ideally, therefore, respondents might be encouraged to think about typical communication patterns in particular scenarios, rather than how often they arise.

In several cases, the degree of overlap between measures of 'communication' and other factors – such as those labelled 'trust' or 'support' - makes it hard to draw clear conclusions about their respective relationships with symptoms. Although findings are not entirely consistent, attributable in part to measurement issues, poor communication and confiding relationships have nevertheless been associated with anxiety and/ or physical symptoms, in a broad range of studies, including those focusing on parental responses or reinforcement. There is also some evidence, at least from the adult literature, that concealment or suppression of feelings can contribute to physical symptoms even controlling for internalising tendencies (Finkenauer and Rime, 1998a). No studies to date have tested whether, controlling for anxiety, levels of communication or secrecy differentiate children who report high levels of physical symptoms from those who do not.

It must be acknowledged that much of the work presented in this chapter is cross-sectional in nature and does not clarify the direction of associations between communication and symptoms – or the relative importance of other family or friendship factors. As highlighted earlier, bi-directional relationships have been found in longitudinal work with children and adolescents, such that, over time, co-rumination with friends predicts anxiety, and vice versa (Rose, Carlson and Waller, 2007), while secrecy about activities predicts, and is in turn predicted by, externalising behaviour (Frijns *et al.*, 2010).

As previously suggested, while adolescents who talk more openly appear less involved in antisocial behaviour (Stattin and Kerr, 2000), this need not be because disclosure is (independently) protective. Reticence to disclose is easily interpretable as a result of contravening family norms and as itself 'protective' against upsetting or angering parents. An equivalent argument can be advanced in relation to anxiety. Specifically, if those who talk more openly about activities and/or feelings are less symptomatic, this need not be because confiding per se is conducive to adjustment. Silence may be indicative of, rather than cause, stress or distress. As outlined in Section 2.3.1, social anxiety in particular may encourage self-concealment. More generally, associations between confiding and mental health may vary, depending on particular drivers of disclosure, with perceptions of parents failing to listen or empathise reflective of poor overall relationships.

While it was not feasible to explore longitudinal relationships in the present study, these key lessons from the literature - together with findings discussed in Chapter 1 - inform the hypotheses set out in Chapter 3, the development of communication measures described

in Chapter 4, and the interpretation of results. For example, as far as was feasible, measures of communication were designed to cover disclosures of different types, concealment or difficulty confiding, and perceptions of mothers' responsiveness. Hypotheses concerned relationships between the key study variables – communication, anxiety and somatic symptoms – but also other factors implicated in the literature, such as gender, comorbidity with depression, parental symptoms, warmth, control and child agency.

Chapter 3

Hypotheses, design and methodology

This chapter outlines the aims of the study, the hypotheses to be tested, the two-stage research design and methodology employed.

3.1 Aims

This research sought to explore relationships between communication and confiding with primary caregivers² and friends, and anxiety and somatic symptoms, among children aged seven to eleven years. Secondary aims included investigating potential mediators and moderators of these associations including gender, age, the mental health of the primary caregiver, relationship warmth, control and demographic factors.

Considered broadly, parent-child interaction has received a great deal of attention. However, there have been few studies where children have informed on the nature and extent of their confiding and communication with parents and friends. Relevant studies have tended to involve older children or adolescents, and disclosure of information about plans, activities and whereabouts – in line with a focus on parental knowledge and monitoring. This research, conversely, sought to focus on emotional experience, and particularly patterns regarding communication of salient negative emotions, such as anxiety, contextualised with reference to more neutral and positive themes. Of interest was whether, and to what degree, children communicated about these experiences; the extent to which doing so was problematic or difficult for the child; and their perceptions of primary caregivers' receptiveness to conversations of this sort. Primarily, this thesis aimed to explicate associations between communication patterns, thus conceived, and children's levels of anxiety and somatic symptoms, separately and in combination. The study also sought to assess the independent contribution of communication and confiding after controlling for broader relationship factors such as warmth and control.

² For the purposes of this study, 'primary caregiver' was defined as the parent or carer who acts as the child's main carer and spends most time looking after them.

3.2 Research questions and hypotheses

This research aimed to address thirteen specific hypotheses, in relation to three overarching questions. These are set out below, contextualised with reference to key findings from the literature reviewed in Chapters 1 and 2.

3.2.1 Gender and communication

The first set of hypotheses concerned relationships between gender and communication. As outlined in Chapter 1, the literature is generally consistent in pointing to gender differences in communication patterns, with girls confiding more in parents and friends, particularly in adolescence. However, it is not clear whether these differences apply equally to all topics. A distinct question, concerning the relative salience of communication for boys and girls in relation to symptoms, is addressed in Section 3.2.2.

Research question 1: Would levels of communication differ by child gender? It was hypothesised that:

- 1.1 Overall levels of communication with primary caregivers would be higher among girls than boys.
- 1.2 Gender differences in levels of communication with primary caregivers would vary according to the topic or aspect of communication, with more substantive differences in relation to talking about worries or distress than positive or neutral topics.
- 1.3 Levels of confiding with friends would be higher among girls than among boys.

3.2.2 Communication and symptoms

The second set of hypotheses was designed to explore relationships between parent-child communication and symptoms. As discussed in Chapter 2, on various theoretical grounds, the nature and extent of communication between children and caretaking parents may be related to levels of child anxiety and somatic symptoms. Moreover, on the basis of studies comparing, for example, associations between internalising problems and secrecy around feelings as opposed to activities, there is reason to suppose that certain topics or aspects of communication may be more relevant than others. These include talk about negative

feelings, such as worry or distress, perceptions of caregivers' responsiveness, and keeping secrets or non-disclosure, as opposed to the general level of communication or talk about positive or neutral experiences.

As detailed in Chapter 2, there is also some evidence that relationships between communication and various measures of wellbeing may differ according to child gender. For example, studies have found that communication with parents and peers is more strongly associated with self-esteem among girls (Gullone and Robinson, 2005), that emotion communication skill in friendships predicts fewer somatic symptoms only among girls (Jellesma, Rieffe and Meerum Terwogt, 2008) and that co-rumination with friends predicts higher levels of anxiety and depression only among female adolescents (Rose, Carlson and Waller, 2007). A lack of communication might plausibly reflect greater problems among girls, if verbal sharing is more the norm for them than for boys.

Research Question 2: Would low levels of communication and perceived limitations on confiding with primary caregivers (assessed by child self-report) be associated with higher levels of anxiety and somatic symptoms among children, particularly girls?

Specifically, it was hypothesised that:

- 2.1** Lower levels of communication with primary caregivers would be associated with higher levels of anxiety and somatic symptoms.
- 2.2** Associations between symptoms and communication would differ by topic of the communication, with confiding of worries or negative emotion more strongly implicated than sharing of positive or neutral experiences.
- 2.3** Symptoms would be more strongly associated with 'secrecy' or inhibited confiding than levels of open communication.
- 2.4** Perceptions of primary caregivers' responsiveness (listening and explaining) would be associated with lower levels of symptoms.
- 2.5** Associations between communication with primary caregivers, anxiety and somatic symptoms would be stronger among girls than among boys.
- 2.6** Negative associations between confiding in friends and symptoms would be stronger for girls than for boys.

3.2.3 Communication and symptoms controlling for other factors

The final set of hypotheses concerned the influence of various demographic, family and relationship factors on levels of communication, and on associations between communication and symptoms. As detailed in Chapter 1, maternal warmth, control, mental health, marital relationships and socio-economic factors have been linked to levels of symptoms in children. Of interest to the present study is whether these factors are linked to levels of communication, and whether, controlling for their effects, there are any significant relationships between communication and children's somatic and anxiety symptoms. As research with older subjects suggests that confiding behaviour may differentiate anxious children who display high levels of somatic symptoms from those who do not, it was also decided to explore relationships between communication and somatic symptoms, taking levels of anxiety into account.

Research Question 3: Would associations between levels of communication and children's somatic and anxiety symptoms be partly accounted for by other individual, family and relationship factors? Specifically, it was hypothesised that:

- 3.1** Controlling for anxiety, lower levels of communication would be associated with higher levels of somatic symptoms.
- 3.2** Low levels of communication would be associated with higher levels of child anxiety and somatic symptoms, controlling for demographic factors (age, gender, family form, ethnicity, employment status and income).
- 3.3** Low levels of communication would be associated with higher levels of child anxiety and somatic symptoms after controlling for warmth expressed by primary caregivers, their mental health, (over)control, and the quality of parental relationships.
- 3.4** Low levels of communication would be associated with higher levels of child anxiety and somatic symptoms after controlling for children's depressive symptoms, perceived autonomy/ influence, friendship satisfaction, and expressed warmth towards primary caregivers.

3.3 Research design and methodology

The following sections describe the design of the present study, beginning with an overview of the context for the research, conducted when the author was employed as a Research Officer at the Thomas Coram Research Unit at the Institute of Education.

3.3.1 Context: the Stress in Children Study

The data described in this study were collected as part of a larger Department of Health funded project, *Stress in Children*, the main aims of which were to investigate:

- the prevalence and patterning of anxiety and somatic symptoms in children aged seven to eleven years;
- children's coping strategies, and the relationship of these to their symptomatology;
- whether the patterns of (potentially) contributory and exacerbating factors associated with somatic symptoms differ from those associated with symptoms of anxiety.

The *Stress in Children* (SiC) study was designed to explore the role of a wide range of factors in the prevalence and patterning of symptoms. The present study, concerned with communication and confiding, was compatible with and therefore adopted its design, benefitting greatly from being embedded in the wider project, which enabled gathering data from a much larger sample than would otherwise have been feasible. There were, however, some constraints associated with pursuing doctoral work in this context. For example, it was necessary to develop measures in line with SiC study timescales, before the literature review for the present study was complete. In addition, some of the measures underpinning the thesis were determined or limited in length by the design and focus of *Stress in Children*. This did not, however, place undue limitations on the doctoral research. Equally, the doctoral research did not compromise the wider study; care was taken, for example, to include additional questions in questionnaires and interview schedules in such a way as to maintain flow and coherence.

In the remainder of this chapter, and the next, there are occasional references to the wider *Stress in Children* study and other members of the research team, reflecting their roles in scaffolding and supporting this research.

3.3.2 Overview: the two-stage research design

The first (screening) stage of the study involved administering questionnaires to a large community sample of children aged seven to eleven years, and their parents, and the second semi-structured interviews with a sample of these children and their primary caregivers. The sampling strategy for Stage 2 of the project was intended to identify and include children presenting across a spectrum from low to high levels of anxiety and somatic symptoms in combination.

Gathering data from both children and their caretaking parents was seen to have clear advantages over relying exclusively on either group, as both parties were judged to have access to different information and valid perspectives on matters central to the study. Furthermore, obtaining information from multiple informants provided one means of addressing shared method variance; in other words that correlations between variables could be inflated by the tendency of one informant to respond in the same way to different questions.

It was decided that a cross-sectional design afforded ample scope for addressing the central questions of the planned doctoral work. The design was not intended to support causal attribution concerning relationships between variables; suggested interpretations are offered, but are provisional.

3.4 Methodology

As noted above, this study involved a two stage design. The following sections describe in further details the methodology employed at each stage.

3.4.1 Stage 1: The questionnaire sample and the role played by schools

The main aim of the first stage of the study was to obtain baseline information on levels of communication, anxiety and (functional) somatic symptoms in a community population. A large sample at Stage 1 of the study was required on several grounds. Firstly, it was imperative to obtain adequate power for multivariate analyses. Secondly, it was anticipated that on some key combined variables (such as relative levels of anxiety and

somatisation), few children would report particular symptom combinations (for example 'high-anxiety, low somatisation'), and yet it was hoped to include these groups. Equally, the large sample was considered essential to the study of communication; facilitating comparisons of the anticipated 'communicative majority' with the minority expected to report more reticence.

The only feasible and efficient way to achieve a sufficiently large sample of children was to involve schools and gain their support in administering questionnaires. The aim was to include all Key Stage 2 pupils in each of 15 schools, except for those opted out by parents.

Selection of areas and schools

The intention was not to achieve a completely representative national sample, but to focus mainly on a relatively high stress, urban population such as London, with the addition of one non-London borough to achieve an ethnic mix more typical of the broader UK population. Involving a relatively high stress population was considered to increase the likelihood of including sufficient children with high as well as low levels of symptoms. Whilst there was no expectation that results of the study, for example in terms of levels of symptoms, would provide an accurate estimation of those elsewhere in the country, it was judged that findings concerning relationships between key variables were likely to have broader applicability beyond the specific areas taking part in the research.

It was decided to approach schools in three different local education authorities. Suitable authorities in and around London were identified and their consent sought, prior to approaching individual schools. Within consenting authorities, the schools approached to participate in the study included some in 'high stress' inner-city neighbourhoods, such as those serving the populations of large council estates.

In selecting areas, and schools within them, the following criteria were considered:

- The socio-economic and ethnic diversity of the area and the school intake
- The proportion of pupils with English as an additional language
- The representativeness of each in comparison with the profile of pupils across England
- The feasibility of access from Central London.

The intention was to achieve some diversity between areas and schools, yet obtain a sample which was more representative of the general population than a random sample from across London. Key demographic information for the samples achieved at each stage is included in Chapter 5.

Recruitment of schools

The Director of Children's Services in each local authority (LA) was sent a letter outlining the study. This letter was then followed up by a phone call from the *Stress in Children* Project Director to negotiate support from LA staff with recruitment of schools, and to discuss how this would be provided. As the assistance received differed between areas, the process is explained separately for each one.

The first area to be contacted (Area 1) was an inner South London borough with a diverse socio-economic profile, areas of affluence and also areas of significant disadvantage with large high-rise estates. The population is ethnically diverse with approximately two-thirds of the school-aged population from black or minority ethnic backgrounds. The Director of Children's services arranged for the researchers to attend a meeting of school heads to describe the study, distribute information sheets (Appendix 1) and elicit interest in participation. At this meeting, one school was recruited; others were approached afterwards via letter, follow-up phonecalls and visits.

The second area to be contacted (Area 2) was also an inner South London borough. Although the population profile is diverse, on the whole, the borough is more affluent and less mixed in terms of ethnicity than Area 1. Here, although the Director of Children's Services was supportive in principle, no opportunity was provided to address heads as a group, and their autonomy with regard to participation in research was stressed. As in Area 1, letters were sent and telephone calls made to heads; where contact proved difficult, visits were made to schools in order to reach key staff in person.

The final area (Area 3) was outside London, a socially mixed area with less ethnic diversity than Areas 1 or 2. In this case, the Director of Children's Services made initial contact with schools and encouraged them to participate, if asked, which all those approached by the research team did.

School procedures

Having arranged to speak with head teachers, either on the telephone or in person, researchers explained the nature and purpose of the study, provided copies of relevant materials, answered any queries, and, where agreement was given, made arrangements for administration of the questionnaires. It was explained that the study, funded by the Department of Health, concerned levels of children's anxiety and somatic symptoms, communication and coping; that participation was voluntary and that all information gathered would be confidential to the research team.

The procedure for schools' involvement in Stage 1 was designed to minimize demands upon, and disruption to, staff and pupils. Information sheets were sent home to parents a week before the appointed date for administration of questionnaires. Parents were able to opt children out of the study by telephoning either the school office (in most cases) or the researchers, who were also accessible to discuss any concerns. As agreed with each school, the researchers were supplied with the names of Key Stage 2 pupils, in class lists. These were then entered onto an Excel database and pupils allocated a unique ID number, consisting of codes for each area, school, class and child. To maintain confidentiality and monitor returns, identification numbers were stamped on questionnaires personalised for each child.

Classroom administration

All children were provided with verbal introductions to the study in general and the questionnaires in particular, within their class groups. They were reassured about confidentiality, reminded that the exercise was not a test, and that there were no right or wrong answers – just the ones that best represented their own thoughts and feelings, and not to look at what their neighbours were writing or reporting. They had the opportunity to ask questions and verbal assent was sought and gained by the researchers. For ease of distribution, questionnaire cover sheets carried the child's first name alongside cartoon faces. These cover sheets, which carried information about the study on the reverse, were detached by the researchers once pupils completed their questionnaires and were returned to them to keep and, if they wished, to colour in whilst other classmates finished their forms.

The few children who had been opted out of the study yet who remained in class were able to continue with other activities as agreed with teachers, and were offered copies of the cartoon cover sheets, so that they could participate in the final 'fun' element of the activity along with their peers. In most schools, however, children who had been opted out by their parents were removed from their classrooms and provided with an alternative activity while questionnaires were completed by their peers.

Children in Years 3 and 4 had questions read aloud to them; those in Years 5 and 6 had assistance where necessary, and their attention was drawn to the instructions for each section. Once all children had completed the questionnaires, they had another opportunity to ask questions and provide feedback. At this point, thank you certificates were presented to the class, and children were reminded to take home questionnaires for parents or carers.

Where pupils were absent due to short-term illness or extra-curricular activities, their questionnaires and spare stamped addressed envelopes were left with teachers so that if it was feasible, children could complete them when they returned to class, and have them sent on to be included in the research.

Distribution of parent questionnaires

Forms for parents were stamped with ID numbers corresponding to those for their children, and distributed to pupils by teachers in sealed envelopes addressed to 'the parent/carer of [child's name]'. Each one contained an accompanying letter (see Appendix 2), reiterating the aims of the study, appealing to parents to return the questionnaire in the freepost envelope provided, and noting the option to take part in a prize draw. This offered a prize to the value of £150 for one winner in each of the three areas, drawn at random, and was included as an incentive for parents who might not otherwise complete the questionnaire. As described more fully in Chapter 4, questionnaires for parents complemented those for children, covering anxiety and physical symptoms as well as background demographics, and contact with health services. Crucially, they also ascertained parents' willingness to be approached regarding participation in Stage 2 of the study. Parents were asked to indicate by ticking 'yes' or 'no' whether they agreed to further contact from the research team. It was made clear that accepting further contact did not

oblige them to take part in subsequent stages of the study; it indicated simply that they were willing to be approached with information and given the opportunity to be involved.

If after ten days the parent questionnaire had not been returned, a reminder letter (Appendix 3) was issued, as before, through the school. In this letter, parents were offered the option of completing an electronic version of the form which could be returned via email, or printed and posted in the usual way. If there was no response to this reminder letter after a further seven days a second, and final, reminder was issued (Appendix 4) with an additional copy of the questionnaire and reply paid envelope.

As indicated above, parents were asked to return questionnaires via post or email directly to the researchers - thereby assuring them of confidentiality. An alternative method of collation, involving children returning forms to their school, was thought to burden school staff unnecessarily and increase the risk of forms going astray.

Schools' role in contacting parents for home visits

Following sampling of eligible children as described below, schools were again contacted with the names of those parents had consented to further contact, and whose addresses were required in order to approach them about participation in the interview stage of the study. For the most part, schools readily passed on the relevant addresses. Despite parents having consented to further contact, and head teachers having agreed to the above procedure, in practice some were later reluctant to supply the addresses. This did not unduly delay the research, however, as in each case, staff were happy to contact parents to confirm their willingness to have their details passed on. This was done in various ways; either by telephoning the few parents involved, or by sending home letters with children.

Feedback to schools

Head teachers in each participating school were sent letters thanking them for their help with the study. As agreed, each also received a brief report outlining initial findings based on analysis of questionnaires completed by their pupils (or in Area 3, by those from across the area).

3.4.2 Stage 2: Sampling and interviewing children and parents

The rationale for Stage 2 of the study, involving semi-structured interviews with children and primary caregivers, was to gather data on, and further understanding of, the role of a range of child, family and relationship factors. Many of these factors had previously been linked to child symptomatology, but were not feasible to explore within the Stage 1 questionnaires, either at all, or in sufficient breadth or depth. This was important to the present study, to allow controlling for such factors when assessing relationships between communication and child symptoms. Stage 2 also provided an opportunity to compare scores on questionnaire measures, including the communication scale, with interview findings on similar topics, and thereby further assess the validity of the new scale.

Identifying the sample

The second stage of the research was intended to involve a subsample of children and their primary caregivers, selected from among those families in which both the child and parent completed questionnaires, and parents consented to further contact.

The aim was achieve a final sample of around 150 children displaying various combinations of symptoms across two dimensions; low to high anxiety and low to high levels of somatic symptoms. This was judged to afford the greatest scope for exploring factors differentiating children reporting distinct patterns of symptoms. The design also took account of gender, as existing literature and piloting indicated significant differences between girls and boys regarding symptoms of anxiety and somatisation.

Accordingly, families selected for interview were identified from children's scores on the anxiety and somatic symptom scales incorporated in Stage 1 questionnaires. A sampling grid was constructed with 25 cells, based on plotting scores for total anxiety symptoms against scores for somatic symptoms, in quintiles (See Appendix 34). Quintile scores and cut-offs were determined on the basis of data from the first three participating schools ($N = 645$). This allowed Stage 2 fieldwork to proceed in one area before Stage 1 data collection was complete, thus minimising the gap between administration of questionnaires and recruitment of families for interview. An equal number of boys and girls were sampled at random from each cell, to yield the total desired sample of 150.

After a child was sampled, the researcher checked whether the child's parent had returned a questionnaire, and if so, whether consent to further contact had been given. If so, a letter was sent to the parent, as described below. If not, the process was repeated for the next eligible child of the same gender sampled for that cell.

Having selected children whose parents had consented to further contact, researchers approached schools to obtain the addresses required and proceeded to recruit families.

Contacting families: introductory letter

Parents of children who were sampled for the interview stage of the study, and who had agreed to further contact, were initially sent a letter by post (Appendix 5). This letter was addressed to 'the parent of [child name]' and reminded them of the *Stress in Children* study and that they had consented to be contacted with a view to possible involvement in further research. The letter suggested that the researcher visit their home at a specified date and time, to tell them and their child about the next stage of the study and see if they were interested in taking part. Also included with the introductory letter was a FREEPOST envelope and a slip on which the parent could indicate alternative dates and/or times for a visit if the suggested time was not suitable. Full contact details were provided for the research team so that the parent could telephone or email them to make alternative arrangements, or to ask further questions before the visit.

It was judged important that researchers had face-to-face contact with families when introducing the second stage of the study. Therefore, if a parent telephoned or emailed in response to the introductory letter and requested information, the researcher would answer their questions, but also explain the benefits of the visit and talking it through in person. These included the chance for the child and (if applicable) both parents to ask questions, and to see the 'Thoughts and feelings' diary that children would be asked to complete, as part of the wider SiC study.

If parents did not make contact to change the arrangement or decline the visit, a member of the research team visited at the suggested time. Appointments were usually arranged for evenings after 6pm, to allow most parents time to travel home from work – sometimes earlier times were proposed, if parents had indicated on their questionnaires that they were not currently working. If possible, several visits were completed in an evening,

depending on the distance between households. In all cases, the researchers allowed up to an hour for initial visits, although in practice this was rarely needed. If, on arrival, it turned out not to be convenient to go ahead with the appointment, a new time was arranged – if possible, there and then; if not, then later, by post, email or telephone.

Introductory visits

The purpose of the introductory visits was to provide parents and children with information about the study, particularly the interviews. There was no strict script, but the researcher covered set topics and answered questions. If possible the researcher talked to the parent(s) and child together, in a quiet room, free of distractions.

The researcher introduced themselves as being from the '*Stress in Children*' research team, at the Thomas Coram Research Unit. If necessary they explained that TCRU was part of the Institute of Education, University of London and described its work. The researcher would check that they were expected, and that the parent had received the introductory letter. As the gap between completion of the questionnaires and the introductory visit varied from a few weeks to some months, the researcher reminded the parent(s) and child about the content of the questionnaires, and that they had expressed interest in finding out more about the next stage of the research.

Parents and children were reminded that the study was concerned with anxiety and physical symptoms in children, and that it aimed to find out more from children and their parents about the sorts of things that helped them to cope with stressful experiences, and which might help other children. It was explained that the research was funded by the Department of Health, and that it was hoped that the findings would inform government policy. Families were also told that the postgraduate researchers conducting the fieldwork had helped to shape the research and would draw on its findings for their doctoral studies.

In order to avoid children (or parents) feeling singled out as abnormal in any way, it was emphasised that the children asked to take part would be a very mixed group from across 15 schools; some boys, some girls; some who said they were very anxious or had a lot of physical symptoms, and others who very rarely felt anxious or unwell. If parents (or children) were interested, the sampling procedure was explained in more detail.

The researcher advised mothers (or fathers, if they were the primary caregivers) that their own participation would involve a single interview, lasting around two hours, while those with children took approximately one hour. It was explained that children and their primary caregivers would be interviewed by different researchers, ideally at the same time.

Usually, the researcher conducting the introductory visit arranged to interview the parent, and told the child the name of the researcher who would talk to them. At this stage, interview topics were outlined in some detail, and as including the following: family life, relationships, communication, school, health, wellbeing, free-time activities and coping with stress.

Parents and children were reassured that the interviews would be confidential and only used for research purposes, including doctoral studies. They were assured that the researchers would not discuss interviews with school staff, government agencies or, importantly, other family members - although mothers and children were free to talk to each other about their interviews and what they had said to the researchers. The researcher also explained how interview data was stored, and that neither names nor other identifying information would be kept on the computer file or included in the research report sent to the Department of Health.

If, at this stage, the primary caregiver agreed to take part, and to allow their child to do so, the child was asked if they were also willing to be interviewed. If both the parent and child agreed to take part, the researchers then arranged suitable dates and times for their interviews, generally within the next fortnight. If the parent was willing, but the child was reluctant or undecided, this was accepted and the parent's interview was arranged. Children could change their minds and decide later to take part, if they wanted. Separate information sheets designed for parents and children were left with the family, reiterating the key points covered by the researcher (Appendices 6 and 7). Contact details were included so that they could reach the team if they wished to change the date and/or time of their interviews, or ask further questions. Finally, the parent and child were told that, as a 'thank you' for their time, they would each receive a £10 high-street gift voucher.

Interviews with children and primary caregivers

Researchers visited family homes at the pre-arranged times to conduct the interviews. If at this point the child or primary caregiver was unable to devote the time required to be

interviewed, a new date was arranged. Interviewees were reminded of the aims of the study, and the interviews, and it was explained that the researchers would like to talk to them separately in private, without other family members present, as it would be easier to speak freely without interruption or distraction. For the most part, interviews took place in the family lounge, dining room, kitchen or bedroom.

Children and primary caregivers were separately reminded that their responses were confidential. Researchers were prepared to deal with disclosures or other concerns, in line with a written Disclosures procedure which specified responsibilities and action to be taken in the event that an interviewer was told something that led to concerns about a child's safety or welfare (Appendix 8). Potential difficulties were thought to include disclosure of abuse of children, disclosure of abuse by or of a partner, previous abuse, or current mental distress. Researchers were prepared to suspend or discontinue the interview at any signs of distress on the part of the parent or child.

Parents and children were reminded at the outset that they were free to stop their interview at any time, ask questions, and choose not to answer any questions or to talk about any particular issue. Before beginning the interview, the researcher checked with the parent or child that they were willing to go ahead. In addition, each parent signed a consent form (Appendix 9) confirming their agreement to taking part.

The semi-structured interview methods of Brown and Rutter (1966) were judged most applicable to the Stress in Children study. This methodology has been employed more recently in studies concerning family life and relationships (Golombok, Tasker and Murray, 1997; Quinton, Rutter and Liddle, 1984; Smith and Jenkins, 1991).

For the present doctoral research – as for the SiC study - the bulk of the data to be collected from children and primary caregivers concerned family interaction, relationships and measures of health and mental health. In light of this, the main advantage of semi-structured interviews over questionnaires lay in their facilitating coverage of a greater range and depth of material, and sensitive issues. It was considered that a semi-structured interview could encourage a degree of spontaneity and richness, while ensuring that key topics were addressed. It was also felt that interviews would be more inclusive of less literate parents and children than would exclusive reliance on questionnaires. Researchers

offered to read aloud the standardised scales which formed part of the interview if the parent or child would find this quicker and easier.

As certain questions were not applicable in every case, depending on the composition of the relevant household, schedules for parents and children were structured so as to enable omitting these topics, without disrupting the flow of discussion. It was also possible to vary the order in which most sections were completed, where responses in one area led naturally to others. Important household information was always sought first, however, beginning with names of household members and their relationships, in order to inform later discussion and ascertain which, if any, topics were redundant. Opening the interview with more straightforward and less sensitive issues was also intended to put parents and children at their ease. Names were used, rather than labels such as 'your stepdaughter', to avoid making assumptions about terms used within the family and their connotations.

Coding

Interviewers aimed to discuss each topic with children and primary caregivers in sufficient detail to enable informed judgements about coding decisions. They sought to motivate disclosure of full and accurate information; clarifying questions where required and using a variety of techniques including neutral probing and expressions of sympathy where appropriate. For children, additional care was taken to make the interview experience 'child-friendly', with questions phrased - and rephrased, if necessary - in simple language.

In each section of the interview, relatively 'factual' data was sought via a series of opening questions and follow-up probes, where required. Throughout, the interviewer made judgements in order to code the information provided, whether this concerned aspects of relationships, or the frequency of events or interactions. In relation to the latter, the interviewer would ask when an event last took place, rather than simply how often it had done so in a particular timeframe, and would seek details, if necessary further examples, and explore whether these experiences were 'typical', to confirm the relevance of the initial response. Non-verbal cues, such as tone of voice and facial expressions, and observations of household interaction were also taken into account in coding decisions.

Throughout the interviews, researchers made notes on the schedules, to inform codings (see Appendix 33). Fewer notes were typically required for straightforward questions about

marital status, or for example, if a child stated convincingly that they had 'never' truanted from school. More extensive notes were made about other issues, such as the severity/ impact of mental health problems, or aspects of relationships with partners. Notes included information about verbal and non-verbal responses, and observations – for example, if a parent appeared to be trying to 'listen in' to a child's interview. Interviewers completed codings for each question/ topic using these notes, while the interview was fresh in their minds, immediately after returning from the family's home. Difficult or borderline codings were discussed with Professor Smith and the rest of the SiC team at weekly meetings.

Post interview feedback

At the end of the interview, the researcher encouraged the parent or child to ask questions, and to give feedback on the experience. In particular, they were asked whether any topics had been embarrassing or hard to talk about and whether they felt anything important had been missed. They were reminded that their data would be treated as confidential, thanked for taking part, and given a gift token to the value of £10.

Approximately one week after completion of a family's interviews, the researcher telephoned the primary caregiver to gather any further feedback on the interviews, and to check whether there had been any difficulties subsequently, in relation to discussion with the child or other family members about the experience. The researcher also sought, and responded to, any questions. Following this telephone call, a letter was sent to the family thanking them again for their help with the research.

Interviewer training

All members of the *Stress in Children* study team were experienced interviewers prior to the start of the project. However, none of the three researchers employed on the project were familiar at the outset with the particular techniques employed during Stage 2 of the study. Researchers' training therefore involved role-play, practice and pilot interviews supervised by the SiC project director, Professor Marjorie Smith, who had extensive experience in using, and training others, in the interviewer-led style. Prior to pilot interviews, Professor Smith conducted role play interviews with the other three researchers, taking turns to play the interviewer and interviewee roles. This enabled demonstrating, and allowing researchers to practice use of appropriate tone, language and

body language. It also ensured they were very familiar with the lengthy interview schedules, understood the distinctions between coding categories, were confident in using relevant follow-up probes, and could make sound and reliable coding judgements based on eliciting sufficient information. In between training sessions, researchers also listened to anonymised recordings of interviews from Professor Smith's previous studies, in which similar topics had been covered, and subsequently discussed these interviews, and the codings based upon them.

During the piloting phase (See Appendix 11), researchers also shadowed Professor Smith as she undertook introductory visits and interviews with both mothers and children. In each case, the accompanying researcher coded these same interviews and subsequently discussed the interview and codings along with the rest of the team. Researchers were then observed conducting interviews themselves. By the time fieldwork for the main stage of the study began, Professor Smith was confident that each of the three researchers was competent in use of the method; capable of appropriately eliciting the relevant information, and coding consistently in the same way.

During the interviewing period itself, the team met regularly – at least weekly - to discuss and resolve any coding difficulties or discrepancies, and to ensure reliability between interviewers was maintained. (While no formal inter-rater reliability tests were conducted, before any substantive analyses were conducted, all interview data were checked for differences in the distribution of codings between interviewers, and there were no such significant differences in relation to key variables.)

3.5 Ethics

Approval to conduct the broader *Stress in Children* study was obtained from the Institute of Education Faculty Research Ethics Committee. Ethical clearance for the doctoral research was obtained from the University Doctoral School, and the Department of Health approved use of the *Stress in Children* data within the thesis. As the doctoral work was being carried out under the aegis of the SiC study, ethical concerns which arose in relation to planning the research or during fieldwork were considered in line with the SiC study protocol (Appendix 8), discussed within the project team, and, as necessary, with the project advisory group.

Risks to participants

By its very nature, a focus on anxiety and stressors could be uncomfortable for children. However, both questionnaires and interviews asked them to report on positive experiences as well as symptoms and worries. Every effort was made to ensure that administration of the forms and their content was sensitive and age as well as context appropriate. In the main, measures had been employed in previous published research and validated for use with the target population – as detailed in Chapter 4. Administration in schools was facilitated by staff well placed to know children and their circumstances, and to assist where appropriate. As stated above, parents were informed in advance and given the opportunity to express concerns and/or opt out their children from the research activity. Piloting of questionnaires – during which children were asked to highlight questions which were difficult or unpleasant to answer - indicated that neither participation in general nor specific questions caused distress. In addition, children were assured that they need not answer any question if they did not wish to do so. The same applied to interviews; children and parents were be fully informed in advance and reminded about their ability to terminate the interview at any time, and researchers were trained to be sensitive to any signs of distress or discomfort. Criminal Records Bureau checks were completed for all researchers before fieldwork was begun.

Consent and potential biases within the sample

As detailed above, parents' information letters, distributed prior to administration of child questionnaires, allowing for opt-out from the class activity, and additional information accompanied parent questionnaires. Verbal briefings were given in each class, and an information sheet given to each child prior to their consenting to take part. Information letters introduced Stage 2 of the study (interviews) and signed, informed consent was obtained from parents on the basis of information sheets and thorough verbal explanations prior to interview. Consent was obtained for participation in the SiC study, and also, explicitly, for use of their data in the doctoral research.

It was anticipated that anxious parents and children might be less likely to participate and that this potential bias could not be entirely eliminated. The approach taken during recruitment and thereafter, however, was designed to be sensitive, such that parents and children were fully informed about the research and what it would involve. As noted above,

interviewers worked to ensure that the research interaction itself was not a cause for increased anxiety in already symptomatic children, stressing that while their participation was valued, they could refuse to answer any questions or stop the interview at any time.

No travel or other expenses were incurred by research participants, as researchers travelled to schools and family homes. Costs were therefore not considered a barrier to taking part. While children and parents taking part in interviews were offered £10 gift vouchers, it was made clear that these were intended only to compensate them for their time and as a gesture of thanks, and were not in any way related to their responses.

Another source of potential bias which was harder to address concerned language barriers, as the SiC study was not resourced to provide translated materials or interpreters. While support was generally available within schools for children with English as a second language, it was anticipated that parents unable to read or speak English would be less likely to return questionnaires. In addition, as detailed in Chapter 5, Figure 5.1, a small number of parents who completed questionnaires - presumably with assistance - but who were unable to participate in interviews without an interpreter, were subsequently excluded from consideration for the Stage 2 sample.

Safeguarding and debilitating symptoms

In the event that disclosures by children or parents, or interviewers' observations, gave rise to safeguarding concerns, SiC study protocols were followed: initially, concerns were raised with the SiC Project Director and where necessary with project advisors and relevant professionals. Given the focus of the study, it was also anticipated that children might be identified with very high and debilitating levels of symptoms. Researchers were prepared to provide details of local helping agencies for children or their parents on request.

Confidentiality

Participants were assured that data would be stored securely and accessible only to the research team and that neither their names nor other identifying information would be included in any publications resulting from the study. Furthermore, families were expressly informed that data disclosed by children would not be shared with their parents, and vice versa, although they were free to discuss with each other what they had said.

3.6 Data management

Records of questionnaires administered to children and sent to parents, opt-outs, and response rates were maintained in a password-secured Excel database. This contained key administrative details: children's names and ID numbers; school and class codes; whether forms were completed and relevant notes if not. The log was updated as and when additional forms (completed late by children returning from absence) were sent on by staff. Records were also kept of when parents returned questionnaires and if applicable, when first and second reminder letters were issued, as well as whether responding parents chose to enter the prize draw and/ or agreed to further contact.

Separate password-protected Excel files were constructed with details of children in each cell of the sampling grid. Whether families were selected, approached, took part or refused involvement in Stage 2 was recorded here. Details of those approached were also added to an Access database (also password protected). On this database, names, addresses, ID numbers and details of correspondence, contacts, appointments and outcomes were recorded, along with records of interviews completed and by whom. This database assisted the researchers in contacting families, in generating progress reports, and with overall project management.

Completed questionnaires and interview schedules were stored in locked cabinets, accessible only to the research team. Procedures for data entry and verification are set out in Section 4.6, following description of the key study measures.

Chapter 4

Measures

This chapter describes the design and composition of the questionnaires and interview schedules central to this research. Information on reliability and validity is presented both for established measures and those developed specifically for this study. As indicated in Chapter 2, the first stage of the study involved questionnaires for children and parents; the second, interviews with a selected subsample of those who completed questionnaires and agreed to further contact.

4.1 Child questionnaire measures

The composite questionnaire for children (Appendix 10) comprised seven different sections: anxiety; somatic symptoms; physical illness symptoms; stressors; coping; communication and confiding; and enjoyable or happy experiences. Those relevant to the current research are described here. (For information on piloting and refinement of measures, see Appendix 11.)

4.1.1 Anxiety: the Spence Children's Anxiety Scale

Anxiety symptoms in children have at times been assessed by means of internalising subscales within general behaviour rating scales. However, for the purposes of the *Stress in Children* study, it was important to employ standardised and validated measures capable of distinguishing symptoms associated with different types of anxiety, in order to ascertain whether associations with somatic symptoms were more or less specific. The most commonly used anxiety scales are the Revised Children's Manifest Anxiety Scale (RCMAS) (Reynolds and Richmond, 1985), the State-Trait Anxiety Inventory for Children (Spielberger and Edwards, 1973) and the more recent Spence Children's Anxiety Scale (SCAS) (Spence, 1998). Of these, the Spence measure offered the best combination of reliability, validity, ease of use and simplicity, with subscales aligned with DSM diagnostic categories.

The SCAS was developed to assess the severity of anxiety symptoms in six DSM-IV domains. In total, the scale has 44 items, 6 of which comprise positive, 'filler' items, intended to reduce negative response bias. The remaining 38 items are identified with subscales as follows: separation anxiety (6 items), social phobia (6 items), obsessive compulsive

problems (6 items), panic/ agoraphobia (9 items), generalised anxiety (6 items) and fears of physical injury (5 items). Items are randomly ordered within the questionnaire. The scale is designed to be simple for children aged eight years and above to complete, by rating the degree to which they experience each symptom on a 4-point frequency scale, labelled never, sometimes, often, and always. (Spence, 1998; Spence, 1997). Total scores are obtained by summing those for all 38 items, excluding fillers, on the basis of scoring as follows: Never (0), Sometimes (1), Often (2) and Always (3), to yield a maximum possible score of 114. Factor scores are created in the same way, by summing scores for relevant items.

A normative total SCAS score for 8-12 year olds, based on a large community sample of Australian children, is reported by Spence³ as 30.35 ($SD = 17.07$, $N = 2357$), with girls scoring higher than boys ($M_{\text{girls}} = 34.02$, $SD = 17.33$, $N = 1185$; $M_{\text{boys}} = 26.65$, $SD = 15.98$, $N = 1172$). Recent studies with pre-adolescents report reliability (using Cronbach's Alpha as a measure of internal consistency) of .9 or above for the total SCAS and generally of at least .7 for each of the subscales, with somewhat lower scores for the shortest, Physical Injury Fears, which comprises items pertaining to a range of distinct fears and phobias, including fear of dogs and dentists (Muris *et al.*, 2002; Muris, Schmidt and Merckelbach, 2000; Spence, 1998; Spence, Barrett and Turner, 2003). Overall test-retest reliability has been assessed, at .60 at six months and .63 at 12 weeks (Spence, 1998; Spence, Barrett and Turner, 2003). In the present study, SCAS scores in one large school ($N = 189$) showed comparable, if slightly higher, test-retest reliability of .72, over three months.

As detailed in Appendix 11, piloting led to minor modifications being made to the Australian scale, chiefly to Anglicise certain items, and to introduce a time limit, such that children were asked to report on their experience over the previous two weeks. This brought the SCAS in line with the chosen measure of somatic symptoms, the Children's Somatization Inventory, as described below.

For the *Stress in Children* study, and the current doctoral research, total SCAS scores were calculated by summing scores for those children who completed a minimum of 35 of 44

³ Normative Data for the SCAS (accessed 13/05/12) at:
<http://scaswebsite.com/docs/normtotalscas.pdf>

items, and two-thirds of the items on each factor (6 of 9 panic items; 3 of 5 physical injury items and 4 of 6 on the remaining factors). Where these conditions were satisfied, missing values were replaced with the item mode. Where they were not satisfied, the relevant cases were excluded from further analyses.

4.1.2 Somatic symptoms: the Children's Somatization Inventory

Investigation of somatic symptoms has predominantly involved the Children's Somatization Inventory (CSI) (Garber, Walker and Zeman, 1991; Walker and Greene, 1989), or a scale derived from this. Children are asked to rate, using a five-point scale, the extent to which they have experienced each symptom in the previous fortnight. The items, based on the diagnostic criteria of somatisation disorder from DSM-III (American Psychiatric Association, 1980), include items such as fainting, headaches, stomach pains, constipation, heart beating too fast even when not exercising, weakness in parts of the body, and nausea. Walker *et al* (2009) report Cronbach's Alpha of .87 for a revised 24-item version, which also showed a very high correlation with the original 35-item measure (for total scores, $r = .99$, $p < .001$). More recently, Lavigne *et al* report Cronbach's Alpha of .92 for the 24-item version, in a sample of 8 to 15 year olds (Lavigne, Saps and Bryant, 2012). In the present study, test-retest reliability over a three month period among pupils from one school ($N = 189$) was assessed as .59.

Most previous studies using the CSI with community samples have involved older children and adolescents. Litcher *et al.* (2001) however, used the full 35-item CSI with a community sample of 10 to 12 year-olds in the Ukraine ($N = 600$). They reported a mean total score of 16.40 ($SD = 16.11$), as well as a normative figure provided by Walker for the same age group of 20.17 ($SD = 14.11$).

For the *Stress in Children* study, the CSI-24 was further shortened to 18 items, to reduce overlap with the SCAS measure of anxiety, and to remove the items least commonly scored in this age group (a modification which did not affect total scores during piloting - see Appendix 11). Using the same scoring system, indicating how bothered they have been by each symptom, from '0' (not at all) to '4' (a lot), the maximum possible total score for this version was 72.

Total CSI scores were calculated for children who completed at least 14 of 18 items. As for SCAS scores, where these conditions were satisfied, missing values were replaced with the item mode. In addition, for the purposes of sampling for the interview stage of the study, and following Walker (Walker *et al.*, 2009) and others (Ferrin *et al.*, 2009; Vila *et al.*, 2009), a somatisation severity score was calculated by recoding scores of 3 ('quite a bit') and 4 ('a lot') as 1, and the remaining scores (indicating that symptoms were more rare, insignificant, or absent) as 0. Scores on this measure ranged from the minimum of 0 ($N = 808$, 31.6%) to the maximum of 18 ($N = 7$, 0.3%), with a mean score of 2.91 ($SD = 3.46$). For analyses relating to hypotheses, however, CSI total scores were employed, to preserve the maximum variability in scores. Accordingly, all references to CSI scores throughout the remainder of the thesis relate to total rather than severity scores.

4.1.3 Communication and confiding: the Communication Scale

As described above, existing measures of anxiety and somatic complaints were found to be suitable for the study, with minor modifications. However, following a review of the literature, it was judged that a new measure of communication and confiding was required for the purposes of this research.

Development of the communication scale

The hypotheses outlined in Chapter 3 called for a measure of verbal communication, with an emphasis on children's confiding in primary caregivers, rather than friends or other people. The intention was to focus primarily upon children's reports of the frequency with which they shared thoughts, feelings and experiences. However, it was also considered important to tap their perceptions of parents' receptiveness and experiences of confiding, particularly in relation to worries or anxiety.

Although it was initially hoped to explore children's communication with both parents, this was ruled out in favour of a focus on primary caregivers, for several reasons. Firstly, it was necessary to limit the length of children's questionnaires, to ensure administration was feasible within the hour generally allowed; particularly for younger pupils, completing the 42-item SCAS and 18-item CSI absorbed most of this time. Secondly, it was recognised that many pupils would be living with just one parent, and a small number with neither, and on ethical grounds it was decided to avoid the risk of singling out these children or making

them feel uncomfortable. Accordingly, when introducing the questionnaire, researchers asked children to think about times when they talked to the person who mostly looked after them, whether this was “their mum, dad, or someone else”.

The final measure of communication and confiding comprised the items listed in Figure 4.1. Four of eleven items replaced others originally present in a pilot version of the scale. This earlier version (see Appendix 11) was employed at the start of SiC data collection, as it had been necessary to move ahead with Phase 1 of the wider study before concluding the literature review and piloting for the present doctoral work.

Figure 4.1 **Communication scale items**

1. I talk to my mum about my day at school
2. I find it hard to tell my mum about things that bother me
3. I tell my mum when something upsets me (like a nightmare, or if someone is nasty)
4. I talk to my mum about my friends
5. I tell my mum if I'm worried or anxious about something
6. I tell my mum about things that make me laugh
7. My mum listens to me if I need to talk about something
8. If my mum is cross with me, she tells me why
9. I have worries I don't tell my mum about
10. If I feel worried, it helps to talk about it with my mum
11. I talk to my friends about how I feel

Instructions printed above the scale read as follows: ‘How much do you talk to your mum? (or the person who mostly looks after you at home?) Circle one answer for each line.’

Scoring was on a three-point scale based on the response options ‘never’ (0), ‘sometimes’ (1) and ‘nearly always’ (2). The final 11 items included three on talk about positive or neutral topics (school, friends and things that made children laugh); two on the extent to which children shared negative feelings (being upset or worried); three on perceptions of primary caregivers’ contributions (listening, explaining annoyance, and the helpfulness of confiding) and one item on communication with friends, as opposed to parents. There were also two items touching on limitations on confiding for which scoring was reversed; ‘I find it hard to tell my mum about things that bother me’ and ‘I have worries I don't tell my mum about’.

As noted previously, the scale was designed to capture reports of 'routine' communication as well as that considered more personal, intense or emotional. The three positive or neutral items were judged to represent 'everyday chat' – communication on topics about which every child would have 'news' on a regular basis.

The items concerning primary caregivers' contributions were intended to tap elements of their perceived responsiveness or receptiveness to child disclosure. The extent to which children felt their primary caregiver listened to them, when they really needed her to, was thought a clear indicator of her availability as a confidant. Her explanations when cross were taken as a mark of her communicating what might be negative emotion effectively and clearly, in a way that the child could understand. In addition, asking children directly whether it helped to talk through worries with their primary caregiver was envisaged as enabling comparisons between anxious children who felt that talking helped and those who did not.

It was decided to include two (positively scored) items directly addressing children's disclosure of negative emotions. Being anxious and being upset were considered as distinct experiences; though it was recognised that in some cases the two could overlap or coincide, particularly for younger children. For example, children could communicate about distress following a nightmare, or an argument with a sibling, but keep fears or worries arising from these events to themselves.

There were two main reasons for inclusion of reverse-scored items. Firstly, it was desirable to have direct measures of children's difficulties with confiding and of their withholding information about their feelings, in line with previous findings on the distinction between disclosure and 'secrecy'. Secondly, as with the 'filler' items on the SCAS, they served to mitigate the risk of response bias.

It was decided that although there was scope to include just a single item on talk about feelings with friends, this could provide a useful indicator – albeit limited - of the extent to which children confided in peers as opposed to parents.

The following sections describe the scoring and properties of the communication scale in the present study, including the approach to imputation of missing data, the results of factor analysis, and calculation of totals and subtotals.

Communication scale scoring and missing values

Each item on the communication scale was scored from 0 to 2. In general, 0 represented 'never' and 2 'nearly always'. Scoring was reversed for negative items, such that 2 always represented more open communication. Total scores were calculated by summing those for each item, yielding a maximum score of 22. A subtotal was also calculated for communication with primary caregivers, excluding the single item on talk with friends. This enabled focusing specifically on primary caregivers (or friends) as confidantes.

A substantial number of children in the main study ($N = 628$) completed the pilot version of the scale, including seven of the eleven final items. As total scores on these seven items correlated closely with those for the final scale ($r = .92$) among children presented with all 11 items ($N = 1802$), scores for those who had a maximum of four missing items were pro-rated. Altogether, total scores were calculated for 2521 children, and scores for communication with primary caregivers (pro-rated for those completing at least six of 10 relevant items) for 2526 children.

Missing values for individual items, however, were not imputed, regardless of whether or not the items were included on the version administered. The response base for each item therefore varied from 1905 to 2552 children.

Factor analysis

Prior to performing Factor Analysis with oblique rotation (on the basis that factors were not expected to be completely independent), the suitability of the data for factor analysis was assessed, and found satisfactory. As shown in Appendix 12, the correlation matrix included several coefficients of .30 and above. Factor analysis (principal axis factoring) identified two components with eigenvalues exceeding 1, explaining 28.86 and 12.76 per cent of the variance respectively. Inspection of the scree plot revealed a clear break after the second component, supporting a two-factor solution. This was reinforced by the results of parallel analysis, which showed that only these two components had eigenvalues exceeding the corresponding criterion values for a randomly generated data matrix of the same size.

As shown in Table 4.1, nine of eleven items (concerning open communication with mothers, and one item tapping confiding in friends) loaded on the first factor, explaining

28.86 per cent of the variance. Two negative (reverse-scored) items formed a second factor pertaining to inhibition, or limitations on communication, accounting for 12.76 per cent of the variance. The factors were labelled open communication, and inhibited/limited confiding, respectively. (Examination of response patterns suggested that children understood the reverse-scored items, and that, as concluded during piloting, there was minimal risk that confusion or response pattern bias was affecting scores.)

Table 4.1 Summary of exploratory factor analysis results (Communication scale)

Item (number)	Rotated factor loadings	
	Factor 1	Factor 2
Helps to talk about worries (10)	.65	.08
Talk about upsets (3)	.61	.03
Talk about worries (5)	.61	.09
Talk about school (1)	.52	.03
Mum listens if I need to talk (7)	.49	.09
Talk about funny things (6)	.48	-.02
Talk about friends (4)	.48	-.03
Mum tells me why she is cross with me (8)	.46	-.05
I talk to my friends about how I feel (11)	.33	-.11
Worries I don't tell mum about (R) (9)	.02	.62
Hard to tell mum about things that bother me (R) (2)	.00	.60
Eigenvalues	3.18	1.40
% of variance explained	28.76%	12.76%

Total scores for the first factor were imputed where children had completed at least seven of nine items ($N=2520$). Significantly fewer children ($N = 1887$) received scores for the second factor, inhibited / limited confiding, simply because this consisted of two items introduced only on the final version of the scale, developed after administration of questionnaires in the first few schools, and as valid responses to both items were required.

Communication Scale subscales

It was hoped to explore associations between different aspects of communication and symptoms, without overreliance on single-item measures. Accordingly, three further subscale scores were calculated for conceptually-linked, and significantly correlated items from the open communication factor: these were labelled ‘confiding of distress’ (comprising the items on talk about upsets, talk about worries and the helpfulness of doing

so); ‘caregiver responsiveness’ (based on items about primary caregivers listening, and providing explanations when cross); and ‘sharing news’ (consisting of items on talk about school, friends, and things that made them laugh). Appendix 13 shows intercorrelations between each of these communication subscales and the two scale factors.

Internal consistency

A reliability (internal consistency) analysis for the final 11-item Communication scale revealed a satisfactory Cronbach’s alpha coefficient of .72. Cronbach’s alpha for the open communication factor was similar, at .76, while that for the two-item inhibition factor was somewhat lower, at .54. However, with such short scales, it is common to find low Cronbach’s Alpha values, and as highlighted by Pallant (2005), it may be more appropriate to consider the mean inter-item correlation. In this case, the (mean) inter-item correlation was .37 – within the ideal range of .2 to .4 recommended by Briggs and Cheek (1986). Mean inter-item correlations for the short open communication subscales were similar, at .30 (caregiver responsiveness), .28 (sharing of news) and .44 (confiding of distress).

Test-retest reliability

Test-retest reliability measures were obtained using additional data from one large school, obtained at two additional visits 12 and 15 months after first administration of the questionnaire. Correlations between total Communication scale scores at time 1, time 2 and time 3 are presented in Table 4.2. As would be expected, the strongest correlation was for three month reliability, between scores at Time 2 and Time 3 ($r = .70$); and the weakest was that for reliability over 15 months, between scores at Time 1 and Time 3 ($r = .58$).

Table 4.2 Communication scale test-retest reliability coefficients

	Time 1	Time 2 (+ 12months)
Time 2 (+ 12 months)	$r = .61, p < .001 (N = 139)$	-
Time 3 (+ 15 months)	$r = .58, p < .001 (N = 144)$	$r = .70, p < .001 (N = 185)$

4.1.4 Child stressors

It was of interest to the wider *Stress in Children* study to capture information on the situations or circumstances in which individual children felt anxious. These data were also relevant to the present study: enabling some exploration of differing levels of confiding

with regard to the nature and number of stressors identified. The relevant section of the child questionnaire contained a set of 10 items, headed 'What kinds of things make you feel worried, upset or anxious?' Children were asked to indicate whether these things 'never', 'sometimes' or 'often' made them feel this way. While not exhaustive, the list covered what are known to be common sources of stress among this age group: friends or other children; schoolwork; tests; parents; siblings; games or sports; TV; being alone; break times and illness in the family. Children were able to note additional stressors in response to a follow-up open question, but none of these were common to large numbers of children.

Responses were coded as 0 (never), 1 (sometimes) or 2 (often). Total stressor scores were obtained by summing those for each item, yielding a maximum total score of 20. The internal consistency of the scale, assessed by Cronbach's alpha, was acceptable, at .73.

4.2 Parent questionnaire

The questionnaire for parents (Appendix 14) consisted of four main sections, covering child anxiety, somatic symptoms; physical illness symptoms; school performance and demographic information. Those relevant to the current research are described here.

4.2.1 Parent reports of child anxiety: SCAS-P

The first section of the questionnaire for parents contained 12 items about children's anxiety equivalent to those posed to children (specifically, two complete subscales covering the more commonly reported symptoms of general anxiety and separation anxiety). These were extracted from the 38-item SCAS-P, a version of the Spence Children's Anxiety Scale for parents (Nauta *et al.*, 2004). In the SCAS-P, items are worded identically to those on the adapted children's version, except that they are presented in the third person, e.g. '*My child worried about things*'. For this research, and in line with instructions given to children, parents were asked to complete sections on anxiety and somatic symptoms with regard to their child's experience over the last two weeks.

The decision not to use the entire SCAS-P was taken following piloting (See Appendix 11) which indicated that, as in previous studies (Nauta *et al.*, 2004; Whiteside and Brown,

2008), parents generally endorsed very few symptoms with respect to their children, and in light of low response rates and apparent literacy problems.

Nauta *et al.* (2004) report moderate associations between the two SCAS-P factors (general and separation anxiety) and children's SCAS total scores ($r = .47$ and $r = .36$ respectively) within a community sample of Dutch and Australian families with children aged 6-18. Associations between parent and child reports on the matched subscales were .60, for separation anxiety, and .28 for generalised anxiety. Within the same study, there were slightly stronger relationships between parent and child reports (ranging from .41 to .66 across subscales) among a clinical sample of 6-18 year olds with a diagnosed anxiety disorder. Although Brown-Jacobsen *et al.* reported slightly stronger associations between parent and child reports on the SCAS and SCAS-P, in another clinical sample of 7-18 year olds, these may have been inflated by the fact that some children completed the study measures at home, with assistance from parents (Brown-Jacobsen, Wallace and Whiteside, 2011).

For the *Stress in Children* study, and the current thesis, scoring for the modified SCAS-P followed that for the SCAS. Specifically, a total score was calculated for the 12 items, as well as subscale scores for general and separation anxiety, if parents completed at least 4 out of 6 items on each subscale.

4.2.2 Parent reports of child somatic symptoms: P-CSI

The second section of the parent questionnaire, on somatic symptoms, contained the 18 items of the modified P-CSI equivalent to those presented to children. Garber *et al* describe a version of the 35-item Children's Somatisation Inventory – the P-CSI – containing identical items for completion by parents reporting on their children's somatic symptoms (Garber, Walker and Zeman, 1991). Agreement between parent and child reports of their somatic symptoms (based on the 35 item version) was described by Garber and colleagues (1991) as 'low but significant' at $r = .20$ in a community sample of 172 children, but others using the same version (for example, Meesters, et al., 2003) have reported higher rates of agreement in a community sample of Dutch schoolchildren aged 10 – 16 years, with a correlation of $r = .44$ between parents' and children's reports of symptoms.

In line with previous research (Garber, Van Slyke and Walker, 1998; Garber, Walker and Zeman, 1991; Meesters *et al.*, 2003), parents involved in the present study were asked to indicate the extent to which their child was bothered by each symptom over the past two weeks. As for the CSI, total scores on the P-CSI were calculated by summing item totals for those completing at least 14 of 18 items, with missing values replaced by the item mode.

4.2.3 Demographic Information

Background information was sought from parents concerning household composition, parental involvement in paid work, the child's birth order, ethnicity and language. The majority of questions were presented with pre-coded response options, but additional comments were invited at the end of the questionnaire.

4.3 The primary caregiver's interview

As indicated above, interviews with primary caregivers covered various aspects of family life, with emphases in line with the broader Stress in Children study. Although the primary concerns of children's health, wellbeing, communication and coping behaviour did dominate, as would be expected, it was made clear to parents that their own experience and feelings were important. As described in Chapter 3, there was flexibility to omit topics and vary the order in which they were covered, depending on the relevance to families' circumstances and the flow of the interview.

Topics covered in the interview and relevant to the present study included the following:

- Demographic information and employment
- Household composition and circumstances
- Quality of the relationship between the child and primary caregiver
- Parent-child communication and confiding behaviour
- Quality of parents' 'marital' relationship (including dissatisfaction and conflict)
- Parental control and discipline
- The primary caregiver's mental health
- The child's mental and physical health.

Measures derived from interview material and employed in the present research are described in more detail below.

Household composition

Primary caregivers were asked to identify all adults and children living in the household, and to clarify their relationships with each other and the child selected for the study.

Education

Primary caregivers were asked about their – and their partner’s - educational history and qualifications achieved at, and since leaving, school. For the former, codes comprised ‘None’, ‘CSE’, ‘GCSE / O Level’ and ‘A Level / FSC or beyond’. For further education, the categories were ‘None’, ‘Occasional (no exams)’, ‘Further qualifications taken’, ‘Day release or technical training’ and ‘Degree or professional qualification’.

Employment

Information was sought concerning primary caregivers’ involvement in paid work. Occupations were coded on the basis of the Registrar General’s classification index; namely as ‘I (Professional)’, ‘II (Intermediate/ managerial)’, ‘III_n (Skilled non-manual)’, ‘III_m (Skilled manual)’, ‘IV (Partially skilled)’, ‘V (Unskilled)’, ‘Economically inactive’, ‘Unemployed’, ‘Student’, or ‘Unsupported, non-working mother’. In addition, interviewees were asked for equivalent employment details in respect of resident partners.

Income

Parents were asked to indicate their total household income (gross, before tax) on a card with seven categories (the lowest two of which were combined for analysis), representing income quintiles derived from the Family Expenditure & Food Survey 2007.

Child internalising and externalising symptoms

Composite ratings of child internalising and externalising symptoms were made on the basis of relevant items from the parent’s version of the Symptom Score, a standardized

interview assessment of child health, behaviour and wellbeing which has been demonstrated to have acceptable psychometric properties, and to be sensitive to family relationships and family functioning (Smith and Jenkins, 1991).

The composite rating of internalising symptoms was based on items from the 'neurotic' subscale of the Symptom Score, which on the basis of previous factor analyses covered 15 items, specifically: school refusal, headaches, stomach aches, nausea, six common phobias, anxiety, worry, low mood, irritability and temper tantrums.

Externalising (or 'antisocial') ratings were based on nine items: lies, stealing from home and school, hyperactivity, aggression towards siblings and peers, enuresis, soiling and disobedience.

Each item was rated from 0 to 3, based on parents' reports of how frequently, and how severely, children were affected, or family life disrupted, by each one, from '0' (affected < 1 day per month) to '3' (affected > 10 days per month). The maximum possible scores for internalising and externalising symptoms were therefore 45 and 27, respectively.

Communication and confiding

Three aspects of children's confiding behaviour were assessed on the basis of information from primary caregivers. Firstly, they were asked how often they and their child would have a chat about school, TV or things they had (each) done during the day. Responses were rated as indicating 'High', 'Moderate' or 'Low' levels of general communication. Secondly, children's willingness to disclose worries or 'things on his/ her mind' was assessed as: 'Will disclose most or all things', 'Some things kept to self', or 'Definite reluctance to confide/ little, if any, confiding'. Finally, the parent's perception of children's communication about feelings more generally was rated as: 'Communicates easily and openly about feelings', 'Only partially/occasionally communicative about feelings', or 'Not (verbally) communicative about feelings'. A composite variable was created from the three items above, each scored as 0, 1 or 2, to represent overall communication scores as reported by mothers. The maximum score for this composite variable was thus 6, representing the highest level of confiding.

In addition, to identify inappropriate parental confiding behaviour, parents were asked the extent to which they shared their own feelings with or sought sympathy or counsel from the child, with regard to personal issues or problems. Responses were coded as 'None', 'Some' or 'Definite – including parental issues'.

Primary caregivers' mental health

For the purposes of this study, three aspects of primary caregivers' mental health were considered. Anxiety and depression were assessed on the basis of responses to interview questions on symptoms and treatment, and a more general assessment of their affective state was obtained using the Malaise Inventory (Rutter, Tizard and Whitmore, 1970).

Levels of situational and non-situational anxiety were rated, each coded none (0), dubious/mild (1), definite (2), panic/ complete avoidance (3). The content of this section was based on the diagnostic categories of the Diagnostic and Statistical Manual version IV (American Psychiatric Association, 2000).

Depression was rated with respect to the last year, and the last five years. Symptoms were coded as none (0), mild (1), moderate (2) or severe (3), in relation to both timescales. As with ratings of anxiety, the final two categories were combined for the purpose of further analysis.

The Malaise Inventory is a 24-item self-completion scale used for assessing psychiatric morbidity (Rutter, Tizard and Whitmore, 1970). The items cover emotional disturbance as well as associated somatic symptoms. Although no specific time frame is specified, questions are phrased in the present tense, for example 'Do you often have backache?' with response options 'Most of the time', 'Some of the time' and 'Rarely / Never', encouraging a focus on recent physical and psychological states. As in other recent studies (for example, Mandemakers, Monden and Kalmijn, 2010), the item 'Have you ever had a nervous breakdown' was excluded. This item is endorsed by a relatively low number of respondents, and it was considered that the relevant interview measures covered this area in greater depth. The remaining 23 items (scored "1" for yes and "0" for no) were summed to yield a total score.

In recent years, the Malaise Inventory has been widely used in studies of both general population and high risk groups (Cheung and Buchanan, 1997; Rodgers *et al.*, 1999; Rodgers, Power and Hope, 1997; Schepman *et al.*, 2011). A recent analysis of the validity of the inventory (Rodgers *et al.*, 1999) reported acceptable internal consistency, with Cronbach alphas of .77 and .80 for two different age groups.

Parents' (marital) relationship

A global rating of the primary caregiver's relationship with her partner, if applicable, was made on the basis of responses to interview questions covering satisfaction with arrangements for housework and childcare; confiding, affection, joint activities, arguments, and relationship problems. Relationships were rated from 1 (strongest) to 6 (weakest). This 'marital' rating was originally developed from those used by Quinton, Rutter and Rowlands (1976). For the purposes of further analysis, ensuring sufficient numbers in each category, the six categories were re-grouped into three, labelled 'good', 'average' and 'poor'.

Warmth towards the child

A composite measure of warmth expressed by primary caregivers towards their children was derived from four interview variables covering: expressed positivity (when asked to describe the children's good points), enjoyment of their company, physical affection (whether children were easy to hug or show affection to and whether they enjoyed doing so) and a global measure of warmth expressed throughout the interview. Assessments on these variables were coded as follows:

- Positive recognition: High = 0; Some = 1; Low/none = 2
- Physical affection: Definite = 0; Dubious or one sided = 1; Little or none = 2
- Enjoyment of company: Definite = 0; Dubious or qualified = 1; Little or none = 2
- Expressed warmth (global interview rating): High = 0, Medium = 1; Low = 2

In line with mean scores across the four items, the resulting total scores were grouped as 'high' (0, 1), 'moderate' (2-5) and 'low' maternal warmth (6-8).

Parental (over) control

A composite measure of parental (over) control, based on variables used previously by the SiC project director, was employed for this study. The composite variable was coded from 0 to 5, with high scores indicating that primary caregivers described a degree of controlling or restrictive parenting in all five of the following areas:

- Out of house supervision (i.e. restrictions on and awareness of their whereabouts)
- Monitoring of homework (i.e. the extent of parental supervision/ interference)
- Internet usage and (separately) TV watching (i.e. the extent of child access/ parental restriction)
- Autonomy in spending (i.e. the extent to which the child had control over pocket money).

4.4 The child's interview

Interviews with children covered various aspects of school and family life, as relevant to the wider SiC study. Topics relevant to the present study included the following:

- Friendships (including confiding behaviour with friends) and peer relations
- Quality of the child's relationship with their primary caregiver
- Communication and confiding behaviour
- The child's perceived autonomy and 'voice' within the family
- Mental health and wellbeing (internalising and externalising symptoms, and depression).

Measures derived from the child interview and employed in the present research are described in more detail below.

Internalising and externalising symptoms

Internalising and externalising symptoms were measured using the child's version of the Symptom Score. As described in relation to the mother's interview, this is a standardized interview assessment of child health, behaviour and wellbeing with adequate psychometric properties (Jenkins, Smith and Graham, 1989; Smith and Jenkins, 1991). Items in the scale

cover anxiety, fears and phobias, sadness, irritable moods, temper tantrums, aggressive behaviour, sleep problems, hyperactivity, eating disorders, poor concentration, headaches, stomach aches and nausea. Each Symptom Score item was rated from 0 to 3 according to the frequency and severity of the problem, and its interference with daily life.

The internalising (neurotic) subscale comprises 15 items, covering: school refusal, headaches, stomach aches, nausea, fears or phobias (6 items), anxiety, cognitive worries, sadness, irritable mood and temper tantrums. The maximum possible score was 45.

The externalising (antisocial) subscale comprises 9 items: lying, truancy, stealing at home or school, aggression at home or school, disobedience at home or school and temper tantrums. The maximum possible score was therefore 27.

Depression

The child's interview incorporated a standardised scale measure of depressive symptoms: the Depression Self-Report Scale, or DSRS (Birleson, 1981; Birleson *et al.*, 1987). The DSRS is an 18-item scale for children aged 7 to 14 tapping affective, cognitive, and behavioural symptoms. For each item (for example, '*I felt like crying*') respondents are asked to indicate whether the statement had applied to them "most of the time" (coded 2), "sometimes" (1) or "never" (0), over the last week. The scores are summed to give the total score. The DSRS has shown satisfactory test-retest reliability (.80), good internal consistency with corrected split-half reliability of .86, and adequate factorial validity (Birleson, 1981). Its clinical validity and predictive value was affirmed in a sample of 155 children aged between 8 and 14 years attending a child psychiatry outpatient clinic (Birleson *et al.*, 1987). Recent studies have reported internal consistency, as assessed by Cronbach's Alpha, of .75 (Sheikh *et al.*, 2008) and .77 (Hunter, Boyle and Warden, 2007).

Communication and confiding with primary caregivers

Three aspects of children's self-reported confiding behaviour with primary caregivers were assessed from interview data. Children were asked about their willingness to communicate about feelings in general; about worries in particular, and about secret keeping, or withholding of information. Communication about feelings/emotions was coded as 'generally talks openly about feelings', 'sometimes talks or hints about feelings', 'tends to

keep feelings to self'. Coding with regard to confiding of worries was coded as 'none', 'dubious/ minimal', 'definite', 'NA/ no stress'. Withholding information/ secret keeping was coded as 'full disclosure/ no secrets', 'some things kept to self', or 'tends to withhold information'.

A composite measure of child confiding in primary caregivers was derived from ratings for each of the three above questions, with a maximum score of 6. (In a very few cases, children claimed never to have any worries and therefore received a coding of 'non applicable' for confiding of worries; for the purpose of calculating their composite confiding scores, the item was recoded as 'none'.)

Satisfaction with friendships

Children's expressed (dis)satisfaction with their friendships was rated as 'no dissatisfaction', 'some dissatisfaction' or 'marked dissatisfaction'.

Confiding with friends

Confiding with friends was assessed by asking children whether they talked to their (best) friend(s) about things that worried them or made them unhappy; and whether there were things that worried or upset them that they did *not* tell their friends. Responses were coded as 'definite confiding', 'dubious or little confiding', 'no confiding' or 'N/A (no friends)'. (Two children who reported having no friends were grouped with those reporting 'no confiding'.)

Warmth towards primary caregivers

As with parental warmth towards the child, a composite measure of children's warmth towards primary caregivers was used in the present study. In this case, three items were drawn upon, concerning expressed warmth towards the parent (in response to being asked to describe her), enjoyment of her company and how close they felt to her (including questions about physical affection). Each of the three component items was rated on three levels (from 1 to 3). Considered as a continuous measure, scores could therefore vary between 3 and 9. However, for the purpose of further analyses, the resulting total scores

were grouped in line with mean scores across items as ‘low’ (3-4), ‘moderate’ (5-7) and ‘high’ (8-9) warmth.

Child autonomy and influence within the family

A rating of children’s perceived autonomy and influence within the family was made based on responses to four questions about the extent to which children felt they had a say at home on matters affecting them (major and minor); desired more independence; and were satisfied with their autonomy in relation to free time. Each of these items was coded from 0 to 2, with 0 indicating the highest level of perceived influence and independence or autonomy. The maximum possible score on the composite variable was therefore 8 – indicating a perceived lack of influence in all four areas.

4.5 Summary: key measures

Table 4.3 lists the key measures employed in the study and referenced in later chapters.

Table 4.3 Key study measures by source

Source	Measure	Items
Child questionnaire	Communication Scale (total)	11
	- Communication with primary caregivers (subtotal)	10
	- Open communication factor	9
	- Confiding of distress subscale	(3)
	- Caregiver responsiveness subscale	(2)
	- Sharing news subscale	(3)
	- Talk with friends about feelings	(1)
	- Inhibition/ limited confiding factor (reverse-scored)	2
- Talk with friends about feelings	1	
	Spence Children’s Anxiety Scale (SCAS)	42
	Children’s Somatisation Inventory (CSI)	18
	Child stressor total	10
Parent questionnaire	Spence Children’s Anxiety Scale, Parent report version (shortened) (Children’s general and separation anxiety symptoms) (SCAS-P)	12
	Children’s Somatisation Inventory, Parent report version (P-CSI)	18
Child interview	Confiding in primary caregivers	3
	Confiding in friends	1
	Child internalising symptoms (‘Neurotic’ factor, Symptom Score)	15
	Child externalising symptoms (‘Antisocial’ factor, Symptom Score)	9
	Depression (Birlson scale)	18
	Warmth towards primary caregivers	3
	Child’s perceived autonomy / influence	4
	Friendship (dis)satisfaction	1

Parent interview	Child confiding in primary caregivers	3
	(Inappropriate) confiding in the child	1
	Child internalising symptoms ('Neurotic' factor, Symptom Score)	15
	Child externalising symptoms ('Antisocial' factor, Symptom Score)	9
	Expressed warmth towards the child	4
	(Over) control	5
	Primary caregiver depression (past year/ past 5 years)	2
	Primary caregiver negative effect (Malaise Inventory)	23
	Primary caregiver situational anxiety	1
	Primary caregiver non-situational anxiety	1
	Parental relationship quality (global rating drawing on 9 topics)	1

4.6 Data entry and analysis

Data analysis was carried out using SPSS versions 16 and 18 for Windows. Child and parent questionnaire and interview data, as well as data from teachers were coded, entered onto separate SPSS files and then merged to create a single database. Each row in the SPSS file, corresponding with a unique child ID, contained all available data pertaining to that child.

Data checking

Data checking and cleaning was conducted prior to analysis. 10% of questionnaires and all interview data were double entered to check for accuracy of data-entry, and very few minor errors were found (almost all relating to codes for missing values). Out-of-range and system-missing data for each variable were identified and corrected, and univariate outliers were identified and checked. Internal consistency checks were conducted using cross tabulations on variables whose coding was conditional or related to the coding of others. For example, if a child did not have siblings, variables concerning relationships with siblings were correctly coded as 'not applicable' rather than 'missing'. Where such errors were found, the SPSS data and questionnaire or interview coding was checked. Of the few errors detected, most were due to inconsistencies in coding, rather than mistakes in data entry.

Missing data

Once data checking was complete, the quantity and distribution of missing data was examined; no evidence of any systematic bias was found. Less than 1% was missing overall.

In general, for item-level analysis, the maximum sample size available was used (pairwise deletion). However, it was recognised that there are various options for imputation of missing data (Donders *et al.*, 2006), and following discussion with the SiC project advisory group, it was deemed acceptable to take the straightforward approach of replacing the small number of missing values at item level on the SCAS, CSI, parent report P-SCAS and P-CSI and stressor scales with the modal values for each (categorical) item. In most cases, the modal values were 0, signifying, for example, that children were 'not at all' bothered by a particular symptom. However, missing values were only replaced for respondents with low levels of missing data on the relevant scale, such as a maximum of four missing items on the 18-item CSI, as detailed in Section 4.1.2. Similarly, values for composite variables such as scale totals were only calculated in these circumstances; cases with excessive missing data were excluded from further analyses.

The approach taken with regard to the Communication scale was somewhat different, as outlined in Section 4.1.3. (As a substantial minority of children lacked scores for items introduced only on a final version of the scale, missing values at item level were not replaced, but where possible, scale totals were calculated using pro-rated values.)

Normality

The distributions of variables were also inspected. For interval-level data, normality was assessed by checking skewness and kurtosis, normal probability plots, and applying the one-sample Kolmogorov-Smirnov test. Nominal or ordinal frequency distributions were examined, and if necessary coding categories were combined.

Reliability

The reliability of composite scales was assessed using Cronbach's alpha coefficient as a measure of internal consistency. In addition, as set out in Section 4.1.3, test-retest reliability was calculated for the new communication scale.

Analysis and reporting

The study was designed to address a number of hypotheses concerning relationships between communication, symptoms and other child and family factors. Group differences

in levels of communication and symptoms and bivariate relationships between variables were assessed using correlations, chi-squares, t-tests and analysis of variance (ANOVA), and appropriate non-parametric alternatives. Fisher's r to z transformations were used to assess the significance of differences between correlation coefficients.

As parametric tests are generally more robust and powerful than non-parametric alternatives (and generally more familiar to the reader), these were used for preference wherever possible. In some cases where exploratory data analysis indicated that assumptions of normality and homogeneity of variance were violated, alternative non-parametric statistical tests were conducted and results compared with those using parametric techniques. Spearman rank order correlation was used as an alternative to Pearson's product-moment correlation; Mann Whitney tests were used as an alternative to independent samples t-tests and Kruskal Wallis tests were used as alternatives to ANOVAs. Where analyses using parametric techniques produced very similar results – which was not unexpected, given the large sample size - these are reported in the text, for ease of interpretation. Likewise, when exploring specific group differences using ANOVA and post-hoc tests, and where group variances were unequal, Games-Howell as well as Tukey tests were conducted. Where results did not differ substantively, those from the latter were reported.

As this study was particularly concerned with relationships between communication and symptoms after controlling for other salient factors, further analyses were conducted to examine multivariate relationships using partial correlation and hierarchical multiple regression. Prior to performing multiple regression analyses (MRA), necessary dummy variables were created to allow inclusion of categorical variables (such as ethnicity, family form and employment status) in the models. Prior to calculating interaction terms, continuous variables were centred, to avoid problems with multicollinearity and to aid interpretation of main effects (Field, 2013; Wooldridge, 2013). Relevant assumptions were checked, as reported in the text. In each case, attention was paid to sample size, multicollinearity, outliers, normality, linearity and homocedasticity.

In order to clarify the magnitude of effects, standard measures of effect size were calculated and are reported throughout: Phi or Cramer's V for Chi-Squared (χ^2) tests, Cohen's d for t-tests, Eta Squared (η^2) for ANOVA, and Cohen's f^2 for multiple regression (Allen and Bennett, 2010; Cohen, 1988).

For the most part, only relationships significant at the $p = .05$ level are reported in the text. In cases where a hypothesis specified the nature of an association (whether positive or negative) a one-tailed test of significance was applied. Otherwise, two-tailed tests were used.

Chapter 5

Results: the questionnaire and interview samples

This chapter presents details of the questionnaire and interview samples, including response rates, demographic data and scores on key study variables.

5.1 Respondents by gender, year group, symptoms and communication

5.1.1 Stage 1: Questionnaires

Altogether, 2566 children from Key Stage 2 completed questionnaires, across 15 schools in three local authorities. Just 20 of 2669 children on the school registers were opted out of the study by their parents, or identified by staff as unable to understand the questions even with assistance. A further 135 were absent from class (or school) when the forms were administered, and though staff later forwarded completed questionnaires for a substantial minority (52), this meant that a further 83 children did not take part as a result. The overall response rate was therefore 96.1%. As shown in Table 5.1, this sample was fairly evenly split by gender and year group.

Table 5.1 Participants at each stage of the study by child gender and year group

Sample	Child Gender		Child year group				Total
	Girls (%)	Boys (%)	3 (%)	4 (%)	5 (%)	6 (%)	N
Child questionnaire	49.4	50.6	25.4	25.3	23.8	25.4	2566
Parent questionnaire	49.2	50.8	25.4	27.6	22.9	24.1	1368
Interviewed families	51.0	49.0	28.3	26.2	24.8	20.7	145

Parents' questionnaires were returned for just over half of the child sample (53.3%). This subsample was similarly split by child gender, with a very slight bias towards younger year groups ($\chi^2(3) = 9.13, p = .03$, Cramer's $V = .06$). There was also a slight bias in terms of symptoms, as shown in Table 5.2: children whose parents returned questionnaires scored lower on the SCAS and CSI than those whose parents did not. Similarly, children whose parents completed questionnaires reported marginally greater openness with mothers at factor level ($M = 11.42, SD = 3.60$) than those whose parents did not ($M = 11.04, SD = 3.89$; $t(2408.06) = -2.54, p = .01, d = .10$), though overall communication scores were similar.

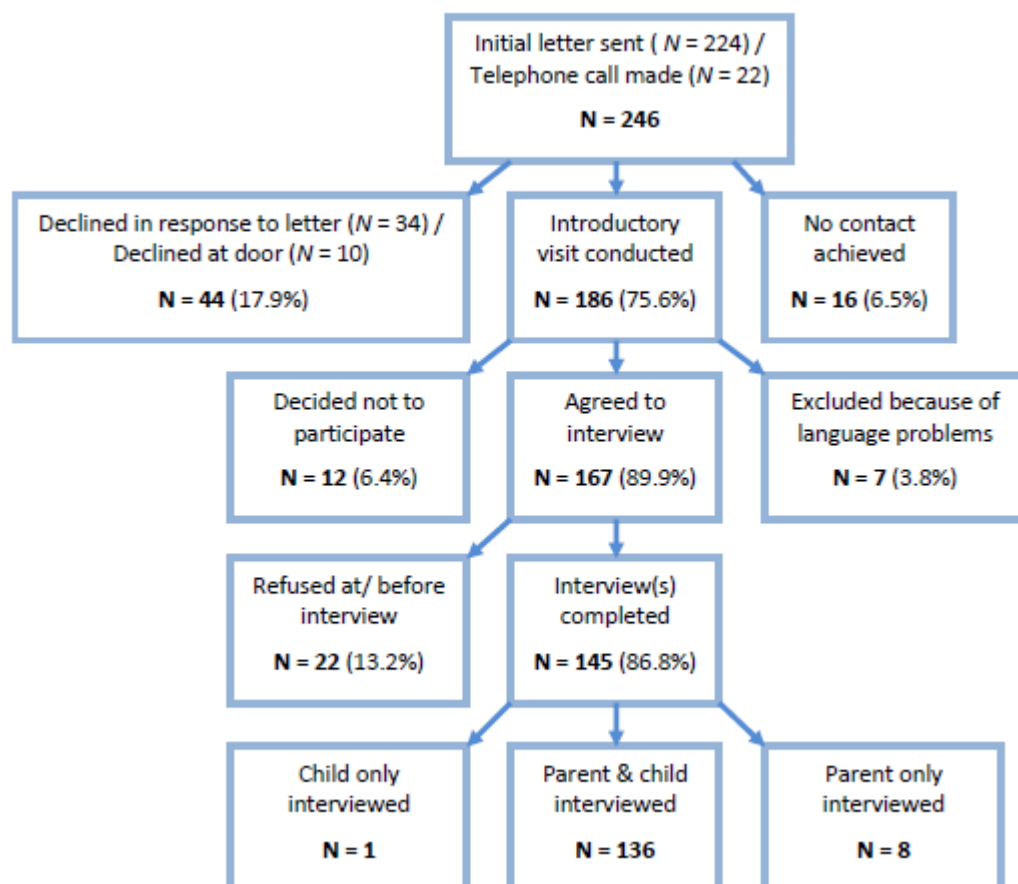
Table 5.2 Child SCAS, CSI and communication scores by parent questionnaire response status

	Parent questionnaire returned			Parent questionnaire not returned			Significance			Effect size
	Mean	(SD)	N	Mean	(SD)	N	t	df	p	Cohen's d
SCAS	28.93	(17.79)	1362	31.95	(20.02)	1197	-4.02	2411.15	<.001	.16
CSI	17.57	(12.89)	1364	19.46	(14.47)	1194	-3.47	2408.91	.001	.14
Communication	13.78	(4.06)	1346	13.48	(4.26)	1175	-1.79	2519.00	.074	.07

5.1.2 Stage 2: Interviews

Altogether, 145 families were involved in the interview stage of the study. Figure 5.1 below indicates the numbers who elected not to participate or who were excluded for various reasons at each point, from the distribution of initial letters through to interview.

Figure 5.1 Stages in recruitment of families for interview



Among the final sample, in all but nine cases, the child as well as their primary caregiver took part. Eight children chose not to do so though their mothers did, and in one case a child took part without either parent participating.⁴

Table 5.1 above demonstrated that, in line with the stratified approach described in Chapter 3, the interview sample maintained the balance between boys and girls. Although at face value there appeared to be a slight skew in favour of younger children, the difference in spread across year groups between the interview sample and the remaining child questionnaire respondents was not significant overall ($\chi^2(3) = 1.97, p = .59$, Cramer's $V = .03$), or for boys or girls separately.

There were no significant differences between mean scores for children who did, and did not, take part in Stage 2, on the SCAS, CSI or communication scale.

Table 5.3 Child SCAS, CSI and total communication scores by participation at Stage 2^a

	In Stage 2 sample			Not in Stage 2 sample			Significance			Effect size
	Mean	(SD)	N	Mean	(SD)	N	t	df	p	Cohen's d
SCAS	30.51	(16.67)	144	30.33	(19.05)	2415	-.11	2557	.91	<.01
CSI	20.23	(12.10)	144	18.34	(13.77)	2414	-1.79	165.88	.07	.28
Communication	14.28	(3.67)	143	13.60	(4.18)	2378	-1.89	2519	.06	.08

^a Due to anomalous data for SCAS and CSI tests, data from one child was excluded in each case.

Notably, the interview sample was not designed to be representative of the wider community sample in terms of anxiety, somatic symptoms, or the relationship between the two; the intention was to sample children with differing combinations of symptoms.

Accordingly, the correlation between SCAS and CSI scores within the interview sample was $r = .30$ ($r_{\text{girls}} = .28$; $r_{\text{boys}} = .33$) – far weaker than in the broader schools sample ($r = .69$; $r_{\text{girls}} = .71$; $r_{\text{boys}} = .65$).

⁴ The mother initially agreed to take part, enabled her daughter's participation, and provided some information about the family, but subsequently rearranged and then missed several appointments for her own interview. After sustained attempts to reach her by phone, a letter was sent thanking the family for their earlier help with the study, but indicating that, unless the mother made contact within the next week, it would not be possible to interview her, and that she would not be approached again about taking part.

In addition, some biases were apparent, when comparisons were conducted separately by gender. Specifically, there were some significant, if small, differences between boys who were involved in Stage 2 and those who were not. Boys who took part in interviews scored higher on the CSI ($M = 19.86$, $SD = 12.11$) than those who did not ($M = 16.56$, $SD = 13.00$, $t(1289) = 2.09$, $p = .04$, $d = .12$). In addition, they scored higher on open communication. In particular, boys who took part in interviews ($M = 3.87$, $SD = 1.57$) were significantly more likely than those who did not ($M = 3.26$, $SD = 1.77$, $t(965) = -2.45$, $p = .01$, $d = .16$) to report sharing worries or upsets with their mothers. Their scores for 'confiding of distress' were on a par with interviewed girls' ($M = 3.98$, $SD = 1.51$), which was not the case within the broader community sample.

Among parent respondents at the questionnaire stage who specified their relationship with the child in question ($N = 1357$), 88.6% were mothers ($N = 1202$), 9.4% fathers ($N = 128$), and 2.0% other carers (including grandparents, step-parents and older siblings: $N = 27$). Among those interviewed as primary caregivers, 97.2% were mothers ($N = 140$), and 2.8% fathers ($N = 4$). That mothers were more prevalent at the interview stage reflects the fact that they were more frequently identified as children's main carers.

5.2 Respondents by demographic background

It was hoped that participants at the questionnaire stage of the study would be broadly representative of the Key Stage 1 population in the areas involved. It was not feasible to collect demographic data on children's questionnaires, beyond age and gender. However, information on household composition, parental involvement in paid work, ethnicity, and the main language(s) spoken at home was obtained from parents' questionnaires. Table 5.4 shows these data for all families in which parents completed questionnaires, and for the smaller interview sample.

5.2.1 Family form

In terms of household structure or family form, interviewed families were typical of those returning questionnaires. Almost three-quarters of children were living with both parents, around one fifth with either their mother or father only, and about five per cent in a stepfamily. In addition for interviewed families only ($N = 144$), parents' relationship status was recorded. Overall, 68.1% of primary caregivers described themselves as married; 6.9%

as cohabiting; 1.4% as not cohabiting, but in a steady relationship; and 22.9% as separated/divorced (13.2%), single/never married (7.6%), or widowed (3.0%).

Table 5.4 Demographic indicators for matched questionnaire and interview samples

		Sample	
		Matched questionnaires	Interview sample
Parents living with the child	Both parents	73.2%	74.5%
	One parent	20.5%	19.3%
	One parent + partner (stepfamily)	4.8%	5.5%
	Other arrangement	1.5%	.7%
	<i>Total (N)</i>	<i>1363</i>	<i>145</i>
(Full time) wage earners in the household	Two (or more)	26.1%	22.8%
	One	53.7%	57.2%
	Part-time only	8.1%	10.3%
	No-one in paid employment	12.2%	9.7%
	<i>Total (N)</i>	<i>1354</i>	<i>145</i>
Child's ethnic group	White British / White other	66.4%	78.6%
	Asian / Asian British	8.4%	5.5%
	Black / Black British	12.0%	4.8%
	Chinese	1.3%	.0%
	Mixed	9.2%	9.7%
	Other	2.7%	1.4%
	<i>Total (N)</i>	<i>1353</i>	<i>145</i>
Main language(s) spoken at home	English	78.3%	89.7%
	Other	10.0%	3.4%
	English and other	11.7%	6.9%
	<i>Total (N)</i>	<i>1343</i>	<i>145</i>

5.2.2 Ethnic background and language

There were differences between families who were interviewed and those who were not, in terms of ethnic background ($\chi^2(5) = 15.53, p = .01$, Cramer's $V = .11$) and languages spoken at home ($\chi^2(2) = 12.80, p = .002$, Cramer's $V = .10$), with the interview sample skewed towards children from White backgrounds, and whose families spoke mainly English. In part, this reflects that parents with English as a second language were less likely to consent to further contact at the questionnaire stage of the research. In addition, as noted in Figure 5.1, seven families were excluded from the interview stage of the study because of parents' inability to participate in interviews without an interpreter.

5.2.3 Socio-economic status

Parents' questionnaires included one indicator of socio-economic status; involvement in paid work. There were no significant differences between questionnaire respondents who were interviewed and those who were not in relation to this measure. Overall, roughly a quarter of children were in homes with two full-time earners, half in households with one and the remainder fairly evenly split between those living with part-time earners only, and with no-one in paid employment.

Further demographic information was obtained from interviewed parents, including details of their income, educational background and occupational status, and that of their partner, if applicable. Table 5.5 shows data on gross household income, and a derived measure of current occupational status, based on the highest of either resident parent, which was used in the present study.

Table 5.5 Household income and highest parental occupational status

		Interview sample
Household income	£7,800 or less	6.9%
	>£7,800 - £13,000	9.0%
	>£13,000 - £25,000	16.0%
	>£25,000 - £39,000	11.1%
	>£39,000 - £73,000	22.2%
	>£73,000	34.7%
	Total (N = 144)	100.0%
Occupational status (highest of any resident parent)	Professional	21.4%
	Intermediate/managerial	44.1%
	Skilled non-manual	8.3%
	Skilled manual	7.6%
	Partially skilled	5.5%
	Unskilled	2.1%
	Economically inactive	3.4%
	Unemployed	2.1%
	Student	1.4%
	Unsupported, non-working mother	4.1%
	Total (N =145)	100.0%

As shown in Table 5.6, six out of ten primary caregivers (predominantly mothers) had a degree, and more than one third were in intermediate/ managerial or professional occupations. Of the partners (predominantly fathers) about whom we had data, similarly, two-thirds had a degree, and seven out of ten were in intermediate/ managerial or professional occupations.

Table 5.6 Parents' educational attainment and occupational status (interview sample)

		Primary caregiver	Partner
Exams achieved	None	9.0%	11.5%
	CSE	2.1%	.9%
	GCSE/ O Level	20.8%	12.4%
	A Level/ FSC or beyond	68.1%	75.2%
	<i>Total (N)</i>	<i>144</i>	<i>113</i>
Further education	None	9.7%	20.2%
	Occasional (no exams)	2.8%	.9%
	Further qualifications taken	7.6%	2.6%
	Day release or technical training	18.8%	8.8%
	Degree /professional qualification	61.1%	67.5%
	Other	.0%	.0%
	<i>Total (N)</i>	<i>144</i>	<i>114</i>
Occupational status	Professional	4.8%	23.9%
	Intermediate/managerial	33.8%	47.0%
	Skilled non-manual	11.0%	3.4%
	Skilled manual	5.5%	12.0%
	Partially skilled	9.7%	5.1%
	Unskilled	1.4%	.9%
	Economically inactive	22.1%	.9%
	Unemployed	2.1%	6.8%
	Student	4.8%	.0%
	Unsupported, non-working mother	4.8%	N/A
	<i>Total (N)</i>	<i>145</i>	<i>117</i>

Equivalent data for English households with (primary school) children are not available. However, while earnings in a primarily London-based sample will be higher than elsewhere, these data suggest that the interview stage of the study included a lower proportion of disadvantaged families than would a representative sample from the broader population. In part, this may be due to language barriers, but it may also reflect a broader pattern of lower response rates in less affluent areas. Indeed, analysis at school level revealed substantial differences in response rate according to the proportion of pupils qualifying for free school meals (FSM). The highest response rate, of 73.3%, was achieved in an affluent area where just 3% of Key Stage 2 pupils were eligible, whereas the lowest rate of return, 27.6%, was for a school with eligibility of 39%. Overall, there was a very strong correlation between FSM eligibility and the rate of return of parent questionnaires ($r = -.86$).

The chapters which follow consider the extent to which children's levels of symptoms and patterns of communication vary according to the demographic factors detailed above.

Chapter 6 Results: questionnaire sample data

This chapter opens with preliminary results concerning the distribution of key variables, and their relationships with demographic factors. The remaining sections report findings from multivariate analyses addressing the hypotheses listed in Chapter 3.

6.1 Anxiety and somatic symptoms

This section focuses on the questionnaire measures of anxiety and somatic symptoms, and covers both child and parent report data.

6.1.1 Levels of anxiety and somatic symptoms

Table 6.1 sets out descriptive data for children's scores on the SCAS and CSI. Total SCAS scores were calculated for 2559 of 2566 children (those who had completed a minimum of 35 of 44 items, and two-thirds of the items on each factor). The items most commonly endorsed (as applying to children at least 'a little' in the previous fortnight) were: worrying about things in general (73.5%); their heart beating fast when they had a problem (69.1%); worrying about something awful happening to a family member (69.0%), about what other people thought of them (64.7%) and that they would do badly at school work (62.6%).

Altogether, 2558 of 2566 children completed at least the requisite 14 of 18 items on the CSI and were awarded total scores. The symptoms most often reported as occurring in the past two weeks were tiredness (81.0%), headaches (67.7%), stomach pain (tummy aches) (61.8%) and feeling sick (61.3%).

Table 6.1 SCAS and CSI total scores: Descriptive statistics

	N	Min	Max	Mean	SD
SCAS Child Total Score	2559	0	98	30.35	18.92
CSI Child Total score	2558	0	72	18.45	13.68

As shown in Figures 6.1 and 6.2, the distributions of SCAS and CSI scores were positively skewed. Transformations were not effective in terms of normalising either set of scores, but parametric tests were judged appropriate for subsequent analyses on the basis of the large sample size.

Figure 6.1 Child anxiety (SCAS) scores: Frequency distribution (N=2559)

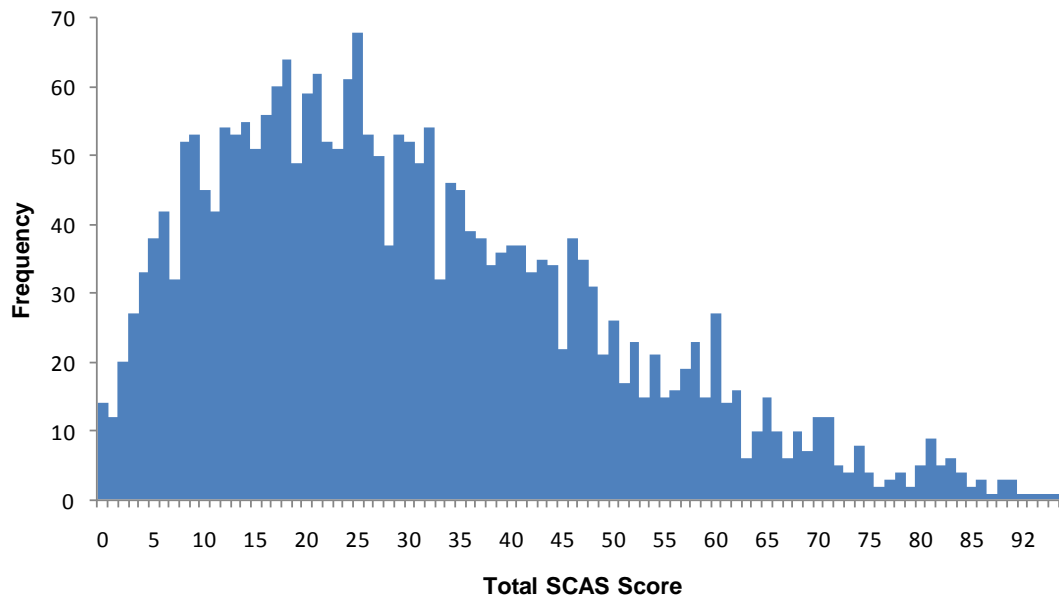
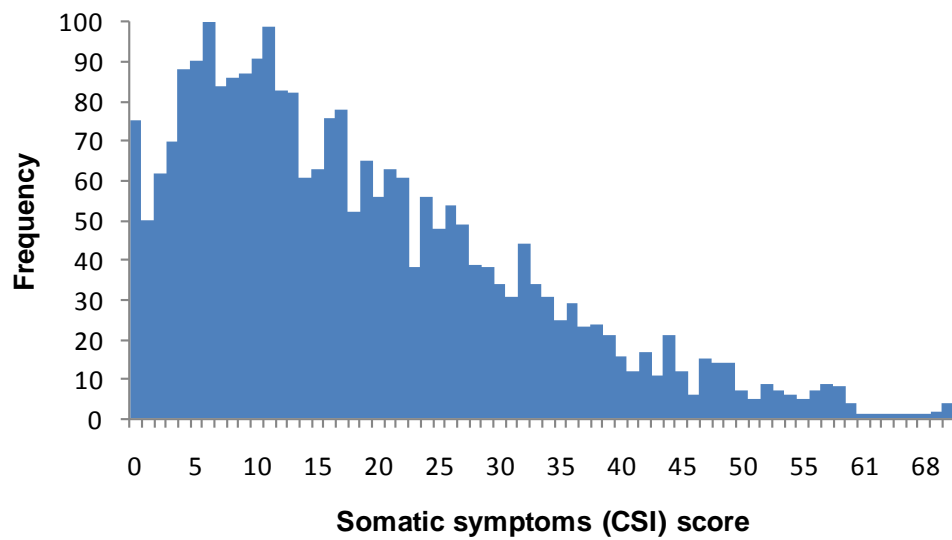


Figure 6.2 Child somatic symptom (CSI) scores: Frequency distribution (N=2558)



6.1.2 Anxiety and somatic symptoms by gender and year group

As set out in Table 6.2, girls scored significantly higher than boys on both the SCAS and CSI. The gender effect was stronger for anxiety than for somatic symptoms.

Table 6.2 SCAS and CSI scores by gender: Descriptive statistics and t-test results

		Boys	Girls	t	df	Sig.	Cohen's d
SCAS	Mean	25.73	35.07	12.85	2473.02	< .001	.51
	SD	16.82	19.78				
	N	1295	1264				
CSI	Mean	16.74	20.20	6.44	2527.20	< .001	.26
	SD	12.97	14.17				
	N	1291	1267				

ANOVAs revealed significant, but comparatively small, age-related differences in levels of anxiety and somatic symptoms, as shown in Table 6.3. In both cases, there was evidence of linearity, with mean scores decreasing significantly, though slightly, from Year 3 to Year 6 ($F_{SCAS}(3, 1416.72) = 18.15, p < .001, \eta^2 = .02$; $F_{CSI} = 21.18(3, 1413.58), p < .001, \eta^2 = .02$). As indicated, however, post-hoc tests showed that only some of the individual year group differences were significant. ANOVAs showed no interaction effects for gender and year group, on either SCAS or CSI scores.

Table 6.3 SCAS and CSI scores by year group: Descriptive statistics and ANOVA results

		Year 3	Year 4	Year 5	Year 6
SCAS	Mean	33.78 ^a	31.58 ^{ab}	29.34 ^b	26.63 ^c
	SD	19.01	20.44	17.89	17.45
	N	649	649	610	651
CSI	Mean	20.99 ^a	15.54 ^{ab}	16.91 ^c	15.96 ^c
	SD	13.53	19.87	12.62	12.15
	N	650	647	610	652

Note: Means without a common superscript differ significantly at $p < .05$

6.1.3 Parent-reports of child anxiety and somatic symptoms

Table 6.4 presents descriptive statistics for child symptoms as reported by parents on the abbreviated two-factor form of the SCAS-P and on the P-CSI, which included 18 items matching those presented to children. Parents reported low levels of child symptoms compared to child self-reports, with pronounced positive skews on both measures.

Table 6.4 SCAS-P and P-CSI scores: Descriptive Statistics

	N	Min	Max	Mean	SD
SCAS-P Child Total Score	1358	0	33	5.21	4.93
P-CSI Child Total score	1358	0	64	5.75	6.72

Parent-reported symptoms by gender and year group

Although parents reported higher levels of anxiety and somatic symptoms for girls than for boys, the gender effects were very small (see Table 6.5). In contrast with the child-report data, there were no significant year group differences in parents' reports on either the SCAS-P or the P-CSI ($F_{SCAS-P} = 1.62 (3, 1354), p = .18, ns$; $F_{P-CSI} = 1.92 (3, 1354), p = .13, ns$).

Table 6.5 SCAS-P and P-CSI scores by gender: Descriptive statistics and t-test results

		Boys	Girls	t	df	Sig.	Cohen's d
SCAS-P	Mean	4.84	5.59	2.77	1324.78	.01	.15
	SD	4.62	5.22				
	N	690	668				
P-CSI	Mean	5.32	6.20	2.42	1356.00	.02	.12
	SD	6.61	6.80				
	N	689	669				

Associations between parent and child reports of symptoms

There were positive, moderately strong associations between children's SCAS scores and parents' ratings of their anxiety on the SCAS-P ($r = .30, p < .001, n = 1352$)⁵, and between parent and child reports of children's somatic symptoms ($r = .31, p < .001, n = 1354$).

The relationship between child-reported symptoms and their parents' assessments was stronger for girls than boys in relation to anxiety ($r_{girls} = .35, p < .001, N = 665$; $r_{boys} = .22, p < .001, N = 667, z = 2.58, p = .005$), but there was no significant gender difference in relation to somatic symptoms, $r_{girls} = .34, p < .001, n = 688$; $r_{boys} = .27, p < .001, n = 271, z = 1.07, ns$).

6.1.4 The relationship between anxiety and somatic symptoms

Children's self-reported SCAS and CSI scores were significantly and strongly correlated ($r = .69, p < .001, N = 2552$). The association between symptoms as reported by parents, on the SCAS-P and P-CSI, was also significant, if somewhat weaker ($r = .51, p < .001, N = 1349$).

⁵ Correlations between P-SCAS scores and children's reports were similar when the comparison was with the full SCAS, as reported above, or only the 13 matched items concerning separation and general anxiety ($r = .30, p < .001, n = 1357$).

Although the study was not designed to investigate particular types of anxiety, it is noteworthy that the SCAS subscale which showed the strongest correlations with CSI scores was panic/ agoraphobia ($r = .65$), which includes items referring to physical sensations such as trembling or feeling faint. However, there were at least moderate associations with all SCAS subscales, with the weakest ($r = .39$) involving physical injury fears (or specific phobias).

The associations between children's anxiety and somatic symptom scores were similar for both sexes, though very slightly stronger for girls (attributable in part to the greater variance in girls' scores). This was the case based on child-report data ($r_{girls} = .71$; $r_{boys} = .65$, $z = 2.82$, $p = .005$), as well as that from parents ($r_{girls} = .55$; $r_{boys} = .47$; $z = 1.98$, $p = .05$).

6.1.5 Anxiety, somatic symptoms, and demographic (family) factors

One aim of the present study was to assess relationships between communication and symptoms, controlling for demographic and other family factors. As outlined in Chapter 4, parent questionnaires sought information on household composition, employment status and ethnicity. In this section, relationships between these factors and symptoms are explored among children whose parents returned questionnaires, to inform later multivariate analyses.

Symptoms and family form (resident parents)

There were significant differences in child anxiety and somatic symptom levels by family form, though effects were small (See Appendix 15). On child and parent reports, children living with one parent were more symptomatic than those living with two. (For SCAS, mean scores were 32.47 versus 27.73, respectively, $p < .001$; for CSI, 19.13 versus 16.94, $p = .06$; for SCAS-P, 6.83 versus 4.71, $p < .001$; and for P-CSI, 6.77 versus 5.37, $p < .001$.)

In addition, on the basis of child-reported SCAS scores only, those living in households with 'other' arrangements (for example, with foster carers) were more symptomatic than children living with both parents (with mean scores of 38.10 versus 27.73, $p = .05$).

Examined separately by gender, these variations in symptoms by family form were apparent only for girls, except in relation to parent ratings of child anxiety, which were higher for both sexes in lone parent than two parent households (See Appendix 16.)

Symptoms and ethnic background

Children's anxiety levels, but not somatic symptoms, varied slightly by ethnic group, on the basis of child and parent-reports. According to children's reports, Black British pupils were significantly more anxious than their White counterparts ($p = .002$) and those from mixed backgrounds ($p = .004$). In contrast, on parents' ratings, Asian children were more anxious than those from White ($p = .008$) or mixed backgrounds ($p = .02$) (See Appendix 17).

Variations in symptom levels by ethnic group were apparent only for girls, when broken down by gender. Both SCAS and CSI scores for Black girls ($M_{SCAS} = 41.53$, $SD = 19.25$; $M_{CSI} = 24.00$, $SD = 16.39$) were significantly higher than for White girls ($M_{SCAS} = 31.98$, $SD = 18.76$, $p < .001$; $M_{CSI} = 18.40$, $SD = 13.21$, $p = .01$), and Black girls also had higher SCAS scores than those from Mixed backgrounds ($M = 29.70$, $SD = 17.77$, $p = .01$). P-SCAS scores for girls from Asian backgrounds ($M = 7.62$, $SD = 6.64$) were significantly higher than those for girls from White ($M = 5.20$, $SD = 4.84$, $p = .02$) and Mixed backgrounds ($M = 4.54$, $SD = 4.30$, $p = .03$).

Symptoms and number of wage-earners in the household

Levels of symptoms varied according to the number of wage earners in the household, on both child and parent reports of anxiety and somatic symptoms. As detailed in Appendix 18, effects were small, but associations were linear. Those living with two parents in full-time work were significantly less symptomatic than those in households without work, or with part-time work only. Those with just one parent in full-time work were also less anxious than those in workless families.

Once again, considered separately by gender, these relationships were stronger and significant for girls only, although boys' SCAS scores tended towards the same pattern. Girls in households with no earners scored significantly higher on the SCAS ($M = 38.28$, $SD = 19.19$) than those living with two full-time earners ($M = 31.15$, $SD = 19.07$, $p = .03$). Similarly, girls living with two full-time earners ($M = 17.69$, $SD = 13.54$) reported lower levels of somatic symptoms than those whose parents were not in work ($M = 23.89$, $SD =$

14.56, $p = .003$) or worked part-time only ($M = 25.56$, $SD = 16.55$, $p = .001$). Likewise, on both the SCAS-P and P-CSI, parents rated girls, but not boys, as less symptomatic if their household contained one or two full-time earners than if there were part-time earners only, or no one was in work.

6.1.6 Stressors, anxiety and somatic symptoms

As outlined in Section 4.1.4, children were presented with a list of ten potential stressors and asked to indicate how often each one made them feel worried, upset or anxious. Family illness and tests or exams were most commonly reported to cause stress. Fewer children identified school break times or games/ sports as stressors. However, as set out in Table 6.6, each situation or trigger affected a substantial minority ‘sometimes’ and was ‘often’ a cause of stress for some.

Table 6.6 Frequency of experiencing stress relating to specific stressors (N = 2554)

	Never (%)	Sometimes (%)	Often (%)
Friends or other children	40.56	48.79	10.65
Schoolwork / lessons	42.95	43.66	13.39
Tests and exams	30.54	42.72	26.74
My mum and / or dad	58.89	28.39	12.73
My brothers / sisters	51.14	30.81	18.05
Playing games or sports	68.48	22.67	8.85
Things I see on TV	47.85	38.57	13.59
Being by myself	57.79	28.82	13.39
Break time	73.73	19.42	6.85
Someone in my family being ill	21.85	47.96	30.19

Stressors by gender and year group

Overall stressor scores were significantly higher for girls than boys ($M_{\text{girls}} = 7.49$, $SD = 3.70$, $N = 1266$; $M_{\text{boys}} = 5.74$, $SD = 3.87$, $N = 1288$, $t(2552) = 11.63$, $p < .001$, Cohen’s $d = .46$). In fact, for each of the ten specified stressors, girls reported experiencing more frequent stress ($p < .001$). The gender effect was most pronounced for friendship-related stress (13.51% of girls versus 7.84 % of boys were often stressed by friends; $\chi^2 = 134.02$, $Phi = .23$), family illness ($\chi^2 = 56.85$, $Phi = .15$) and tests or exams ($\chi^2 = 54.70$, $Phi = .15$) and weakest in relation to parents, with 14.22 per cent of girls and 11.26 per cent of boys claiming that their mother or father ‘often’ made them worried, anxious or upset ($\chi^2 = 17.33$, $Phi = .08$).

Stressor total scores also differed by year group, albeit very slightly ($F(3, 1414.51) = 5.12$, $p = .002$, $\eta^2 = .006$). Post-hoc tests showed that scores for the youngest group, Year 3 ($M = 7.02$, $SD = 3.80$), were higher than those for either Year 5 ($M = 6.38$, $SD = 3.81$, $p = .02$) or Year 6 ($M = 6.28$, $SD = 3.74$, $p = .002$).

Stressors, anxiety and somatic symptoms

Total stressor scores were strongly related to those for child-reported anxiety (SCAS, $r = .63$, $N = 2548$) and somatic symptoms (CSI, $r = .53$, $N = 2549$). They were also significantly, but weakly, related to parent reports of child symptoms (for SCAS-P, $r = .19$; for P-CSI, $r = .16$, both $p < .001$, $N = 1353$).

As shown in Table 6.7, relationships between stressor scores and symptoms appeared consistently stronger for girls, particularly in relation to parent reports of child anxiety, where the gender difference reached significance ($z = 2.08$, $p = .04$). This echoes the relationship between child-reported anxiety (SCAS) and SCAS-P scores. At face value, this suggests that levels of stress experienced by children around common stressors was more closely related to parents' awareness of anxiety in girls than boys; however, the gender effect was not particularly large, and may stem from the greater variance in girls' scores.

Table 6.7 Stressor scores and symptoms by gender: Correlations

	Stressor scores			
	Girl	N	Boy	N
SCAS Child Total Score	.64 ^{***}	1262	.57 ^{***}	1286
CSI Child Total score	.53 ^{***}	1265	.50 ^{***}	1284
Parent SCAS-P total	.23 ^{***}	667	.12 ^{***}	686
Parent P-CSI total	.19 ^{***}	668	.10 ^{***}	685

*** Correlations significant at $p < .001$

6.1.7 Summary: anxiety and somatic symptoms

Children's total scores for both anxiety and somatic symptoms (were positively skewed, with most reporting low levels of symptoms. There was a strong association between anxiety (SCAS) and somatic symptom (CSI) scores ($r = .69$). Girls scored higher on both the SCAS and CSI than did boys, and younger children also scored higher than older children on both measures. These patterns were echoed in relation to scores on a measure of recent stress, associated with common situations or experiences.

There were moderate associations between parent and child reports of child symptoms, with parents reporting lower levels of symptoms than children. Levels of anxiety and somatic symptoms varied to some extent according to family form, ethnic background, and parental employment. Particularly for girls, living with one parent (or none) compared to two; having no parent in full-time work; and being Black compared to White, was associated with higher levels of symptoms.

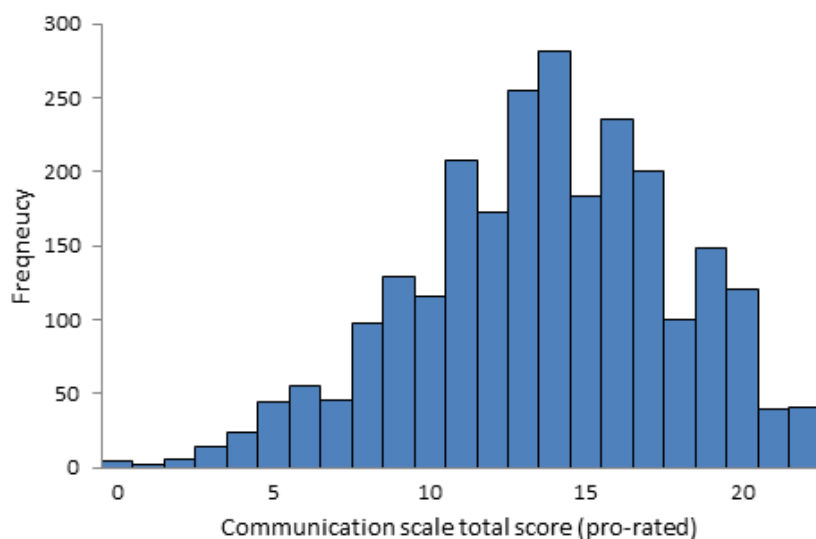
6.2 Patterns and levels of child communication

This section focuses on patterns of child communication, based on the questionnaire measure. As described in Chapter 4, the scale developed for this study contained 11 items, all but one concerning communication with primary caregivers. Consideration is given to the overall distribution of scores and responses by item, to gender differences in aspects of communication, and to their relationships with demographic factors.

6.2.1 Total communication scores

Children's total communication scores ranged from 0 ($N = 4$ children, 0.2%) to 22 ($N = 40$ children, 1.6%) with a mean of 13.64 ($SD = 4.16$). As shown in Figure 6.3, scores were reasonably normally distributed; neither the negative skew of $-.31$ ($SE = .05$) nor kurtosis of $-.21$ ($SE = .10$) were improved by logarithmic or square root transformations. Despite substantial variation across the sample, few children reported little or no confiding.

Figure 6.3 Child communication scores: Frequency distribution (N=2521)



6.2.2 Levels of communication by topic

In line with the skew in total communication scores, responses at item level consistently indicated that most children ‘sometimes’ or ‘nearly always’ shared experiences and feelings. Nevertheless, as shown in Table 6.8, the degree of openness varied. Children were somewhat less likely to talk about worries or about friends than other issues or emotions. On the basis of one item on confiding in friends (rather than about them), they appeared less open with friends than with primary caregivers; almost one in three children ‘never’ talked to friends about feelings.

Of all 11 statements, the one eliciting the most positive response concerned primary caregivers’ attentiveness when children needed to talk: around two-thirds (64.46%) felt that they ‘nearly always’ listened, and just 6.35% that they ‘never’ did so. Although greater numbers said their primary caregiver ‘never’ gave a reason when cross (16.44%), nearly half felt theirs almost invariably did. Close to half of all children reported ‘nearly always’ telling their primary caregiver about: funny things (47.78%), school (45.96%) and things that upset them (45.43%) – positive, potentially neutral and negative experiences.

Table 6.8 Communication scale items: Distribution of responses

Item	Never (%)	Sometimes (%)	Nearly Always (%)	N
I talk to my mum ¹ about my day at school	9.21	44.83	45.96	2552
I find it hard to tell my mum about things that bother me	33.42	48.36	18.22	1915
I tell my mum when something upsets me	17.43	37.15	45.43	2536
I talk to my mum about my friends	15.52	51.30	33.18	2532
I tell my mum if I’m worried or anxious about something	20.51	45.27	34.22	2525
I tell my mum about things that make me laugh	13.25	38.96	47.78	2528
My mum listens to me if I need to talk about something	6.35	29.19	64.46	1905
If my mum is cross with me, she tells me why	16.44	37.31	46.26	2525
I have worries I don’t tell my mum about	38.24	45.31	16.46	1896
If I feel worried, it helps to talk about it with my mum	19.73	41.65	38.62	1911
I talk to my friends about how I feel	31.07	46.91	22.02	2543

¹Children were instructed to focus on their ‘mum, or the person who mostly looks after’ them.

Focusing specifically on sharing of worries – of particular interest to the current study – a sizeable minority said that they never confided in their primary caregivers. For some, never sharing worries could reflect never having them. However, responding to a separate item

on keeping worries quiet, more than six out of ten children said they ‘sometimes’ or ‘nearly always’ had worries they did not tell their primary caregiver about. Though two-thirds reported difficulty, on occasion, in talking about things that bothered them, four in five said it helped to share worries with their primary caregivers – with a fairly even split between those who felt it helped ‘sometimes’ as opposed to ‘nearly always’.

As expected, children’s perceptions of caregivers’ receptiveness, readiness to explain anger, and helpfulness in relation to talking through worries were associated with their propensities to confide. The strongest inter-item correlations were between feeling that it helped to talk about worries and actually talking about them, or about upsets ($r = .44, p < .001$; $r = .43, p < .001$), and between finding it hard to talk about things and keeping worries from primary caregivers ($r = .37, p < .001$). (For a full correlation matrix, see Appendix 12). In addition, talking about feelings with friends was moderately associated with scores for the remaining 10 items focusing on primary caregivers ($r = .27, p < .001, N = 2520$).

6.2.3 Communication by gender

As shown in Table 6.9, girls scored significantly higher than boys overall; on communication with primary caregivers (on the subtotal excluding confiding in friends); and on open communication (including on two of the three subscales). Girls also registered more inhibition than boys, however, and in each case the gender effects were rather small.

Table 6.9 Communication total and factor and subscale scores by gender

		Girls	Boys	<i>t</i>	<i>Sig.</i>	<i>Cohen’s d</i>
Total Communication	M (SD)	14.23 (4.09)	13.07 (4.14)	7.06	<.001	.28
	N	1249	1272			
Communication with primary caregiver	M (SD)	13.24 (3.89)	12.32 (3.89)	5.95	<.001	.24
	N	1251	1275			
Open communication	M (SD)	11.86 (3.58)	10.64 (3.80)	8.31	<.001	.33
	N	1249	1271			
Limited/ inhibited confiding ^a	M (SD)	2.29 (1.18)	2.45 (1.14)	-3.14	^a .002	- .14
	N	925	962			
<i>Confiding of distress</i>	M (SD)	3.85 (1.67)	3.29 (1.76)	7.10	<.001	.33
	N	913	967			
<i>Caregiver responsiveness</i>	M (SD)	2.84 (1.08)	2.86 (1.09)	-.33	.740	-.02
	N	928	959			
<i>Sharing of news</i>	M (SD)	4.09 (1.41)	3.70 (1.49)	6.73	<.001	.27
	N	1246	1266			

^a Unlike total and open communication, predicted to be higher amongst girls, no predictions were made about gender differences in inhibition, so a two-tailed test was used here.

Item level gender differences in communication

As implied by the differing factor and subscale results reported above, the size and nature of the gender gap in communication varied at item level. Nevertheless, as detailed in Appendix 19, the difference between boys' and girls' scores was significant for all but two statements, concerning caregivers' responsiveness rather than children's propensity to talk: boys were just as likely as girls to report their primary caregivers listening and explaining being cross. In line with the gender difference in inhibition scores, girls were more likely to report keeping worries from their primary caregiver, and to have difficulty talking to her about things that bothered them. On all of the remaining items, girls reported higher levels of communication than boys. The largest gender differences – albeit still small – concerned upsetting experiences and confiding in friends. More than half of all girls said they 'nearly always' talked to their primary caregiver about things that upset them while just 12.42% 'never' did, compared to 38.20% and 22.34% of boys respectively. Similarly, less than a quarter of girls but more than a third of boys claimed 'never' to confide in friends. In contrast, few children of either sex 'never' told primary caregivers about their day at school (See Appendix 20).

As noted in Chapter 4, the factor structure of the communication scale was very similar for girls and boys. For both sexes alike, perceptions of their primary caregivers as confidants, in terms of listening, explaining, and helpfulness in relation to talking through worries were associated with their own confiding behaviour in the expected direction. For example, associations between confiding about worries and the perceived helpfulness of doing so were similarly strong for girls ($r = .42$) and boys ($r = .45$). Likewise, there were similar, though weaker, associations for girls and boys between levels of confiding in friends and communication with primary caregivers ($r_{\text{girls}} = .23$; $r_{\text{boys}} = .28$). Correlations between communication scale items by gender are set out in full in Appendix 21.

6.2.4 Communication by demographic and family factors

Associations between communication and demographic factors were explored among the subsample whose parents provided data. (The salience of other demographic variables, measured at interview stage, is addressed in Chapter 7.)

Communication and child age (year group)

Communication scores were stable across the age range (7-11 year olds), with ANOVAs revealing no significant differences between year groups, with one exception. Scores on the caregiver responsiveness subscale did increase with age ($F(3, 1883) = 10.67, p < .001$), with scores for Year 3 ($M = 2.67, SD = 1.09$) and Year 4 ($M = 2.75, SD = 1.11$) significantly lower than those for Year 5 ($M = 2.95, SD = 1.05, p < .05$) and Year 6 ($M = 3.02, SD = 1.07, p < .05$). Considered separately by gender, there were no age-related differences in communication scores for either sex.

Communication, family form and employment

There was no relationship between communication scores and household composition, specifically whether children lived with both parents, one of them, in a stepfamily or in another family form. Likewise, there was no association between communication and parental employment, in terms of involvement in full-time or part-time work – either across the sample or for either sex separately.

Communication and ethnicity

ANOVAs revealed small differences by ethnicity on scores for communication with primary caregivers ($F(5, 1325) = 2.67, p = .02, \eta^2 = .01$). Children from Chinese backgrounds ($M = 10.61, SD = 3.37, N = 18$) tended to reported lower levels of communication than those from Mixed backgrounds ($M = 13.25, SD = 3.84, N = 123, p = .07$) or White children ($M = 13.04, SD = 3.75, N = 886, p = .08$). At factor level, Chinese children had both the lowest mean levels of open communication and the highest mean levels of inhibition, but none of the between-group differences on either measure approached significance, which may reflect the small size of the Chinese group relative to the others. The same patterns were apparent for boys and girls when considered separately.

6.2.5 Summary: patterns and levels of communication

Few children reported low levels of communication, overall. With that caveat, scores on the new communication scale were otherwise normally distributed. The level of communication varied to some extent across topics, and children appeared less likely to

confide in friends than in primary caregivers. However, fully one fifth of children claimed never to share their worries with primary caregivers. Perceptions of their readiness to listen and explain anger, and the helpfulness of talking to them about worries were associated with a tendency to confide.

Overall, girls reported slightly higher levels of open communication than boys, particularly in relation to confiding in friends. However, they also reported more difficulty around confiding in primary caregivers than did boys. Neither child openness nor inhibition differed by child age, though older children considered their primary caregivers more responsive. There were no significant differences in communication according to family form, parental employment or ethnicity, though there was a tendency for Chinese children to score lower than those of other ethnic backgrounds.

6.3 Communication and symptoms

This section describes bivariate relationships between children's scores on the communication scale and the questionnaire measures of anxiety (SCAS) and somatic symptoms (CSI). Here, the focus is on the entire schools sample; Section 6.4 considers these relationships separately by gender.

6.3.1 Communication, anxiety and somatic symptoms

Table 6.10 presents zero order correlations between communication scores and children's anxiety and somatic symptoms as reported on the SCAS, CSI, SCAS-P and P-CSI. Of note, relationships between limited/ inhibited confiding and children's reports of both anxiety and somatic symptoms were significant and of moderate strength. The direction of the relationships reflects reverse-scoring of negative items; greater inhibition was associated with experiencing more anxiety and more somatic symptoms.

There was also a relationship, albeit weaker, between children's reports of inhibited confiding and parental reports of their somatic symptoms, but not their anxiety levels. In other words, parents observed more physical symptoms in their children when children avoided expressing their worries, or had difficulty doing so.

In comparison with results for inhibition, the few significant relationships between symptoms and other aspects of communication were weak and generally applied only to child-reported symptoms. Focusing on the open communication subscales, ‘caregiver responsiveness’ was negatively associated with child-reported anxiety and somatic symptoms, whereas ‘confiding of distress’ was positively associated with child-reported anxiety; and ‘sharing of news’ was positively correlated with children’s reports of both types of symptom. Associations between subscales and parent-reported symptoms followed the same pattern, but were weaker still, rarely reaching significance. The strongest relationship linked caregiver responsiveness and P-CSI scores.

On the single item relating to talk with friends, ANOVAs reinforced the results of correlation analysis shown in the final row of Table 6.10. There were significant, but small, group differences by levels of confiding in friends for both SCAS ($F(2, 1331.99) = 13.48, p < .001, \eta^2 = .01$) and CSI scores ($F(2, 1332.37) = 10.33, p < .001, \eta^2 = .01$). In both cases, ‘nearly always’ confiding in friends was associated with significantly higher symptom scores than either ‘never’ or ‘sometimes’ doing so ($p < .05$) – but there were no significant relationships between confiding in friends and parent-reported symptoms.

Table 6.10 Communication scale scores and child symptoms: Correlations

	SCAS		CSI		SCAS-P		P-CSI	
	r	N	r	N	r	N	r	N
Total communication	< .01	2515	-.06**	2517	-.01	1336	-.03	1336
Communication with primary caregiver	-.02	2520	-.07***	2521	-.01	1337	-.03	1337
Open communication	.07***	2514	.01	2516	-.07	1335	-.01	1335
Inhibited confiding	-.33***	1882	-.32***	1883	-.03	1010	-.11***	1011
Confiding of distress	.10***	1876	.02	1876	.05	1004	.02	1004
Caregiver responsiveness	-.11***	1882	-.16***	1883	-.06	1012	-.09***	1013
Sharing of news	.08***	2507	.04*	2507	-.02	1329	-.01	1329
Confiding in friends	.09***	2537	.05*	2539	-.04	1347	.01	1347

* Correlations significant at $p < .05$; ** Correlations significant at $p < .01$; *** Correlations significant at $p < .001$

6.3.2 Gender, communication and symptoms

This section addresses whether, and if so, how, bivariate relationships between measures of communication and symptoms differed by gender. Full details of the relevant associations are set out in Appendix 22. In short, however, for both sexes, the strongest

association between symptoms and communication scores concerned inhibition. In line with results for the sample as a whole, greater inhibition and, to a lesser extent, lower responsiveness were associated with higher levels of self-reported anxiety and somatic symptoms, regardless of child gender. Similarly, for both sexes, there were significant relationships between child-reported inhibition and parental reports of somatic symptoms (P-CSI), but not anxiety (SCAS-P).

In contrast, the weak positive relationships between SCAS scores and open communication, 'confiding of distress', 'sharing of news', and 'confiding in friends' held only for boys. In other words, for boys, but not girls, higher levels of anxiety were associated with more frequent communication of distress and other experiences to primary caregivers and friends. Among girls, levels of open communication, even about distress, were unrelated to self-reported anxiety. However, for girls only, 'confiding of distress' was weakly linked to higher parent ratings of their anxiety on the SCAS-P ($r = .10$). This finding – involving the only significant association between child-reports of communication and parent reports of child anxiety - may be due to chance. At face value, however, it suggests that the more girls verbally communicate their distress, the higher parents rate their anxiety levels.

Communication with friends, gender and symptoms

Associations between confiding in friends and symptoms were gendered to some extent, as shown by the ANOVA results shown in Table 6.11 (and the correlation coefficients in Appendix 22). For boys, but not girls, there was a linear relationship such that confiding in friends was associated with higher levels of anxiety. Although for both sexes, 'nearly always' confiding in friends about feelings was associated with the highest symptom scores, boys who 'never' talked to friends were least anxious and reported similar levels of somatic symptoms as those who did so 'sometimes'. Conversely, among girls, post-hoc tests showed that those who 'sometimes' talked to friends about their feelings were least symptomatic; those who 'never' did so scored significantly higher ($p = .01$) - on a par with those who 'nearly always' confided in friends. Without taking other factors into account, this suggests that, for girls, but not boys, low as well as high levels of confiding in friends are associated with emotional distress.

Table 6.11 Symptoms by confiding in friends and gender: Descriptive statistics and ANOVA results

			Never	Sometimes	Nearly always	df1	df2	F	p	η^2
SCAS	Girls	M (SD)	36.90 (20.85)	32.90 (18.78)	37.39 (20.13)	2	664.66	7.43	.001	.01
		N	308	611	338					
	Boys	M (SD)	24.43 (16.90)	25.59 (16.18)	29.20 (18.08)	2	1277.00	6.13	.002	.01
		N	480	582	218					
CSI	Girls	M (SD)	21.34 (14.77)	18.88 (13.62)	21.51 (14.40)	2	673.96	5.18	.006	.01
		N	309	610	341					
	Boys	M (SD)	16.65 (13.27)	15.87 (12.03)	19.35 (14.57)	2	561.17	4.96	.007	.01
		N	480	581	218					

Parent-rated symptoms were not associated with either boys' or girls' reports of confiding in friends, except that for boys only there was a weak association with SCAS-P scores ($F(2, 678) = 3.86, p = .02, \eta^2 = .01$). Parents perceived higher levels of anxiety in boys who reported never confiding in friends ($M = 5.34, SD = 4.89, N = 250$) than in those who did so sometimes ($M = 4.37, SD = 4.44, p = .03$). Scores for the small proportion of boys who 'nearly always' confided in friends ($M = 5.38, SD = 4.44, N = 106$), were on a par with those of boys who 'never' did. On the basis of this single-item measure of confiding, it appears that, from parents' perspective, if not their own, boys who deny confiding in friends as well as those who 'always' do so appear more anxious than those who 'sometimes' share their feelings – echoing findings from girls' self-report data.

6.3.3 Communication and relationships between parent and child reported symptoms

As reported in Section 6.1.3, there were moderate associations between child and parent reports of child symptoms. To explore whether these relationships varied with levels of communication, children were divided into three groups, with 'low' (≤ 12), 'moderate' and 'high' (16 and above) communication scale scores, using the SPSS visual binning procedure to create cut-points at the 33rd and 66th percentiles. For children reporting higher levels of communication, there were indeed stronger correlations between their own and their parents' reports of their anxiety symptoms.

Table 6.12 shows that the effect of overall communication level was stronger for boys than girls, whose communication scores tended to be higher. In contrast, there was no clear ‘communication effect’ for parent-child agreement on somatic symptoms, which may partly reflect that the communication scale focused on talk about emotional experiences and news, rather than physical symptoms.

Table 6.12 Parent and child reported symptoms by level of communication: Correlations

Communication level	SCAS and SCAS-P scores			CSI and P-CSI scores		
	Total	Girls	Boys	Total	Girls	Boys
Low	.24 ^{***}	.32 ^{***}	.16 ^{**}	.30 ^{***}	.38 ^{***}	.20 ^{**}
Moderate	.28 ^{***}	.31 ^{***}	.19 ^{**}	.32 ^{***}	.30 ^{***}	.34 ^{***}
High	.41 ^{***}	.42 ^{***}	.35 ^{***}	.32 ^{***}	.33 ^{***}	.28 ^{**}

** Correlations significant at $p < .01$; *** Correlations significant at $p < .001$

6.3.4 Communication and stressors

Section 6.1.6 reported on the frequency with which children felt worried, upset or anxious in relation to each of ten situations or important people in their lives. Relationships between communication and stressor scores were considered as an additional means of exploring associations between anxiety, its sources, and communication. As detailed in Appendix 23, associations between communication and stressor scores strongly reinforced findings in relation to anxiety, measured on the SCAS, with total stress (and stress associated with individual stressors) most strongly and consistently related to inhibition and to a lesser extent, caregiver responsiveness, for both boys and girls.

6.3.5 Summary: communication and symptoms

There were significant and moderately strong associations between child inhibition and symptoms. Greater inhibition was associated with higher levels of both anxiety and somatic symptoms, as well as with stress associated with a broad range of stressors. In comparison, relationships between symptoms and other aspects of communication were relatively weak. Caregiver responsiveness was, nonetheless, significantly associated with lower levels of symptoms.

When considered separately by gender, relationships between inhibition and symptoms held for both boys and girls, whereas weak positive associations between symptoms and confiding of distress, sharing of news, and confiding in friends were apparent only for boys.

6.4 Communication and symptoms controlling for other factors

Of particular interest to this study was the relationship between communication and somatic symptoms, controlling for anxiety, given the theory that satisfactory verbal expression of distress may reduce the likelihood of somatisation, or manifestation of distress in physical symptoms. Another key hypothesis concerned whether communication was associated with anxiety and/ or somatic symptoms after controlling for demographic and family factors.

Section 6.4.1 addresses the first of these issues and Section 6.4.2 both of them; in each case, consideration is given to whether findings differ by gender.

6.4.1 Partial correlations between communication and somatic symptoms

As noted in Section 6.1.4, SCAS and CSI scores were highly correlated, while there were weaker associations between both measures of symptoms and aspects of communication.

Partial correlations indicated that controlling for anxiety based on SCAS scores reduced but did not eliminate the substantive association between inhibition and somatic symptoms (partial $r = -.13$, $p < .001$). Inhibition (reverse-scored) was still associated with higher scores on the CSI. The weaker negative relationship between caregiver responsiveness and somatic symptoms was reduced to a lesser extent (partial $r = -.12$, $p < .001$). In contrast, the very weak negative relationships between CSI scores and total communication scores or those for communication with primary caregivers were marginally strengthened by controlling for anxiety (partial $r = -.08$ for both, $p < .001$). This reflected that the positive relationships between somatic symptoms and both 'sharing of news' and 'confiding in friends' were no longer apparent once SCAS scores were taken into account (respectively, partial $r = -.01$, $p = .51$, and partial $r = -.02$, $p = .46$). Moreover, while previously there had been no significant relationship between confiding of distress and somatic symptoms, there was a weak but significant negative association between the two after controlling for anxiety (partial $r = -.08$, $p = .001$).

Overall, these results suggest that children's self-reported communication with primary caregivers can explain a small, but significant, amount of variation in their levels of somatic symptoms, over and above that accounted for by anxiety. Controlling for anxiety, higher levels of openness or confiding as well as lower levels of inhibition were associated with lower levels of somatic symptoms.

Communication and somatic symptoms by gender, controlling for anxiety

Further tests, utilising partial correlations, assessed whether the above patterns held for both sexes. In general, this was the case. With respect to caregiver responsiveness, associations with somatic symptoms were reduced in strength to a similar extent among both sexes, after controlling for anxiety (partial $r_{\text{girls}} = -.11, p = .001$; partial $r_{\text{boys}} = -.12, p < .001$). Whereas for boys there had been a tendency for confiding in friends to be associated with higher levels of somatic symptoms, this was not the case after controlling for anxiety ($r = -.01, p = .73$). Some minor gender differences in the impact of controlling for anxiety reflected the slightly stronger association between SCAS and CSI scores among girls. With respect to overall communication, controlling for anxiety eliminated the weak relationship with somatic symptoms among girls (partial $r = -.03, ns$), whereas it strengthened the association among boys (partial $r = -.11, p < .001$). This reflected that the relationship between CSI scores and inhibition was weakened somewhat more for girls (partial $r = -.09, p = .01$) than boys (partial $r = -.17, p < .001$). Similarly, for boys, after controlling for anxiety, there was a stronger negative relationship between confiding of distress and somatic symptoms ($r_{\text{girls}} = -.05, p = -.16, ns$; $r_{\text{boys}} = -.09, p = .007$).

Communication and parent-reported somatic symptoms, controlling for anxiety

As set out in Section 6.3.3, parent reports of children's somatic symptoms on the P-CSI were associated with children's reports of inhibition and lower levels of caregiver responsiveness. Partial correlations were conducted to test whether these associations held, taking into account parent and child reports of child anxiety.

In both cases, controlling for child but not parent reports of anxiety rendered the associations non-significant. In other words, children's reports of inhibition and caregiver responsiveness explained variation in parents' reports of their somatic symptoms (P-CSI) beyond that explained by child anxiety as assessed by parents; however, neither measure

of communication explained additional variation in P-CSI scores, beyond that accounted for by children's own reports of anxiety. Specifically, the association between P-CSI scores and child-reported inhibition remained significant after controlling for SCAS-P scores, at partial $r = -.12$, $p < .001$ (partial $r_{\text{girls}} = -.14$; partial $r_{\text{boys}} = -.10$). However, controlling for children's SCAS scores eliminated the association between P-CSI scores and child-reported inhibition across the sample (partial $r = -.04$, $p = .18$) and for both sexes. Similarly, focusing on links between P-CSI scores and caregiver responsiveness, although the very weak relationship held across the sample after controlling for parent-reports of child anxiety (partial $r = -.07$, $p = .03$), it was no longer significant after controlling for child-reported anxiety.

6.4.2 Multiple regression analyses

Having established that aspects of communication were associated with anxiety and somatic symptoms, hierarchical multiple regression analyses (MRA) were carried out to ascertain whether communication scores helped predict self-reported symptoms over and above other factors. At this stage, it was possible to take account of gender, year group and three demographic indicators from parents' questionnaires: ethnicity, family form and parental employment. Stressor scores were not included as predictors, given the conceptual overlap between the stressor scale (which asked children how often they felt worried, upset or anxious, albeit in relation to specific triggers) and the SCAS, reflected in the strong association between scores on the two measures.

Three sets of analyses were conducted. The first treated anxiety (SCAS scores) as the dependent variable, and included demographic and communication predictors. The second set of analyses followed the same pattern, with somatic symptoms (CSI scores) considered as the outcome variable. Finally, this set of analyses was repeated, but with SCAS scores as an additional predictor.

Multiple regression analyses predicting anxiety

Checks were carried out prior to interpreting results of the MRA. Relatively high tolerances for all independent predictors indicated that multicollinearity was not a concern. The normal probability plot of standardised residuals and scatterplot of standardised residuals against predicted values suggested that residuals were reasonably normally distributed. (See Appendix 24 for the Normal Probability Plot and Scatterplot of standardised residuals

against predicted values.) The maximum value for Cook's Distance was .04, well below the critical value of 1 (Tabachnick and Fidell, 2001), suggesting that outlying cases were not exerting undue influence⁶.

As shown in Table 6.1.3, step 1 of the MRA included demographic variables: ethnicity, family form, and parents' paid work, as well as child gender and year group. Altogether, these factors accounted for a significant 11% of the variance in SCAS scores, with all predictors significant at $p < .05$ with the exception of employment.

Step 2 introduced three communication measures: inhibition, caregiver responsiveness and confiding of distress, accounting for an additional 13% of the variance. Each was a significant predictor, with inhibition making the greatest unique contribution⁷. The contribution of other (demographic) predictors remained significant – and that of parental employment reached significance, at this stage.

Next, interactions between predictors were tested in turn. Just one contributed significantly to the model: that between ethnicity and gender. As noted in Section 6.1.5, without controlling for other factors, SCAS scores of Black girls, but not boys, were significantly higher those of their White peers. Figure A.24 (c) in Appendix 24 shows that this was still the case after controlling for other factors. A similar though weaker effect was also apparent with respect to scores of Asian girls and boys, compared to their White peers.

Model 3 in Table 6.13 shows that the interaction between gender and ethnicity accounted for an additional 1% of the variance, with the model as a whole explaining 25% of the

⁶ There were a substantial number of multivariate outliers, with 61 of 971 cases (6.3%) having scores above the critical Mahalarobis distance of 46.80 (for $df = 21$ at $\alpha = .001$). Exclusion of these cases meant removing whole groups of children (and dummy variables) from the analysis: Chinese children, those from 'other' ethnic backgrounds and those living in 'other' household arrangements. As a result of this, one parent family status reached significance as a predictor. As there were no other substantive effects on the model, it was decided not to exclude these cases.

⁷ Initially, the other communication subscale, sharing of news, and the single-item measure on confiding with friends were also introduced at this stage. However, they failed to contribute to the model, and for ease of interpretation the MRA was repeated without them. Table 6.13 shows results without the redundant variables.

variance in SCAS scores. By Cohen's (1988) conventions, an effect of this size (Cohen's $f^2 = .33$) can be considered moderate to large. Altogether, the communication variables accounted for around half of the explained variance.

Table 6.13 Variables predicting child anxiety: Summary of Hierarchical MRA

Variable	Model 1			Model 2			Model 3		
	B	SE B	β	B	SE B	β	B	SE B	β
One parent family	2.53	1.72	.05	1.77	1.59	.04	2.12	1.59	.05
Stepfamily	2.05	2.71	.02	.45	2.51	.01	.63	2.50	.01
Other family form	10.72	4.80	.07*	9.62	4.43	.06*	10.04	4.43	.06*
2 parents work FT	-3.85	2.32	-.09	-5.27	2.14	-.12*	-4.79	2.15	-.11*
1 parent works FT	-2.75	2.06	-.07	-3.72	1.91	-.10	-3.45	1.91	-.09
Parent(s) work PT	.04	2.65	.00	-1.58	2.46	-.02	-1.17	2.46	-.02
Asian	1.76	2.09	.03	4.07	1.94	.06*	7.33	2.80	.11**
Black	4.47	1.84	.08*	5.74	1.70	.10**	9.07	2.36	.16***
Chinese	1.54	4.98	.01	-.88	4.62	-.01	-4.60	6.20	-.03
Mixed	-1.91	2.02	-.03	-.88	1.86	-.01	-3.15	2.79	-.05
Other ethnic group	6.91	3.56	.06	7.34	3.30	.06*	9.14	5.07	.08
Sex	-9.21	1.14	-.24***	-7.19	1.07	-.19***	-6.23	1.30	-.16***
Year group	-2.33	.51	-.14***	-1.84	.47	-.11***	-1.81	.47	-.11***
Inhibition ^(Reversed)				-5.51	.46	-.34***	-5.47	.46	-.34***
Caregiver responsiveness				-2.74	.55	-.16***	-2.76	.55	-.16***
Confiding distress				2.01	.35	.18***	2.00	.35	.18***
Asian x Sex							-6.21	3.84	-.07
Black x Sex							-6.75	3.29	-.09*
Chinese x Sex							8.52	9.27	.04
Mixed x Sex							3.86	3.73	.05
Other x Sex							-3.31	6.66	-.02
R^2			.11			.24			.25
F for change in R^2			9.33***			58.06***			1.88

* Significant at $p < .05$; ** $p < .01$ *** $p < .001$

Multiple regression analyses predicting somatic symptoms

Results of bivariate analyses reported in Section 6.1.5 indicated that family form, parents' involvement in paid work, and child ethnicity were related to somatic symptoms on the CSI, though associations were stronger for girls. All three variables and the relevant gender interactions were initially entered into a regression model designed to predict somatic symptoms, alongside sex, year group, inhibition, the open communication subscales, and confiding in friends. Three factors - ethnicity, family form and confiding in friends - made no independent contributions, however, and the analysis was repeated excluding these variables.

Preliminary checks yielded satisfactory results, similar to those for the previous MRA, predicting anxiety⁸.

As shown in Table 6.14, the first model included parents' paid work, sex and year group, and explained just 5% of the variation in somatic symptoms. On step 2, communication variables accounted for an additional 13% of the variance. Inhibition, caregiver responsiveness, confiding of distress and sharing of news made significant contributions, with inhibition and caregiver responsiveness accounting for more of the variance.

As shown in Model 3 below, the interaction between gender and parental employment was also a significant predictor. As illustrated in Figure A.25(c) in Appendix 25, for girls, but not boys, having at least one parent in full-time work was associated with significantly lower levels of somatic symptoms than having parents working part-time or not at all.

Across the whole sample, the final model accounted for a moderate 19% of the variance in CSI scores (Cohen's $f^2 = .24$).

⁸ There were acceptable tolerance levels for all predictors and reasonably normally distributed residuals (See Appendix 25, Figures A.25 (a) and (b)). 10 of 973 cases (1.0%) were multivariate outliers, with scores above the critical Mahalarobis distance of 32.91 (for $df = 12$ at $\alpha = .001$), but the highest Cook's distance value, of .03, indicated that no individual cases were distorting the model.

Table 6.14 Variables predicting somatic symptoms: Summary of Hierarchical MRA

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
2 parents work FT	-4.20	1.46	-.13**	-4.96	1.37	-.16***	-8.61	1.94	-.28***
1 parent works FT	-3.91	1.34	-.14**	-4.23	1.25	-.15**	-7.95	1.76	-.29***
Parent(s) work PT	-.14	1.92	.00	-1.30	1.79	-.03	-.11	2.57	.00
Sex	-3.40	.84	-.12***	-2.08	.81	-.08**	-7.82	2.26	-.29**
Year group	-1.75	.37	-.14***	-1.36	.35	-.11***	-1.36	.35	-.11***
Inhibition ^(Reversed)				-3.75	.34	-.32***	-3.77	.34	-.32***
Caregiver Responsiveness				-2.48	.42	-.20***	-2.59	.42	-.21***
Confiding distress				.64	.28	.08*	.59	.28	.08*
Sharing of news				.76	.32	.08*	.77	.32	.08*
2 parents FT x Sex							7.19	2.72	.18**
1 parent FT x Sex							7.46	2.49	.24**
Parent(s) PT x Sex							-1.96	3.56	-.03
R^2			.05			.18			.19
<i>F</i> for change in R^2			10.67***			38.70***			5.91**

* Significant at $p < .05$; ** $p < .01$ *** $p < .001$

Models predicting somatic symptoms including anxiety

The final set of regression analyses extended the previous set by introducing anxiety (SCAS scores) as a predictor prior to the communication variables. As before, only the final set of models are set out below – confiding of distress and sharing of news proved redundant and were removed.

As previously, there were satisfactory tolerance values for each predictor, including SCAS scores, and the assumptions of normality and linearity of residuals were met (See Appendix 26)⁹.

⁹ In this case, 14 of 995 cases (1.4%) were multivariate outliers, with scores above the critical Mahalarobis distance of 31.26 (for $df = 11$ at $\alpha = .001$). As for previous MRAs, Cook's distance values did not give cause for concern, with the highest .03, and results are reported inclusive of all cases.

As shown in Table 6.15, Step 1 of the MRA replicated that of the previous model, with parents' paid work, child age and gender accounting for 5% of the variance in CSI scores. On Step 2, introduction of SCAS scores accounted for an additional 43% of the variance in somatic symptoms. On Step 3, communication variables – inhibition and caregiver responsiveness – contributed similarly to explaining an additional 2% of the variation in scores. Testing of interactions showed that one interaction – between child gender and parental work - contributed significantly to the model, but explained less than an additional 1% of the variance. As in the previous MRA without SCAS as a predictor, the interaction reflected that having parents in full-time employment predicted lower somatic symptom scores among girls, but not boys (See Figure A.26, Appendix 26). This final model (4) explained a large part of the variation in somatic symptom scores on the CSI ($R^2 = .50$, Cohen's $f^2 = 1.02$). The contribution of communication variables, however, after controlling for anxiety, was very limited.

Table 6.15 Variables predicting CSI scores (including SCAS scores): Summary of Hierarchical MRA

Variable	Model 1			Model 2			Model 3			Model 4		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Two parents work FT	-4.20	1.46	-.14**	-1.33	1.09	-.04	-1.81	1.08	-.06	-4.64	1.52	-.15**
One parent works FT	-3.91	1.34	-.14**	-1.51	.99	-.05	-1.71	.98	-.06	-4.99	1.38	-.18***
Parent(s) work PT	-.14	1.91	-.00	.05	1.42	.00	-.37	1.40	-.01	.25	2.00	.00
Sex	-3.40	.84	-.12***	1.19	.64	.04	1.12	.64	.04	-3.78	1.76	-.14*
Year group	-1.75	.37	-.14***	-.63	.28	-.05*	-.57	.28	-.05*	-.58	.28	-.05*
Anxiety (SCAS)				.50	.02	.69***	.46	.02	.64***	.46	.02	.64***
Inhibition (reversed)							-1.23	.28	-.10***	-1.26	.28	-.11***
Caregiver responsiveness							-.96	.29	-.08**	-1.07	.29	-.09***
2 parents FT x Sex										5.54	2.12	.14**
1 parent FT x Sex										6.52	1.94	.21**
Parent(s) PT x Sex										-.93	2.77	-.01
R^2	.05			.48			.50			.50		
<i>F</i> for change in R^2	10.74***			825.56***			15.22***			6.37***		

* Significant at $p < .05$; ** $p < .01$ *** $p < .001$

6.4.3 Summary: communication and symptoms controlling for other factors

Partial correlations revealed that controlling for anxiety attenuated but did not eliminate the associations between somatic symptom scores and either inhibition or perceived caregiver responsiveness. In contrast, the weak positive associations between somatic symptoms and sharing news or confiding in friends were no longer apparent, and there was a negative association between somatic symptoms and confiding of distress – albeit significant only for boys - once levels of anxiety were taken into account.

Multiple regression analyses demonstrated that aspects of communication – particularly inhibition and caregiver responsiveness – helped to predict symptoms, over and above a number of other demographic factors. The unique contribution of communication measures to models predicting somatic symptoms was limited, although still significant, after controlling for levels of anxiety. Results of multiple regression analyses suggested that, while there were some gender differences in the contribution of demographic factors to predicting levels of symptoms, there were no significant gender differences in the role of communication, after controlling for other factors.

Chapter 7

Results: interview sample data

Interviews with a subsample of those completing questionnaires enabled gathering data on family relationship factors, as well as further exploring communication patterns and levels of symptoms. As set out in Chapter 3, the interview stage of the Stress in Children study was not designed to involve a group representative of the broader community sample. Rather, it involved those with various combinations of anxiety and somatic symptoms, to ensure that within this smaller sample, it was still possible to explore differences between groups – such as those experiencing anxiety but few somatic symptoms; those reporting high levels of both types of symptom, and neither.

In this chapter, interview data are used to extend the findings reported in Chapter 6 with regard to communication, anxiety, somatic symptoms, and their relationships with each of the following:

- Additional measures of child symptoms (internalising, externalising and depression)
- Further demographic factors (parental employment status, education and income)
- Family and relationship factors (warmth, (over)control, mental health and relationships with partners)
- Children's friendship satisfaction, perceived autonomy/ influence within the family and expressed warmth towards primary caregivers.

The first sections of this chapter set out descriptive data on key interview measures, and, where applicable, their relationships with questionnaire findings on similar topics.

7.1 Child symptoms within the interview sample

As described in Chapter 4, interviewers rated internalising and externalising symptoms as described by children and their primary caregivers, using the 'neurotic' and 'antisocial' subscales of the Symptom Score (Smith and Jenkins, 1991), and measured children's self-reported depressive symptoms, using the Birleson Depression Self-Report Scale (Birleson, 1981; Birleson *et al.*, 1987). This section reports descriptive data relating to these interview measures, and their relationships with anxiety and somatic symptoms.

7.1.1 Internalising and externalising symptoms

Table 7.1 shows mean scores on the composite interview ratings of child internalising and externalising symptoms, across the sample and by gender. The first set of figures relate to ratings from children’s interviews. On these ratings, internalising scores ranged from 0 to 28, of a possible maximum of 45. In line with questionnaire findings in relation to symptoms, girls’ internalising scores were significantly higher than boys’ ($t(135) = 2.94, p = .004$). There were no significant differences by year group. Externalising scores ranged from 0 to 18 of a possible 27, and did not differ significantly by year group or gender.

Based on interviews with primary caregivers, ratings of child internalising symptoms ranged from 0 to 24, of a possible 45, while those for externalising symptoms ranged from 0 to 14 out of 27. Although there was a tendency for interviewers’ ratings based on parents’ reports of child internalising symptoms to be higher for girls than boys, the gender difference did not reach significance ($t(142) = 1.79, p = .07$), and there were no significant variations by year group. Parents did, however, report higher levels of externalising symptoms among boys than girls ($t = -3.00(142), p = .003$). There were also significant variations by year group ($F(3, 140) = 4.14, p = .008, \eta^2 = .08$), although post-hoc tests showed that the only significant group difference was between ratings for Year 3 pupils ($M = 3.53, SD = 2.86, N = 32$) and the lower scores for Year 5 ($M = 1.90, SD = 1.66, N = 41, p = .03$).

Table 7.1 Child internalising and externalising symptoms by gender

		Internalising symptoms		Externalising symptoms		N
		Mean	SD	Mean	SD	
Child interviewer ratings	Girls	10.05	5.24	3.12	2.60	73
	Boys	7.66	4.18	3.49	3.38	64
	All	8.93	4.90	3.28	2.96	137
Parent interviewer ratings	Girls	8.77	4.97	2.04	1.97	73
	Boys	7.38	4.28	3.25	2.82	71
	All	8.08	4.68	2.64	2.49	144

There were weak to moderate associations between parent and child reports of children’s internalising symptoms ($r = .26, p = .002$), and externalising symptoms ($r = .33, p < .001$). Broken down by gender, parent-child agreement was greater with respect to girls, in relation to both internalising ($r_{\text{girls}} = .30, p = .01, r_{\text{boys}} = .14, p = .27$) and externalising symptoms ($r_{\text{girls}} = .49, p < .001, r_{\text{boys}} = .24, p = .06$).

7.1.2 Child depressive symptoms

Scores on the Birlleson Depression Self-Report Scale ($M = 8.10$, $SD = 3.43$, $N = 135$) ranged from 1 to 18 of a possible 36, and did not differ significantly by either gender or year group.

7.1.3 Relationships between interview and questionnaire measures of child symptoms

Table 7.2 shows associations between child and parent interviewer ratings of child symptoms and standardised questionnaire scores, across the sample as a whole. Focusing on data from children, the strongest relationships between interview and questionnaire measures involved interviewer ratings of child internalising symptoms and anxiety. While CSI scores were weakly related to depression, they were not significantly associated with internalising symptoms. Based on parents' interviews and questionnaires, however, there were equally strong relationships between internalising and both anxiety and somatic symptoms. In addition, whereas child interview ratings of externalising symptoms were not significantly associated with either SCAS or CSI scores, they were linked to parent reports of child anxiety on the SCAS-P.

Table 7.3 shows equivalent associations to those in Table 7.2, but for girls and boys separately. While associations between child interview ratings of internalising symptoms and SCAS scores were equally strong for both sexes, other relationships were stronger and in several cases significant only for girls, particularly those between child and parent measures. Unexpectedly, whereas girls' depressive symptoms were associated with parents' ratings of their somatic symptoms in the expected (positive) direction, there were significant negative relationships between depression among boys and parents' ratings of their symptoms, on both the SCAS-P and P-CSI.

Table 7.2 Interview ratings of child symptoms and questionnaire reports of child symptoms: Correlation matrix

		1	2	3	4	5	6	7	8	9
1	Internalising (child interview)	1	.26**	.21*	.35***	.09	.26**	-.01	.31***	.28**
2	Externalising (child interview)	.26**	1	.19*	-.01	.10	.17	.33***	.19*	.09
3	Depression (child interview)	.21*	.19*	1	.07	.19*	.42***	.31***	-.00	.10
4	SCAS (child questionnaire)	.35***	-.01	.07	1	.30***	.18*	.04	.22**	.27**
5	CSI (child questionnaire)	.09	.10	.19*	.30***	1	.19*	.12	.10	.10
6	Internalising (parent interview)	.26**	.17	.42**	.18*	.19*	1	.41***	.39***	.42***
7	Externalising (parent interview)	-.01	.33**	.31**	.04	.12	.41***	1	.17*	.12
8	SCAS-P (parent questionnaire)	.31***	.19*	-.00	.22**	.10	.39***	.17*	1	.62***
9	P-CSI (parent questionnaire)	.28***	.09	.10	.27**	.10	.42***	.12	.62***	1

* Significant at $p < .05$; ** $p < .01$ *** $p < .001$. *N* varies between 134 and 137.

Table 7.3 Interview ratings of child symptoms and questionnaire reports of child symptoms by gender: Correlation matrix^a

		1	2	3	4	5	6	7	8	9
1	Internalising (child interview)	1	.32**	.31**	.33**	.10	.30*	.18	.39**	.41**
2	Externalising (child interview)	.26*	1	.25*	-.01	.23	.31**	.49***	.24*	.10
3	Depression (child interview)	.09	.12	1	.07	.26*	.50***	.47***	.17	.38**
4	SCAS (child questionnaire)	.32**	.01	.08	1	.28*	.07	.02	.21	.30*
5	CSI (child questionnaire)	.07	-.01	.09	.33**	1	.25*	.06	.19	.24*
6	Internalising (parent interview)	.14	.05	.32**	.29*	.10	1	.62***	.44**	.45**
7	Externalising (parent interview)	-.07	.24	.19	.14	.18	.36**	1	.29*	.28*
8	SCAS-P (parent questionnaire)	.23	.16	-.25*	.23	.01	.34**	.12	1	.65***
9	P-CSI (parent questionnaire)	.04	.09	-.34**	.19	-.05	.37**	.04	.59***	1

^a Correlation coefficients for girls are shown above the diagonal and boys below. (*N* varies between 63 and 73.)

7.1.4 Anxiety, somatic symptoms and demographic factors

Chapter 6 considered the associations between symptoms and child gender, year group and ethnicity, along with family form and parents' involvement in paid work. At interview stage, three additional variables were used to consider socio-economic status; parents' educational attainment, household income and occupational status (of the main caregiver or, where applicable, partner, whichever was the higher). This section sets out relationships between child symptoms and each of these factors, among those involved in Stage 2 of the study.

Within the interview sample, there were no significant gender differences in levels of either anxiety or somatic symptoms, although that in relation to anxiety did approach significance ($M_{\text{girls}} = 33.01$, $SD = 18.02$; for boys, $M_{\text{boys}} = 27.82$, $SD = 14.69$; $t(143) = 1.90$, $p = .06$). The lack of difference was not unexpected, despite the contrast with the clear gender differences apparent at Stage 1. As noted previously, the Stage 2 sampling frame was designed to select children with different levels of symptoms, and was stratified by gender, rather than being a representative sample. In addition, symptom levels did not differ significantly by year group among those interviewed, whereas they had within the broader community sample. This, however, clearly reflected the relative lack of power within the smaller Stage 2 sample, as the year group means within the interview sample showed the same linear patterns as at Stage 1, with very similar differences between the higher SCAS and CSI scores among Year 3 pupils and the lower scores of those in Year 6.

On the basis of parent interview reports of their educational histories, household income and occupational status (their own, or that of their partner, if higher), none of these factors was related to children's anxiety or somatic symptoms, on parent or child report measures.

Finally, in contrast with the Stage 1 findings, there were no statistically significant associations within the interview sample between child symptoms on any measure and ethnicity, family form, or parents' involvement in paid work (as opposed to occupational status). Particularly in relation to ethnicity, this appeared to result from the reduction in power at the second stage of the study.

7.1.5 Summary: child symptoms within the interview sample

At interview, three additional assessments of child symptoms were obtained, supplementing the SCAS and CSI scores derived from questionnaire data. Levels of child-reported internalising symptoms were higher among girls than boys within the interview sample, and were significantly associated with anxiety (SCAS scores), but not somatic symptoms on the CSI. Externalising symptoms did not differ by gender on the basis of children's interview data, but parents reported higher levels among boys than girls. There was no association between child-reported externalising symptoms and either SCAS or CSI scores across the interview sample, though for girls only, externalising symptoms were weakly associated with CSI scores. Child depressive symptoms were associated with CSI scores (among girls), though not with anxiety on the SCAS.

The sample at Stage 2 was purposively not representative of the broader community sample involved at Stage 1, and this – along with the reduction in power - had implications for the patterns observed in the second, interview stage. In particular, there were no significant gender or age differences in levels of either anxiety or somatic symptoms within the interviewed sample, though there was a tendency for girls to report higher levels of anxiety than boys. Similarly, within the interview sample, neither anxiety nor somatic symptoms were associated with demographic factors such as family form, ethnicity, or SES.

7.2 Patterns and levels of communication measured at interview

As detailed in Chapter 4, researchers rated levels of confiding as described by children and their primary caregivers at interview. The following sections describe the distributions of the relevant items and composite measures; relationships between child and parent accounts; the nature and extent of gender differences; and associations with questionnaire measures of communication.

7.2.1 Child interview reports of communication and confiding

Children were asked about the extent to which they confided in their primary caregiver about worries or problems; confided in her about feelings more generally; kept things to themselves (information or secrets); confided in friends; and confided in other close adults. As shown in Table 7.4, fewer than one in ten children claimed never to confide in their primary caregivers about worries. Asked if they kept some things from them (information or secrets), just one in seven said that they usually or often did so, and similar numbers said that they predominantly kept their feelings to themselves. Notably, whereas more than half said that they generally shared their feelings and worries, fewer were so adamant about disclosing in all areas – almost two-thirds said they sometimes withheld information or secrets. It appeared far more common for children never to confide in friends, however – more than a quarter said this was the case. In addition, almost six out of ten said that, other than their parents, there was no adult in whom they confided.

Table 7.4 Child interview measures of confiding in primary caregivers, other adults and friends: Distribution of interviewer ratings

		Frequency	%
Confiding of worries	No confiding	12	9.2
	Dubious/ minimal confiding	45	34.4
	Definite confiding	74	56.5
Withholding information / secrecy	Full disclosure /no secrets	48	35.3
	Some things kept to self	69	50.7
	Tends to withhold information	19	14.0
Talk about feelings	Generally talks openly	77	56.6
	Sometimes talks or hints	40	29.4
	Tends to keep feelings to self	19	14.0
Confiding in adult(s) other than parents	None	80	58.8
	Dubious or minimal	21	15.4
	Yes	35	25.7
Confiding in friends	Definite confiding	49	35.8
	Dubious or little confiding	50	36.5
	No confiding	38	27.7

On the composite interviewer rating of confiding in primary caregivers, based on children's responses to the questions on feelings, worries and secrecy, scores ranged from 0 (minimal) to 6, the maximum possible, with the mean (4.06), median (5) and modal score (6) reflecting the generally high levels of communication within the sample ($N = 136$).

There were no significant differences in scores by year group on the composite measure of confiding in primary caregivers ($F(3, 132) = 1.13, p = .34$), on its component items, or in relation to confiding in friends or adults other than parents. There were gender differences, however, as reported in Section 7.2.5.

7.2.2 Parent interview reports of communication and confiding

Table 7.5 shows interviewer ratings of confiding based on parents' interview reports. In relation to general chat or children's confiding, more than half of primary caregivers reported high levels of communication. Very few described low levels of chat, for example, about activities. Although almost one quarter said their child was not verbally communicative about feelings overall, when asked specifically about worries, fewer (less than 15%) felt their children were reluctant to confide or avoided doing so.

Three quarters of primary caregivers claimed never to share their own worries or problems with their child. Of those who did, a small number described sharing what were judged to be inappropriate issues, for example around relationships with partners.

Table 7.5 Parent interview measures of child confiding and parental confiding in the child: Distribution of interviewer ratings (N=144)

		Frequency	Valid %
Parent-child chat (general level of talking together)	High	86	59.7
	Moderate	49	34.0
	Low	9	6.3
Child communication about feelings	Communicates easily and openly	75	52.1
	Partially / occasionally communicative	35	24.3
	Not verbally communicative	34	23.6
Child confiding / willingness to disclose worries	Will disclose most / all things	74	51.4
	Some things kept to self	49	34.0
	Definite reluctance / little or no confiding	21	14.6
Parent reports of inappropriate confiding in the child	None	108	75.0
	Some	31	21.5
	Definite – including parental issues	5	3.5

On the composite measure of child confiding, based on ratings of parents' responses to questions on 'chat', feelings and worries ($N = 144$), totals ranged from 0 to 6, with a mean of 4.19 ($SD = 1.87$). As with ratings based on children's interviews, the modal value was the maximum possible score, and the median was almost as high, at 5. There were no significant differences by year group on either the composite measure of child confiding or

individual communication items from parents' interviews. Gender differences are covered along with those on children's interview measures, in Section 7.2.5.

7.2.3 Relationship between child and parent interview reports of confiding

While the aspects of communication and confiding explored with parents and children differed, the picture painted by each group was similar, suggesting that few children were uncommunicative with their primary caregivers, though a fairly substantial minority (of no more than 15 per cent) generally avoided talking about worries. In order to gauge how closely parents' reports matched children's accounts, their responses were compared in relation to confiding of worries – the area of greatest interest, and the most directly comparable. In addition, composite measures of confiding from parents' and children's interviews were compared, though these were not expected to be as closely aligned, given that parents alone were asked about general chat, and children about withholding information.

There was a significant positive correlation between the composite ratings of confiding based on child and parent accounts ($r = .24, p = .006$), with a linear association between the respective measures of sharing worries (ordinal (linear) chi square (1) = 3.79, $p = .05$). Among children who reported 'definite' confiding, very few (around one in ten) had parents who strongly suggested otherwise, that is, that they were reluctant to confide. Not surprisingly, where children described more limited confiding, parents' assessments of their openness appeared to differ from children's self-reports to a greater extent, though the numbers involved were very small (see Appendix 27).

As so few primary caregivers (5 of 144) were rated as 'definitely' confiding in children about adult issues, this group was combined with the next, those reporting 'some' such sharing, for further analyses. T-tests demonstrated that there were no significant relationships between reports of inappropriate parental confiding and child communication - either across the sample or for boys or girls separately.

7.2.4 Interview measures of communication and demographic factors

Aside from gender, none of the demographic factors assessed at questionnaire or interview stage (year group, family form, ethnicity, parents' employment, income, or occupational status) were related to interview assessments of children's confiding in primary caregivers or friends. Inappropriate parental confiding, however, did vary according to family form, being more prevalent in lone parent households than intact two-parent families ($\chi^2(2) = 4.85$, Cramér's phi = .19, $p = .03$).

7.2.5 Interview measures of communication by gender

Girls scored significantly higher than boys on the composite child interview rating of confiding in primary caregivers ($M_{\text{girls}} = 4.43$, $SD = 1.63$; $M_{\text{boys}} = 3.64$, $SD = 1.90$; $t = 2.62$ (134), $p = .01$, Cohen's $d = .45$). Similarly, on the composite assessment from parents' interviews, girls were rated as slightly more communicative ($M_{\text{girls}} = 4.49$, $SD = 1.58$; $M_{\text{boys}} = 3.87$, $SD = 2.08$; $t = 2.01$ (130.60), $p = .05$, Cohen's $d = .35$).

Table 7.6 below compares ratings of girls' and boys' self-reported communication, on particular topics. Significant gender differences emerged in relation to most areas. Girls were more likely to report confiding in friends ($\chi^2(2) = 15.43$, Cramér's phi = .34, $p < .001$) and in primary caregivers both about worries ($\chi^2(2) = 6.30$, Cramér's phi = .22, $p = .04$) and feelings in general ($\chi^2(2) = 8.61$, Cramér's phi = .25, $p = .01$). There was also a tendency for girls to report higher levels of confiding in other adults ($\chi^2(2) = 5.61$, Cramér's phi = .20, $p = .06$). In contrast, there were no significant gender differences in relation to withholding information (or keeping secrets) from primary caregivers ($\chi^2(2) = 2.11$, Cramér's phi = .13, $p = .35$, ns)

Echoing children's reports, parents were more likely to describe girls confiding about worries, compared to boys ($\chi^2(2) = 8.26$, Cramér's phi = .24, $p = .02$). As shown in Appendix 28, there was also a marginally significant gender difference in relation to communicating feelings generally, ($\chi^2(2) = 6.00$, Cramér's phi = .20, $p = .05$). In contrast, parents did not describe engaging girls in more routine 'chat' ($\chi^2(2) = 2.65$, Cramér's phi = .14, $p = .27$, ns), and they were no more likely to describe sharing their own problems with daughters than with sons ($\chi^2(2) = .35$, Cramér's phi = .05, $p = .84$).

Table 7.6 Child interview measures of confiding by gender

		Girls		Boys	
		N	%	N	%
Confiding of worries	None	3	4.3	9	14.5
	Dubious/ minimal	21	30.4	24	38.7
	Definite	45	65.2	29	40.8
	Total	69	100.0	62	100.0
Withholding information / secrecy	Full disclosure /no secrets	29	40.3	19	29.7
	Some things kept to self	35	48.6	34	53.1
	Tends to withhold information	8	11.1	11	17.2
	Total	72	100.0	64	100.0
Talk about feelings	Generally talks openly	48	66.7	29	45.3
	Sometimes talks or hints	19	26.4	21	32.8
	Tends to keep feelings to self	5	6.9	14	21.9
	Total	72	100.0	64	100.0
Confiding in adult(s) other than parents	None	36	50.0	44	68.8
	Dubious or minimal	15	20.8	6	9.4
	Yes	21	29.2	14	21.9
	Total	72	100.0	64	100.0
Confiding in friends	Definite confiding	36	49.3	13	20.3
	Dubious or little confiding	25	34.3	25	39.1
	No confiding	12	16.4	26	40.6
	Total	73	100.0	64	100.0

The relationship between composite ratings of confiding from child and parent interviews did not reach significance for either sex when broken down by gender. It was, however, of a similar magnitude for girls and boys as in the sample as a whole ($r_{girls} = .22, p = .07; r_{boys} = .22, p = .09$).

7.2.6 Relationships between interview and questionnaire measures of communication

This section reports on associations between interview ratings and questionnaire measures of children's communication with primary caregivers and with friends.

Interview and questionnaire measures of communication with primary caregivers

As shown in Table 7.7, the composite child interview measure of confiding in primary caregivers was moderately associated with the questionnaire measures of communication, except caregiver responsiveness, an area explored solely at Stage 1. The strongest relationship was with 'confiding of distress', reflecting that the interview measure was dominated by items on sharing feelings.

The composite parent interview measure of child confiding was also related – albeit weakly - to the child questionnaire measures of total communication and communication with primary caregivers. Focusing specifically on confiding of worries, where questions were most comparable, there were also significant positive associations between the child questionnaire item on confiding of worries and parents’ interview accounts of the extent to which children shared worries ($r = .21, p = .01$) and feelings more generally ($r = .28, p = .001$).

Table 7.7 Correlations between interview and questionnaire measures of child communication

Questionnaire measure	Confiding in mother (child interview)		Confiding in mother (parent interview)	
	<i>r</i>	<i>N</i>	<i>r</i>	<i>N</i>
Communication scale total	.39***	134	.17*	142
Communication with primary caregivers	.39***	134	.22*	142
Open Communication	.39***	134	.14	142
Inhibited / limited confiding	.22*	101	.16	109
- Confiding of distress	.42***	100	.16	108
- Caregiver responsiveness	.15	102	.09	110
- Sharing news	.35***	133	.09	141

* Correlations significant at $p < .05$; ** significant at $p < .01$; *** significant at $p < .001$

Interview and questionnaire measures of communication by gender

In general, associations between overall communication scores on the questionnaire and child interview measures held for both sexes, although they were somewhat stronger for boys ($r = .46$) than girls ($r = .30$). In addition, only for boys were total communication scale scores significantly associated with the parent interview rating of child confiding ($r = .24$). Focusing on communication subscales, whereas boys’ scores for ‘sharing of news’ were strongly related to their interviewer ratings for confiding in primary caregivers ($r = .50$), girls’ were not ($r = .15, ns$). However, girls’ questionnaire scores for confiding of distress were more closely aligned with their own interviewer ratings for confiding ($r = .50$) than were boys’ ($r = .35$). Considered separately by gender, there were no significant relationships between the interview measures and either inhibition or caregiver responsiveness.

Interview and questionnaire measures of confiding in friends

Children’s questionnaire and interview reports of confiding in friends were not significantly related, based on the single communication scale item and interviewers’ ratings of the

extent to which they shared worries and upsets ($r = -.13$, $p = .13$), and associations were similar for boys and girls.

7.2.7 Summary: patterns of communication measured at interview

While based on different measures, patterns of communication reported by children at interview generally reinforced those found in the broader community sample: the majority reported high levels of confiding in primary caregivers, and girls reported more openness than did boys. Parent interview data reinforced this picture, although the associations between child and parent reports of child confiding were fairly weak. It was more common for children to report never confiding in friends about worries or upsets, than to avoid confiding in primary caregivers about such feelings. However, almost two-thirds said they sometimes kept secrets or information of some sort from them .

Aside from gender, no other demographic factor was related to children's confiding in primary caregivers or friends, assessed at interview. Inappropriate parental confiding, however, did vary according to family form, being more prevalent in lone parent households than intact two-parent families.

7.3 Communication and symptoms within the interview sample

The following sections describe relationships between children's communication patterns and levels of symptoms within the interview sample, drawing on measures from both stages of the study.

7.3.1 Child confiding in mothers, anxiety and somatic symptoms

This section focuses on associations between children's symptoms and measures of their communication with primary caregivers, within the interview sample.

Interview ratings of confiding in primary caregivers and symptoms

Neither of the composite interview measures of confiding in primary caregivers (from child or parent reports) was significantly associated with questionnaire assessments of anxiety or somatic symptoms within the interviewed sample. To some extent, this – like earlier findings in relation to demographic factors - reflects the difference in sample size between the questionnaire and interview stages, and thus differences in statistical power. The weak association between CSI scores and child-reported confiding, rated at interview ($r = -.08$), was similar in magnitude to that between CSI scores and the scale measure of communication with primary caregivers ($r = -.07$, ns), which reached significance in the larger Stage 1 sample ($r = -.07$, $p < .001$). (This was not the case with respect to SCAS and child-reported confiding at interview; $r = .002$, ns.)

Analyses by gender revealed that, for girls only, there was a significant negative association between ratings of child-reported confiding in primary caregivers and CSI scores. Specifically, lower levels of confiding were linked to higher levels of somatic symptoms ($r_{\text{girls}} = -.28$, $p = .02$), while a weaker negative relationship with anxiety did not reach significance ($r_{\text{girls}} = -.11$, ns). For boys, there were similarly weak, but positive, non-significant associations between levels of confiding and both CSI and SCAS scores ($r = .09$ and $r = .08$ respectively).

Ratings of child confiding based on parents' interviews were unrelated to child symptoms.

Inappropriate parental confiding in children and child symptoms

Ratings of inappropriate parental confiding were not related to child symptoms on any measure, which may partly reflect the low incidence of inappropriate confiding described by those interviewed.

Communication scale scores and symptoms within the interview sample

Across the interview sample, scores on the communication subscale 'caregiver responsiveness' were negatively related to levels of symptoms on both the SCAS ($r = -.33$, $p < .001$) and CSI ($r = -.29$, $p = .002$). Inhibited confiding was also significantly related to

SCAS scores ($r = -.26, p = .007$), such that greater inhibition was linked to higher levels of anxiety, but it was not linked to somatic symptoms on the CSI ($r = -.12, p = .20$).

Associations between communication scale scores and symptoms were somewhat more gendered among children taking part in interviews than among the broader questionnaire sample (see Section 6.3.2). Among those interviewed, the relationship between inhibition and SCAS scores held only for girls ($r = -.32, p = .02$). Partly reflecting this, for girls only, there was a substantive negative relationship between SCAS scores and overall communication with primary caregivers ($r = -.23, p = .05$), indicating that lower levels of anxiety were associated with higher levels of communication. In addition, although the association between caregiver responsiveness and SCAS scores reached significance for both sexes ($r_{\text{girls}} = -.33, p = .01$; $r_{\text{boys}} = -.30, p = .03$), that between caregiver responsiveness and somatic symptoms on the CSI held only for girls ($r = -.44, p = .001$).

None of the communication scale measures (total, factor or subscale) were related to parent reports of child symptoms across the interview sample. Considered separately by gender, however, there was a negative association between P-CSI scores and 'sharing of news' among boys ($r = -.30, p = .01$), with parents identifying fewer somatic symptoms in those who reported more routine sharing about school, friends, or things that amused them.

7.3.2 Confiding in friends, anxiety and somatic symptoms

Across the sample, interviewer assessments of children's confiding in friends (about worries or upsets) were not related to levels of their anxiety or somatic symptoms. Broken down by gender, however, there was a significant relationship - for girls only - between ratings of confiding in friends and scores on the CSI ($F(2, 69) = 6.19, p < .01, \eta^2 = .15$). Girls describing the highest level of confiding reported significantly lower levels of somatic symptoms ($M = 15.80, SD = 10.02, N = 35$) than those reporting little or limited confiding ($M = 26.08, SD = 12.73, N = 25, p = .003$), although scores for the small group of girls reporting no confiding in friends did not differ significantly from those for the others ($M = 22.92, SD = 12.53, N = 12$).

Within the interviewed sample, responses to the questionnaire item on talk with friends about feelings were not significantly related to anxiety or somatic symptoms on any measure.

7.3.3 Communication and other measures of child symptoms

Associations between measures of communication and children's internalising, externalising and depressive symptoms were examined within the interview sample, to supplement analyses relating to the main child outcome measures, SCAS and CSI scores.

There were weak relationships between depressive symptoms and lower levels of confiding in primary caregivers, rated during children's (but not parents') interviews ($r = -.26$, $p = .003$). Similar relationships were apparent for girls and boys, separately ($r_{\text{girls}} = -.24$; $r_{\text{boys}} = -.26$).

As detailed further in Appendix 29, other results - like those with respect to anxiety and somatic symptoms - were somewhat gendered. Associations between the child interview rating of internalising symptoms and lower levels of both perceived caregiver responsiveness and interview ratings of confiding in primary caregivers approached significance solely for girls (for caregiver responsiveness: $r_{\text{girls}} = -.26$; $r_{\text{boys}} = .05$; for confiding in primary caregivers, $r_{\text{girls}} = -.19$; $r_{\text{boys}} = -.01$). Externalising symptoms, in contrast, were more consistently associated with lower levels of communication among boys.

7.3.4 Summary: communication and symptoms within the interview sample

Within the interviewed sample, inhibition scores (on the questionnaire factor) were associated with children's SCAS scores, as within the larger community sample, but not with somatic symptoms on the CSI. Perceived caregiver responsiveness, however, was related to both SCAS and CSI scores, as at Stage 1. Some of these relationships held only for girls, when broken down by gender – specifically, those between inhibition and anxiety, and caregiver responsiveness and somatic symptoms.

Similarly, child confiding measured at interview was not associated with anxiety or somatic symptoms across the sample. For girls only, however, there were significant negative associations between CSI scores and confiding in both primary caregivers and friends.

Focusing on the additional interview measures of child symptoms, gender was also a factor in relationships with communication. On one hand, there were similar negative relationships for both sexes between symptoms of depression and the child interview measure of confiding in primary caregivers. However, there were tendencies for girls', but not boys' interview ratings of internalising symptoms to be negatively associated with perceived caregiver responsiveness and the child interview measure of confiding (dominated by talk about feelings). Conversely, there were more consistent negative associations between communication and externalising symptoms among boys.

7.4 Communication, symptoms and other factors within the interview sample

This section presents descriptive data on additional family and relationship factors measured within the study and identified by previous research as associated with child symptoms. Bivariate relationships with communication and symptoms are explored, to enable comparisons with previous findings, and inform later multivariate analyses.

7.4.1 Relationship warmth, parent-child communication and symptoms

As described in Chapter 4, warmth expressed by children towards their primary caregivers was assessed during child interviews, and an equivalent rating of warmth expressed by the primary caregivers was made during their interviews. The two measures were strongly related: $\chi^2 (1) = 13.81, p < .001$, Cramer's Phi = .32. As shown in Table 7.8, more than half of all children and seven out of ten parents expressed high levels of warmth. As the 'low' warmth groups were so small, these were combined with the 'moderate' categories to facilitate further analysis. Child gender was not associated with warmth expressed by parents, but girls were rated as expressing more warmth than boys ($\chi^2 (2) = 11.74, p = .003$, Cramer's Phi = .29). Neither measure of warmth varied by year group.

Table 7.8 Warmth expressed by children and primary caregivers by child gender

		Girls		Boys		Total	
		N	%	N	%	N	%
Children's expressed warmth towards primary caregivers	Low	1	1.4	5	7.0	6	4.4
	Moderate	24	32.4	35	49.3	59	43.4
	High	47	63.5	24	33.8	71	52.2
	Total	73	100.0	64	100.0	136	100.0
Primary caregivers' expressed warmth towards children	Low	1	1.4	1	1.4	2	1.4
	Moderate	16	21.6	21	29.6	37	25.5
	High	56	75.7	49	69.0	105	72.4
	Total	73	100.0	71	100.0	144	100.0

Ratings of parent/child warmth were quite robustly associated with aspects of communication, particularly in boys. For example, children expressing high, compared to moderate/ low, levels of warmth reported significantly greater confiding in primary caregivers on the composite interview measure ($t(110.46) = 4.75, p < .001$, Cohen's $d = .82$). However, this relationship was weaker among girls ($t(70) = 2.15, p < .04$, Cohen's $d = .52$) than boys ($t(59.29) = 4.54, p < .001$, Cohen's $d = 1.07$), whose levels of expressed warmth were also significantly associated with parent reports of their confiding ($t(62) = 2.02, p < .05$, Cohen's $d = .53$); and with most of the questionnaire measures of communication, which was not the case for girls. (See Appendix 30.)

In contrast, neither child nor parent interview ratings of warmth were associated with child anxiety or somatic symptoms. As a result, neither measure was considered further as a predictor.

7.4.2 Primary caregivers' mental health, parent-child communication and symptoms

In light of existing evidence linking maternal anxiety and depression with children's symptoms, these associations were explored within the interview sample, as were relationships between primary caregivers' symptoms and communication with their children.

Depression among primary caregivers

As shown in Table 7.9, a quarter of primary caregivers reported experiencing depression in the last year, though few described more than mild symptoms. Depression over the past five years was more common, with over a third reporting at least mild symptoms.

Table 7.9 Depression among primary caregivers by child gender

		Girls		Boys		Total	
		N	%	N	%	N	%
Depression among primary caregivers over previous year	None	51	69.9	55	77.5	106	73.6
	Mild	13	17.8	12	16.9	25	17.4
	Moderate	8	11.0	4	5.6	12	8.3
	Severe	1	1.4	0	.0	1	.7
	Total	73	100.0	71	100.0	144	100.0
Depression among primary caregivers over previous five years	None	44	60.3	49	69.0	93	64.6
	Mild	15	20.5	10	14.1	25	17.4
	Moderate	10	13.7	12	16.9	22	15.3
	Severe	4	5.5	0	.0	4	2.8
	Total	73	100.0	71	100.0	144	100.0

(For the purposes of further analyses, moderate and severe symptom groups were combined in each case.) Ratings of caregivers' depression did not differ significantly by either child gender or year group.

Depression among primary caregivers and child communication

Across the sample, depression among primary caregivers was not associated with child communication. Considered separately by gender, however, primary caregivers' depression over the past year was associated with boys' communication scale total, factor and subscale scores. The only relationship which failed to reach statistical significance at $p = .05$ involved inhibition ($F(2, 51) = 2.69, p = .08, \eta^2 = .10$), though there was a clear tendency for sons of those who experienced moderate/ severe depression to report greater inhibition. The strongest relationship concerned confiding of distress ($F(2, 50) = 9.62, p < .001, \eta^2 = .28$). In each case, post-hoc tests showed that boys whose primary caregivers had experienced moderate/ severe depression reported lower levels of communication than where they reported mild depression or none (all $p < .05$). These relationships were not apparent for girls; in fact, there was a tendency for girls to report less inhibition if their primary caregivers had been depressed over the last year ($F(2, 52) = 2.80, p = .07, \eta^2 = .10$).

Of note, with respect to boys only, primary caregivers' depression over the past year was also associated with inappropriate confiding in children: ordinal (linear) chi square (1) = 4.86, $p = .03$.

Primary caregivers' depression over the longer period (five years) was significantly associated with boys' reports of limited or inhibited confiding ($F(2, 51) = 4.23, p = .02, \eta^2 = .14$) – but with no other measures of communication for either sex.

Depression among primary caregivers and child anxiety and somatic symptoms

Depression among primary caregivers was not associated with child anxiety or somatic symptoms across the sample, or among boys or girls separately. Of note, however, for boys only, caregivers' depression over the past five years was quite strongly associated with their own depressive symptoms on the Birleson scale ($F(2, 60) = 4.09, p = .02, \eta^2 = .12$). Those whose primary caregivers had experienced moderate/ severe symptoms reported significantly more depressive symptoms than those whose primary caregivers reported mild depression or none (both $p = .03$).

Anxiety among primary caregivers

As shown in Table 7.10, just over half of primary caregivers were rated as experiencing some degree of situational anxiety. Around one third were deemed to have dubious or mild symptoms, although a few described more serious panic or complete avoidance of situations. Overall, fewer– less than a third - suffered from non-situational anxiety.

Table 7.10 Primary caregivers' situational and non-situational anxiety by child gender

		Girls		Boys		Total	
		N	%	N	%	N	%
Situational anxiety	None	32	43.8	36	50.7	68	47.2
	Dubious/ mild	27	37.0	25	35.2	52	36.1
	Definite	12	16.4	8	11.3	20	13.9
	Panic/ complete avoidance	2	2.7	2	2.8	4	2.8
	Total	73	100.0	71	100.0	144	100.0
Non-situational anxiety	None	50	68.5	55	77.5	105	72.9
	Dubious/ mild	13	17.8	15	21.1	28	19.4
	Definite	8	11.0	1	1.4	9	6.3
	Panic/ complete avoidance	2	2.7	0	.0	2	1.4
	Total	73	100.0	71	100.0	105	100.0

For further analyses, few primary caregivers judged to experience panic/ complete avoidance were grouped alongside the remainder showing 'definite' symptoms. Although their levels of situational anxiety did not vary by child gender, parents of girls in the sample were more likely to report non-situational anxiety than those of boys ($\chi^2 (2) = 7.72, p = .02, \text{Phi} = .23$). There was no variation in primary caregivers' anxiety by child age (year group).

Primary caregivers' anxiety and child communication

Primary caregivers' anxiety was unrelated to child communication, on questionnaire or interview measures. When results were examined separately by gender, however, parents' situational anxiety was moderately associated with boys' interview reports of confiding ($F (2, 61) = 3.71, p = .03, \eta^2 = .11$). Sons of those with the highest level of anxiety reported significantly lower levels of confiding ($M = 2.22, SD = 1.92$) than those whose primary caregivers were thought to have mild symptoms ($M = 4.18, SD = 1.68, p = .02$), though scores for sons of those with no significant symptoms fell in between ($M = 3.67, SD = 1.88$) and did not differ statistically from either of the two other groups.

Primary caregivers' anxiety and child symptoms

Primary caregivers' anxiety was not related to child anxiety or somatic symptoms, across the sample or for either sex.

Primary caregivers' Malaise scores

Malaise Inventory scores were considered as an additional self-report measure of parental symptoms. Scores ranged from 0 to 15, with a mean of 3.45 ($SD = 2.96$). They did not differ significantly by child gender or year group.

Primary caregivers' Malaise scores and child communication

Malaise scores were not associated with measures of child communication, except the questionnaire factor, inhibition. Higher levels of parental symptoms were associated with less, not more, inhibition on the reverse-scored factor ($r = .20, p = .04$). Analyses by gender showed that this relationship was only evident for girls ($r_{\text{girls}} = .33, p = .02; r_{\text{boys}} = .01, ns$) – reinforcing the pattern noted above with respect to depression in primary caregivers.

Primary caregivers' Malaise scores and child anxiety and somatic symptoms

Primary caregivers' Malaise scores were not associated with children's self-reported anxiety or somatic symptoms. They were, however, positively associated with parent ratings of child symptoms on the SCAS-P ($r = .30, p < .001$) and the P-CSI ($r = .23, p = .01$). Parents who scored higher on the Malaise Inventory identified higher levels of anxiety in both boys and girls ($r_{\text{girls}} = .26, p = .03$; $r_{\text{boys}} = .36, p = .002$). In contrast, the link with P-CSI scores reached significance only for boys ($r_{\text{girls}} = .16, p = .18, \text{ns}$; $r_{\text{boys}} = .33, p = .03$).

Primary caregivers' mental health and child-reported symptoms

As none of the measures of primary caregivers' mental health were associated with child-reported anxiety or somatic symptoms within the interview sample, they were not considered further as predictors of SCAS or CSI scores.

7.4.3 Parental relationship quality, child communication and symptoms

This section reports on ratings of parental relationship quality from interviews with primary caregivers, and on associations with child communication and symptoms across the Stage 2 sample.

As shown in Table 7.11, the majority of couples' relationships were rated as 2 or 3 on the six-point scale, considered good or 'good average'. Ratings did not differ by child gender or year group. For the purposes of further analyses, ratings of relationship quality were combined into three groups: good, average and poor.

Table 7.11 Parental relationship quality by child gender

Parental Relationship Quality	Girls		Boys		Total	
	N	%	N	%	N	%
1 (very good)	6	10.3	5	8.6	11	9.5
2 (good)	18	31.0	14	24.1	32	27.6
3 (good average)	18	31.0	25	43.1	43	37.1
4 (poor average)	9	15.5	8	13.8	17	14.7
5 (poor)	6	10.3	5	8.6	11	9.5
6 (very poor)	1	1.7	1	1.7	2	1.7
Total	58	100.0	58	100.0	116	100.0

Parental relationship quality and child communication

There were no significant associations between ratings of parental relationship quality and child communication, on either questionnaire or interview measures.

Parental relationship quality and child symptoms

Parental relationship quality was not related to child symptoms, with one exception: parent reports of boys' somatic symptoms on the P-CSI ($F = 3.32 (2, 55), p = .04, \eta^2 = .11$). Post-hoc tests indicated that parents whose relationships were rated as strongest ('good') reported significantly fewer somatic symptoms in their sons ($M = 3.79, SD = 4.32, N = 19$) than those in relationships rated as average ($M = 8.30, SD = 6.51, N = 33, p = .03$). Although P-CSI ratings from the small number in the poor relationship quality group also appeared high, they varied widely, and did not differ significantly from the others ($M = 7.33, SD = 8.52, N = 6$).

Because there were no apparent relationships between the quality of parents' relationships and child-reported symptoms, this variable was not considered further as a predictor.

7.4.4 Parental control, child autonomy, communication and symptoms

This section focuses on ratings of parental control and of children's perceptions of their autonomy and influence in the family. The first analyses, including of associations with communication and symptoms, concern parental control based on primary caregivers' accounts; the remainder concentrate on children's perspectives of their autonomy.

Parental (over)control

As described in Chapter 4, the composite measure of parental (over)control was based on primary caregivers' descriptions of their parenting behaviour regarding out of house supervision; monitoring of homework, internet and TV use; and children's autonomy in spending. Scores ranged from 0 to 5 (the maximum possible).

Table 7.12 Parental (over)control ratings by gender and year group

	Girls	Boys	Year 3	Year 4	Year 5	Year 6	Total
Mean	1.89	2.38	2.53	2.37	1.90	1.75	2.13
SD	1.17	1.15	1.04	1.17	1.09	1.30	1.18
N	73	71	32	38	41	33	144

To assess the significance of the apparent gender and year group differences in parental control, a two-way between groups ANOVA was carried out. There were main effects for gender ($F(1, 136) = 5.48, p = .02, \eta^2 = .04$, with parents of boys describing more controlling behaviour, and for year group ($F(3, 136) = 3.36, p = .02, \eta^2 = .07$), with Year 6 pupils subject to less restriction than their Year 3 counterparts ($p = .03$). The interaction effect for gender and year group did not reach significance ($F(3, 136) = 2.27, p = .08$).

Parental control and child communication

Parental control was weakly related to parent interview reports of child confiding ($r = .19, p = .02$), with primary caregivers describing more controlling behaviour considering their children more communicative. Broken down by gender, the association was stronger and significant only for boys ($r = .36, p = .002$). Parental control was not linked to child-reported communication, however, on any measure.

Parental control and child symptoms

Parental control was positively related to parent and child questionnaire reports of anxiety (SCAS: $r = .26, p = .001$; SCAS-P: $r = .30, p < .001$) and parent-reported P-CSI scores ($r = .20, p = .02$). When broken down by gender, the associations between parental control and child-reported SCAS scores held for both sexes ($r_{\text{girls}} = .35, p = .003$; $r_{\text{boys}} = .25, p = .04$). For girls only, there was also a significant relationship with somatic symptoms on the CSI ($r = .32, p = .01$). In contrast, associations between parental control and parent reports of child symptoms held only for boys (SCAS-P, $r = .47, p < .001$, and P-CSI, $r = .39, p = .001$).

Children's dissatisfaction with their autonomy and influence within the family

As detailed in Chapter 4, scores from four child interview variables were used to create a composite measure of children's dissatisfaction with their autonomy and influence within the family. Mean scores for the sample, and by gender and year group, are shown in Table

7.13. Scores did not differ significantly by either gender or year group. Child-reported lack of autonomy was not related to primary caregivers' accounts of controlling behaviour across the sample ($r = .13$, ns) though the relationship was significant for girls ($r = .28$, $p = .02$).

Table 7.13 Child dissatisfaction with autonomy and influence within the family

	Girls	Boys	Year 3	Year 4	Year 5	Year 6	Total
Mean	1.71	2.08	1.97	2.00	2.13	1.33	1.88
SD	1.59	1.95	1.85	1.82	1.80	1.54	1.77
N	72	62	31	35	38	30	134

Children's autonomy/ influence and child communication

Children's dissatisfaction with their autonomy/influence was negatively, if weakly, associated with their interview reports of confiding in primary caregivers ($r = -.20$, $p = .02$), but not to other measures of communication. When broken down by gender, the associations between confiding and dissatisfaction with autonomy no longer reached significance, though for boys, at least, the correlation was of the same magnitude as across the sample as a whole ($r_{\text{boys}} = -.20$, $p = .12$, ns; $r_{\text{girls}} = -.15$, $p = .20$, ns).

Children's autonomy/ influence and symptoms

Children's dissatisfaction with their autonomy/influence was significantly associated with their self-reported anxiety ($r = .23$, $p = .008$) as well as parents' ratings of their anxiety on the SCAS-P ($r = .24$, $p = .005$) and somatic symptoms on the P-CSI ($r = .21$, $p = .02$).

Broken down by gender, the relationship with self-reported anxiety reached significance only for boys ($r_{\text{boys}} = .31$, $p = .01$; $r_{\text{girls}} = .20$, $p = .09$). In contrast, relationships with parents' reports of child symptoms held only for girls (SCAS-P, $r = .34$, $p = .004$; P-CSI, $r = .27$, $p = .02$).

It was concluded from the above results that as child autonomy/ influence was associated with SCAS scores (for boys) and as parental control was related to SCAS scores (for both sexes) and CSI scores (for girls), both measures should be included in regression analyses designed to predict symptoms.

7.4.5 Friendship satisfaction, confiding and symptoms

Children's friendship satisfaction was explored during their interviews, in order to consider how closely it related to levels of confiding and levels of symptoms. As shown in Table 7.14, two-thirds of the sample expressed no dissatisfaction with their friendships, with girls more likely than boys to report at least some ($\chi^2 = 7.05$, $df = 2$, $p = .03$, Cramer's phi = .23). There were no significant differences in satisfaction according to year group.

Table 7.14 Friendship (dis)satisfaction by gender

	Girls		Boys		Total	
	N	%	N	%	N	%
No dissatisfaction	44	60.3	47	73.4	91	66.4
Some dissatisfaction	24	32.9	9	14.1	33	24.1
Marked dissatisfaction	5	6.8	8	12.5	13	9.5
Total	73	100.0	64	100.0	137	100.0

Friendship satisfaction and confiding with friends

Confiding in friends about worries or upsets, rated at interview, was positively associated with friendship satisfaction (or more precisely, negatively linked with dissatisfaction) ($\chi^2 (4) = 16.12$, $p = .003$, Cramer's $V = .24$). Considered separately by gender, however, the association was significant only for girls ($\chi^2 (4) = 11.46$, $p = .02$, Cramer's $V = .28$).

Friendship satisfaction and confiding in primary caregivers

Friendship satisfaction was unrelated to communication with primary caregivers on any measure, except inhibition among boys ($F (2, 45) = 4.28$, $p = .02$, $\eta^2 = .16$). Boys reporting 'some' dissatisfaction with friendships recorded more inhibition on the reverse-scored factor ($M = 1.25$, $SD = .50$) than those who did not ($M = 2.53$, $SD = 1.00$), though scores for those reporting more marked dissatisfaction fell in between, and did not differ significantly from the others' ($M = 1.88$, $SD = .83$).

Friendship satisfaction and child symptoms

Whereas children's dissatisfaction with their friendships was not related to their somatic symptoms on either child or parent reports, it was linked to higher levels of anxiety on the SCAS ($F = 7.38 (2, 134)$, $p = .001$, $\eta^2 = .10$) and SCAS-P ($F = (2, 133)$, $p = .02$, $\eta^2 = .06$).

Children expressing no dissatisfaction ($M = 27.47$, $SD = 16.00$) scored significantly lower on the SCAS than either those expressing 'some' ($M = 37.27$, $SD = 16.78$, $p = .007$) or 'marked' dissatisfaction ($M = 40.69$, $SD = 9.53$, $p = .02$). Focusing on parent reports of child anxiety, SCAS-P scores for children satisfied with their friendships ($M = 4.54$, $SD = 3.95$) were also lower than for children expressing some dissatisfaction ($M = 7.03$, $SD = 5.96$, $p = .03$), though scores for the few in the most dissatisfied group did not differ significantly from the others ($M = 6.77$, $SD = 5.15$, ns).

Friendship satisfaction and child symptoms by gender

When results were examined separately by gender, similar patterns held for both sexes, though the association between friendship satisfaction and SCAS scores reached significance at $p < .05$ only for boys ($F_{boys} = 4.66$ (2, 61), $p = .01$, $\eta^2 = .13$; $F_{girls} = 2.82$ (2, 70), $p = .07$, $\eta^2 = .08$), and the relationship with parents' ratings on the SCAS-P held only for girls ($F_{girls} = 3.90$ (2, 69), $p = .03$, $\eta^2 = .10$).

On the basis of these links with anxiety, it was concluded that friendship satisfaction should be included in regression analyses designed to predict SCAS scores in the Stage 2 sample.

7.4.6 Summary: communication, symptoms and other factors in the interview sample

This section considered bivariate relationships between various family factors and both communication and child symptoms. Key findings are highlighted below.

Although designed to tap different phenomena, expressed warmth towards primary caregivers and communication were strongly related. Children expressing high, compared to moderate/ low, levels of warmth reported greater confiding in primary caregivers on interview and questionnaire measures. Primary caregivers expressing high levels of warmth towards their children also rated them as more communicative. However, neither children's warmth towards parents nor parents' towards children was associated with child symptoms.

For boys only, depression among primary caregivers was associated with lower scores on the questionnaire measures of communication, while anxiety among primary caregivers

was associated with lower levels of confiding rated during boys' interviews. Unexpectedly, girls tended to report lower levels of inhibition if primary caregivers reported more depressive symptoms or scored higher on the Malaise Inventory, a more general measure of psychological distress. However, none of the measures of parental mental health were associated with child-reported anxiety or somatic symptoms. Parental relationship quality, rated during interviews with primary caregivers, was related to neither child communication nor child-reported symptoms.

Parental (over)control was also unrelated to child-reported communication, but was positively associated with child-reported anxiety (for both sexes) and somatic symptoms (among girls only). Children's perceived lack of autonomy/ influence, rated during their interviews, was also associated with child-reported anxiety, and with lower levels of confiding in primary caregivers.

Finally, children's friendship satisfaction was positively associated with confiding in friends, but only among girls. In contrast, dissatisfaction with friendships was associated with higher levels of anxiety for both sexes.

7.5 Communication and symptoms controlling for other factors in the interview sample

This section first considers partial correlations between communication and somatic symptoms, controlling for anxiety, within the interview sample. The focus then turns to regression analyses designed to extend findings reported in Chapter 6, by including child, family and relationship factors measured only at interview. The first set of regression models considers anxiety as the dependent variable, and the second substitutes somatic symptoms as the dependent variable, with anxiety as an independent predictor. In neither case were demographic factors included, other than gender, as these were unrelated to symptoms within the interview sample.

7.5.1 Partial correlations between communication and somatic symptoms

Controlling for anxiety as assessed by the SCAS, the only aspect of parent-child communication to be significantly associated with somatic symptoms across the interview

sample as a whole was caregiver responsiveness (partial $r = -.21$, $p = .03$). Considered separately by gender, this relationship was stronger for girls, but no longer apparent for boys (partial $r_{\text{girls}} = -.38$, $p < .01$; partial $r_{\text{boys}} = -.02$, *ns*).

For girls only, the significant negative association between somatic symptoms and the interview measure of confiding in primary caregivers also held after controlling for anxiety (partial $r = -.26$, $p = .03$). Similarly, controlling for anxiety, there was an association between confiding in friends about feelings and somatic symptoms among girls which might have reached significance in a larger sample (partial $r = -.21$, $p = .08$) – whereas there was no such tendency for boys (partial $r = -.03$, $p = .83$, *ns*).

7.5.2 Multiple regression analyses predicting anxiety

As set out in Section 7.3.1, within the interview sample as a whole, anxiety measured on the SCAS was associated with two aspects of communication: caregiver responsiveness and inhibition. Alongside gender, three additional factors, measured only at interview, were significantly related to SCAS scores and initially considered as predictors: parental (over)control, children's dissatisfaction with their autonomy/influence and dissatisfaction with friendships¹⁰. However, child autonomy /influence made no significant contribution to the model, and Table 7.15 below shows results of analyses omitting this redundant factor.

Residuals were normally distributed, with no outliers (See Appendix 31) and multicollinearity was not a concern: all predictors had Tolerance values above .90.

Step 1 of the regression analysis included child gender, parental (over) control and friendship dissatisfaction. Altogether, these three variables accounted for a significant 19% of the variance in SCAS scores, and all were independently significant predictors.

Steps 2 and 3 introduced the communication measures: inhibition and caregiver responsiveness, accounting for an additional 11% of the variance in SCAS scores. Of these two variables, caregiver responsiveness exerted the greater influence – after its

¹⁰ Although internalising symptom scores were also related to both SCAS and CSI scores, they were not included as a predictor in Stage 2 regressions because of the overlap with both main outcome variables.

introduction into the model, the contributions of inhibition and gender both reduced to just below significance. Neither inhibition nor gender was removed from the model, however; when tested, the effect of doing so was to reduce the R^2 value to .25. In line with previously reported bivariate associations, parental control, dissatisfaction with friendships, being female, and inhibited confiding independently predicted higher anxiety, whereas perceived caregiver responsiveness predicted lower anxiety.

Interactions between predictors were tested, but none made significant contributions. Accordingly, the model as set out in Step 3, explaining 30% of the variation in SCAS scores (Cohen's $f^2 = .43$), was retained.

Table 7.15 Variables predicting child anxiety at Stage 2: Summary of Hierarchical MRA

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Sex	-6.64	3.09	-.20*	-6.38	3.01	-.19*	-5.64	2.92	-.17
Parental control	4.00	1.31	.29**	4.27	1.28	.30**	4.24	1.24	.30**
Friendship dissatisfaction	6.90	2.30	.28**	5.91	2.27	.24*	5.52	2.20	.22*
Inhibition (Reversed)				-3.48	1.37	-.23*	-2.56	1.36	-.17
Caregiver responsiveness							-4.48	1.60	-.25**
R^2			.19			.24			.30
<i>F</i> (change in R^2)			7.69***			6.44*			7.85**

* Significant at $p < .05$; ** $p < .01$ *** $p < .001$

7.5.3 Multiple regression analyses predicting somatic symptoms

In addition to anxiety (SCAS scores), five factors were significantly associated with CSI scores within the interview sample, as detailed in Sections 7.1 and 7.4: children's interviewer ratings of their externalising symptoms, parental control, child depression, caregiver responsiveness and the children's interview reports of confiding in primary caregivers (Confiding in friends was not expected to be a significant predictor, in line with results of partial correlations, controlling for anxiety, and this was confirmed in preliminary models.) Accordingly, these variables, along with gender, were initially included in the model, with the expectation that gender interactions would play a part, as only the relationship with SCAS scores held for boys as well as girls when considered separately by gender. As it transpired that neither externalising symptoms nor child depression contributed significantly to the model, the analysis was re-run without either factor, as shown in Table 7.16 below.

Checks of the assumptions of MRA revealed no problems with multicollinearity or outliers, with residuals normally distributed (See Appendix 32).

Step 1 included child gender, SCAS scores and parental (over) control. As shown in the first column of Table 7.15, these three variables accounted for 10% of the variance in CSI scores, although anxiety was the only predictor to make a significant contribution at this stage.

Step 2 introduced the communication measures: caregiver responsiveness and child confiding. As a block, these accounted for an additional 3% of the variance in CSI scores, though the contribution of child confiding was negligible.

Two gender interactions – with parental control and confiding in primary caregivers – made contributions to the model which approached significance ($p < .10$). Together these increased the proportion of variance explained by 6%, as shown in Models 3 and 4. Both parental control and confiding in primary caregivers played a greater role in predicting levels of somatic symptoms among girls than among boys, controlling for other factors within the interview sample. As shown in Figures A.33(c) and (d) in Appendix A.33, greater parental control was associated with higher levels of somatic symptoms in girls (partial $r = .17$), but not in boys (partial $r = -.05$). Conversely, higher levels of confiding with mothers were associated with lower levels of somatic symptoms in girls (partial $r = -.17$), but not in boys (partial $r = .09$). (As discussed in Chapter 8, these findings should be treated with caution, as they may reflect the unrepresentative nature of the interview sample, rather than genuine gender differences in the role of either maternal control or confiding.) Overall, the final model explained 20% of the variance in somatic symptoms (Cohen's $f^2 = .24$).

Table 7.16 Variables predicting somatic symptoms (CSI scores) including SCAS scores as a predictor at Stage 2: Summary of Hierarchical MRA

Variable	Model 1			Model 2			Model 3			Model 4		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Sex	.03	2.43	.00	-.18	2.47	-.01	-.17	2.46	-.01*	-.25	2.42	-.01
Anxiety (SCAS)	.21	.07	.29**	.15	.08	.21	.14	.08	.20	.13	.08	.18
Parental control	.66	1.05	.06	.98	1.05	.10	2.39	1.42	.23	2.58	1.41	.25
Caregiver responsiveness				-2.82	1.34	-.22*	-2.73	1.33	-.21*	-2.78	1.31	-.21*
Child confiding in primary caregiver				-.39	.67	-.06	-.35	.66	-.05	-1.73	.96	-.26
Sex x Control							-2.88	1.97	-.19	-3.30	1.96	-.22
Sex x Confiding										2.54	1.30	.28
R^2			.10			.14			.16			.20
<i>F</i> (change in R^2)			3.48*			2.69			1.13			3.83

* Significant at $p < .05$; ** $p < .01$ *** $p < .001$

7.5.4 Summary: communication and symptoms controlling for other factors, within the interview sample

Partial correlations showed that perceived caregiver responsiveness was significantly associated with children's somatic symptoms even after controlling for anxiety. This was the case across the interview sample and – more strongly - for both sexes considered separately. In addition, for girls, only, inhibition was significantly associated with somatic symptoms after controlling for anxiety. Finally, the partial correlation between confiding in friends and somatic symptoms did not fall far short of significance for girls, while there was no such relationship for boys.

Multiple regression analyses revealed that, in addition to gender, parental control and friendship satisfaction, perceived caregiver responsiveness and inhibition played a part in predicting child anxiety (SCAS scores) within the interview sample.

Equivalent regression analyses designed to predict somatic symptoms, whilst controlling for anxiety, showed that perceived caregiver responsiveness made a significant contribution to the model, and that the contributions of parental control and levels of confiding in primary caregivers approached significance, once interactions with gender were taken into account. For girls only, parental control was associated with higher, and confiding in primary caregivers associated with lower, levels of somatic symptoms.

Chapter 8 Discussion and conclusions

This chapter first considers the strengths and limitations of the present study, focusing on design and methodology. The results are then discussed in relation to the hypotheses set out in Chapter 3, and contextualised with findings from previous studies. Significant new findings are identified and suggestions made for further research.

8.1 Strengths and limitations of the current study

Key strengths of the present study are identified in this section, alongside its limitations in relation to the nature of the samples at each stage, the measures employed, and the ways in which the research design restricts interpretation of the results.

8.1.1 Design

A major strength of this study was its two-stage mixed methods design. This enabled addressing key topics with a large community sample, and then exploring others in more depth with a smaller number of families, selected on the basis of responses at Stage 1. As ratings of children's behaviour and wellbeing have consistently been shown to differ across informants, with each party contributing relevant data (Achenbach, 2006), both children and their primary caregivers were involved, to help build a more comprehensive picture, and allow comparisons of their perspectives on symptoms and patterns of communication. A further strength was the development of a new measure – quick and easy for children to complete – covering several aspects of communication.

The decision to focus on communication (and more broadly, relationships) with one parent/carer stemmed from the need to prioritise within the time available, but was also informed by evidence of mothers, typically their main caregivers, being primary confidantes for preadolescent children. As a result, however, findings ostensibly relating to parent-child communication, or communication between children and their primary caregivers, may not be equally applicable to fathers. Confiding or other aspects of relationships with fathers and/or other caregivers may explain additional variance in child symptoms.

In relation to the methodology and interviewer training, in retrospect, it would have been useful to have had interviewers observe and code a number of recorded interviews in their entirety, and to have formally measured the inter-rater reliability of their codings.

Recording of interviews would have helped to ascertain whether interviewing styles may have subtly differed, such that each researcher tended to elicit different responses from interviewees. However, as far as possible, extensive interviewer training (as described in Section 3.4.2) and feedback provided by the project director prior to, and during, Stage 2 fieldwork was designed to ensure reliability between researchers both in the conduct of interviews and coding of responses. This was reflected in the fact that the distribution of codings on key interview measures did not differ significantly between interviewers.

Finally, a limitation of the design was that, as the study was cross-sectional, any exploration of the causal role that communication may play in relation to symptoms can only be provisional. (Although those participating in both stages of the study technically contributed data at two points in time, these were relatively close together, and treated as one.) It is likely that there are bi-directional associations between anxiety and communication, as discussed further below, but investigation of such longitudinal and bidirectional relationships was outwith the scope of the present study.

8.1.2 Interview and questionnaire samples

One strength of the present research – derived from its location within the *Stress in Children* study - lay in the large community sample of seven to eleven year olds and their parents involved in Stage 1. The questionnaire sample, in particular, as discussed further below, was larger than for any of the studies reviewed in Chapter 2 which have previously considered relationships between communication and internalising symptoms. Admittedly, the response rate for parent questionnaires, at 53.8%, was much lower than the completion rate for child questionnaires, despite the efforts made to make the forms accessible to parents, and encourage interest in the study. As other researchers and school staff have reported similar levels of engagement whilst working with parents, particularly in less affluent areas, this was unexceptional.

At Stage 2, a relatively large subsample of 145 families were recruited for in-depth interviews, and in most cases, the child as well as a parent took part. As set out in Chapter 3, however, sampling was on the basis of anxiety and somatic symptom scores among

children from all schools – not just those where the final communication scale was administered. As a result, a sizeable minority of those interviewed lacked scores for some key variables, reducing the number of cases contributing data to the final regression analyses by almost a third. This further restricted the study's power to explore the role of communication alongside other predictors of symptoms.

Possible biases in the questionnaire samples

It is important to consider to what extent the study sample may have been biased, particularly in ways which could affect key findings. Very few children were opted out of the questionnaire stage, or absent during administration, and school staff helped to ensure that those absent, due to ill health or music lessons, for example, completed forms on their return to class. Accordingly, although some of those who failed to complete forms were ill, and may have experienced particularly high levels of symptoms, it is unlikely that their scores will have significantly affected results overall.

It is also possible that some parents of anxious children, or suffering from anxiety themselves, avoided taking part in the study. Conversely, some may have seen the study as more relevant to their families and elected to contribute as a result. On the basis of children's scores, however, children of parents who returned completed questionnaires scored very slightly lower on the SCAS and CSI than those whose parents failed to respond.

On the basis of school-level data, parental engagement was substantially higher in more affluent areas, with a strong negative correlation between the response rate to parent questionnaires and the proportion of children eligible for free school meals ($r = -.86$). The fact that parent forms were designed for self-completion and distributed only in English almost certainly led to lower response rates from those with low levels of literacy and with English as a second language. As a result, the subsample comprising those who returned parent questionnaires is likely to be biased towards native English speakers and more affluent families. This is not true of the broader sample of children who completed forms in schools, however, and their questionnaire data – on communication and symptoms – was used to address key questions within the current study.

Potential biases in the interview sample

Some biases in the parent questionnaire sample were compounded at interview stage. For example, some parents who spoke limited English did return questionnaires, perhaps with assistance and after receiving reminders, but were unable to participate in interviews without interpreters, which the *Stress in Children* study was not resourced to provide.

As well as the demographic biases detailed above, some families told us that they were simply too busy to take part. While in some cases this may have reflected lack of interest in the study, a number of those who opted out worked long irregular hours or night shifts, and said they would struggle to find the time required, regardless of the flexibility shown by interviewers.

There may have been other family reasons why some parents were less willing to take part. It may be that whilst happy to complete a short questionnaire, parents with children or other family members who were ill or under stress wished to avoid anything more demanding or intrusive. More generally, it is plausible that families less keen to share their experiences were unlikely to take part. As reported in Chapter 5, children whose families participated in the interview stage of the study scored significantly higher on open communication than those who did not.

In addition, while many parents of children reporting high levels of anxiety and somatic symptoms did return questionnaires, it proved difficult at the interview stage to recruit families of children with unusual combinations of symptoms – such as high levels of somatic symptoms alongside low anxiety.

More fundamental limitations were associated with the sampling approach for Stage 2 of the study. This was designed to ensure inclusion of children with varying levels of anxiety and somatic symptoms, in order to better explore the extent to which various factors, including communication, were associated with one or the other type of symptom. Given the strong association between anxiety and somatic symptoms within the Stage 1 sample, and the generally low levels of symptoms overall, it was decided against selecting a random subsample of children from among questionnaire respondents, as the resulting group would be likely to show limited variability in levels of symptoms. However, to the extent that the aim of the Stage 2 sampling design was achieved, and children with unusual

symptom combinations included, the sample was not representative of the broader community from which it was drawn. As a result, results from Stage 2 of the study cannot be generalised to the broader population. Where expected relationships failed to materialise on the basis of interview data, or were only weakly evident, this may well be due to the atypical sample.

8.1.3 Measures of communication

New questionnaire measure of communication and confiding

As detailed in Chapter 4, the key outcome measures for both the *Stress in Children* study and the present research, the SCAS and CSI, contained 38 and 18 items respectively, and were given priority on the questionnaires. In contrast, the communication scale was devised specifically for this doctoral study, but its length (11 items), and therefore scope, was limited by the need to avoid imposing an undue burden on seven year old children, and to ensure the feasibility of administering the entire questionnaire within the allotted time – generally no more than one hour. One consequence of using such a short scale was that communication factors and subscales were based on small numbers of items. Had it been possible to accord more space to communication items, further exploration of different aspects of communication as well as confiding with friends and perhaps other family members could have been achieved. However, focusing on one main carer was also judged to be sensitive to children in single parent households.

A separate limitation associated with the communication scale was that its content was finalised only part-way through data collection in schools. As noted previously, this meant that a substantial minority of children lacked data for some key communication variables. It was not feasible to delay the start of the broader SiC project in order to first pilot the scale and make it more robust, or to refine it further, in light of the ongoing review of the literature.

While the new scale had limitations, and comprised just 11 items, it is notable that other measures of child or adolescent communication employed in many important studies have been similarly short, or shorter, with some reliant on single item measures. The final scale also had a number of important strengths. Firstly, even the youngest (seven year old) children were able to comprehend the items. As reported in Chapter 4, the internal

consistency was satisfactory, with Cronbach's Alpha of .72, and scores were normally distributed. Test-retest reliability was also acceptable, on the basis of data from one large school, 12 and 15 months after the initial visit. Further validation of the scale was provided by its significant associations with interview measures of communication, while parent-child agreement on symptoms also varied according to communication level, in the expected direction.

In line with distinctions in the adolescent literature between open and problem communication, two clear factors emerged from principal components analysis of the scale: open communication and inhibition. As discussed further below, it proved important to distinguish these factors in clarifying associations with symptoms. The new scale also enabled examination of different aspects of open communication at a subscale level, based on conceptually linked and correlated items on sharing news, confiding about distress and perceived caregiver responsiveness – which also showed differing relationships with scores on the SCAS and CSI.

As set out in Chapter 5, none of the existing tools identified in the literature covered all the desired elements of communication, whereas the new scale allowed their relative importance to be explored with respect to outcomes. Unlike some other scales which include items on non-verbal displays of emotion or relationship issues such as warmth, the measure designed for this study focused explicitly on (verbal) communication. Although it was not possible to measure other aspects of relationships or a broad range of family environment factors within the large questionnaire sample, these were assessed during interviews, enabling some consideration of their associations with patterns of communication.

Interviewer-rated communication

At interview, parents' reports of communication were explored for the first time, enabling comparisons with child reports on similar questions. Not surprisingly, as interviewer ratings focused mainly on the extent to which children shared their experiences, worries, and feelings, these showed stronger associations with the questionnaire subscale 'confiding of distress' than with any others. As discussed further below, the respective foci of the questionnaire and interview measures also partly account for their differing associations with symptoms.

Within the wide-ranging interviews for the *Stress in Children* study, it was not feasible to devote a great deal of time to the topic of communication. Accordingly, there was no further probing of children's decision-making processes in relation to disclosure or inhibition. With hindsight, it would have been useful to cover these areas, particularly as a substantial minority of children had completed a pilot version of the communication scale and lacked scores for the inhibition factor.

8.1.4 Other study measures

As set out in Chapter 4, the standardised measures of anxiety (SCAS) and somatic symptoms (CSI) used in the present study have been extensively used and validated. Although the distributions of scores on these measures, and their parent-report equivalents, were positively skewed, this was expected on the basis of previous research with community samples. Although transformations did not improve the distributions, the statistical techniques employed in this study (in correlational and regression analyses) are relatively robust to violations of normality.

Interview measures were predominantly derived from those used and validated in previous studies by Marjorie Smith (the project director of the *Stress in Children* study). As indicated in Chapter 3, interviewer training and regular discussion of borderline ratings was designed to ensure consistent codings across the research team. Interviewer effects and subtle differences in judgements, however, may have reduced the reliability of the measures.

As reported in Chapter 7, the distributions of some interview measures were skewed, generally towards more optimal family relationships, with low levels of symptoms. As a result, it was necessary to combine certain categories, in order to ensure sufficiently large numbers in each one for the purposes of further analysis. Had it been possible to distinguish these categories as intended, further group differences may have emerged.

Finally, although the study included data from parents as well as children, analyses focused mainly on children's reports of communication, symptoms, and other family and relationship factors. As the key concerns of the study were the extent to which children disclosed to parents, and the extent to which they experienced anxiety and somatic

symptoms, their own accounts were considered vital. However, shared method variance could have inflated associations between measures. Children's perceptions of parents' behaviour may be biased by their own moods or anxieties. The same is true, of course, of primary caregivers' perceptions of children's symptoms, behaviour and relationships. Inclusion of primary caregivers' reports as well as children's did enable interesting comparisons, however. For example, primary caregivers rated by interviewers as more controlling believed boys to communicate more openly, but this was not backed up by their sons' own accounts.

8.2 Study results in the context of previous findings

As set out in Chapter 3, this study addressed three broad questions concerning: the relationship between child communication and symptoms of anxiety and somatisation; the extent to which these relationships as well as levels of communication were gendered; and whether communication patterns explained any variation in symptoms taking into account other family and relationship factors. These areas are addressed in this section, which as well as considering results pertaining to hypotheses, also makes other relevant observations and comparisons with previous findings.

8.2.1 Measurement, prevalence and patterning of child communication

This section briefly addresses four overarching issues relating to the extent and patterning of child communication, within the relevant age group.

Distinction between open communication and limitations on confiding

Factor analysis of the new communication scale indicated that open communication and inhibition, or limitations on confiding, are distinct constructs. This is in line with previous findings in relation to child and adolescent disclosure and secrecy about activities (Almas, Grusec and Tackett, 2011; Frijns *et al.*, 2010; Keijsers *et al.*, 2010).

Levels of communication with mothers and friends

The questionnaire and interview measures of communication suggested that the majority of children confided in their primary caregivers. Overall, the findings on levels of communication with primary caregivers and friends were in accordance with the literature reviewed in Chapter 1, which suggested that mothers tend to remain primary confidants for children at least until early adolescence (Brown *et al.*, 2006; Buhrmester and Furman, 1987; Papini *et al.*, 1990). There was, however, variation across the sample in levels of communication; across topics, and according to gender and other child and family factors, as discussed further below.

Perceptions of primary caregivers as confidants and child confiding behaviour

Children's perceptions of their primary caregivers as confidants were associated with their own confiding behaviour, consistent with the existing literature around predictors of disclosure and reasons for confiding (Almas, Grusec and Tackett, 2011; Soenens *et al.*, 2006; Yau, Tasopoulos-Chan and Smetana, 2009; Zeman and Garber, 1996). Specifically, children's perceptions of their primary caregivers' receptiveness, readiness to explain anger, and helpfulness in relation to talking through worries were associated with a propensity to confide. Similarly, finding it difficult to talk with primary caregivers about things which bothered them was associated with keeping worries to themselves.

Associations between child and parent reports of communication

Previous research has suggested that parents tend to overestimate levels of adolescent disclosure (Smetana *et al.*, 2006). The present study did not 'test' parents' knowledge of their children's activities or feelings, but did compare child and parent reports of child confiding behaviour. There were significant but rather weak positive relationships between composite ratings of communication derived from primary caregivers' accounts and those of children, and between the respective measures of confiding about worries. On the whole, parents' assessments of their children's openness were broadly in line with children's own accounts, though some considered their son or daughter to disclose much more or less than their children's self-report data would suggest. It is possible that these associations may have been stronger, had the questions posed to parents and children been more precisely equivalent. Previous studies, however, have also reported weak

correlations between parent and child reports of child disclosure, though these have tended to involve adolescents rather than younger children who typically confide more in their mothers (Barnes and Olson, 1985; Guilamo-Ramos *et al.*, 2006; Hartos and Power, 2000a).

Inappropriate parental confiding in children was unrelated to other measures of parent-child communication. Of note, very few primary caregivers described using their children as confidants; had the sample included adolescents, more may have done so. Also, children were not asked about parents' behaviour in this area, and findings based on their accounts may have been different.

8.2.2 Gender and communication

As hypothesised, gender differences were evident in relation to various aspects of communication and, to some extent, its relationships with symptoms. Those relating to overall levels and patterning of communication are discussed in this section.

Gender and communication with mothers

Hypothesis 1.1 *Levels of communication with primary caregivers would be higher among girls than boys.*

Levels of communication with primary caregivers were significantly higher for girls than for boys, whether assessed using the questionnaire scale or composite ratings from child or parent interviews. This is in line with findings from most other studies which have considered the issue in this age group (for example, Bumpus and Hill, 2008; Gentzler *et al.*, 2005; Lambert and Cashwell, 2004). Gender differences on the broader scale measures for overall and open communication were, however, relatively modest.

Hypothesis 1.2 *Gender differences in levels of communication with primary caregivers would vary according to the topic or aspect of communication, with more substantive differences in relation to talk about worries or distress than positive or neutral topics.*

The extent of the gender gap in communication did vary to some extent, depending on the topic in question. It was indeed largest in relation to sharing upsetting experiences

(Cohen's $d = .33$). The gender gap in relation to confiding about worries was no larger than that in relation to talking about friends, or things that made children laugh, but it was less pronounced in relation to sharing news from school.

Of note, girls registered higher levels of inhibition as well as openness: they were very slightly more likely than boys to report keeping worries from their primary caregiver, and to have difficulty talking to her about things that bothered them. In contrast, there was no such gender difference in child interview ratings of withholding information or secrecy more generally. This reinforces and extends previous research which has found that, despite girls communicating more in general, and reporting more secrets about interpersonal or family issues (Last and Aharoni-Etzioni, 1995), boys report as much secrecy, if not more, about activities or behaviour (Bumpus and Hill, 2008; Keijsers *et al.*, 2010).

Focusing on primary caregivers' contributions to conversations, boys and girls rated them equally highly on responsiveness, in terms of listening and explaining. This is in line with findings from attachment studies, using composite measures of communication which tap children's perceptions of their parents' availability and reactions to disclosure (Raja, McGee and Stanton, 1992).

Reinforcing children's reports, primary caregivers described girls as disclosing more about worries and other emotions than boys. That they described similar levels of routine 'chat' with sons and daughters may reflect that this type of exchange is more influenced by parental solicitation. This is consistent with Crouter *et al.*'s (1999) characterisation of routine communication with children as a 'scripted' part of a mother's role, independent of child characteristics. Likewise, primary caregivers did not report sharing their own problems with daughters more than with sons. Although Waller and Rose (2010) found that mothers engaged in more co-rumination about their problems with adolescent daughters, compared to sons, this may reflect that older children were involved. It is plausible that differences in primary caregivers' confiding behaviour by child gender become more pronounced when children reach adolescence and are considered more able to give, as well as receive, support.

Gender and communication with friends

Hypothesis 1.3 *Levels of confiding with friends would be higher among girls than among boys.*

One of the larger gender differences detected in the study – albeit still modest - concerned levels of confiding in friends, which were higher among girls on both questionnaire and interview measures (Cohen's $d = .33$; Cramér's $\phi = .34$). This reflected that, while the majority among both sexes confided in friends at least 'sometimes', more than a third of boys 'never' did, compared to less than a quarter of girls. The gender gap was apparent in all year groups, rather than just the oldest as some have found, possibly because this study focused on confiding in friends about feelings, rather than more impersonal topics or secrets (O'Neill *et al.*, 1976). The results align with previous findings concerning self-disclosure with friends in preadolescent samples (Lansford and Parker, 1999; O'Neill *et al.*, 1976; Parker and Asher, 1993b; Rose, 2002) as well as the more extensive literature concerning older groups.

8.2.3 Communication and other demographic, child and family factors

This section discusses findings on relationships between child communication and key demographic and family factors, considered as potential mediators of relationships with symptoms.

Child age (year group) and communication

Child age was unrelated to measures of communication, except that perceived caregiver responsiveness increased slightly from the youngest to oldest year groups. Similar results were reported by Kerns *et al.* (2006), who found that 5th Grade children (typically 11 years old), perceived their mothers as more available than they had done in 3rd Grade. The authors tentatively attributed this to the older group being more confident in their ability to obtain support from their mothers, even when they were not physically present. It seems plausible that older children are better able to recognise and appreciate parents' efforts and reasoning. Equally, parents may engage in more extended discussion with older

children, who express their views and feelings effectively and seek attention more selectively.

Ethnic background and child communication

There were small differences in levels of communication with mothers by ethnic group, with girls and boys of Chinese heritage tending to report lower levels than those from White or Mixed backgrounds. Although this finding is based on scores from a small number of Chinese pupils, it does reinforce other research which has found that, compared with American mothers, Chinese mothers engage in less negotiation and discussion with children about their emotions (Fivush and Wang, 2005), and that Chinese-American adolescents disclose less to their mothers about activities and feelings than do their European-American peers (Yau, Tasopoulos-Chan and Smetana, 2009).

Family form, income and employment and child communication

Other demographic factors assessed at questionnaire or interview stage (family form, household income, parents' involvement in paid work and occupational status) were unrelated to child communication. This was not unexpected, despite the well-established links between SES, parenting and language skills, given the weak and conflicting findings regarding differences in levels of child disclosure according to these factors, as outlined in Chapter 1.

Inappropriate parental confiding in children, however, was more prevalent in lone parent households than intact two-parent families. This has been reported previously with respect to adolescents of divorced compared to intact couples (Jurkovic, Thirkield and Morrell, 2001) while other studies have found higher incidence of role-reversal, whereby children act as confidants for parents, in the context of marital conflict rather than in more harmonious households (Macfie *et al.*, 2008; Peris *et al.*, 2008). It seems plausible that ongoing tension with ex-partners was communicated to children in this study, and/or that lone parents tended to turn to them with other adult problems, in the absence of a partner in whom to confide.

Parent–child relationship warmth and child communication

Care was taken to ensure that ratings of parent-child warmth did not incorporate indicators of communication, focusing instead on expressed positivity and physical affection, and enjoyment of their company. As expected, however, relationship warmth and communication were strongly linked - particularly in relation to sharing worries or distress. These findings are in line with those reported by others, for instance Fletcher *et al.* (2004) with respect to maternal warmth and child disclosure about activities, and Salafia *et al.* (2009) regarding more personal self-disclosure.

Previous studies have also reported gender effects, with stronger associations between parent-child relationship warmth and communication among girls than boys (Herman and McHale, 1993; Keijsers *et al.*, 2010; Vieno *et al.*, 2009). This has been interpreted as reflecting that lower levels of disclosure are more the norm for boys, and thus less likely to indicate relationship problems. Within the present study, however, associations between warmth expressed by both parties and child communication were stronger and more consistent for boys.

Several factors may help to account for these unexpected findings. Firstly, there was more variability in levels of expressed warmth (and confiding rated at interview) among boys than girls. Secondly, interviewed boys were less typical of their peers than interviewed girls, in terms of scores on the communication scale completed at Stage 1 of the study. On the questionnaire measure, interviewed boys reported confiding in primary caregivers about worries and distress as much as did interviewed girls, which was not the case within the broader community sample. In contrast, girls were less typical of their Stage 1 peers in terms of the relationships between aspects of communication, with a relatively weak link between their levels of confiding and perceived caregiver responsiveness. It is possible that within more typical samples of boys and girls, gender differences in relationships between warmth and communication would have been more consistent with previously published findings.

Primary caregivers' mental health and child communication

In the present study, for boys only, moderate or severe depression in primary caregivers over the past year was associated with lower levels of communication, and with

inappropriate parental confiding. Caregiver depression over a longer period was also associated with inhibition among boys. In addition, sons of primary caregivers with moderate or severe situational anxiety reported lower levels of confiding at interview than those whose caregivers reported mild symptoms or none. To some extent, these results chime with previous findings linking depression – particularly recent episodes - with less sensitive and more passive behaviour with children (Foster, Garber and Durlak, 2008; Murray *et al.*, 2006), and linking maternal anxiety with negative parent-child interaction (Pape and Collins, 2011; Schneider *et al.*, 2009). That boys but not girls appeared to communicate less with depressed primary caregivers could reflect that girls are typically more open and less dependent than boys on sensitive parental solicitation. In addition, it is important to recall that the vast majority of primary caregivers were mothers. Although in this study primary caregivers' accounts suggested that they were no more likely to confide in girls than boys, it may be that daughters are more inclined than sons to engage with mothers' feelings or problems, as others have found among older samples (Waller and Rose, 2010). Indeed, in the present study, daughters of primary caregivers experiencing more psychological distress (as measured on the Malaise Inventory) actually reported lower levels of inhibition, indicating that they were less likely to keep worries to themselves or have difficulty confiding in their primary caregivers. It could be that, within this particular sample, boys were more reluctant participants in talk about adult problems, or mothers' problems, and were deterred from raising their own. The direction of effects is unclear, however, and another possibility is that having 'difficult' uncommunicative boys – or girls inclined to co-ruminate on problems - contributes to parents' symptoms.

Parental relationship quality and child communication

Although the present study found that parental relationship quality was unrelated to levels of child communication, this is likely to reflect that very few primary caregivers reported the serious conflict or disharmony which has been associated in the literature with negative family interaction or withdrawal from engagement with children (Kitzmann, 2000; Sturge-Apple, Davies and Cummings, 2006). As suggested previously, it is possible that parents under particular stress, including those experiencing relationship problems, avoided taking part in interviews.

Parental control, child autonomy/voice and child communication

Reinforcing the value of comparing parent and child perspectives, primary caregivers rated by interviewers as restrictive or controlling believed boys to communicate more openly about their feelings and experiences, but this was not backed up by their sons' own accounts. Among both boys and girls, dissatisfaction with their autonomy/influence was associated with lower levels of confiding in primary caregivers - in line with findings from previous studies reporting child disclosure to be associated with experience of greater autonomy and lower psychological control (Guilamo-Ramos *et al.*, 2006; Roth, Ron and Benita, 2009; Soenens *et al.*, 2006).

Friendship satisfaction and child communication with friends

Satisfaction with friendships was positively associated with confiding in friends about worries or upsets, measured at interview, but only for girls. This reflects that confiding was more prevalent within girls' friendships, and is in line with others' findings that girls consider confiding more important than do boys (Buhrmester and Furman, 1987). That there was no association for either sex between friendship satisfaction and the earlier questionnaire measure of talk with friends about feelings may partly reflect that friendship satisfaction varies from week to week, based on interactions at a particular point in time. In addition, talk about worries, as opposed to feelings more generally, may be particularly indicative of closeness for girls, whereas boys' friendships tend to be built on shared activities and interests rather than emotional disclosure of any sort (Buhrmester and Furman, 1987; McNelles and Connolly, 1999; McQuillan and Neill, 2009).

8.2.4 Child symptoms

This section first compares the present study's findings on levels of child anxiety and somatic symptoms with those of previous research. Attention is also given to associations between the two measures, between child and parent reports, and with other measures of child wellbeing.

Anxiety

Anxiety scores in the present study of 7-11 year olds, based on SCAS total scores ($M = 30.35$, $SD = 18.92$), were very similar to those the normative scores supplied by Spence¹¹, based on a community sample of 8-12 year olds in Australia ($M = 30.35$, $SD = 17.07$, $N = 2357$). As in the normative sample, girls scored significantly higher than boys.

Also in line with previous studies using the SCAS (Nauta *et al.*, 2004; Whiteside and Brown, 2008) and other measures (Hartos and Power, 1997), parents reported low levels of child symptoms compared to children themselves. The correlation between parent and child ratings on the SCAS and SCAS-P general anxiety subscales ($r = .26$) was very similar to that reported by Nauta *et al.* (2004) for their non-clinical sample of Australian and Dutch 6-18 year olds ($r = .28$), though that for separation anxiety ($r = .30$) was weaker than theirs ($r = .60$). It is possible that the higher rate of parent-child agreement on separation anxiety reported by Nauta *et al.* reflected that scores on this subscale decline most with age, and their sample was older ($M = 11.5$ years). Moreover, in many cases, children in their study completed measures at home, potentially with parents, rather than at school.

Somatic symptoms

Levels of somatic symptoms within the present study were also on a par with previous findings. Mean CSI scores for 7-11 year olds (18.45; $SD = 13.68$) fell in between those reported by Litcher *et al.* (2001) and Garber *et al.* (1991) for 10-12 year olds, while the mean for Year 6 pupils in the present study (aged 10 and 11), at 15.96 ($SD = 12.15$) fell just below that of Litcher *et al.* (16.40, $SD = 16.11$). Whereas Litcher *et al.* and Walker both used the full 35-item scale, just 18 items were presented in this case. However, comparisons of results using the 18 and 24 item scales, and the 24 and 35 item versions, confirmed that removal of largely redundant items made very little difference to overall scores. Girls reported significantly higher levels of somatic symptoms than boys, which was also consistent with results reported by Litcher *et al.* (2001).

¹¹ Norms for Total SCAS Scores: Accessed 13.05.12:
<http://scaswebsite.com/docs/normstotalscas.pdf>

Associations between anxiety and somatic symptoms

The strong associations between children's SCAS and CSI scores ($r = .69$) and between parents' reports on the abbreviated SCAS-P and P-CSI ($r = .51$) exceeded those found in previous studies using other measures and focusing on a broader age range, including adolescents as well as younger children (Garber, Walker and Zeman, 1991; van der Veek, Nobel and Derkx, 2012). The association between children's reports on each measure was closer to that of Lavigne *et al.* (2012), among 8-15 year olds ($r = .57$), which may to some extent reflect that their study also involved a measure of anxiety which, like the SCAS, included 'somatic' items referencing physical sensations. Indeed, although CSI scores were at least moderately associated with all SCAS subscales, the strongest relationships involved panic and general anxiety, measured in part using items on trembling, feeling faint, a racing heart and 'funny feeling' in the stomach. It is also plausible, however, that there is a stronger relationship between somatic symptoms and anxiety in younger children, compared to adolescents.

Associations between anxiety, somatic symptoms and other child outcome measures

Associations between SCAS and CSI scores and other measures of child symptoms provided evidence of the convergent and divergent validity of the key study measures, as well as highlighting differences between child and parent perceptions. Specifically, as expected, internalising symptoms rated during child interviews, on the Symptom Score (Smith and Jenkins, 1991), were moderately associated with SCAS scores. They were not, however, associated with CSI scores. This may reflect that relatively few Symptom Score items refer to physical symptoms, and that associations between SCAS and CSI scores were weaker among those interviewed than across the broader Stage 1 sample. In contrast, and as anticipated, self-reported externalising symptoms were not associated with anxiety, though for girls only, they were weakly associated with somatic symptoms.

Based on parent reports, child internalising symptoms were moderately associated with SCAS-P and P-CSI scores, while for girls only there were also similar relationships between externalising symptoms and scores on both questionnaire measures. This reflects the significantly stronger associations between parent reports of internalising and externalising

symptoms among girls than boys, as has been found in other research involving community samples (Polier *et al.*, 2012).

Child depressive symptoms, on the Birleson self-report measure, were also positively associated with CSI scores, and with parents' reports of girls' somatic symptoms on the P-CSI. In part, this may reflect that both scales refer to tummy aches and phenomena such as tiredness. Unexpectedly, boys scoring higher on the Birleson scale were reported to experience lower levels of anxiety and somatic symptoms by their parents. In seeking to understand this, it is relevant to recall that for boys, depressive symptoms were associated not only with lower levels of confiding, but lower levels of perceived caregiver responsiveness and with caregivers' own depressive symptoms, which in turn may have been associated with less sensitive parenting and limited awareness of children's experiences. This is discussed further in Section 8.2.9.

Associations between parent and child reports of child symptoms by gender

The relationship between child-reported symptoms and their parents' assessments was stronger for girls than boys in relation to anxiety and both internalising and externalising symptoms, though not somatic symptoms. This may reflect girls' greater openness about their feelings and activities, whilst suggesting that boys are no less likely than girls to mention their aches and pains.

8.2.5 Associations between communication, anxiety and somatic symptoms

This section discusses findings on key issues for the present thesis, concerning relationships between communication, anxiety and somatic symptoms.

Communication with mothers, anxiety and somatic symptoms

Hypothesis 2.1 *Lower levels of communication with primary caregivers will be associated with higher levels of anxiety and somatic symptoms.*

As hypothesised, total scores for communication with primary caregivers were associated with CSI scores, albeit weakly, with lower levels of communication associated with higher

levels of somatic symptoms. They were unrelated to anxiety on the SCAS, however, or to parent reports of child symptoms on the SCAS-P or P-CSI.

The lack of any relationship between overall communication with primary caregivers and children's anxiety symptoms was unexpected, but perhaps understandable. As detailed in Chapter 2, not all studies have reported significant associations between broad measures of child communication or disclosure and anxiety. Further exploration of the results showed a more complex pattern, however, with certain aspects of communication more strongly associated with symptoms, and others showing weaker associations which differed by gender. On the basis of the existing literature, some variation along these lines was anticipated, as detailed in Hypotheses 1.2, 1.3, and 1.4 and discussed below.

Confiding of distress versus sharing of news

Hypothesis 2.2 *Associations between symptoms and communication will differ by topic of the communication, with confiding of worries or negative emotion more strongly implicated than sharing of positive or neutral experiences.*

Contrary to Hypothesis 2.2, there was no substantive difference between confiding of distress and sharing of positive or neutral experiences ('news') in terms of bivariate relationships with symptoms, across the sample. Unexpectedly, scores on both communication subscales were positively, though weakly, associated with anxiety on the SCAS. Associations with somatic symptoms on the CSI followed the same pattern but were weaker still, and neither aspect of communication was linked to parent reports of child symptoms.

As discussed in Section 8.2.6 below, gender differences may also partially explain these findings. A small number of previous studies have, however, found positive relationships between anxiety and confiding (Vazsonyi and Belliston, 2006) or disclosure as well as co-rumination (Rose, 2002). As argued by Vazsonyi and Belliston, the former may reflect over-involvement or parental intrusiveness. It is also likely that scores for confiding of distress, as with previous findings on co-rumination, partly reflect the frequency or extent of children's problems: one child who 'never' shares worries may rarely experience them, while another may be extremely anxious, and fearful about the experience or consequences of disclosure. Indeed, in some cases where disclosure has been linked to

lower levels of symptoms, it has been defined in opposition to concealment (Smetana *et al.*, 2009) and it may be that absence of concealment is the relevant factor.

Inhibition versus open communication

Hypothesis 2.3 *Symptoms will be more strongly associated with 'secrecy' or inhibited confiding than levels of open communication.*

In line with Hypothesis 2.3, levels of both anxiety and somatic symptoms were more strongly associated with inhibited confiding than with open communication. Whereas greater inhibition was associated with higher levels of symptoms, open communication was positively, albeit very weakly, associated with anxiety on the SCAS, reflecting the pattern described above for 'confiding of distress' and 'sharing of news' (two of the three subscales on the relevant factor). In addition, consistent with the notion of somatisation - that those who hide their feelings display more physical symptoms - child inhibition was positively associated with parental reports of their somatic symptoms on the P-CSI, but not their levels of anxiety on the SCAS-P.

Although no previous study has looked at associations between inhibition, anxiety and somatic symptoms among preadolescents, some have explored similar issues among older children or adults, with comparable results. Specifically, in each case, they have distinguished avoidance of disclosure from open communication, and found the former to carry the variance in explaining links with anxiety, depression, externalising behaviour or physical symptoms (Barr, Kahn and Schneider, 2008; Bumpus and Hill, 2008; Finkenauer, Engels and Meeus, 2002; Frijns, Finkenauer and Keijsers, 2013; Frijns *et al.*, 2005; Frijns *et al.*, 2010; Larson and Chastain, 1990).

In contrast, child interview ratings of withholding information or 'secrecy' more generally – as opposed to difficulty confiding worries – were unrelated to anxiety or somatic symptoms across the smaller Stage 2 sample. This perhaps reflects that children have many reasons for not disclosing information. As previous studies have shown, these range from avoiding punishment or parental disapproval, to simply considering the issues unimportant (Last and Aharoni-Etzioni, 1995; Zeman and Garber, 1996). Of note, one other study to consider concealment of different types of information – albeit among adolescents – reported

parallel findings: while lying about personal issues was associated with depressed mood, lying about rule-governed activities and behaviour was not (Smetana *et al.*, 2009).

Primary caregivers' responsiveness

Hypothesis 2.4 Perceptions of primary caregivers' responsiveness (listening and explaining) will be associated with lower levels of symptoms.

Confirming Hypothesis 2.4, perceived caregiver responsiveness (listening when needed and explaining crossness) was negatively, though very weakly, associated with child anxiety and somatic symptoms). It was also weakly associated with parents' scores on the P-CSI, such that parents perceived more somatic symptoms – but not greater anxiety - in children who rated them as less responsive. While these relationships are weak, they are consistent with the idea that children may experience and/ or communicate physical symptoms to a greater extent if they feel their feelings are ignored.

As highlighted in Chapter 2, previous studies using measures of secure attachment or communication have included items tapping parents' qualities as confidants alongside those on levels of disclosure, but tended not to delineate their respective associations with symptoms. Such studies have linked lower levels of attachment or communication to higher levels of anxiety (Hale, Engels and Meeus, 2006; Hartos and Power, 2000b) and bodily symptoms (Cooper, Shaver and Collins, 1998; Tremblay and Sullivan, 2010). Of particular relevance are those few studies which have provided a more detailed breakdown of results. For example, one study reported that scores for 'trust', covering views on parents' listening skills and other attributes as confidants, were significantly related to adolescent anxiety scores on the SCAS. In contrast, scores for 'communication', focusing on levels of disclosure and discussion, were not (Muris *et al.*, 2001). Similarly, another study which distinguished aspects of parents' behaviour found anxiety to be negatively related to perceived supportiveness, which incorporated listening to their adolescent children, but not to the frequency of communication (Vazsonyi and Belliston, 2006). In both cases, these findings with respect to adolescents chime with those of the present study, in terms of associations between aspects of communication and symptoms in younger children.

Primary caregiver reports of communication and child anxiety and somatic symptoms

Ratings of child confiding based on primary caregivers' interview reports were not related to children's anxiety or somatic symptoms, on any measure. There are several possible explanations for these findings, which contrast with results based on child reports of communication. Firstly, and by definition, parents have limited awareness of the extent to which children are keeping thoughts, feelings or symptoms to themselves. As noted previously, this study is not unique in finding weak associations between parent and child reports of child communication or symptoms. This reinforces the importance of asking children about their patterns of confiding and experiences, rather than relying on parental reports alone. Secondly, caregiver responsiveness and inhibition around worries were measured only at Stage 1, using child-report data, and were more closely associated with symptoms than was open communication. In line with this, studies which have found significant associations between mothers' reports of adolescent symptoms and communication have used measures such as the PACS, which assess parents' contributions to conversations and perceptions of communication problems, as well child disclosure (Hartos and Power, 1997; Hartos and Power, 2000b).

Communication and parent-child agreement on levels of child symptoms

While parent-child agreement on child anxiety scores was generally low, it was greater for girls than boys, and for children who reported high levels of communication. This 'communication effect' was stronger among boys than girls, who typically reported higher levels of confiding and symptoms. These results echo previous findings that mothers' awareness of adolescent stress was limited, but positively associated with adolescent reports of communication (Hartos and Power, 2000b). It is also plausible that girls communicate distress more effectively, as well as more frequently, than boys, in line with the established gender differences in emotion socialisation and expression (Dunn, Bretherton and Munn, 1987; Kuebli, Butler and Fivush, 1995; Leaper, Anderson and Sanders, 1998).

In contrast, parent-child agreement on children's somatic symptoms did not vary by either gender or level of communication. This may reflect that the communication scale focused on emotions rather than bodily sensations; children may tell their parents when they have

a sore tummy, regardless of how often they talk about worries or news about school. It is also consistent with the notion of somatisation, or communication of distress through the body, that some of those who disclose little about emotions may communicate loudly and clearly through their aches and pains.

8.2.6 Gender, communication and symptoms

This section discusses findings with respect to the role of gender in relationships between communication and symptoms.

Gender and associations between aspects of communication and symptoms

Hypothesis 2.5 *Associations between communication with primary caregivers, anxiety and somatic symptoms would be stronger among girls than among boys.*

Hypothesis 2.5 predicted that associations between communication with primary caregivers, anxiety and somatic symptoms would be stronger among girls than boys, on the grounds of existing evidence that higher levels of confiding are more normative for girls than boys (Bumpus and Hill, 2008; Gentzler *et al.*, 2005).

There was little evidence in favour of this hypothesis within the broad community sample. For boys only, there were unexpectedly positive, though weak, bivariate relationships between anxiety and disclosure of both distress and news. There were, however, no gender differences with respect to the substantive bivariate relationships between symptoms and inhibition or caregiver responsiveness. Moreover, in multivariate analyses, inhibition was the most important communication predictor for both sexes, and for boys and girls alike, lower caregiver responsiveness and greater confiding of distress independently predicted greater anxiety.

In the smaller interview sample, regression analyses also revealed no significant gender differences in the role played by inhibition or caregiver responsiveness in predicting anxiety. Likewise, with regard to somatic symptoms, there were no significant gender differences in the predictive role of caregiver responsiveness, though there was a tendency for higher levels of confiding to be associated with lower levels of somatic symptoms, solely among girls. Although this is in line with the hypothesis that confiding would better predict

girls' somatic symptoms, less confidence can be placed on this result, given that those interviewed included disproportionate numbers of children with atypical symptom combinations. Taken together, these findings suggest that, regardless of gender, when it comes to anxiety and somatic symptoms, feeling able to confide in primary caregivers and to secure their attention is more important than how often children communicate. While being able to confide in primary caregivers may be protective, doing so routinely may also signal the presence of persistent or unmanageable stressors. After taking other factors into account, this appears to be the case for both sexes, despite the fact that boys tend to confide less often, and consider confiding less helpful, than do girls.

Confiding in friends, gender and symptoms

Hypothesis 2.6 Negative associations between confiding in friends and symptoms would be stronger for girls than boys.

It was hypothesised that, for girls more than boys, confiding in friends would be associated with lower levels of symptoms, on the basis that it plays a more important part within their friendships (McNelles and Connolly, 1999), and that inability to confide in friends could function as a stressor.

In fact, confiding in friends did not predict symptoms for either sex, when considered alongside aspects of communication with primary caregivers in multivariate analyses. This may be because communication with primary caregivers is more important in this age group, and/or because the most salient aspect of communication – inhibition – was measured on the questionnaire only in relation to confiding in them.

Examination of bivariate associations, however, showed some interesting gender differences. For boys only, confiding in friends was positively associated with anxiety, with those who 'never' talked about their feelings being least anxious. Conversely, among girls, those who 'sometimes' talked to friends about feelings were least symptomatic; those who 'never' did so scored significantly higher - on a par with those who 'nearly always' did. These results provide partial support for Hypothesis 2.6, suggesting that, while high levels of confiding in friends may imply co-rumination, or simply high levels of distress, for both sexes, for girls only, low as well as high levels of emotional intimacy in friendships are associated with greater anxiety.

Bivariate relationships between symptoms and interview ratings of confiding in friends were also gendered, to some extent. Among girls, scores on this more specific measure of confiding in friends about worries were associated with lower levels of somatic symptoms than more limited or 'dubious' confiding. It is possible that confiding in friends about worries was more salient to somatic symptoms, compared to the more general stage 1 measure, partly because interviewers explored not only whether children shared worries with friends, but also whether they kept worries from them. Effectively, this meant that the measure tapped inhibition as well as openness – and on the basis of findings around communication with mothers, inhibition was more important than openness, particularly for girls. That confiding in friends about worries was not associated with anxiety may reflect the counteracting tendencies for talk about worries to indicate having worries, but also lack of inhibition.

In short, bivariate relationships between confiding in friends and symptoms did show some differences by gender. Caution should be exercised in drawing firm conclusions on the basis of single item questionnaire and interview measures. At face value, however, it appears that confiding in friends about worries, and to some extent about feelings more broadly, is associated with more positive outcomes for girls than for boys.

8.2.7 Further demographic, family and child factors, and child symptoms

This section discusses relationships between child anxiety, somatic symptoms and further demographic or family factors which were explored within the study as additional predictors of child outcomes.

Child age (year group)

The finding that levels of anxiety and somatic symptoms decreased very slightly with age among 7-11 year olds was in line with patterns observed in previous research using the SCAS (Spence, 1998). Although there are no comparable published findings in relation to CSI scores, research including primary and secondary school pupils has also found higher levels of somatic symptoms among the former (Garber, Walker and Zeman, 1991).

Family form, income, employment and ethnicity

As outlined in Chapter 1, previous findings in relation to the effects of ethnicity and socio-economic status on child symptoms were mixed, partly but not wholly explicable by whether or not other factors were taken into account. Within the present study, multiple regression analyses demonstrated that parental employment, family form and ethnicity all made independent contributions to predicting child anxiety, and that parental employment also helped to predict somatic symptoms, even after controlling for levels of anxiety. These findings were based on the broad community sample involved in Stage 1 of the study, and were not replicated among the smaller and somewhat atypical group of those interviewed.

Family form was not found to be independently associated with symptoms, with the exception of the small group living in 'other' household arrangements (for example, with foster carers) – a category which made an independent contribution to predicting higher levels of anxiety. This is likely to reflect the difficult family circumstances which typically lead to children being removed from their natural parents. Of note, previous studies which have been able to take account of parental conflict as well as family form have found the former to be a stronger predictor of child symptoms than the latter (Troxel and Matthews, 2004); in the present study it was not feasible to seek information on the quality of parents' relationships using the Stage 1 questionnaire measures.

In relation to employment patterns, girls living with parents in full-time work reported significantly lower levels of anxiety and somatic symptoms than those in households without work, or with part-time work only. Although boys' anxiety scores tended to follow the same pattern, more weakly, their CSI scores did not. To some extent, this may reflect the slightly weaker association between anxiety and somatic symptoms among boys, compared to girls, whose scores on both measures ranged more widely. No previous studies appear to have reported gender differences in relationships between parental employment and children's internalising symptoms. However, McMunn *et al.* (2012) found that while maternal employment had a positive effect on children's socio-emotional wellbeing overall, the relationship between behavioural difficulties and maternal employment was significantly stronger for girls than for boys. It is conceivable that employment status is acting as a marker for poverty, and that girls are more sensitive than boys to stressors affecting low-income families.

Child report data clearly showed that being from a Black or Asian, as opposed to White, background was associated with higher anxiety scores on the SCAS - but only for girls. Previous studies have also reported higher rates of anxiety in Black and other ethnic minority groups compared to White children or adolescents (Hale *et al.*, 2005; Muris *et al.*, 2006; Varela *et al.*, 2004), although no existing research was identified which explored interactions of gender and ethnicity in this area. Of note, on the basis of parents' reports, girls of Asian, but not Black, heritage were rated as more anxious than those from White backgrounds. This may reflect variations in parents' own levels of anxiety, which were not explored at Stage 1 of the study, or cultural differences in the acceptability of reporting symptoms. Another tentative explanation is that of Putwain (2007). Whereas he attributed Black pupils' high test anxiety scores to typically low performance, he suggested that those of (typically high-achieving) Asian pupils related to parents' high expectations about behaviour or performance. It is plausible that such expectations may lead to more anxiety-provoking discussions at home, and consequently to Asian parents rating their children as more anxious than do others.

Primary caregivers' mental health

In the present study, neither depression nor anxiety in primary caregivers was associated with child anxiety or somatic symptoms, though moderate/severe depression in primary caregivers was associated with higher rates of depressive symptoms among boys. As noted previously, for boys, moderate or severe depression among primary caregivers was also associated with lower levels of communication, greater inhibition, and being subjected to inappropriate parental confiding. These findings are in accordance with existing evidence linking maternal disclosure with higher levels of depression among boys in adolescence, even controlling for other parent-child relationship factors (Lichtwarck-Aschoff *et al.*, 2012).

Associations between parental depression/anxiety and child anxiety might have been expected, given the existing evidence base implicating both genetic inheritance and parenting behaviour (Rapee, 2012). That there was no such link detected within the present study may reflect that primary caregivers in the current study who were depressed or anxious were only mildly so, exhibiting symptoms which did not strongly affect parenting. Although parents' scores on the Malaise Inventory - which taps physical symptoms alongside psychological distress - were positively associated with their reports of

child anxiety and somatic symptoms, they were not associated with children's self-reported symptoms. It is possible that parents' own symptoms may have biased their perceptions of children's, as has been found previously (Najman *et al.*, 2001).

Parent-child relationship warmth

Neither primary caregivers' expressed warmth towards children nor children's expressed warmth towards primary caregivers was associated with child anxiety or somatic symptoms, despite both symptoms and warmth being associated with patterns of communication. It is important to note that among those interviewed, levels of warmth were generally high; findings may have been different in a larger and more representative sample. However, parental warmth has consistently been found to play a weaker role than parental control in predicting child anxiety (McLeod, Wood and Weisz, 2007; Rapee, 2012; Rapee, 1997). The results of the present study also parallel previous findings with respect to externalising symptoms among adolescents: Stattin and Kerr (2000) found that disclosure explained twice as much variance in norm-breaking as did the quality of relationships with parents. As previous studies have found, children report different reasons for not confiding in parents (Yau, Tasopoulos-Chan and Smetana, 2009; Zeman and Garber, 1996). These may apply even when relationships are characterised by a high level of affection, as children may wish to protect their parents' feelings, or anticipate well-meaning but unhelpful reactions.

Parental relationship quality

Not unexpectedly, as few mothers reported high levels of conflict with their partners, parental relationship quality was unrelated to child-reported symptoms, though primary caregivers whose relationships were rated as strongest reported fewer somatic symptoms in their sons. As highlighted in Chapter 1, compared to other aspects of parental relationships, serious conflict or violence has been found to play a greater role with respect to children's internalising and externalising outcomes (Rapee, 2012).

Parental control and child autonomy/ influence within the family

In the present study, parental (over) control, rated during primary caregivers' *interviews*, predicted children's self-reported anxiety, over and above other factors. This is in line with

the large body of evidence associating parental control with anxiety in children (McLeod, Wood and Weisz, 2007; Rapee, 2012; Rapee, 1997). There was also a tendency for parental control to independently predicted somatic symptoms even after controlling for anxiety, but only for girls. This may reflect that the association between SCAS and CSI scores was weaker among girls than boys within the interview sample. Children's perceptions of limited autonomy were also associated with higher levels of anxiety, but did not contribute significantly to regression models which included maternal control, based on interviewer ratings of restrictive parenting behaviour.

Friendship (dis)satisfaction

Children's dissatisfaction with their friendships made a significant contribution to predicting their levels of anxiety, over and above other factors, though it was not associated with somatic symptoms within the interview sample. That problems with friends should be associated with anxiety is unsurprising, with Stage 1 questionnaires indicating that more than half of the broader sample reported stress related to 'friends or other children', with one in ten experiencing this 'often'. This is in line with previous research, as reviewed by Kingery *et al.* (2010), which has demonstrated that anxious children and adolescents tend to experience difficulties in various aspects of their peer relationships. It is likely that bidirectional or cyclical processes are implicated, for example, with anxious children withdrawing from social situations, losing confidence, failing to develop social competence and close relationships, and becoming more vulnerable to victimisation.

8.2.8 Communication and symptoms controlling for other factors

Associations between communication and somatic symptoms, controlling for anxiety

Hypothesis 3.1 *Controlling for anxiety, lower levels of communication would be associated with higher levels of somatic symptoms.*

Hypothesis 3.1 concerned the relationship between communication and somatic symptoms, controlling for anxiety, predicting that, in the absence of verbal expression, worries would be more likely to manifest in physical symptoms. Indeed, across the Stage 1 sample, partial correlations showed that, controlling for anxiety, aspects of self-reported

communication with primary caregivers – lower inhibition, greater caregiver responsiveness and more confiding of distress – were associated with lower levels of somatic symptoms. However, the amount of additional variance explained by communication, while statistically significant, was very limited.

It is important to highlight that, after controlling for anxiety, previously positive relationships apparent for boys between somatic symptoms and aspects of open communication - ‘sharing of news’ and ‘confiding in friends’ - became non-significant, and there was a newly significant and negative relationship between confiding of distress and anxiety. This suggests that any positive bivariate associations between openness and physical symptoms reflect the degree of anxiety children experience. These findings, like those of Jellesma *et al.*(2008), linking confiding in friends with higher levels of symptoms in boys, highlight the difficulties inherent in measuring the frequency of talk about worries or distress, as distinct from the frequency or intensity of those feelings *per se*, and the importance of taking the latter into account when evaluating the influence of the former. Of note, Rose *et al.* (2007) found that, even after controlling for initial anxiety, one very particular type of communication, co-rumination with friends, predicted increased anxiety, but only among girls. Plausibly, it was suggested that the nature of girls’ deliberation on problems served to maintain them, in a way that boys’ typically did not. However, it is also likely that at least some children who claim ‘never’ to communicate about worries tend not to have them very often; and that many of those who report ‘nearly always’ doing so have more experience to draw on.

When included in regression analyses alongside anxiety and other factors, confiding of distress did not independently predict somatic symptoms across the questionnaire sample, but inhibition and caregiver responsiveness did, for both girls and boys¹². This reinforces the earlier conclusion, based on bivariate analyses, that whether or not children feel able to confide in primary caregivers and to secure their attention is more important than the frequency of their communication.

¹² Although there was a tendency for confiding to predict lower levels of somatic symptoms among girls within the Stage 2 sample, after controlling for anxiety, this was based on interview ratings which took account of withholding information as well as levels of disclosure, and may therefore have been tapping inhibition.

No previous study has reported on associations between preadolescent communication with parents and somatic symptoms, controlling for levels of anxiety. These findings, however, are consistent with the theory that avoiding disclosure can have adverse physical effects; if children feel unable to talk about problems, or unsure that parents will listen, their distress may manifest as physical symptoms, and be communicated as such, while their emotions remain hidden. These results are also in line with the few relevant studies with adult samples, including those based entirely on self-report data (Finkenauer and Rime, 1998a), and those involving experimental designs (Gross and Levenson, 1997).

Associations between communication and symptoms, controlling for demographic factors

Hypothesis 3.2 *Low levels of communication would be associated with higher levels of child anxiety and somatic symptoms, controlling for demographic factors (age, gender, family form, ethnicity, employment status and income).*

Stage 1 regression analyses indicated that certain demographic factors did play a significant part in predicting child anxiety and/ or somatic symptoms; alongside gender, discussed separately, these included age, family form, ethnic background and parental employment status. In line with Hypothesis 3.2, however, aspects of communication also made independent – and more substantial – contributions to the respective models.

Even after controlling for demographic factors, lower levels of inhibition and higher levels of perceived caregiver responsiveness independently predicted lower levels of anxiety and somatic symptoms. As outlined in the previous section, confiding of distress predicted slightly higher scores on both the SCAS and CSI, and sharing of news also predicted higher levels of somatic symptoms, but after controlling for anxiety as well as demographic factors, the only aspects of communication to independently predict somatic symptoms within the broad community sample were inhibition and caregiver responsiveness.

Associations between communication and symptoms, controlling for further child and family factors

Hypothesis 3.3 *Low levels of communication would be associated with higher levels of child anxiety and somatic symptoms after controlling for warmth expressed by primary caregivers, their mental health, (over)control, and the quality of parental relationships.*

Hypothesis 3.4 *Low levels of communication would be associated with higher levels of child anxiety and somatic symptoms, after controlling for children's depressive symptoms, perceived autonomy/ influence, friendship satisfaction and expressed warmth towards mothers.*

A range of additional child and family factors were measured at interview: primary caregivers' warmth towards their children, their mental health and (over)control, and children's depressive symptoms, perceived autonomy/ influence, friendship satisfaction and expressed warmth towards primary caregivers. Among these factors, only parental control made an independent contribution to explaining both anxiety and somatic symptoms (among girls), while children's friendship (dis)satisfaction contributed to predicting anxiety alone.

After accounting for these factors, aspects of communication did independently predict both types of symptom among the interview sample, in the hypothesised directions. Levels of inhibition and perceived caregiver responsiveness contributed to explaining SCAS scores, as in the broader Stage 1 sample, while caregiver responsiveness predicted CSI scores, as did the interview measure of confiding in primary caregivers, among girls, after controlling for anxiety.

The nature of the interview sample places caveats on these conclusions, as associations between levels of anxiety and somatic symptoms were weaker than among the Stage 1 sample. Overall, however, findings from the second stage of the study reinforce and extend those from the broader schools sample. Specifically, they suggest that communication with primary caregivers plays a significant role in predicting levels of child anxiety and somatic symptoms, after taking into account a broad range of child and family factors. Moreover, it appears that the ability to confide in primary caregivers may contribute to explaining levels of somatic symptoms, after controlling for anxiety as well as other significant predictors, such as parental control, friendship problems and gender.

8.3 Significant new findings

The present study adds to existing knowledge about associations between children's communication patterns and levels of symptoms. It focuses on a relatively under researched area: differential associations between particular aspects of communication and symptoms in preadolescents.

In order to measure the desired aspects of communication, the study developed and tested a new scale for 7-11 year olds. This proved simple to complete, and psychometrically robust, showing acceptable internal and test-retest reliability. It behaved as expected, regarding relationships with other measures of communication, and had a factor structure consistent with findings from previous studies with adults and adolescents which have distinguished between inhibition (or withholding information) and open communication (for example, Finkenauer, Engels and Meeus, 2002; Larson and Chastain, 1990).

In the context of high levels of communication with primary caregivers, which were expected, the inclusion on the new scale of items tapping inhibition showed that fully two-thirds of 7-11 year olds reported finding it hard to tell their primary caregivers about things that bothered them, at least sometimes. For more than one in six, this was nearly always the case, with similar numbers saying they nearly always kept worries from their primary caregivers. In itself, this is noteworthy, and suggests that many children could benefit from more support to express their feelings at home, or elsewhere. This appears the case for both sexes; although girls reported higher levels of communication overall, they were in fact a little more likely than boys to report difficulty confiding in mothers and avoiding sharing their worries.

Previous research on parent-child communication and symptoms has tended to focus on adolescents rather than preadolescents (for example, Hartos and Power, 1997; Keijsers *et al.*, 2009; Kerr and Stattin, 2000; Muris *et al.*, 2001) and on externalising symptoms, depression or *either* anxiety or somatic symptoms (for example, Bumpus and Hill, 2008; Frijns *et al.*, 2005; Jellesma, Rieffe and Meerum Terwogt, 2008; Waller and Rose, 2010). This study appears to be the first to measure relationships between communication and somatic symptoms as well as anxiety, within a large preadolescent sample. The study showed that bivariate associations between communication and somatic symptoms broadly followed the same patterns as those between communication and anxiety, with

higher scores on both the SCAS and CSI moderately associated with inhibition, and more weakly linked to lower levels of caregiver responsiveness. These similarities could largely be explained by the strong association between anxiety and somatic symptoms across the sample.

By measuring associations between communication and somatic symptoms controlling for anxiety, this research tested the assumption underpinning a popular understanding of somatisation; that if not articulated in words, distress is more likely to manifest in physical symptoms. While results were slightly more nuanced, and the effects were weak, they broadly supported this hypothesis. Specifically, after taking into account levels of anxiety, inhibition around sharing worries with mothers and a perceived lack of caregiver responsiveness were independently associated with higher levels of somatic symptoms within a broad community sample. The proportion of additional variance explained was small, however.

Of note, while shared method variance may partly account for associations between child-report measures, child-reported inhibition also explained a small, but significant, degree of variance in parent reports of child somatic symptoms, even after controlling for parent reports of child anxiety.

Few studies have simultaneously considered gender differences in associations between child symptoms, communication and other family factors. This study established that aspects of communication with primary caregivers were associated with anxiety and somatic symptoms in children of both sexes, even after controlling for a broad range of relevant child and family factors. Within the questionnaire sample, these included child age, family form, parental employment, and ethnicity. Within the smaller interview sample, additional factors were considered, including household income, parental relationships, primary caregivers' mental health, parental control, warmth within the parent-child relationship, child depression and dissatisfaction with friendships.

There were, however, unanticipated gender differences in relation to bivariate associations between primary caregivers' symptoms and levels of child communication. It appeared that for boys, but not girls, anxiety and depression in primary caregivers were associated with lower levels of confiding and higher levels of inhibition, suggesting that in the presence of a depressed or anxious caregiver, boys are inhibited from sharing their worries. Assuming the

results are robust, they may reflect girls' relative readiness to empathise with (distressed) parents and engage in talk about problems. There were also gender differences in the effects of parental employment, with having parents in full-time work seemingly more protective for girls than boys. It would be important to replicate these findings within a larger and more representative sample than was involved in interviews for the present study.

Finally, by asking children about their symptoms and communication patterns, this study obtained measures from those best able to report on their experiences. However, through also involving primary caregivers, it was also possible to compare their perspectives, and obtain some additional findings relating to the links between the two. As might be expected, for children reporting higher levels of communication, there were stronger correlations between their own and their parents' reports of their anxiety. This was particularly the case for boys, for whom the overall discrepancy between child and parent reports was greater than for girls. This suggests that parents may normally be less aware of anxiety experienced by sons than daughters, due to boys' relatively low levels of confiding.

8.4 Suggestions for further research

For reasons explained earlier, this study has been confined largely to the study of children's communication with primary caregivers, and to a much lesser extent with their friends. Future studies could usefully explore relationships between symptoms and communication with fathers and mothers, separately, and compare these with those found in the present study. While feeling able to communicate with one parent may be important, whether that parent is their mother or father may be immaterial, and it is unclear whether inhibition with one parent presents problems, if children can be open with the other. Equally, ability to confide in two parents may offer additional benefits. There may also be gender differences; for instance, it may be that aspects of communication with fathers show stronger relationships with symptoms among boys.

More broadly, while the present study examined whether children kept worries from their primary caregivers, it did not consider whether they kept these to themselves entirely, or found alternative confidantes at home or elsewhere. This distinction could be tested in future, given that a close relationship with an adult outside the family is known to be protective, for example for children affected by parental conflict (Jenkins and Smith, 1990).

As it was only possible to touch lightly on communication with friends, this area could also be considered further, in order to test whether inhibition and friends' responsiveness show similar associations with child symptoms, and to thoroughly explore their relative importance for girls and boys.

As noted previously, whilst the new communication scale developed for the study had a number of important strengths and proved a useful measure, only limited piloting was possible. It is likely that it could benefit from further development and refinement, for example, to maximise the discriminant validity of each item. One potential modification, of particular relevance to relationships between communication and symptoms, would be to cover the propensity to share physical symptoms as distinct from emotions or 'news'. While the present study did not explore caregivers' responsiveness when children complain about feeling unwell, it would be interesting to compare perceptions of their willingness to listen in such situations, as opposed to when children are unhappy or anxious.

In light of the apparent significance of inhibition, as opposed to open communication, it would also be useful to further consider associations between children's symptoms, reasons for not confiding, and their difficulties in confiding about particular topics. This could potentially inform resources geared to supporting children in talking about their problems – and supporting their parents (and peers) as responsive listeners. Particularly in light of the significant role played by friendship (dis)satisfaction in predicting levels of anxiety, it is clear that exposure to stressors could account for additional variance in symptoms. In the present study, children were asked about the extent to which they had felt anxious about potential stressors, with clear overlap with the measure of anxiety. Future studies exploring connections between stressors, anxiety and confiding could attempt to isolate experience of potential stressors, such as moving home, falling out with friends, hearing parents argue, or struggling with schoolwork, from the level of stress they engender, and then examine whether 'secrecy' about particular experiences was associated with anxiety and somatic symptoms, over and above the effects of the stressors per se. One possible design for such a study would involve monitoring associations between communication and symptoms over time, among a group experiencing a common stressor such as the transition to secondary school.

An alternative, more qualitative, approach could yield further insights into communication patterns and experiences within families and their relationships with child symptoms. For

example, interviewers could (separately) record child and caregiver accounts of child communication and inhibition about different topics (including recent stressors). This could enable detailed comparisons of the narratives of high stress / high somatisation children, high stress/ low somatisation and low stress/ low somatisation children, in relation to their decision-making about, and experiences of, communication, or lack of communication with primary caregivers. It would enable comparisons of the accounts of boys and girls, and exploration of the extent to which caregivers are aware of factors affecting their children's confiding behaviour. (Whereas previous studies have observed parent-child communication during structured discussion tasks, and compared patterns for anxious and healthy children, the intention in this case would be to focus on child and parent perceptions and experiences of 'naturally occurring' communication.)

More broadly, longitudinal research could address limitations of the present study associated with its cross-sectional design. Results suggest that it is highly plausible that difficulty talking through worries with primary caregivers may heighten anxiety, and lead to reporting of higher levels of somatic symptoms than might be expected. However, as previously acknowledged, it is also very likely that anxiety creates, or exacerbates, communication problems, and that the two factors are mutually reinforcing. Accordingly, future studies could usefully explore the longitudinal and bi-directional associations between anxiety, somatic symptoms, and limitations on confiding – accompanied by more qualitative work on child and parent perceptions of these associations.

8.5 Conclusions

The present study addressed associations between child communication, anxiety and somatic symptoms, both in a large community sample, and in more depth with a smaller number of these families. It explored areas which have tended to be considered among adolescents, among 7-11 year olds, and developed a new measure tapping various aspects of communication, in order to consider their relative importance. It took account of a broad range of child and family factors, in order to better understand the role of communication in context.

In the opening chapter of this thesis, it was hypothesised that low levels of communication with primary caregivers may be associated with higher levels of anxiety and somatic symptoms in preadolescent children. Furthermore, it was proposed that children who are

able to communicate their worries may be less likely to translate anxiety into physical symptoms – even after controlling for other family factors known to be implicated. The results of the study provide some evidence in support of these hypotheses, but inhibition and perceptions of caregivers' responsiveness, rather than the level of open communication, showed the more substantive independent relationships with symptoms.

Notably, the aspects of communication which emerged as most important – inhibition, difficulty confiding, and primary caregivers' willingness to listen and explain – are particularly qualitative and relational, capturing negative experiences or perceived deficits. That these factors, rather than the overall quantity of communication, appear to count in relation to symptoms is not surprising, being in line with popular understandings of the need for 'quality time'. It also reinforces previous findings that, among adults, the quality of communication with partners and friends explains more variance in relational satisfaction than its extent (Emmers-Sommer, 2004), and that problematic communication or 'secrecy', as opposed to openness, predicts internalising as well as externalising symptoms in older child and adolescent samples (Finkenauer, Engels and Meeus, 2002; Frijns *et al.*, 2005). In attachment terms, the findings are consistent with the idea that, in middle childhood, ability to access a secure base, by way of a responsive carer, is more important than the frequency with which children actually seek their support (Kerns, Tomich and Kim, 2006).

Alongside aspects of communication, friendship dissatisfaction and parental control rather than expressed warmth made independent contributions to explaining symptoms. More broadly, therefore, results are also consistent with others' findings on family life and outcomes for children, where the variance appears to be carried by negativity, rather than positive aspects of the mother-child relationship (for example, Dunn *et al.*, 1998; Jenkins and Smith, 1991). Accordingly, in order to fully understand patterns of communication and their effects, it appears vital to measure limitations on confiding as well as levels of disclosure.

One aim of the present study was to examine gender differences in relationships between communication and symptoms. In line with existing evidence, girls did appear to communicate more with primary caregivers and friends than did boys, although they also reported higher levels of inhibition around confiding in primary caregivers. Overall, however, these differences were not large. Likewise, relationships between aspects of

communication and symptoms were very similar for boys and girls, particularly across the large community sample involved in Stage 1 of the study.

A further finding with implications for the measurement of communication and its effects was that there were weak positive relationships between open confiding, particularly about distress, and somatic symptoms, which disappeared when controlling for anxiety. The most plausible explanation for this is that children who experience the most intense anxiety feel the greatest need to confide in primary caregivers. It had been anticipated that questions which asked simply about the frequency of talk about worries would be influenced by the frequency of worry, but it seems clear that although items were phrased such as to avoid this, the severity of worry was a relevant factor. In retrospect, this is not surprising, and is perhaps unavoidable: as highlighted by Zeman and Garber (1996), whether or not children share their feelings depends partly on their intensity, and inconsequential or fleeting concerns may be quickly forgotten. As a finding, however, this reinforces the importance of taking levels of anxiety into account when interpreting associations between communication and somatic symptoms.

As emphasised throughout this chapter, it is not possible to determine the direction or causal nature of relationships between communication and symptoms, on the basis of cross-sectional research. Longitudinal studies could usefully extend the work begun here, to better understand the likely bi-directional relationships between symptoms and communication with primary caregivers, in the context of that with others. In particular, it is not yet clear whether openness with one person modifies the impact of inhibition with another. There is also scope for qualitative work to better understand the nature and causes of inhibition in this age group, and whether more can be done to support children to communicate about particular stressors.

Despite their limitations, the findings of this study reinforce existing evidence that it is desirable for children to feel able to confide in their parents about their worries, and to feel confident that they will listen attentively - not only to allay their fears and help them address problems, but also to minimise the risk of them expressing anxiety and distress through physical symptoms.

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Appendices

Appendix 1. Information sheets for schools

Information sheet for schools: Page 1 of 2



Leading education
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THOMAS CORAM RESEARCH UNIT
Institute of Education, University of London

Stress in children: the prevalence and patterning of somatic symptoms and anxiety in children

Research team: Professor Marjorie Smith, Katie Donovan, Jennifer Gibb and Louise Neil
Timescale: March 2008 to February 2010
Funder: Department of Health

Background

Most of the attention to children's behaviour in schools has been focussed on conduct disorders and other behaviours that are disruptive to the classroom or school environment. There has been little attention paid to children who are not disruptive to the rest of the class, but who are anxious or stressed, and who may report feelings of physical illness, such as headaches, stomach aches or feeling sick, when there is no discernable pathological reason for their symptoms. The lack of attention to these children in school is perhaps not surprising since they are often reported to be conscientious, sensitive, 'good' children, who are keen to succeed at school. At the same time there is evidence that increasing numbers of children are reporting that they feel stressed, and rates of physical symptoms such as headaches in children are increasing. The recently published first interim report from the Primary Review (2007) has identified that there was deep concern among community representatives, including parents and children themselves, about the 'pervasive anxiety' which now characterises children's lives. There is reason for concern, as anxious children or children with somatic symptoms are at increased risk of psychiatric problems in adulthood.

Aims

The aims of this major study are to investigate the prevalence and patterning of somatic and anxiety symptoms in children aged seven to eleven years (Key Stage 2); the association of these with events at home or at school that are stressful for children; and the strategies children use for coping with stress. The project aims to explore how anxious children differ from those with somatic symptoms. An anticipated longer term aim is to develop designs for potential intervention studies to reduce stress and somatic symptoms in primary aged children, to be delivered in community/school settings.

Methods

The study, which will involve a community population of children attending schools in or around London and their caregivers, is in two stages, as follows:

1. The first stage will involve questionnaires being completed by approximately 1500-2000 children and their caregivers. From this, a sample of not less than 140 children will be identified comprising children with differing levels of somatic and anxiety symptoms, including some with high levels.
2. The second stage will involve these children completing diaries of symptoms and stressors for an eight day period, after which they and their caregivers will be interviewed separately at home, to obtain information on family functioning and relationships at home, as well as on their physical health and well being. In addition, events or circumstances that may be stressful to children will be identified and their coping strategies will be explored.



There is increasing concern about children's levels of stress

Piloting has been undertaken in several schools in order to refine procedures and obtain feedback from teachers and children. A step-by-step outline of the process for schools is set out overleaf.

What would participation mean for your school?

1. Parents of Key Stage 2 children will be sent a letter from us explaining the research and providing them the opportunity to 'opt out' of the study. A4 posters describing the study will also be provided to schools for display on parent notice boards.
2. The research team will visit the school over a one or two day period, to be agreed with head teachers. During these visits, questionnaires will be administered to all Key Stage 2 children in class groups. Children in years 5 and 6 will normally complete questionnaires relatively unaided, while researchers will read questionnaires aloud to children in years 3 and 4, to aid comprehension. It may be helpful to have children seated in literacy groups. If there are teaching assistants available to lend a hand, additional support is always welcome! Administration of questionnaires will take a maximum of one hour per class.
3. During these visits, researchers will also provide teachers with questionnaire packs for children to take home for completion by caregivers. These packs will contain a short questionnaire and covering letter, together with a freepost envelope so that completed questionnaires may be returned direct to the research team.
4. Up to two reminders for parents who have not returned questionnaires will be delivered to the school, bundled into class groups, for distribution by class teachers.
5. A small number of families will be followed up to participate in the second stage of the research, involving diaries and interviews. Details of selected parents who have given consent for future contact will be sought from schools.
6. At the conclusion of the research, a brief report will be sent to participating schools.

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Appendix 2. Initial letter to parents



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Date XXXXX

Dear Parent / Carer,

XXXXXXXXXX School has kindly agreed to help us with a research study we are carrying out. We are writing to tell you about it and want to make sure you are happy for your child to take part, along with their class. The study, which is funded by the Department of Health, is finding out about the sorts of things children find stressful, and how they cope with them. We hope to learn from the study about how better to support children in future.

Who are we?

Thomas Coram Research Unit is part of the Institute of Education, at the University of London. We carry out research on the health and wellbeing of children, young people and families.

What will it involve for my child and me?

We will ask children to fill in a questionnaire in class. Children's names will not appear on the questionnaires and all the information we gather will be treated as confidential

After that we will ask you if you would be willing to fill in a questionnaire about your child, asking about the same sorts of things.

What do I do now?

Nothing - if you are happy for your child to take part in the study by filling in a questionnaire.

If, however, you don't want your child to take part, then please contact the school office at **DETAILS**, by DATE. If you have any questions about the study, you can also contact us at TCRU using the details at the top of this letter. We hope all children will be able to take part, as we would like to have as wide a range of responses as possible.

Thank you for your help.

Yours sincerely,

A handwritten signature in black ink that reads 'Marjorie Smith'.

Dr Marjorie Smith

Project Director

Appendix 3. First reminder letter to parents



Leading education
and social research
Institute of Education
University of London

Thomas Coram Research Unit
Institute of Education
27–28 Woburn Square
London WC1H 0AA
Tel +44 (0)20 7612 6957
www.ioe.ac.uk/tcr

DATE

Dear Parent / Carer,

You may remember that recently we wrote to you about our research on stress in children. You should have received a copy of our questionnaire which aims to find out about your child's health and wellbeing. We have received many completed forms. However, there are still some which have not been returned. If you have filled in the questionnaire and sent it back in the last few days - thank you very much - and please ignore the rest of this letter!

If not, we would be very grateful if you would take a few minutes to fill in and return the questionnaire. We need to have as many responses as we can, so that we can get a complete picture of the sorts of feelings and symptoms children experience when upset or worried about things, and how common they are. Even if your child has not recently experienced any of the symptoms described, we would still like you to fill in the questionnaire.

If you have lost the original questionnaire, please ring us on 020 7612 6967 and we will send you another copy and FREEPOST envelope*.

It will not cost you anything to return the questionnaire to us, so please do, and do not forget the free prize draw, which you can choose to enter.

With many thanks.

Yours sincerely,

A handwritten signature in black ink that reads 'Marjorie Smith'.

Dr Marjorie Smith

Project Director

Appendix 4. Second reminder letter to parents



Leading education
and social research
Institute of Education
University of London

Thomas Coram Research Unit
Institute of Education
27–28 Woburn Square
London WC1H 0AA
Tel +44 (0)20 7612 6957
www.ioe.ac.uk/tcru

DATE

Dear Parent

Research on Stress in Children

As I hope you know, we are conducting a research study which is aiming to find out better ways to help children cope with stress. You should have received a copy of our questionnaire, and a letter reminding you about it. If you have sent back your questionnaire already, thank you, the rest of this letter does not apply to you.

If you have not sent back the questionnaire we would be very grateful if you could take a few minutes to fill it in now. Do not forget that you can also choose to enter our free prize draw. We have included another questionnaire, with a FREEPOST envelope in case you did not get a copy or it has been lost.

While we have had many questionnaires back it is important for our research that we get as many responses as possible. This is so we can get as complete a picture as possible of children's experiences of stress and how they react to it. Most parents have been able to complete the questionnaire quickly and easily.

We would like to reassure you that what you say is completely confidential. The questionnaires are returned directly to us and no information from individual questionnaires will be given to the school or to anyone else. In fact, the questionnaire does not even have a name on it (only a number, so that we can match it with your child's). The only information we have is your child's name and class.

We believe this is an important study and that the results will help to improve the health and wellbeing of children. We hope that you think it is worth giving ten minutes of your time to answer the questions. We need your response. If, however, you do not want to complete the questionnaire, please could you return it to us in the FREEPOST envelope? It would be helpful if you could include a note saying why you do not want to take part. This will enable us to see whether we can improve the questionnaire for the future, and helps us to check the completeness of our study.

If you are not sure whether to complete it, or would like to talk to us about the study, please feel free to telephone.

With many thanks

Yours sincerely,

A handwritten signature in black ink that reads 'Marjorie Smith'.

Dr Marjorie Smith

Project Director

Appendix 5. Letters to parents at interview stage

Letter to parents at interview stage: Page 1 of 2



Leading education
and social research
Institute of Education
University of London

Thomas Coram Research Unit
Institute of Education
27–28 Woburn Square
London WC1H 0AA
Tel +44 (0)20 7612 6957
www.ioe.ac.uk/tcru

ADDRESS

DATE

Dear PARENT NAME,

You may remember that some time ago you and your child completed questionnaires on 'Stress in Children'. At that time, you also gave us permission to contact you regarding the next stage of our research which involves talking to some families. We have now moved into the second stage and are contacting families such as yours to ask if you would be willing to take part.

This is an important study, funded by the Department of Health, aiming to help children and families. We hope that you will be able to help us.

I would like to visit you at home to tell you more about the research. This will not take long, but will enable us to explain to you and CHILD NAME what your involvement would mean and allow you to ask any questions you might have. Can I suggest that I call to see you on DATE & TIME. If this date or time is not convenient to see you both could you please either telephone me on 020 7612 6967, email me (at j.gibb@ioe.ac.uk), or return the enclosed slip in the envelope provided, suggesting another time when it would be convenient for me to see you? There is no need to respond if it is convenient to see me on DATE. **Agreeing to this visit does not in any way commit you or CHILD NAME to taking part in any further research.**

If you do decide to take part all the information we collect will be confidential to the research team.

I look forward to seeing you on DATE. Thank you in advance for your help.

Yours sincerely,

Jen Gibb

Research Officer



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University of London

Thomas Coram Research Unit
Institute of Education
27-28 Woburn Square
London WC1H 0AA
Tel +44 (0)20 7612 6957
www.ioe.ac.uk/tcru

Stress in Children Study

NEW APPOINTMENT SLIP

Name: _____

Address: _____

Telephone number: _____

I would like to change the date of my visit to:

New date: _____

New time: _____

Appendix 6. Parent information leaflet

Parent information sheet: Cover

Thomas Coram Research Unit
Institute of Education
University of London
27/28 Woburn Square
London WC1H 0AA

telephone: 020 7612 6957 / 6967
email: m.smith@ioe.ac.uk; k.guy@ioe.ac.uk;
j.gibb@ioe.ac.uk; l.neil@ioe.ac.uk

STRESS IN CHILDREN STUDY

INFORMATION FOR PARENTS



Thank you for your interest in our project. This leaflet provides information about the study you have been asked to take part in, and answers some of the questions you and your family may have about the study.

TCRU
THOMAS CORAM RESEARCH UNIT
Stress in Children Study
Marjorie Smith, Katie Donovan, Jen Gibb and Louise Neil
Tel 020 7612 6946
Email m.smith@ioe.ac.uk

IOE LONDON
Leading education and social research
Institute of Education
University of London

Thomas Coram Research Unit
Institute of Education
27-28 Woburn Square
London WC1H 0AA
Tel +44 (0)20 7612 6957
www.ioe.ac.uk/ten

Parent information sheet: Inside pages

Who are we?

The research is being carried out by researchers from the **Thomas Coram Research Unit (TCRU)**. The members of the research team are Marjorie Smith, Katie Donovan, Jennifer Gibb and Louise Neil. The study is funded by the Department of Health.

The **Thomas Coram Research Unit** is part of the Institute of Education, University of London. The Unit carries out research related to children and young people in and outside their families. This includes care, education, health and social service settings.

What is the aim of the study?

The research aims to find out about the sorts of things that make children anxious, or sometimes to have physical symptoms like tummy aches or headaches, and how they cope with them. We hope to learn from the study about how better to support children in future.

How did we choose your family?

All children in Key Stage 2 were asked to fill in questionnaires and take forms home for their parents to return. In the second stage of the research, we hope to find out more from a small number of children and their parents, so we are inviting them to take part in a follow-up stage. We are inviting a wide range of families to take part, to include children with differing levels of anxiety and physical symptoms; and some with younger and some with older children. Altogether we hope to involve about 150 families across all the schools taking part.

What will you be asked to do, if you decide to take part?

Whether you decide to take part or not is entirely up to you and your child. When we visited you at home, we told you and your child about our research and asked if you wanted to take part. We also gave your child a short diary to fill in. If you are happy to take part, we will come back to interview you at the time we agreed.

During your interview, we would ask about family life and relationships, about health and well-being, and of course, about worries and coping with stress. We will ask your child about their point of view, including experience of stressful and enjoyable things at school, and what they think helps them to cope with difficulties. We will also collect their diary. This will normally take about an hour of your child's time – and nearer two hours talking to you. If you agree, we will also ask your child's teacher to fill in a short questionnaire.

Can I change my mind about taking part?

Yes, you can change your mind about taking part at any time.

Will the research be confidential?

Yes, absolutely. No one outside the research team will see any of the information you give us. We will ensure that you are not identified by name or in any other way. Any information we collect will be treated in accordance with the Data Protection Act and will be used only for research purposes.

What will happen to the results from the study?

If you choose to take part, your responses will be combined with those of other participating families and will appear in reports to the Department of Health, in published journal articles and as part of doctoral theses. We will also send you a newsletter to tell you about the results. We hope to suggest ways of improving support for children who are stressed.

How can you get hold of the research team?

If you want to get in touch with us you can telephone us at Thomas Coram Research Unit on 020 7612 6957 or 0207612 6967 (there is an answer phone outside working hours), or you can email or write to us at the addresses on the back of this sheet. We will always be happy to answer any questions.

Appendix 7. Children's information leaflet

Children's information sheet: Cover

We will keep our notes about what you say in a safe, locked place. If we use any of the words you say in our reports, we will change your name, so no one will know that it was you.

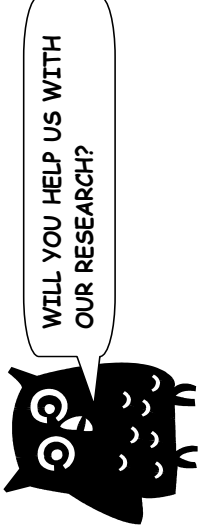
What will happen to the results from the study?
If you choose to take part, the things you tell us will be combined with information from other children and parents and will appear in reports and journal articles.

Will doing the research help me?
We hope you will enjoy helping us, and find it interesting, but our main aim is to write reports that will help other children and families in the future.

Who can I talk to if I have other questions?
We are always happy to answer any questions. There are telephone numbers and email addresses on the front of this sheet, or you can ask us when you see us.

Stress in Children Study

Information for Children




WILL YOU HELP US WITH OUR RESEARCH?


This leaflet gives some information about our project.

It is made up of a number of questions and answers about the research. We hope you will find it helpful as a reminder of the things we told you about during our visit.

If there is anything else you would like to know, please contact Marjorie, Jen, Katie or Louise in the project office.



THOMAS CORAM RESEARCH UNIT
Stress in Children Study
Marjorie Smith, Kaitie Quy, Jen Gibb and Louise Neil
Tel: 020 7612 6946
Email: m.smith@ioe.ac.uk



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Institute of Education
University of London

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www.ioe.ac.uk/teu

Thomas Coram Research Unit
Institute of Education, University of London
27/28 Woburn Square
London WC1H 0AA
020 7612 6957/6967
k.quy@ioe.ac.uk / j.gibb@ioe.ac.uk

Questions about the Project

Why is the research being done?

Talking to children about the kinds of things they find worrying or stressful, their physical symptoms, and how they cope with them, will help us to understand how children think and feel. This information will be useful to help us to find better ways to help children who are worried or stressed.

Who is doing the research?

The research is being done by Marjorie Smith, Jen Gibb, Katie Donovan and Louise Neil, who work at the Thomas Coram Research Unit. The Unit is part of the Institute of Education, University of London.
The Unit carries out research on children and young people, looking at their family lives, health and education. The Department of Health is paying for this project.

Why did you choose me to take part?

Do you remember that you completed our questionnaires in school along with the rest of your class? You also took one home for your mother (or father) to complete. We are now asking some children and their mothers if they would agree to talk to us to help us understand more about how children think and feel.

We will be talking to lots of different children - some who worry a lot, some who worry sometimes, and some who hardly ever feel worried. We will be talking to both boys and girls; some who are younger and some who are older - so being chosen is nothing to worry about!

Do I have to take part?

It is up to you to decide if you want to take part or not. Even if you say 'yes' to start with, you can still change your mind at any time.

What will happen if I take part?

When we first visited you at home, we talked to you about the research and asked you if you wanted to take part. We gave you a diary to fill in, telling us about things that happen to you and how you think and feel in different situations.

We will come to visit you again, and if you are happy to take part, we will ask you some questions about yourself. There are no right or wrong answers to these questions. We just want to know what you think.

While you are talking to us, you can tell us if you want to stop or have a break at any time. If there are any questions you do not want to answer, you can say so.

We will write down some of what you say, and take some notes while you are talking. The whole visit will take about an hour.

Who will know if I take part or what I have talked about?

If you decide to take part it is up to you who you tell. We will not tell anyone what you say to us, but you can tell other people about it if you want to.

(continued on back page)

Appendix 8. Disclosures procedure

Stress in Children Study

Thomas Coram Research Unit, Institute of Education,
27/28 Woburn Square, London WC1H 0AA

Plan of action for disclosures during interviews.

This is intended to cover situations where the interviewer is provided with, or becomes aware of information which raises concern about a child's welfare or safety, or is concerned about the welfare or situation of the parents. These two will be dealt with separately.

Concern about the child's safety or welfare.

The child's safety is of paramount importance. From a legal point of view information obtained in the interview is uncorroborated hearsay evidence, and there is no legal obligation to act on it. However it is the duty of the interviewer (in the same way as it would be the duty of a clinician, privy to the same information) to act on information that a child's safety may be endangered.

There are three steps which should be taken.

In the first instance: if you have a high level of concern, or your concern has a high level of certainty, discuss your concerns with the mother at the end of the interview. If the concern arises from information provided during the course of the interview with the child, tell the child of your concerns and your proposed plan of action. Say that you would like to raise it with the parent, and do so before leaving the house. In either case tell the mother what you think would be the appropriate plan of action and ask for her approval in instigating this. Tell her that you would like to contact the appropriate helping agency and request her permission to do so. In addition tell the parent that you will be informing [*] (*our designated medical cover*). For issues other than child protection, and if the plan does not involve the family doctor, tell the mother also that you would like to inform the family doctor of the proposed action.

An exception to this would be if you judged the child's safety to be further threatened if the parent was informed. If you think that this is the case, then do not say anything to the parent before leaving the house.

For low levels of concern or uncertainty (niggling anxieties or worries) do not say anything to the mother before leaving the house, but discuss with colleagues before taking any action.

Proceed to the second and third stages, whether or not the mother consents to your plan (in practice she usually will).

Secondly: Discuss your concerns and possible plan of action with colleagues - including any other members of the team who have had contact with or interviewed members of the

family, and Marjorie Smith (*study director*), and [*] (*our designated medical cover - who is a child psychiatrist*). If it is then decided to take any action, for all child protection issues - (1) the first contact should be with the duty officer at the Social Services Department (telephone number *) and (2) inform *the Community Paediatrician*. For issues other than child protection (1) inform *the Community Paediatrician* and (2) contact the child's GP. The exact plan of action will depend on the nature of the disclosure, but in most instances it will be a case of asking one or other of these persons to take the appropriate action. If not, make sure that the appropriate helping agency is informed, and the appropriate action instigated.

Finally: contact the mother, preferably by visiting (but by telephone, if visiting would delay contacting her), to tell her what action you have taken. If the mother has been told of your concerns, and there is after discussion a decision to take no action, the mother needs to be informed of this too.

Concerns about the parents' welfare or family situation

In practice most concerns that arise from interviews are not about the child's safety, or the topic under investigation, that is violence to children, but are about other social or medical/ psychiatric problems (such as depression or agoraphobia in a parent).

Here the chain of action and responsibility is basically the same, except that in the first instance instead of a request to take some action (i.e. "I would like to contact your doctor and tell him ...", it should be phrased as an offer to help (i.e. "Would you like me to contact your doctor..."). It will nearly always be the case that the mother accepts this offer, and this will facilitate the appropriate action being taken (as described in stages two and three above). However if the mother does not accept the offer to help, then the interviewer should still proceed through the second and third stages as described above.

It is the responsibility of the person to whom the disclosure is originally made to ensure that all stages of the appropriate action are carried out, according to these guidelines, and that a record is made of decisions made and any subsequent action taken. The implication of this is that if in the second stage decisions are made which do not actively involve the person to whom the original disclosure was made, then they should still be kept informed of all actions taken and their outcome.

Marjorie Smith

Thomas Coram Research Unit

Appendix 9. Parental (interview) consent form



THOMAS CORAM RESEARCH UNIT
Institute of Education, University of London

Stress in Children: research study

Consent Form

Name

I agree to take part in this research study, the purpose of which has been explained to me.

- I understand that the investigation is designed to increase knowledge, and does not have any diagnostic or therapeutic aims.
- I note that all information will be treated in the strictest confidence, and will be used only for research purposes (including PhD research).
- I have read the information sheet about the study and have had my questions about the study answered.
- I understand that I can withdraw from the research at any time.

Signed: Date:

Name of researcher: Date:

Appendix 10. Child questionnaire

Child questionnaire: Page 1 of 6



My Thoughts and Feelings



First tell us a bit about you!

I am a Girl / Boy I am years old.

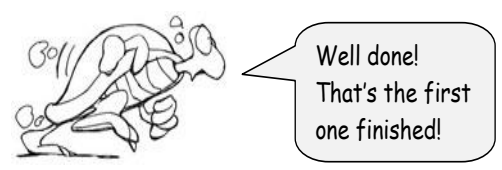
BELOW IS A LIST OF WAYS YOU MIGHT HAVE FELT OR ACTED RECENTLY.
PLEASE CIRCLE HOW *MUCH* YOU HAVE FELT THIS WAY DURING THE LAST TWO WEEKS.

1	I worried about things	Not at all	A little	Quite a bit	A lot
2	I was scared of the dark	Not at all	A little	Quite a bit	A lot
3	When I had a problem, I got a funny feeling in my tummy	Not at all	A little	Quite a bit	A lot
4	I felt afraid	Not at all	A little	Quite a bit	A lot
5	I felt afraid of being on my own at home	Not at all	A little	Quite a bit	A lot
6	I felt scared when I had to take a test	Not at all	A little	Quite a bit	A lot
7	I felt afraid if I had to use public toilets or bathrooms	Not at all	A little	Quite a bit	A lot
8	I worried about being away from my parents	Not at all	A little	Quite a bit	A lot
9	I felt afraid that I would make a fool of myself in front of people	Not at all	A little	Quite a bit	A lot
10	I worried that I would do badly at my school work	Not at all	A little	Quite a bit	A lot
11	Other children liked me	Not at all	A little	Quite a bit	A lot
12	I worried that something awful would happen to someone in my family	Not at all	A little	Quite a bit	A lot
13	I suddenly felt as if I couldn't breathe when there was no reason for this	Not at all	A little	Quite a bit	A lot
14	I had to keep checking that I had done things right (like the switch was off, or the door was locked)	Not at all	A little	Quite a bit	A lot
15	I felt scared if I had to sleep on my own	Not at all	A little	Quite a bit	A lot
16	I had trouble going to school in the mornings because I felt nervous or afraid	Not at all	A little	Quite a bit	A lot
17	I was good at sports	Not at all	A little	Quite a bit	A lot
18	I was scared of dogs	Not at all	A little	Quite a bit	A lot
19	I couldn't seem to get bad or silly thoughts out of my head	Not at all	A little	Quite a bit	A lot
20	When I had a problem, my heart beat really fast	Not at all	A little	Quite a bit	A lot
21	I suddenly started to tremble or shake when there was no reason for this	Not at all	A little	Quite a bit	A lot
22	I worried that something bad would happen to me	Not at all	A little	Quite a bit	A lot
23	I was scared of going to the doctors or dentists	Not at all	A little	Quite a bit	A lot

Child questionnaire: Page 2 of 6

**BELOW ARE SOME OTHER WAYS YOU MIGHT HAVE FELT OR ACTED RECENTLY.
PLEASE CIRCLE HOW MUCH YOU HAVE FELT THIS WAY DURING THE LAST TWO WEEKS.**

24	When I had a problem, I felt shaky	Not at all	A little	Quite a bit	A lot
25	I was scared of being in high places or lifts	Not at all	A little	Quite a bit	A lot
26	I was a good person	Not at all	A little	Quite a bit	A lot
27	I had to think of special thoughts to stop bad things from happening (like numbers or words)	Not at all	A little	Quite a bit	A lot
28	I felt scared if I had to travel in the car, or on a bus or a train	Not at all	A little	Quite a bit	A lot
29	I worried what other people thought of me	Not at all	A little	Quite a bit	A lot
30	I was afraid of being in crowded places	Not at all	A little	Quite a bit	A lot
31	I felt happy	Not at all	A little	Quite a bit	A lot
32	All of a sudden I felt really scared for no reason at all	Not at all	A little	Quite a bit	A lot
33	I was scared of insects or spiders	Not at all	A little	Quite a bit	A lot
34	I suddenly became dizzy or faint when there was no reason for this	Not at all	A little	Quite a bit	A lot
35	I felt afraid if I had to talk in front of my class	Not at all	A little	Quite a bit	A lot
36	My heart suddenly started to beat too quickly for no reason	Not at all	A little	Quite a bit	A lot
37	I suddenly got a scared feeling when there was nothing to be afraid of	Not at all	A little	Quite a bit	A lot
38	I liked myself	Not at all	A little	Quite a bit	A lot
39	I was afraid of being in small closed places, like tunnels or small rooms	Not at all	A little	Quite a bit	A lot
40	I had to do some things over and over again (like washing my hands, cleaning or putting things in a certain order)	Not at all	A little	Quite a bit	A lot
41	I was bothered by bad or silly thoughts or pictures in my mind	Not at all	A little	Quite a bit	A lot
42	I had to do some things in just the right way to stop bad things happening	Not at all	A little	Quite a bit	A lot
43	I was proud of my school work	Not at all	A little	Quite a bit	A lot
44	I felt scared if I had to stay away from home overnight	Not at all	A little	Quite a bit	A lot
45	Is there something else that you worry about? • If so, please write down what it is below: 	NO	YES		



Child questionnaire: Page 3 of 6

BELOW IS A LIST OF SYMPTOMS (OR FEELINGS) THAT CHILDREN SOMETIMES HAVE. PLEASE CIRCLE THE RESPONSE WHICH SHOWS HOW MUCH YOU WERE BOTHERED BY EACH ONE IN THE LAST TWO WEEKS.

1.	Headaches	Not at all	A little	Some	Quite a bit	A lot
2.	Feeling faint or dizzy	Not at all	A little	Some	Quite a bit	A lot
3.	Pain in your heart or chest	Not at all	A little	Some	Quite a bit	A lot
4.	Feeling low in energy or slowed down	Not at all	A little	Some	Quite a bit	A lot
5.	Sore muscles	Not at all	A little	Some	Quite a bit	A lot
6.	Trouble getting your breath (when you're not exercising)	Not at all	A little	Some	Quite a bit	A lot
7.	Suddenly feeling hot or cold for no reason	Not at all	A little	Some	Quite a bit	A lot
8.	Numbness or tingling in parts of your body	Not at all	A little	Some	Quite a bit	A lot
9.	Feeling weak in parts of your body	Not at all	A little	Some	Quite a bit	A lot
10.	Feeling tired	Not at all	A little	Some	Quite a bit	A lot
11.	Feeling like you might be sick or having an upset tummy	Not at all	A little	Some	Quite a bit	A lot
12.	Constipation (when it's hard to go to the toilet or poo)	Not at all	A little	Some	Quite a bit	A lot
13.	Loose (runny) poo or diarrhoea	Not at all	A little	Some	Quite a bit	A lot
14.	Pain in your stomach (tummy aches)	Not at all	A little	Some	Quite a bit	A lot
15.	Your heart beating too fast (when you're not exercising)	Not at all	A little	Some	Quite a bit	A lot
16.	Being sick or throwing up	Not at all	A little	Some	Quite a bit	A lot
17.	Food making you feel sick	Not at all	A little	Some	Quite a bit	A lot
18.	Pain in your arms or legs	Not at all	A little	Some	Quite a bit	A lot



Another one finished!

HOW HAS YOUR PHYSICAL HEALTH BEEN IN THE LAST TWO WEEKS?

(Please circle "No" or "Yes" for each one)

1.	I had a cold	No	Yes
2.	I had a tummy bug (diarrhoea or vomiting)	No	Yes
3.	I had a sore throat	No	Yes
4.	I had a cough	No	Yes
5.	I had an ear ache	No	Yes
6.	I had a high temperature (fever)	No	Yes
7.	I had asthma / eczema	No	Yes
8.	I was off school because I was ill	No	Yes
9.	I had to take some medicine because I was ill	No	Yes
10.	I went to the doctor	No	Yes



Child questionnaire: Page 5 of 6

WHAT KINDS OF THINGS MAKE YOU FEEL WORRIED, UPSET OR ANXIOUS?

Circle one answer for each line.

1	Friends or other children	Never	Sometimes	Often	
2	Schoolwork / lessons	Never	Sometimes	Often	
3	Tests and exams	Never	Sometimes	Often	
4	My mum and / or dad	Never	Sometimes	Often	
5	My brothers / sisters	Never	Sometimes	Often	I don't have brothers / sisters
6	Playing games or sports	Never	Sometimes	Often	
7	Things I see on TV	Never	Sometimes	Often	
8	Being by myself	Never	Sometimes	Often	
9	Break time	Never	Sometimes	Often	
10	Someone in my family being ill	Never	Sometimes	Often	

Is there anything else that makes you feel **worried, upset or anxious**? No / Yes - if so, what is it?

.....

EVERYONE FEELS DIFFERENT WHEN THEY ARE WORRIED OR UPSET. PLEASE LOOK AT THE SENTENCES BELOW, AND TELL US IF THEY ARE TRUE FOR YOU.

(Please circle 'No' or 'Yes' for each.)

When I am worried or upset:

1	I can usually do something to make things better	No	Yes
2	I can see the good side of things	No	Yes
3	I find it hard to stop thinking about it	No	Yes
4	I can change how I feel	No	Yes
5	I stay upset for several days	No	Yes
6	Getting angry helps me to feel better	No	Yes
7	I try not to think about it	No	Yes
8	There is nothing I can do about it	No	Yes
9	I can calm myself down	No	Yes
10	I try to think about how I can solve the problem	No	Yes
11	Sometimes I don't know why I'm upset	No	Yes

What helps you **most** to feel better, when you're **worried or upset**?

.....



HOW MUCH DO YOU TALK TO YOUR MUM? (OR THE PERSON WHO MOSTLY LOOKS AFTER YOU AT HOME) Circle one answer for each line.

1	I talk to my mum about my day at school	Never	Sometimes	Nearly Always
2	I find it hard to tell my mum about things that bother me	Never	Sometimes	Nearly Always
3	I tell my mum when something upsets me (like a nightmare, or if someone is nasty)	Never	Sometimes	Nearly Always
4	I talk to my mum about my friends	Never	Sometimes	Nearly Always
5	I tell my mum if I'm worried or anxious about something	Never	Sometimes	Nearly Always
6	I tell my mum about things that make me laugh	Never	Sometimes	Nearly Always
7	My mum listens to me if I need to talk about something	Never	Sometimes	Nearly Always
8	If my mum is cross with me, she tells me why	Never	Sometimes	Nearly Always
9	I have worries I don't tell my mum about	Never	Sometimes	Nearly Always
10	If I feel worried, it helps to talk about it with my mum	Never	Sometimes	Nearly Always
11	I talk to my friends about how I feel	Never	Sometimes	Nearly Always

WHAT KINDS OF THINGS MAKE YOU FEEL HAPPY? (Circle one answer for each line.)

1	Friends or other children	Never	Sometimes	Often	
2	Schoolwork / lessons	Never	Sometimes	Often	
3	TV or computer games	Never	Sometimes	Often	
4	My mum and / or dad	Never	Sometimes	Often	
5	My brothers / sisters	Never	Sometimes	Often	I don't have brothers / sisters
6	Playing games or sports	Never	Sometimes	Often	
7	Being by myself	Never	Sometimes	Often	
8	Break time	Never	Sometimes	Often	
9	My pets	Never	Sometimes	Often	I don't have pets

Finally, is there **anything else** that makes you feel **happy**? No / Yes

If so, what is it?

Phew, well done, you're finished!



Appendix 11. Piloting and development of measures

This appendix details the piloting and development work undertaken for Stages 1 and 2 of the research, as part of the broader Stress in Children (SiC) project. The focus here is on work relating to procedures and measures used in the present doctoral research.

Pilot work was conducted between September 2008 and March 2009, in order to:

- Pilot appropriate methods and measures for assessing anxiety, somatic symptoms and communication in children (for the first questionnaire stage of the study)
- Develop and pilot interview measures for the subsequent stages of the study
- Pilot research methods and communications (such as information sheets and letters to parents) for their acceptability to schools, children and/or parents.

Stage 1: Questionnaires

Piloting and development work for Stage 1 of the study was conducted in three schools in West London with the following aims:

- To assess the suitability of existing measures (SCAS and CSI) for the study
- To test and refine methods of administering questionnaires to class groups
- To develop and test new measures, including of communication
- To train researchers in group questionnaire administration
- To assess the impact of modifications to the SCAS and CSI.

Child Questionnaires

Measures of anxiety and somatic symptoms

Two existing questionnaires, selected following a review of the literature, were assessed for their potential suitability for the Stress in Children study. These were an Australian questionnaire on children's anxiety symptoms, the Spence Children's Anxiety Scale: SCAS (Spence, 1998); and an American measure of somatic symptoms, the Revised Children's Somatization Inventory: CSI-24 (Walker *et al.*, 2009).

The initial aims of pilot work in relation to the SCAS and CSI were to:

- Establish whether the questionnaires were suitable for the relevant age range
- Investigate whether the measures were comprehensible to children
- Ascertain the time taken to complete the questionnaires
- Check their acceptability to children and schools.

These checks were necessary as the proposed scales appeared not to have been used in the UK, with this age group. The SCAS was trialled in Australia on children aged 8 -13 years, but for the SiC study it was proposed to administer it to a slightly younger group - children aged 7 to 11 years. Piloting therefore tested whether children in Years 3 and 4 (7 - 8 years old) could complete the questionnaires in groups, if they were read aloud, and if they could be completed by Year 5 and 6 pupils (9-11 years old), largely unaided. As a result of initial piloting (in the first of three schools), the following changes were made:

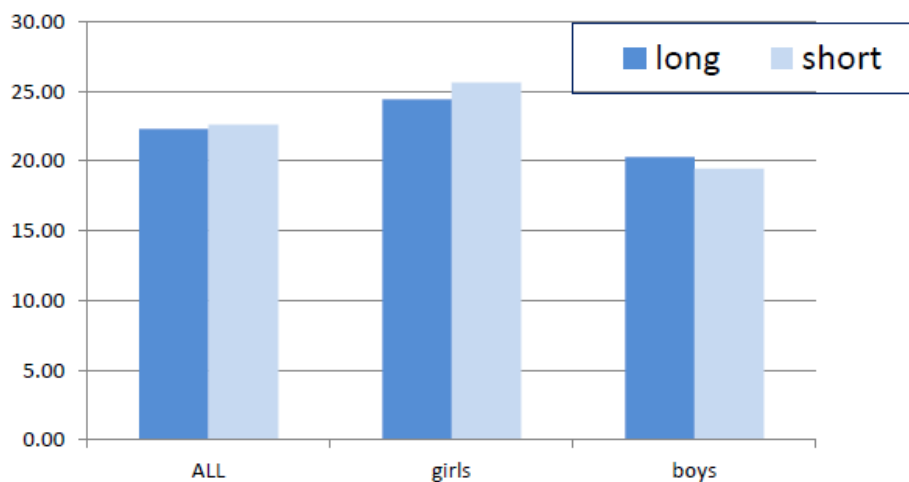
- Anglicisation of the wording of some of the questionnaire items
- Anglicisation of some of the response categories (for example, the CSI categories 3 and 4 were changed from “a lot”, and “a whole lot”, to “quite a bit” and “a lot”)
- Addition of a time limit (of the previous two weeks) for response to SCAS items, in order to match the time limit on the CSI, and thereby ensure that anxiety and somatic symptoms were assessed over the same time period
- Shortening of both scales: the SCAS from 44 items to 38, and the CSI-24 from 24 to 18 items, to reduce the overlap between the scales, and to remove the items least commonly scored in this age group.

The results from piloting in this first school suggested that the SCAS and CSI appeared ‘fit for purpose’, in that they could be completed by 7 to 11 year old children, and appeared to produce consistent and valid data across the age range (based on patterns of responses).

Adding a time scale to the SCAS did change the distribution of scores and the overall prevalence of symptoms, thereby reducing the comparability with other published data using this scale. For the SiC team, this drawback had to be balanced against the benefits of matching the timescales for the SCAS and CSI.

In a second pilot school, a systematic trial was conducted of the shortened versions of the questionnaires against the longer versions. This involved parallel administration of short and longer questionnaire forms in a two form entry school, with one of the parallel classes in each year group completing the longer versions and the other the shortened versions. Results of this exercise showed that, while shortening of the CSI from 24 to 18 items (by removing items rarely scored by children in the age group) was acceptable (see Figure A.11.(a) below), this did not apply to the SCAS, where shortening changed the nature and performance of the scale. Thus it was decided to continue with the 44 item SCAS.

Figure A.11 (a) CSI scores by pilot questionnaire version and gender



Piloting in a third (and final) school involved trialling three versions of the SCAS, with 228 children. This enabled estimating the impact of changes made to the scale. The three versions differed in the timeframe that was asked about (the previous two weeks, to match the CSI, or no timeframe), and in the response categories. The versions were:

- **Version 1:** The proposed version, with symptoms measured over the past 2 weeks, and category headings 'Not at all', 'A little', 'Quite a bit' and 'A lot'
- **Version 2:** A hybrid version, with symptoms measured over the past 2 weeks, and the original SCAS headings of 'Never', 'Sometimes', 'Often' and 'Always'
- **Version 3:** Spence's original version, with no timescale specified, and category headings of 'Never', 'Sometimes', 'Often' and 'Always'.

The reasons for doing this were (a) to enable calibrating SiC study results in the future against those using the (original) version of the SCAS; and (b) to enable systematic

estimation of the impact of imposing a two week timescale on scores. On the whole, the impact of the changes was as predicted. Slightly fewer (but not at all significantly so) children reported the symptoms with the timescale imposed, so there was a greater tendency to score 0 (not at all/never), and total scores were marginally lower overall (all analyses were conducted with and without three outliers who completed V2).

Table A.11 (a) Mean scores for different pilot versions of SCAS (with and without outliers)

	mean	sd	N (includes outliers)
V1 - Our proposed version (Past 2 weeks: Not at all, a little, quite a bit, a lot)	33.24	19.15	75
V2 - Hybrid version (Past 2 weeks: Never, Sometimes, Often, Always)	36.96	21.57	71
V3 - Spence version (Present tense: Never, Sometimes, Often, Always)	35.81	15.70	81

And without outliers:

	mean	sd	N (excludes outliers)
V1 - Our version (Past 2 weeks: Not at all, A little, Quite a bit, A lot)	33.24	19.15	75
V2 - Hybrid version (Past 2 weeks: Never, Sometimes, Often, Always)	34.25	17.53	68
V3 - Spence version (Present tense: Never, Sometimes, Often, Always)	35.81	15.70	81

Following comparisons of the distribution of responses on each version, it was decided to use Version 1, as it matched the CSI in timescale, and psychometrically appeared as good as, if not somewhat better than, the original scale for this age group.

Scale measure of communication

Chapter 4 sets out the rationale for developing the new measure of communication, its composition, and its psychometric properties. As noted in Chapter 4, four items originally included in the scale were replaced with others for the final version. Piloting did not indicate any problems in terms of children’s comprehension of the original items – set out in Table A.11 (b) below. Rather, it was decided to replace items which failed to discriminate sufficiently between children otherwise scoring high and low on communication, and to reduce overlap between items, whilst making room for two items on difficulty confiding and withholding of worries. (As noted in Chapter 4, the ongoing literature review had indicated the potential importance of avoidance of disclosure.)

Table A.11 (b) Communication scale: original version

1.	I talk to my mum about my day at school
2.	I tell my mum if something good happens at school
3.	I tell my mum when something upsets me (like a nightmare, or if someone is nasty)
4.	I talk to my mum about my friends
5.	If I'm worried or anxious about something, I tell my mum
6.	I tell my mum about things that make me laugh
7.	My mum understands how I feel
8.	If my mum is cross with me, she tells me why
9.	If I feel sad, I talk to my mum
10.	My mum explains things to me
11.	I talk to my friends about how I feel

In deciding which of the similarly-scored items to retain, other factors were considered. '*I tell my mum if something good happens at school*' was removed, while the broader school-focused item was retained, as it was thought a better indicator of routine communication. '*My mum understands how I feel*' was removed it was felt that, on reflection, this implied empathy but did not directly measure verbal communication. '*My mum explains things to me*' was judged too vague, whilst the similarly-scored item on explaining crossness allowed measuring communication of negative emotion. Likewise, '*If I feel sad, I talk to my mum*' was removed in favour of the more specific item on telling mothers about being upset.

When administering the revised scale, attention was paid to whether children – particularly the youngest - could understand and competently answer the 'negative' items on difficulty confiding, or withholding of worries. These appeared to cause no problems, based on researchers' observations of, and interaction with children and the feedback they provided. This was reinforced by examination of response patterns, as set out in Chapter 6 (Table 6.8) - as expected, far fewer children endorsed the negative items, and there appeared little risk that confusion or response pattern bias was affecting scores. Moreover, results of factor analysis (see Section 4.1.3) were in line with findings from previous studies, and the final scale had acceptable psychometric properties, with Cronbach's alpha of .72.

Additional questionnaire content and methods of administration

The 10-item measure of children's experience of specific stressors (described more fully in Section 4.1.4) appeared to work well, and no changes were made as a result of piloting.

Piloting also allowed testing of procedures for administration. As a result of incorporating a tear off cover sheet with the child's name, it proved relatively straightforward to distribute questionnaires to children, with their assistance and that of staff. Children appeared to like the cartoon faces included on these cover sheets, and the younger ones among them enjoyed colouring them in, after completing their questionnaires.

Parent Questionnaires

In the third pilot school, questionnaires were also sent home to parents of the children completing questionnaires in class. The piloted questionnaire for parents included a parallel version of the SCAS (SCAS-P) for completion by parents about their children, a parallel version of the 18-item CSI (P-CSI), demographic questions, and some additional items on the impact of child symptoms.

The parental response rate was low, with only just over a quarter of parents (29%) returning questionnaires, and half of these agreeing to further contact. Parents generally endorsed very few symptoms with respect to their children. Following discussion at a SiC project Advisory Group meeting, the parents' version of the SCAS was shortened to two factors (generalised anxiety and separation anxiety - comprising 12 items) and the impact questions were removed completely. In addition, following suggestions from Advisory Group members, and subsequent agreement from the Department of Health, it was decided to include incentives to encourage questionnaire return and agreement to further contact, within the main study. These incentives, which were mentioned at the end of the parents' questionnaire, took the form of a 'free prize draw' to which parents returning the questionnaire could opt into, and a small shopping voucher for families taking part in the second (interview) stage of the study.

The response rate received from parents with a simplified and shortened questionnaire (but before the incentives were introduced) was significantly higher than for the initial version, at 51.3%, with 54.7% of respondents (28.1% overall) agreeing to further contact.

Stage 2: Interviews

Pilot work for Stage 2 of the study was conducted with families from the third pilot school, who had completed and returned the parents' questionnaire, and agreed to further contact. The key aims of piloting at this stage were:

- To contribute to the training of interviewers
- To assess the acceptability of information sheets and interviews, overall, to children and parents
- To test and obtain feedback on newly developed parts of the interview.

As detailed in Chapter 3 (Section 3.4.2), interviewer training continued during the piloting phase. Each of the three researchers employed to work on the SiC study accompanied and shadowed the project director during introductory visits to families and interviews with both primary caregivers and children, and was in turn observed by the project director whilst interviewing. The visits, interviews, and coding judgements were subsequently discussed as a team.

The pilot introductory visits allowed gauging participants' reactions to information sheets and the prospect of taking part in the interviews, and checking whether they felt any important information was missing. The materials all proved satisfactory, and so only minor changes to formatting and design were made.

To a large extent, items or sections from previously used parent or child interviews, including those employed in studies led by the SiC study director, were incorporated into the interview schedules. This offered the dual advantages of potentially comparative data, and known reliability and validity. Both test-retest and inter-rater reliability of key measures had previously been assessed and found satisfactory (Jenkins, 1987; Jenkins and Smith, 1990; Jenkins and Smith, 1993; Jenkins, Smith and Graham, 1989). Some sections of the interview, however, were new, or revised, and required piloting. A number of minor revisions were made to sections relevant to the present study, including the addition of a question on internet access to the section on parental control, which appeared to work well alongside the existing content. For the most part, however, revisions concerned measures used only in the broader SiC study, and not employed in the present doctoral research.

As expected on the basis of the previous studies, those taking part in pilot interviews seemed to find the experience acceptable, even enjoyable. The ordering of sections appeared to work well, and it proved possible to cover all priority topics in sufficient depth within the timescales envisaged.

Appendix 12. Communication scale item correlation matrix

Table A.12 Communication scale item correlation matrix (N varies between 1882 – 2552)

	Talk about school	Hard to tell mum things (R)	Talk about upsets	Talk about friends	Talk about worries	Talk about funny things	Mum listens	Mum says why she is cross	Worries I don't tell mum (R)	Helps to talk about worries	Talk to friends re. feelings
School		.050*	.290**	.279**	.311**	.262**	.304**	.221**	.033	.320**	.150**
Hard to tell (R)	.050*		.028	-.005	.074**	.022	.089**	-.002	.377**	.050*	-.036
Upsets	.290**	.028		.281**	.446**	.281**	.280**	.253**	.061**	.430**	.175**
About friends	.279**	-.005	.281**		.305**	.264**	.177**	.199**	.038	.279**	.213**
Worries	.311**	.074**	.446**	.305**		.235**	.280**	.254**	.090**	.439**	.176**
Funny things	.262**	.022	.281**	.264**	.235**		.247**	.232**	.036	.292**	.224**
Mum listens	.304**	.089**	.280**	.177**	.280**	.247**		.305**	.067**	.352**	.102**
Mum says why she is cross	.221**	-.002	.253**	.199**	.254**	.232**	.305**		-.012	.283**	.147**
Worries I don't tell mum (R)	.033	.377**	.061**	.038	.090**	.036	.067**	-.012		.103**	-.047*
Helps to talk about worries	.320**	.050*	.430**	.279**	.439**	.292**	.352**	.283**	.103**		.184**
Talk to friends about feelings	.150**	-.036	.175**	.213**	.176**	.224**	.102**	.147**	-.047*	.184**	

** . Correlation is significant at the 0.01 level (2-tailed). * . Correlation is significant at the 0.05 level (2-tailed).

Appendix 13. Communication scale factor and subscale correlation matrix



Table A.13 Communication scale factor and subscale correlation matrix

	Open communication	Inhibition / limited confiding	Confiding of distress	Caregiver responsiveness	Sharing of news	Confiding in friends
Open communication	1.000	.069**	.844**	.691**	.815**	.474**
Inhibition / limited confiding	.069**	1.000	.101**	.045	.050*	-.045
Confiding of distress	.844**	.101**	1.000	.446**	.510**	.224**
Caregiver responsiveness	.691**	.045	.446**	1.000	.400**	.172**
Sharing of news	.815**	.050*	.510**	.400**	1.000	.276**
Confiding in friends	.474**	-.045	.224**	.172**	.276**	1.000

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Appendix 14. Parent questionnaire

Parent questionnaire: Page 1 of 5

 <p>THOMAS CORAM RESEARCH UNIT</p>	ID number:
<h1>Stress in Children</h1>	
<p>This questionnaire is part of a research study aimed at finding out the sorts of things that make children feel stressed and how they cope with them. In order to carry out this research, we need to collect information on how children think and feel, and the different things that worry them.</p>	
<p><i>Please tell us about the child who brought this questionnaire home. Please fill in a separate questionnaire for each child who brings one home</i></p>	
<p>My child is a... <input type="checkbox"/> girl <input type="checkbox"/> boy (please tick one box)</p>	
<p>Her / his date of birth is: (day) (month) (year)</p>	
<p>What is your relationship to this child? (for example, mother)</p>	
<p>I am this child's:</p>	
<p>Today's date is:</p>	
	<p>Everything you tell us will be <u>COMPLETELY CONFIDENTIAL</u> and will only be used for research purposes - it will not be disclosed to anyone else.</p>

Parent questionnaire: Page 2 of 5

Firstly, we would like to ask you some questions about the sorts of things that make your child feel worried. Below is a list of items that describe children. For each item please circle the response that best applied to your child during the last two weeks. Please answer all the items.

1	My child worried about things	Not at all	A little	Quite a bit	A lot
2	When my child had a problem, s(he) complained of having a funny feeling in her / his stomach	Not at all	A little	Quite a bit	A lot
3	My child complained of feeling afraid	Not at all	A little	Quite a bit	A lot
4	My child felt afraid of being on her/his own at home	Not at all	A little	Quite a bit	A lot
5	My child worried about being away from us / me	Not at all	A little	Quite a bit	A lot
6	My child worried that something awful would happen to someone in our family	Not at all	A little	Quite a bit	A lot
7	My child was scared if (s)he had to sleep on her/his own	Not at all	A little	Quite a bit	A lot
8	My child had trouble going to school in the mornings because (s)he felt nervous or afraid	Not at all	A little	Quite a bit	A lot
9	When my child had a problem, s(he) complained of her/his heart beating really fast	Not at all	A little	Quite a bit	A lot
10	My child worried that something bad would happen to her/him	Not at all	A little	Quite a bit	A lot
11	When my child had a problem, (s)he felt shaky	Not at all	A little	Quite a bit	A lot
12	My child felt scared if (s)he had to stay away from home overnight	Not at all	A little	Quite a bit	A lot
13	<p>Is there anything else that makes your child worried or anxious?</p> <p><u>If yes</u>, what is it?</p> <p>.....</p>	No	Yes		

Now we would like to ask you about your child's physical symptoms. Below is a list of symptoms (or feelings) that children sometimes have. Please choose the response which shows how much your child was bothered by each one in the last two weeks.

1.	Headaches	Not at all	A little	Some	Quite a bit	A lot
2.	Feeling faint or dizzy	Not at all	A little	Some	Quite a bit	A lot
3.	Pain in the heart or chest	Not at all	A little	Some	Quite a bit	A lot
4.	Feeling low in energy or slowed down	Not at all	A little	Some	Quite a bit	A lot
5.	Sore muscles	Not at all	A little	Some	Quite a bit	A lot
6.	Trouble getting breath (when not exercising)	Not at all	A little	Some	Quite a bit	A lot
7.	Suddenly feeling hot or cold for no reason	Not at all	A little	Some	Quite a bit	A lot
8.	Numbness or tingling in parts of the body	Not at all	A little	Some	Quite a bit	A lot
9.	Feeling weak in parts of the body	Not at all	A little	Some	Quite a bit	A lot
10.	Feeling tired	Not at all	A little	Some	Quite a bit	A lot
11.	Feeling like they might be sick, or having an upset tummy	Not at all	A little	Some	Quite a bit	A lot
12.	Constipation	Not at all	A little	Some	Quite a bit	A lot
13.	Loose bowel movements or diarrhoea	Not at all	A little	Some	Quite a bit	A lot
14.	Pain in tummy (tummy aches)	Not at all	A little	Some	Quite a bit	A lot
15.	Heart beating too fast (when not exercising)	Not at all	A little	Some	Quite a bit	A lot
16.	Being sick or throwing up	Not at all	A little	Some	Quite a bit	A lot
17.	Food making them feel sick	Not at all	A little	Some	Quite a bit	A lot
18.	Pain in arms or legs	Not at all	A little	Some	Quite a bit	A lot

Next, we would like to ask you about your child's background and general health and wellbeing.

1. Which of the following describes your child's general health at the moment? Please tick one of the following:

Good Some problems Poor Major health problems

2. Approximately how many times in the past TWELVE MONTHS has your child seen their GP?

None 1 – 5 times 6 – 10 times More than 10 times

3. Approximately how many days was your child absent from school in the last FULL TERM? (for whatever reason)

None 1 – 5 days 6 – 10 days More than 10 days

4. Does your child suffer from any chronic or recurrent health problems? (e.g. asthma, eczema, epilepsy)

No Yes If yes, what?

If yes, does this involve...? Please tick one:

No medication or treatment Occasional medication or treatment Daily medication or treatment

HEALTH & WELLBEING continued.

5. Has your child been to see any of the following health professionals? Please tick those which apply to your child.
None Psychologist /psychiatrist Other specialist Other health professional
6. How well do you think that this child is doing at school?
Very well No problems Some problems Significant problems

BACKGROUND INFORMATION

1. How many children under 18 including this child live in the home?
2. Is this child (please tick one): The oldest / only child Middle child Youngest child
3. Does your child live with:
Both parents One parent One parent + partner (stepfamily) Other
4. How many full time wage earners are there in the household?
Two (or more) One Part time only None
- 5a. Please tick the box which best describes your child's ethnic group:
White British/White other Asian/Asian British Black/Black British Chinese
Mixed (please give details) Other (please give details):
- 5b. Was this child born in the UK? Yes No
- 5c. What is the main language spoken in your child's home?

FREE PRIZE DRAW

Please **tick here** if you would like to be entered into our free Prize Draw to win a prize to the value of £150

FUTURE CONTACT

- At a later stage we will be asking a small number of parents if they would be willing to talk to us about the sorts of things that make their child feel stressed, and what helps them to cope.
- There will be a small gift voucher for each family involved at that stage, in recognition of their time and assistance.
- If you are chosen, we would like to contact you to give you some more information about the research so that you can decide whether you would like to take part. Would this be all right?

YES NO (please tick one)

Ticking YES does not mean you are agreeing to take part.

ANY COMMENTS ?

Please write any comments you have about the questionnaire below:



THANK YOU VERY MUCH FOR YOUR HELP

PLEASE RETURN THIS QUESTIONNAIRE IN THE FREEPOST ENVELOPE PROVIDED

If you have any questions, or would like to speak to a member of the research team, you can contact us:

Research team: Marjorie Smith, Katie Donovan. Louise Neil and Jen Gibb

Stress in Children Study

Thomas Coram Research Unit

Institute of Education, University of London

27/28 Woburn Square

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Appendix 15. Anxiety and somatic symptoms by family form

Table A.15 SCAS and CSI by family form: Descriptive statistics and Anova results

		Two parent	One parent	Stepfamily	Other	df1	df2	F	p	η^2
SCAS	Mean	27.73	32.47	29.22	38.10	3	73.01	5.76	.001	.02
	SD	17.05	19.32	18.53	21.42					
	N	997	275	65	20					
CSI	Mean	16.94	19.13	19.03	23.05	3	1355.00	3.59	.013	.01
	SD	23.48	13.26	15.00	18.81					
	N	997	278	65	19					
SCAS-P	Mean	4.71	6.83	5.20	7.11	3	71.03	11.75	<.001	.03
	SD	4.60	5.62	5.06	5.70					
	N	990	279	65	19					
P-CSI	Mean	5.37	6.77	6.71	6.75	3	1350	3.04	.009	.01
	SD	6.72	6.62	5.98	7.83					
	N	989	280	65	20					

Appendix 16. Anxiety and somatic symptoms by family form by gender

Table A.16 SCAS(-P) and (P) CSI scores by family form by gender: Descriptive statistics and Anova results:

			Two parent	One parent	Stepfamily	Other	df1	df2	F	p	η^2
Girls	SCAS	Mean	32.06	37.37	30.77	53.00	3	664	6.39	<.001	.03
		SD	18.45	19.48	20.48	22.33					
		N	482	142	35	9					
	CSI	Mean	18.29	20.83	20.54	33.44	3	666	4.89	.002	.02
		SD	13.05	14.12	14.56	20.86					
		N	482	144	35	9					
	SCAS-P	Mean	5.08	7.07	5.69	8.50	3	662	6.36	<.001	.03
		SD	4.90	5.80	5.62	6.05					
		N	479	144	35	8					
	P-CSI	Mean	5.71	7.41	6.86	9.11	3	663	3.04	.03	.01
		SD	6.64	7.01	6.54	10.08					
		N	478	145	35	9					
Boys	SCAS	Mean	23.68	27.25	27.40	25.91	3	685	2.33	.07	.01
		SD	14.53	17.79	16.12	10.47					
		N	515	133	30	11					
	CSI	Mean	15.68	17.31	17.27	13.70	3	685	.89	.45	<.01
		SD	11.80	12.06	15.56	10.74					
		N	515	134	30	10					
	SCAS-P	Mean	4.37	6.58	4.63	6.09	3	683	8.72	<.001	.04
		SD	4.27	5.42	4.33	5.50					
		N	511	135	30	11					
	P-CSI	Mean	5.04	6.07	6.53	4.82	3	683	1.26	.29	.01
		SD	6.79	6.13	5.34	5.10					
		N	511	135	30	11					

Appendix 17. Anxiety and somatic symptoms by ethnic background

Table A.17 SCAS and CSI by ethnic background: Descriptive statistics and Anova results

		White	Asian	Black	Chinese	Mixed	Other	df1	df2	F	p	η^2
SCAS	Mean	28.16	29.41	33.87	30.44	26.20	33.56	5	1341	3.99	.001	.02
	SD	17.32	18.29	19.40	18.00	17.47	15.96					
	N	895	114	161	18	123	36					
CSI	Mean	17.38	17.01	19.54	16.00	16.63	20.14	5	1343	1.30	.261	.01
	SD	12.46	12.17	15.10	11.58	13.69	13.01					
	N	898	114	160	18	123	36					
SCAS-P	Mean	4.92	6.61	5.83	6.61	4.55	6.71	5	1337	4.36	.001	.02
	SD	4.59	6.14	5.31	6.67	4.80	5.97					
	N	893	113	161	18	124	34					
P-CSI	Mean	5.50	6.35	6.53	4.50	5.94	6.97	5	1338	1.23	.291	.01
	SD	6.08	8.72	7.54	4.22	7.11	9.84					
	N	892	113	162	18	124	35					

Appendix 18. Anxiety and somatic symptoms by household earners

Table A.18 SCAS(P) and (P)CSI by household earners: Descriptive statistics and ANOVA results

		Two (or more)	One full-time	Part-time only	No earners	df1	df2	F	p	η^2
SCAS	Mean	27.23 ^a	28.43 ^{ab}	32.34 ^{bc}	33.06 ^c	3	1344.00	5.52	.001	.01
	SD	17.52	17.47	18.79	18.75					
	N	353	724	109	162					
CSI	Mean	16.54 ^a	16.96 ^{ab}	20.45 ^b	20.70 ^b	3	328.27	5.28	.001	.01
	SD	12.32	12.32	15.04	14.16					
	N	353	727	106	164					
SCAS-P	Mean	4.47 ^a	4.96 ^{ab}	6.12 ^{bc}	7.11 ^c	3	336.62	10.45	<.001	.03
	SD	4.25	4.82	5.12	5.90					
	N	350	722	109	163					
P-CSI	Mean	4.70 ^a	5.68 ^{ab}	7.60 ^b	7.04 ^b	3	326.93	6.44	<.001	.02
	SD	5.87	6.35	9.09	7.65					
	N	350	722	108	165					

Note: Means without a common subscript differ significantly at $p < .05$

Appendix 19. Gender differences in communication by item

Table A.19 Gender differences in communication by item

Item		Girls	Boys	<i>t</i>	Sig.	Cohen's <i>d</i>
Talk about my day at school	Mean (SD)	1.41 (.64)	1.33 (.65)	3.10	.002	.12
	N	1264	1288			
Hard to tell mum about things	Mean (SD)	.90 (.70)	.80 (.70)	3.10	.002	.14
	N	938	977			
Tell mum when upset	Mean (SD)	1.40 (.70)	1.16 (.76)	8.43	< .001	.33
	N	1256	1280			
Talk to mum about my friends	Mean (SD)	1.26 (.66)	1.10 (.68)	5.89	< .001	.24
	N	1255	1277			
Tell mum if worried or anxious	Mean (SD)	1.22 (.71)	1.06 (.73)	5.72	< .001	.22
	N	1249	1276			
Tell mum about funny things	Mean (SD)	1.42 (.67)	1.27 (.73)	5.48	< .001	.22
	N	1254	1274			
Mum listens if I need to talk	Mean (SD)	1.57 (.61)	1.59 (.61)	-.84	.401	.02
	N	933	972			
If cross, mum explains why	Mean (SD)	1.31 (.73)	1.28 (.74)	.92	.355	.04
	N	1254	1271			
I have worries I don't tell mum	Mean (SD)	.82 (.72)	.75 (.70)	2.16	.031	.10
	N	928	968			
It helps to talk about worries	Mean (SD)	1.26 (.73)	1.12 (.75)	3.10	.002	.19
	N	932	979			
Talk to friends about how I feel	Mean (SD)	1.03 (.72)	.80 (.71)	8.11	< .001	.32
	N	1261	1282			

Appendix 20. Distribution of responses to communication items by gender

Table A.20 Distribution of responses to communication items by gender

Item	Girls			Boys		
	Never (%)	Sometimes (%)	Nearly Always (%)	Never (%)	Sometimes (%)	Nearly Always (%)
Talk about my day at school	8.62	42.01	49.37	9.78	47.59	42.62
Hard to tell mum about things	30.17	49.79	20.04	36.54	46.98	16.48
Talk about upsets	12.42	34.79	52.79	22.34	39.45	38.20
Talk about friends	12.11	50.20	37.69	18.87	52.39	28.74
Talk about worries	16.81	44.36	38.83	24.14	46.16	29.70
Talk about funny things	9.97	37.88	52.15	16.48	40.03	43.49
Mum listens if I need to talk	6.22	30.65	63.13	6.48	27.78	65.74
Mum tells me why she is cross	15.63	37.56	46.81	17.23	37.06	45.71
Worries I don't tell mum about	36.42	45.37	18.21	39.98	45.25	14.77
Helps to talk about worries	16.85	40.02	43.13	22.47	43.21	34.32
Talk to friends about how I feel	24.50	48.45	27.04	37.52	45.40	17.08

Appendix 21. Communication scale inter-item correlations by gender

Table A.21 Communication item correlation matrix showing coefficients for girls (above the diagonal) and boys (below)

		1	2	3	4	5	6	7	8	9	10	11
1	Talk about school		-.14**	.32**	.28**	.34**	.26**	.32**	.21**	-.09**	.34**	.13**
2	Hard to tell mum things (R)	.03		-.10**	-.01	-.14**	-.10**	-.12**	-.00	.39**	-.15**	.01
3	Talk about upsets	.29**	-.00		.28**	.39**	.24**	.26**	.20**	-.15**	.39**	.10**
4	Talk about friends	.28**	.01	.27**		.30**	.25**	.15**	.22**	-.09**	.25**	.17**
5	Talk about worries	.27**	-.02	.43**	.31**		.23**	.28**	.26**	-.18**	.42**	.15**
6	Talk about funny things	.29**	.02	.31**	.28**	.25**		.22**	.22**	-.09**	.28**	.20**
7	Mum listens if I need to talk	.29**	-.05	.32**	.20**	.30**	.28**		.31**	-.11**	.35**	.07*
8	Mum explains why she is cross	.24**	.01	.26**	.18**	.25**	.24**	.30**		-.03	.27**	.20**
9	Worries I don't tell mum (R)	.02	.34**	.01	.01	-.01	.01	-.02	.06		-.19**	.02
10	Helps to talk about worries	.29**	.02	.45**	.28**	.44**	.30**	.37**	.30**	-.01		.17**
11	Talk to friends about feelings	.18**	.03	.19**	.22**	.17**	.21**	.16**	.14**	.06	.18**	

* Significant at $p < .05$; ** $p < .01$ *** $p < .001$. N varies between 915 – 1264.

Appendix 22. Correlations between communication and symptoms by gender

Table A.22 Correlations between communication scores and symptoms by gender

		SCAS		CSI		SCAS-P		P-CSI	
		Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys
Total communication	r	-.08**	.01	-.08**	-.07*	.02	-.07	-.03	-.05
	N	1245	1270	1248	1269	659	677	660	676
Communication with mother	r	-.09**	-.01	-.08**	-.09**	.03	-.07	-.03	-.05
	N	1247	1273	1250	1271	659	678	660	677
Open communication	r	-.01	.08**	-.02	-.01	.02	-.06	-.01	-.02
	N	1245	1269	1248	1268	659	676	660	675
Inhibition/ limited confiding	r	-.34***	-.32***	-.30***	-.33***	.01	-.06	-.10*	-.12**
	N	922	960	924	959	487	523	487	524
Confiding of distress	r	.01	.13***	-.03	.02	.10*	-.01	-.03	.05
	N	911	965	912	964	479	525	479	526
Caregiver responsiveness	r	-.13***	-.10**	-.17***	-.15***	-.03	-.08	-.08	-.09
	N	925	957	927	956	489	523	489	524
Sharing of news	r	.02	.08**	.03	.03	.01	-.06	<.01	-.03
	N	1243	1264	1245	1262	658	671	659	670
Confiding in friends	r	.01	.09**	.01	.05	-.07	-.03	-.01	<-.01
	N	1257	1280	1260	1279	666	681	667	680

* Correlations significant at $p < .05$; ** significant at $p < .01$; *** significant at $p < .001$

Appendix 23. Relationships between communication and stress(ors)

Communication and total stressor scores

Total stressor scores were moderately associated with the reverse-scored inhibition factor ($r = -.36$), indicating that greater inhibition was associated with more frequent stress. As shown in Table 6.16, this relationship held for boys and girls, though it was slightly stronger among the latter, as was that between stressor scores and perceived caregiver responsiveness. This may partly reflect girls' higher scores on the respective measures.

In contrast, a weak positive relationship with open communication across the sample was not apparent for girls, reflecting that for boys only, positive associations between total stressor scores and 'confiding of distress', 'sharing news' and 'confiding in friends' reached significance. As a result, for girls but not boys, there were significant – but not substantial – negative relationships between stressor scores and overall levels of communication.

Table A.23 Correlations between stressor scores and communication scores by gender

	Girls		Boys		Total	
	r	N	r	N	r	N
Total communication	-.10 ^{***}	1247	<-.01	1266	-.02	2513
Communication with mother	-.11 ^{***}	1249	-.02	1269	-.03	2518
Open Communication	-.02	1247	.06 [*]	1265	.06 ^{**}	2512
Limited/inhibited confiding	-.38 ^{***}	923	-.32 ^{**}	958	-.36 ^{***}	1881
Confiding of distress	.01	911	.06 [*]	963	.07 ^{**}	1874
Caregiver responsiveness	-.13 ^{***}	926	-.08 [*]	955	-.10 ^{***}	1881
Sharing of news	.01	1244	.06 [*]	1260	.06 ^{**}	2504
Confiding in friends	.02	1259	.06 [*]	1276	.08 ^{***}	2535

*Correlation significant at $p < .05$; ** $p < .01$ *** $p < .001$

Communication and individual stressors

Across all ten scenarios, stress was significantly related to inhibition. The strongest associations concerned stress around 'mum or dad' ($F(2, 609.82) = 76.65, p < .001, \eta^2 = .08$), friends or other children ($F(2, 495.27) = 60.83, p < .001, \eta^2 = .07$), and schoolwork or lessons ($F(2, 664.55) = 51.96, p < .001, \eta^2 = .06$). Most group differences were significant at $p < .001$, with those who reported 'often' feeling stressed reporting significantly greater

inhibition than those who 'sometimes' did; they in turn reported more inhibition than those who were 'never' affected.

Perceived caregiver responsiveness was also significantly, if weakly, related to each stressor, except family illness. More frequent stress was always associated with lower responsiveness. The strongest effects concerned stress around break times ($F(2, 305.18) = 20.73, p < .001, \eta^2 = .02$), parents ($F(2, 608.74) = 10.37, p < .001, \eta^2 = .01$) and siblings ($F(2, 855.66) = 10.24, p < .001, \eta^2 = .01$).

Associations between individual stressor scores and 'confiding of distress' tended to follow a different pattern, although relationships were generally very weak, if significant. Most commonly, experiencing stress 'sometimes' or 'often' was associated with more confiding of distress than 'never' feeling stressed. The strongest relationship concerned television programmes, with children who 'never' found these anxiety-provoking reporting lower levels of confiding distress ($M = 3.31, SD = 1.82$) than those who did 'sometimes' ($M = 3.85, SD = 1.60, p < .001$) or 'often' ($M = 3.64, SD = 1.72, p = .02$). Similarly, there were weak positive associations between sharing of news and stress provoked by other children, TV programmes or family illness.

Reflecting these differing associations between stressors and particular aspects of communication, relationships between individual stressors and total communication scores were generally weak, and there was no consistent pattern to the ordering of group means.

Communication and individual stressors by gender

There were no gender differences with respect to the linear relationships between individual stressor scores and either inhibition or caregiver responsiveness.

There were, however, minor gender variations in the weak associations between particular stressor scores and other aspects of communication (confiding of distress, sharing of news, and confiding in friends). For example, for girls only, 'never' experiencing friend-related stress was associated with higher levels of confiding in friends. For boys only, experiencing at least some friend-related stress was associated with higher levels of confiding of distress in mothers. For girls only, more frequent stress was consistently linked to lower levels of

communication, except in relation to tests. This may reflect that, particularly for girls, experiencing a degree of stress in this area is normative.

Appendix 24. Plots from Stage 1 MRA predicting SCAS scores

Figure A.24 (a) Normal Probability Plot of Regression Standardised Residuals

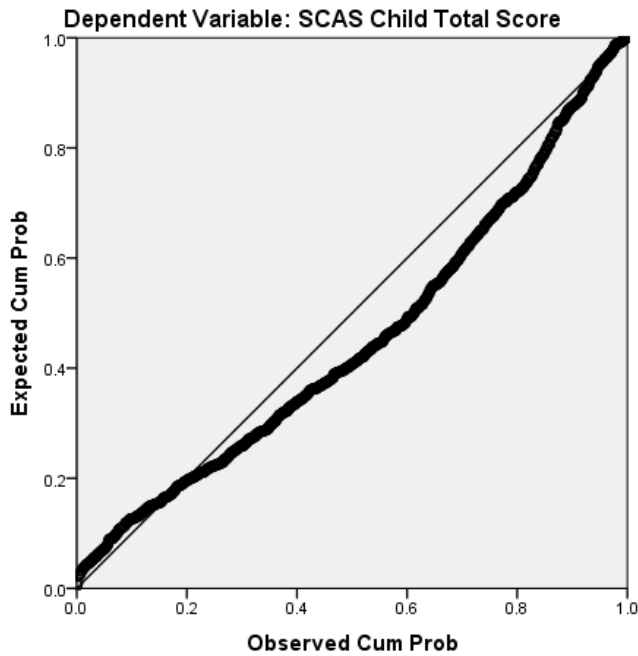


Figure A.24 (b) Scatterplot of Regression Standardised Residuals against Predicted Values

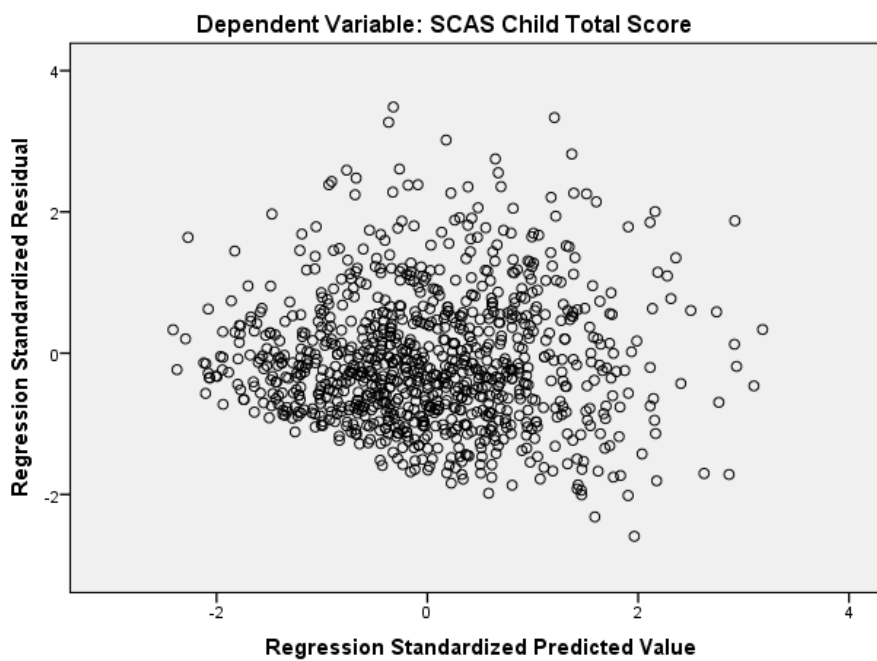
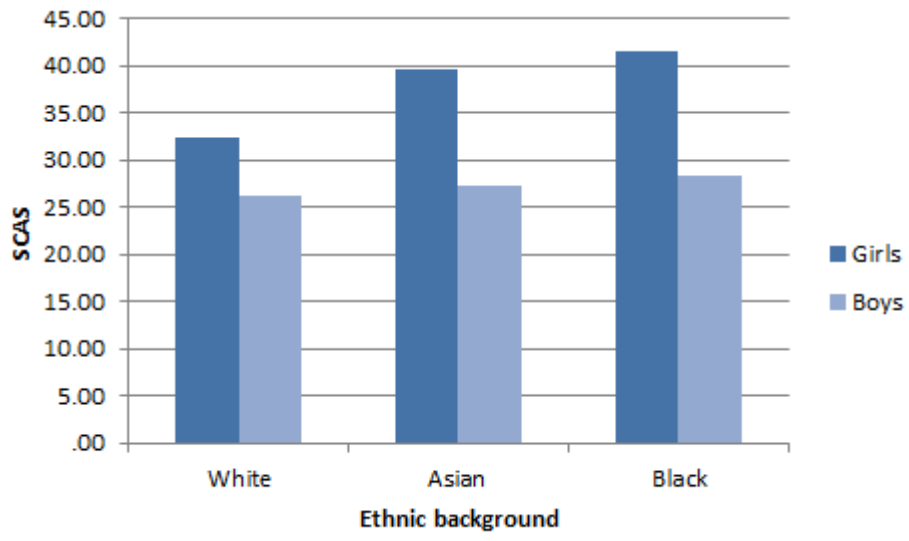


Figure A.24 (c) Interaction between gender and ethnicity in predicting SCAS scores



Appendix 25. Plots from Stage 1 MRA predicting CSI scores

Figure A.25 (a) Normal Probability Plot of Regression Standardised Residuals

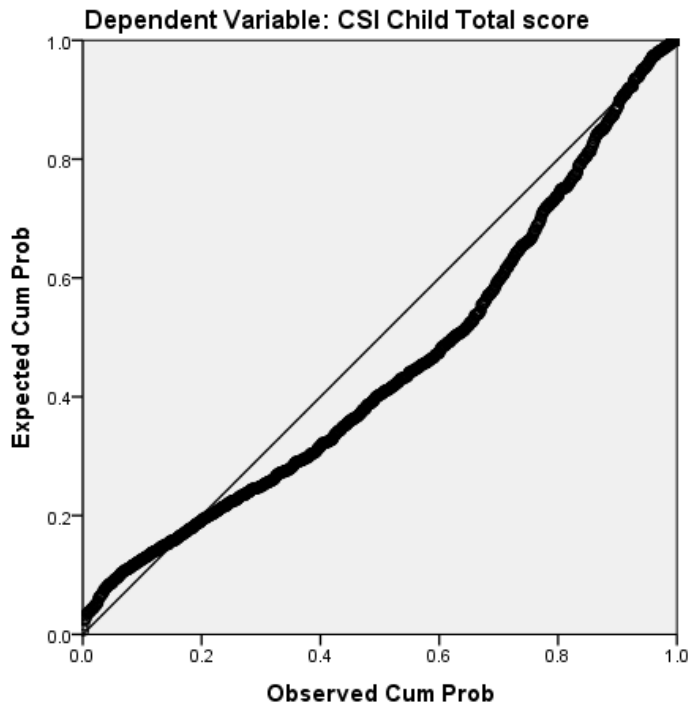


Figure A.25 (b) Scatterplot of Regression Standardised Residuals against Predicted Values

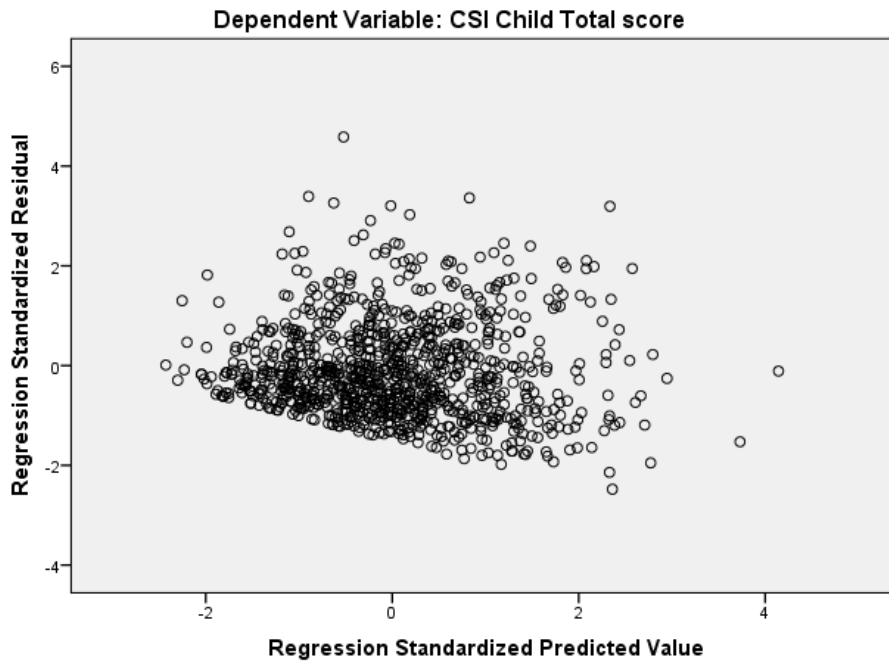
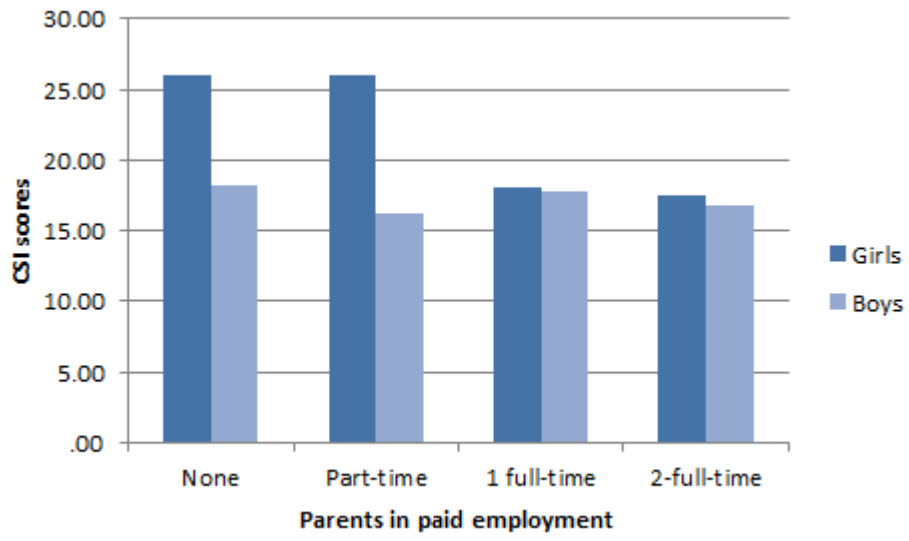


Figure A.25 (c) Interaction between gender and parental employment in predicting CSI scores



Appendix 26. Plots from MRA predicting CSI scores, including SCAS scores as a predictor

Figure A.26 (a) Normal Probability Plot of Regression Standardised Residuals: Dependent variable CSI scores (including SCAS scores among predictors)

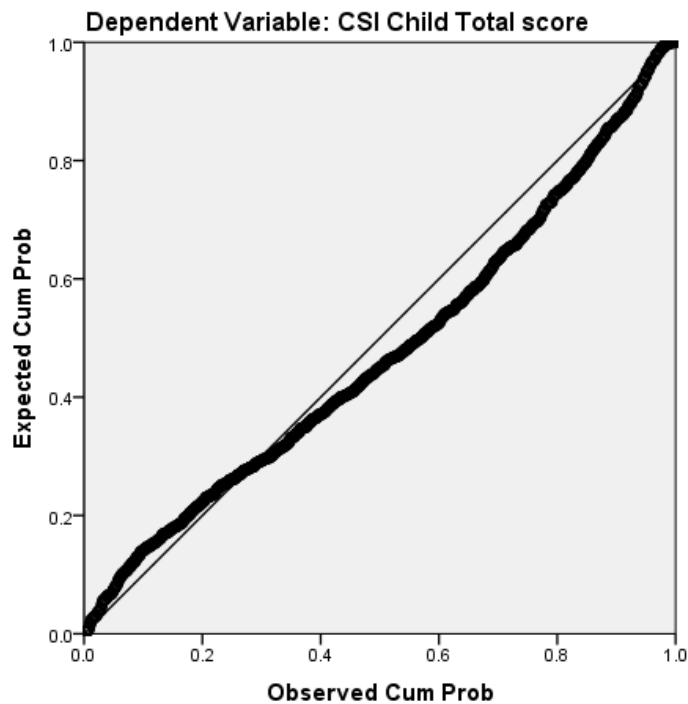


Figure A.26 (b) Scatterplot of Regression Standardised Residuals against Predicted Values: Dependent variable CSI scores (including SCAS scores among predictors)

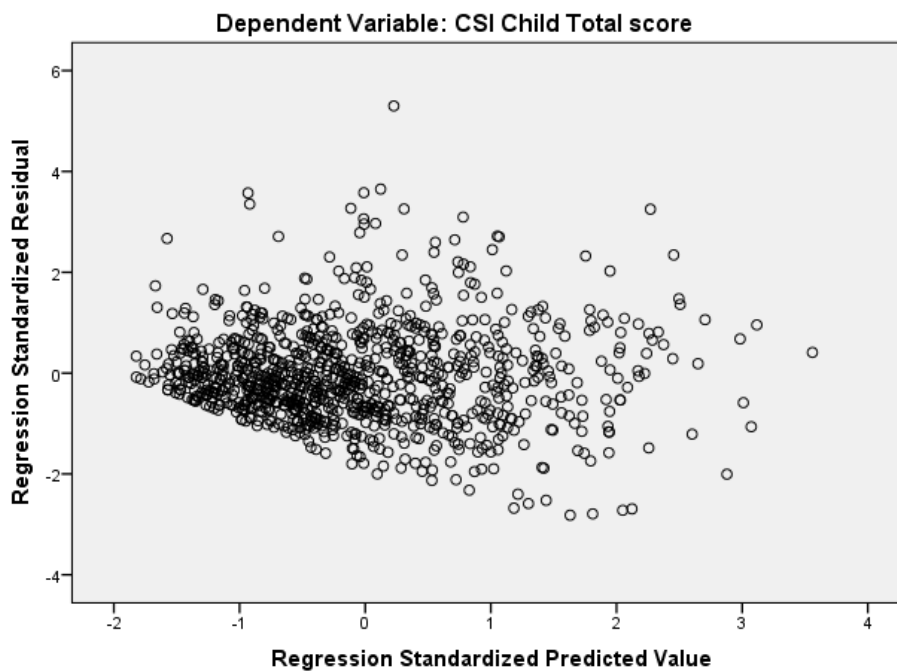
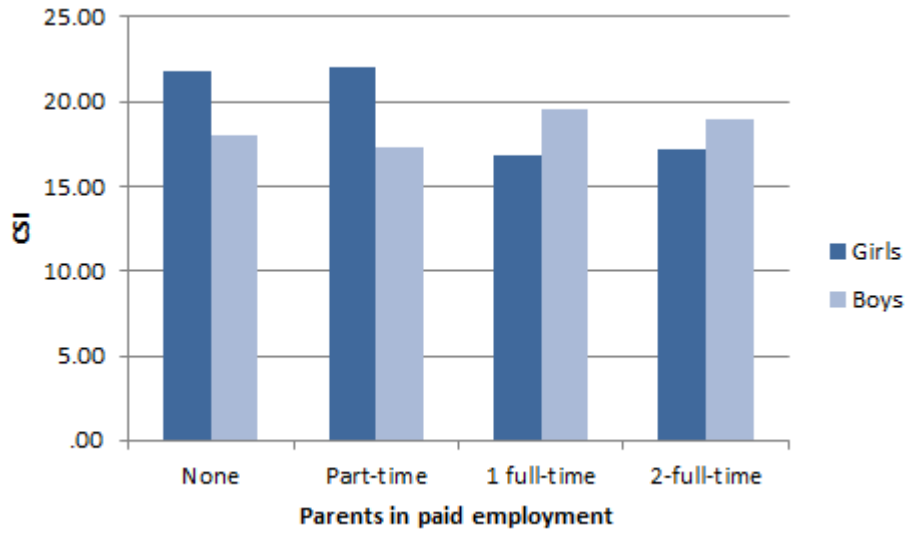


Figure A.26 (c) Interaction between gender and parental employment in predicting CSI scores (controlling for SCAS)



Appendix 27. Parent and child reports of child confiding about worries

Table A.27 Crosstabulation of parent and child reports of child confiding about worries

		Child reports of confiding (worries)						Total	
		No confiding (%)		Minimal or dubious (%)		Definite confiding (%)		N	(%)
Parent reports of child confiding (worries)	Will disclose most/ all things	4	(33.3)	20	(44.4)	42	(57.5)	66	(50.8)
	Some things kept to self	5	(41.7)	18	(40.0)	23	(31.5)	46	(35.4)
	Definite reluctance/ little if any confiding	3	(25.0)	7	(15.6)	8	(11.0)	18	(13.8)
Total		12	(100.0)	45	(100.0)	73	(100.0)	130	(100.0)

Appendix 28. Parent reports of child confiding by gender

Table A.28 Parent interview ratings of child confiding and maternal confiding in the child by child gender

		Girls		Boys	
		N	Valid %	N	Valid %
Parent-child chat (general level of talking together)	High	48	65.8	38	53.5
	Moderate	22	30.1	27	38.0
	Low	3	4.1	6	8.5
	Total	73	100.0	71	100.0
Child communication about feelings	Communicates easily and openly	42	57.5	33	46.5
	Partially/ occasionally communicative	20	27.4	15	21.1
	Not verbally communicative	11	15.1	23	32.4
	Total	73	100.0	71	100.0
Child confiding / willingness to disclose worries	Will disclose most / all things	38	52.1	36	50.7
	Some things kept to self	30	41.1	19	26.8
	Definite reluctance / little or none	5	6.8	16	22.5
	Total	73	100.0	71	100.0
Parent reports of inappropriate confiding in the child	None	56	76.6	52	73.2
	Some	15	20.5	16	22.5
	Definite – including parental issues	2	2.7	3	4.2
	Total	71	100.0	71	100.0

Appendix 29. Communication and interview measures of child symptoms

Child internalising and externalising symptoms and communication with mothers

Across the sample, ratings of child internalising symptoms were not significantly associated with child communication with mothers, on any measure. Broken down by gender, however, the association between child interview ratings of internalising symptoms and children's reports of caregiver responsiveness approached significance for girls ($r = -.26, p = .06$), whereas there was no such relationship for boys ($r = .05, p = .74$). In a larger sample, the association between internalising scores and the composite interview rating of confiding in mothers may also have reached significance for girls ($r = .19, p = .10$) though there was no such tendency for boys ($r = -.01, p = .91$).

In contrast, children's externalising scores were significantly related to communication on various measures, across the sample. Child interview ratings of externalising symptoms were moderately and negatively associated with caregiver responsiveness ($r = -.31, p = .002$), and as a result, more weakly negatively associated with the broader open communication factor ($r = -.17, p = .04$). They were also similarly related to scores on the child interview measure of confiding in mothers ($r = -.18, p = .03$). Examined separately by gender, the only association to reach significance for girls was with caregiver responsiveness ($r = -.34, p = .01$). For boys, there were significant associations between self-reported externalising behaviour and the child interview measure of confiding ($r = -.24, p = .05$), and the questionnaire's open communication factor ($r = -.26, p = .04$), based on similarly strong relationships with two of its component subscales; caregiver responsiveness ($r = -.30, p = .04$) and confiding of distress ($r = -.27, p = .07$).

Parent interview ratings of child externalising symptoms were also negatively associated with both the child interview report of confiding in mothers ($r = -.24, p = .005$) and with the equivalent parent interview rating of child confiding ($r = -.24, p = .004$). When considered separately by gender, however, the only relationship which held was the association between parent interview ratings of externalising symptoms and boys' confiding: $r = -.27, p = .02$. (For girls, $r = -.08, p = .49$.)

Child internalising and externalising symptoms and communication with friends

There were no significant relationships between children's internalising or externalising scores and their levels of confiding in friends, with one exception: a weak positive relationship between mothers' interview ratings of child externalising and children's interview reports of confiding in friends ($r = .17, p = .05$). This relationship held for neither boys nor girls, examined separately.

Child depression and communication with mothers

The composite child interview measure of confiding in mothers was negatively associated with scores on the Birleson scale ($r = -.26, p = .003$), indicating that higher levels of communication were associated with fewer depressive symptoms. Gender breakdowns revealed similar relationships for both sexes ($r_{\text{girls}} = -.24, p = .05$; $r_{\text{boys}} = -.26, p = .04$).

Depressive symptoms were also negatively related to questionnaire scores for overall communication with mothers ($r = -.17, p = .06$) and caregiver responsiveness ($r = -.24, p = .01$). Considered separately by gender, these associations reached or approached significance only among boys (respectively, $r = -.24, p = .06$ and $r = -.36, p = .01$).

Child depression and confiding in friends

Across the sample, the interview measure of confiding in friends about worries was significantly associated with depressive symptoms ($F(2, 132) = 3.65, p = .03, \eta^2 = .05$). Children describing 'definite confiding' in friends scored significantly lower on the Birleson scale ($M = 7.35, SD = 3.17$) than those reporting none ($M = 9.29, SD = 3.89$), while scores for the 'dubious' confiders fell in between, without differing significantly from the other groups ($M = 7.94, SD = 3.15$). Broken down by gender, however, the association reached significance for neither sex.

Appendix 30. Parent-child warmth, communication and symptoms

Children's expressed warmth towards mothers and communication

Ratings of warmth were intended to tap aspects of relationships other than communication, such as positive recognition, physical affection and enjoyment of the other's company. That said, warmth and communication were strongly related. Children expressing high, compared to moderate/ low, levels of warmth reported greater confiding in mothers on the composite interview measure ($t(110.46) = 4.75, p < .001$, Cohen's $d = .82$); on the questionnaire's open communication factor ($t(132) = 1.98, p < .05$, Cohen's $d = .34$); and its subscale 'confiding of distress' ($t(98) = 2.00, p < .05$, Cohen's $d = .40$). Child-expressed warmth was also positively associated with mothers' reports of children's confiding behaviour ($t(121.90) = 2.49, p = .01$, Cohen's $d = .43$).

When results were broken down by gender, the only association to hold among girls concerned their warmth towards mothers and interview reports of confiding ($t(70) = 2.15, p < .04$, Cohen's $d = .52$). In contrast, among boys, there was a more consistent set of associations. Warmth towards mothers was more strongly associated with boys' interview reports of confiding ($t(59.29) = 4.54, p < .001$, Cohen's $d = 1.07$); moderately associated with mother's reports of their sons confiding ($t(62) = 2.02, p < .05$, Cohen's $d = .53$); and strongly related to most of the questionnaire measures of communication. Specifically, high levels of warmth among boys were linked with higher scores on overall communication with mothers ($t(61) = 2.91, p < .01$, Cohen's $d = .78$) and the open communication factor ($t(61) = 2.80, p < .01$, Cohen's $d = .75$), as well as the subscales 'confiding of distress' ($t(45) = 2.11, p = .04$, Cohen's $d = .60$) and 'sharing of news' ($t(60) = 3.03, p = .004$, Cohen's $d = .81$).

Mothers' expressed warmth and communication

Maternal warmth was strongly associated with mothers' reports of children's confiding ($t(142) = 4.53, p < .001$, Cohen's $d = .81$), and its association with child interview reports of confiding also approached significance ($t(133) = 1.93, p = .06$, Cohen's $d = .35$). It was also associated with children's questionnaire scores for overall communication ($t(140) = 1.96, p < .05$, Cohen's $d = .38$) and open communication ($t(140) = 2.11, p = .04$, Cohen's $d = .41$).

Analyses by gender showed that these relationships, like those based on children's accounts, were somewhat stronger and more consistent for boys. Firstly, the association between maternal warmth and accounts of children's confiding was marginally stronger for boys ($t(69) = 3.32, p = .001, \text{Cohen's } d = .84$) than girls ($t(71) = 2.82, p = .01, \text{Cohen's } d = .71$). The association with boys' own interview reports of confiding also approached significance ($t(62) = 1.93, p = .06, \text{Cohen's } d = .49$). In addition, associations between maternal warmth and children's communication scale scores reached significance only for boys. There were strong associations with overall communication with mothers ($t(68) = 2.75, p = .01, \text{Cohen's } d = .72$), open communication ($t(68) = 2.41, p = .02, \text{Cohen's } d = .65$), and the 'sharing of news' subscale ($t(67) = 3.28, p = .002, \text{Cohen's } d = .88$).

Appendix 31. Plots from Stage 2 MRA predicting SCAS scores

Figure A.31 (a) Normal Probability Plot of Regression Standardised Residuals: Dependent variable SCAS scores (Stage 2 MRA)

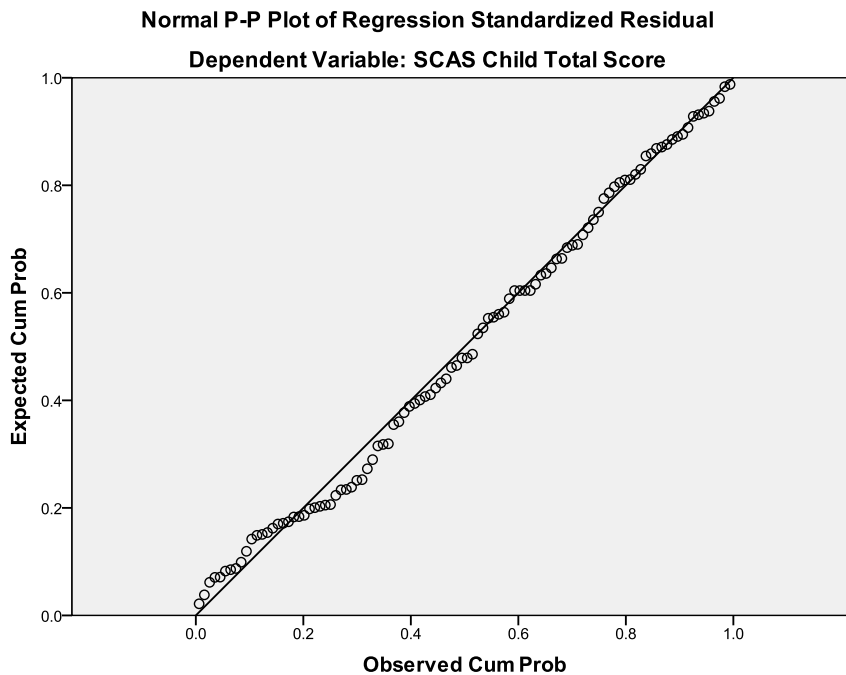
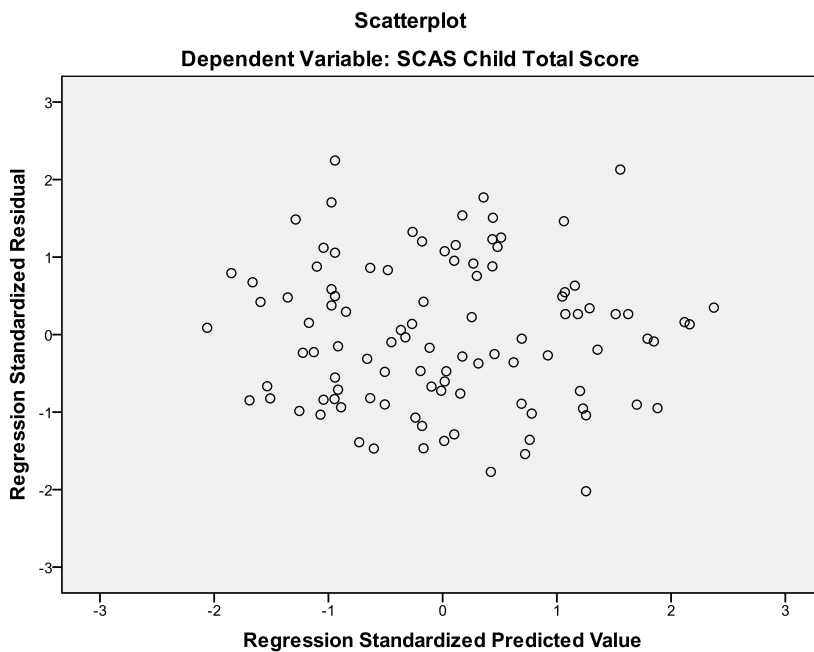


Figure A.31 (b) Scatterplot of Regression Standardised Residuals against Predicted Values: Dependent variable SCAS scores (Stage 2 MRA)



Appendix 32. Plots from Stage 2 MRA predicting CSI scores, including SCAS scores as a predictor

Figure A.32 (a) Normal Probability Plot of Regression Standardised Residuals: Dependent variable CSI scores (including SCAS scores among predictors)(Stage 2 MRA)

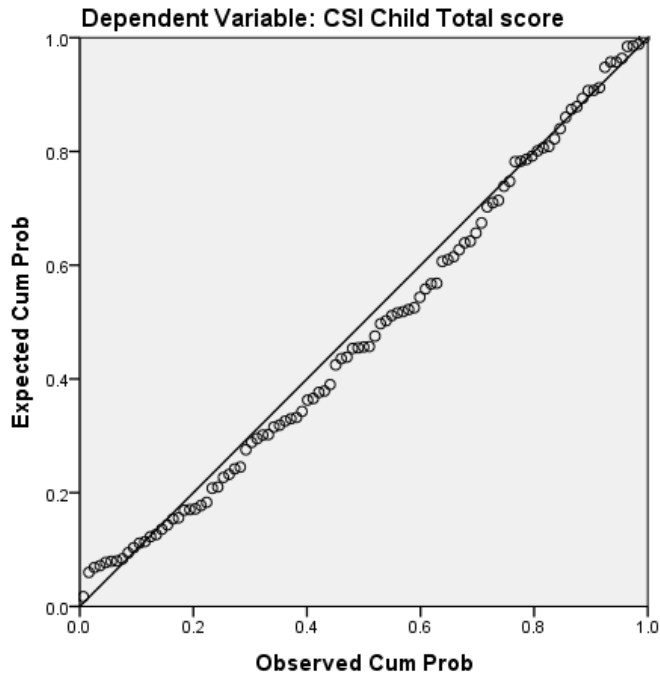


Figure A.32 (b) Scatterplot of Regression Standardised Residuals against Predicted Values: Dependent variable CSI scores (including SCAS scores among predictors) (Stage 2 MRA)

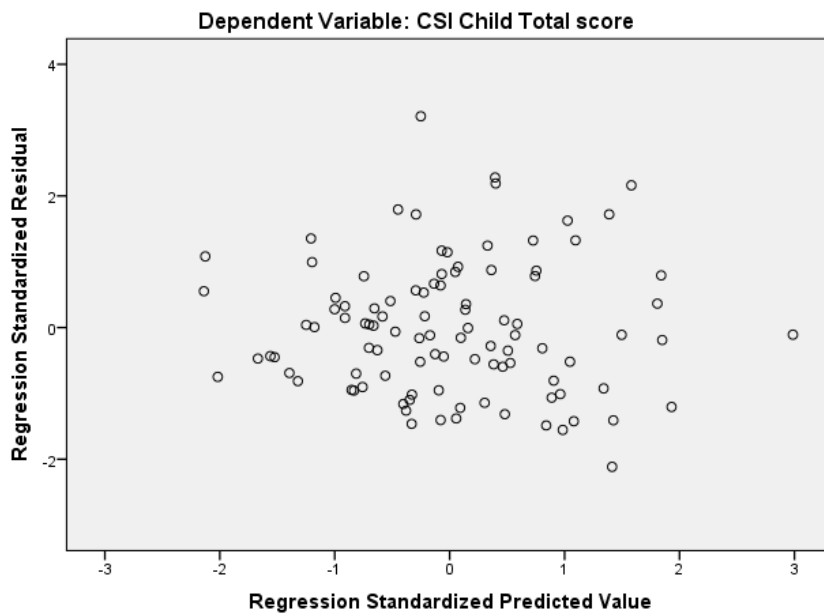


Figure A.32 (c) Interaction between gender and maternal control in predicting CSI scores (controlling for SCAS) (Stage 2 MRA)

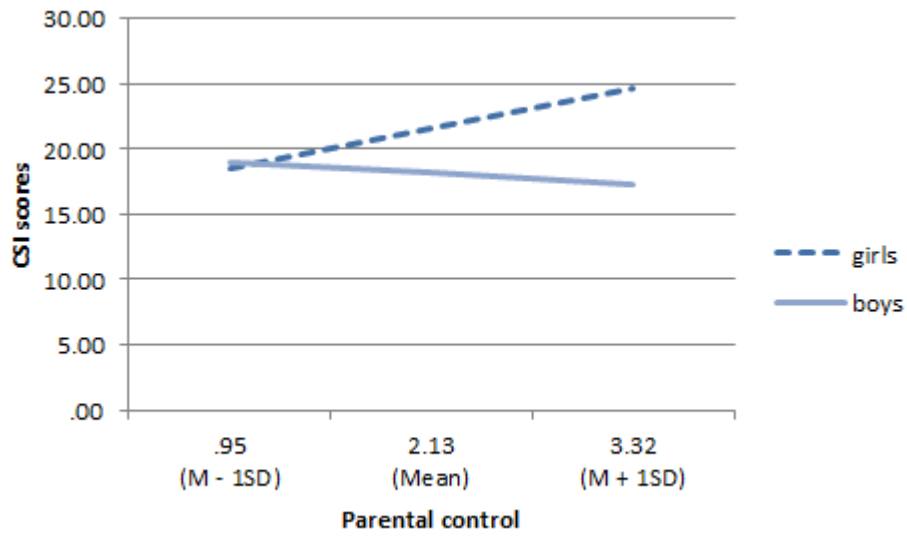
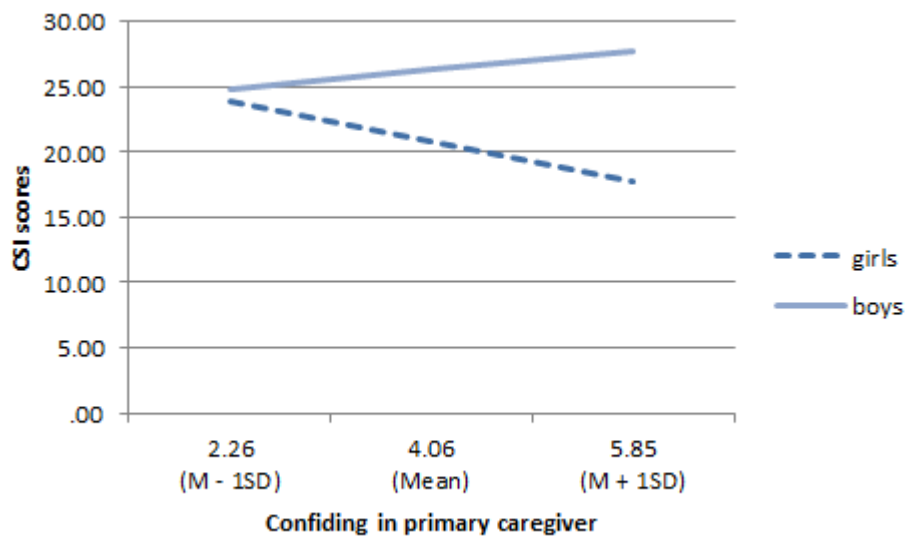


Figure A.32 (d) Interaction between gender and child confiding in mothers in predicting CSI scores (controlling for SCAS) (Stage 2 MRA)



Appendix 33. Sample extracts from interview schedules

Chapter 4, Sections 4.3 and 4.4 describes in turn the key content of the primary caregiver and child interviews employed within the Stress in Children study and the doctoral research described in this thesis. This appendix contains example sections from the primary caregiver and child interview schedules employed during Stage 2 of the present study. In each case, there are examples of questions, prompts and codings, but these are only examples provided for the interviewer, and not a script. (As set out in Chapter 4, interviewers were trained to probe further as required, to gather sufficient information to form sound coding judgements.) The format presented differs from that employed during fieldwork, where for both interviews questions and prompts were presented on the left hand pages of a ring bound volume, leaving ample space for the interviewer to record handwritten notes or quotes to support the coding decision below it, and with coding categories and coding boxes on the right hand pages. Here, coding categories are presented beneath the relevant questions.

Sample extracts from primary caregiver interview schedule

Below are examples of questions, suggested prompts and coding categories pertaining to the communication and warmth sections of the schedule.

Communication

Talking together

Do you ever sit down and just have a chat? What sort of things do you talk about together?

How much does N tell you about what goes on at school and ordinary things like that? How much do you talk about things you have watched on TV or things she or you have done?

Talking together (general communication level)

High	0
Moderate	1
Low	2
Not known	9

Willingness to disclose/ confiding

Does N ever talk to you about things she is worried about, or things on her mind?

Do you have to ask her/him or does she tell you spontaneously?

Do you feel there are many/any things she does not tell you?

Willingness to disclose

Will disclose most or all things	0
Some things kept to self	1
Definite reluctance to confide/little if any confiding	2
Not known	9

Communication about feelings/emotions

How much does she talk to you about how she is feeling?

Communication about feelings/emotions

Communicates easily and openly about feelings	0
Only partially/occasionally communicative about feelings	1
Not (verbally) communicative about feelings	2
Not known	9

Confiding - parent to child

Do you find N a sympathetic child?

Do you ever talk to her/him about things that you are worried or upset about? What sorts of things? About one of the other children? About your work? About irritations with <Father>?

Inappropriate confiding

None	0
Some	1
Definite - including parental issues	2
NA	8
NK	9

Warmth towards the child

Positive recognition

Now I'd like to talk to you a bit more about N - What sort of child is she/he?

How would you describe her/him to me?

What would you say N's good points were? What makes you feel proud of her?

Positive recognition

High (>1 area of positive recognition)	0
Some (≥ 1 area of positive recognition)	1
Low/none	2
NK	9

Warmth (Physical affection)

Some children like being cuddled and some don't. Is N a cuddly child...an easy child to show affection to? Do you enjoy cuddling her/him?

Do you wish she was easier to show affection to?

Warmth - physical affection

Definite mutual enjoyment	0
Dubious or one-sided enjoyment	1
Little or none	2
Not Known	9

Enjoyment of company

Can you enjoy each other's company? Do you enjoy being with N? What sorts of things do you like doing with her?

Enjoyment of company

Definite	0
Dubious - qualified to some extent	1
Little or no enjoyment	2
Not Known	9

Global rating of warmth towards the child expressed throughout the interview

<u>Global rating - warmth to child</u>		<input type="text"/>
High	0	
Medium	1	
Low	2	
NK	9	

Sample extracts from child interview schedule

Below are examples of questions, suggested prompts and coding categories from sections of the child interview schedule on communication with primary caregivers, confiding with friends and (dis)satisfaction with friendships sections.

Communication with primary caregivers

Confiding:

What about talking about things that you are worried about? Do you talk to your mum about things that you're worried or unhappy about?

Confiding in mother [primary caregiver]

No confiding	0	<input type="text"/>
Dubious minimal confiding	1	
Definite confiding	2	
NA/no stress	8	
Not known	9	

Willingness to disclose

Are there some things (secrets) you do not tell your Mum? What sort of things are they?
How much do your parents really know about your friends?

(Probe secrets about free time; activities with friends; difficulties with friendships; bullying)

Willingness to disclose

Full disclosure/no secrets	0	<input type="text"/>
Some things kept to self	1	
Generally keeps information/problems to self	2	
Not known	9	

Confiding of feelings

What about your feelings –do you tell your Mum about how you are feeling – if you are worried or sad or upset?

What about if you feel cross or angry?

Confiding of feelings

Talks about feelings to mother	0
Sometimes talks/hints about feelings	1
Generally tries to keep feelings to self	2
Not known	9

Confiding with friends

Do you talk to (named best friend/any of your friends) about things that are worrying you, or making you feel unhappy?

Are there some things that worry or upset you that you do not tell her/him?

Confiding with friends

Definite confiding	0
Dubious or little confiding	1
No confiding	2
NA (no friends)	8
Not known	9

(Dis)satisfaction with friendships

Do you ever feel that you want more friends or do you think you have enough friends?

Do you ever feel lonely, or feel that other children do not like you very much?

(Dis)satisfaction with friendships

No dissatisfaction	0
Some dissatisfaction	1
Marked dissatisfaction	2
NA	8
Not known	9

Appendix 34. Sampling grid for Stage 2 of the study

Figure A.34 Quintile by quintile plot of the distribution of SCAS and CSI scores (boys/girls; $N = 2559$)

CS I \ SCAS	1 (LO)	2	3	4	5 (HI)
5 (HI)	5/12	9/16	27/45	45/96	62/166
4	20/42	24/42	51/60	68/66	38/42
3	53/81	48/47	69/56	52/48	21/16
2	136/119	75/60	62/42	33/17	17/5
1 (LO)	225/115	77/42	51/21	19/10	5/1