**I THINK THEREFORE I AM... ANXIOUS AND DEPRESSED?
THE ROLE OF NEGATIVE COGNITIONS IN THE LINKS BETWEEN
SHYNESS AND INTERNALIZING DIFFICULTIES IN
LATE CHILDHOOD AND EARLY ADOLESCENCE**

By

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Abstract

Shyness in childhood is associated with the development of *internalizing* difficulties (e.g., feelings of anxiety and depression), which in turn have been strongly associated with negative thought patterns (*negative cognitions*). The central goal of this study was to explore the role of negative cognitions in the links between shyness and internalizing difficulties in late childhood and early adolescence. A secondary goal was to explore the relative importance of *social* (i.e., dealing with social situations) versus *non-social* negative cognitions in linking shyness with internalizing difficulties. Participants were $N=686$ children and adolescents aged 10-14 years (in grades 5-8), who completed self-report assessments of shyness, negative cognitions (threat perceptions, attribution biases, negative cognitive errors, probability and cost estimates, cognitive triad) and internalizing difficulties (anxiety, social anxiety, depression, loneliness). Parents also completed assessments of their child's anxious and depressive symptoms. Results from structural equation modeling suggest that negative cognitions play an important *mediating* role in the relations between shyness and internalizing problems. Social cognitions were also more important than non-social cognitions in mediating the links between shyness and internalizing difficulties, particularly when outcomes were also of a social nature. Results are discussed in the terms of the conceptualization of shy children's cognitive processes, the consequences of such processes for shy children's emotional adjustment, and the implications for ameliorative interventions for shy children.

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**“I think therefore I am... anxious and depressed”: The Role of Negative Cognitions
in the Links between Shyness and Internalizing Difficulties in Early Adolescence**

Shyness is a ubiquitous phenomenon; most individuals report to have experienced some form of shyness at some point in their lifetimes (Zimbardo, 1977). Thus, shyness can be considered to be a normal part of our collective experience. However, there are substantial individual differences in shyness, both in terms of its frequency and degree of severity. In children and youth, this can be evidenced in terms of the well-documented associations between shyness and a vast array of maladaptive social and emotional outcomes (Rubin, Coplan, & Bowker, 2009).

Childhood shyness is often associated with internalizing difficulties, which are broadly defined as problems that are manifested internally, including feelings of anxiety and depression (Achenbach & Edelbrock, 1981). Shy children are at greater risk of developing serious and debilitating clinical disorders related to anxiety and depression, but more often will develop elevated but sub-threshold (sub-clinical) feelings of anxiety and depression (Rapee & Coplan, 2010). Sub-threshold levels of internalizing difficulties are potentially problematic because they are risk factors for the development of clinical disorders in youth and later in life (e.g., Feng, Shaw, & Silk, 2008). Thus, it is important to understand the possible mechanisms through which shy children and youth might develop feelings of anxiety and depression. This increased understanding could lead to the identification of important risk or protective factors which, if modifiable, could be incorporated into ameliorative interventions for children at risk for internalizing disorders.

Theories related to internalizing difficulties such as anxiety and depression have focused largely on negative thoughts or thought processes (i.e., *negative cognitions*). Although there is some evidence that anxiety and depression are related to anxiety-specific and depression-specific negative cognitions, it is clear that both anxiety and depression are closely associated with maladaptive ways of perceiving the world and processing information (Dobson & Kendall, 1993; Leung & Wong, 1998; Ronan, Kendall, & Rowe, 1994). Indeed, there is a considerable degree of *comorbidity*, or co-occurrence, both in clinical and sub-clinical anxiety and depression. In fact, although there is evidence for specificity of cognitive features between anxiety and depression (e.g., Prins, 2000), there is also evidence for some degree of overlap (e.g., Garber, Weiss, & Shanley, 1993). There is also evidence to suggest that the co-occurrence of anxiety and depression is associated with a more negative overall thought pattern than either anxiety or depression alone (e.g., Epkins, 1996).

Considering the central role of negative cognitions in the development and maintenance of anxiety and depression, these negative thought patterns may also help to explain the commonly observed link between shyness and internalizing difficulties. There is almost no research examining the relation between shyness and negative cognitions. However, a handful of studies have shown that shy children seem to expect failure and rejection (Gazelle & Druhen, 2009; Stewart & Rubin, 1995; Wichmann, Coplan, & Daniels, 2004), suggesting that shyness may be associated with a more generally maladaptive pattern of thinking.

Given that shyness is associated with certain negative thought patterns, and that a number of negative thought patterns are associated with anxiety and depression, such

patterns of negative cognitions may be important in clarifying the link between shyness and internalizing difficulties. Negative cognitions could be identified as important factors in shy children's internalizing difficulties, as well as factors that could be targeted in anxiety and depression intervention efforts. However, the nature of the role played by negative cognitions in these associations has been largely unexplored.

One possibility is that the relations between shyness and internalizing difficulties involve *indirect* as well as *direct* effects. Shyness may be directly related to internalizing difficulties, but may also have an indirect effect through negative cognitions (i.e., negative cognitions play a *mediating* role). That is, it is possible that negative cognitions are part of the causal pathway from shyness to internalizing difficulties, and can thus explain part of the reason shy children develop anxiety and depression.

Considering the social relevance of shyness—shy children are apprehensive in social situations—it might be that the social relevance of particular negative thoughts has an impact on such a mediated causal pathway. Specifically, it might be that shy children become anxious or depressed mainly due to negative thinking that is specifically *social* (i.e., regarding social interactions, rather than non-social events). Moreover, internalizing difficulties can be construed as social (e.g., anxiety about social interactions) or non-social (e.g., anxiety about math tests), and it is also possible that negative cognitions are most likely to play such a mediating role linking shyness with social internalizing difficulties.

The purpose of the present study was to examine these possible associations in an attempt to clarify the associations among shyness, negative cognitions, and internalizing difficulties. Although elevated levels of anxiety and depression can be seen in young

children (Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006), they are much less common in early childhood, and typically emerge in a more pronounced way in late childhood and adolescence (Kessler, Berglund, Demier, Jin, Merikangas & Walters, 2005). The goal of the present study was to examine the above-mentioned associations in a sample of children in grades 5 through 8.

In the following sections, the theoretical framework for the present study is presented. To begin, the concept of shyness is explored, particularly as it relates to children and youth. Following this general overview of childhood shyness, literature is reviewed that links shyness with anxiety and depression, respectively. Next, an overview of cognitive models of anxiety and depression are presented. Evidence is then presented pertaining to the comorbidity among anxiety and depression, as well as the overlap versus specificity of anxious and depressive cognitive features. Having established the importance of negative cognitions in anxiety and depression, the conceptual link is then established between shyness and certain types of negative cognitions. Finally, the potential role of negative cognitions in understanding the relations between shyness and internalizing difficulties is explored, as well as the role of ‘social relevance’ in these relations.

Shyness in Childhood

Definitions and concepts. Children sometimes choose (for a variety of reasons) to engage in solitary behaviours in the presence of their peers. This “self-imposed” isolation from the peer group through the consistent display of solitary behaviours has been labeled social withdrawal (Rubin & Coplan, 2004). It has long been argued that social interaction is vital to children’s social and cognitive development and,

consequently, socially-withdrawn children have been the focus of a growing developmental literature examining the potential consequences of a comparative “lack of social interaction” in childhood (Rubin et al., 2009).

Some socially-withdrawn children seem to engage in such solitary behaviours due to a preference for solitude. These children have been labeled *unsociable* (or *socially disinterested*; Coplan, Prakash, O’Neil, & Armer, 2004). In contrast, other socially-withdrawn children are wary of social interaction and seem to engage in solitary behaviours in part because they experience anxiety in social situations. These children exhibit what is commonly known in the developmental literature as *shyness*. Shyness can be defined as wariness in the face of social novelty and/or self-conscious behaviour in situations of perceived social evaluation (Asendorpf, 1991; Cheek & Buss, 1981). In terms of motivations, it has been suggested that shy children experience an “approach-avoidance” conflict, wherein they desire social interactions but simultaneously want to avoid such interactions due to feelings of anxiety (Coplan et al., 2004).

Shyness shares considerable conceptual overlap with a number of related terms (for a recent discussion, see Coplan & Rubin, 2010). For example, *behavioural inhibition* (BI; Kagan, 1997) is a temperamental trait described as biologically-based unease and wariness towards novel situations and unfamiliar people (Garcia-Coll, Kagan, & Reznick, 1984). Similarly, *anxious solitude* refers to the display of socially-wary and solitary behaviours in familiar social situations (Gazelle, 2010). For the purposes of the present research, these constructs will be considered synonymous.

Origins of shyness. The early origins of shyness are not fully understood. However, results from a number of studies over the past two decades suggest that shyness

is associated with a number of biological factors (e.g., Warren, Schmitz, & Emde, 2004). For example, shyness seems to be influenced by genetics (Plomin & Daniels, 1987; Plomin & Stocker, 1989; Rickman & Davidson, 1994; Robinson, Kagan, Reznick, & Corley, 1992). Also, as compared to their non-shy peers, extremely shy children tend to have higher and less variable resting heart rates, larger pupillary diameters, a greater decrease in vocal perturbation (a marker of muscle tension), higher levels of morning cortisol, and a more reactive sympathetic nervous system (de Haan, Gunnar, Tout, Hart, & Stansbury; Garcia Coll et al., 1984; Kagan, Reznick, & Snidman, 1988; Rubin, Hastings, Stewart, Henderson, & Chen, 1997; Schmidt, Fox, Rubin, & Sternberg, 1997).

Results from physiological research have shown that shy children display greater right frontal EEG asymmetrical activation, particularly in response to social stressors (Fox et al., 1995; Henderson, Rubin, Calkins, & Schmidt, 2001; Henderson, Marshall, Fox, & Rubin, 2004; Schmidt, Fox, Schulkin, & Gold, 1999). Shyness has also been associated with a greater likelihood of developing allergies (Bell, Jasnosi, Kagan, & King, 1990; Kagan, 1997) and illnesses (Chung & Evans, 2000; Rosenberg & Kagan, 1987). In light of the biological substrates of shyness, it is not surprising that this personality trait has been found to be relatively stable from early childhood through middle and late childhood, and into adolescence (Evans, 1996; Hymel, Rubin, Rowden, & LeMare, 1990; Kagan et al., 1988; Karevold, Ystrøm, Coplan, Sanson, & Mathiesen, in press; Sanson, Pedlow, Cann, Prior, & Oberklaid, 1996).

Environmental influences can also play an important role in the development of shyness. One such influence that has received attention in the developmental literature is parenting. In particular, parenting styles such as *authoritarian* (strict, harsh) and

authoritative (warm, responsive) (Baumrind, 1966) are thought to influence the development of childhood shyness. Authoritarian parents tend to attribute their children's shyness to factors internal to the child (Coplan, Hastings, Lagace-Seguin, & Moulton, 2002), which might serve to exacerbate shyness and anxiety. In contrast, authoritative parenting is positively related to children's social competence (Dawoud, 1999), academic achievement (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987), and negatively related to parental ratings of shyness (Coplan et al., 2004).

More recently, parental *overprotectiveness* has been examined as a potential precursor to shyness (Burgess et al., 2005; Chen et al., 1998; Kennedy, Rubin, Hastings, & Maisel, 2004; Rubin, Burgess, & Hastings, 2002; Rubin, Stewart, & Coplan, 1995; Rubin et al., 1997). Overprotective (also called *oversolicitous*) parents tend not to let their children enter potentially stressful situations, and tend to remove them from potential stressors if they occur (Rubin et al., 2002). Therefore, children whose parents are overprotective learn that these situations should be avoided, and are more likely to become more socially anxious because they are less likely to learn appropriate coping strategies (Rubin, Cheah, & Fox, 2001). In support of this, Rubin et al. (1997) showed that overprotective mothers are more likely to have behaviourally inhibited toddlers. Moreover, Rubin et al. (2001) found that overprotectiveness led to shyness in young children who already display negative emotionality, suggesting that overprotectiveness can exacerbate already existing emotional problems. In fact, several studies have shown that overprotective parenting may exacerbate the development of anxiety for shy and behaviorally inhibited children (Coplan, Arbeau, & Armer, 2008; Degnan, Henderson, Fox, & Rubin, 2008; Hane, Cheah, Rubin, & Fox, 2008; Hastings et al., 2008).

Behaviours associated with shyness. As mentioned, shy children tend to be socially-withdrawn and therefore spend less time in peer interaction than their non-shy counterparts (Rubin et al., 2009). Shy children speak less during social interactions (Asendorpf & Meier, 1993; Crozier & Perkins, 2002; Evans, 1993, 2001; Kagan et al., 1988), initiate fewer such interactions (Kagan et al., 1988), and take longer to become comfortable once social interactions have begun (Crozier & Perkins, 2002). Also, consistent with the suggested ‘approach-avoidance’ conflict, shy children tend to engage in reticent behaviour during play. Reticent behaviour includes standing near others and watching their play behaviours, while not actually taking part in play (Coplan, Rubin, Fox, Calkins, & Stewart, 1994), and is associated with ratings of anxiety and wariness (Asendorpf, 1990), maternal ratings of shyness, and observations of anxious behaviour (Coplan et al., 1994; Coplan & Rubin, 1998; Coplan et al., 2001). Moreover, shy children have a general tendency to engage in more solitary play at school, which may contribute to more negative relationships with peers and teachers (e.g., Birch & Ladd, 1997; Coplan et al., 1994; Ladd, 1990; Pianta, Steinberg, & Rollins, 1995).

Correlates of shyness. Considering the idea that social interaction is fundamental to healthy social and cognitive development (Rubin, Bukowski, & Parker, 2006), shy children could be expected to have a number of adjustment difficulties. In fact, although shy children may not always experience maladjustment, a growing number of studies have shown that shyness is associated with a number of maladaptive outcomes, particularly those of an internalizing nature (Boivin, Hymel, & Bukowski, 1995; Bowker, Bukowski, & Zargarpour, 1998; Letcher, Smart, Sanson, & Toumbourou, 2008; Prior, Smart, Sanson, & Oberklaid, 2000; Rubin, Chen et al., 1995; Rubin & Mills, 1988).

In early childhood, shyness is positively related to negative mood and anxiety, as well as negatively related to children's perceived competence, prosocial behaviours, and social competence (Bohlin, Hagekull, & Andersson, 2005; Coplan et al., 2004; Stevenson-Hinde & Glover, 1996). Shy preschoolers have been shown to have lower expressive and receptive language skills than their non-shy peers (Spere, Schmidt, Theall-Honey, & Martin-Chang, 2004), and shyness in kindergarten has been associated with peer rejection and exclusion (Gazelle & Ladd, 2003; Phillipsen, Bridges, McLemore, & Saponaro, 1999), as well as school adjustment difficulties (Coplan, Closson, & Arbeau, 2007).

Outcomes may worsen for shy children in middle childhood. Indeed, it has been suggested that, as children get older (particularly in middle and later childhood), non-social behaviour becomes more noticeable and peers view such behaviour as increasingly deviant (Rubin & Asendorpf, 1993). Not surprisingly, there is evidence that shy-withdrawn children experience a greater degree of adjustment problems in middle childhood (Bukowski, 1990; Younger & Boyko, 1987; Younger & Piccinin, 1989; Younger, Schwartzman, & Ledingham, 1985). For instance, Younger and Piccinin (1989) found that an increase in grade level was associated with a decrease in peer reports of likeability of socially-withdrawn children.

Shyness and social withdrawal in middle childhood have been associated with lower self-esteem, as well as higher depression, loneliness and negative emotionality (Boivin et al., 1995; Crozier, 1995; Eisenberg, Shepard, Fabes, Murphy, & Guthrie, 1998; Fordham & Stevenson-Hinde, 1999; Rubin, Chen et al., 1995). Adjustment difficulties for shy children seem to continue into adolescence (e.g., Cheek & Krasnoperova, 1999;

Ishiyama, 1984; Prior, Smart et al., 2000). For example, Ishiyama (1984) found that shy 10th graders were lonelier, experienced more academic difficulties, and had more trouble developing friendships than their non-shy peers.

The outcomes associated with shyness have also been examined longitudinally, although most research has not distinguished shyness from social withdrawal in general (e.g., Eisenberg, Shepart, Fabes, Murphy, & Guthrie, 1998; Gazelle & Ladd, 2003; Hymel et al., 1990; Ollendick, Greene, Weist, & Oswald, 1990; Rubin & Mills, 1988; Rubin, Chen et al., 1995). Nevertheless, this research suggests that shy children are at risk not only for concurrent maladjustment, but also long-term social and emotional difficulties. Shy-withdrawn children are more likely to subsequently experience more negative self-perceptions, feelings of loneliness and depression, peer rejection and internalizing difficulties (Rubin et al., 1995; Rubin & Mills, 1988), lower self-worth (Rubin et al., 1995), isolation (Hymel et al., 1990), unpopularity and neglect (Booth-LaForce & Oxford, 2008), and are at greater risk of developing internalizing problems and anxiety disorders in adolescence (Asendorpf, Denissen, & van Aken, 2008; Kagan, Snidman, Kahn, & Towsley, 2007; Letcher et al., 2008; Leve et al., 2005; Prior et al., 2000).

Gender differences in shyness. Although most of the research suggests there is no gender difference in terms of the prevalence of childhood shyness (Rubin et al., 2009), there is some evidence girls self-report being more shy than boys in later childhood and adolescence (Crozier, 1995; Haselager, Hartup, van Lieshout, & Riksen-Walraven, 1998; Ollendick et al., 1990; Rubin, Chen, & Hymel, 1993; Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, & Burgess, 2006). Perhaps more notable is the suggestion that,

at least in North America, shy boys may be at greater risk for adjustment difficulties than shy girls (Rubin, Burgess, & Coplan, 2002). Along with this notion, it has been suggested that shyness is not as socially acceptable in boys as in girls, and that it is more accepted for girls to be more quiet and less assertive (e.g., Rubin & Coplan, 2004; Sadker & Sadker, 1994). In support of these ideas, some research suggests that shy boys tend to experience more negative family interaction than shy girls (Engfer, 1993; Hinde, Easton, Meller, & Tamplin, 1983; Simpson & Stevenson-Hinde, 1985). For instance, Simpson and Stevenson-Hinde (1985) found that shyness was positively associated with parental acceptance for girls, but negatively related to parental acceptance for boys. This result also suggests that parenting may partially account for less positive outcomes in shy boys. Indeed, maternal overprotective parenting seems to be more strongly related to shyness in boys than in girls (Coplan et al., 2004; Coplan et al., 2008). Moreover, Hastings and Rubin (1999) found that maternal overprotection was associated with warm and supportive parenting behaviours for girls but not for boys.

Other research suggests that shy boys are more likely than shy girls to experience internalizing problems (Bowen, Vitaro, Kerr, & Pelletier, 1995), loneliness, peer relations difficulties (Coplan et al., 2007), negative mood, behaviour problems (Stevenson-Hinde & Glover, 1996), and peer exclusion (Coplan et al., 2004; Gazelle & Ladd, 2003). The long-term outcomes of shyness also seem to be more negative for boys than for girls. Rose, Rose, and Feldman (1989) found that boys, but not girls, showed an increase in internalizing problems from ages 2-5 years. Gest (1997) found that, for boys, childhood inhibition was related to emotional distress in adulthood. Studies also indicate that shy boys take longer to get married and find stable employment (Caspi, Elder, & Bem, 1988;

Kerr, Lambert, & Bem, 1996). However, boys may not always experience more negative outcomes associated with shyness— some research suggests that shy girls may be at greater risk of developing more severe social anxiety later in life. For instance, Hayward and colleagues (Hayward, Wilson, Lagle, Kraemer, Killen, & Taylor, 2008) found that parent-rated childhood shyness was a stronger predictor of adolescent social anxiety for females than males.

Shyness and anxiety. A recent review by Rapee and Coplan (2010) suggests that despite a number of similarities, shyness and social anxiety are distinct constructs in childhood. However, part of the conceptualization of shyness in the developmental literature is the experience of anxiety, particularly in social situations (e.g., Coplan et al., 2004). Thus, it should be expected that childhood shyness is related to childhood anxiety, and in particular, social anxiety. Results from a growing number of studies are showing that shyness is associated with the development of anxiety (e.g., Coplan et al., 2008; Coplan, Debow, Schneider, & Graham, 2009; Goldsmith & Lemery, 2000; Rapee, Kennedy, Ingram, Edwards, & Sweeney, 2005; Shamir-Essakow, Ungerer, & Rapee, 2005). For instance, Rapee and colleagues (2005) reported that 90% of a group of extremely shy preschool-aged children also met criteria for an anxiety disorder.

It has also been widely argued that the presence of shyness in childhood represents a vulnerability factor for the development of anxiety, particularly social anxiety (Beidel & Turner, 2007; Goldsmith & Lemery, 2000; Neal & Edelmann, 2003; Ollendick & Hirshfeld-Becker, 2002; Rapee & Spence, 2004; Rapee, 2010; Rubin et al., 2009; Townsley, Stemberger, Turner, Beidel, & Calhoun, 1995). Indeed, although most shy children do not develop clinical anxiety disorders, there is evidence from a growing

number of studies that shyness in childhood is related both to concurrent feelings of anxiety as well as the development of clinical and sub-clinical anxiety symptoms later in life (Biederman et al., 2001; Bohlin & Hagekull, 2009; Essex, Klein, Slattery, Goldsmith, & Kalin, 2010; Chronis-Tuscano, Degnan, Pine, Perez-Edgar, Henderson, Diaz, et al., 2009; Hayward, Killen, Kraemer, & Taylor, 1998; Hayward et al., 2008; Biederman, Henin, & Faraone, 2007; Masi et al., 2004; Mason et al., 2004; Mian, Wainwright, Briggs-Gowan, & Carter, 2011; Prior et al., 2000; Schwartz, Snidman, & Kagan, 1999; Schofield, Coles, & Gibb, 2009; Volbrecht & Goldsmith, 2010). For example, Schwartz, Snidman, and Kagan (1999) found that extremely shy toddlers were more likely at age 13 years to have developed generalized social anxiety, assessed through a diagnostic interview. Also, Massi et al. (2004) found that adolescents with anxiety disorders had higher parent ratings of shyness than did controls. More recently, Bohlin and Hagekull (2009) found that shyness in 20-to-48-month-olds was associated with two separate measures of social anxiety at 21 years of age, and Hayward et al. (2008) found that retrospective parent reports of shyness were predictive of adolescents' social anxiety.

Although much of the research linking shyness to anxiety has focused on clinical anxiety disorders, more recent research has also examined the link between shyness and individual differences in *sub-clinical* levels of anxiety (e.g., Coplan & Armer, 2005; Coplan et al., 2008; Coplan et al., 2009; Goldsmith & Lemery, 2000; Shamir-Essakow et al., 2005; Weeks, Coplan, Kingsbury, 2009). For example, Coplan and Armer (2005) found a positive relation between shyness and social anxiety in preschool children. More recently, Weeks et al. (2009) reported that parent ratings of child shyness were positively related to grade 2 children's self-ratings of social anxiety. This research suggests that,

although shyness does not place most children at high risk of developing an anxiety disorder, many shy children nevertheless seem to experience a greater degree of anxiety, which potentially leads to more negative outcomes concurrently and later in life.

Shyness and depression. Although shyness may be most conceptually related to anxiety (particularly social anxiety), it has also been associated with feelings of depression. In adults, shyness and depression have been reported to overlap considerably in a number of studies (e.g., Alden & Philips, 1990; Alfano, Joiner, Perry & Metalsky, 1994; Anderson & Harvey, 1988; Schmidt & Fox, 1995). For example, Alfano et al. (1994) reported a positive correlation between shyness and depression self-reports, and Schmidt and Fox (1995) reported that subjects high in shyness were significantly higher in depression scores than a 'low-shy' group. Moreover, some research suggests that shyness may be a vulnerability factor for depression (e.g., Joiner, 1997). Indeed, other research indicates that the frequency of non-social activity is associated with loneliness and depression in adolescence (Burgess & Younger, 2006).

Most research suggests that adolescence is the period of greatest risk for developing depression. Indeed, rates of depression have been shown to increase significantly during late childhood and early adolescence (Earls, 1986; Peterson & Craighead, 1986; Rutter, 1986). In adolescence, shyness has also been associated with depression (Bohlin & Hagekull, 2009; Carey, Finch, & Carey, 1991; Karevold, Røysamb, Ystrom, & Mathieson, 2009; Leve et al., 2005; Masi et al., 2004). Masi et al. (2004) found that adolescents with depressive disorders showed significantly higher shyness scores than normal controls, and Carey et al. (1991) found that shyness accounted for 37% of the variance in depression scores in 10-to-17-year-old inpatients. Moreover,

research has shown that shyness in adolescence predicts depression over time. For instance, Murberg's (2009) prospective study showed that shyness in 14-to-16-year-olds predicted depressive symptoms one year later.

Notwithstanding the evidence that shyness may be most strongly associated with more severe depression in adolescence, there is evidence that childhood shyness is associated with elevated (but sub-clinical) levels of depression, and this may be an important marker for later and more serious depression. Indeed, certain temperamental styles are considered to be associated with vulnerability to depressive symptoms (e.g., Ono et al., 2002). Although there are not as many studies linking shyness to depression in childhood, some research suggests that shy children may be more likely than their non-shy peers to show signs of depression. For instance, Bell-Dolan, Reaven, and Peterson (1993) found that social withdrawal predicted both peer-rated and teacher-rated depression in 4th to 6th grade children. More recently, Coplan, Rose-Krasnor, Weeks, Kingsbury, Kingsbury, and Bullock (in press) found that shy children aged 9-to-12-years showed greater depressive symptoms than comparison children.

Chen and colleagues (Chen, Cen, Li, & He, 2005; Chen, Rubin, & Li, 1995a; Chen, Rubin, & Li, 1995b; Chen, Wang, & Wang, 2009) have reported on the relation between shyness and depression in Chinese children. Initial results suggested there was no relation between shyness and depression (Chen et al., 1995b), and no difference in depression scores between shy and aggressive children (Chen et al., 1995a). However, Chen et al. (2005) performed a three-cohort cross-sectional study examining the correlates of shyness over a 12-year period. Results indicated that shyness was unrelated to depression in the first two cohorts, but in the third cohort shyness and depression were

positively correlated. Although this association was modest, it suggests that, in China, shyness and depression have become more strongly related over time. More recently, Chen et al. (2009) have shown that childhood shyness is related to depression in urban areas, whereas shyness was related to more positive outcomes for rural children.

Other research has shown more long-term associations between shyness and depression. Some retrospective studies suggest that having been shy in childhood is predictive of adult depressive symptoms (e.g., Nystrom & Lindegard, 1975; Parker, Hadzi-Pavlovic, Brodaty, & Boyce 1992; Van Valkenberg, Winoker, Loury, Behar, & Van Valkenberg, 1983). Also, results from prospective studies suggest that shyness in children and young adults is predictive of later depression (e.g., Elovainio et al., 2004; Gazelle & Ladd, 2003; Kim, Rapee, Oh, & Moon, 2008). Gazelle and Ladd (2003) found that high-shy children were at elevated risk for depressive symptoms, as evidenced by an increasing trajectory of depressive symptoms from grades 1 to 4. Also, Bohlin and Hagekull (2009) found that shyness in infancy was predictive of depression in adults, and Leve et al. (2005) found that childhood shyness predicted internalizing behaviour (including depression) at age 17 years. Karevold et al. (2009) performed an 11-year longitudinal study examining the pathways to depressive symptoms at age 12-13 years, and found that there were two main pathways to depressive symptoms. One of these pathways was through child temperament— shyness at ages 4.5 and 8-9 years was predictive of depression at age 12-13 years.

Cognitive Models of Anxiety

Considering the fact that shyness has been linked to both anxiety and depression in childhood, it is reasonable to assume that childhood shyness, anxiety, and depression

would share some specific attributes. One potential attribute (or group of attributes) that might help explain the relations among these overlapping constructs might be a shared pattern of thought processes (or *cognitive style*). In fact, there has been a growing interest in the cognitive approach to the study of psychopathology, with negative cognitive style thought to contribute to the development, maintenance, and exacerbation of anxiety and depression (e.g., Dobson & Kendall, 1993; Leung & Wong, 1998; Ronan et al., 1994). If there is a common (or at least overlapping) pattern of negative thoughts (*negative cognitions*) associated with shyness, anxiety, and depression, it is possible that such cognitive factors might also affect the degree to which shy children develop symptoms of anxiety and depression. In fact, cognitive models of anxiety and depression are commonplace, and treatment of the associated clinical disorders often involves elements of cognitive restructuring. In order to examine further the potential overlap of cognitive styles, the literature covering cognitive patterns in anxiety, depression, and shyness will now be reviewed.

Cognitive models have become the dominant models of anxiety and anxiety disorders. According to the DSM-IV, anxiety disorders are characterized by internal processes of excessive worry, apprehensive expectation, and/or rumination about possible negative outcomes (American Psychiatric Association, 1994). Indeed, it has been suggested that negative cognitions play a significant role in the etiology of anxiety, particularly social anxiety (Beidel, Turner, & Dancu, 1985; Sanz & Avia, 1994). The term *cognition* (as it is applied to models of anxiety) has come to include several types of cognitive processes such as cognitive distortions, cognitive errors, and cognitive biases (e.g., Bögels & Zitgerman, 2000; Epkins, 1996; Kendall & Chansky, 1991; Spence,

Donovan, & Brechman-Toussaint, 1999; Treadwell & Kendall, 1996; Weems, Berman, Silverman, & Saavedra, 2001). It has been argued that negative cognitions are not well understood in terms of their relation to anxiety in children (Alfano, Beidel, & Turner, 2002). However, some research with both clinical and non-clinical populations suggests that childhood anxiety is generally associated with patterns of negative cognitions (e.g., Chansky & Kendall, 1997; Chorpita, Albano, & Barlow, 1996; Houston, Fox, & Forbes, 1984; Prins & Hanewald, 1997; Spence et al., 1999; Reijntjes, Dekovic, & Telch, 2007). For example, as compared to non-anxious peers, anxious children tend to exhibit more cognitive preoccupation (Houston et al., 1984), negative thoughts (Prins & Hanewald, 1997), more negative social expectations and views of themselves (Chansky & Kendall, 1997), and a greater anticipation of negative consequences during social interactions (Reijntjes et al., 2007).

Considering the links between negative cognitions and anxiety, it is not surprising that *cognitive behavior therapy* (CBT; a commonly used therapy for treating anxiety disorders) aims, at least partly, to restructure negative cognitions. Outcomes of treatment studies generally support the efficacy of CBT in this regard. For instance, Treadwell and Kendall (1996) found that children's negative cognitions were lessened after CBT treatment. Barrett, Dadds, and Rapee (1996) looked at cognitive style (threat perceptions and avoidant solutions) pre- and post-treatment with CBT. The 'CBT-parent involvement' group showed significantly fewer threat perceptions and avoidant solutions (although this was not the case for the 'CBT-only' group), showing the importance of parents in maintaining children's cognitions. Also, Silverman et al. (1999) reported that

cognitive errors in phobic children were reduced in the 'group CBT' condition but not in the 'wait-list control' condition.

Cognitive distortions. Various cognitive models of anxiety have been proposed, although these models have focused on adult anxiety, and have all but ignored the development of anxiety in childhood (Alfano et al., 2002). Beck and Emery (1985) and Barlow (1998, 1999) proposed theoretical models suggesting that anxious people attend more to threatening stimuli, and they interpret the world in a way that is consistent with their biased cognitions (e.g., expectancies). Beck and Emery (1985) argued that anxiety is a result of a problem with information processing that leads to biased attention. In this view, information is interpreted through *schemas* (or *schemata*), and if someone has an anxious schema, they will tend to perceive non-threatening stimuli as threatening, dangerous, or scary. Once information has been processed through this schema and has been interpreted in this way, thoughts subsequently become more automatic and tend to be focused around apprehension, and the individual has a hard time focusing on other information that might otherwise disconfirm their biased interpretations. Similarly, Kendall (1985) argued that anxiety results from chronic over-activity of schemas that have been organized around themes related to threat and danger. These over-activated schemas are thought to focus on threat-relevant information, which is then manifested in the form of *cognitive distortions* (biased, maladaptive cognitive processes).

Barlow's theory (1988, 1999) added to these ideas by proposing that attentional biases are present while information is being processed. Also, when people are aroused, their attention is focused by some threat and they pay more attention to it. Individuals' expectations also come into play, however, and those who expect to succeed at tasks will

focus on task demands, whereas failure expectations lead to focusing on these negative expectations. This narrow (biased) focus of attention leads to greater arousal and both lead to more apprehension and ultimately avoidance.

Models specific to social anxiety disorder (SAD, also sometimes called social phobia) seem to parallel these concepts, although there is disagreement between such models (e.g., Hope, Gansler, & Heimberg, 1989; Clark & Wells, 1995). Hope et al. (1989) argued that physiological arousal leads to an increase in self-focused attention, which then leads to more internal attributions and negative emotions. In contrast, Clark and Wells (1995) emphasized that socially anxious individuals start out by engaging in negative cognitions, such as viewing the self as a ‘social target’ and holding negative views of the self, which then lead to greater physiological arousal. More recently, Rapee and Heimberg (1997) added to these models by arguing that the anxiety experienced in SAD is due to the perception of a threat of negative evaluation. They argued that individuals have negative views of their own behavior, and therefore expect negative evaluations by others.

Learned-helplessness. One potentially important cognitive model for the study of anxiety is the *learned helplessness* (LH) model (Abramson, Seligman, & Teasdale, 1978). Although the focus has mainly been on applying learned helplessness to depression (see subsequent section on cognitive factors and depression), others have argued that it might be a good model for explaining anxiety (Barlow, 1988; Mineka, 1985; Mineka & Zinbarg, 1996). In fact, Waschbusch, Sellers, LeBlanc, and Kelley (2003) noted that most of the research on learned helplessness and depression does not take co-occurring anxiety into account.

Overmier and Seligman (1967) found that dogs exposed to inescapable and unavoidable shock in one situation, did not attempt to escape in other situations where escape was possible. According to Seligman and Maier (1967), this effect was due to the uncontrollability of the situation, rather than the fact that the dogs were exposed to shock. Although the example of Overmier and Seligman's (1967) study with dogs has been used most often to generate cognitive theories of depression, some have argued that there are parallels between the phenomenon of learned helplessness and anxiety disorders.

According to Maier and Seligman (1976), individuals who are faced with a situation where they cannot influence the outcome tend to develop an expectation that future outcomes will not be affected by their actions. As a result of this expectation of uncontrollability, people are then less motivated to engage in new activities and show deficits in problem solving. This pattern of response is known as a *LH response* and *LH theory* was developed based on Maier and Seligman's (1976) theoretical framework and subsequently reformulated by Abramson et al. (1978). This reformulation involved the idea that certain individuals are prone to make maladaptive attributions for the causes of events (see subsequent section on *attribution biases*).

A key idea in learned helplessness is the lack of control, and it has been argued that a lack of control is just as likely (if not more likely) to lead to anxiety as depression (Chorpita & Barlow, 1998). Indeed, the work of Peterson, Maier and Seligman (1993) showed that animals show anxiety in new situations following 'helpless induction' (i.e., as a result of learned helplessness). However, findings from research linking anxiety to learned helplessness are scarce and have shown mixed findings. In a clinical sample of adolescents, Curry and Craighead (1990) found that anxiety was unrelated to helpless

attributions for both positive and negative events. In contrast, Garber et al. (1993) conducted a study with an *unselected* (i.e., non-clinical) sample of adolescents and found that anxiety was significantly related to a helpless attributional style.

Locus of control. Considering that a lack of control may be related to anxiety, the concept of *Locus of Control*¹ is also of potential importance. Rotter (1966) first defined *Locus of Control* (LoC) as a dimension of control that exists along a continuum from internal to external. Individuals who have an internal LoC feel as though they have control over life events, whereas individuals with an external LoC feel as though the outcomes of life events are beyond their control (i.e., a *lack* of control). Consequently, children who have an external LoC should be expected to experience greater anxiety. Indeed, having an external LoC has been related to anxiety in clinical and unselected samples of children (e.g., Finch & Nelson, 1974; Nunn, 1988; Rawson, 1992).

According to Barlow (2002; Chorpita & Barlow, 1998), a perceived lack of control over negative events is central to the development of anxiety disorders. Barlow (2002) argued that children are sometimes exposed early to uncontrollable events which can lead to more chronic feelings of uncontrollability, and a greater tendency to perceive events as uncontrollable, which in turn can lead to clinical (or sub-clinical) anxiety. In fact, uncontrollable events or causes have been shown to play a significant role in the etiology of anxiety disorders (Barlow, 1991; Mineka & Kelly, 1989). Indeed, there have been several studies (including both adult and child samples) linking perceived control to anxiety. Rapee, Craske, Brown, and Barlow (1996) found that adults with clinical levels

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¹ It should be noted that assessments of attributional style (commonly used to assess feelings of helplessness) include 'internal' versus 'external' attributions, which are conceptually equivalent to internal versus external Locus of Control.

of anxiety scored lower on perceived control. Subsequent research has built on this finding by showing anxiety is negatively associated with perceived control in children and adolescents (Hogendoorn et al., 2008; Weems, Silverman, Rapee, & Pina, 2003).

Negative cognitive errors. Another group of negative cognitions that are thought to be important for the understanding of childhood anxiety are *negative cognitive errors* (i.e., predispositions toward negative interpretations of neutral, ambiguous, or potentially threatening stimuli or situations) (Leitenberg, Yost, & Carroll-Wilson, 1986). An example of such an error is *personalizing* (i.e., attributing control over the outcomes of negative events to internal causes; originally proposed by Beck, 1976). A study by Weems et al. (2001) showed a positive relation between negative cognitive errors and anxiety in a sample of clinically referred youth aged 6-17 years (although this relation was stronger for 12-to-17-year-olds). Also, Weems, Costa, Watts, Taylor, and Cannon (2007) reported that negative cognitive errors predicted anxiety symptoms in a similar sample, even at one-year follow-up.

Threat perception biases. Another potentially important interpretive bias when examining the role of cognitive factors in childhood anxiety is *threat perception bias*. According to Weems and Watts' (2005) model describing the influences of cognitions on children's anxiety, threat perception might be important for anxiety due to attentional biases, which may promote selective encoding of threat-related information in memory. This selective encoding may then lead to greater amounts of threat-related memories that are negatively biased. Muris, Jacques, and Mayer (2004) note two important types of threat perception bias - *interpretational bias* and *reduced evidence for danger* (RED) bias. Interpretational bias "reflects children's tendency to interpret ambiguous stimuli and

situations more readily as threatening”, and RED bias “refers to anxious children’s tendency to quickly jump to the conclusion that they are in danger, even when confronted with minor threat cues” (Muris et al., 2004, p. 252).

Several studies have shown that anxious children and adolescents tend to exhibit interpretational threat perception biases (Bögels, van Dongen, & Muris, 2003; Bögels & Zigterman, 2000; Chorpita et al., 1996; Taghavi, Moradi, Neshat-Doost, Yule, & Dalgleish, 2000). Magnúsdóttir and Smári (1999) looked at 13-to-15-year-old adolescents’ appraisal of negative events. They found that, as compared to their non-anxious peers, socially anxious adolescents predicted more threatening outcomes for hypothetical situations. Hadwin, Frost, French, and Richards (1997) presented 7-to-9-year-olds with a series of words that could be interpreted in a threatening or neutral way (e.g., bark, hanging, tank, whipping). Children were then shown a pair of pictures representing two homophones of these words (e.g., dog barking and tree bark) and asked to indicate which of two pictures represented the word they just heard. Results indicated that anxious children were more likely to choose the picture that represented the more threatening interpretation, suggesting that these children were showing an interpretational bias. Barrett, Rapee, Dadds, and Ryan (1996) looked at interpretations of ambiguous situations in a sample of 7-to-14-year-olds. They also found that children with anxiety disorders interpreted situations as more threatening than did non-anxious comparison children. These findings suggest that anxious children do interpret ambiguous stimuli as more threatening than non-anxious children.

There is also evidence that anxious children are more likely to exhibit a RED bias. In a series of studies, Muris and colleagues (Muris, Kindt, et al., 2000; Muris, Luermans,

Merckelbach, & Mayer, 2000; Muris, Merckelbach, & Damsma, 2000; Muris, Merckelbach, Schepers, & Meesters, 2003; Muris, Rapee, Meesters, Schouten, & Geers, 2003) read stories describing daily situations to children aged 8 to 13 years. Children were told that some stories would be ‘scary’ (i.e., bad ending), whereas other stories would be ‘not scary’ (i.e., happy ending), and were instructed to determine which type of story was being read. Stories were presented sentence by sentence, and children were asked whether the story would be scary or not scary after each sentence. Results from these studies show that children with greater levels of anxiety heard fewer sentences before deciding a story would be scary (an example of the RED bias), as compared to children with lower levels of anxiety. These findings suggest that anxious children not only interpret ambiguous stimuli as more threatening, but also are more vigilant and require only minor threat cues in order to perceive threats.

More recently, researchers have developed and validated self-report assessments of children’s threat perceptions. For example, the *Ambiguous Scenarios Questionnaire* (ASQ, Barrett et al., 1996b, adapted by Creswell & O’Connor, 2006) involves children being presented with a series of situations that each can be interpreted as threatening or non-threatening. Creswell and O’Connor (2006) found that child self-reported anxiety was significantly correlated with threat interpretations of ambiguous scenarios. A recent study by Lester, Seal, Nightingale, and Field (2010) extended this finding, showing that children’s threatening interpretations of ambiguous scenarios were significantly related to both child anxiety and maternal anxiety.

Finally, there is some evidence that anxious children perceive negative events as both more likely (i.e., more probable) and more distressing (i.e., more costly) than their

non-anxious peers. In fact, some research has shown that anxious youth exhibit biased estimates for the probability and cost of negative events. As far as children's probability estimates for negative events, the evidence for a bias has been somewhat mixed.

Dalgleish et al. (1997) reported that youth with anxiety disorders did not show more elevated probability estimates than did healthy youth. However, in research with using non-clinical (or community) samples, there is evidence of a probability bias associated with elevated levels of anxiety. For instance, Canterbury et al. (2004) conducted a study wherein children and youth aged 9-18 years completed a self-report of how likely negative events were to occur. These authors found that high-anxious youth showed significantly higher probability estimates than did non-anxious youth. More recently, Szabó (2009) found that higher probability and cost estimates for negative events were related to higher levels of worrying in adults and children.

Cognitive Models of Depression

Much as in the case of anxiety, cognitive models are also the dominant models used for the understanding of childhood depression. This section will include an overview of widely cited cognitive models of depression, followed by a review of the evidence for the link between negative cognitions and childhood depression. This review will include studies that support assertions made by specific theories, as well as those that more generally address the link between negative cognitions and depression. Some of the same cognitive models associated with anxiety are relevant for the case of depression (i.e., learned helplessness), and thus they will not be reviewed in as much detail here.

Cognitive triad. Beck's (1976) cognitive theory of depression has been one of the most influential models of depressed affect. In fact, this theory essentially laid the

groundwork for cognitive behavior therapy (CBT). Beck's conceptualization of the *cognitive triad* (i.e., negative views of the self, future, and environment) is thought to play an important role in the etiology of depression (Beck, 1970, 1976). Beck believed that 'cognitive disturbances' preceded changes in negative affect (i.e., changes in depression), but were also the cause of such changes. According to the theory, individuals misinterpret information through a *negative cognitive screen* (essentially, 'cognitive distortions' or 'negative cognitions'), and this leads them towards feelings of depression. In support of Beck's notion of the cognitive triad, Meyer et al. (1988) found that depressed children exhibited a more negative view of themselves (i.e., comparing themselves unfavourably with peers), their abilities (i.e., evaluating their performance more negatively than others' performances), and the future (i.e., more negative expectations for themselves prior to a task).

Attribution biases. As described above, Overmier and Seligman's (1967) learned helplessness (LH) model suggests that feelings of helplessness are produced by experiencing uncontrollable negative events and coming to expect that nothing can be done to change or avoid these events. The LH model was subsequently (and somewhat controversially) used in an attempt to explain depression in humans. Due to several limitations, the original model was reformulated by Abramson et al. (1978), who expanded on the original concept of LH and developed a cognitive model of depression. According to this reformulated learned helplessness model, individuals' causal attributions for events (particularly negative events) was of primary concern.

Abramson et al. (1978) argued that depressed individuals tend to exhibit a maladaptive attributional style. Specifically, among depressed individuals, there is a

tendency to interpret negative events as having causes that are internal (e.g., “I caused this”), stable (e.g., “it will last forever”), and global (e.g., “it will affect everything I do”). In contrast, non-depressed individuals tend to attribute negative events to external, unstable, or specific causes, and are more likely to engage in active problem solving and resist negative affect.

Results from a large number of studies have also lent support to Abramson and colleagues’ (1978) proposition that depressed individuals tend to display maladaptive causal attributions (particularly for negative events). In samples of adults, it has been shown that attributing negative events to internal, stable and global causes is associated with depression and depressive disorders (Barnett & Gotlib, 1988; Brewin, 1985; Peterson & Seligman, 1984; Robins, 1988; Seligman, Abramson, Semmel, & von Baeyer, 1984; Sweeney et al., 1986; Turner & Cole, 1994). For instance, Butters, McClure, Seigert, and Ward (1997) found that undergraduates’ (negative) attributional style for both real and hypothetical events was associated with depressive symptoms. Also, studies with adolescents have shown a clear link between helpless attributions and depression (Gladstone & Kaslow, 1995; Joiner & Wagner, 1995; Nolen-Hoeksema & Girgus, 1995; Seligman, Reivech, Jaycox, & Gillham, 1995).

More recent research has also examined the relation between attributional style and depression in childhood (e.g., Haley, Fine, Marriage, Moretti, & Freeman, 1985; Kaslow, Rehm, & Siegel, 1984; Kaslow, Rehm, Pollack, & Siegel, 1988; Moyal, 1977). This research has shown that depressive children tend to exhibit more helpless, blaming, and self-blaming tendencies (Moyal, 1977), depressed and distorted responses to hypothetical situations (Haley et al., 1985), and deficits in self-evaluation and causal

attributions (Kaslow et al., 1984; Kaslow et al., 1988; Nolen-Hoeksema, Girgus, & Seligman, 1986; Seligman, Kaslow et al., 1984).

Diener and Dweck (1978) examined 5th grade children in terms of attributions for failure, classifying children as ‘helpless’ or ‘mastery-oriented’ based on these attributions. Helpless children were those who attributed failures to a lack of ability, whereas mastery-oriented children made relatively few attributions, instead focusing on problem solving. Building upon these results, Fincham, Diener, and Hokoda (1987) measured attributional style in 5th grade children, and found that ‘helpless’ children showed significantly more depressive symptoms than their more mastery-oriented peers, suggesting that negative attributions may lead to depression in children. Meyer et al. (1988) gave depressed and non-depressed 5th and 6th grade children ‘picture arrangement’ problems from a standard children’s intelligence test. Similarly to the above stated findings, these researchers found that depressed children made attributions that emphasized the importance of one’s own ability in failure. However, these authors also examined children’s evaluations of themselves and others – they found that depressed children provided lower evaluations for themselves than for others (social comparison component), and for attributions, depressed children emphasized the importance of ability in failure (whereas non-depressed children emphasized the importance of other factors). In fact, an earlier study by Brewin and Furnham (1986) suggested that childhood depression might be more strongly related to social comparison judgments than attributional style.

Broader examinations of the attributional style literature have yielded similar results to the above-mentioned studies. In a meta-analytic review of 28 studies, Gladstone

and Kaslow (1995) found that higher levels of depressive symptoms were associated with a negative attributional style. Specifically, depressive symptoms were positively associated with internal, stable, and global attributions for negative events, as well as external, unstable, and specific attributions for positive events. Moreover, other research suggests attributional style is linked with depression in children and adolescents with a variety of clinical disorders. For instance, Barnhill and Myles (2001) reported that adolescents with Asperger's syndrome who had more elevated depressive symptoms, tended also to have a more negative attributional style. The authors suggested that attributional style might predispose individuals to depression, or maintain depression in already depressed individuals. Also, Milich and Okazaki (1991) found that boys diagnosed with ADHD were more likely to exhibit a 'helpless' response when given an unsolvable puzzle task.

It seems as though negative attributions precede depressive symptoms in children. Some research suggests that kindergarten-aged children are capable of making attributions that are an accurate representation of their inner state of mind (e.g., Gopnik & Wellman, 1992). Dweck and colleagues (Burhans & Dweck, 1995; Heyman, Dweck, & Cain, 1992; Ruble & Dweck, 1995) have shown that some children as young as 3-years of age already demonstrate negative self-attributions. However, whereas the relation between attributional style and depressive symptoms likely does not appear in children younger than 7 years of age (Asarnow & Bates, 1988; Kaslow et al., 1984), emotions conceptually related to depression may lead to the display of a negative (or helpless) attributional style. Hayden, Klein, Durbin, and Olino (2006) provide support for this idea in a longitudinal study using an interpersonal laboratory task. They found that low

positive emotionality measured at age 3 was predictive of helplessness in the interpersonal task 4 years later. Indeed other research suggests that children showing symptoms of depression tend to use fewer negotiation strategies than non-depressed peers (Greno-Malsch, 1998), which is also suggestive of helpless behaviour. Taken together, these findings suggest that childhood depression is associated with several negative cognitions and behaviours, including a negative attributional style and helpless behaviour, which are consistent with major cognitive theories of depression.

Threat perception bias. It should be noted briefly that depression in childhood, as in the case of anxiety, might be associated with threat perception. There is some evidence, albeit mixed, that depressed children are more likely to process negative information (e.g., Teasdale, 1983) and that this might apply to the prediction of future events (MacLeod & Byrne, 1996). Because depressed children might have a more general tendency to expect negative outcomes, they might also tend to perceive threat more readily than their non-depressed peers. Indeed, in a community sample, Muris, Luermans et al. (2000) found that although anxiety was more strongly related to depression, children's depressive symptoms were significantly correlated with biased threat perception even when controlling for anxiety. However, another study of typically developing children by Muris and colleagues (Muris, Meesters, Smulders, & Mayer, 2005) found that depression was not related to threat perception when anxiety and aggression were included in the analyses. Therefore, it is unclear whether depressed children would show increased perceptions of threat as compared to non-depressed children.

Co-Occurrence of Anxiety and Depression

Although research has often focused on anxiety and depression separately, these feelings are generally co-occurring, in both clinical and unselected samples (Epkins, 1996; Rapee, 1995; Regier, Rae, Narrow, Kaelber, & Schatzberg, 1998; Schatzberg, Samson, Rothschild, Bond, & Regier, 1998; Strauss & Last, 1993). Indeed, between a quarter and half of youth with anxiety disorders have a comorbid depressive disorder (Chavira, Stein, Bailey, & Stein, 2004; Essau, Conradt, & Petermann, 1999; Lewinsohn, Zinbarg, Seeley, Lewinsohn, & Sack, 1997; Wittchen, Stein, & Kessler, 1999). Also, depressive and anxious thoughts are common in both mood and anxiety disorders (Ambrose & Rholes, 1993; Epkins, 1996; Laurent & Stark, 1993; Weems et al., 2001). This should come as no surprise, as symptoms of anxiety and depression are frequently grouped together into the larger category of *internalizing* problems (e.g., Mathiesen & Sanson, 2000).

The co-occurrence of anxiety and depression is typically associated with the most severe outcomes for children (Cicchetti & Toth, 1998; Franco, Saavedra, & Silverman, 2007; Manassis & Menna, 1999; Strauss, Last, Hersen, & Kazdin, 1988). For example, some studies show that youth with *AD-DD* (anxious disorder with comorbid depressive disorder) exhibit greater levels of anxiety than those with no comorbidities or with non-depressive comorbidities (Franco et al., 2007; Strauss et al., 1988). These youth also tend to have lower global functioning than those with no depression comorbidity (Manassis & Menna, 1999), as well as less involvement in extra-curricular activities and greater depression than those with other comorbidities (Franco et al., 2007). Also, children and adolescents who have symptoms of both anxiety and depression tend to experience more

impairment, show poorer responses to treatment, and generally exhibit more negative developmental trajectories than those with anxiety or depression alone (Cicchetti & Toth, 1998).

These findings indicate that co-occurring anxiety and depression lead to worse problems than the presence of either anxious or depressive symptoms alone, as well as potentially greater problems than those associated with other comorbidities. This suggests further that research attention should be paid to the co-occurrence of anxiety and depression in particular. However, comorbid depression is often an exclusion criterion for research related to anxiety disorders, which might partially account for the relative lack of attention paid to such comorbidity or co-occurrence.

Some longitudinal research has shown that in cases of comorbid anxiety and depression, symptoms are more severe and chronic and are associated with more risk factors (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Merikangas et al., 2003; Moffitt, Harrington, et al., 2007). Therefore, as has been suggested by some researchers, the prediction of anxiety and depression co-occurrence might be more important than symptoms of either anxiety or depression alone (Karevold et al., 2009; Moffitt, Caspi, et al. 2007).

Given the comorbidity of anxiety and depression, it can be speculated that a similar pattern might be observed in the case of negative cognitions. Few studies have examined this possibility. However, in Epkins' (1996) study of anxiety and depression, children showing signs of co-occurring anxiety and depression reported more negative cognitions than the anxious group alone. Also, Weeks, Kingsbury, and Coplan (2010) found that 9-to-12-year-olds showing signs of social anxiety as well as depression

exhibited the most negative attributional style (although not significantly different from depressed children), as well as the greatest tendency to repetitively focus on stressors (although not significantly more than socially anxious children). Considering these results, it seems plausible to assume that overall, children exhibiting symptoms of both anxiety and depression will exhibit the most negative (or maladaptive) pattern of cognitive factors.

Overlap vs. Specificity of Cognitive Features of Anxiety and Depression

Having established that childhood anxiety and depression tend to co-occur and are both related to negative cognitions, an important follow-up question is whether there are *specific* cognitive patterns uniquely associated with childhood anxiety versus depression, or whether there is a more *general* cognitive style that is associated with a range of negative affective states, including anxiety and depression. In the following sections, the evidence for each possibility is reviewed.

Evidence for overlapping of cognitive features. There is considerable conceptual overlap between the constructs of anxiety and depression. For instance, Gray (Gray, 1982; Gray & McNaughton, 1996) defined anxiety as a nervous system state where the behavioral inhibition system is activated. In this view, anxiety is thought to be separate from fear, which is the actual reaction to perceived danger— anxiety being more akin to the preparation for this perceived danger. Within this conceptualization, it has been suggested that anxiety is actually closer to the idea of *negative affect* and is therefore common to both anxiety and depressive disorders (Barlow, Chorpita, & Turovsky, 1996; Brown et al., 1998; Chorpita, Albano, & Barlow, 1998; Clark & Watson, 1991; Gray & McNaughton, 1996). In fact, it has been argued that in childhood,

social anxiety and depression have similar underlying cognitive and emotional mechanisms, and that anxiety and depression should be regarded as part of the same continuum of problems (Stark, Kaslow, & Laurent, 1993; Wadsworth, Hudziak, Heath, & Achenbach, 2001).

Childhood anxiety and depression are both closely linked to negative cognitions, and considering suggestions of conceptual similarities between the two, it would be expected that childhood anxiety and depression would not only co-occur, but would share cognitive features such as negative cognitions. Indeed, there is some evidence to suggest both of these propositions are true to some extent. Leitenberg et al. (1986) found that negative cognitive errors are related to both anxiety and depression. Laurent and Stark (1993) examined anxiety and depression in an unselected sample of adolescents and found that although anxious and depressed youth may both report more anxious and depressive thoughts than controls, they did not differ significantly from each other in these regards. Research has also examined self-critical automatic thoughts in non-clinical samples of adolescents (Garber et al., 1993; Laurent and Stark, 1993). These studies found that the presence of such thoughts did not distinguish between anxious and depressed youth.

Epkins (1996) compared cognitive features of social anxiety and depression in a sample of 211 children aged 8 to 12 years. Results indicated that socially anxious and depressed children both reported more negative views of the self, the world, and the future (i.e., the cognitive triad), as well as more negative cognitions about themselves than did comparison children. These results support the idea that anxiety and depression are associated with similar negative cognitions.

Evidence for specificity of cognitive features. It is clear that the cognitive profiles of anxiety and depression in childhood often overlap considerably, in that they both seem to include a general pattern of negative cognitions. However, some researchers have maintained that there is also a considerable amount of *specificity* in terms of negative cognitions associated with anxiety and depression, respectively (e.g., Prins, 2001). Certainly in the case of clinical anxiety and depression, it has been argued that these disorders are associated with distinct cognitive features (Beck, Epstein, & Harrison, 1983; Beck, Brown, Steer, Eidelson, & Riskind, 1987; Rholes, Riskind, & Neville, 1985).

According to Beck and Clark (1988), anxious and depressed individuals' schemas are structurally dissimilar. Specifically, depression is thought to be associated with selectively processing negative information while attending minimally to positive information; whereas, anxious individuals are thought to selectively process threatening information. Thus, depressive cognitions are thought to focus on loss and failure, whereas anxious cognitions are thought to focus more on threat and danger (i.e., the *content-specificity* hypothesis, Beck & Clark, 1988).

In support of these ideas, Ambrose and Rholes (1993) examined cognitions related to threat and loss, as well as symptoms of anxiety and depression, in a sample of 5th, 8th, and 11th grade children. They found that threat-related cognitions contributed significantly toward the variance in anxiety, even when controlling for depression and loss-related cognitions. Also, threat-related cognitions were more strongly related to anxiety than depression. In contrast, even when controlling for anxiety and anxiety-related cognitions, loss-related cognitions contributed significantly toward the variance in depressive symptoms, and were more strongly associated with depression than anxiety.

More recently, Williamson, Birmaher, Dahl, and Ryan (2005) found that loss events were more common in children with depressive disorders than in children with anxiety disorders and healthy controls.

Ambrose and Rholes (1993) also examined the effect of negative cognition frequency. Interestingly, they found that more frequent negative cognitions were associated more strongly with depression, whereas less frequent negative cognitions were more strongly associated with anxiety. These results lend support to the content-specificity hypothesis, suggesting that anxiety and depression are differentially associated with negative cognitions. Other studies also suggest this idea has some merit. For instance, Muris and van der Heiden (2006) reported that both anxiety and depression were related to greater probability estimates for negative events in 10-to-13-year-old children. However, when controlling for anxiety, depression was no longer related to such probability estimates. This suggests that only anxiety is uniquely related to this particular negative cognition (see also Rheingold, Herbert, & Franklin, 2003).

It may be the case that depressed children experience more severe negative cognitions than their more anxious counterparts. In fact, Alfano et al. (2002) argue that negative cognitions may not be as important for the etiology or maintenance of anxiety disorders as for depressive disorders, as children reporting high levels of negative cognitions will likely report depressive symptoms as well. However, as Ambrose and Rholes' (1993) results suggest, the specific type of negative cognition is likely as important a consideration as the frequency.

Along these lines, other researchers have suggested that although some negative cognitions are related to anxiety as well as depression (e.g., Leitenberg et al., 1986),

particular negative cognitions are more strongly related to anxiety, such as *catastrophizing* (i.e., expecting the worst possible outcome) and *overgeneralizing* (i.e., seeing a single negative event as representative of all future events). In contrast, other negative cognitions may be more strongly related to depression, such as *selective abstraction* (e.g., selectively focusing on negative aspects of an event) (Epkins, 1996; Leitenberg et al., 1986; Leung & Wong, 1998; Weems et al., 2001). In support of this idea, Weems et al. (2007) found that selective abstraction was a significant predictor of depression in 6-to-17-year-olds, over and above the effects of anxiety. However, these researchers found no evidence that any other negative cognitive errors differentially predicted anxiety versus depression.

Kaslow, Stark, Printz, and Livingston (1992) examined children's responses to a questionnaire assessing Beck's idea of the cognitive triad. They found that although anxious children showed more negative views of themselves, the world, and the future than comparison children, depressed children exhibited more negative views than did both of the latter groups. This suggests that although present in both anxious and depressed children, negative cognitions may be more strongly associated with depression. In further support of these ideas, Epkins (1996) reported that socially anxious children were more likely to engage in overgeneralizing and personalizing, as well as more anxious automatic thoughts, as compared to depressed children. More recently, Weeks et al. (2010) found that children aged 9-12 years showing signs of depression exhibited a more negative attributional style than did children showing signs of social anxiety, who did not differ significantly from comparison children.

Social-Cognitive Models of Shyness

Social interaction is thought to be important for children's social and cognitive development, and a lack of social interaction may therefore lead to social and cognitive deficits. Indeed, results from a growing number of studies suggest that shyness in children is associated with cognitive and social-cognitive characteristics, including more negative self-talk and loss of concentration when feeling shy (Ishyama, 1984), and different processing of faces, possibly due to hypersensitivity to social cues (Brunet, Heisz, Mondloch, Shore, & Schmidt, 2009).

Considering that shy children may indeed exhibit such deficits or bias in their social cognitions, it is worth considering the degree to which such negative cognitions overlap with those evidenced in anxious and depressed children. If there is some overlap in negative cognitions associated with shyness, anxiety, and depression, it may be that such negative cognitions are part of the process through which shy children experience greater or lesser amounts of anxiety and depression. The literature linking shyness to negative cognitions will now be reviewed, and evaluated in terms of the overlap with negative cognitions seen in childhood anxiety and depression.

Research with adults suggests that shyness is associated with various negative cognitions. Some studies have shown that shy individuals are more likely to exhibit a more negative attributional style, including external causal attributions for social successes and internal attributions for social failures (e.g., Girodo, Dotzenroth, & Stein, 1981; Teglasi & Hoffman, 1982). Leary, Kowalski, and Campbell (1988) found that shy undergraduates, who were to be evaluated after social interaction, expected to make a

worse impression on others than their non-shy counterparts, with no factual basis for these expectations.

Few studies have directly examined the relation between shyness and negative cognitions in childhood. However, there is evidence that children who spend less time with peers tend to show negative cognitions. Rubin, Daniels-Beirness, and Bream (1984) showed kindergarten children hypothetical vignettes depicting social problems and asked children to generate possible solutions. They also measured children's response flexibility (i.e., their ability to generate new solutions if their first suggestion was inappropriate). Results indicated that socially-isolated children generated fewer solutions than other children. More importantly, isolated children exhibited less flexibility after giving an initial inappropriate response. One possible explanation for this result is that isolated children felt helpless to come up with an appropriate solution, and were unmotivated to change their subsequent responses following initial "failure". However, it is unclear whether the results reflect a deficit in motivation or competence. It is possible that these children were simply less advanced in terms of social cognition and were less able to generate responses. Also, some of these children may have been isolated due to peer exclusion, suggesting that these results may not necessarily apply to shy children in particular.

Other studies have examined the social competency of socially-withdrawn children. Young children who are socially-withdrawn tend to have deficits in terms of perspective taking (LeMare & Rubin, 1987). They also seem to exhibit behaviours that are suggestive of helplessness. For instance, Stewart and Rubin (1995) observed the dyadic free-play behaviours of children aged 5 to 9, and noted the frequency of children's

social requests. They found that not only were withdrawn children more likely to have their requests denied by their play partner, but they were also less likely to make re-attempts when their first attempt failed, which is characteristic of a 'learned helplessness' response, and suggests a negative attributional style.

Indeed, some research suggests that socially-withdrawn children seem to have such an attributional style. Wichmann et al. (2004) showed ambiguous provocation vignettes to children in grades 4 through 6 and asked them to attribute causes to the events depicted. They found that children who were nominated by peers as socially-withdrawn tended to display an attributional style indicative of being more familiar with social failure. These children were also more likely to suggest less assertive, more self-defeating strategies in order to solve the hypothetical problems depicted. These results suggest that children might display less social competence because they have learned (from previous experience) that they are unable to use more competent strategies. However, Wichmann et al. (2004) did not find that withdrawn children had lower perceived control with regards to the hypothetical situations, which is inconsistent with what we might expect from learned helplessness theory. Recently, Coplan et al. (in press) showed that shy children aged 9-to-12-years had a more depressive attributional bias than non-shy comparison children.

These findings have received support in the form of laboratory paradigms. For instance, Gazelle and Druhen (2009) examined shy children's responses to an experimentally manipulated peer rejection, which involved being given the choice to invite a friend to play, but being told that the friend did not want to play. Results indicated that shy children were not only more upset about the rejection, but also

exhibited more helpless behaviour, in that they were less likely to ask another friend to play.

Shy children may also differ from non-shy peers in terms of their *implicit personality theories* or IPTs. Individuals can be grouped into *entity theorists* (i.e., those who believe that personality is fixed or immutable) and *incremental theorists* (i.e., those who believe that personality can be changed). Research by Erdley, Loomis, Cain, and Dumas-Hines (1997) showed that 4th and 5th grade children who are entity theorists tend to focus on the evaluative nature of tasks (i.e., performance goals), whereas incremental theorists tend to focus on potential learning opportunities (i.e., learning goals).

Some research has specifically examined the IPTs of shy individuals. Beer (2002) performed a study with a sample of undergraduates, examining shy incremental versus entity theorists in terms of their perceptions of social situations. Results showed that shy incremental theorists (who believe that shyness is an aspect of personality that can change) tend to view social situations as potential opportunities for learning (instead of something to be avoided), use less avoidant strategies for coping with social situations, and suffer fewer negative consequences than shy entity theorists (who believe shyness is an immutable aspect of personality).

Dweck (e.g., Dweck, Chiu, & Hong, 1995) suggests that IPTs can be *domain specific* (i.e., individuals could have one type of theory for one aspect of personality, while having another type for another aspect). Therefore, it is possible that shy children might tend to have a particular IPT regarding shyness. If shy children tend to be entity theorists regarding shyness, this might be seen as a type of negative cognition, particularly if children see their shyness as a problem (i.e., they believe they have a

problem that can never change, and this might lead to feelings of helplessness). In contrast, shy children who are incremental theorists regarding shyness might be more likely to seek out ways of feeling less shy or coping with their shyness.

Taken together, these findings suggest that cognitive factors could function as possible risk and protective factors for shy children. As has been shown, childhood shyness is not only associated with several factors that can be broadly described as ‘negative cognitions’, but also associated with anxiety and depression. However, it remains to be seen whether negative cognitions associated with shyness may help explain the links between shyness on the one hand, and anxiety and depression on the other. The next section will further explore the question of whether negative cognitions can help clarify the association between shyness and internalizing difficulties.

Conceptualizing Links between Shyness, Negative Cognitions, and Internalizing Problems

It has been established that shyness is associated with certain negative cognitions, and as it most often precedes anxiety and depression, it can also be regarded as a risk factor for internalizing difficulties. However, it is certainly the case that not *all* shy children go on to experience problems with anxiety and depression. Moreover, among those shy children that do experience later difficulties, outcomes vary in their nature and severity. It has been suggested that the thought patterns of shy children may allow a better understanding of why these children experience such internalizing difficulties as anxiety and depression (Rubin et al., 2003). That is, examining children’s cognitive patterns (in particular, the degree to which they exhibit negative cognitions) may help to

explain the links between shyness and internalizing difficulties such as anxiety and depression.

In this regard, negative cognitions can be viewed as potential *mediators*, wherein shy children experience anxiety and/or depression via an indirect path through negative cognitions (e.g., shyness leads to negative cognitions, which in turn promote the development of anxiety and/or depression). Thus, negative cognitions can be seen as providing at least a partial explanation for the tendency exhibited among shy children to experience anxiety and depression.

Conceptually, a mediation model assumes some degree of causality, or at least temporality, among variables. Thus, it is important to establish the plausibility of the idea that negative thinking is an intervening variable in a process whereby shyness leads to subsequent internalizing difficulties. First, it can be argued that shyness is a stable personality trait and mostly likely appears earlier than both negative cognitions and internalizing difficulties. Indeed, shyness seems to have some biological basis and often emerges early in life (Warren et al., 2004), and can be observed in infants and preschool aged children (Kagan et al., 1988).

In contrast, negative cognitions often emerge later in life and they require more sophisticated cognitive processes which would not be expected in younger children (Harter, 2003). Also, anxiety and depression do not typically become problematic until early adolescence (Kessler et al., 2005). Moreover, as previously mentioned, it has been argued that negative cognitions often precede internalizing difficulties (e.g., Beck, 1970; Clark & Wells, 1995; Rapee & Heimberg, 1997). Thus, there is conceptual ground for a model positing a mediational role of negative cognitions in the relations between shyness

and internalizing difficulties.

Although some studies have examined mediating roles of various risk factors of internalizing problems in childhood (Appleyard, Egeland, Van Dulmen, & Sroufe, 2005; Essex et al., 2006; Gaylord, Kitzmann, & Lockwood, 2003; Leech, Larkby, Day, & Day, 2006; Luby, Belden, & Spitznagel, 2006; MacPhee & Andrews, 2006; Masi et al., 2003), there has been virtually no research directly examining the potential mediating role of negative cognitions in the relations between shyness and internalizing difficulties in childhood and adolescence.

Some have argued that negative cognitions play a causal or mediational role in the development of children's anxiety (e.g., Chorpita & Barlow, 1998; Kendall & Ronan, 1990). Although there have been no studies examining this question in childhood and adolescence, there is nevertheless some evidence to suggest that maladaptive thoughts can mediate the relations between shyness and anxiety. In one study of 9-to-11-year-old children, Findlay, Coplan, and Bowker (2009) examined the concept of *internalizing coping*, which was construed as a maladaptive set of coping strategies for dealing with an argument with a friend (Causey & Dubow, 1992). Children in this study were asked a question ("When I have an argument with a friend, I usually...") and then rated various responses, representing different coping styles. Results indicated that internalizing coping mediated the relation between shyness and social anxiety. This measure of internalizing coping included items that overlap conceptually with certain maladaptive thought patterns. Indeed, two example items from this measure are "get mad at myself for doing something that I shouldn't have done" and "worry that others will think badly of me", which suggest patterns of self-blaming (i.e., negative attributions) and biased perception

of the likelihood of negative events.

In terms of the potential influence of negative cognitions on the relation between shyness and depression, there is again no developmental research examining this issue. However, one study suggests that negative cognitions might play a mediational role in emerging adulthood. Alfano et al. (1994) measured attributional style and level of depression in shy and non-shy college students. They found that shy students exhibited a more negative attributional style and more depression than non-shy students. Moreover, when attributional style was included in the analyses, there was no longer a difference between the shy and non-shy students in terms of depression, supporting the idea that attributional style might mediate the relation between shyness and depression.

“Social relevance” of cognitive factors. Considering the theoretical conceptualization of shyness as involving wariness in social situations (Asendorpf, 1993), rather than non-social situations, it is possible that shy children will only exhibit negative cognitions (or at least to a greater extent) when there is some social salience (or social relevance) – that is, when social situations are involved. Although there are almost no studies to date that have examined this idea, particularly from a developmental perspective, some studies from the adult personality literature support this idea. For instance, Teglasi and Hoffman (1982) found that shy adults were more likely to make negative causal attributions in ‘interpersonal’ than in ‘achievement’ situations. Also, Bruch and Belkin (2001) found that shyness was associated with a maladaptive attributional style for interpersonal events, but not for non-interpersonal events.

If shy children are indeed more likely to exhibit negative cognitions in social situations, it is possible that the explanatory power of these cognitions in regards to the

relation between shyness and internalizing might depend on their social relevance. That is, the strength (or even presence) of indirect (i.e., mediation) effects might depend on whether negative cognitions are socially relevant or socially irrelevant. As has been discussed, the negative cognitions associated with shyness and social withdrawal are generally socially-relevant. Shy and withdrawn children tend to show deficits in perspective-taking (LeMare & Rubin, 1987) and behaviours suggestive of feeling helpless in social situations (Gazelle & Druhen, 2009; Wichmann et al., 2004).

Goetz and Dweck (1980) found that following social failure, some children showed helplessness (e.g., decreased effort, withdrawing from the encounter, and self-blame), whereas other children showed a 'mastery' response (e.g., increased effort, not blaming on own inadequacies, and persistence at task). It is possible that in such situations, shy children are more likely to exhibit negative cognitions suggestive of helplessness, as compared to non-shy peers. Indeed, the laboratory tasks used by Hayden et al. (2006) and Gazelle and Druhen (2009) to assess helplessness were of an interpersonal nature. Moreover, Gazelle and Druhen (2009) showed that shy children were in fact less likely than their non-shy peers to re-attempt the task (i.e., more likely to show helplessness). However, it is unclear from their study whether the social nature of the task was critical in finding this result. That is, it is possible that shy children show negative cognitions (and behaviours) in non-social as well as social situations. It remains to be seen whether the social relevance of situations plays an important role not only in shy children's negative cognitions, but also in the ability of these cognitions to explain why shy children tend to feel more anxious and depressed than their peers.

There is some evidence that the social salience of cognitive factors plays a role in the relations between cognitive factors and internalizing problems, particularly when internalizing problems are also of a social nature. For instance, Foa, Franklin, Perry, and Herbert (1996) found that adults with SAD reported greater probability and cost estimates for negative social events, but not negative non-social events. These authors also found that following a SAD treatment program, probability and cost estimates for negative social events were reduced, whereas those for negative non-social events remained unchanged. Also, Rheingold et al. (2003) found that, in comparison to healthy controls, adolescents with SAD overestimated the cost of both social and non-social negative events, but only displayed a probability bias for negative *social* events. Finally, in a clinical sample of 7-to-14-year-olds, participants with social phobia interpreted greater threat from social situations than physical situations, whereas this was not the case for participants with simple phobia (Spence et al., 1999). Taken together, these findings suggest that it is important to examine whether or not negative thoughts involve social or non-social situations or events, as this may be important in understanding the links between thought processes and internalizing difficulties, as well as the role of thought processes in linking shyness with such difficulties.

Gender differences. Although the role of gender is not a focus of the current thesis, it is possible that various gender differences could further complicate the above-positated relations among shyness, negative cognitions, and internalizing difficulties. Thus, a brief review of the literature examining relevant gender differences amongst these variables is warranted.

There seems to be a clear gender difference in the *prevalence* of internalizing disorders, with epidemiological research showing that disorders related to anxiety and depression are almost twice as prevalent among females (Kessler, McGonagle, Nelson, & Hughes, 1994). However, as noted by Zahn-Waxler, Shirtcliff, and Marceau (2008), most of the research examining gender differences in internalizing difficulties has not screened for *psychopathology* (i.e., DSM criteria for disorders), and therefore it is possible that such gender differences will not appear in a community sample. The examination of internalizing difficulties along a continuum may lead to different results in terms of gender differences than the identification of internalizing disorders based on clinical criteria.

In adults, this gender difference might be partially explained by males' greater tendency to use and abuse alcohol, which can be used to mask symptoms of anxiety through self-medication (Kessler et al., 1994). Also, the *gender intensification hypothesis* (Hill & Lynch, 1983) argues that society reinforces feminine stereotyped behaviours (such as being dependent and emotional) that put females at greater risk for depression. However, biological factors are also likely contributors to these gender differences. For instance, it has been shown that hormonal differences (including levels of estrogen and progesterone) may impede girls' ability to recover from stress (Young & Korszun, 1998), which may put adolescent girls at greater risk of internalizing difficulties than their younger counterparts (Hayward, 2003).

Gender differences in the prevalence of depression generally become apparent in adolescence (e.g., Allgood-Merten, Lewinsohn, & Hops, 1990; Aubé, Fichman, Saltaris, & Koestner, 2000). Specifically, adolescent girls are two to three times more likely than

boys to experience depression, in both clinical and community samples (i.e., whether diagnosed as a clinical disorder or examined along a continuum) (Zahn-Waxler, Crick, Shirlcliff, & Woods, 2006). Rates of childhood depression, in contrast to findings with adolescents, have been shown to be roughly equivalent for boys and girls (Zahn-Waxler et al., 2008).

In the case of anxiety, although some research found no gender differences in children and adolescents (Reynolds & Richmond, 1978), more recent studies suggest that girls show greater levels of overall anxiety sensitivity than do boys (e.g., Walsh, Stewart, McLaughlin, & Comeau, 2004). Also, a recent meta-analytic review (Else-Quest et al., 2006) suggests that girls as young as preschool age show greater fear and anxiety than boys.

Considering the links between internalizing difficulties and patterns of thinking, gender differences may also be apparent in terms of children's negative cognitions. Indeed, it has been suggested that cognitive style may account for gender differences in internalizing difficulties (Cyanowski, Frank, Young, & Shear, 2000; Hankin & Abramson, 2001). This hypothesis has been supported by some studies (Hankin & Abramson, 2002), and yet not supported by others (Hankin, Abramson, & Siler, 2001; Lewinsohn, Joiner, & Rohde, 2001). Calvete and Cardenoso (2005) reported that 14-to-17-year-old girls scored higher on a series of negative cognitions than did boys. Also, in a recent study of children and adolescents in grades 4 to 9, Cole et al. (2009) found that a number of cognitive factors (including the 'cognitive triad') were more trait-like for girls than boys. Thus, certain negative cognitions related to depression might be more a part of typical thought patterns for girls than boys. Accordingly, it may be the case that girls are

generally more likely to exhibit such negative cognitions. Girls' negative cognitions may also be more susceptible to changes. For instance, Stice, Shaw, Bohon, Marti, and Rohde (2009) found that interventions aimed at reducing negative cognitions were more effective when targeted towards girls than boys. However, according to Wade, Cairney, and Pevalin (2002), gender differences in depression only begin to emerge at age 14 and, in fact, until early adolescence boys might actually exhibit a greater amount of negative cognitions than girls (Piccinelli & Wilkinson, 2000).

As previously described, gender effects are quite common in developmental shyness research, suggesting that although girls may sometimes report being more shy than boys, shy boys appear to be at a greater risk for loneliness, negative mood, and general internalizing difficulties as compared to shy girls (Bowen et al., 1995; Coplan et al., 2007; Stevenson-Hinde & Glover, 1996). Therefore, gender may further complicate the role of negative cognitions in the links between shyness and internalizing difficulties.

Developmental considerations. An examination of children's negative cognitions also necessitates considerations of the cognitive abilities associated with various age periods. Certainly, in order to assess the extent to which children exhibit a series of negative cognitions, a requirement would be that children have reached a certain level of cognitive self-awareness. Research has shown that although self-representations in early childhood have begun to develop, they tend to be unrealistically positive (Harter, 2003). This may in part be due to children's inability to acknowledge that opposing attributes are possible (Fisher, Hand, Watson, Van Parys, & Tucker, 1984).

The general developmental period from ages 5-12 years is marked by an increased ability to use social comparisons (Ruble & Frey, 1991) and thus a decrease in inflated

self-representations. However, some aspects of *unidimensional* thinking persist through middle childhood (Harter, 2003), as children typically over-differentiate between ‘good’ and ‘bad’ aspects of the self (Fisher et al., 1984; Harter & Buddin, 1987). It is not until late childhood or early adolescence that this unidimensional thinking is replaced with a more balanced and integrated view of the self (Harter, 2003). It may therefore be less feasible for children to report on their thoughts and feelings until they have reached the age range of late childhood and beyond.

The Current Study

To summarize, shy children are at increased risk for a number of maladaptive adjustment outcomes, particularly in terms of internalizing difficulties such as anxiety and depression. Child and youth anxiety and depression, in turn, have been shown to co-occur in clinical and non-clinical populations. Although this co-occurrence may be partly attributable to a similarity in underlying cognitive mechanisms, anxious and depressed children seem to exhibit at least somewhat distinct patterns of negative cognitions. Also, the co-occurrence of anxiety and depression has been associated with more negative outcomes than either anxiety or depression alone, suggesting that this may also be the case for negative cognitions.

Shy children also have a tendency to exhibit certain negative cognitions, which may be of potential importance in understanding the links between shyness and internalizing difficulties. Indeed, it can be postulated that negative cognitions provide an explanatory pathway between shyness and internalizing difficulties (i.e., a mediating role). Also, considering the *social* nature of shyness, it is possible that such negative cognitions could play an even stronger mediating role in if they are also social in nature.

There is certainly a need to identify and clarify some of the potential cognitive patterns through which shyness may be associated with anxiety and depression. If negative cognitions can provide even partial explanations for these associations, a number of cognitive patterns could be regarded as early warning signs that shy children may be more prone to experience anxiety and depression. Although internalizing difficulties experienced by shy children may not be at clinically diagnosable levels, they may nevertheless be elevated compared to other children. Such sub-clinical levels of internalizing difficulties are strong longitudinal predictors of similar difficulties in later childhood (e.g., Ashford, Smit, van Lier, Cuijpers, & Koot, 2008; Huijbregts & Swaab-Barneveld, 2009), and are in and of themselves risk factors for more severe difficulties later in life (e.g., Pine, Cohen, Cohen, & Brook, 1999).

Moreover, these more serious mental health problems such as anxiety and depressive disorders, which are particularly prevalent among young people (Petersen, Compas, Brooks-Gunn, & Stemmler, 1993), are often associated with reduced quality of life (e.g., Chung, Pan, & Hsiung, 2009; Mendlowicz & Stein, 2000) and higher risk of suicide (e.g., Cheung & Dewa, 2006). Also, the economic burden of these disorders in Canada has been estimated at more than \$50 billion annually (Smetanin, Stiff, Briante, Adair, Ahmad, & Khan, 2011). Thus, there is a need to identify warning signs, or at least correlates, of anxiety and depression symptoms that are perhaps not clinically problematic, but are elevated compared to the average.

The central goal of the current study was to explore the potentially complex nature of the inter-associations among shyness, negative cognitions, and internalizing

difficulties in late childhood and early adolescence (grades 5-8)². In particular, the potential mediating role of negative cognitions in the associations between shyness and internalizing difficulties (i.e., anxiety and depression) was explored. As well, the effect of “social relevance” was investigated, both at the level of negative cognitions (i.e., social versus non-social cognitions) and at the level of internalizing outcomes (social anxiety versus non-social anxiety, and social depression versus non-social depression³). Finally, the patterns of negative cognitions associated with anxiety, depression, and the co-occurrence of both of these internalizing difficulties were also examined.

Hypotheses. To begin, it was expected that, overall, shyness would be positively associated with symptoms of both anxiety and depression.⁴ This hypothesis is supported by several clinical and non-clinical studies (e.g., Bohlin & Hagekull, 2009; Carey et al., 1991; Coplan et al., 2008, 2009; Goldsmith & Lemery, 2000; Karevold et al., 2009; Leve et al., 2005; Masi et al., 2004; Rapee et al., 2005; Shamir-Essakow et al., 2005), as previously discussed.

It was also predicted that shyness would be positively related to the report of heightened negative cognitions. Aside from negative causal attributions, there is little direct evidence for the relation between shyness and negative cognitions. However, it was

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²This age group was chosen for reasons described in the section ‘Developmental considerations’, as well as a practical consideration – that children below this age group were expected to have considerably more difficulty understanding and completing self-report questionnaires, which due to resource limits was completed in large groups rather than one-on-one interviews.

³ Social depression is conceptualized as a combination of loneliness and socially-relevant depression (see Methods section).

⁴Anxiety and depression levels in the current study were not expected to meet or exceed clinically diagnosable levels. Rather, individual differences in anxiety and depression were the important factor being considered. Sub-clinical levels of depression are often called ‘dysphoria’, but for simplicity, this term was not used for the current thesis.

speculated that shyness would also demonstrate positive associations with other negative cognitions that underlie anxiety and depression, including biased threat perceptions, higher perceptions of probability and cost of negative events, negative cognitive errors, and negative views of the self, the world, and the future (i.e., the cognitive triad).

Overall, negative cognitions were also expected to relate positively to levels of both anxiety and depression. Specific subtypes of negative cognitions were also expected to show differential patterns of associations with anxiety, depression, and the co-occurrence of both anxiety and depression. For example, catastrophizing, overgeneralizing, personalizing (Epkins, 1996; Leitenberg et al., 1986; Weems et al., 2001), threat perceptions (Barrett et al., 1996b; Hadwin et al., 1997), and higher perceived cost and probability of negative events (Hoffman, 2004; Muris & van der Heiden, 2006) were all expected to be more strongly predictive of anxiety as compared to depression. In contrast, negative views of the cognitive triad (Kaslow et al., 1992) and selective abstraction (Epkins, 1996; Leitenberg et al., 1986; Leung & Wong, 1998; Weems et al., 2001) were predicted to be more strongly associated with depression as compared to anxiety.

Although it has been suggested that anxiety should be related to attributional style, the mixed empirical support for this assertion (Curry & Craighead, 1990; Garber et al., 1993) suggests this relation is unclear. However, the literature examining the relation between depression and negative causal attributions is more consistent (e.g., Diener & Dweck, 1978; Fincham et al., 1987; Meyer et al., 1988; Weeks et al., 2010). Accordingly, negative causal attributions were predicted to be more strongly associated with depression as compared to anxiety.

Perceptions of the likelihood and costs of negative events have been linked to anxiety in children, in clinical (e.g., Rheingold et al., 2003) and unselected (e.g., Canterbury et al., 2004) samples, but only linked to depression when not controlling for anxiety (e.g., Muris & van der Heiden, 2006). Thus, the likelihood and cost perceptions for negative events were predicted to be more strongly associated with anxiety as compared to depression.

Overall, it was expected that anxiety would demonstrate a moderate positive correlation with depression, as has been found in previous research (e.g., Costello et al., 2003; Weeks et al., 2010). Also, based on the frequent overlap of anxiety and depression, as well as previous findings that co-occurrence of depression and anxiety are associated with more negative outcomes than either depression or anxiety alone, it was expected that children showing high levels of both anxiety and depression would exhibit the most negative pattern of cognitions.

Negative cognitions were also expected to play a *mediating* role in the links between shyness and internalizing difficulties. According to a conceptually-derived mediated model (see Figure 1), shyness was expected to lead to internalizing difficulties via an indirect path through negative cognitions, suggesting that negative thinking is a contributing factor towards shy children's symptoms of anxiety and depression. This hypothesis is based on the theoretical framework and previous research outlined above (Alfano et al., 1994; Findlay et al., 2009). However, considering that shyness has not been linked to precisely the same negative cognitions as have anxiety and depression,

Figure 1. Conceptual mediation model of shyness, negative cognitions, and internalizing difficulties.

this hypothesis remained somewhat speculative and exploratory in nature.

Considering the social nature of shyness and the difficulties that shy children have, particularly in social situations, it is plausible that the social nature of negative cognitions could impact their mediating (or ‘explanatory’) role in the links between shyness and symptoms of anxiety and depression. In this regard, the social nature of negative cognitions, as well as internalizing problems, was also expected to play a contributing role in mediated relations between shyness, negative cognitions, and internalizing problems. Specifically, the overall fit of mediation models was expected to increase as a function of the social relevance of both negative cognitions (i.e., social versus non-social cognitions) and internalizing difficulties (e.g., social versus non-social anxiety). These model comparisons are presented in Figures 2 and 3. The inclusion of social cognitions in mediation models was also expected to result in a stronger indirect effect. Specifically, the indirect (i.e., mediating) effect of social cognitions was predicted to be greater than that of non-social cognitions. Moreover, this difference between the indirect effect associated with social and non-social cognitions was expected to be more pronounced when the outcome was social (e.g., social anxiety) than when the outcome was non-social (e.g., non-social anxiety).

As previously reviewed, gender differences may potentially alter some of the hypothesized relations already mentioned, although several conflicting findings have made potential gender differences difficult to predict. Considering the evidence that internalizing disorders are more common in females than males (e.g., Kessler et al., 1994), girls could be expected to show higher levels of anxiety and depression than boys.

Figure 2. Model comparisons- social versus non-social cognitions and social versus non-social anxiety.

Figure 3. Model comparisons- social versus non-social cognitions and social versus non-social depression.

However, in the case of depression, there is reason to believe gender differences might only be apparent in adolescence (e.g., Wade et al., 2002), and childhood depression has been shown to be equivalent in boys and girls (e.g., Zahn-Waxler et al., 2008).

Therefore, it was unclear whether overall gender differences in levels of depression would be evident in the current study. However, it was considered likely that, among the older participants, girls would show higher levels of depression than boys. In the case of anxiety, gender differences seem to be more consistent in the literature, with recent studies showing that girls are more prone to feelings of anxiety than are boys (e.g., Else-Quest et al., 2006). Therefore, in the current study, girls were expected to display greater levels of anxiety than boys.

Gender differences may also be apparent in terms of children's negative cognitions. Research showing gender differences in the display of negative cognitions in children and adolescents (e.g., Cole et al., 2009) has not been consistent (e.g., Hankin et al., 2001). Moreover, there is some evidence that, before the age of 14 years, boys may exhibit negative cognitions to a greater extent than girls. Considering the conflicting evidence, no specific hypotheses were made regarding gender differences in the display of negative cognitions.

Method

Participants

Participants for the current study included $N=686$ children (327 boys, 359 girls) aged 10-14 years ($M=11.58$, $SD=1.13$). Children were in grade 5 ($n=195$), grade 6, ($n=225$), grade 7 ($n=143$), and grade 8 ($n=123$) classrooms in 18 schools from two school boards in Eastern Ontario.

The sample was roughly 85% Caucasian, 2.8% Asian, 2.3% Aboriginal, and 2% other ethnicities. Information on parents' highest level of education was gathered as a proxy measure of socio-economic status (SES). For mothers, 3.8% had completed elementary school, 25.3% had completed high-school, 43% had completed community college, 18.7% had completed an undergraduate university degree, and 6.2% had completed a graduate degree. For fathers, 7.5% had completed elementary school, 30.6% had completed high-school, 38.8% had completed community college, 14.7% had completed an undergraduate university degree, and 4.4% had completed a graduate degree. Thus, the sample was considered to be relatively diverse in terms of SES.

Procedure

School boards were contacted and, upon review of a formal application for research, gave the principal investigator permission to contact individual schools. Letters and questionnaires were sent home to parents, and children whose parents gave written consent were given the opportunity to participate in the study. Parents who gave written consent for their child to participate were also asked to complete two brief questionnaires, as well as information on education level and ethnicity. Approximately 2,000 consent forms were sent home to parents, and roughly 60% of these packages were returned. Of the packages that were returned, the consent rate was roughly 80%. This consent rate is comparable to similar studies recently undertaken in these school boards.

Those students who had been given parental consent to participate were read an informed consent script describing the general purpose of the study and the voluntary nature of their participation. They were then asked to complete a series of questionnaires. Due to the large number of questionnaire items, questionnaires were completed on two

occasions (roughly one week apart), each taking between 30 and 45 minutes to complete. Questionnaires were completed in groups of roughly 20 students, in quiet locations (e.g., a library). Trained undergraduate and graduate students were present at each session, along with the principal investigator, in order to answer participants' questions.

Measures

Shyness. Children completed the 26-item *Children's Shyness Questionnaire* (CSQ, Crozier, 1995; see Appendix A), a self-report measure of shyness. Example items include: "I am easily embarrassed"; "I am usually shy in a group of people"; and "I feel nervous when I am with important people". Children answered each question by choosing "yes", "no", or "sometimes". Although the CBQ originally contained 27 items, previous research suggests that one item ("I enjoy singing aloud when others can hear me") should be omitted because it lowers the internal consistency of the scale (Crozier, 1995; Findlay & Coplan, 2008; Spooner, Evans, & Santos, 2005).

The CSQ has been used previously with children aged 9-12 years (Crozier, 1995; Findlay & Coplan, 2008; Spooner et al., 2005). The CSQ has also shown good psychometric properties. Crozier (1995) and Spooner et al. (2005) reported good internal consistency (Cronbach's alpha of .82 and .88, respectively). Also, in support of validity, Crozier (1995) reported that CSQ items were similar to previously used measures of shyness in adults, and correlate negatively with measures of self-esteem. Internal consistency in the present sample was $\alpha = .85$.

Anxiety symptoms. Children and one of their parents completed the *Spence Children's Anxiety Scales* (Spence, 1997; see Appendices B and C). Both the child-report (SCAS- C) and parent-report (SCAS- P) versions yield a total anxiety score, as well as 6

subscale scores, assessing symptoms of ‘general anxiety’, ‘panic/agoraphobia’, ‘obsessive-compulsive disorder’, ‘separation anxiety’, ‘social phobia’, and ‘physical injury fears’. This scale has been widely used in both clinical and community samples aged 8-18 years (e.g., Muris, Schmidt, & Merckelbach, 2000; Spence, 1998; Whiteside & Brown, 2008), to identify clinical anxiety symptoms as well as to indicate anxiety symptoms and risk factors for anxiety disorders in youth. Muris, Schmidt, and Merckelbach (2000) reported good internal consistency for the child-report version (Cronbach’s alpha was .92 for the total anxiety score, and ranged from .73 to .81 for the individual subscales, with the exception of $\alpha = .57$ for ‘physical injury fears’). In support of validity, both the child-report and parent-report of the SCAS have been shown to correlate positively with other commonly used self-reports of anxiety (Muris et al., 2000). For the SCAS-C, internal consistency in the present sample was $\alpha = .93$ for the total scale, and between $\alpha = .66$ and $\alpha = .83$ for the individual subscales. For the SCAS-P, internal consistency in the present sample was $\alpha = .88$ for the total scale, and between $\alpha = .65$ and $\alpha = .77$ for the individual subscales.

Social anxiety. As a measure of social anxiety, children completed the revised version of the *Social Anxiety Scale for Children* (SASC-R; La Greca & Stone, 1993; see Appendix D). The SASC-R contains 22 items, 18 items concerning social anxiety and 4 filler items (La Greca & Stone, 1993; Ginsburg, La Greca, & Silverman, 1998). Factor analysis and confirmatory factor analysis on the SASC-R have demonstrated that the scale consists of 3 subscales: Fear of Negative Evaluation from Peers (FNE, 8 items), Social Avoidance and Distress-Specific to New Peers or Situations (SAD-New; 6 items), and Generalized Social Avoidance and Distress (SAD-General; 4 items) (Ginsburg et al.,

1998; La Greca & Stone, 1993). The FNE subscale contains items pertaining to children's worries about peers' negative perceptions of them (e.g., "I'm afraid that other kids will not like me"). The SAD-New consists of questions related to social avoidance or distress felt in new situations or when around unfamiliar peers ("I get nervous when I talk to kids I don't know very well"). The SAD-General is a different construct from the SAD-New because it contains items that reflect social avoidance or distress in more general situations, other than when the situations or the peers are unfamiliar (e.g., "I feel shy even with kids I know very well"). Children are asked to indicate how true each statement is for them. The items on the SASC-R are rated on the following 5-point Likert scale: 1) not at all, 2) hardly ever, 3) sometimes, 4) most of the time, and 5) all the time. Higher scores indicate more socially anxious feelings. To reduce the number of analyses, a total social anxiety score will be created (by taking the average score of the items) as opposed to calculating the scores for the individual subscales.

The SASC-R has been shown to be appropriate for use with children in grades 5 and 6 (Ginsburg et al., 1998; La Greca, Dandes, Wick, Shaw, & Stone, 1988; La Greca & Stone, 1993). The measure has been found to have satisfactory internal consistency (Coplan et al., 2006; Ginsburg et al., 1998; La Greca & Stone, 1993; Weeks et al., 2009). In support of its discriminant validity, Ginsburg et al. (1998) found that children who had clinical diagnosis of Social Anxiety Disorder were distinguished from children with other anxiety disorders. Also, neglected and rejected children have shown higher scores on the SASC-R than children with average sociometric status (La Greca & Stone, 1993). Internal consistency in the present sample was $\alpha = .93$ for the total scale.

Depression. Children completed the *Children's Depression Inventory* (CDI; Kovacs, 1983, 1992; see Appendix E). The CDI is a 27-item⁵ self-report measure of depressive symptoms in children and youth, and is an 'age-downward' extension of the *Beck Depression Inventory* (BDI) for adults (Beck & Beamesderfer, 1974). Children reported on their cognitive, behavioral, and emotional symptoms of depression over the previous 2 weeks. For each item, children selected from three statements that are scored in increasing severity from 0 to 2, and total scores ranging from 0 to 54. This measure includes 5 subscales: a subscale for 'interpersonal problems' (i.e., trouble getting along with others), which was used to represent socially relevant depression (i.e., 'social depression'), as well as 4 subscales for 'negative mood' (i.e., feeling sad), 'negative self-esteem' (i.e., self-dislike), 'ineffectiveness' (i.e., negative evaluation of one's ability), and 'anhedonia' (i.e., impaired ability to experience pleasure), which were used to represent general depression (i.e., 'non-social depression'). Saylor, Finch, Spirito, and Bennett (1984) reported good internal consistency (Kuder-Richardson alpha = .94) and moderate test-retest reliability ($r = .38$) for the CDI with a non-clinical population of children in grades 5 and 6. In support of its validity, Timbremont, Braet, and Dreessen (2004) reported that the CDI predicts depressive disorders and differentiates them from other disorders.

Parents completed the 'parent form' of the CDI (CDI-P; Kovacs, 1992; see Appendix F), which includes similar items to the child CDI version. Parents rated their child on 17 items dealing with home and family situations over the previous 2 weeks. This form yields a total score, as well as two subscale scores: Emotional Problems and

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⁵ It was decided that one item, dealing with suicidal ideation, should be omitted.

Functional Problems. The CDI-P has been found to correlate significantly with the child-report CDI ($r = .66$) (Wierzbicki, 1987). Also, Meehan et al. (2008) examined both the CDI-P and CDI, and reported that both showed good internal reliability. Internal consistency in the present sample was $\alpha = .88$ for the CDI ($\alpha = .71$ for the CDI-‘interpersonal problems’ subscale), and $\alpha = .85$ for the CDI-P.

Loneliness. As a proxy measure of social dysphoria or ‘depression’, children completed the 24-item *Loneliness and Social Dissatisfaction Questionnaire* (LSDQ; Asher, Hymel, & Renshaw, 1984; see Appendix G). Asher et al. (1984) developed the measure with children in grades 3 through 6 in order to assess children’s feelings of loneliness. This measure requires children to respond to 16 items related to loneliness (e.g., ‘I have nobody to talk to’) and 8 filler items (e.g., ‘I like toast’) by using a 5-point Likert-type scale to indicate how much each item is a true description of themselves (i.e., always true, true most of the time, true sometimes, hardly ever true, not true at all). Total loneliness scores are calculated by averaging responses to the 16 loneliness items, with higher scores indicated greater loneliness. The LSDQ has been widely used with children in grades 3 to 6 (Asher et al., 1984; Asher & Wheeler, 1985; Nangle et al., 2003; Parker & Asher, 1993) and has demonstrated good psychometric properties. Asher et al. (1984) reported high internal consistency (Cronbach’s alphas of .90) and comparable Cronbach’s alphas have been found in subsequent studies (e.g., Nangle, Erdley, Newman, Mason, & Carpenter, 2003; Parker & Asher, 1993). In support of validity, Asher et al. (1984) found that children with few or no friends (as measured through sociometric nominations) reported higher scores on the LSDQ than children with many friends. Also, Asher and Wheeler (1985) found that sociometrically ‘rejected’ children reported significantly

higher LSDQ scores than ‘high status’ children. Internal consistency in the present sample was $\alpha = .87$.

Cognitive triad. Children completed the *Cognitive Triad Inventory- Child Version* (CTI-C; Kaslow et al., 1992; see Appendix H), a 36-item measure designed to assess children’s views of the Self, the World, and the Future, represented by three subscales scores, and a total score. Each subscale consists of 12 items, half worded in a positive direction and half worded in a negative direction, and a total score is obtained by summing the scores for each subscale. Children choose between “yes”, “no”, or “maybe”, as to whether the statement is consistent with their own view. Kaslow et al. (1992) reported good internal consistency for the CTI-C, both for the full scale ($\alpha = .92$) and individual scales ($\alpha = .83$ for the Self, $\alpha = .85$ for the Future, and $\alpha = .69$ for the World scales). Also, LaGrange et al. (2008) reported Cronbach’s alphas ranging from .86 to .94 for the CTI-C. In support of its validity, Kaslow et al. (1992) also reported that the ‘Self’ subscale was correlated with measures of self-esteem, and the ‘Future’ and ‘World’ subscales correlated negatively to a measure of hopelessness. Internal consistency in the present sample was $\alpha = .89$ for the total scale, and between $\alpha = .74$ and $\alpha = .85$ for the individual subscales.

Negative cognitive errors. Children will complete the *Children’s Negative Cognitive Errors Questionnaire* (CNCEQ; Leitenberg et al., 1986; see Appendix I) to assess four major cognitive distortions: selective abstraction, overgeneralization, personalizing, and catastrophizing. The measure includes 24 vignettes reflecting cognitive distortions in three areas of a child’s life: social, academic, and athletic. Each vignette is followed by a thought that children rate on a 5-point Likert-type scale

describing how similar the thought is to the way they would think in the situation – (1) “not at all like what I would think”, to (5) “almost exactly like I would think”. Leitenberg et al. (1986) report good internal consistency and concurrent validity for the CNCEQ. Internal consistency in the present sample was $\alpha = .92$.

Causal attributions. Children’s explanations for the causes of positive and negative events were measured with the 24-item self-reported *Children’s Attributional Style Questionnaire- Revised* (CASQ-R; Kaslow & Nolen-Hoeksema, 1991; see Appendix J). There are 12 positive items and 12 negative items on the questionnaire. Also, 12 items are socially-relevant and 12 non-socially relevant⁶ (e.g., “you put a hard puzzle together” - a positive and non-socially relevant item; and “some kids that you know say that they do not like you” - a negative and socially relevant item). Also, for each item, children are given two options for causal attributions; these options reflect one of three dimensions of causal attributions: internal-external, stable-unstable, and global-specific. Internal consistency in the present sample was $\alpha = .65$.

Probability and cost estimates. Children completed the *Probability/Cost Questionnaire for Children* (PCQ-C; Rheingold et al., 2003; see Appendices K and L) as a measure of children’s estimates of the probability and cost of negative events. The PCQ-C is a 40-item self-report questionnaire – a modification of the original questionnaire by Foa et al. (1996). The PCQ-C includes items reflecting 20 negative non-

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⁶ Unlike the other measures with ‘social’ versus ‘non-social’ items, the authors of the CASQ-R had not defined any items as ‘social’. Thus, ‘social’ items were classified as those pertaining to social relationships and/or social situations. All other items were classified as ‘non-social’. To ensure agreement on the identification of these items, these choices were reviewed by graduate students involved in this study.

social events (e.g. “you will lose your backpack”) and 20 negative social events (e.g., “you will be ignored by someone you know”). Each event is rated on a 9-point Likert-type scale from 0= not at all likely/bad to 8=extremely likely/bad (Foa et al., 1996).

There are two sets of questions (or ‘subscales’): one asking about the perceived probability of negative events, and another asking about the perceived cost of these same events. High internal consistency (Cronbach’s alphas .87 to .93 for subscales) and test-retest reliability (r ’s = .71 to .93 for 2-week interval), as well as good construct validity, have been reported for the PCQ-C with adults, adolescents, and children as young as 12 years of age (Foa et al., 1996; Gaudiano & Herbert, 2007; Rheingold et al. 2003). Internal consistency in the present sample was $\alpha = .91$ for the Probability scale and $\alpha = .95$ for the Cost scale.

Threat perception. As a measure of threat perception, children completed the *Ambiguous Scenarios Questionnaire* (ASQ; Creswell & O’Connor, 2006; modified from Butler & Mathews, 1983; see Appendix M). The modified ASQ consists of 12 ambiguous situations (6 are physical in nature, and 6 are social in nature). Each situation can be interpreted as either threatening or non-threatening. Children provide free responses regarding their interpretation of the situation, coded as ‘threat’ versus ‘non-threat’. Also, children are given a ‘forced-choice’ between a ‘threat’ and ‘non-threat’ explanation of each situation. These two types of responses are summed to create a total ‘threat’ score.). In order to reduce the number of questions and ease the burden on children participating in the current study, only the forced-choice responses were collected. Creswell and O’Connor (2006) showed that free and forced-choice responses are highly inter-correlated ($r = .80$, $p < .001$), and thus dropping the free-choice component was deemed

to be appropriate. Also, for the second ambiguous situation, the word “headteacher” was replaced with “school principal”. Internal consistency in the present sample was $\alpha = .62$.

Results

Preliminary Analyses

Missing data. Data were checked for errors or omissions during data entry and then examined for missing values. For cases with no more than 10% incomplete data on a particular multi-item variable, missing items were replaced by that participant’s mean response on the corresponding subscale for that variable. Thirty-one and 35 participants were absent from the first and second testing sessions, respectively. In order to ensure the corresponding data were missing at random, *t*-tests were performed to determine whether absence from a testing session was related to other variables in the study. Results indicated that participants who missed the first or second testing session did not differ significantly from those present at both sessions in terms of any of the study variables. These results suggest that the data may be *missing completely at random* (MCAR), rather than simply *missing at random* (MAR).

Next, *missing values analysis* (MVA) was performed using SPSS, including Little’s MCAR test, which tests whether the data can be considered to be MCAR. If the chi-square value of this test is not significant, MCAR can be assumed. Little’s MCAR test statistic $\chi^2 = 1933.394$ (3947) was not significant ($p = .999$), suggesting that the data can be assumed to be MCAR. When data are MCAR, missing data may be dealt with using listwise deletion. Listwise deletion was not deemed necessary because the Amos software (used for structural equation modeling) uses *full estimation maximum likelihood*

(FIML), which ensures that cases with missing values on certain variables are not deleted from the analysis. The observed portion of each case is taken into account during the analysis, thus making full use of the data. In Monte Carlo simulations, FIML has been shown to be superior to listwise deletion, pairwise deletion, and similar response pattern imputation (Enders & Bandalos, 2001). However, both the bootstrapping approach and the reporting of SRMR in Amos require no missing data (see *mediation analyses* section below). Therefore, missing data were imputed using the *expectation maximization* (EM) algorithm in SPSS MVA.

Univariate outliers. Potential univariate outliers were first identified as values greater than 3.29 standard deviations from the mean (Tabachnick & Fidell, 2007), and several such cases were identified. However, the presence of outliers is to be expected in large datasets (Stevens, 2002), and an examination of scatterplots revealed only 3 values that could be considered to be outlying from other values, though not drastically so. Moreover, the deletion of these values did not affect the overall results, and thus the original values were retained.

Testing of assumptions. Data were then examined for deviations from linearity, normality, independence, and constancy of variance (homoscedasticity). First, plots of observed versus predicted values were examined for each variable; from these plots, no noticeable curvature was evident. Normal probability plots were examined, and no substantive departure from normality was evident. Finally, from plots of residuals versus predicted values, there was no evidence of heteroscedasticity. Thus, transformations of the data were deemed unnecessary.

Multivariate outliers. Potential multivariate outliers were then examined by comparing Mahalanobis distance values to the critical χ^2 value, with degrees of freedom equal to the number of variables at $p < .001$. Multiple regressions with all predictor variables were run for each dependent variable. In each case, the 10 largest Mahalanobis distance values were less than the critical value of $\chi^2 = 24.322(7)$. Thus, no significant multivariate outliers were identified.

Multicollinearity. The degree of multicollinearity in the dataset was examined (although the problem of multicollinearity is of less concern during the analysis of a structure, as in factor analysis or structural equation modeling). Tolerance values were all high (all above .5) and variance inflation factor (VIF) values were low (all below 2), both of which suggest that there are no problems with multicollinearity in the dataset.

Inter-associations among variables. Correlations among all study variables can be found in Table 1. Of central interest were the relations among shyness, negative cognitions, and internalizing difficulties which, consistent with expectations, were all positively inter-correlated. Also, anxiety and depression were moderately correlated, as expected. Parent ratings of children's anxiety and depression were also positively inter-correlated, as were parent and child ratings of anxiety and depression (see Table 2).

Gender differences were also examined, and results indicated that girls were significantly higher than boys in terms of Shyness ($t = 3.917, p < .001$), Social Anxiety ($t = 5.018, p < .001$), Anxiety ($t = 5.145, p < .001$), Probability Estimates ($t = 1.986, p = .047$) and Cost Estimates ($t = 2.967, p = .003$), as well as showing a trend level difference in Depression ($t = 1.961, p = .050$). Boys were significantly higher than girls in terms of Negative Attributions ($t = 2.136, p = .033$). Therefore, child gender was controlled for in

Table 1

Bivariate correlations among main study variables

	1	2	3	4	5	6	7	8	9	10	11
1. Shyness	—	.597**	.449**	.387**	.283**	.306**	.479**	.339**	.289**	.398**	.340**
2. Social Anxiety		—	.661**	.511**	.362**	.292**	.468**	.376**	.240**	.528**	.450**
3. Anxiety			—	.540**	.351**	.298**	.451**	.356**	.250**	.507**	.502**
4. Depression				—	.468**	.358**	.490**	.232**	.532**	.522**	.768**
5. Loneliness					—	.294**	.286**	.087*	.270**	.310**	.548**
6. Threat Perception						—	.282**	.198**	.295**	.363**	.333**
7. Probability Estimates							—	.510**	.397**	.383**	.392**
8. Cost Estimates								—	.151**	.276**	.146**
9. Negative Attributions									—	.366**	.502**
10. Cognitive Errors										—	.532**
11. Cognitive Triad											—

** $p < .001$ * $p < .05$

Table 2

Bivariate correlations among parent and child ratings of children's anxiety and depression

	1	2	3	4
1. Anxiety (Parent-rated)	—	.628**	.387**	.308**
2. Depression (Parent-rated)		—	.234**	.412**
3. Anxiety (Child-rated)			—	.540**
4. Depression (Child-rated)				—

** $p < .001$ * $p < .05$

subsequent analyses. Also, middle school participants (i.e., grades 7-8) showed significantly greater negative attributions ($t = 3.820, p < .001$), as well as greater probability estimates for negative events ($t = 2.678, p < .001$), as compared with senior elementary students (i.e., grades 5-6).⁷ Therefore, grade level was also controlled for in subsequent analyses. Parent education level and ethnicity were not significantly related to any of the study variables, and were thus not included in subsequent analyses.

Anxiety, Depression, and Co-Occurrence

To allow for group-wise comparisons between children with anxious versus depressive symptoms, the following groups were created based on quartile cut-offs: *anxious* ($n = 78$; top 25% of the sample for anxiety scores, bottom 75% of the sample for depression scores), *depressed* ($n = 78$; top 25% on depression, bottom 75% on anxiety), *anxious-depressed* ($n = 93$; top 25% on both anxiety and depression), and *comparison* ($n = 224$; bottom 50% on both anxiety and depression). In order to examine the differential pattern of negative cognitions associated with anxiety, depression, and the co-occurrence of anxious and depressive symptoms, a 2 (Sex) x 2 (Grade Level) x 4 (Group) multivariate analysis of variance (MANOVA) was performed. Outcome variables included the following: Threat, Probability estimates, Cost estimates, Cognitive Triad, as well as four subscales of the CNCEQ (Catastrophizing, Personalizing, Overgeneralizing, and Selective Abstraction).

Results indicated a significant overall effect of Group (Wilks' $\lambda = .36, F(27,452) = 20.23, p < .001$), Sex (Wilks' $\lambda = .96, F(9,452) = 2.17, p = .023$), and Grade Level (Wilks' $\lambda = .93, F(9,452) = 3.74, p < .001$). Results of univariate ANOVAs indicated there was a

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⁷ Grade level was dichotomized, wherein participants in grades 5 and 6 were grouped into 'elementary' and those in grades 7 and 8 were grouped into 'middle school'.

significant main effect of Group in the prediction of Threat ($F(3, 460) = 26.641, p < .001$, partial $\eta^2 = .148$), Probability ($F(3, 460) = 53.424, p < .001$, partial $\eta^2 = .258$), Cost ($F(3, 460) = 14.164, p < .001$, partial $\eta^2 = .085$), Cognitive Triad ($F(3, 460) = 167.532, p < .001$, partial $\eta^2 = .522$), Catastrophizing ($F(3, 460) = 51.534, p < .001$, partial $\eta^2 = .252$), Personalizing ($F(3, 460) = 39.463, p < .001$, partial $\eta^2 = .205$), Overgeneralizing ($F(3, 460) = 70.730, p < .001$, partial $\eta^2 = .316$), and Selective Abstraction ($F(3, 460) = 41.674, p < .001$, partial $\eta^2 = .214$).

Post-hoc multiple comparisons (see Figures 4 and 5) revealed that, consistent with hypotheses, the *anxious* group was significantly higher in terms of Cost estimates than the *depressed* group, whereas the *depressed* group was significantly higher in terms of Cognitive Triad, Negative Attributions, and Selective Abstraction. Also, as expected, the *anxious-depressed* group showed the most negative pattern of outcomes—specifically, this group showed significantly greater Threat, Probability, Catastrophizing, Overgeneralizing, Personalizing, and Selective Abstraction than both the *anxious* and *depressed* groups. Contrary to expectations, the *depressed* group showed greater Overgeneralizing than the *anxious* group, and these groups did not differ in terms of Threat, Probability estimates, Catastrophizing, or Personalizing. Finally, as expected, the *comparison* group showed significantly lower scores than the other groups on all negative cognition variables.

There was also a significant main effect of Sex in the prediction of Cost Estimates ($F(1, 460) = 5.42, p = .020$, partial $\eta^2 = .012$). Post-hoc comparisons showed that girls ($M = 3.39, SD = 1.36$) had significantly higher cost estimates than boys ($M = 3.05, SD = 1.30$). Finally, there was a main effect of Grade Level in the prediction of Negative Attributions ($F(1, 460) = 15.874, p < .001$, partial $\eta^2 = .033$) and Probability Estimates ($F(1, 460) = 11.888$,

Figure 4. Standardized means comparing groups on negative cognitions.

Note: Prob= Probability; CTI= Cognitive Triad; NegAtt= Negative Attributions

Note: Means that do not share a letter differ from each other at $p < .05$

Figure 5. Standardized means comparing groups on CNCEQ subscales.

Note: Catas= Catastrophizing; OverGen= Overgeneralizing; Pers= Personalizing; SA= Selective Abstraction

Note: Means that do not share a letter differ from each other at $p < .05$

$p = .001$, partial $\eta^2 = .025$). Post-hoc comparisons showed that middle school students ($M = 7.81$, $SD = 3.74$) showed significantly greater negative attributions than elementary students ($M = 6.67$, $SD = 3.19$), as well as greater probability estimates ($M = 3.29$, $SD = 1.24$) than elementary students ($M = 3.21$, $SD = 1.41$).

To summarize, groups of children showing elevated levels of anxiety, depression, and both types of symptoms, as well as comparison children not showing elevated symptom levels, were compared in terms of the degree to which they showed negative cognitions. These results indicate that the anxious group and the depressive group were higher than the comparison group in terms of each type of negative cognition. However, anxious and depressive children differed from each other on several negative cognitions, and therefore seem to show different patterns of negative thinking. Also, children with elevated levels of anxious and depressive symptoms had higher scores on most negative cognitions, suggesting that these children had the most negative pattern of thinking overall.

Measurement Models: Cognitions and Internalizing Problems

The next set of analyses involved building latent factors of negative cognitions and internalizing difficulties to be used in subsequent structural mediation models. Measurement models were constructed using Amos (version 19). The first model included a latent *negative cognitions* variable, with Threat Perception, Probability Estimates, Cost Estimates, Cognitive Triad, Cognitive Errors, and Negative Attributions as manifest (observed) variables. The second model included a latent *Internalizing Difficulties* variable, with Social Anxiety (child rated), Anxiety Symptoms (parent and child rated), Depression (parent and child rated), and Loneliness (child rated) as observed variables. Two additional models were constructed to empirically test conceptually derived clusters of ‘anxiety-related’ and ‘depression-related’

negative cognition variables. It was hypothesized that certain negative cognitions would play a more important role in predicting anxiety versus depression.

Negative cognitions. Confirmatory factor analysis (CFA) was conducted on the measurement model, with summary scores for each of the six negative cognition variables as manifest (observed) variables, and one *Negative Cognitions* latent variable. This was conducted to determine whether these negative cognition variables could be conceptualized as relating to one latent factor. This model initially showed an overall poor fit, $\chi^2(9, N = 686) = 183.102, p < .001$, Comparative Fit Index (CFI) = .861, Tucker-Lewis Index (TLI) = .769, Root Mean Square Error of Approximation (RMSEA) = .168 (90% confidence interval [CI] = .147, .189), Standardized Root Mean Square Residual (SRMR) = .07, Akaike Information Criterion (AIC) = 207.102. Upon examination of modification indices, two theoretically appropriate alterations were made (allowing two sets of error terms to covary)⁸, which resulted in a final model with an excellent fit, $\chi^2(7, N = 686) = 11.267, p < .001$, CMIN/DF = 1.878, CFI = .995, TLI = .987, RMSEA = .036 (90% CI < .001, .068, PCLOSE = .733), SRMR = .02, AIC = 41.267.

Internalizing difficulties. A CFA was conducted on the measurement model for *Internalizing Difficulties*, with summary scores for child-rated anxiety, social anxiety, depression, and loneliness, as well as parent-rated anxiety and depression. This was conducted to determine whether these variables could be conceptualized as relating to one latent *Internalizing* factor. This model initially showed an overall poor fit, $\chi^2(9, N = 686) = 430.994, p < .001$, CFI = .755, TLI = .592, RMSEA = .261 (90% CI = .240, .282), SRMR = .10, AIC = 454.994. Four modifications resulted in a final model with a good fit, $\chi^2(5, N = 686) = 16.382$,

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⁸ All modifications mentioned in the following sections also involved allowing error terms to covary.

$p = .113$, CFI = .997, TLI = .992, RMSEA = .034 (90% CI < .001, .069, PCLOSE = .736), SRMR = .02, AIC = 40.908.

Anxious cognitions. The *Anxious Cognitions* latent variable included ASQ, PCQ-P, PCQ-C, CNCEQ-Catastrophizing, and CNCEQ-Overgeneralizing as observed variables. The measurement model initially showed a poor fit, $\chi^2(5, N = 686) = 168.815$, $p < .001$, CFI = .844, TLI = .688, RMSEA = .218 (90% CI = .191, .247, PCLOSE < .001), SRMR = .10, AIC = 198.815. Three modifications were made, resulting in an excellent fit, $\chi^2(2, N = 686) = 4.949$, $p = .084$, CFI = .997, TLI = .986, RMSEA = .046 (90% CI < .001, .100, PCLOSE = .454), SRMR = .01, AIC = 40.949.

Depressive cognitions. Finally, the *Depressive Cognitions* latent variable included CTI, CASQ-R, CNCEQ-Personalizing, and CNCEQ-Selective Abstraction as observed variables. This model also showed a poor fit initially, $\chi^2(2, N = 686) = 102.341$, $p < .001$, CFI = .891, TLI = .674, RMSEA = .270 (90% CI = .227, .316, PCLOSE < .001), SRMR = .08, AIC = 126.341. One modification was made, resulting in an excellent model fit, $\chi^2(1, N = 686) = 3.807$, $p = .050$, CFI = .997, TLI = .981, RMSEA = .064 (90% CI = .002, .138, PCLOSE = .262), SRMR = .01, AIC = 29.848.

To summarize, measurement models with latent variables representing general negative cognitions, internalizing difficulties, anxious cognitions, and depressive cognitions, were constructed and tested for overall goodness of fit. These models each showed a good fit of the data, and were thus included in the subsequent structural equation models.

Structural Models - Mediation: Shyness, Cognitions, and Internalizing

In the subsequent analyses, the bootstrapping approach was used to estimate the significance of the mediating role of overall negative cognitions, as well as anxious and

depressive cognitions (i.e., the indirect effect of shyness on overall internalizing difficulties, anxiety, and depression). The bootstrapping technique is a nonparametric test that does not make assumptions regarding the shape of the sampling distributions from which statistics are derived. Estimates of indirect effects were derived through the collection of 2000 samples (with replacement), creating a sampling distribution of the indirect effect and producing a bias-corrected 95% confidence interval (CI). Child gender and age level (i.e., grades 5-6 versus grades 7-8) were controlled for in the following structural models.⁹

Undifferentiated model. To begin with, an overall structural mediation model was evaluated, which included the two overall measurement models described in the previous section (see Figure 6). Even after several suggested modifications were implemented, this model showed a poor fit, $\chi^2(67, N = 686) = 527.606, p < .001$, CFI = .881, TLI = .839, RMSEA = .100 (90% CI = .092, .108, PCLOSE < .001), AIC = 631.606, SRMR = .06. No further modifications resulted in any noticeable improvement in the fit of the model. Although this model did not seem to provide a good fit of the data, it did account for 99% of the variance in the internalizing latent factor. Also, consistent with hypotheses, the path from shyness to negative cognitions was significant, as was the path from negative cognitions to internalizing. Additionally, the path from shyness to internalizing was non-significant, and the bootstrapped indirect effect of shyness on internalizing was significant, suggesting that negative cognitions might nevertheless play a mediating role in the relations between shyness and internalizing difficulties.

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⁹ Multiple-groups analyses were performed to determine whether the structural pathways varied by gender or age level. Results indicated that structural paths were invariant across gender (undifferentiated model: $\chi^2(3) = .764, p = .858$; anxiety model: $\chi^2(3) = .936, p = .817$; depression model: $\chi^2(3) = 4.227, p = .238$) and age level (undifferentiated model: $\chi^2(3) = 1.384, p = .709$; anxiety model: $\chi^2(3) = 3.456, p = .326$; depression model: $\chi^2(3) = 1.137, p = .768$). Thus, models were not stratified by gender or age level.

$\chi^2 = 527.805$, $p = .000$

CFI = .881

TLI = .839

RMSEA = .100 (90% CI = .095, .110)

SRMR = .05

AIC = 631.805

Indirect effect = 9.082 (95% CI = 7.64, 10.77)

Figure 6. Undifferentiated mediation model.¹⁰

ASQ = Ambiguous Scenarios Questionnaire

CTI = Cognitive Triad Inventory

CASQ-R = Children's Attributional Style Questionnaire- Revised

CNCEQ = Children's Negative Cognitive Errors Questionnaire

PCQ-C = Probability/Cost Questionnaire (Cost of Negative Events)

PCQ-P = Probability/Cost Questionnaire (Probability of Negative Events)

CDI-P = Children's Depression Inventory (parent report)

CDI = Children's Depression Inventory (child report)

SCAS-P = Spence Children's Anxiety Scale (parent report)

SCAS-C = Spence Children's Anxiety Scale (child report)

LSDQ = Loneliness and Social Dissatisfaction Questionnaire

SASC-R = Social Anxiety Scale for Children- Revised

¹⁰ Note for this model and all subsequent SEM models: displayed values are with standardized path coefficients, solid lines indicate significant pathways, broken lines indicate non-significant pathways, and all significant structural pathways were significant at $p < .001$.

Anxiety model. A model was then tested to examine the mediating role of anxious cognitions in the relation between Shyness and Anxiety (see Figure 7). Initially, this model showed a poor fit of the data, $\chi^2(28, N = 686) = 229.140, p < .001$, CFI = .916, TLI = .864, RMSEA = .102 (90% CI = .090, .115, PCLOSE < .001), SRMR = .08, AIC = 303.140. However, subsequent to several modifications, the model showed a good fit, $\chi^2(16, N = 686) = 63.256, p < .001$, CFI = .980, TLI = .955, RMSEA = .058 (90% CI = .044, .073, PCLOSE = .167), SRMR = .03, AIC = 159.037. Consistent with hypotheses, the path from shyness to anxious cognitions was significant ($\beta = .69, p < .001$), as was the path from anxious cognitions to anxiety ($\beta = .89, p < .001$). Also, the path from shyness to anxiety was non-significant ($\beta = .03, p = .727$), whereas the bootstrapped indirect effect of shyness on anxiety was significant (95% CI = 14.565, 34.728, $p = .001$), suggesting that anxious cognitions play an important mediating role in the relation between shyness and anxiety (Hayes, 2009).

Depression model. The next model examined the mediating role of depressive cognitions in the relation between shyness and depression (see Figure 8). Initially, this model showed a poor fit, $\chi^2(22, N = 686) = 416.059, p < .001$, CFI = .813, TLI = .693, RMSEA = .185 (90% CI = .170, .200, PCLOSE < .001), SRMR = .08, AIC = 470.059. However, after two modifications were made, the model showed a much improved fit, $\chi^2(15, N = 686) = 77.419, p < .001$, CFI = .971, TLI = .946, RMSEA = .075 (90% CI = .059, .091, PCLOSE = .001), SRMR = .04, AIC = 167.501. All fit statistics were within the acceptable range, except RMSEA. However, the CI for RMSEA did include the recommended acceptable value of .06 (Hu & Bentler, 1999), and thus could be considered to be within the acceptable range. Notwithstanding the overall fit of this model, as for the anxious cognitions model, the path from shyness to depressive cognitions was significant, as was the path from depressive

$\chi^2 = 63.256$, $p = .000$
 CFI = .980
 TLI = .955
 RMSEA = .053 (90% CI = .044, .073)
 SRMR = .03
 AIC = 159.037
 Indirect effect = 22.50 (95% CI = 14.63, 35.14)

Figure 7. Anxious cognitions mediation model.

ASQ = Ambiguous Scenarios Questionnaire
 CNCEQ-Catas = Children's Negative Cognitive Errors Questionnaire (Catastrophizing subscale)
 CNCEQ-Overgen = Children's Negative Cognitive Errors Questionnaire (Overgeneralizing subscale)
 PCQ-C = Probability/Cost Questionnaire (Cost of Negative Events)
 PCQ-P = Probability/Cost Questionnaire (Probability of Negative Events)
 SCAS-P = Spence Children's Anxiety Scale (parent report)
 SCAS-C = Spence Children's Anxiety Scale (child report)
 SASC-R = Social Anxiety Scale for Children- Revised

$\chi^2 = 77.419$, $p = .000$
 CFI = .971
 TLI = .946
 RMSEA = .075 (90% CI = .059, .091)
 SRMR = .04
 AIC = 167.501
 Indirect effect = 7.63 (95% CI = 5.88, 9.60)

Figure 8. Depressive cognitions mediation model.

CNCEQ-Pers = Children's Negative Cognitive Errors Questionnaire (Personalizing subscale)
 CNCEQ-SA = Children's Negative Cognitive Errors Questionnaire (Selective Abstraction subscale)
 CASQ-R = Children's Attributional Style Questionnaire- Revised
 CTI = Cognitive Triad Inventory
 LSDQ = Loneliness and Social Dissatisfaction Questionnaire
 CDI = Children's Depression Inventory (child report)
 CDI-P = Children's Depression Inventory (parent report)

cognitions to depression. Also, the bootstrapped indirect effect of shyness on depression was significant (95% CI = 5.88, 9.60, $p = .001$), suggesting that depressive cognitions play a mediating role in the relation between shyness and depression (Hayes, 2009).

To summarize, three structural models tested the mediating role of negative cognitions in the relations between shyness and internalizing difficulties, including: 1) an *undifferentiated* model with shyness, overall negative cognitions, and overall internalizing difficulties; 2) an *anxiety* model with shyness, anxious cognitions, and anxiety symptoms; and 3) a *depression* model with shyness, depressive cognitions, and depressive symptoms. Taken together, these structural models provide support for the idea that negative thought patterns mediate the relations between shyness and internalizing difficulties. However, only the *anxiety* and *depression* models showed an acceptable fit, suggesting that anxiety and depression might be associated with specific patterns of negative thinking, and that negative thinking may play a different role in linking shyness with anxiety than with depression.

Measurement Models: Social versus Non-Social Cognitions

The next set of analyses tested hypotheses that negative cognitions might have stronger mediation effects in the relations between shyness and internalizing difficulties when cognitions and internalizing outcomes were socially relevant. To begin, for each cognitive factor, a CFA was performed in order to determine whether *social* and *nonsocial* items in these measures could be considered as correlated sub-factors. For each scale, models with one common factor were compared to models with separate *social* and *nonsocial* factors (herein referred to as the *one-factor* and *two-factor* models). Models were compared using the *chi-square likelihood-ratio* test. For this test, the smaller χ^2 value is subtracted from the larger χ^2 value, with degrees of freedom equal to the difference in degrees of freedom for each model.

A significant χ^2 difference value is indicative of a significant difference in fit between the two models. For each variable, if the two-factor model was comparable to the one-factor model in terms of fit, it was concluded that the variable could be regarded as having two sub-factors: *social* and *nonsocial*.

Threat perception. For threat perception, the one-factor model fit statistics are as follows, $\chi^2(54, N = 686) = 82.447, p = .008, CFI = .925, TLI = .892, RMSEA = .028$ (90% CI = .015, .039), AIC = 154.447. Fit statistics for the two-factor model are as follows, $\chi^2(53, N = 686) = 58.966, p = .267, CFI = .984, TLI = .977, RMSEA = .013$ (90% CI < .001, .028), AIC = 132.966. The χ^2 difference value of $82.447(54) - 58.966(53) = 23.481(1)$ exceeds the χ^2 critical value of 3.84 at $p = .05$. Thus, it was concluded that threat perception can be subdivided into two latent sub-factors representing social and non-social items.

Probability estimates. For probability estimates, the one-factor model fit statistics are as follows, $\chi^2(740, N = 686) = 2225.322, p < .001, CFI = .727, TLI = .697, RMSEA = .054$ (90% CI = .051, .057), AIC = 2465.322. Fit statistics for the two-factor model are as follows, $\chi^2(739, N = 686) = 1928.626, p < .001, CFI = .781, TLI = .757, RMSEA = .048$ (90% CI = .046, .051), AIC = 2170.626. The χ^2 difference value of $2225.322(740) - 1928.626(739) = 296.696(1)$ exceeds the χ^2 critical value of 3.84 at $p = .05$. Thus, it was concluded that probability estimates can be subdivided into two latent sub-factors representing social and non-social items.

Cost estimates. For cost estimates, the one-factor model fit statistics are as follows, $\chi^2(740, N = 686) = 2748.018, p < .001, CFI = .783, TLI = .760, RMSEA = .063$ (90% CI = .060, .065), AIC = 2988.018. Fit statistics for the two-factor model are as follows, $\chi^2(739, N = 686) = 2378.028, p < .001, (CFI) = .823, TLI = .804, RMSEA = .057$ (90% CI = .054, .059), AIC =

2620.028. The χ^2 difference value of $2748.018 (740) - 2378.028 (739) = 369.990 (1)$ exceeds the χ^2 critical value of 3.84 at $p = .05$. Thus, it was concluded that cost estimates can be subdivided into two latent sub-factors representing social and non-social items.

Negative attributions. For negative attributions, the one-factor model fit statistics are as follows, $\chi^2 (252, N = 686) = 456.251, p < .001, CFI = .716, TLI = .661, RMSEA = .034$ (90% CI = .029, .039), AIC = 600.251. Fit statistics for the two-factor model are as follows, $\chi^2 (251, N = 686) = 448.706, p < .001, CFI = .725, TLI = .671, RMSEA = .034$ (90% CI = .029, .039), AIC = 594.706. The χ^2 difference value of $456.251 (252) - 448.706 (251) = 7.545 (1)$ exceeds the χ^2 critical value of 3.84 at $p = .05$. Thus, it was concluded that negative attributions can be subdivided into two latent sub-factors representing social and non-social items.

Negative cognitive errors. For negative cognitive errors, the one-factor model fit statistics are as follows, $\chi^2 (252, N = 686) = 722.802, p < .001, CFI = .896, TLI = .876, RMSEA = .052$ (90% CI = .048, .057), AIC = 866.802. Fit statistics for the two-factor model are as follows, $\chi^2 (251, N = 686) = 625.676, p < .001, CFI = .917, TLI = .901, RMSEA = .047$ (90% CI = .042, .051), AIC = 771.676. The χ^2 difference value of $722.802 (252) - 625.676 (251) = 97.126 (1)$ exceeds the χ^2 critical value of 3.84 at $p = .05$. Thus, it was concluded that negative cognitive errors can be subdivided into two latent sub-factors representing social and non-social items.

To summarize, measurement models with latent variables were constructed for each negative cognition variable. In each case, a 'one-factor' model with all scale items was compared with a 'two-factor' model with 'social' and 'non-social' items as separate sub-factors. For each variable, the two-factor model provided a better fit of the data than the one-

factor model, suggesting that these variables could conceptually be separated into two sub-components representing ‘social’ and ‘non-social’ cognitions.

Social Cognitions - All. For the measurement model including the social subscales from the above-mentioned measures, the initial fit was poor, $\chi^2(5, N = 686) = 52.478, p < .001$, CFI = .921, TLI = .843, RMSEA = .117 (90% CI = .090, .147, PCLOSE < .001), SRMR = .05, AIC = 72.478, BIC = 72.654. However, after three modifications were made, the fit of the model fit was good, $\chi^2(2, N = 686) = 10.593, p = .005$, CFI = .986, TLI = .929, RMSEA = .079 (90% CI = .037, .129, PCLOSE = .116), SRMR = .02, AIC = 36.869. Therefore, this model was used in subsequent analyses.

Non-social Cognitions - All. For the model including the non-social subscales of the above-mentioned measures, this initial fit was poor, $\chi^2(5, N = 686) = 34.347, p < .001$, CFI = .668, TLI = .336, RMSEA = .175 (90% CI = .122, .232, PCLOSE < .001), SRMR = .09, AIC = 54.347, BIC = 54.992. However, after one modification was made, the model fit was excellent, $\chi^2(4, N = 686) = 3.315, p = .507$, CFI = 1.000, TLI = 1.000, RMSEA < .001 (90% CI < .001, .100, PCLOSE = .709), SRMR = .02, AIC = 26.702. Therefore, this model was used in subsequent analyses.

Structural Models: Shyness, Social vs. Non-social Cognitions, and Social vs. Non-social Anxiety

The next set of analyses involved testing a series of models in order to examine the possible differences in the mediating effects of social versus non-social cognitions in the links between shyness and social and non-social internalizing difficulties. Essentially, these analyses were conducted to determine which type of negative cognitions (i.e., social versus non-social) and which types of internalizing difficulties (i.e., social versus non-social) provide

the better account of the mediating effect of negative cognitions. In order to test these ideas, mediation models were first compared on the basis of differences between AIC values, with the lowest AIC values suggesting the better fitting model. It was predicted that models would show a better overall fit if social cognitions were included (rather than non-social cognitions), and if social anxiety was included (rather than non-social anxiety). The previous analyses showed that five negative cognition variables could be divided into ‘social’ and ‘non-social’ subscales, and that the ‘social cognitions’ and ‘non-social cognitions’ measurement models showed a good fit. The following analyses were conducted using these measurement models.

Model comparisons - anxiety. Four mediation models were compared in terms of overall fit when including social versus non-social cognitions, as well as social versus non-social anxiety in such models. As shown in Figures 9-12, contrary to original expectations, AIC values indicate that the inclusion of social cognitions and social anxiety led to *worse* fitting models than the inclusion of non-social cognitions and non-social anxiety.

Model comparisons - depression. Four additional mediation models were compared in terms of overall fit when including social versus non-social cognitions, with social versus non-social depression as the outcome variables (see Figures 13-16). Again, contrary to hypotheses, the AIC values were lower for the models including non-social cognitions (Figures 14 and 16), indicating a better overall fit for these models. However, the models including social depression as the outcome variable (Figures 13 and 14) had lower AIC values than analogous models with non-social depression as the outcome (Figures 15 and 16), providing partial support for the original hypotheses.

$\chi^2 = 179.513, p = .000$
 CFI = .931
 TLI = .888
 RMSEA = .079 (90% CI = .058, .091)
 SRMR = .04
 AIC = 255.513
 Indirect effects = 0.45 (95% CI = 0.32, 0.60)

Figure 9. Social cognitions linking shyness and social anxiety.

ASQ-S = Ambiguous Scenarios Questionnaire (social subscale)
 CASQ-R-S = Children's Attributional Style Questionnaire- Revised (social subscale)
 CNCEQ-S = Children's Negative Cognitive Errors Questionnaire (social subscale)
 PCQ-C-S = Probablity/Cost Questionnaire (Cost of Negative Events; social subscale)
 PCQ-P-S = Probablity/Cost Questionnaire (Probability of Negative Events; social subscale)
 SCAS-P-SP = Spence Children's Anxiety Scale (parent report; social phobia subscale)
 SCAS-C-SP = Spence Children's Anxiety Scale (child report; social phobia subscale)
 SASC-R = Social Anxiety Scale for Children- Revised

$\chi^2 = 97.422, p = .000$
 CFI = .950
 TLI = .938
 RMSEA = .051 (90% CI = .039, .053)
 SRMR = .04
 AIC = 181.422
 Indirect effect = 0.33 (95% CI = 0.21, 0.50)

Figure 10. Non-social cognitions linking shyness and social anxiety.

ASQ-NS = Ambiguous Scenarios Questionnaire (non-social subscale)
 CASQ-R-NS = Children's Attributional Style Questionnaire- Revised (non-social subscale)
 CNCEQ-NS = Children's Negative Cognitive Errors Questionnaire (non-social subscale)
 PCQ-C-NS = Probability/Cost Questionnaire (Cost of Negative Events; non-social subscale)
 PCQ-P-NS = Probability/Cost Questionnaire (Probability of Negative Events; non-social subscale)
 SCAS-P-SP = Spence Children's Anxiety Scale (parent report; social phobia subscale)
 SCAS-C-SP = Spence Children's Anxiety Scale (child report; social phobia subscale)
 SASC-R = Social Anxiety Scale for Children- Revised

$\chi^2 = 141.594, p = .000$
 CFI = .918
 TLI = .864
 RMSEA = .079 (90% CI = .065, .092)
 SRMR = .05
 AIC = 217.594
 Indirect effect = 0.49 (95% CI = 0.35, 0.65)

Figure 11. Social cognitions linking shyness and non-social anxiety.

ASQ-S = Ambiguous Scenarios Questionnaire (social subscale)
 CASQ-R-S = Children's Attributional Style Questionnaire- Revised (social subscale)
 CNCEQ-S = Children's Negative Cognitive Errors Questionnaire (social subscale)
 PCQ-C-S = Probability/Cost Questionnaire (Cost of Negative Events; social subscale)
 PCQ-P-S = Probability/Cost Questionnaire (Probability of Negative Events; social subscale)
 SCAS-P-SP = Spence Children's Anxiety Scale (parent report; not including social phobia subscale)
 SCAS-C-SP = Spence Children's Anxiety Scale (child report; not including social phobia subscale)

$\chi^2 = 73.026, p = .000$
 CFI = .949
 TLI = .912
 RMSEA = .051 (90% CI = .038, .066)
 SRMR = .04
 AIC = 151.026
 Indirect effect = 0.45 (95% CI = 0.23, 0.67)

Figure 12. Non-social cognitions linking shyness and non-social anxiety.

ASQ-NS = Ambiguous Scenarios Questionnaire (non-social subscale)
 CASQ-R-NS = Children's Attributional Style Questionnaire- Revised (non-social subscale)
 CNCEQ-NS = Children's Negative Cognitive Errors Questionnaire (non-social subscale)
 PCQ-C-NS = Probablity/Cost Questionnaire (Cost of Negative Events; non-social subscale)
 PCQ-P-NS = Probablity/Cost Questionnaire (Probability of Negative Events; non-social subscale)
 SCAS-P-SP = Spence Children's Anxiety Scale (parent report; not including social phobia subscale)
 SCAS-C-SP = Spence Children's Anxiety Scale (child report; not including social phobia subscale)

Comparisons of Indirect Effects - Multiple Mediator Models

The above results suggest that models including non-social cognitions and, in some cases non-social internalizing difficulties, lead to a better overall fit. However, the overall fit of these models does not provide a direct test of the strength of the mediation effect. Indeed, a main goal of the current study was to examine whether social cognitions lead to stronger mediating (or *indirect*) effects than non-social cognitions. Hayes (2009) argues that the bootstrapping approach can be used to test the significance of the indirect effect, and that this method has several advantages over other commonly used methods for assessing mediation, such as the ‘causal steps’ approach recommended by Baron and Kenny (1986). Indeed, simulation studies have supported the validity of this method for testing the effects of mediating variables (MacKinnon, Lockwood, & Williams, 2004; Williams & MacKinnon, 2008). Moreover, examining the relative strength of indirect effects in the same model allows for meaningful comparisons between potential mediators (Hayes, 2009), and reduces estimation bias that is associated with comparisons of inter-correlated mediators across two separate models (Preacher & Hayes, 2008). Thus, the final set of analyses further explored the relative importance of social versus non-social cognitions in the relations between shyness and internalizing difficulties by comparing the strength of indirect effects in multiple mediator models (i.e., containing two mediator variables representing ‘social cognitions’ and ‘non-social cognitions’). If the indirect path through social cognitions is stronger than the path through non-social cognitions, this provides support for the original hypothesis suggesting the greater importance of social cognitions.

The first set of multiple mediation models included one independent variable (Shyness), one dependent variable (Overall Internalizing Difficulties, Overall Anxiety, or

$\chi^2 = 155.785, p = .000$
 CFI = .904
 TLI = .828
 RMSEA = .091 (90% CI = .078, .104)
 SRMR = .05
 AIC = 245.788
 Indirect effect = 0.33 (95% CI = 0.21, 0.45)

Figure 13. Social cognitions linking shyness and social depression.

ASQ-S = Ambiguous Scenarios Questionnaire (social subscale)
 CASQ-R-S = Children's Attributional Style Questionnaire- Revised (social subscale)
 CNCEQ-S = Children's Negative Cognitive Errors Questionnaire (social subscale)
 PCQ-C-S = Probability/Cost Questionnaire (Cost of Negative Events; social subscale)
 PCQ-P-S = Probability/Cost Questionnaire (Probability of Negative Events; social subscale)
 LSDQ = Loneliness and Social Dissatisfaction Questionnaire
 CDI-S = Children's Depression Inventory (child report)- Interpersonal subscale

$\chi^2 = 72.827, p = .000$
 CFI = .952
 TLI = .917
 RMSEA = .051 (90% CI = .038, .066)
 SRMR = .04
 AIC = 150.827
 Indirect effect = 0.34 (95% CI = 0.24, 0.48)

Figure 14. Non-social cognitions linking shyness and social depression.

ASQ-NS = Ambiguous Scenarios Questionnaire (non-social subscale)
 CASQ-R-NS = Children's Attributional Style Questionnaire- Revised (non-social subscale)
 CNCEQ-NS = Children's Negative Cognitive Errors Questionnaire (non-social subscale)
 PCQ-C-NS = Probability/Cost Questionnaire (Cost of Negative Events; non-social subscale)
 PCQ-P-NS = Probability/Cost Questionnaire (Probability of Negative Events; non-social subscale)
 LSDQ = Loneliness and Social Dissatisfaction Questionnaire
 CDI-S = Children's Depression Inventory (child report)- Interpersonal subscale

$\chi^2 = 200.411, p = .000$
 CFI = .874
 NFI = .773
 RMSEA = .101 (90% CI = .087, .115)
 SRMR = .06
 AIC = 280.411
 Indirect effect = 0.41 (95% CI = 0.28, 0.56)

Figure 15. Social cognitions linking shyness and non-social depression.

ASQ-S = Ambiguous Scenarios Questionnaire (social subscale)
 CASQ-R-S = Children's Attributional Style Questionnaire- Revised (social subscale)
 CNCEQ-S = Children's Negative Cognitive Errors Questionnaire (social subscale)
 PCQ-C-S = Probablity/Cost Questionnaire (Cost of Negative Events; social subscale)
 PCQ-P-S = Probablity/Cost Questionnaire (Probability of Negative Events; social subscale)
 LSDQ = Loneliness and Social Dissatisfaction Questionnaire
 CDI-S = Children's Depression Inventory (child report)- Non-social items
 CDI-P-NS = Children's Depression Inventory (parent report)- Non-social items

$\chi^2 = 77.501, p = .000$
 CFI = .945
 TLI = .906
 RMSEA = .054 (90% CI = .040, .068)
 SRMR = .04
 AIC = 154.189
 Indirect effect = 0.44 (95% CI = 0.32, 0.59)

Figure 16. Non-social cognitions linking shyness and non-social depression.

ASQ-NS = Ambiguous Scenarios Questionnaire (non-social subscale)
 CASQ-R-NS = Children's Attributional Style Questionnaire- Revised (non-social subscale)
 CNCEQ-NS = Children's Negative Cognitive Errors Questionnaire (non-social subscale)
 PCQ-C-NS = Probability/Cost Questionnaire (Cost of Negative Events; non-social subscale)
 PCQ-P-NS = Probability/Cost Questionnaire (Probability of Negative Events; non-social subscale)
 LSDQ = Loneliness and Social Dissatisfaction Questionnaire
 CDI-NS = Children's Depression Inventory (child report)- Non-social items
 CDI-P-NS = Children's Depression Inventory (parent report)- Non-social items

Overall Depression), and two mediator variables (Social Cognitions and Non-Social Cognitions). These models tested the hypothesis that social cognitions would play a stronger mediating role in the relation between shyness and internalizing difficulties than would non-social cognitions. Four additional models were examined—two models examining indirect effects with Social Anxiety versus Non-Social Anxiety as outcomes, and two models examining such effects with Social Depression and Non-Social Depression as outcomes (see Figure 17).¹¹ These latter four models tested the hypothesis that the mediating role of social cognitions would be more pronounced when outcomes were socially-relevant.

In order to reduce the number of analyses, aggregated mediator and dependent variables were created with a series of PCAs to derived variables from factor scores (described in more detail above), representing social cognitions, non-social cognitions, overall anxiety, overall depression, as social anxiety, non-social anxiety, social depression, and non-social depression.¹² Multiple mediator models were analyzed using Preacher and Hayes' (2008) *Indirect* macro in SPSS. Point estimates, *p*-values, and bootstrapped bias-corrected 95% confidence intervals were obtained for each indirect effect and the contrast between the two indirect effects of each model (i.e., the indirect effect including the *social* mediator compared with the indirect effect of the *non-social* mediator).

Results suggest that social cognitions were associated with a stronger indirect effect (0.58; CI = [0.40, 0.76], *p* = .000) of shyness than were non-social cognitions (0.23; CI = [0.09, 0.38], *p* < .001) when predicting overall internalizing difficulties (contrast of indirect effects:

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¹¹ As mentioned in the Methods section, social depression was represented by the interpersonal problems subscale of the CDI and the LSDQ, whereas general (or non-social) depression was represented by the remaining CDI items along with conceptually non-social items from the CDI-P.

¹² As previously described, factor scores were created in lieu of latent variables. These included the same indicators as the latent variables included in the aboved-mentioned measurement and structural models.

Figure 17. Comparisons of mediating effects of social versus non-social cognitions in the relations between shyness and a) internalizing difficulties, b) anxiety, c) depression, d) social anxiety, e) non-social anxiety, f) social depression, g) non-social depression.

Note: Error bars represent 95% bias-corrected confidence intervals

0.35, CI = [0.07, 0.62], $p=.014$) (Figure 17-a). Social cognitions were also associated with a stronger indirect effect (0.53; CI = [0.36, 0.71], $p<.001$) of shyness than were non-social cognitions (0.20; CI = [0.07, 0.35], $p=.002$) when predicting overall anxiety (contrast of indirect effects: 0.33; CI = [0.05, 0.61], $p=.025$) (Figure 17-b). Social cognitions (0.61; CI = [0.41, 0.83], $p<.001$) also played a more important mediating role than non-social cognitions (0.24; CI = [0.09, 0.40], $p=.000$) when predicting overall depression (contrast of indirect effects: 0.37; CI = [0.04, 0.66], $p=.026$) (Figure 17-c).

Next, four models examined the indirect effect comparisons with social anxiety versus non-social anxiety, and social versus non-social depression, as outcome variables. These results indicated that the mediating effect of social cognitions (0.54; CI = [0.38, 0.73], $p<.001$) was stronger than that of non-social cognitions (0.11; CI = [-0.03, 0.25], $p=.059$) in the case of social anxiety (contrast of indirect effects: 0.43; CI = [0.15, 0.73], $p=.001$) (Figure 17-d). However, the mediating effects of social cognitions (0.45; CI = [0.27, 0.66], $p<.001$) and non-social cognitions (0.23; CI = [0.07, 0.39], $p=.002$) did not differ significantly in the case of non-social anxiety (contrast of indirect effects: 0.23; CI = [-0.08, 0.62], $p=.155$) (Figure 17-e). Similarly, the mediating effect of social cognitions (0.54; CI = [0.33, 0.77], $p<.001$) was stronger than the mediating effect of non-social cognitions (0.11; CI = [-0.04, 0.27], $p=.140$) in the case of social depression (contrast of indirect effects: 0.60; CI = [0.10, 0.77], $p=.012$) (Figure 17-f), but social (0.63; CI = [0.41, 0.89], $p<.001$) and non-social (0.32; CI = [0.15, 0.54], $p=0.000$) cognitions did not differ in terms of their mediating effect in the case of non-social depression (contrast of indirect effects = 0.31; CI = [-0.12, 0.69], $p=.060$) (Figure 17-g). It should also be noted that, as can be seen in Figures 17-d and 17-f, the mediating effects of non-social cognitions were not significant for the models social anxiety

and social depression as outcomes. These analyses are consistent with the original hypotheses, and suggest that the differential mediating effect of social cognitions (versus non-social cognitions) is more apparent in the relations between shyness and *social* (versus non-social) internalizing outcomes.

To summarize, a series of analyses explored the importance of the social relevance of negative cognitions in the links between shyness and internalizing difficulties. Structural models were compared in terms of relative overall fit, and these model comparisons did not support the hypothesis that the inclusion of social cognitions and social internalizing difficulties would lead to greater overall model fit. Models with non-social cognitions showed a better fit than those with social cognitions, and models with non-social anxiety showed a better fit than those with social anxiety (although models with social depression showed a greater fit than models with non-social depression). However, when social and non-social cognitions were simultaneously included in multiple mediator models, results indicated that the indirect effect of shyness on internalizing difficulties was stronger with social cognitions as the mediator than with non-social cognitions. Interestingly, results of further analyses showed that this larger mediating effect of social cognitions was only apparent for social internalizing outcomes. Also, only social cognitions (not non-social cognitions) had a significant mediating effect when models included social anxiety and social depression, whereas in models including non-social anxiety and non-social depression, significant mediating effects were shown for both social and non-social cognitions.

Discussion

The goal of the current study was to explore the nature of the associations between shyness, negative cognitions, and internalizing difficulties in late childhood and early

adolescence. Overall, results indicated that self-reported shyness was related to negative cognitions, as well as to heightened internalizing symptoms (including both anxiety and depression). Further, elevated levels of anxiety and depression in children and adolescents were associated with similar but distinct patterns of negative cognitions, and the co-occurrence of anxiety and depression was clearly associated with a more consistently negative pattern of cognitions than was the case for either anxiety or depression alone.

Results from structural equation modeling analyses showed that negative cognitions significantly mediated the relations between shyness and internalizing difficulties. However, it was further evident that mediation models involving negative cognitions showed an improved fit when anxiety and depression were examined separately as outcomes, and when the model included specific subsets of negative cognitions that were selected based on their conceptual relevance for anxiety versus depression. Also, the model showing a mediating effect of anxious cognitions on anxiety showed a somewhat better fit than the model showing the mediating effect of depressive cognitions on depression.

A particularly novel aspect of this study was the hypothesis that the social relevance of negative cognitions, as well as the social or non-social nature of internalizing difficulties, would have an impact on mediated pathways. Comparisons of the fit of structural models failed (overall) to support the original hypotheses, specifically that the inclusion of social cognitions and social internalizing outcomes would contribute to increased model fit. However, analyses examining the relative strength of the mediating effect of social versus non-social cognitions clearly showed that social cognitions play a stronger mediating role in the relations between shyness and internalizing difficulties. These results were complicated by the fact that this differential mediating effect was found for social outcomes (social anxiety

and social depression), but not for non-social outcomes (non-social anxiety and non-social depression). Each of these results is discussed in greater detail in the following sections.

Shyness, Negative Cognitions, and Internalizing Problems

The main goal of this thesis was to examine the nature of the associations among shyness, negative cognitions, and internalizing difficulties. To begin with, shyness was positively associated with indices of both anxiety and depression. This supports the growing body of literature indicating that shy children and adolescents are often concurrently experiencing increased levels of anxiety (e.g., Coplan et al., 2008; Coplan et al., 2009; Coplan et al., in press; Goldsmith & Lemery, 2000; Rapee et al., 2005; Shamir-Essakow et al., 2005; Weeks et al., 2009) and depression (Bell-Dolan et al., 1993; Chen et al., 2005; Chen et al., 2009; Coplan et al., in press).

As expected, indices of anxiety and depression were both positively associated with all indices of negative cognitions. Anxiety and depression were associated with more negative attributions, more negative views of the self, world, and future (i.e., the Cognitive Triad), greater negative cognitive errors (i.e., catastrophizing, personalizing, overgeneralizing, and selective abstraction), greater perceptions of the cost and probability of negative events, and an increased bias towards the perception of threat in ambiguous situations. This supports the well-established cognitive models of anxiety and depression, wherein negative thoughts have been regarded as important for the etiology of both anxious disorders (Barlow, 1988, 1999; Beck & Emery, 1985; Clark & Wells, 1995; Rapee & Heimberg, 1997) and depressive disorders (Beck, 1970, 1976; Abramson et al., 1978). These findings also add to the existing literature showing that a broad range of negative cognitions commonly occur in clinical and sub-clinical anxiety (e.g., Canterbury et al., 2004; Chansky & Kendall, 1997; Chorpita et al.,

1996; Creswell & O'Connor, 2006; Houston et al., 1984; Prins & Hanewald, 1997; Spence et al., 1999; Reijntjes et al., 2007) and depression (Fincham et al., 1987; Gladstone & Kaslow, 1995; Haley et al., 1985; Joiner & Wagner, 1995; MacLeod & Byrne, 1996; Meyer et al., 1988; Muris et al., 2005).

Importantly, as with anxiety and depression, shyness was also positively associated with all of the negative cognitions. This supports previous research that has examined cognitive biases in shy children (Coplan et al., in press; Gazelle & Druhen, 2009; Rubin et al., 1984; Lemare & Rubin, 1987; Stewart & Rubin, 1995; Wichmann et al., 2004), but also significantly extends these findings by showing that shy children seem to display a wide range of maladaptive cognitive processes. Moreover, these findings highlight that shyness seems to be associated with the types of negative thinking typically associated with anxiety and depression. Indeed, there seems to be considerable overlap in the negative thought patterns of shy, anxious, and depressed children and adolescents, thus providing the foundations for the conceptualization of negative cognitions as important “linking” variables in the relations between shyness and internalizing difficulties, as proposed in the current study.

As expected, indices of anxiety and depression were all positively inter-correlated. This supports the conceptualization of anxiety and depression as being part of the same overarching construct of internalizing difficulties. However, the moderate association between anxiety and depression in the current sample clearly indicates that there is by no means a one-to-one correspondence between these two types of internalizing difficulties.

The mediating role of negative cognitions. The current study was the first to examine the role played by negative cognitions in the conceptual link between shyness and internalizing problems in children and adolescents. Results indicated that negative cognitions

appeared to function in a highly complex manner as mediating variables. Indeed, the strength of the mediating role of negative cognitions depended upon a number of factors, including the particular type of internalizing difficulty, the particular type of negative cognition, the social versus non-social relevance of negative cognitions, and also the social versus non-social nature of internalizing difficulties. The details of these varied roles are discussed below.

Results from structural equation modeling indicated that negative cognitions played a significant mediating role, whereby shyness seems to be largely associated with internalizing difficulties via an indirect path through negative cognitions. Both the path coefficients and bootstrapped confidence intervals of indirect effects support this conclusion. The direct path from shyness to internalizing difficulties was non-significant and therefore the only effect of shyness on internalizing was an indirect effect through negative cognitions. However, the overall fit of this *undifferentiated* model was poor, and model fit was greatly improved in models examining the mediating role of anxious cognitions on anxiety and depressive cognitions on depression. Also, as was the case for the undifferentiated model, in both of these subsequent models, the indirect effect of shyness was significant, yet shyness did not show a significant direct effect to either depression or anxiety.

The fact that these models showed noticeable improvements over the undifferentiated model suggests that the mediating role of negative cognitions linking shyness to internalizing may be specific both to the *type of cognition* (i.e., anxious vs. depressive) and to the *internalizing outcome* (i.e., anxiety vs. depression). These results are consistent with Beck's (2006) content-specificity hypothesis, as well as several studies suggesting that anxiety and depression are associated with anxiety-specific and depressive-specific thoughts, respectively

(e.g., Jolly & Dykman, 1994; Jolly & Wiesner, 1996; Laurent & Stark, 1993; Marien & Bell, 2004).

These results also support and build on the previous research by Findlay et al. (2009), who reported that internalizing coping mediated the relation between shyness and internalizing difficulties in a sample of 9-to-11-year-old children. It is evident from the current findings that several kinds of maladaptive thinking can contribute to shy children's development of internalizing difficulties. These findings also support previous research with emerging adults suggesting that negative attributions mediate the relation between shyness and depression (Alfano et al., 1994). The current findings show that this mediating role can be seen in children and adolescents as well as adults. Moreover, the mediating role played by negative causal attributions may be part of a larger pattern of negative thinking that may partially explain the link between shyness and depression. This finding can now be extended, however, to children and adolescents, as the *depressive cognitions* measurement model included a measure of attributional style, and thus extends Alfano et al.'s (1994) findings to children and youth.

These results also suggest that not all negative thoughts necessarily have the same negative consequences for shy children. Accordingly, shy children whose negative thought processes tend to be more anxiety-specific (e.g., related to threat perception) might be expected to be more likely to develop feelings of anxiety. In contrast, shy children whose thought processes are more depression-specific (e.g., related to self-blame) might be expected to be more likely to develop feelings of depression. Thus, shy children seem to be prone to certain negative thought processes, and depending on the specific types of negative thoughts,

may in turn be more prone to internalizing difficulties that are directly related to the thought processes they exhibit.

In some sense, it is plausible that shy children who display thought patterns indicative of anxiety are likely on a path towards feelings anxious, whereas those shy children showing depressive thoughts may be on a path towards symptoms of depression. However, anxious cognitions are also likely to be involved in feelings of depression, and certain depressive cognitions are likely involved in feelings of anxiety. Indeed, correlation analyses and group comparisons (above) suggest this is likely the case. Thus, it should be expected that these processes are occurring simultaneously for many shy children.

Overall, these findings suggest that negative cognitions play an important role in understanding the link from shyness to internalizing difficulties. It seems likely that negative thinking can help clarify the mechanisms through which shy children can experience negative feelings such as anxiety and depression. It is thus plausible that ‘anxious negative thinking’ is part of the pathway from shyness to anxiety, whereas ‘depressive negative thinking’ is part of the pathway from shyness to depression. If this conceptualization is true, then negative thinking should potentially be viewed as part of two independent but related processes, wherein shyness leads to negative thoughts, which subsequently lead to internalizing difficulties, whatever the specific nature of that process might be¹³. Thus, negative thinking can be seen as playing two parallel roles in shy children’s development of internalizing, with the specific role depending on the focus of negative thoughts—anxious versus depressive.

The results have a number of implications for shy children and their parents. It is clear that shy children exhibit a pattern of negative thinking. This alone is somewhat concerning, as

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¹³ As discussed below, there may be several other factors on a “causal” pathway from shyness to anxiety and depression, and these factors could help clarify the true nature of this process.

a young person who has the tendency to think that everything will turn out badly, believes danger is lurking around every corner, and that everything is their fault is, on the face of it, may be on a path towards negative social and emotional development (e.g., Epkins, 1996). However, the present findings suggest that this kind of thinking may play a role in shy children's development of (presumably) unwanted emotions such as anxiety and depression. As mentioned earlier, even sub-clinical (or sub-threshold) levels of anxiety and depression are often precursors of more serious mental health problems that are particularly problematic in young people (Kessler et al., 2005; Petersen et al., 1993).

Social vs. non-social cognitions. One of the main goals of the current thesis was to test not only whether negative cognitions play an important mediating role in the relations between shyness and internalizing difficulties, but also whether the social or non-social nature of such negative cognitions impact the strength of this mediating role.

The first step was to establish that negative cognitions can be conceptualized as either 'social' or 'non-social', as most of the negative cognition variables used in the current thesis had not previously been shown to have social and non-social factors. Thus, several confirmatory factor analyses (CFAs) were conducted in order to test the relative fit of measurement models with a single factor versus corresponding models with two correlated sub-factors. These analyses confirmed the idea that negative cognitions can be conceptualized as having two sub-components: social cognitions and non-social cognitions. In fact, results indicated that for each negative cognition variable examined, the model with two correlated sub-factors actually provided a *better* fit of the data than the models with one overall factor.

Although the measures used in the current study contained “social” subscales¹⁴, only two studies (both using the PCQ-C) have empirically shown that social and non-social negative cognitions can represent separate subscales of the same measure (Foa et al., 1996; Rheingold et al., 2003). The current study was thus able to demonstrate that in addition to the PCQ-C, three additional measures of negative cognitions previously regarded as uni-dimensional can, and perhaps should, be conceptualized as bi-dimensional, with social and non-social sub-factors. The use of these measures with the assumption that there are such sub-factors has therefore been validated by the current study. Use of these measures in this way will help researchers ascertain whether certain sub-groups of children and adolescents have more biased thought processes in social (or non-social) situations, and potentially lead to a better understanding of various phenomena that are related to thought processes, including shyness.

More specifically, research that makes use of these social and non-social elements of negative cognitions can help clarify the specific types of negative thinking that characterize, or indeed predict, a number of social or psychological problems in young people, including (but not limited to) shyness, anxiety, and depression. That is, acknowledging that there can be different elements of negative thinking (such as social versus non-social) can lead to a better overall understanding of children’s thought processes in a more general way. However, this might in turn allow for a clearer understanding of the cognitive processes that underlie various aspects of personality, such as shyness. Indeed, knowing the specific types of thoughts that are most typical of shy children can help in the planning and implementation of programs to help

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¹⁴ With the exception of the CASQ-R, for which social and non-social items were conceptually derived.

these children adjust to new situations (e.g., school transition) and help researchers to correctly target the kinds of negative thinking that are most likely to be exhibited.

One implication of these findings is that previous studies that have used these measures as uni-dimensional constructs should perhaps be re-examined in light of the current findings. Specifically, most of the research examining threat perception (e.g., Creswell & O'Connor, 2006), negative cognitive errors (e.g., Silverman et al., 1999; Weems et al., 2001, 2007), and attributional style (e.g., Haley et al. 1985; Kaslow et al., 1984; 1988; Moyal, 1977) has not examined the influence of the social relevance of individual items.

Some studies have acknowledged the importance of the social context in the examination of children's negative thinking. For instance, the concept of learned helplessness in social situations (Gazelle & Druhen, 2009; Goetz & Dweck, 1980) has been examined as a way of deciphering children's attributions regarding perceived social rejection. However, this research has not examined the potential differences between helplessness in social versus non-social situations. For instance, Gazelle and Druhen's (2009) study used a laboratory procedure involving peer rejection to elicit helpless behaviour in shy children. This paradigm was inherently social, in that children were made to believe a friend had socially rejected them. Thus, this study was not able to assess whether the social nature of this rejection was an important factor in children's subsequent behaviour. Future research could employ laboratory paradigms wherein children's degree of 'helpless' behaviour could be assessed in situations with varying degrees of social salience, and thus allow researchers to measure the effect of such social salience on 'shy negative thinking'.

Two sets of analyses examined the idea that the mediating effect of negative cognitions in the relations between shyness and internalizing is stronger when negative cognitions are

social versus non-social, and when internalizing is social versus non-social. One set of analyses involved comparisons in terms of the overall fit of various structural models, where social versus non-social cognitions, and social versus non-social internalizing outcomes, were included. It was hypothesized that these models would show an incremental increase in fit. A second set of analyses directly examined the relative strengths of social cognitions versus non-social cognitions in their role as mediators in the relations between shyness and internalizing. These models allowed for multiple mediators to be included in the models, as well as direct tests of the relative strength of one mediator (i.e., social cognitions) as compared to another (i.e., non-social cognitions).

Results of the initial model comparisons showed that, contrary to expectations, the overall fit of these models did not increase as a function of: 1) the social nature of the negative cognitions; or 2) the social nature of the internalizing outcome. In fact, according to AIC values, the overall fit was best for the ‘shyness→ non-social cognitions→non-social anxiety’ model and worst for the ‘shyness→social cognitions→social anxiety’ model, with similar findings for the two models including depressive cognitions and depression.

In contrast, the results from multiple mediator models showed that the indirect effect of shyness on overall internalizing difficulties, as well as anxiety and depression specifically, was stronger through social cognitions than through non-social cognitions. This provides support for the original hypothesis that social cognitions indeed play a stronger mediating role in the relation between shyness and internalizing difficulties.

However, these results seemed to depend on the specific nature of anxiety and depression. As mentioned, anxiety and depression were both broken down into ‘social’ and ‘non-social’, in order to test whether the relative importance of social cognitions was more

apparent with ‘social’ outcomes. The results suggest that the relative importance of social versus non-social cognitions depends on whether the indirect pathway, from shyness through negative cognitions, leads to feelings of anxiety or depression that are of an interpersonal (or social) nature.

It is not entirely clear why these two sets of analyses provided somewhat different accounts of the data. One possibility is that AIC (used to assess the relative fit of different structural models) is only able to tell the researcher which model represents the least amount of lost information, rather than which model is “best” or “true” in a theoretical sense. Also, it has recently been acknowledged that, although the model with the lowest AIC should generally be selected as the preferred model, there may be more than one “true” model, and AIC may not select the “simplest” of these (Chakrabarti & Ghosh, 2011). Moreover, the models containing either ‘social anxiety’ or ‘non-social anxiety’ as outcome latent variables did not have the same number of manifest variables, and AIC imposes a penalty for model complexity (Bozdogan, 1987). Thus, AIC values may have been lower for the ‘social anxiety’ models if they had fewer manifest variables.

As mentioned earlier, it should be noted that the structural model comparisons did not allow for a direct test of the original hypotheses, and the bootstrap method for testing indirect effects has several advantages over other methods (Hayes, 2009). Considering this, the overall findings seem to fit into the conceptual framework put forth in the current thesis, wherein the relations among shyness, negative cognitions, and internalizing difficulties can be best understood when examining the social relevance (or salience) of children and adolescents’ negative thoughts. That is, negative thought patterns that involve social situations seem to be particularly important in the process whereby shy children and youth develop feelings of

anxiety and depression. Interestingly, this may only be the case when these anxious and depressive feelings are also of a social nature.

The current study is the first to directly examine the role of social relevance, as it relates to shy children's negative thoughts, as well as shy children's emotional adjustment. The results suggest that, for shy children who specifically have anxious or depressive feelings regarding social situations, negative thoughts that are socially relevant seem to have a much greater impact on such feelings than do socially irrelevant thoughts. In fact, for such children, negative thinking that does not involve social situations does not seem to play a significant role in understanding the link between shyness and such feelings. This would seem to make conceptual sense as, for children who are having negative thoughts specifically about social situations, it is not surprising that they would also experience anxious or depressive feelings with regard to such situations. That is, such children may be constantly convincing themselves that such situations are unpleasant and should be avoided if possible.

In contrast, in the context of anxiety and depression that is outside the social realm, shy children's thinking seems to provide an equally plausible explanation of such outcomes, regardless of whether or not thoughts are specific to social situations. In some sense, it should also not be surprising that when shy children's feelings of anxiety and depression are outside the social realm, the social impact of negative thinking has no special significance on such feelings. One might expect that non-social cognitions would play a stronger role in this case, as non-social outcomes could be expected to be largely the result of this type of thinking. However, social anxiety is only one anxiety sub-type, of which there are several. Indeed, the measures of anxiety and depression used in the current study are composed of several subscales representing correlated subtypes of these constructs. Thus, it is perhaps more

plausible for social cognitions to play a more important role only for the case of social internalizing difficulties, partly because there were no analogous ‘types’ of negative thinking for other subtypes of anxiety (e.g., separation anxiety) and depression (e.g., anhedonia).

These results help to clarify the apparently complex role played by negative thinking in shy children’s emotional adjustment. It has been previously suggested that shy children tend to think more negatively about themselves and the world around them (e.g., Rubin et al., 1984; Wichmann et al., 2004). However, it is an important step forward in the understanding of shy children’s thought processes to understand the possible impact of negative thoughts on negative outcomes.

The current study has a number of implications for shy children in general. First, these findings add to the growing body of literature suggesting that extreme shyness may be cause for concern. Shyness was associated with a pattern of heightened internalizing difficulties, which itself is problematic because, as discussed above, such difficulties may lead to serious and debilitating disorders later in life. Shyness was also associated with a pattern of negative thinking, which can also be thought to be inherently problematic in that such thought patterns have been largely implicated in the development of internalizing difficulties.

More importantly, this study has identified a conceptual pathway whereby shyness leads to negative thinking, which in turn leads to internalizing difficulties. It was also shown that negative social thoughts are potentially more important intermediary factors than non-social thoughts. This suggests that shy children are indeed focused on the social world, and this focus is perhaps the most important intermediary link between shyness and internalizing difficulties. However, it was also apparent that understanding shy children’s thought patterns in relation to the social world may be of particular importance for our understanding of shy

children's mental health in an interpersonal (or social) context (i.e., social anxiety and social depression).

Acknowledging this suggests that there are also practical implications that follow from the current findings. The current study provides evidence that targeting negative cognitions could "disrupt" the pathway from shyness to internalizing difficulties. Thus, these results can potentially inform those who may develop intervention programs, in terms of tailoring such programs to the specific needs of children. For instance, interventions for shy children may be generally more effective at reducing levels of anxiety and depression if *social* thoughts are targeted in particular. Also, if an intervention is designed for shy children who are showing signs of (or risk factors for) social anxiety or social depression specifically, it is possible that targeting socially-relevant negative thoughts might lead to a more successful intervention than if socially-irrelevant thoughts (or indeed negative thoughts in general) were targeted. However, to speculate further, if an intervention is aimed at shy children with signs of (or risk factors for) non-social anxious symptoms (e.g., fear of animals) or non-social depressive symptoms (e.g., lack of appetite), there may be no particular benefit of preferentially targeting social cognitions.

The current study showed that anxious cognitions may play an important role in linking shyness to anxiety, and depressive cognitions may play a similar role in linking shyness to depression. It might be the case that, if interactions with parents are important in shy children's development of negative cognitions, that particular kinds of negative interaction will lead to particular negative cognitions. Parents may verbalize particular patterns of thoughts, and thus model this way of thinking for their children. If a parent exhibits a particularly anxious way of thinking, it is possible that their children might be more likely to

have feelings of anxiety partly as a result of the parental modeling of anxious cognitions. In contrast, a parent could model a more depressive style of negative thinking, which may then contribute to their child's feelings of depression. Regardless of the specific process through which parenting may affect the path from shyness to negative cognitions, it is unclear whether parenting is somewhere on the causal pathway, or whether it plays a moderating role. These questions can potentially be addressed in future studies.

The main findings of the current study have broader implications, specifically for efforts to reduce shy children's negative thoughts. Drawing on the findings of cognitive therapy studies (e.g., Barrett et al., 1996a), thought patterns have often been shown to be modifiable, and thus can be targeted in intervention programs. CBT involves an attempt to restructure maladaptive thought patterns, and thus aspects of CBT could be explicitly incorporated into existing and future intervention programs for shy children, in order to reduce the likelihood of problematic levels of anxiety and depression in adolescence. Such intervention programs could be provided for children showing increased negative cognitions, but also for children with higher levels of shyness, as these children have been shown to be "at risk" for such negative cognitions in the first place.

However, the current study also showed that the social nature of negative cognitions is an important consideration in terms of the role played by negative cognitions in linking shyness and internalizing difficulties. Thus, it is important to take this into account in the context of interventions specifically for shy children. If shy children's negative cognitions are particularly problematic when they deal with social relationships, interventions should focus on social relationships and attempts to restructure shy children's tendency to think of social interactions in maladaptive ways. For instance, shy children could be helped to understand that

such interactions are not necessarily threatening, and that unpleasant interactions should not necessarily be attributed to personal failure. Thus, while addressing negative cognitions more broadly may be beneficial for all children, a more focused intervention specifically for shy children should perhaps target negative thinking in the context of social interactions and relationships.

Anxious vs. Depressive Cognitions

A secondary goal of the current study was to examine the potentially different patterns of negative cognitions in four sub-groups of participants: those with elevated anxiety (*anxious* group), those with elevated depression (*depressed* group), those with elevated symptoms of anxiety *and* depression (*anxious-depressed*), and those with neither elevated anxiety nor elevated depression (*comparison* group). As expected, results of this analysis suggested that the anxious group showed a somewhat different pattern than the depressed group. Although both groups consistently showed higher negative cognitions than the comparison group, the anxious group showed higher estimates of the cost of negative events than did the depressed group. This is not surprising, considering that anxiety is essentially a feeling of worry about possible future negative events, and we should expect particularly high amounts of concern about the perceived cost of these events, among anxious individuals.

In contrast, the depressed group exhibited more negative views of the self, world and future (i.e., the cognitive triad) than the anxious group. This is also not surprising, considering the conceptual relevance of the CTI measure with depressive symptoms, as well as previous research showing that depressed children endorse these items to a greater extent than anxious children (Kaslow et al., 1992). The depressed group also showed greater negative attributions than the anxious group, which was expected and is consistent with several studies showing

that depression in childhood is associated with a negative attributional style (Haley et al., 1985; Kaslow et al., 1984, 1988; Moyal, 1977). Also consistent with expectations was the finding that the depressed group showed greater selective abstraction (selectively focusing on negative aspects of an event) than the anxious group, which is also consistent with the existing literature (Epkins, 1996; Leitenberg et al., 1996; Leung & Wong, 1998; Weems et al., 2007).

It was somewhat more unexpected to find that the depressed group reported more overgeneralizing (i.e., seeing a single event as representative of all future events) than the anxious group. Some previous research has suggested that anxious individuals should show higher levels of this particular negative cognition than depressed individuals (e.g., Epkins, 1996; Leitenberg et al., 1986). However, a more recent study by Weems et al. (2007) suggests that anxiety and depression differ in terms of selective abstraction (as found in the current study), but are similar in terms of other negative cognitions. Moreover, the study by Epkins (1996) examines social anxiety rather than overall anxiety, which might account for the different findings. Group comparisons in the current study were not differentiated in terms of sub-types of anxiety.

Results from group comparisons not only showed differences between the anxious and depressed groups, but also differences between these two groups versus the anxious-depressed group. The anxious-depressed group exhibited the most negative pattern of cognitions overall. Specifically, this group reported higher threat perception, estimates of the probability of negative events, and negative cognitive errors (i.e., catastrophizing, overgeneralizing, personalizing, and selective abstraction) than both the anxious and depressed groups. Thus, the combination of high anxiety and high depression seems to be associated with the most negative thinking. This is consistent with previous studies showing that comorbidity of anxiety

and depression is associated with more negative outcomes than anxiety or depression alone (Cicchetti & Toth, 1998; Costello et al., 2003; Franco et al., 2007; Harrington, et al., 2007; Manassis & Menna, 1999; Merikangas et al., 2003; Strauss et al., 1988).

Taken together, these findings to some extent support the *content-specificity* hypothesis (Beck & Clark, 1988), which suggests that anxious and depressive cognitions have different foci, and are therefore distinguishable. In the current study, the anxious and depressed groups differed significantly in terms of several negative cognitions. However, this hypothesis was only partially supported, especially considering that both the anxious and depressed groups showed higher levels on all cognitive variables than the comparison group, and did not differ significantly from each other on most negative cognitions examined. Thus, these results arguably support the idea that anxiety and depression are associated with the same underlying pattern of problems (Stark et al., 1993; Wadsworth et al., 2001), albeit to different degrees for certain types of negative thinking.

It might be that differences between the depressed and anxious groups are partially due to depression being associated with an overall more negative pattern of cognitions than anxiety, as was suggested by Alfano et al. (2002). Indeed, the depressed group did report higher levels of negative cognitions than did the anxious group, although this seemed to depend greatly on the specific negative cognition in question.

Most importantly, these findings show the importance of examining anxiety and depression together. It has been widely noted that both anxiety and depression are closely related (Barlow et al., 1996; Brown et al., 1998; Chorpita et al., 1998; Clark & Watson, 1991; Gray & McNaughton, 1996), and should therefore be considered together if possible. Thus, the main implication of the group comparisons in the current study is that children and

adolescents who have the most negative thinking are those who have co-occurring high anxiety and high depression. This also suggests, as has been shown previously, that this particular group is the least well-adjusted, as compared with children and youth who only show elevated anxiety *or* elevated depression.

Limitations & Future Directions

Although the current study sheds light on the processes through which shy children may develop feelings of anxiety and depression, there are a number of limitations that should be mentioned. To begin, the data for this study are cross-sectional and therefore it is not possible to make any conclusions regarding causality or the directionality of the statistical relationships discussed above, and other possible conceptualizations must be entertained. For instance, these data cannot definitively show that shyness leads to negative cognitions, which then lead to internalizing difficulties. It is possible that negative cognitions are largely a result of internalizing difficulties, and that shyness results from (or is further affected by) negative cognitions and/or internalizing difficulties. Indeed, it has been noted that these types of cross-sectional mediation models can produce several equally acceptable interpretations, and should thus be interpreted with great caution (Roe, 2011). Although, as previously argued, there is a strong conceptual basis for this theoretical framework, the temporality of these relations can be more easily assessed with a longitudinal design, which could be employed in future studies.

Age differences were not a focus of the current thesis. Notwithstanding, some grade level differences were observed. Middle school participants (grades 7 and 8) in the current study showed more negative causal attributions and more negatively biased estimates of the probability of negative events, as compared with senior elementary participants (grades 5 and 6). Adolescence is a period that is often marked by increased stress from various sources

(Dahl & Gunnar, 2009; Greenfield et al., 2003; Nelson et al., 2005; Paus et al., 2008) and is associated with increased rates of mental health problems (Alloy et al., 2003; Bijl & Ravelli, 2000). Therefore, it is not surprising that certain patterns of negative thinking were more prominent among the older students in the present sample, as these older students are typically dealing with greater stress than their younger counterparts.

It is also likely that the relations examined in the current study are largely transactional in nature. For instance, shy children may have more negative thoughts, and as a result become shyer because these thoughts reinforce a desire to avoid social interactions. Spending even less time interacting with peers and feeling more apprehensive in social situations may, in turn, lead these children to have even more negative thoughts, especially regarding social encounters. This type of ‘feedback loop’ is also likely to occur among other variables examined in the current study (e.g., negative thoughts and depression) and should also be examined in future research.

Another limitation of the current study was that it relied mostly on self-report questionnaire data. Some parent-reports were also obtained and, where possible, were included in the analyses (e.g., in the creation of latent variables in structural models). However, the large majority of the data collected were from the same source, and thus the relations among the study variables may have been somewhat inflated due to shared method variance. Children and adolescents may also have under- or over-reported their levels of shyness, negative cognitions, or anxiety and depression. Future studies could take a more comprehensive multi-method approach, including teacher and peer ratings of certain behaviours, as well as behavioural observations. Teachers were not asked to complete questionnaires in the current study because it was decided, along with the school boards, that

teachers were already overburdened and would be generally unwilling to participate, especially because no compensation was offered for participation.

The current study used a community sample drawn from two largely rural school boards. It is not known to what degree this group of children and adolescents are representative of Canadian children and adolescents in terms of the variables measured in the current study. It is possible that the statistical relations found in the current study would differ to some degree in a more urban sample. Also, it is not clear what, if any, clinical significance the current findings have, and it is reasonable to ask whether these findings have any relevance in the context of clinical anxious and depressive disorders. In future research, it would be useful to include a wider selection of participants in order to maximize representativeness of results, but also to compare results across different sub-populations, including those with clinically diagnosed anxious and depressive disorders. Having said this, the approach of the current study was to model relations among variables, rather than to predict clinical diagnoses of anxiety and depression. That is, the purpose was to show how certain processes might occur in children and youth more generally, rather than only in specific subgroups.

Although gender was not a primary focus of the current study, some gender differences did emerge. First, girls reported greater shyness than did boys. This supports previous research showing that girls tend to self-report higher levels of shyness (Crozier, 1995; Haselager et al., 1998; Ollendick et al., 1990; Rubin et al., 1993, 2006), although other studies suggest this may not reflect actual gender differences in shyness *per se* (Rubin et al., 2009). Girls also reported greater anxiety and social anxiety than did boys, which supports research on gender differences in anxiety and anxiety sensitivity (Else-Quest et al., 2006; Walsh et al., 2004), as

well as epidemiological evidence that the prevalence of anxiety disorders is considerably higher in females (e.g., Kessler et al., 1994). Girls and boys did not show strong differences in terms of depression, which contradicts previous research with clinical and community samples of adolescents (Zahn-Waxler et al., 2006). This null finding was not surprising, considering the evidence that gender differences in depression may only appear around 14 years of age (Wade et al., 2002), which was the upper age limit in the present sample. Indeed, as mentioned, research with children has shown gender equivalence in terms of depression (Zahn-Waxler et al., 2008), and thus large gender differences in depression should not necessarily be expected in a sample of older children and early adolescents.

There was generally a lack of gender differences in the associations between study variables. In terms of negative cognitions, gender differences were generally not apparent. However, girls and boys did differ in terms of estimates of the probability and cost of negative events; overall, girls believed these events to be more probable and more costly than did boys. In contrast, boys made more negative causal attributions than did girls. Although gender differences were considered beyond the scope of the current thesis, there are potentially interesting and important gender effects that should be further explored in subsequent studies.

One of the most substantive limitations of the current study is that the findings represent only a small “piece of the puzzle” with regards to the way shyness may eventually lead to internalizing difficulties in children and youth; indeed, there are several unexplored questions that should be examined in future studies. For instance, shy children seem to exhibit a maladaptive cognitive style (i.e., a pattern of negative cognitions). However, little is known about the causal mechanisms that may underlie the link between shyness and negative cognitions, or the possible moderating variables that may affect these links.

One potential factor that could account for individual differences in shy children's negative cognitions is the quality of interactions with parents. Bowlby (1980) suggested that children's early experiences with attachment figures are influential in the development not only of internal working models, but also of biased cognitions that may be applied to new situations. Similarly, Beck (1967) proposed that children's attitudes and beliefs are affected through early experiences with important people with whom they interact. Accordingly, it can be speculated that shy children who experience particularly negative interactions with their parents may come to develop more negative patterns of thinking. In this regard, parent-child interactions can be viewed as a potential risk factor for shy children developing negative cognitions. Specifically, shy children who experience more negative (i.e., lower quality) relationships with their parents may be more likely to exhibit a pattern of negative cognitions than shy children whose relationships with their parents are more positive (i.e., higher quality).

There is partial support of these ideas in the results of studies indicating that children whose parents display characteristics such as high levels of criticism, rejection, intrusiveness, and a lack of warmth, tend to have lower self-esteem, higher self-criticism, and more dysfunctional attitudes (Blatt & Homann, 1992; Brewin, Firth-Cozens, Furnham, & McManus, 1992; Litovsky & Dusek, 1985; McCranie & Bass, 1984; Parker, 1993; Randolph & Dykman, 1998; Stark, Schmidt, & Joiner, 1996; Whisman & Kwon, 1992; Whisman & McGarvey, 1995). However, it should be noted that other researchers have not found such associations (e.g., Oliver & Berger, 1992, and Tiggemann, Winefield, Goldney, & Winefield, 1992). Future research should include measures of attachment or relationship quality with family and friends, in order to better understand the pathway from shyness to negative thinking.

Conclusion

Despite these limitations, the current research also had a number of strengths. First and foremost, this study included a large sample of children and adolescents. This increased statistical power, mitigated the influence of outliers and missing data, and allowed for relatively large sub-groups for examining patterns of negative cognitions for anxiety versus depression.

The current study used statistical techniques not commonly used in this area of research, such as structural equation modeling. This technique has a number of advantages over OLS regression, such as less stringent assumptions, the reduction of measurement error through the use of CFA in measurement models, the ability to assess the overall fit of the model as well as individual parameters, and the ability to handle non-normal data. Additionally, as mentioned above, the use of the bootstrapping method provided a number of advantages over the often-used alternatives for establishing the mediating effects of variables (Hayes, 2009).

The current dissertation also made a number of important contributions to the literature. It was the first study to examine the relations between shyness and multiple negative cognitions, and showed that shyness is associated with an overall pattern of maladaptive thoughts. It was also the first to examine the role of these wide-ranging negative cognitions in explaining the tendency for shy children and adolescents to exhibit elevated levels of internalizing difficulties. This was the first study to show that several negative cognitions which have been conceptualized as uni-dimensional can be seen as having social and non-social components. Moreover, this study showed that social relevance, both of negative

thinking and internalizing difficulties, is an important factor in the nature of the role played by negative cognitions linking shyness and internalizing difficulties.

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Appendix A

Children's Shyness Questionnaire

1) I find it hard to talk to someone I don't know.	YES	SOMETIMES	NO
2) I am easily embarrassed	YES	SOMETIMES	NO
3) I am usually quiet when I am with others.	YES	SOMETIMES	NO
4) Do you blush when people sing "Happy Birthday" to you?	YES	SOMETIMES	NO
5) I feel nervous when I am with important people.	YES	SOMETIMES	NO
6) I feel shy when I have to read aloud in front of the class.	YES	SOMETIMES	NO
7) I feel nervous about joining a new class.	YES	SOMETIMES	NO
8) I go red when someone teases me.	YES	SOMETIMES	NO
9) Do you say a lot when you meet someone for the first time?	YES	SOMETIMES	NO
10) I am usually shy in a group of people.	YES	SOMETIMES	NO
11) I feel shy when I am the center of attention.	YES	SOMETIMES	NO
12) Do you blush a lot?	YES	SOMETIMES	NO
13) I feel shy when the teacher speaks to me.	YES	SOMETIMES	NO
14) If the teacher asked for someone to act in a play would you put your hand up?	YES	SOMETIMES	NO
15) It is easy for me to make friends.	YES	SOMETIMES	NO
16) I would be embarrassed if the teacher put me in the front row on stage.	YES	SOMETIMES	NO
17) When grown-ups ask you about yourself do you often not know what to say?	YES	SOMETIMES	NO
18) I go red when the teacher praises my work.	YES	SOMETIMES	NO
19) I feel shy why I have to go into a room full of people.	YES	SOMETIMES	NO
20) Are you embarrassed when your friends look at photos of you when you were little?	YES	SOMETIMES	NO
21) Would you be too shy to ask someone to sponsor you for a good cause?	YES	SOMETIMES	NO
22) I enjoy having my photograph taken.	YES	SOMETIMES	NO
23) I usually talk to only one or two close friends.	YES	SOMETIMES	NO
24) I am usually shy when I meet girls (boys).	YES	SOMETIMES	NO
25) I go red when I have to speak to a girl (boy) of my age.	YES	SOMETIMES	NO

Appendix B

Spence Children's Anxiety Scale (Child Report)

1. I worry about things.....	Never	Sometimes	Often	Always
2. I am scared of the dark.....	Never	Sometimes	Often	Always
3. When I have a problem, I get a funny feeling in my stomach	Never	Sometimes	Often	Always
4. I feel afraid	Never	Sometimes	Often	Always
5. I would feel afraid of being on my own at home.....	Never	Sometimes	Often	Always
6. I feel scared when I have to take a test.....	Never	Sometimes	Often	Always
7. I feel afraid if I have to use public toilets or bathrooms	Never	Sometimes	Often	Always
8. I worry about being away from my parents.....	Never	Sometimes	Often	Always
9. I feel afraid that I will make a fool of myself in front of people.....	Never	Sometimes	Often	Always
10. I worry that I will do badly at my school work.....	Never	Sometimes	Often	Always
11. I am popular amongst other kids my own age.....	Never	Sometimes	Often	Always
12. I worry that something awful will happen to someone in my family....	Never	Sometimes	Often	Always
13. I suddenly feel as if I can't breathe when there is no reason for this..	Never	Sometimes	Often	Always
14. I have to keep checking that I have done things right (like the switch is off, or the door is locked)	Never	Sometimes	Often	Always
15. I feel scared if I have to sleep on my own.....	Never	Sometimes	Often	Always
16. I have trouble going to school in the mornings because I feel nervous or afraid.....	Never	Sometimes	Often	Always
17. I am good at sports.....	Never	Sometimes	Often	Always
19. I can't seem to get bad or silly thoughts out of my head.....	Never	Sometimes	Often	Always
20. When I have a problem, my heart beats really fast.....	Never	Sometimes	Often	Always
21. I suddenly start to tremble or shake when there is no reason for this.....	Never	Sometimes	Often	Always
22. I worry that something bad will happen to me.....	Never	Sometimes	Often	Always
23. I am scared of going to the doctors or dentists.....	Never	Sometimes	Often	Always
24. When I have a problem, I feel shaky.....	Never	Sometimes	Often	Always
25. I am scared of being in high places or lifts (elevators)	Never	Sometimes	Often	Always
26. I am a good person.....	Never	Sometimes	Often	Always
27. I have to think of special thoughts to stop bad things from happening (like numbers or words).....	Never	Sometimes	Often	Always
28. I feel scared if I have to travel in the car, or on a Bus or a train...	Never	Sometimes	Often	Always
29. I worry what other people think of me.....	Never	Sometimes	Often	Always
30. I am afraid of being in crowded places (like shopping centres, the movies, buses, busy playgrounds).....	Never	Sometimes	Often	Always
31. I feel happy.....	Never	Sometimes	Often	Always
32. All of a sudden I feel really scared for no reason at all.....	Never	Sometimes	Often	Always
33. I am scared of insects or spiders.....	Never	Sometimes	Often	Always
34. I suddenly become dizzy or faint when there is no reason for this..	Never	Sometimes	Often	Always
35. I feel afraid if I have to talk in front of my class.....	Never	Sometimes	Often	Always
36. My heart suddenly starts to beat too quickly for no reason.....	Never	Sometimes	Often	Always
37. I worry that I will suddenly get a scared feeling when there is nothing to be afraid of.....	Never	Sometimes	Often	Always
38. I like myself.....	Never	Sometimes	Often	Always
39. I am afraid of being in small closed places, like tunnels or small rooms.....	Never	Sometimes	Often	Always
40. I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order).....	Never	Sometimes	Often	Always
41. I get bothered by bad or silly thoughts or pictures in my mind.....	Never	Sometimes	Often	Always

42. I have to do some things in just the right way to stop bad things happening.....	Never	Sometimes	Often	Always
43. I am proud of my school work.....	Never	Sometimes	Often	Always
44. I would feel scared if I had to stay away from home overnight.....	Never	Sometimes	Often	Always

Appendix C

Spence Children's Anxiety Scale (Parent Report)

[choices are: 'never', 'sometimes', 'often', 'always']

1. My child worries about things
2. My child is scared of the dark
3. When my child has a problem, s(he) complains of having a funny feeling in his / her stomach
4. My child complains of feeling afraid
5. My child would feel afraid of being on his/her own at home
6. My child is scared when s(he) has to take a test
7. My child is afraid when (s)he has to use public toilets or bathrooms
8. My child worries about being away from us / me
9. My child feels afraid that (s)he will make a fool of him/herself in front of people
10. My child worries that (s)he will do badly at school
11. My child worries that something awful will happen to someone in our family
12. My child complains of suddenly feeling as if (s)he can't breathe when there is no reason for this
13. My child has to keep checking that (s)he has done things right (like the switch is off, or the door is locked)
14. My child is scared if (s)he has to sleep on his/her own
15. My child has trouble going to school in the mornings because (s)he feels nervous or afraid
16. My child is scared of dogs
17. My child can't seem to get bad or silly thoughts out of his / her head
18. When my child has a problem, s(he) complains of his/her heart beating really fast
19. My child suddenly starts to tremble or shake when there is no reason for this
20. My child worries that something bad will happen to him/her
21. My child is scared of going to the doctor or dentist
22. When my child has a problem, (s)he feels shaky
23. My child is scared of heights (eg. being at the top of a cliff)
24. My child has to think special thoughts (like numbers or words) to stop bad things from happening
25. My child feels scared if (s)he has to travel in the car, or on a bus or train
26. My child worries what other people think of him/her
27. My child is afraid of being in crowded places (like shopping centres, the movies, buses, busy playgrounds)
28. All of a sudden my child feels really scared for no reason at all
29. My child is scared of insects or spiders
30. My child complains of suddenly becoming dizzy or faint when there is no reason for this
31. My child feels afraid when (s)he has to talk in front of the class
32. My child's complains of his / her heart suddenly starting to beat too quickly for no reason
33. My child worries that (s)he will suddenly get a scared feeling when there is nothing to be afraid of
34. My child is afraid of being in small closed places, like tunnels or small rooms
35. My child has to do some things over and over again (like washing his / her hands, cleaning or putting things in a certain order)
36. My child gets bothered by bad or silly thoughts or pictures in his/her head
37. My child has to do certain things in just the right way to stop bad things from happening
38. My child would feel scared if (s)he had to stay away from home overnight

Appendix D

Social Anxiety Scale for Children- Revised

1 = Not at all
 2 = Hardly ever
 3 = Sometimes
 4 = Most of the time
 5 = All the time

1. I worry about doing something new in front of other kids...	1	2	3	4	5
2. I like to play with other kids.....	1	2	3	4	5
3. I worry about being teased.....	1	2	3	4	5
4. I feel shy around kids I don't know.....	1	2	3	4	5
5. I only talk to kids I know really well.....	1	2	3	4	5
6. I feel that other kids talk about me behind my back.....	1	2	3	4	5
7. I like to read.....	1	2	3	4	5
8. I worry about what other kids think of me.....	1	2	3	4	5
9. I'm afraid that others will not like me.....	1	2	3	4	5
10. I get nervous when I talk to kids I don't know well.....	1	2	3	4	5
11. I like to play sports.....	1	2	3	4	5
12. I worry about what others say about me.....	1	2	3	4	5
13. I get nervous when I meet new kids.....	1	2	3	4	5
14. I worry that other kids don't like me.....	1	2	3	4	5
15. I'm quiet when I'm with a group of kids.....	1	2	3	4	5
16. I like to do things by myself.....	1	2	3	4	5
17. I feel that other kids make fun of me.....	1	2	3	4	5
18. If I get into an argument with another kid, I worry that he or she will not like me.....	1	2	3	4	5
19. I'm afraid to invite other kids to do things with me because they might say no.....	1	2	3	4	5
20. I feel nervous when I'm around certain kids.....	1	2	3	4	5
21. I feel shy even with kids I know well.....	1	2	3	4	5
22. It's hard for me to ask other kids to do things with me	1	2	3	4	5

Appendix E

Children's Depression Inventory (Child Self-Report)

Kids sometimes have different feelings and ideas.

This next form lists the feelings and ideas in groups. From each group of three sentences, pick one sentence that describes you *best* for the past two weeks. After you pick a sentence from the first group, go onto the next group.

There is no right or wrong answer. Just pick the sentence that best describes the way you have been recently. Put a mark like this $\checkmark$ next to your answer. Put the mark in the box next to the sentence that you pick.

Here is an example of how this form works. Try it. Put a mark in the box next to the sentence that describes you best.

Example:

- ☐ *I read books all the time.*
- ☐ *I read books once in a while.*
- ☐ *I never read books.*

Remember, pick out the sentences that describe you best in the PAST TWO WEEKS.

Item 1

- ☐ *I am sad once in a while.*
- ☐ *I am sad many times.*
- ☐ *I am sad all the time.*

Item 2

- ☐ *Nothing will ever work out for me.*
- ☐ *I am not sure if things will work out for me.*
- ☐ *Things will work out for me O.K.*

Item 3

- ☐ *I do most things O.K.*
- ☐ *I do many things wrong.*
- ☐ *I do everything wrong.*

Item 4

- ☐ *I have fun in many things.*
- ☐ *I have fun in some things.*
- ☐ *Nothing is fun at all.*

Item 5

- ☐ *I am bad all the time.*
- ☐ *I am bad many times.*
- ☐ *I am bad once in a while.*

Item 6

- ☐ *I think about bad things happening to me once in a while.*
- ☐ *I worry that bad things will happen to me.*
- ☐ *I am sure that terrible things will happen to me.*

Item 7

- ☐ *I hate myself.*
- ☐ *I do not like myself.*
- ☐ *I like myself.*

Item 8

- ☐ *All bad things are my fault.*
- ☐ *Many bad things are my fault.*
- ☐ *Bad things are not usually my fault.*

Item 9

- ☐ *I feel like crying every day.*
- ☐ *I feel like crying many days.*
- ☐ *I feel like crying once in a while.*

Item 10

- ☐ *Things bother me all the time.*
- ☐ *Things bother me many times.*
- ☐ *Things bother me once in a while.*

Item 11

- ☐ *I like being with people.*
- ☐ *I do not like being with people many times.*
- ☐ *I do not want to be with people at all.*

Item 12

- ☐ *I cannot make up my mind about things.*
- ☐ *It is hard to make up my mind about things.*
- ☐ *I make up my mind about things easily.*

Item 13

- ☐ *I look O.K.*
- ☐ *There are some bad things about my looks.*
- ☐ *I look ugly.*

Item 14

- ☐ *I have to push myself all the time to do my schoolwork.*
- ☐ *I have to push myself many times to do my schoolwork.*
- ☐ *Doing schoolwork is not a big problem.*

Item 15

- ☐ *I have trouble sleeping every night.*
- ☐ *I have trouble sleeping many nights.*
- ☐ *I sleep pretty well.*

Item 16

- ☐ *I am tired once in a while.*
- ☐ *I am tired many days.*
- ☐ *I am tired all the time.*

Item 17

- ☐ *Most days I do not feel like eating.*
- ☐ *Many days I do not feel like eating.*
- ☐ *I eat pretty well.*

Item 18

- ☐ *I do not worry about aches and pains.*
- ☐ *I worry about aches and pains many times.*
- ☐ *I worry about aches and pains all the time.*

Item 19

- ☐ *I do not feel alone.*
- ☐ *I feel alone many times.*
- ☐ *I feel alone all the time.*

Item 20

- ☐ *I never have fun at school*
- ☐ *I have fun at school only once in a while.*
- ☐ *I have fun at school many times.*

Item 21

- ☐ *I have plenty of friends.*
- ☐ *I have some friends but I wish I had more.*
- ☐ *I do not have any friends.*

Item 22

- ☐ *My schoolwork is alright.*
- ☐ *My schoolwork is not as good as before.*
- ☐ *I do very badly in subjects I used to be good in.*

Item 23

- ☐ *I can never be as good as other kids.*
- ☐ *I can be as good as other kids if I want to.*
- ☐ *I am just as good as other kids*

Item 24

- ☐ *Nobody really loves me.*
- ☐ *I am not sure if anybody loves me.*
- ☐ *I am sure that somebody loves me.*

Item 25

- ☐ *I usually do what I am told.*
- ☐ *I do not do what I am told most times.*
- ☐ *I never do what I am told.*

Item 26

- ☐ *I get along with people.*
- ☐ *I get into fights many times.*
- ☐ *I get into fights all the time.*

Appendix F

Child Depression Inventory- Parent version

For each of the statements below, select one response that best describes your observations of your child in the PAST TWO WEEKS.
Indicate your response for each item by circling the number that best corresponds to your choice.

Remember, for each statement, pick ONE answer that best describes your observations of your child in the PAST TWO WEEKS.

My Child...	Not at all	Some of the time	Often	Much or most of the time
1. looks sad.....	1	2	3	4
2. has fun.....	1	2	3	4
3. does not like himself or herself.....	1	2	3	4
4. blames himself or herself for things.....	1	2	3	4
5. cries or looks tearful.....	1	2	3	4
6. is cranky or irritable.....	1	2	3	4
7. enjoys being with people.....	1	2	3	4
8. thinks that he or she is ugly.....	1	2	3	4
9. has to push himself or herself to do schoolwork.....	1	2	3	4
10. has trouble sleeping at night.....	1	2	3	4
11. looks tired or fatigued.....	1	2	3	4
12. seems lonely.....	1	2	3	4
13. enjoys school.....	1	2	3	4
14. spends time with friends.....	1	2	3	4
15. is showing worse school performance than before.....	1	2	3	4
16. does what he or she is told.....	1	2	3	4
17. has disagreements and conflicts with others.....	1	2	3	4

Appendix G

Loneliness and Social Dissatisfaction Questionnaire¹⁵

that's always true about me = 1
 that's true about me most of the time = 2
 that's sometimes true about me = 3
 that's hardly ever true about me = 4
 that's not true at all about me = 5

1. It's easy for me to make new friends at school.
2. I like to read.
3. I have nobody to talk to.
4. I'm good at working with other children.
5. I watch TV a lot.
6. It's hard for me to make friends.
7. I like school.
8. I have lots of friends.
9. I feel alone.
10. I can find a friend when I need one.
11. I play sports a lot.
12. It's hard to get other kids to like me.
13. I like science.
14. I don't have anyone to play with.
15. I like music.
16. I get along with other kids.
17. I feel left out of things.
18. There's nobody I can go to when I need help.
19. I like to paint and draw.
20. I don't get along with other children.
21. I'm lonely.
22. I am well-liked by the kids in my class.
23. I like playing board games a lot.
24. I don't have any friends.

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¹⁵ Filler items: 2, 5, 7, 11, 13, 15, 19, 23
 Reverse coded items: 3, 6, 9, 12, 14, 17, 18, 20, 21, 24

Appendix H

The Cognitive Triad Inventory for Children

1. I do well at many different things.....	Yes	Maybe	No
2. Schoolwork is no fun.....	Yes	Maybe	No
3. Most people are friendly and helpful.....	Yes	Maybe	No
4. Nothing is likely to work out for me.....	Yes	Maybe	No
5. I am a failure.....	Yes	Maybe	No
6. I like to think about the good things that will happen for me in the future.....	Yes	Maybe	No
7. I do my schoolwork ok.....	Yes	Maybe	No
8. The people I know help me when I need it.....	Yes	Maybe	No
9. I think that things will be going very well for me a few years from now.....	Yes	Maybe	No
10. I have messed up almost all the best friendships I have ever had.....	Yes	Maybe	No
11. Lots of fun things will happen for me in the future.....	Yes	Maybe	No
12. The things I do every day are fun.....	Yes	Maybe	No
13. I can't do anything right.....	Yes	Maybe	No
14. People like me.....	Yes	Maybe	No
15. There is nothing left in my life to look forward to.....	Yes	Maybe	No
16. My problems and worries will never go away.....	Yes	Maybe	No
17. I am as good as other people I know.....	Yes	Maybe	No
18. The world is a very mean place.....	Yes	Maybe	No
19. There is no reason for me to think that things will get better for me.....	Yes	Maybe	No
20. The important people in my life are helpful and nice to me.....	Yes	Maybe	No
21. I hate myself.....	Yes	Maybe	No
22. I will solve my problems.....	Yes	Maybe	No
23. Bad things happen to me a lot.....	Yes	Maybe	No
24. I have a friend who is nice and helpful to me.....	Yes	Maybe	No
25. I can do a lot of things well.....	Yes	Maybe	No
26. My future is too bad to think about.....	Yes	Maybe	No
27. My family doesn't care what happens to me.....	Yes	Maybe	No
28. Things will work out ok for me in the future.....	Yes	Maybe	No
29. I feel guilty for a lot of things.....	Yes	Maybe	No
30. No matter what I do, other people make it hard for me to get what I need.....	Yes	Maybe	No
31. I am a good person.....	Yes	Maybe	No
32. There is nothing to look forward to as I get older.....	Yes	Maybe	No
33. I like myself.....	Yes	Maybe	No
34. I am faced with many difficulties.....	Yes	Maybe	No
35. I have problems with my personality.....	Yes	Maybe	No
36. I think that I will be happy as I get older.....	Yes	Maybe	No

Appendix I

Children's Negative Cognitive Errors Questionnaire¹⁶

These next items describe a number of situations that might happen to kids. Each situation is followed by a thought that a kid in that situation might have. This thought is in "quotation marks". We want to know how similar that thought is to what you might think in that situation. Please read each situation and imagine that it is happening to you, even if it never has in the past. Then read the thought which is in "quotations". Circle the statement underneath each thought that best describes how similar that thought is to how you would think in that situation.

As an example let's read this:

You are a goalie for your soccer team. The game ends in a 1-1 tie. After the game you hear one of your teammates say that your team should have won today. You think, "He/she thinks it's my fault we didn't win."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

If the thought ("He/she thinks it's my fault we didn't win.") was *somewhat* like the way you would think in that situation, you would circle:

somewhat
like I would
think

Now let's begin:

1. You invite one of your friends to stay overnight at your house. Another one of your friends finds out about it. You think, "He/she will be real mad at me for not asking them and never want to be friends again."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

---

¹⁶ The *social* subscale includes items 1, 6, 8, 10, 15, 18, 19, and 21

2. Your class is having a 4-person relay race in gym class. Your team loses. You think, “If I had just been faster we would not have lost.”

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

3. You are trying out for the school softball team. You get up four times and get two hits and make two outs. You think, “What a lousy practice I had.”

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

4. Your team loses a spelling contest. The other team won easily. You think, “If I were smarter, we wouldn’t have lost.”

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

5. Some of your friends have asked you if you’re going to try out for the school soccer team. You tried out last year but did not make it. You think, “What’s the use of trying out, I couldn’t make it last year.”

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

6. You call one of the kids in your class to talk about your math homework. He/She says, “I can’t talk to you now, my father needs to use the phone.” You think, “They didn’t want to talk to me.”

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

7. You and three other students completed a group science project. Your teacher did not think it was very good and gave your group a poor grade. You think, "If I hadn't done such a lousy job, we would have gotten a good grade."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

8. Whenever it is someone's birthday in your class, the teacher lets that student have a half hour of free time to play a game with another student. Last week it was one of your friends' birthday and they picked someone else. Now another of your friends is going to get to choose someone. You think, "They probably won't pick me either."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

9. Your softball team is having practice. The coach tells you he would like to talk to you after practice. You think, "He's not happy with how I'm doing and doesn't want me on the team anymore."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

10. You went to a party with one of your friends. When you first got there your friend hung around with some other kids instead of you. Later you and your friend decide to stop at his/her house for a snack before you go home. Later that night you think, "My friend didn't seem to want to hang around with me tonight."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

11. You forgot to do your spelling homework. Your teacher tells the class to hand them in. You think, "The teacher is going to think I don't care and I won't pass."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

12. You were having a good day in school up until the last period when you had a math quiz. You did poorly on the quiz. You think, "School is a drag, what a waste of time."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

13. You play basketball and score 5 baskets but missed two real easy shots. After the game you think, "I played poorly."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

14. Last week you had a history test and forgot some of the things you had to read. Today you are having a math test and the teacher is passing out the test. You think, "I'll probably forget what I studied just like last week."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

15. You spent the day at your friend's house. The last hour before leaving you were really bored. You think, "Today was no fun."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

16. You are taking skiing lessons. The instructor tells the class that he does not think people are ready for the steep trails yet. You think, "If I could only learn to ski faster, I wouldn't be holding everyone up."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

17. Your class is starting a new unit in math. The last one was really hard. When it's time for math class you think, "That last stuff was so hard I just know I'm going to have trouble with this too."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

18. You just started a part-time job helping one of your neighbors. Twice this week you were not able to go skating with your friends because of having to work. As you see your friends leaving to go skating, you think, "Pretty soon they won't ever want to do anything with me."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

19. Last week one of the kids in your class had a party and you weren't invited. This past week you heard another student in your class telling someone he was thinking of getting some kids together to go to a movie. You think, "It'll be just like last week, I won't be asked to go."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

20. You did an extra credit assignment. Your teacher tells you that he would like to talk to you about it. You think, "He thinks I did a lousy job on my assignment and is going to give me a bad grade."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

21. You're with two of your friends. You ask if they would like to go to a movie this weekend. They both say they can't. You think, "They probably just don't want to go with me."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

22. Your cousin calls you to ask if you'd like to go on a long bike ride. You think, "I probably won't be able to keep up and people will make fun of me."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

23. Your team has just lost in a spelling contest. You were the last one up for your team and had spelled four words right. The last word was 'excellent' and you got it wrong. When you sit down you think, "I'm no good at spelling."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

24. Last week you played softball and struck out twice. Today some kids from your class ask you to play soccer. You think, "There's no sense playing, I'm no good at sports."

This thought is:

almost exactly	a lot	somewhat	only a little	not at all
like I would	like I would	like I would	like I would	like I would
think	think	think	think	think

Appendix J

Children's Attributional Style Questionnaire—Revised¹⁷

1. You get an "A" on a test a. I am smart b. I am good in the subject that the test was in	2. Some kids that you know say that they do not like you a. Once in a while people are mean to me. b. Once in a while I am mean to other people.
3. A good friend tells you that he or she hates you. a. My friend was in a bad mood that day. b. I wasn't nice to my friend that day.	4. A person steals money from you. a. That person is not honest. b. Many people are not honest.
5. Your parents tell you something that you make is very good. a. I am good at making some things. b. My parents like some things I make.	6. You break a glass. a. I am not careful enough. b. Sometimes I am not careful enough.
7. You do a project with a group of kids and it turns out badly. a. I don't work well with people in that particular group. b. I never work well with groups.	8. You make a new friend. a. I am a nice person. b. The people that I meet are nice.
9. You have been getting along well with your family. a. I am usually easy to get along with when I am with my family. b. Once in awhile I am easy to get along with when I am with my family.	10. You get a bad grade in school. a. I am not a good student b. Teachers give hard tests.
11. You walk into a door and you get a bloody nose. a. I wasn't looking where I was going. b. I have been careless lately.	12. You have a messy room. a. I did not clean my room that day. b. I usually do not clean my room.

¹⁷ Conceptually-derived *social* items: 2, 3, 5, 7, 8, 9, 13, 14, 17, 18, 19, and 21

13. Your mother makes you your favorite dinner. a. There are a few things that my mother will do to please me. b. My mother usually likes to please me.	14. A team that you are on loses a game. a. The team members don't help each other when they play together. b. That day the team members didn't help each other.
15. You do not get your chores done at home. a. I was lazy that day. b. Many days I am lazy.	16. You go to an amusement park and you have a good time. a. I usually enjoy myself at amusement parks b. I usually enjoy myself in many activities.
17. You go to a friend's party and you have fun. a. Your friend usually gives good parties. b. Your friend gave a good party that day.	18. You have a substitute teacher and she likes you. a. I was well behaved during class that day b. I am almost always well behaved during class.
19. You make your friends happy. a. I am usually a fun person to be with. b. Sometimes I am a fun person to be with.	20. You put a hard puzzle together. a. I am good at putting puzzles together b. I am good at many things.
21. You try out for a sports team and do not make it. a. I am not good at sports. b. The other kids who tried out were very good at sports.	22. You fail a test. a. All tests are hard. b. Only some tests are hard.
23. You hit a home run in a ball game. a. I swung the bat just right. b. The pitcher threw an easy pitch	24. You do the best in your class on a paper. a. The other kids in my class did not work hard on their papers. b. I worked hard on the paper.

Appendix K

Subjective Probability Questionnaire¹⁸

0	1	2	3	4	5	6	7	8
Not at all		A little		Moderately		Very		Extremely

1. You will get stomach aches.
2. While you are talking with several people, one of them will leave.
3. You will miss a favorite TV show this week.
4. You will unexpectedly be called in to see your principal at school.
5. You will catch the flu.
6. You will have trouble getting your words out while talking.
7. You will have a small fire in your home.
8. At a party, others will notice that you are nervous.
9. You will lose your backpack.
10. You will be ignored by someone you know.
11. Your bike will have a flat tire soon.
12. You will feel shy around other people.
13. Your stereo will break down soon. ....
14. Someone you know won't say hello to you.
15. You will find that you have no more money left of your allowance.
16. You will do something foolish in front of other people.
17. You will be mugged, but not seriously hurt.
18. You will blush while meeting a new person.
19. You will be caught outside in the rain without a coat or umbrella.
20. You will feel not as important as others.
21. You will have a small accident on your bike.
22. You will sound dumb while talking to others.
23. You will lock your locker combination in your locker.
24. You will feel embarrassed by something you did.
25. You will lose your house keys.
26. You will be turned down when you ask someone out.
27. You will get a letter from the library about an overdue workbook.
28. People will think you are boring.
29. A burglar will break into your home while you and your family are away.
30. During a meeting with your teacher, you will freeze.
31. Someone will steal your iPod or music player.
32. You will feel very nervous in front of others.
33. You will be stuck on the bus in a traffic jam for over an hour.
34. Strangers will stare at you as you pass them on the street.
35. You will sprain your ankle.
36. You will avoid introducing yourself to another person.
37. You will have a small flood in your bathroom.
38. You will leave a school dance as soon as you possibly can.
39. Three of your favorite CD's will get scratched.
40. You will walk into class late.

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¹⁸ The *social* subscale includes all even-numbered items

Appendix L

Subjective Cost Questionnaire¹⁹

0	1	2	3	4	5	6	7	8
Not at all		A little		Moderately		Very		Extremely
1. To get stomach aches 2. To have someone leave while you are talking with several people. 3. To miss a favorite TV show this week. 4. To unexpectedly be called in to see your principal at school. 5. To catch the flu. 6. To have trouble getting your words out while talking. 7. To have a small fire in your home. 8. To have others at a party notice that you are nervous. 9. To lose your backpack. 10. To be ignored by someone you know. 11. To have a flat tire on your bike soon. 12. To feel shy around other people. 13. Have your stereo break down soon. 14. To have someone you know not say hello to you. 15. To find that you have no more money left of your allowance. 16. To do something foolish in front of other people. 17. To be mugged, but not seriously hurt. 18. To blush while meeting a new person. 19. To be caught outside in the rain without a coat or umbrella. 20. To feel not as important as others. 21. To have a small accident on your bike. 22. To sound dumb while talking to others. 23. To lock your locker combination in your locker. 24. To feel embarrassed by something you did. 25. To lose your house keys. 26. To be turned down when you ask someone out. 27. To get a letter from the library about an overdue workbook. 28. To have people think you are boring. 29. To have a burglar break into your home while you and your family are away. 30. To freeze during a meeting with your teacher. 31. To have someone steal your iPod or music player. 32. To feel very nervous in front of others. 33. To be stuck on the bus in a traffic jam for over an hour. 34. To have strangers stare at you as you pass them on the street. 35. To sprain your ankle. 36. To avoid introducing yourself to another person. 37. To have a small flood in your bathroom. 38. To leave a school dance as soon as you possibly can. 39. To have three of your favorite CD's get scratched. 40. To walk into class late.								

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¹⁹ The *social* subscale includes all even-numbered items

Appendix M

Ambiguous Scenarios Questionnaire²⁰

Here are some situations that you might find yourself in. You might have been in some of these situations before. For others you might have to imagine what it would be like to be in that situation. The important thing is that you put what you would really think if it happened to you.

Read each situation and then answer the question by choosing on of the two options below. Put a check mark beside the one you think is the most likely.

1. You notice at school one day that a favourite book of yours is missing.

What do you think is most likely to have happened to the book?

Someone has stolen the book	
You left your book at home	

2. You see the School Headteacher walking around the playground and she/he has been asking other children where you are.

Why do you think the Head teacher is looking for you?

The Headteacher has a message from your mother for you	
The Headteacher thinks you have done something wrong	

3. You are staying over at a friend's house and their parents seem to be very angry.

Why do you think the parents are angry?

They had an argument and are upset with each other	
They don't want you to be there and are angry at you	

4. You see a group of children from another class playing a great game. When you walk over to join in they are laughing.

Why would you think they are laughing?

One of them has told a nasty joke about you	
They are laughing about something in the game	

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²⁰ The *social* subscale includes items 1-6

5. You arrange to have a party at 4 o'clock and by half past 4 no one has arrived.

Why would you think no one has turned up?

No one wants to come to the party	
They are running a little late	

6. You are showing your school project in front of the class and two children at the back of the class are giggling.

What would you think they are giggling at?

They are laughing at something stupid that you said	
One of them told a joke and they are laughing at that	

7. *If you don't have a dog just pretend you do for this next situation.*

You are playing inside and your dog runs to the door and starts to bark and growl at the door.

What would you think he is growling at?

There is another dog walking past outside	
There is someone you don't know trying to get in to your house	

8. On the way to school you start to feel sick in the tummy.

What would you think has made you feel sick?

You ate some bad food and are going to be really sick at school	
You didn't have enough breakfast and are just feeling hungry	

9. You are lying in bed at night when you hear a big crash in the house.

What would you think it is?

Someone has dropped something on the floor	
One of your parents has fallen and is hurt	

10. You are at a friend's house and the phone rings in the middle of the night.

Why would you think someone is calling so late?

There is an emergency at home	
It is a wrong number	

11. You are walking to a friend's house and a big dog comes up to you.

What would you think the dog is going to do?

The dog wants to sniff you and have a pat	
The dog is going to bite you	

12. You are reading and cannot see the words properly.

Why would you think you can't see properly?

Your eyes are tired	
There is something wrong with your eyes	