

EXPLORING LINKS BETWEEN SHYNESS, INTERPRETATION BIASES,
AND NEGATIVE PEER EXPERIENCES IN EARLY CHILDHOOD

by

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Abstract

The aim of the current study was to explore a conceptual model linking shyness, threat interpretation biases, negative peer experiences, and social anxiety in early childhood. The sample consisted of $N = 44$ children (ages 4-6 years), recruited from childcare centres in the Ottawa area. Parents and teachers completed assessments of children's shyness, socio-emotional difficulties (i.e., social anxiety symptoms), and negative peer relations (e.g., peer rejection, victimization). Children's threat perceptions were assessed using an interview measure where children were asked to respond to ambiguous scenarios. Parents also provided their expectations of how their children would interpret these same ambiguous scenarios. Among the results, some questions were raised pertaining to the psychometric properties of the modified version of the *Ambiguous Situations Questionnaire*. Results from correlation analyses indicated several theoretically consistent significant associations among the variables of interest. However, no empirical support was found for the notion that negative peer experiences might moderate the associations between shyness and threat perceptions. Findings of the current study offer a preliminary examination of the threat perceptions of young children. Implications for understanding threat interpretation and its association with the development of anxiety in early childhood are discussed.

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Exploring Links between Shyness, Interpretation Biases, and Negative Peer Experiences
in Early Childhood

Shyness is a temperamental trait characterized by wariness and anxiety in the face of social novelty and perceived social evaluation (Coplan & Armer, 2007). Although in most cases shy children are relatively well adjusted, a significant subset of extremely shy children appears to be at risk for a variety of maladaptive outcomes. Even in early childhood, shyness is associated with a host of social, emotional, and adjustment difficulties. For example, as compared to their more sociable counterparts, shy children tend to have fewer friends and are at a higher risk of being excluded and victimized by peers (Perren & Alsaker, 2006; Rubin, Coplan, & Bowker, 2009). In and of themselves, both peer victimization and rejection are associated with negative social expectations (London, Downey, Bonica, & Paltin, 2007), which in turn, may bias children's perceptions of ambiguous stimuli. It has been well documented that interpretation biases (e.g., heightened threat perception) are associated with socio-emotional difficulties, such as social anxiety (Amir, Beard, & Bower, 2005; Miers, Blöte, Bögels, & Westenberg, 2008), although less is understood about these associations in young children. Despite these findings, there is a lack of empirical research examining the potentially complex inter-associations (e.g., mediating and moderating effects) among shyness, threat perception, and negative peer experiences. Furthermore, very little is understood about the role of interpretation biases in the association between shyness and social anxiety, particularly in early childhood.

Early childhood represents a crucial period in the social development of children (Ladd & Price, 1987). The transition from the home environment to out-of-home care

facilities (e.g., preschools and childcare centres) presents new environmental challenges and social dynamics (Bronfenbrenner, 1979). For example, children are often faced with frequent and routine interaction with a consistent group of peers for the first time. They are exposed to increased peer influence, new social rules, and are being cared for by adults other than their parents (Dunn, 1994). The transition requires that children learn how to monitor their own behaviours, as well as understand and adapt to others' behaviours, in order to accomplish their social goals. Consequently, early childhood (i.e., ages 3-6 years) represents a period when children develop their sense of social competence, and stabilize their sentiments towards social experiences and peers (Denham, McKinley, Couchoud, & Holt, 1990).

The transition to preschool may be particularly challenging for *shy* children (Coplan & Arbeau, 2008; Henderson & Fox, 1998). New peers, authority figures, expectations, and routines may be overwhelming for shy children, given their feelings of uneasiness in unfamiliar social settings (Coplan & Arbeau, 2008; Rubin et al., 2009). Indeed, it has been suggested that increased social demands (e.g., "show and tell") may intensify feelings of anxiety in shy children (Evans, 2001; Evans & Bienert, 1992). Frequent negative peer experiences may further exacerbate these difficulties, as shy children have been reported to display more negative responses to such experiences (Gazelle & Ladd, 2003). The current study addresses several gaps in the literature by examining a conceptual model linking shyness, negative peer experiences, threat interpretation biases, and social anxiety in preschool-aged children.

Overview of Shyness in Early Childhood

Historically, a lack of clarity has existed among the various terms used to describe socially inhibited behaviours. For example, the terms *behavioural inhibition*, *shyness*, *social anxiety*, and *social withdrawal* have often been used interchangeably. However, despite some conceptual overlap, important definitional distinctions have been proposed among these constructs (e.g., Coplan & Rubin, 2010). Consequently, a summary of the various terms will first be presented.

Description of key terms. The term of greatest interest for the current study is *shyness*, a temperamental trait that emerges early in life, and is characterized by “wariness in the face of social novelty and/or self-conscious behaviour in situations of perceived social evaluation” (Rubin et al., 2009, p. 5). Shy children tend to withdraw from peer interactions; however, they do not necessarily dislike social interaction. In other words, although some shy children desire social interaction, their social motivation may be inhibited by fear and anxiety (Coplan, Prakash, O’Neil, & Armer, 2004).

There is growing evidence that supports a biological component of shyness. For example, as compared to their more outgoing peers, shy children have been reported to display patterns of right frontal EEG asymmetry (Fox, Henderson, Rubin, Calkins, & Schmidt, 2001; Henderson, Marshall, Fox, & Rubin, 2004), and higher levels of early morning salivary cortisol (Schmidt et al., 1997), which may be associated with an “over-aroused amygdala,” the centre for fear-related behaviours. It has been hypothesized that these characteristics combine to result in hyper-reactivity towards novel and stressful situations. Parenting style has also been reported to be associated with shyness in childhood. Most notably, an overprotective parenting style has been associated with child

shyness (Rubin & Burgess, 2002). It has been suggested that over-involved parents may discourage their children from exploring new situations, resulting in an over-dependence on parents, and a decreased sense of self-efficacy (Rubin, Stewart, & Coplan, 1995).

Behavioural inhibition (BI) is a conceptually similar construct which refers to a heightened sensitivity when faced with novel situations, resulting in a fearful approach (Kagan, Reznick, & Snidman, 1988). Behaviourally inhibited children have been described as shy and reticent in unfamiliar social situations during early and middle childhood (Kagan, 1997). Whereas BI refers to a more global fearful approach to novel situations, shyness emphasizes wariness specifically in *social* contexts. Although they have been identified as distinct constructs, there is significant evidence linking BI and social wariness (e.g., Coplan, DeBow, Schneider, & Graham, 2009; Hirshfeld-Becker et al., 2007). Consequently, given the theoretical similarities among these constructs, BI and shyness will be used interchangeably herein.

Another term of interest for the proposed study is *social anxiety* (SA), which refers to “discomfort in social situations and personal interactions” (Melfsen & Florin, 2002, p. 110). Key components of social anxiety include the fear of negative evaluation by others (Clark & Wells, 1995), and feelings of poor social competence (Rubin, 1985). In an assessment of anxiety symptoms in children, it was reported that social fears were one of the most common problems among 3-5-year-olds (Spence, Rapee, McDonald, & Ingram, 2001). There is a significant body of research focusing on clinically diagnosed adults and children who suffer from *social anxiety disorder* (SAD) (also sometimes labelled *social phobia*). SAD is defined as “a marked and persistent fear of social or performance situations in which embarrassment may occur” (American Psychiatric

Association, 2000, p. 450). Social settings evoke immediate anxiety in socially phobic individuals, often resulting in the avoidance of such situations. Individuals suffering from SAD experience extreme emotional distress and impaired daily functioning (Rapee & Heimberg, 1997; Simonian, Beidel, Turner, Berkes, & Long, 2001).

Some researchers (e.g., Rapee & Heimberg, 1997) have used a continuum to describe the relation among these terms, with SAD at the higher extreme of concern about social evaluation, and shyness at the lower extreme (i.e., a range in symptom severity). The description of SAD as an extreme form of shyness, however, is still debated in the literature. Stopa and Clark (1993) proposed a key difference between social phobia and shyness. Although shy and socially phobic individuals may approach social situations in a similar manner (e.g., hesitant, fearful), they may respond to cues differently. For example, *socially phobic* individuals may be too pre-occupied with their own negative self-evaluations and environmental scanning to acknowledge positive cues, thus allowing the cycle of anxiety and negativity to continue. However, if a *shy* person is given positive feedback from others and determines that their surroundings are safe, they may terminate their negative thoughts for that specific situation, thereby reducing their feelings of anxiety and fear. This would suggest that experiencing certain types of social interactions may enhance or diminish the likelihood of a shy individual going on to develop more severe social difficulties.

Given the severity of the symptoms required for clinical diagnosis, and the ongoing development of young children, SAD is rare in early childhood (2.5%; Egger & Angold, 2006). As shyness is much more prevalent in early childhood, “sub-clinical levels” of social anxiety (i.e., social anxiety symptoms) were examined in the current

study. It should be noted that despite the variance among these constructs, it has been suggested that cognitive models of social phobia can be applied to shyness given their similarities in symptoms and etiology (Rapee & Heimberg, 1997).

Correlates and outcomes. Although many shy children do not display socio-emotional maladjustment, there is increasing evidence to suggest that a subgroup of extremely shy children may be at risk for a host of difficulties. Shy children are often quiet and wary in social contexts, and rarely initiate social interactions with peers and teachers (Burgess & Younger, 2006; Rubin et al., 2009). Even in early childhood, shyness appears to have negative consequences and correlates. For example, shyness among preschool and kindergarten-aged children is associated with internalizing problems (e.g., anxiety), lower school liking, and social dissatisfaction (Coplan, Arbeau, & Armer, 2008; Coplan, Closson, & Arbeau, 2007). Although shyness in childhood does not appear to predict significant differences in the prevalence of mutual friendships (Ladd & Burgess, 1999), the relationships of shy children tend to be of poorer quality than those among their less shy counterparts (Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, & Burgess, 2006). Shy children may also be more prone to negative self-perceptions (Hymel, Bowker, & Woody, 1993), even in early childhood (Coplan, Findlay, & Nelson, 2004). Shyness in preschool is associated with peer exclusion and rejection (e.g., Coplan, Findlay, et al., 2004; Gazelle & Ladd, 2003; Hart et al., 2000), as well as peer victimization (Perren & Alsaker, 2006). Furthermore, shy children appear to be particularly susceptible to the damaging outcomes associated with negative peer experiences. For example, Gazelle and Ladd (2003) reported that shy children who were frequently excluded displayed significantly higher levels of depressive symptoms than

those who were less frequently excluded in kindergarten. Furthermore, shy excluded children maintained their high levels of depressive symptoms, while non-excluded shy children showed a decrease in symptoms over time.

Shyness is fairly stable across time and circumstance (Bittner et al., 2007; Rubin et al., 2009). Moreover, shyness in childhood has been widely found to be a contributing factor in the subsequent development of more serious mental health difficulties, such as SAD, general anxiety disorder, and depression (e.g., Chronis-Tuscano et al., 2009; Essex et al., 2009; Goodwin, Fergusson, & Horwood, 2004; Hirshfeld-Becker, et al., 2007; Schwartz, Snidman, & Kagan, 1999; Volbrecht & Goldsmith, 2010). Bittner et al. (2007) reported that anxiety disorders in early childhood predicted a range of psychiatric diagnoses in adolescence. Similarly, Goodwin and colleagues (2004) found that 8-year-old children who displayed socially anxious/withdrawn behaviours had higher rates of depression and anxiety disorders when tested again at ages 16-18 and 18-21 years. Individuals with SAD have also reported higher rates of substance abuse, restricted socialization, and impaired career functioning in adulthood (Rapee & Heimberg, 1997). Thus, although many shy children are just as well adjusted as their more social counterparts, these findings suggest the need for support and/or intervention for a subgroup of at-risk children who display early signs of social anxiety and shyness during childhood.

Links between Shyness and Threat Interpretation Biases

Despite the associations between shyness and later socio-emotional maladjustment, there still exists significant variability in the developmental trajectories of shy children (e.g., Caspi, Moffit, Newman, & Silva, 1996). This has led some researchers

to question why some children seem to “grow out of it” while others go on to develop more severe social deficits. Recently, cognitive mechanisms have become a focal point in the literature examining child temperament and later socio-emotional adjustment. For example, Eisenberg and colleagues (2009) suggested that individual differences in effortful control (e.g., attention shifting and inhibitory control capabilities) *moderated* the link between early behavioural inhibition and later anxiety problems.

Cognitive distortions (i.e., maladaptive thought patterns) have been widely examined in various areas of developmental research (e.g., aggression, depression, social anxiety). Three distinct forms of cognitive distortions have emerged in the literature: attention bias, judgement bias, and interpretation bias. *Attention bias* reflects a tendency for an individual to selectively focus on present dangers or signals of threat. *Judgement bias* reflects a tendency to exaggerate the probability and/or cost of a negative event (Amir, Foa, & Coles, 1998). In both cases, a negative event or threat is actually present, and it is the focus on the stimuli or the consequences associated with it that is exaggerated.

The cognitive distortion of most interest for the current study, *interpretation bias*, refers to an individual’s tendency to perceive threat or impose negative interpretations when faced with ambiguous situations (Muris, Merckelbach, & Damsma, 2000; Muris, Rapee, Meesters, Schouten, & Geers, 2003). For example, perceiving a peer’s yawn as a sign of boredom (a negative interpretation) rather than as an indication that they are tired (a neutral interpretation) would demonstrate a bias towards threat. Thus, in the case of interpretation biases, there need not be any actual threatening or negative stimuli present for this cognitive distortion to occur. Cognitive-behavioural models (e.g., Clark & Wells,

1995; Rapee & Heimberg, 1997) have suggested that interpretation biases contribute to the development and maintenance of SAD. Indeed, social anxiety has been reported to be a unique predictor of biased interpretations (Amir et al., 2005). Extension of the literature on social anxiety and social phobia suggests that shy individuals may be at risk of displaying similar biased cognitions, although this relation has remained relatively empirically untested.

The presence of any of these biases can result in dysfunctional or maladaptive thoughts and behaviours (Murris et al., 2003). Amir and colleagues (1998) suggested that each type of bias may have different implications depending on the population of interest. For example, judgement biases may have a greater impact on anxiety disorders wherein probabilities of danger are overestimated (e.g., panic disorder), whereas interpretation biases may be more pertinent in anxiety disorders wherein ambiguous information requires interpretation (e.g., social anxiety disorder). For this reason, the current study focused primarily on interpretation biases among shy preschool-aged children. Although each cognitive bias is considered to be distinct, it has been theorized that all cognitive biases share a common underlying mechanism (Mathews, Mackintosh, & Fulcher, 1997). Consequently, related research findings from all forms of cognitive biases will be drawn upon herein.

The role of interpretation biases has been relatively well documented in the literature on aggression (e.g., Reid, Salmon, & Lovibond, 2006), anxiety (e.g., Creswell, Shildrick, & Field, 2011; Muris et al., 2003), and as previously mentioned, has been established as serving a crucial role in the development and maintenance of clinical and non-clinical levels of social anxiety in adult and adolescent samples (e.g., Amir et al.,

1998; Miers et al., 2008; Muris, Merckelbach, et al., 2000; Vassilopoulos & Banerjee, 2008). However, to our knowledge, there has been no empirical research to date examining the links between shyness and interpretation biases in young children. There are three related areas of inquiry that support the notion that shyness may be associated with interpretation biases among preschoolers. These theoretical perspectives will now be described.

Theoretical link 1: Behavioural inhibition. A theoretical framework pertinent to the current study focuses on a specific form of child temperament: behavioural inhibition. It has been suggested that over-arousal towards stimuli, combined with fearful expectations may lead behaviourally inhibited children to seek out signs of threat, even when they are not present. Given the theoretical overlap shared by BI and shyness with regard to heightened sensitivity and low threshold for arousal, it is postulated that shy children may also display this tendency to perceive threat more frequently.

Recently, Pérez-Edgar et al. (2011) suggested that attention mechanisms act as “gate-keepers,” selectively choosing which aspects of the environment to attune to, as well as how to process them. In two separate studies, Pérez-Edgar and colleagues (2010, 2011) reported that attention biases played a moderating role in the development of adolescent social withdrawal in behaviourally inhibited toddlers, providing initial evidence of a link between cognitive biases and behaviourally inhibited temperament.

Surprisingly, despite the theoretical similarities between attention and interpretation biases (Mathews et al., 1997), only one study has examined the association between BI and threat-related interpretation biases. Dodd, Hudson, Morris, and Wise (2011) assessed interpretation biases, behavioural inhibition, and anxiety in 131 young

children (age 3-4 years), with follow-up assessments conducted 1, 2, and 5 years after the initial assessment. The authors reported that those who met the criteria for an anxiety diagnosis at baseline were significantly more likely to provide threatening interpretations when presented with ambiguous story-stems. Threat interpretations also predicted symptoms of anxiety at the 1-year, but not later follow-ups.

Interestingly, the authors found little evidence for an association between BI and interpretation biases. These findings suggest that BI and threat perception may make *independent* contributions to the development of anxiety in early childhood. However, a major limitation of this study was the lack of reliability and validity of the story-stem method used to measure interpretation biases. Although the story-stem method has been used extensively with young children, this was the first time it had been used to assess threat interpretations with this age group. Another limitation was that symptoms of anxiety were measured only with a questionnaire conducted by mail for the 1-year follow-up, therefore the presence of clinical anxiety could not be determined. This may explain why interpretation biases predicted symptoms of anxiety only at the 1-year follow-up, and not at the 2- and 5-year follow-ups (when clinical assessments were conducted).

As this is the only relevant study published to date, further examination of these associations is clearly needed, particularly in community (i.e., non-clinical) samples. Accordingly, a primary goal of the present study was to examine whether interpretation biases partially accounted for the link between shyness and social anxiety in young children.

Theoretical link 2: Social information processing. Some researchers (e.g., Camodeca, Goossens, Schuengel, & Meerum Terwogt, 2003) have differentiated between attention and interpretation biases based on when the cognitive errors occur within the commonly accepted model of social information processing (SIP) (Crick & Dodge, 1994). In brief, the SIP model presents a series of cognitive steps that occur during social interactions, ranging from encoding of social cues, to behavioural enactment. According to this model, each child approaches a situation with a unique combination of “biologically limited capabilities,” and a database of past experiences, memories, acquired rules, knowledge, and social schemas which influence and are influenced by social experiences (Crick & Dodge, 1994, p. 76). In Step 1, the child encodes an array of sensory input presented to them during a social interaction. In Step 2, they interpret and make a mental representation of the social cues. In Step 3, clarification or selection of a goal takes place, followed by Step 4, wherein response options are drawn upon from memory or, if necessary, new options are constructed. In Step 5, a decision is made about which response to make, which is ultimately followed by behavioural enactment in Step 6. Thus, according to this model, attention biases occur during Step 1, whereas interpretation biases occur during Step 2.

It has been suggested that a major shortcoming of the original SIP model is a lack of emphasis on the role of *emotions* during interactions. Consequently, Lemerise and Arsenio (2000) proposed an integrated model of emotional and cognitive processes in the SIP. This integrated model suggests that how a child regulates their emotional arousal may impact their interpretation and behavioural responses during social interactions.

Thus, according to this revised model, emotional and cognitive processes have the ability to impact any, or all, of the six steps of the SIP model.

For example, if an aggressive child feels angry during a social interaction with a peer, their emotions may influence which past experiences they draw upon when deciding how to process new information. Although this child presumably has both positive and negative experiences to draw upon, their emotional state may influence the child to recall past events during which they were experiencing similar feelings. This in turn may lead them to expect confrontation, and thus perceive threat even if it is not present. Similarly, if a shy child enters a social situation feeling nervous or uneasy, memories of failed attempts at socializing may surface. The child may then feel socially inadequate or embarrassed, and assume that their own self-evaluations are congruent with others' perceptions, leading them to expect negative evaluations from others. In addition, given that socially inhibited children tend to have more negative peer experiences (Siegel, La Greca, & Harrison, 2009; Storch & Masia-Warner, 2004), they may be more likely to expect negative outcomes when faced with novel situations.

Theoretical link 3: Cognitive-behavioural models of social anxiety. Cognitive-behavioural models developed to explain the etiology and maintenance of social anxiety suggest that socially anxious individuals experience difficulty interpreting social cues. A central component of social anxiety involves seeking positive approval from others, while simultaneously fearing behaving in ways that will result in loss of status and/or worth (Clark & Wells, 1995; Philippot & Douilliez, 2005; Rapee & Heimberg, 1997). Socially anxious individuals appear to possess negative self-schemas of social ability that leave them constantly scanning their environment for information on how others perceive them

(Clark & Wells, 1995), and more specifically, whether signs of threat or rejection exist (Rapee & Heimberg, 1997). Consequently, socially anxious individuals allocate a considerable amount of attentional resources towards detecting possible negative evaluations from others. Their sensitivity and heightened perceived cost of negative evaluation (Schofield, Coles, & Gibb, 2007) also trigger self-focused attention towards their own performance (Philippot & Douilliez, 2005). Together, these result in what Rapee and Heimberg (1997) refer to as the “multiple-task paradigm” (p. 746). According to this model, socially anxious individuals engage in both internal and external attentional focus during social interactions, in addition to focusing on completing whatever task they may be engaging in. This in turn diminishes their ability to accurately process information and function in social situations (Schultz & Heimberg, 2008). Socially anxious individuals have an even greater risk of misinterpreting cues due to their belief that others are inherently critical (Rapee & Heimberg, 1997), and that their negative self-evaluations are synonymous with their peers’ perceptions (Clark & Wells, 1995).

Upon feeling symptoms of anxiety, socially anxious individuals may behave in ways that elicit less friendly responses and/or acceptance from others (e.g., interact less, appear less interested), furthering their social isolation. This may confirm their fears that others are judging them in a non-favourable manner (Rapee & Heimberg, 1997) and perpetuate the cycle of anxiety. Additionally, socially anxious individuals are more likely to ruminate about their social interactions. Therefore, any real or perceived negative evaluation from others may exacerbate their feelings of anxiety (Clark & Wells, 1995) and lead socially anxious children to develop a pattern of distorted interpretations of social interactions.

These cognitive models were originally developed to explain underlying mechanisms of social anxiety in adults. Notwithstanding, results from a study conducted by Hodson, McManus, Clark, and Doll (2008) with a sample of 11-14-year-old children suggested that Clark and Wells' (1995) model could be applied to children. Additionally, studies examining children as young as 7 years old have reported findings consistent with these models (e.g., Barrett, Rapee, Dadds, & Ryan, 1996; Higa & Daleiden, 2008; Muris, Merckelbach, et al., 2000; Vassilopoulos & Banerjee, 2008; Vassilopoulos, Banerjee, & Prantzalou, 2009). To date, no study has specifically examined the role of interpretation biases on the development of social anxiety in preschool-aged children. However, these findings suggest a developmental pathway that could extend to very young children. Consequently, relevant studies from the anxiety, social anxiety and social phobia literature in older children and adults are now briefly reviewed.

Empirical links. It has been relatively well established that anxiety and interpretation biases are significantly associated in older children (e.g., Creswell & O'Connor, 2010; Lu, Daleiden, & Lu, 2007; Muris et al., 2003) and adults (e.g., Mathews & MacLeod, 1994). Recently, two longitudinal studies examining very young children (Creswell et al., 2011; Dodd et al., 2011) extended these findings to early childhood. For example, Creswell and colleagues (2011) reported a significant association between threat interpretation biases and anxiety in 5-year-old children over a three-year timeframe.

The link between *social* anxiety and interpretation biases has also been well documented among adults and children in both clinical and non-clinical populations. When presented with ambiguous social scenarios, socially anxious individuals are more

likely to interpret them as negative (e.g., Amir et al., 1998; Constans, Penn, Ihen, & Hope, 1999; Vassilopoulos & Banerjee, 2008). Bögels and Zigterman (2000) reported that anxiety disorders (including social anxiety disorder) in their sample of 9-18-year-olds predicted more negative cognitions when presented with ambiguous situations, as compared to a control group. Higa and Daleiden (2008) examined the role of self-focused attention in social interpretation biases in a sample of sixth graders. Social anxiety predicted self-focused attention as well as threat interpretation biases, providing support for the cognitive-behavioural models of social anxiety (Clark & Wells, 1995; Rapee & Heimberg, 1997).

Further support for the association between interpretation biases and social anxiety has been provided by examining the effects of experimental modification of interpretation biases in socially anxious children. Vassilopoulos and colleagues (2009) trained a group of 10-11-year-olds selected for high levels of non-clinical social anxiety to endorse benign interpretations of potentially threatening social scenarios. Following training, the group was less likely to interpret new, ambiguous social scenarios as negative. Furthermore, they reported reduced trait social anxiety, suggesting a reciprocal relation between social anxiety and interpretation biases.

Some researchers have used images of emotional facial expressions (EFE) to examine whether socially anxious individuals are more likely to perceive negative emotions (e.g., hostility, disgust, rejection) when faced with neutral or positive stimuli (e.g., McClure & Nowicki, 2001; Melfsen & Florin, 2002; Schofield et al., 2007; Winton, Clark, & Edelmann, 1995; Yoon & Zinbarg, 2007). Winton and colleagues (1995) reported that more socially anxious adults tended to display a bias towards interpreting

emotional expressions as negative. Similarly, Yoon and Zinbarg (2007) found that socially anxious undergraduate participants tended to perceive negative or threatening emotions when presented with neutral EFEs. In one of the few studies examining the EFE decoding abilities of preschool-aged children, Zuckerman and Przewuzman (1979) reported that children with better decoding abilities were rated as being better adjusted by their parents. This study provided initial evidence of a link between the social abilities and cognitive distortions in children as young as two-and-a-half years old.

However, the results in this area are not entirely consistent. For example, contrary to previous findings, Melfsen and Florin (2002) reported that negative interpretation biases were nonexistent in their sample of 8-12-year-old socially anxious children. In this study, socially-anxious children did not display enhanced abilities to detect negative expressions, nor did they tend to interpret positive and/or neutral expressions as negative. Similarly, Schofield et al. (2007) reported that undergraduate students who reported greater symptoms of social anxiety did not display increased negative interpretation biases in facial expressions. These researchers did, however, find that the more socially anxious participants expressed a greater perceived cost of interacting with someone showing disgust, supporting the notion that socially anxious individuals place more importance on being accepted by others (Clark & Wells, 1995).

Assessments of Interpretation Biases

Several measures have been used to assess interpretation biases in a variety of populations. Due to the lack of studies examining the interpretation biases of very young children, the current study implemented an adapted measure based on methods used with

adults and older children (Barrett et al., 1996; Creswell et al., 2011). An overview of the different methods employed to assess interpretation biases is now presented.

As previously mentioned, several studies have used *emotional facial expression recognition tasks* in order to gauge an individual's propensity to perceive threat. This method involves presenting participants with images of facial expressions depicting various emotions (e.g., happiness, sadness, anger, disgust, surprise, fear) and asking them to identify a corresponding emotion for each image. In some cases, images have been distorted to produce EFEs of varying intensities. For example, 0% (neutral expression), 30% (using a morphed image of neutral and full intensity anger), and 100% (full intensity anger) were presented to participants in a study conducted by Philippot and Douilliez (2005). This method works under the assumption that those who display cognitive biases will be more likely to detect emotions at lower intensities. However, this method does not directly assess the presence of threat-related interpretation biases, as performance is often based on identification accuracy across both positive and negative emotional expressions. Additionally, although neutral expressions are sometimes included, the majority of stimuli used in this method include emotional expressions, reducing the ability to examine perceptions of ambiguity. Considering the young age of the population of interest and the level of inference required to assess threat-related interpretation biases using facial recognition tasks, this method was not deemed as appropriate for use in the current study.

Some studies have implemented the use of *homophones* in order to assess interpretation biases (e.g., Hadwin, Frost, French, & Richards, 1997). In this method, participants listen to a series of ambiguous homophones (e.g., "bury/berry," "die/dye")

and are asked to indicate their interpretations of each word by identifying the corresponding image. This method requires a relatively developed vocabulary, and as a result, was not an appropriate measure to use with very young children.

In one of the very few studies examining interpretation biases in preschool-aged children, Dodd and colleagues (2011) used a *story-stem* approach. Drawing upon previous research with young children (e.g., Warren, Emde, & Sroufe, 2000), this method involves presenting participants with ambiguous story-stems and asking them to interpret and complete each scenario. Although the story-stem method has been shown to have adequate psychometric properties when used to assess attachment relationships in children aged 3 to 8 years (Holmberg, Robinson, Corbitt-Price, & Wiener, 2007), there is no data on the validity or reliability of this method as an assessment of threat interpretation biases.

Muris, Merckelbach, and colleagues (2000) developed a method that involves presenting participants with *hypothetical scenarios*. In this method, participants are told that they will be presented with some stories that are scary, and some that are not. Each story is presented sentence by sentence. After each sentence the participant is asked whether they think the story will be scary or not (Muris, Merckelbach, et al., 2000; Muris et al., 2003). This particular method, referred to as the RED bias (“reduced evidence for danger;” Muris et al., 2003, p. 273), assumes that those who display interpretation biases will perceive threat earlier and more frequently when faced with ambiguous scenarios.

A similar method involving presenting participants with hypothetical vignettes of ambiguous scenarios was developed by Barrett and colleagues (1996). Upon reading each scenario, children are asked two open-ended questions: “What do you think is most likely

to have happened?” and “What will you do about it?” In addition to these questions, children must select one of four options that best represents how they interpret the situation (two non-threatening, and two threatening interpretations). It is assumed that those who display heightened interpretation biases will choose threatening interpretations more frequently.

Previous studies have used this method (e.g., Barrett & Holmes, 2001) or adaptations of this method (e.g., Creswell & O’Connor, 2010; Creswell, Schniering, & Rapee, 2005). This method was selected as the most appropriate method for the current study. Given the age of the participants, simplicity was necessary. This method appeared to offer the most straightforward, and direct measure of threat interpretation biases across a variety of scenarios, without compromising our ability to interpret and generalize the results. The original measure was developed for older children (ages 7 to 14), therefore modifications were made in order to suit the target population. For instance, the vignettes were read aloud to each child. Only two interpretations were offered as interpretation choices, and the use of the open-ended questions were dropped. A more detailed description of the modifications made to this measure for the current study is presented in the Method section.

Role of Negative Peer Experiences

The SIP model implies that we develop interpretive styles at least partially based on past experiences (Crick & Dodge, 1994). Consequently, if an individual has frequently been subjected to negative peer experiences, such as victimization and rejection, one could expect them to develop a negatively biased interpretive style. Indeed, peer rejection

has been reported to be associated with future expectations of rejection (London et al., 2007).

Accordingly, another goal of the current study was to examine the role of negative peer experiences in the association between shyness and interpretation biases among preschool-aged children. In particular, it was postulated that the experience of negative peer relationships would *exacerbate* the links between shyness and biased perceptions of threat. For the purpose of the current study, *negative peer experiences* was employed as an umbrella term to encompass multiple forms of negative interactions, including peer rejection, exclusion, and victimization.

It has been reported that up to 82.3% of school-aged children have been victims of negative peer experience on a regular basis (Dulmus, Theriot, Sowers, & Blackburn, 2004; Hunter, Boyle, & Warden, 2007; Solberg & Olweus, 2003; Theriot, Dulmus, Sowers & Johnson, 2005; Whitney, Nabuzoka, & Smith, 1992). Studies on victimization and its correlates have been predominantly focused on middle childhood (e.g., Dulmus et al., 2004; Fox & Boulton, 2005; Wang, Iannotti, & Nansel, 2009). This has likely occurred, at least in part, due to evidence that suggests that bully victimization peaks during the transition from primary to middle school and declines during high school (Pellegrini & Bartini, 2000). Despite this, peer victimization and rejection frequently occur in early childhood (Barker et al., 2008; Crick, Casas, & Ku, 1999; Prinstein, Cheah, & Guyer, 2005). Although it has also been suggested that patterns of victimization stabilize in elementary school, there is evidence that moderate short-term patterns of stability occur in preschool-aged children (Crick et al., 1999; Monks, Smith, & Swettenham, 2003; Olson, 1992).

Methods by which children engage in peer victimization may differ across age groups (e.g., younger children engage in more simple and direct methods than older children who have developed more cognitive and social skills). Notwithstanding, Crick et al. (1999) argued that receiving frequent harm is likely to be an aversive experience regardless of age. As emphasized by Griffin and Gross (2004), examination of different age groups is necessary in order to determine which experiences are normative and what factors are associated with these experiences across the developmental timeframe.

Negative peer experiences have been reported to predict both concurrent and subsequent social, behavioural, and emotional maladjustment (e.g., Carney & Merrell, 2001; Craig, 1998; Sandstrom, Cillessen, & Eisenhower, 2003). Children who are consistently rejected and/or victimized have been reported to possess poorer self-esteem, fewer friends, and social skills deficits (Carney & Merrell, 2001; Fox & Boulton, 2005), including poorer social interpretation abilities (Gibb, Schofield, & Coles, 2009; Vosk, Forehand, & Figueroa, 1983). They are more socially marginalized among classmates (Juvonen, Graham, & Schuster, 2003), and experience more loneliness and social dissatisfaction (Sandstrom et al., 2003). Children experiencing negative peer relations also tend to report heightened emotional distress and higher rates of both internalizing (Carney & Merrell, 2001; Craig, 1998; Juvonen et al., 2003) and externalizing problems (Sandstrom et al., 2003). Furthermore, frequently victimized and rejected children are more likely to experience depression and anxiety in adulthood (Dempsey & Storch, 2008; Gladstone, Parker, & Malhi, 2006).

Crick et al. (1999) reported that victims of relational and physical peer victimization in their sample of 3-5-year-olds displayed greater adjustment problems.

Additionally, a longitudinal study reported that psychological distress in children as young as 2 years old due to various forms of victimization including peer victimization, may predict susceptibility for re-victimization (Cuevas, Finkelhor, Clifford, Ormrod, & Turner, 2010). Although these associations are all likely to be reciprocal, it is clear that frequent negative peer experiences during childhood present significant risks.

Peer experiences and threat perceptions. Few studies have directly examined links between social-cognitive biases and negative peer experiences in children (e.g., Camodeca et al., 2003; Gibb et al., 2009; Rosen, Milich, & Harris, 2007; Vosk et al., 1983). Findings have been relatively stable in samples of older children and adults, with those who are frequently exposed to negative peer experiences displaying poorer social interpretation abilities. In an early study, Vosk and colleagues (1983) examined the emotional interpretation abilities of children in grades 3-5. It was revealed that peer rejected children obtained lower scores than accepted children on the identification of emotions during social interactions. Similarly, a retrospective study of undergraduate students who reported being abused (by peers and adults) during childhood displayed both attention and interpretation biases towards angry faces in an EFE recognition task (Gibb et al., 2009). Another study conducted by Rosen and colleagues (2007) examined a sample of chronically victimized children ages 9-13 years. They found that these children identified themselves as victims, which led to greater emotional distress during social interactions, and “emotionally dysregulated ‘pre-emptive’ processing of threatening social stimuli” (Rosen et al., 2007, p. 213). The authors interpreted these findings as evidence that children who self-identify as victims due to consistent peer victimization are more likely to infer victimization during social interactions with peers.

Contrary to these findings, Camodeca and colleagues (2003) reported that victims in their sample of children ($M_{age} = 8$ years) did not display a tendency to attribute hostile intent to their peers when faced with ambiguous scenarios. The authors suggested that this may have been due to an overlap between bully victims and depressed children, who may be prone to attribute the negative intentions of others to their own fault. It should be noted that this study focused on the victims' perceptions of their peers' intentions, rather than the presence of distorted perceptions of threat. In other words, the findings do not discount the presence of interpretation biases in victims, but instead, focus on who they believe to be at fault (i.e., others or themselves) for their negative peer interactions.

A review of the literature revealed only one study that had specifically examined negative peer experiences and social cue interpretations in very young children. Prinstein and colleagues (2005) explored the interactive effects of both critical self-referent attributions and intent attributions with peer victimization on the development of internalizing symptoms in 5-6-year-old children. High levels of peer victimization accompanied by a tendency to derive critical self-referent attributions from ambiguous social interactions were found to be associated with depressive symptoms. This study provided preliminary evidence that negative peer experiences are related to social information processing deficits and further socio-emotional maladjustment. However, no study to date has specifically examined the role of negative peer experiences on interpretation biases in very young, shy children.

Peer experiences and shyness. It has been suggested that victims possess common personality traits that differentiate them from others, such as anxiety and insecurity, making them easy targets for bullies (Bernstein & Watson, 1997; Carney &

Merrell, 2001; Troy & Sroufe, 1987). Shy children often exhibit poorer social skills, along with other characteristics often used to describe children who are at risk of being victimized by peers (e.g., withdrawn, submissive), suggesting that shyness as a trait may be a risk factor for continued victimization (Beran, 2008). Garner and Lemerise (2007) reported that teacher-rated social competence in preschoolers negatively predicted relational and physical victimization. Additionally, a positive association between victimization and social anxiety has been well documented among children as young as 6 years old (e.g., Dempsey & Storch, 2008; Ginsburg, La Greca, & Silverman, 1998; Gren-Landell, Aho, Andersson, & Svedin, 2011; La Greca, Dandes, Wick, Shaw, & Stone, 1988; La Greca & Stone, 1993; Ranta, Kaltiala-Heino, Pelkonen, & Marttunen, 2009; Storch & Masia-Warner, 2004).

Although these findings have been relatively consistent, there exists very little empirical support as to why this relation exists. Some researchers (e.g., London et al., 2007) have begun to examine the role of rejection sensitivity, defined as the tendency to anxiously expect, readily perceive, and overreact to social rejection (Downey, Lebolt, Rincón, & Freitas, 1998). Models of rejection sensitivity suggest that past experiences of rejection can sensitize children towards possible rejection in the future (e.g., Downey & Feldmen, 1996; Downey et al., 1998), leading to increased expectations of rejection and heightened emotional states that prepare these children to defend themselves. In turn, their heightened defences activate a hyper-vigilance for rejection cues and increase the likelihood of falsely perceiving rejection (Downey, Mougios, Ayduk, London, & Shoda, 2004; London et al., 2007).

There is evidence to suggest that rejection sensitivity is a central component of

shyness (Jackson, Towson, & Narduzzi, 1997; Stritzke, Nguyen, & Durkin, 2004).

Consequently, it appears as though shy children may be particularly sensitive to the effects of victimization and rejection. Indeed, it has been reported that shy and anxious children are observably more upset when excluded, and report more feelings of rejection than their more social counterparts (Gazelle & Druhen, 2009).

To date, no study has examined the interactive effects of shyness and negative peer experiences on cognitive biases. It has been reported that although heritable factors play a role in the development of information processing biases, environmental factors, including peer relations, account for nearly two-thirds of the variance (Eley & Zavos, 2010). A study conducted by Zadro, Boland, and Richardson (2006) provides preliminary support for the interactive effect of social inhibition and negative peer experiences on threat-related interpretation biases. The authors examined the moderating effects of social anxiety in the link between ostracism (a form of exclusion) and interpretation of ambiguous situations in students enrolled in first year undergraduate psychology courses. They found that ostracized subjects reported significantly more threat perceptions than their more accepted counterparts. Furthermore, the more highly socially anxious participants took longer to recover from the effects of ostracism. The authors interpreted their findings based on Clark and Wells' (1995) model of social anxiety. They proposed that socially anxious individuals are more vulnerable to the negative effects of ostracism (i.e., sensitive to rejection), and are prone to display biased interpretations. In turn, these threatening perceptions may further magnify the impact of negative social interactions, resulting in a cycle of distorted perceptions and negative experiences (Zadro et al., 2006). Together they may maintain or even exacerbate socio-emotional maladjustment.

Thus, heightened rejection sensitivity in shy children, combined with negative peer experiences, may result in increased biased cognitions. As previously outlined, cognitive distortions are hypothesized to play a role in the development and maintenance of social anxiety. Consequently, it is posited that increased biased cognitions may partially account for the strong association between shyness and socio-emotional maladjustment. Indeed, shy children who have been excluded in early childhood have been found to display greater stability in their subsequent solitary behaviour (Gazelle & Ladd, 2003). Additionally, rejection sensitivity has been reported to predict increased social anxiety and withdrawal in children (Li, 2011; London et al., 2007).

The Present Study

The primary goal of this study was to explore the links between shyness, threat interpretation biases, negative peer relations, and social anxiety symptoms in early childhood. Along with exploring the linear associations between these constructs, more complex, conceptually-derived mediating and moderating effects were also explored. Finally, the psychometric properties of an adapted version of the *Ambiguous Situations Questionnaire* (Barrett et al., 1996) as an assessment of threat perception for young children (as rated by children and their parents) were examined.

Hypotheses. Drawing upon previous studies which have reported that social anxiety and behavioural inhibition are associated with cognitive biases (e.g., Amir et al., 1998; Dodd et al., 2011), it was anticipated that shyness would be positively associated with threat-related interpretations of ambiguous situations. More specifically, parent-reported shyness was expected to be positively associated with both parent-rated and child-reported threat interpretations. Consistent with past theoretical and empirical

findings, shyness was expected to be associated with negative peer experiences, including peer exclusion and victimization (as measured by parent and teacher reports). Finally, as it has been well documented in the literature, parent-rated shyness was expected to be positively associated with parent and teacher ratings of child social anxiety.

In terms of more complex associations, it was hypothesized that parent- and teacher-reported negative peer experiences would *moderate* the association between shyness and interpretation biases. In other words, among children who experienced negative peer relations more frequently, shyness would demonstrate a strong positive association with interpretation biases (i.e., exacerbating effect). In contrast, among children who experienced fewer negative peer relations, this association would be attenuated.

It was further hypothesized that interpretation biases would partially *mediate* the association between parent-rated shyness and social anxiety (as rated by parents and teachers). In other words, it was expected that once interpretation biases were taken into account, the association between shyness and social anxiety would significantly decrease. Anticipated mediation and moderation effects are depicted in Figure 1.

Past research suggests that child gender may also play a role in some of these associations. For example, although there appears to be no gender differences with regards to the *prevalence* of shyness in early childhood (e.g., Arbeau, Coplan, & Weeks, 2010; Battaglia et al., 2004; Coplan & Armer, 2005), there is increasing evidence to suggest that shyness may be more problematic for boys than for girls. Starting in early childhood, shyness has been found to be more strongly associated with various indices of

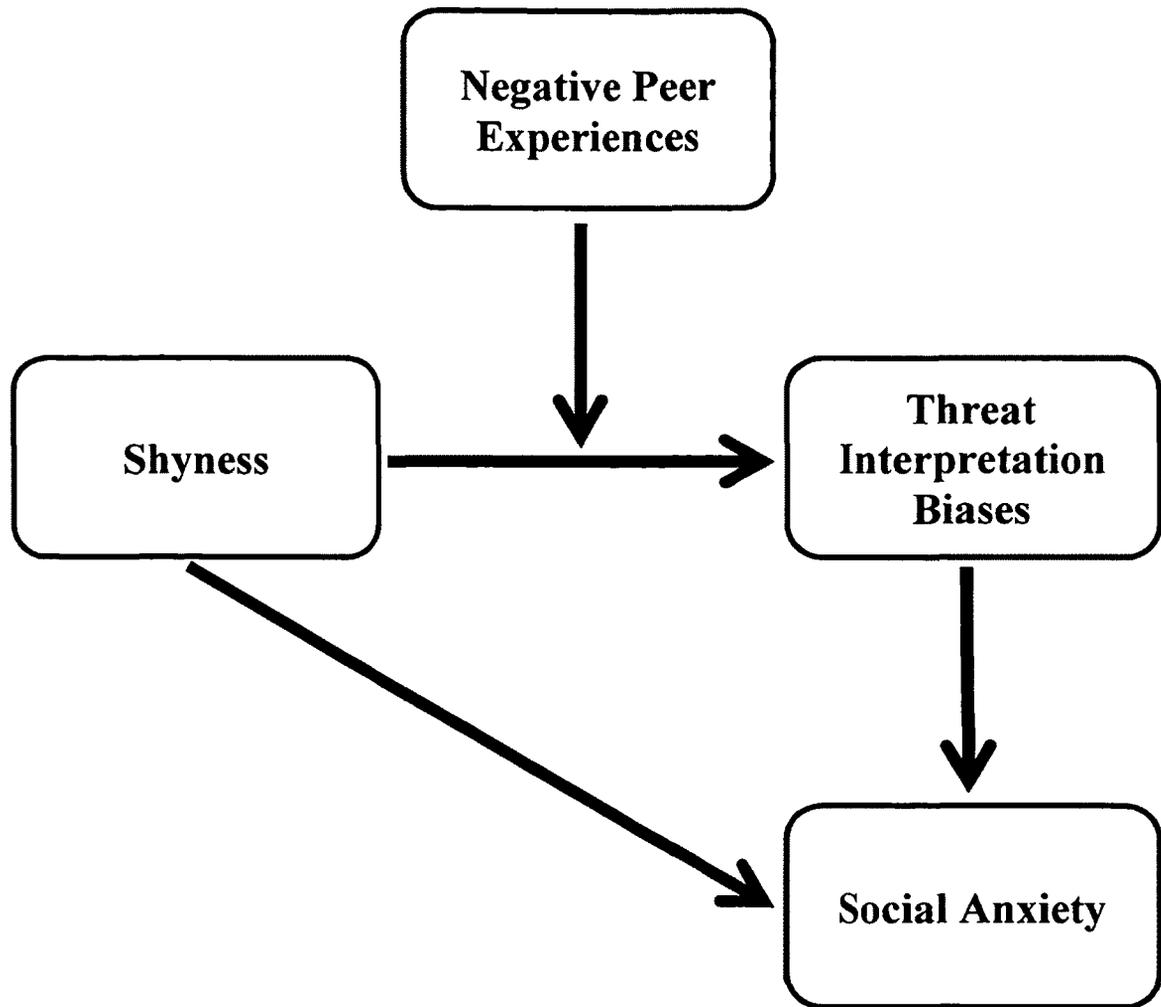


Figure 1. A conceptual model of the associations among shyness, negative peer experiences, interpretation biases, and social anxiety.

maladjustment in boys (e.g., Coplan, Gavinski- Molina, Lagace-Séguin, & Wichmann, 2001; Coplan, Prakash, et al., 2004; Stevenson-Hinde & Glover, 1996). In particular, shyness appears to be more strongly related to peer exclusion among boys (e.g., Coplan, Prakash, et al., 2004; Gazelle & Ladd, 2003). It has been suggested that these findings reflect a lower social acceptance of shyness in boys due to the violation of stereotypical male gender roles (e.g., assertiveness, dominance), particularly in Western cultures (Gazelle & Ladd, 2003; Rubin & Coplan, 2004). Thus, it can be speculated that that *shy* boys will be more likely to be involved in negative peer experiences. However, there has been no research on gender differences in the link between shyness and social cognitions. Accordingly, gender differences in the pattern of associations between shyness, negative peer experiences, threat interpretation biases, and social anxiety were investigated.

Multi-source assessment was employed to measure child shyness, social anxiety, and peer experiences using parent and teacher ratings. Parental assessments provide insight into patterns of behaviour across time and circumstance. Teachers, on the other hand, offer unique perspectives on their students' social behaviours, as they are often present during peak social times. It has been suggested that multiple informants is particularly useful with regard to peer interactions, as they may change across contexts (Stone, Otten, Engels, Vermulst, & Janssens, 2010).

Although many studies have relied on self-reported peer problems, children this young may not have the proper insight into their social interactions or the ability to accurately express it. Additionally, self-reports can be problematic as victims are often reluctant to reveal victimization (Griffin & Gross, 2004). Other studies have relied on peer nominations in order to assess peer relations (e.g., Fox & Boulton, 2005; McEvoy, Estrem, Rodriguez, & Olson, 2003). This method may not be appropriate for the sample

age as it often relies on the participation of most, or many, students in each class.

Consequently, it was determined that parent- and teacher-reports were the most appropriate method to assess these constructs for this particular age group.

Interpretations of ambiguous scenarios were assessed during individual child interviews. Self-report as a means of measuring young children's interpretation biases has not been thoroughly investigated in the literature; however, recent studies (e.g., Creswell et al., 2011; Dodd et al., 2011) suggest that young children may be able to accurately convey their social perceptions. Parents were also asked to provide their expectations of how their child would interpret each scenario. To date, most studies that have included a measure of parental interpretations have focused on whether the parents themselves perceive threat in ambiguous situations in order to examine whether a pattern of behaviour is consistent within families (e.g., Lester, Field, Oliver, & Cartwright-Hatton, 2009). Parental anxiety and cognitive biases were beyond the scope of the current study. Instead, given the relative novelty of examining young children's cognitive biases, we proposed to use the parent's expectations of how their child would perceive ambiguity as another measure of child interpretation biases.

Method

Participants

The participants in this study were $N = 44$ children (18 boys, 26 girls), ages 40 to 79 months ($M = 56.52$ months, $SD = 10.27$). Participants were from seven childcare and preschool programs located in Ottawa, Ontario. Parents granted consent by responding to information letters sent home with their children. On average, participants attended their preschool/childcare centre 30.7 hours per week ($SD = 12.1$), and had been attending their

respective schools for 25.6 months ($SD = 13.8$).

The sample was approximately 64% Caucasian, with a variety of other ethnicities also represented (10% Black, 4% Hispanic, 4% Asian, 4% Aboriginal). Approximately 3% of parents had not attended high school, 10% had completed high school, 50% had a college or university degree, and 36% had a graduate level degree. Thus, participants appeared to be of mid-to-high socioeconomic status.

Procedure

Preschools and childcare centres in Ottawa, Belleville, and Kingston were contacted in order to recruit participants during the months of February through June, 2012. A total of 75 centres were contacted by email, and for subgroups of these, by telephone and/or in-person (see Appendix A for a detailed description of participant recruitment efforts). Study information and consent forms were distributed to the teachers and childcare workers of participating centres (see Appendix B). Information packages explaining details of the study, each participant's expected role, and contact information were then given to participating teachers to distribute to the parents of the children who met inclusion criteria (see Appendix C). Upon receiving written consent from the parent(s) and teacher(s), verbal assent was required from each child in order to participate in the study.

Multi-source assessment was employed, including parental ratings, teacher-reports, and child self-reports. Parents provided demographic information (see Appendix D) and completed ratings of child shyness, social anxiety, peer problems, and their expectations of their child's threat interpretations. Participating children were then individually interviewed in order to assess their threat interpretations. In order to

minimize distractions, children were individually interviewed in a room located at their school with a trained research assistant. Before beginning the task, children were read a letter of assent, explaining what would be happening, what was expected of them, and asking them if they were willing to participate. If the child agreed, verbal instructions for the measure of threat interpretations were given to the child. Twelve scenarios and the corresponding interpretation choices were then read aloud by a research assistant in a randomized order. Pictures were also presented as the scenarios and interpretation choices were read. Children were asked to provide their interpretation of each scenario by pointing to the corresponding picture. The research assistant marked down each choice on a form in order to record their interpretations. Finally, teachers were asked to complete measures of socio-emotional functioning and peer victimization for each participating child.

Children were told that there were no right or wrong answers, and that they did not have to answer a question if they did not feel comfortable doing so. It was also stressed that their answers would not be shared with anyone other than researchers involved in the study. Upon completion of the interview, the research assistant read a debriefing letter aloud to each child thanking them for their involvement, and briefly explaining the purpose of the study. Participants were also rewarded with a small gift (e.g., stickers).

Measures

Shyness. Parent ratings of child shyness were collected using the *Child Social Preference Scale* (CSPS; Coplan, Prakash, et al., 2004). Of particular interest for the current study was the seven-item “shyness” subscale, which was specifically designed to

assess shyness in preschool-aged children (Coplan, Prakash, et al., 2004). Parents were asked to respond to the question “How much is your child like that?” along a 5-point scale for each item, ranging from 1 = *not at all*, to 5 = *a lot* (see Appendix E). Items included: “My child seems to want to play with others but is sometimes nervous to,” and “My child rarely initiates play activities with other children.” Summary “shyness scores” were generated by averaging all of the items (with item 6 reverse scored), with higher scores indicating higher levels of shyness.

Coplan, Prakash, and colleagues (2004) reported strong construct validity for the shyness subscale based on consistent associations with behavioural observations, teacher ratings, child interview assessments, and other parental reports of shyness. Reliable factor loadings (.63 to .81), and high internal consistency ($\alpha = .86 - .90$) for the shyness subscale have also been reported (Arbeau et al., 2010; Coplan et al., 2008; Coplan & Armer, 2005; Coplan, Prakash, et al., 2004; Coplan, Reichel, & Rowan, 2009). Consistent with previous studies, good internal reliability was demonstrated in the current sample ($\alpha = .87$).

Interpretation bias. Individual child interviews were conducted using a modified version of the *Ambiguous Situations Questionnaire* (ASQ; Barrett et al., 1996) to assess child threat interpretations. Children were verbally presented with 12 ambiguous scenarios (6 physical, 6 social) and were asked to imagine that each situation was happening to them. Following each scenario, the child was given a choice of two interpretations, one threatening, and one non-threatening (see Appendix F). Although the current study was focused on the *social* characteristics of young children, research has suggested that high levels of symptoms of a specific type of anxiety (e.g., social anxiety)

are not related to cognitive patterns associated with a specific type of story (Lu et al., 2007; Muris, Kindt, et al., 2000). In other words, socially anxious children do not appear to only show interpretation biases when faced with social situations. As a result, both physical and social scenarios were included. Non-threatening choices were scored as 0, and threatening choices were scored as 1. The order of threat and non-threat, as well as physical and social items were balanced across all 12 scenarios, and summary “threat interpretation scores” were generated, with higher scores indicating a greater tendency to perceive threat in ambiguous situations.

Following Creswell and colleagues (2011), who recently assessed the interpretation biases of younger children, some of the items had minor modifications. For example, the original item, “you are sleeping at a friend’s house and their parents seem to be really cross all the time,” was changed to “you are visiting a friend’s house and his/her mom seems to be very angry.” Other items were removed altogether and replaced with more age- and language-appropriate items. For example, one item on the original measure was “you are reading and you cannot see the words properly.” As most children in the current sample are not yet reading, we did not expect them to understand the potential threat in not being able to read words properly. As a result, this item was replaced with “you go to play with a new toy and it doesn’t work.” Another item that was removed was “you are at a party and the lights go off. You smell smoke!” Again, we felt that the item was not age appropriate for the current sample, and was instead replaced with another potential physical threat item similar to one used by Creswell and colleagues (2011): “you are lying in bed at night when you hear a big crash in the house.” The final item that was replaced was “you are in the middle of a class and are called to go and see

the school nurse.” Given the age of the participants, this is an unlikely scenario.

Therefore, this item was replaced with “you are at a friend’s house and your mom shows up early” (see Appendix F for interpretations).

The original ASQ offered four interpretations, which we believed was too many for the sample age group. Therefore, following Creswell and colleagues (2005, 2011), only two interpretations were included. The open-ended questions used in the original measure were also excluded, as they did not offer sufficient additional information pertinent to the current study. For example, the question “what do you think is most likely to have happened?” was designed to allow participants’ to expand upon their perceptions of each situation. Given that interpretations were already being assessed via multiple-choice, it was decided that this question did not offer enough additional information to warrant extended participation time. Also, given the age of the participants and the large variability in language abilities, every effort was made to make the task as simple as possible. The second question, “what will you do about it?” was originally designed to assess how aggressive children would respond to perceived threat, and consequently, was not pertinent to the current study. Finally, a major difference from the original ASQ was the addition of visual aids. Given that preschool-aged children are (typically) not yet learning to read, story-telling heavily relies on the use of visual aids in order to convey meaning. Following protocols developed by Creswell and colleagues (2011), each item was accompanied by pictures representing the ambiguous situation, as well as each interpretation.

Although the scenarios presented were designed to be ambiguous in nature, there was a chance that some children would perceive elements of threat or danger. However,

these hypothetical scenarios were no more threatening than what is presented to children on a daily basis. Given the focus of the current study, it is the children who perceive threat in such situations that were of most interest. Nonetheless, three “mood neutralizing” scenarios were presented at the end of the interview, in a similar manner as the items on the ASQ, except both options were neutral. Additionally, every effort was made to keep the children’s participation short, given their young age.

Since only one previous study has examined the threat interpretations of young children using ambiguous hypothetical vignettes (Creswell et al., 2011), it is not well established whether children of this age: a) have the cognitive ability to perceive the scenarios in a realistic manner; or b) have the ability to convey their perceptions accurately. As such, parental expectations of their child’s interpretations were also collected using the modified version of the *Ambiguous Situations Questionnaire, Parent Expectations* (ASQ-pc; Barrett et al., 1996; Creswell et al., 2011) as another measure of child threat interpretations. Parents were presented with the same scenarios as those presented to the children in the ASQ (“you” was changed to “your child”), and were asked to predict how their child would interpret each scenario. Unlike Creswell and colleagues (2011), who only used half of the scenarios presented to the children, all 12 scenarios were included in the current study. Additionally, smaller versions of the pictures presented to the children were included in the parental measure. Similar to the child ASQ, threatening interpretations were given a score of 1, and non-threatening responses were given a score of 0, with higher summary scores indicated greater threat expectancies.

The internal reliability of the ASQ was assessed using the Kuder-Richardson 20

coefficient, a special case of Cronbach's alpha used for binary variables. The internal consistencies for the ASQ were $\alpha = .72$ and $\alpha = .44$ for the child- and parent-reports respectively. Although the internal reliability for the child-reported threat interpretation measure is acceptable, the ASQ as reported by parents appears to have psychometric weaknesses. The reliability statistics of the child-reported ASQ were analyzed using the "if item deleted" function, which revealed a slight increase in reliability ($\alpha = .78$) if items 6 and 10 were removed. However, the removal of these items did not significantly affect any subsequent analyses, and given that minor increase in the alpha level, the entire 12-item measure was retained. The internal consistency of the parent-reported ASQ was raised to $\alpha = .54$ with the removal of items 3, 7, 8, and 11. However, given that this was still an unacceptable alpha, the entire 12-item measure was also retained based on significant bivariate correlations with other variables of interest, which offered support for the construct validity of the measure (see Results for more details).

Socio-emotional functioning and peer relations. Teachers completed subscales from the *Child Behavior Scale* (CBS; Ladd & Profilet, 1996), a measure designed to examine young children's behaviours with peers at school. For the current study, the "anxious-fearful" (CBS-AF), and the "excluded by peers" (CBS-EP) subscales were employed to gather ratings of the children's socially anxious behaviours, and the likelihood of being socially isolated by peers, respectively. The CBS has previously been used to observe children ranging from 4-13 years old (Kochenderfer & Ladd, 1997; Ladd, Herald-Brown, & Andrews, 2009; Ladd & Profilet, 1996). Teachers were asked to respond using a 3-point Likert scale based on how characteristic or applicable each item was for the child ($1 = \textit{doesn't apply}$, $2 = \textit{applies sometimes}$, or $3 = \textit{certainly applies}$)

(See Appendix G). Summary scores were generated by averaging the items within each subscale, with higher scores indicating greater difficulties.

The four-item CBS-AF (e.g., “appears miserable, distressed”) has previously been used to examine children’s socially anxious behaviours (e.g., Coplan & Armer, 2005; Weeks, Coplan, & Kingsbury, 2009). Ladd and Profilet (1996) reported the CBS-AF as having good psychometric properties. They found adequate to good internal consistency, ranging from $\alpha = .77$ to $.79$. The reliability for the current sample was somewhat lower ($\alpha = .64$), perhaps due to the small sample size.

Adequate test-retest reliability coefficients were reported, ranging from $.59$ to $.68$ over a 4-month interval. Construct validity of the CBS-AF was supported based on associations with the subscales of the Child Behavior Profile-Teacher Report Form (CBP-TRF; Achenbach, 1991). Moderate correlations ($r = .39$ to $.59$) between the CBS-AF and similar internalizing subscales of the CBP-TRF were reported, suggesting convergent validity. When compared to the externalizing subscales of the CBP-TRF, correlations were much lower ($r = -.01$ to $.18$), indicating discriminant validity.

The seven-item CBS-EP (e.g., “peers refuse to let child play”) was designed to examine a child’s tendency to be “ignored, avoided, and excluded by peers” (Ladd & Profilet, 1996, p. 1010) and was used as an index of negative peer experiences. It has previously been used to measure peer victimization in preschool-aged children (e.g., Ostrov, Woods, Jansen, Casas, & Crick, 2004), and has been reported as having good psychometric properties. Ladd and Profilet (1996) reported high internal consistency, ranging from $\alpha = .93$ to $.96$. Subsequent studies using the CBS-EP have supported this, reporting internal consistencies ranging from $\alpha = .91$ to $.93$ (Ostrov et al., 2004; Weeks et

al., 2009). The alpha for the current sample was somewhat lower, although still acceptable ($\alpha = .84$). Acceptable test-retest reliability coefficients have been reported, ranging from .67 to .72 over a 4-month interval (Ladd & Profilet, 1996). The construct validity of the CBS-EP was supported based on associations with subscales of the CBP-TRF. Moderate correlations ($r = .43$ to $.63$) between the CBS-EP and similar social subscales (i.e., “withdrawn behaviors”, and “social problems”) of the CBP-TRF were reported, suggesting convergent validity. When compared to the internalizing subscales of the CBP-TRF (i.e., “anxious-depressed”), correlations were much lower ($r = -.22$ to $.24$), indicating discriminant validity. Although statistically low, it is speculated that these correlations are not even lower due to some overlap among rejected and depressed children.

In addition, peer victimization was measured as another index of negative peer experiences using the *Preschool Peer Victimization Measure, Teacher Report* (PPVM-TR; Crick et al., 1999). The PPVM-TR is a nine-item teacher-rated measure of peer victimization among preschool-aged children. It is comprised of 3 subscales: physical victimization (3 items; e.g., “the child gets hit, kicked, or pinched by peers”), relational victimization (3 items; e.g., “the child gets left out of the group when someone is mad at them or wants to get back at them”), and being the recipient of prosocial behaviour (3 items; e.g., “The child gets help from peers when he/she needs it”). Of most importance for the current study are the two victimization scales. Teachers were asked to rate items based on how true they believe each statement to be for the child on a 5-point Likert scale ($1 = \textit{never to almost never true}$, to $5 = \textit{always or almost always true}$) (See Appendix H). Since we were not interested in distinguishing between the two types of victimization,

total victimization summary scores were generated by averaging items across both subscales, with higher scores reflecting more frequent victimization.

Crick and colleagues (1999) reported good psychometric properties for the PPVM-TR. Moderate to high internal consistencies were reported for each subscale, with alphas of .77 (relational), and .88 (physical). The internal consistencies for the current sample were $\alpha = .62$ and $\alpha = .87$ for the relational and physical subscales, respectively, and $\alpha = .76$ for the combined measure of victimization.

As another measure of negative peer relations, parents completed the *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 1997). The SDQ was designed as a screening measure of the behavioural strengths and difficulties of children ages 4-16 years. It has been translated into 60 different languages, and has been widely used in both research and practice. Teacher-, parent-, and self-report versions of the SDQ have been used extensively in the literature (e.g., Goodman & Scott, 1999; Hawes & Dadds, 2004; Van Roy, Veenstra, & Clench-Aas, 2008), with the latter designed for older children (i.e., ages 11 to 16).

Parents were asked to rate each item on a 3-point scale based on how true they believed each item to be for the child, either “*not true*,” “*somewhat true*,” or “*certainly true*” (See Appendix I). Of most importance for the current study was the five-item “peer problems” subscale (SDQ-PP). Items included: “picked on or bullied by other children,” and “generally liked by other children.” Items 6, 19, and 23 were given a score of 0 for each response of “*not true*,” 1 for “*somewhat true*,” or 2 for “*certainly true*.” Items 11 and 14 were reverse scored. A summary score for the subscale was generated by averaging the five items, with higher scores indicating greater peer difficulties.

Stone and colleagues (2010) conducted a review of 48 studies examining the psychometric properties of the total difficulties as well as the subscales of the SDQ for each type of informant (i.e., parent and teacher). This review was restricted to studies of children ages 4-12 years old. Inter-rater agreement of parent- and teacher-reports ($r = .44$ for total difficulties, and $.35$ for the peer problems subscale; $k = 8$) were reported as acceptable based on Achenbach, McConaughy, and Howell's (1987) $r = .27$ cut-off of data quality, outlined in their study on cross-informant correlations. Weighted means of various measures of validity and reliability were reported. High mean internal consistencies were reported for the total difficulties score ($\alpha = .80$). Lower, but adequate internal consistencies were reported for the SDQ-PP subscale ($\alpha = .53$; $k = 26$). Consistent with these findings, the SDQ-PP had an alpha of $.57$ for the current sample. High test-retest correlations have also been reported for the total difficulties score ($r = .76$), and the peer problems subscale ($r = .66$; $k = 6$).

The SDQ correlated with the *Child Behavior Check List* (CBCL; Achenbach, 1991), what has long been considered the "gold standard" of measuring childhood behavioural problems. Total scores of the SDQ and the CBCL had a mean correlation of $r = .76$. The "peer problems" subscale of the SDQ and the "social problems" subscale of the CBCL were also highly correlated ($r = .52$; $k = 9$), suggesting concurrent validity. Stone et al. (2010) concluded that, overall, the SDQ shows strong psychometric properties, and the significantly shorter length of the SDQ (25 items compared to the 118-item CBCL) does not appear to affect its psychometric strength. It was noted, however, that the "peer problems" subscale presented the weakest results of all the subscales, particularly for the parent- reports. The authors postulated that this may have

been due to the nature of the subject matter; that having an “outsider” perspective (vs. “insider,” self-report) may make it difficult for others to accurately assess social interactions. Despite some deficits, the SDQ appears to perform well as a screening instrument for behavioural difficulties in young children (Stone et al., 2010).

Finally, parent-ratings of child social anxiety were collected using *the Revised Preschool Anxiety Scale* (PAS-R; Edwards, Rapee, Kennedy, & Spence, 2010). The PAS-R is a slightly modified version of the Preschool Anxiety Scale (PAS; Spence et al., 2001). Of particular interest for the current study was the seven-item “social anxiety” subscale (PAS-R-SOC). The PAS-R-SOC is specifically designed to assess DSM-defined symptoms of social anxiety in young children, and has previously been used to assess social anxiety in children ages 4-5 years old (e.g., Ale, Chorney, Brice, & Morris, 2010). Parents were asked to rate each item based on how true it is of their child’s behaviour along a 5-point scale, ranging from 0 = *not at all true*, to 4 = *very often true* (See Appendix J). Items included: “is afraid of talking in front of the class/preschool group (e.g., show and tell),” and “worries that he/she will do something to look stupid in front of other people.” A “social anxiety summary score” was calculated by averaging the responses of each item in the subscale, with higher scores indicating greater levels of socially anxious symptoms.

The original and revised versions of the PAS have been reported as having good psychometric properties. High internal consistency for the entire measure has been reported, ranging from $\alpha = .85$ to $.92$ (Broeren & Muris, 2008; Edwards et al., 2010; Kennedy, Rapee, & Edwards, 2009; Visu-Petra, Miclea, Cheie, & Benga, 2009). Adequate test-retest reliability has also been reported ($r = .59$ to $.73$; Edwards et al.,

2010; Visu-Petra et al., 2009). More specifically, the social anxiety subscale has displayed satisfactory item-total correlations ($r = .54$ to $.63$; Broeren & Muris, 2008), and good internal consistency, ($\alpha = .81$ to $.89$; Broeren & Muris, 2008; Edwards et al., 2010). Falling in line with previous reports, the PAS-R-SOC had excellent internal reliability ($\alpha = .90$). The construct validity of the PAS-R-SOC has been supported based on associations with subscales of the SDQ (Goodman, 1997). Moderate to high correlations were found between the PAS-R-SOC and the “emotional symptoms subscale” of the SDQ ($r = .57$ to $.62$), suggesting convergent validity. Lower correlations were reported for the PAS-R-SOC and the more externalizing subscales of the SDQ: “conduct problems” ($r = .08$), and “hyperactivity-inattention” ($r = -.11$ to $-.17$), indicating discriminant validity.

Results

Preliminary Analyses

Missing data was analyzed and addressed prior to conducting any further analyses. A total of 22 data points were missing. Analysis revealed that items were missing at random. As such, missing items were prorated based on the average scores of each participant’s available items on their respective measure/subscale. One case was missing two items on the CSPPS (5 out of 7 items completed). Although this was slightly below the suggested cut-off of 75% completed data required to prorate missing items (Tabachnik & Fidell, 2007), the case was retained given the small sample size. The remaining missing items were prorated based on 75%-92% completed data for their respective measure/subscale. It should be noted that the CBS-EP contained one outlier (i.e., 5 *SDs* above the mean). The item was brought in to the next highest score in the data

set following standard procedures outlined in Tabachnik and Fidell (2007). Four children chose not to participate in the assessment of threat perception. Analyses revealed no significant differences between the four participants and the remaining sample. As such, the cases were included in other analyses as appropriate.

Parental education and child age were not significantly related to any of the study variables. Accordingly, these demographic variables were not controlled for in subsequent analyses. There were no significant gender differences with regards to any of the study variables. There were also no significant gender differences in the associations between the variables of interest. Consequently, gender was not controlled for in subsequent analyses. Descriptive statistics for all study variables are displayed in Table 1. Of note, child ratings of threat were significantly higher than parent-ratings ($t(39) = 3.69$, $p = .001$).

Bivariate Correlations

Correlations between study variables are presented in Table 2. Consistent with hypotheses, parent-reported child shyness was positively and significantly related to parent-reported peer problems ($r = .38$, $p = .011$) and parent-reported social anxiety ($r = .72$, $p < .001$). Contrary to hypotheses, shyness was not significantly related to parent- ($r = .09$, ns) or child-reported threat interpretation ($r = -.19$, ns).

Teacher-reported social anxiety was positively and significantly related to teacher-reported peer exclusion ($r = .38$, $p = .011$). Additionally, the association between parent-reported social anxiety and parent-reported peer problems approached significance ($r = .29$, $p = .052$).

Table 1

Descriptive Statistics for all Study Variables

Variable	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Range</i>
Parent-Reported				
Shyness ¹	44	2.29	.74	1–4.4
Social anxiety symptoms ¹	44	1.31	.84	0–3
Peer problems ²	44	.21	.27	0–1
Child Threat Interpretation Biases				
Child-reported ³	40	.35	.23	0–.75
Parent-reported ³	44	.21	.14	0–.55
Teacher-Reported				
Social anxiety symptoms ²	44	1.42	.41	1–2.75
Peer exclusion ²	44	1.15	.31	1–2.71
Peer victimization ¹	44	1.54	.47	1–3

¹ 5-point scale² 3-point scale³ 2-point scale

Table 2

Correlations among Study Variables (n = 44)

	2	3	4	5	6	7	8
1. Parent-Reported Shyness	-.19	.09	.38*	-.04	-.18	.11	.72***
2. Child-Reported Threat Interpretation ¹		.10	.06	.04	.28 [†]	-.12	-.22
3. Parent-Reported Threat Interpretation			.45**	-.05	-.07	.34*	.35*
4. Parent-Reported Peer Problems				.14	-.05	.17	.29 [†]
5. Teacher-Reported Peer Exclusion					.26 [†]	.38*	-.17
6. Teacher-Reported Peer Victimization						.21	-.15
7. Teacher Reported Social Anxiety Symptoms							.12
8. Parent-Reported Social Anxiety Symptoms							

¹ n = 40***p < .001; **p < .01; *p < .05; [†]p < .10

Parent- and child-reported measures of threat interpretations were not significantly correlated ($r = .10$, *ns*). Moreover, child-reported threat interpretation was not significantly associated with any study variables, except for an association with teacher-reported peer victimization that approached significance ($r = .28$, $p = .08$). In contrast, parent-reported threat interpretation was significantly related to parent-reported peer problems ($r = .45$, $p = .002$), parent-reported social anxiety ($r = .35$, $p = .021$), and teacher-rated social anxiety ($r = .34$, $p = .026$).

Moderation Analyses

A goal of the current study was to explore the potential moderating role of negative peer experiences (i.e., peer victimization, peer exclusion, peer problems) in the association between shyness and interpretation biases in young children (see Figure 2). Following procedures outlined by Aiken and West (1991), hierarchical regression analyses were computed.

Given the lack of significant associations between parent- and child-rated threat perception these variables were kept separate for these analyses. Although measures of peer victimization, peer exclusion, and peer problems did not inter-correlate significantly in the present sample (likely due to the small sample size), these variables were combined to create an aggregate variable representing *negative peer experiences* based on previously supported associations among the constructs (e.g., Crick et al., 1999; Garner & Lemerise, 2007; Ostrov, 2009). This was done to reduce the number of analyses. The number of variables able to be examined simultaneously in each regression analysis was limited by the small sample size (of note – results did not change when each measure of negative peer relations was considered independently).

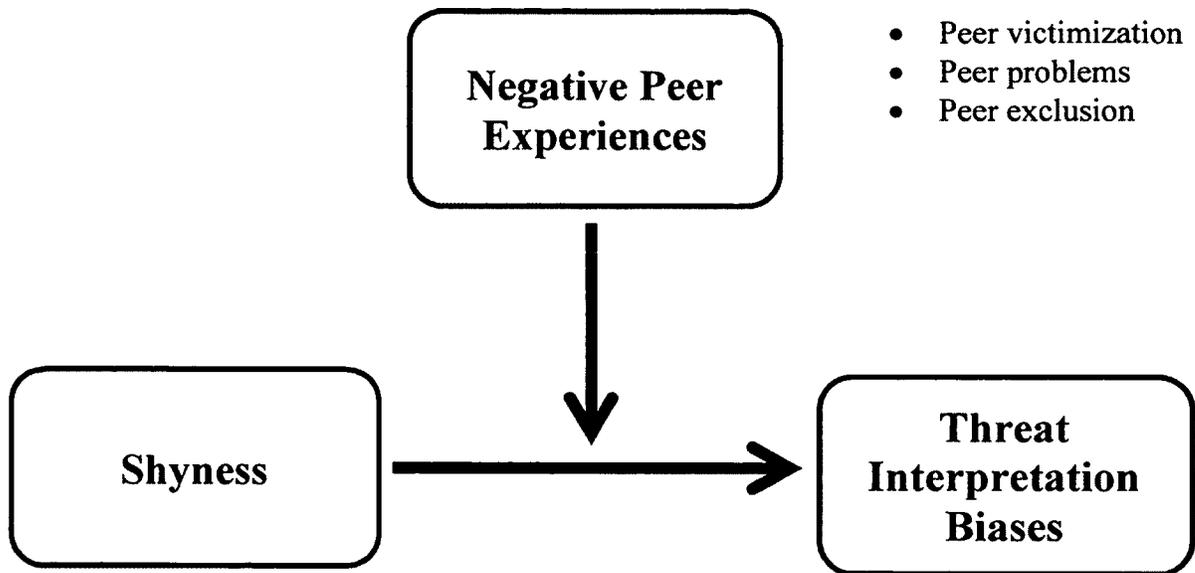


Figure 2. Theoretical moderation model for shyness, negative peer experiences, and threat interpretation biases.

Accordingly, two regression equations were computed (to predict child-reported and parent-reported threat perception). For each equation, the centered “main effect” variables of shyness and negative peer experiences were first entered at Step 1. Next, the shyness x negative peer experiences two-way interaction term was entered at Step 2. Results are summarized in Table 3 and Table 4. No significant interaction effects were indicated.

Mediation Analyses

The final set of analyses was intended to examine threat interpretation biases as a potential mediator of the relation between shyness and social anxiety. However, certain conditions must be met in order for a mediation effect to be present (see Baron & Kenney, 1986). First, a significant direct effect of the predictor variable (shyness) on our outcome variable (social anxiety) must be present (see path *c* in Figure 3). Next, a second regression equation must show that shyness is a predictor of the mediator variable (interpretation biases; path *a*). A third regression analysis must be conducted in order to determine that interpretation biases predict social anxiety, while controlling for shyness (path *b*), and that shyness does not predict social anxiety after taking interpretation biases into account (path *c*’). Although the first condition was fulfilled, the second, and consequently, third conditions were not met (i.e., a significant association between shyness and interpretation biases was not present). As such, a mediation effect could not be tested.

Table 3

Hierarchical Regression Predicting Child-Rated Threat Perception from Shyness and Negative Peer Relations.

Variable	R ²	F	ΔR ²	ΔF	β
Step 1	.10	2.14	.10	2.14	
Shyness					-.23
Negative Peer Relations					.26
Step 2	.13	1.82	.03	1.15	
Shyness					-.30
Negative Peer Relations					.20
Shyness x Negative Peer Relations					.20

* $p < .05$

Table 4

Hierarchical Regression Predicting Parent-Rated Threat Perception from Shyness and Negative Peer Relations.

Variable	R ²	F	ΔR ²	ΔF	β
Step 1	.03	.64	.03	.64	
Shyness					.06
Negative Peer Relations					.15
Step 2	.04	.48	.01	.20	
Shyness					.08
Negative Peer Relations					.18
Shyness x Negative Peer Relations					-.08

* $p < .05$

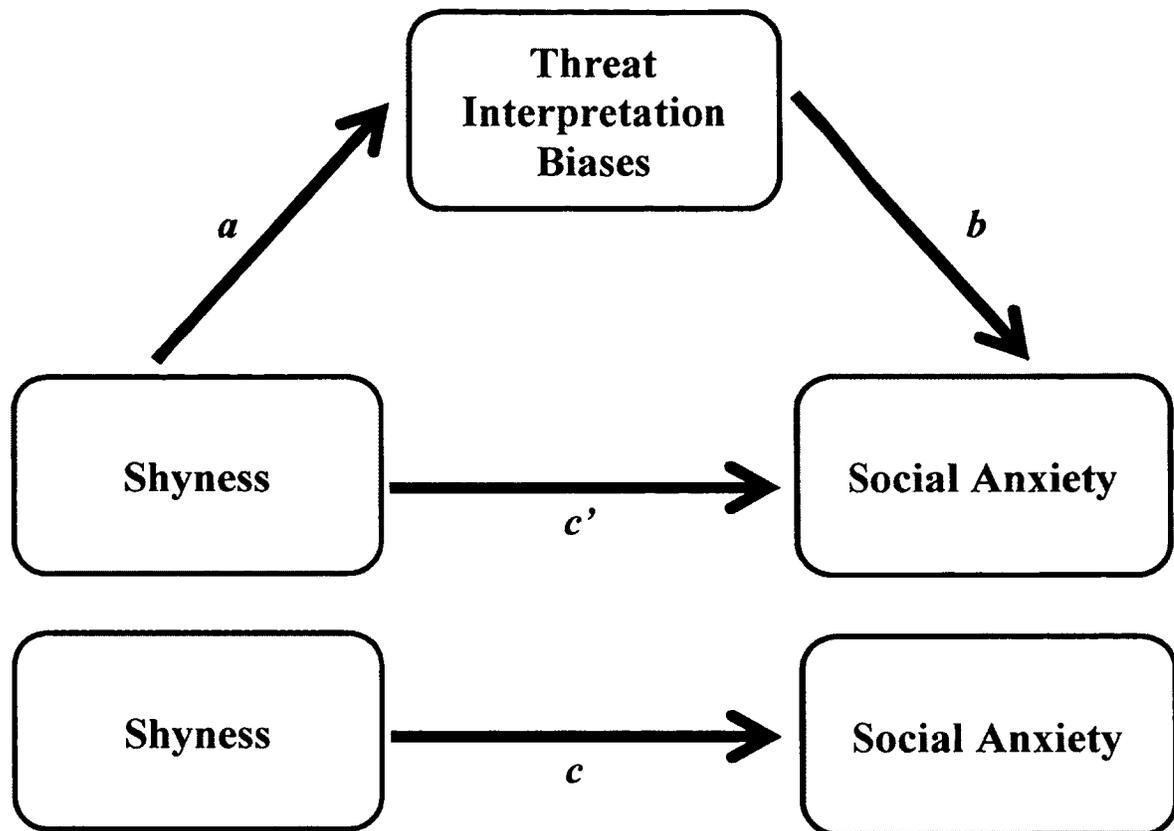


Figure 3. Theoretical mediation model for shyness, threat interpretation biases, and social anxiety.

Discussion

Relatively little is known about the threat perceptions of young children. The goal of the current study was to explore the links between shyness, threat interpretations, negative peer experiences, and social anxiety in early childhood. Overall, results indicated that child shyness (as rated by parents) was significantly associated with parent (but not teacher) ratings of social anxiety and peer relation difficulties. Parental ratings of child threat perception were positively associated with parental ratings of peer problems, and both parent- and teacher-rated social anxiety. In contrast, child-reported threat perception was not related to any of the study variables. Finally, although negative peer experiences were related to shyness, threat perception, and social anxiety, there was no evidence to suggest that negative peer experiences moderate the association between shyness and threat perception.

Although the current study was hampered by a small sample size, these results represent an important first step in the understanding of the development of shyness and threat perceptions in early childhood. In the following sections, each of these results is discussed in greater detail.

Shyness in Early Childhood

The findings from the current study support previous literature linking shyness to social anxiety (e.g., Chronis-Tuscano et al., 2009; Hirshfeld-Becker, et al., 2007) and peer problems (e.g., Coplan, Findlay, et al., 2004; Hart et al., 2000; Perren & Alsaker, 2006) in early childhood. This adds to the growing evidence suggesting that shyness is a risk factor for socio-emotional problems, even in early childhood.

The lack of significant association between shyness and threat perception in the current study was contrary to hypotheses. However, it should be noted that Dodd and colleagues (2011) also reported no significant associations between BI and interpretation biases in their sample of preschool-aged children. Moreover, results from the current study also replicated their finding of a significant correlation between *anxiety* and threat interpretation biases. Thus, it may be that shyness is not related to threat perception in early childhood, and that cognitive-behavioural models of social anxiety (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997) cannot be applied to shyness during this age period. It may be that shyness only comes to be associated with the social-cognitive underpinnings of anxiety when children are older and more cognitively mature. It may also be that shyness is associated with *other* aspects of social cognitions (e.g., attention) in very young children. Regardless, despite the strong association between shyness and social anxiety demonstrated in the current study (and others), the fact that anxiety, but not shyness, was related to threat perception can be interpreted as support for the distinction between these two constructs in early childhood (Rapee & Coplan, 2010; Stopa & Clark, 1993).

Of course, it is also possible that there is indeed an association between shyness and threat perception biases in early childhood, but that this relation went undetected in the present study. Aside from the small sample size (an issue discussed in more detail in a later section) – another possible contributing factor to this lack of association may have been problems with the measure of threat perception.

Using the Ambiguous Situations Questionnaire to Assess Threat Perception in Young Children

Results from the current study raised some questions as to the reliability and validity of the Ambiguous Situations Questionnaire (ASQ) as an assessment of threat perception in early childhood. The child-rated version of the ASQ did appear to have acceptable internal consistency. In other words, children who tended to choose a threatening response on one item were more likely to do so for the other items. This suggests that young children may be able to report consistent patterns of threat expectations. Child ratings of threat perception were not significantly associated with any study variables (including parent-rated threat perception). Thus, there is a notable lack of support for the construct validity for the ASQ as a self-report measure of threat perception at this age.

In contrast, parental ratings of child threat using the ASQ displayed unacceptably low internal reliability. Moreover, when compared to child self-reports, parents appeared to *underestimate* their children's perceptions of the ambiguous threats presented in the vignettes. Despite these psychometric issues, parent ratings of child threat perception were significantly associated with theoretically-relevant constructs, including social anxiety and peer problems. For example, parent-rated threat interpretation was positively and significantly associated with teacher-rated symptoms of social anxiety. This cross-informant association suggests that, although in need of some psychometric fine-tuning, parental ratings of threat using the ASQ do demonstrate some promise as an assessment of young children's threat perceptions. Thus, further work on the assessment of threat perception is required to determine: a) if threat perception is stable and measurable at

this age; b) whether it is important (i.e., does it predict anything?); and c) the best method to assess threat perception in young children. One possibility is that there may need to be more focus on the behaviours of children this age, and less on their cognitions in order to assess their threat expectancies.

There are additional issues that should be mentioned pertaining to the psychometric properties of the ASQ. First, the ASQ was presented as a two-option, forced-choice measure, with each vignette rated as either threatening or non-threatening. Dichotomizing the responses into threatening and non-threatening interpretations may have limited response validity. The original version of the ASQ (Barrett et al., 1996) included four interpretation options, as well as open-ended questions regarding their interpretations of scenarios and how they would respond. However, given the target age group, open-ended questions were not employed because of language demands. By only including two options, participants were assumed to be providing the “most accurate” representation of their interpretations. Indeed, Creswell and O’Connor (2010) reported that the free and forced choice responses of their sample of 10- to 11-year olds were highly correlated ($r = .80$) using the ASQ at two different time points.

Second, although the visual aids were included to increase the validity of the scenarios, it is possible that they had the opposite effect. For example, the concreteness of the images may have made it difficult for the children to interpret the scenarios in a personalized manner. In other words, it may have been beneficial for children to apply the situations to their personal experiences and memories, and the images may have depicted specific scenarios that they have not experienced. Future studies may wish to conduct more stringent tests of the psychometric properties of the ASQ.

Development of Threat Interpretation in Early Childhood

A major question that still needs to be addressed is whether threat biases can be reliably and validly measured in preschool-aged children. The mixed findings in the current study reveal that there is still a lot to be learned in this area. It may be argued that young children may not be able to accurately perceive ambiguous situations and/or determine how they would react in a real life situation. Some cognitive and developmental theories suggest that patterns of threat perception are not stable or measurable in children at this young age (see Field & Lester, 2010 for a recent review). For example, children may require more cognitive maturation in order for such patterns to be stabilized. For this reason, the effectiveness of cognitive-behavioural therapy in early childhood has been a point of debate in the literature (see Grave & Blissett, 2004).

Field and Lester (2010) summarized threat interpretations within a developmental framework and questioned whether theories of adult information processing could be applied to children. They identified three ways to conceptualize the role of child development in processing biases: the integral bias model, the moderation model, and the acquisition model. According to the *integral bias model*, child development does not influence information processing. In other words, it assumes that cognitive biases are innate in *certain* individuals, and do not change with development. In this case, individual factors (e.g., shyness) determine the degree to which biases are present, and adult models can be applied to children. The *moderation model*, on the other hand, suggests that development and individual factors interact to influence information processing biases. According to this model, *everyone* is born with processing biases, and the developmental trajectory of biases differs as a function of individual factors. The

acquisition model proposes that information biases emerge as a result of cognitive, social, and emotional development. Thus, according to this model, *no one* is born with the necessary skills to display information processing biases. In other words, children who do not display biases early on may go on to acquire interpretation biases as they develop. This model implies that all humans start out without having processing biases, and they only emerge in certain individuals through developmental influences.

Consistent with the majority of the child literature on information processing, the current study assumed that interpretation biases fit within the integral bias model. In other words, only some children (e.g., shy children) are born with a predisposition for interpretation biases, and this tendency to perceive threat does not change as a result of development. It should be noted that this model does not rule out environmental factors (i.e., negative peer relations) in the trajectory of information processing biases. As such, the current study assumed that adult theories of information processing could be applied to young children. Future studies should test these models in order to obtain a better understanding of the variability of information processing in young children.

Limitations and Future Directions

Although the current study addressed several gaps in the literature, some limitations should be noted in the interpretation of these results. Despite significant efforts with regards to participant recruitment, the small sample size represents a major limitation of the current study. The relative lack of participants is likely to have impacted several areas of the study. First, the small sample size limited the ability to assess the psychometric properties of the newly modified parent and child versions of the *Ambiguous Situations Questionnaire* (Barrett et al., 1996; Creswell et al., 2011). For

example, the sample size simply did not permit a factor analysis of measure items.

However, since the psychometric properties of the measure have not been previously reported for children this age, the current study did offer a first insight into the potential strengths and weaknesses of the measure.

The small sample also significantly limited the ability to detect significant associations among variables. Although some of the expected associations were detected, none of the more complex associations were significant (e.g., moderating and mediating effects), potentially due to a lack of power. Clearly, the replication and extension of this study with a substantively larger sample of young children is required.

Another potential limitation of the current study could involve the measurement of children's peer relations. It has been reported that preschool-aged boys are more likely to deliver and receive physical victimization, whereas girls are more likely to deliver and receive relational victimization (Crick et al., 1999; Ostrov et al., 2004). Although the current study did not distinguish between the various forms of peer victimization, it is important to acknowledge that it is possible that behavioural gender differences may have influenced the victimization rates due to an inability to accurately detect it. In an attempt to attenuate such biases, the current study implemented a multi-informant design.

Although no gender differences were found for any of the peer problems measures, future studies may wish to include naturalistic observations as a means of more objective data collection (see Ostrov & Keating, 2004 for a reliable and valid measure of naturalistic observations of aggression among preschoolers).

It must also be noted that the correlational design of the present study does not allow for any causal links to be drawn between the variables of interest. For example, it

may be that heightened threat perceptions lead to peer relations difficulties. However, it is also plausible that experiencing problems with peers serves to exacerbate the development of threat perception biases. Future research should employ a longitudinal design, in order to test the reliability of reports across different time-points, as well as track the developmental progression of shyness, social anxiety, threat perceptions, and peer relations.

Characteristics of the present sample may have also influenced results. Although demographic variables were not significantly associated with any of the study variables, future studies should include samples characterized by greater ethnic and SES diversity. It is also possible that some of the parents of the shyest and most anxious children did not grant permission for their children to participate in the current study because they did not want their child to be exposed to (even ambiguous) situations of threat. These factors affect the ability to generalize the results to the general population.

Finally, although shy children are generally prone to negative peer relations, the potential *protective* role of friendships for shy children remains under-investigated. Boulton et al. (1999) proposed a “friendship protection hypothesis,” wherein children with more friends are protected from victimization. This association, however, appears to be more complex for shy children. For example, although Rubin et al. (2006) reported no differences in the frequency of peer victimization in shy children with best friends and those without best friends, shy children with *shy friends* actually had a higher risk of being victimized. These findings highlight the importance of examining both quantitative and qualitative measures of friendship. It is unclear whether shy children might benefit from the friendship protection hypothesis, which could potentially lead to more positive

interactions and a decrease in negative expectations. Even less is known about how friends' characteristics and the quality of friendships might impact these associations. Future studies should explore possible protective factors (e.g., friendship quality, friendship quantity, positive peer experiences) in the associations between peer experiences, threat perceptions, and socio-emotional adjustment in shy children.

Implications

The findings of the current study may impact the application and development of early and appropriate intervention. There is a large body of literature supporting the importance of early intervention for children who display social and emotional difficulties (e.g., Barrett, Lock, & Farrell, 2005). However, it has also been reported that the effectiveness of intervention is contingent upon the 'fit' between the treatment goals and the particular 'deficiencies' of the child (Coie, 1985). Traditional intervention programs for socially inhibited children have emphasized increased social exposure, parent education, and positive social skills training (e.g., communicating, initiating interaction) (e.g., Fisher, Masia-Warner, & Klein, 2004; Rapee, Kennedy, Ingram, Edwards, & Sweeney, 2005). The current findings support the need for, and development of, alternative interventions. For example, intervention programs emphasizing proper social expectations, interpreting social cues, and controlling responses to negative experiences may prove to be more beneficial for some children. Indeed, there is evidence which suggests that aggressive, rejected, and socially anxious children's negative social expectations and appraisals can be altered with intervention (Hudley & Graham, 1993; Rabiner & Coie, 1989; Vassilopoulos et al., 2009), and more importantly, can positively impact social interactions in older children.

Although no support for any association between shyness and threat perception was detected, the current study demonstrates novel insight into the link between threat perception and socio-emotional adjustment in early childhood. More specifically, there is evidence to suggest that threat interpretation biases are associated with symptoms of social anxiety and peer problems in young children. The current study also offers preliminary steps in the development of an appropriate assessment of threat perception in early childhood, however further work is required to obtain a psychometrically sound measure. Only then can the correlates and outcomes of threat perception in early childhood be further explored.

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Appendix A

List of Preschools and Childcare Centres Contacted for Recruitment

CENTRE/SCHOOL	LOCATION	EM	PH	OS	PAR
The Children's Place	1150 Carling Avenue, Ottawa, Ontario K1Z 7K5	X	X		
Dow's Lake Day Care	580 Booth Street, Ottawa, Ontario, K1A 0E4	X		X	
Riverside Montessori Pre-school	88 Main Street, Ottawa, Ontario K1S 1C2	X		X	
Colonel By Child Care Centre	1125 Colonel By Drive, Ottawa, Ontario, K1S 5B6	X			
Glebe Parent's Day Care	10 Fifth Avenue, Ottawa, Ontario, K1S 5N5	X	X		
Glebe Reggio Centre	109A Fourth Avenue, Ottawa, Ontario, K1S 2L3	X			8/16
Ottawa Children's Montessori Centre	630 Island Park Drive, Ottawa, Ontario, K1Y 0B7	X	X		
Riverside Park Nursery School	3191 Riverside Dr. Ottawa, Ontario	X			
Children's Universe Daycare Centres – Schneider Rd.	101 Schneider Road, Kanata, Ontario K2K 1Y3	X			
Children's Universe Daycare Centres – Greenbank Rd.	289 Greenbank Road, Nepean, ON K2H 8K9	X			
Playtime Daycare Centre	1160 Maitland Ave., Unit 207, Ottawa, ON K2C 2C2	X		X	
Greenboro Daycare	1400 Cahill Drive, Ottawa, Ontario, K1T 2Y9	X	X		
Children's Centre	407 Hilson Ave., Ottawa, Ontario, K1Z 6B9	X		X	9/90
Hawthorne Meadows Nursery School	2244 Russell Road, Ottawa, Ontario, K1G 1B3	X	X		
Annavale Nursery School	250 Anna Avenue, Ottawa, Ontario, K1Z 7V6	X	X		
Nanny Goat Hill Nursery School	755 Somerset Street West, Ottawa, Ontario, K1R 6R1	X	X		
Queensway Preschool	429 Parkdale Avenue, Ottawa, Ontario, K1Y 1H3	X	X		
Cornerstone Children's Centre	2330 Don Reid Drive, Suite 102, Ottawa, Ontario, K1H 1E1	X	X		
Esther By Day Care	1550 Caldwell Avenue, Ottawa, Ontario, K1Z 8M7	X	X		
Foster Farm Child Care Centre	1065 Ramsey Crescent, Ottawa, Ontario, K2B 7Z9	X			
Pinecrest Queensway Nursery School	2860 Ahearn Avenue, Ottawa, Ontario, K2B 6Z9	X			

CENTRE/SCHOOL	LOCATION	EM	PH	OS	PAR
Westboro Nursery School	411 Dovercourt Ave, Ottawa, Ontario, K2A 0S9	X	X		
Glebe Montessori School	650 Lyon St. South, Ottawa, Ontario, K1S 3Z7	X		X	
St. Thomas the Apostle Nursery School	2345 Alta Vista Dr., Ottawa, Ontario, K1H 7M6	X		X	0/30
Ottawa Montessori School	335 Lindsay Street, Ottawa, Ontario, K1G 0L6	X	X		
Kanata North Early Learning Centre	Unit 103, 232 Herzberg Road, Ottawa, Ontario K2K 2A1	X			
Bells Corners Cooperative Nursery School	3955 Richmond Rd., Nepean, ON, K2H 5C5	X	X		
Leitrim Montessori Preschool	4861 Bank Street, Ottawa, Ontario, K1X 1G6	X		X	
West Carleton Kids' Korner	5670 Carp Rd, Ottawa, Ontario, K0A 2H0	X	X		
Aladin Child Care Services – Hawthorne	Hawthorne P.S., Ottawa, Ontario, K1G 1B3	X			6/20
Aladin Child Care Services - Pleasant Park	564 Pleasant Park Road, Ottawa, Ontario, K1H 5N1	X			
Aladin Child Care Services - Russell Rd.	2240 Russell Road, Ottawa, Ontario, K1G 1B3	X		X	7/34
Barrhaven Child Care Centre - Kennevale	56 Kennevale Drive, Nepean, Ontario, K2J 3B2	X		X	
Barrhaven Child Care Centre - Malvern	101-A Malvern Drive, Nepean, Ontario, K2J 2S8	X	X		
Barrhaven Child Care Centre - Barrhaven Family Resource Centre	56 Kennevale Drive, Nepean, Ontario, K2J 3B2	X			
Barrhaven Child Care Centre - Barrhaven Early Years Centre	56 Kennevale Drive, Nepean, Ontario, K2J 3B2	X			
Barrhaven Child Care Centre - Nursery School	56 Kennevale Drive, Nepean, Ontario, K2J 3B2	X			
Overbrook Day Care, Kindergarten, and School Age Program (Dani)	557 Queen Mary St, Ottawa, Ontario, K1K 1V9	X		X	2/28
Mooney's Bay Montessori School	2833 Riverside Drive, Ottawa, Ontario, K1V 8N4	X	X		
Rainbow Kidschool (Carleton Preschool)	63 Evelyn Avenue, Ottawa, ON, K1S 0C6	X		X	
Queensway West Montessori School	930 Watson St., Ottawa, Ontario, K2B 6B9	X	X		
Westboro Montessori School	Campus 1: 307 Richmond Rd., Ottawa, Ontario, K1Z 6X3 Campus 2: 387 Danforth Ave., Ottawa, Ontario, K2E 0E1	X	X		
Parkdale Montessori School	555B Parkdale Avenue, Ottawa, Ontario, K1Y 1H9	X		X	

CENTRE/SCHOOL	LOCATION	EM	PH	OS	PAR
Little Love Bugs Daycare	1160 Maitland Avenue, Ottawa, Ontario, K2C 2C2	X	X		
Little Munchkins Hideout Day Care Centre	1426 Hunt Club Road, Ottawa, Ontario, K1T 1M6	X	X		
Carleton Montessori School	20 Harrison Street, Ottawa, Ontario, K2H 7N5	X	X		
Acorn Early Learning Centre	600 Bank Street, Ottawa, Ontario, K1S 3T6	X		X	6/37
Andrew Fleck Child Care Centre on George Street	195 George St., Ottawa, Ontario, K1N 5W6	X	X		
Beacon Learning Centre	2379 Ogilvie Rd., Ottawa, Ontario, K1J 7N4	X		X	2/18
Capital Day Care Centre	1230 Bank Street, Ottawa, Ontario, K1S 3Y3	X	X		
Centrepointe Childcare Centre (group care)	75 Hemmingwood Way, Nepean, Ontario, K2G 5T6	X	X		
City View Centre for Child and Family Services (Nursery School)	1099 Longfields Drive, Nepean, Ontario, K2J 5L2	X	X		
Cornerstone Montessori	3773 Jockvale Rd., Ottawa, Ontario, K2C 3H1	X	X		
Crestway School Age Program	201B Crestway Drive, Nepean, Ontario, K2G 6Z3	X	X		
Rideau Valley Child Care Centre (Global Child Centre Services)	5858 Rideau Valley Drive N, Manotick, Ontario, K4M 1B3	X	X		
Pineview Child Care Centre	1627 Maxime St., Gloucester, Ontario, K1B 3K9	X	X		
Play House Learning Centre	3350 Fallowfield Rd., Ottawa, Ontario, K2J 5L1	X		X	0/60
Rockliffe Montessori Pre- School	415 McArthur Avenue, Ottawa, Ontario, K1K 1G5	X		X	
St. Elias Child Care & Family Resource Centre	700 Ridgewood Avenue, Ottawa, Ontario, K1V6N1	X		X	4/25
Weefolk Playhouse	171 Greenbank Rd., Nepean, Ontario, K2H 5V6	X	X		
Tiny Hoppers - Riverside South/Manotick Location	665 Earl Armstrong Rd., Gloucester, Ontario, K1V 2G2	X		X	
Tiny Hoppers - Barrhaven Location	3025 Cedarview Rd., Ottawa, Ontario, K2J 3Z2	X			
Tiny Hoppers - Findlay Creek Location	4772 Bank Street, Unit #1, Ottawa, Ontario, K1T 3W7	X		X	
Abigail's Learning Centre (Belleville)	119 Station Street, Belleville, Ontario, K8N 2S8	X			
Belleville Montessori School (Belleville)	28 Oriole Park Ave., Belleville, Ontario, K8N 4C7	X			
Catundra Day Care Centre (Belleville)	350 Dundas Street West, Belleville, Ontario, K8P 1B2	X		X	

CENTRE/SCHOOL	LOCATION	EM	PH	OS	PAR
First Adventure Child Care Development Centres – Tracey St. (Belleville)	100 Tracey Street, Belleville, Ontario, K8P 2R8	X		X	
First Adventure Child Care Development Centres – Bridge St. East (Belleville)	225 Bridge St East, Belleville Ontario, K8N 1N7	X		X	
Kinder Learning Centre – Dundas St. (Belleville)	308 Dundas Street, Belleville, Ontario (East Location)	X			
Kinder Learning Centre – Dufferin Ave. (Belleville)	331 Dufferin Avenue, Belleville, Ontario (North Location)	X			
Nova Children's Daycare (Belleville)	216 Montrose Rd, Belleville, Ontario, K8R 1A7	X			
The New Old School House Daycare (Belleville)	339 Vermilyea Rd, Belleville, Ontario, K8N 4Z5	X			
Bayridge Child Care Centre (Kingston)	1035 Bayridge Drive, Kingston, Ontario, K7P 3B8	X	X		
Henderson Child Care Centre (Kingston)	180 Henderson Blvd, Kingston, Ontario, K7M 3W3	X	X		
Corner Clubhouse Daycare Centre Inc. (Kingston)	244 MacDonnell Street, Kingston, Ontario, K7L 4C3		X		

*Centres written in bold font agreed to participate

EM = Centre contacted by e-mail

PH = Centre contacted by phone

OS = Centre visited on-site

PAR = Number of participants/potential participants

Appendix B

Teacher Consent Form

**The Child Social Experiences Study**

Dear Teachers,

We are writing to ask for your participation in a study that is being conducted by researchers from Carleton University at your preschool/daycare. We are trying to learn more about children's social experiences at childcare (or preschool). Learning to get along well with others represents a major task for young children. For most children, adjusting to childcare is a relatively smooth process. However, for others, this transition represents a more difficult challenge. For example, whereas some children are more sociable and outgoing, and enjoy meeting and interacting with new children, others are more shy and cautious, and take longer to "warm-up" to new situations. We are also particularly interested in how young children's thoughts and expectations about social situations might be related to their actual social experiences at childcare.

Your participation would involve: (1) collecting sealed envelopes containing parental consent forms and storing them in a safe place until they are picked up; and (2) completing three questionnaires concerning children's social behaviours at childcare/preschool (e.g., how children play in class, how they interact with other children) for each child who has received parental consent to participate. The questionnaires should take about 5-10 minutes to complete per child. You are free to not answer any questions that you choose to omit. Participating children's names will be changed to numerical codes on all corresponding forms in order to maintain confidentiality. Please also note that any information you provide will not be shared with the children or their parents. Only the researchers associated with this project have access to the data. Your signed consent form will be kept in a secure environment and will be destroyed after 2 years. Your participation is strictly voluntary and you have the right to withdraw at any time without any penalty or questions. It will be possible for you to receive a copy of a summary of the results of this study once it has been completed. This study has received clearance by the Carleton University Psychology Research Ethics Board (12-235), and all researchers associated with this project have had police record checks.

We know you are busy! Your participation in this study would be very much appreciated and important in understanding the social experiences and feelings of young

children. If you have any questions concerning this study, please feel free to contact me: Laura Ooi (looi@connect.carleton.ca, 613-520-2600, ext. 2680), or my faculty advisor, Dr. Robert Coplan (robert_coplan@carleton.ca, 613-520-2600 ext. 8691). Should you have any ethical concerns about this research, please contact Dr. Monique Sénéchal (Ethics Chair, monique_sénéchal@carleton.ca, 613-520-2600 ext. 1155). For any other concerns, please contact Dr. Anne Bowker (Chair, Department of Psychology anne_bowker@carleton.ca, 613-520-2600, ext. 8218).

Sincerely,

Laura Ooi
MA Candidate
Department of Psychology
Carleton University

THE CHILD SOCIAL EXPERIENCES STUDY: CONSENT FORM (TEACHERS)

The information collected for this project is confidential and protected under the Municipal Freedom of Information and Privacy Act, 1989.

This study has received clearance by the Carleton University Psychology Research Ethics Board (12-235)

Date: _____

(Name - please print)

(Name of organization - please print)

(Age range of children in your class)

Please check one:

_____ I agree to participate in the **Child Social Experiences Study**

_____ I do not agree to participate the **Child Social Experiences Study**

(Signature of teacher)

(dd/mm/yyyy)

Please keep the first information page for your own records and return this signed consent form to us.

A summary of the findings from this study will be forwarded to your childare/preschool.

Appendix C

Parent Consent Form



The Child Social Experiences Study



Dear Parent(s)/Guardian(s),

I am writing to ask your permission to allow your child to participate in a study that is being conducted by researchers from Carleton University at your child's preschool/daycare. We are trying to learn more about children's social experiences at childcare (or preschool). Learning to get along well with others represents a major task for young children. For most children, adjusting to childcare is a relatively smooth process. However, for others, this transition represents a more difficult challenge. For example, whereas some children are more sociable and outgoing, and enjoy meeting and interacting with new children, others are more shy and cautious, and take longer to "warm-up" to new situations. We are also particularly interested in how young children's thoughts and expectations about social situations might be related to their actual social experiences at childcare.

Here is a more detailed description of what this project will involve (if you choose to participate):

Parents: Parents are being asked to complete some short questionnaires. The first concerns background information that will be used only to characterize this sample. Other questionnaires ask about your child's social behaviours and how you think your child might respond to different hypothetical situations. These questionnaires are attached for your inspection, and should take no longer than 15 minutes to complete. If you agree to participate in this study, please complete the attached questionnaires and return them to your child's teacher along with the signed consent form (*sealed in the envelope provided*). You are free to not answer any questions that you choose to omit.

Children: Children will be invited to participate in a short (less than 10 minutes) interview with a trained female research assistant. Interviews will be conducted in a location chosen by your child's teacher (e.g., if possible, in a quiet corner of the

classroom), during a time period selected to minimize the disruption of your child's normal daily routine. Your child will be asked a few questions about how they would respond to a series of hypothetical situations (similar to the attached vignette measure that you are being asked to complete). Your child will be reminded that they do not have to answer any questions they don't want to, and of course, they are free to end the interview at any time.

Teachers: Your child's teacher will also be asked to fill out some questionnaires concerning your child's social behaviours at childcare. These questionnaires concern, for example, how your child plays in class and how he/she interacts with other children.

Your child's name will be changed to a numerical code on all corresponding forms in order to maintain confidentiality. Only the researchers associated with this project have access to the data. The consent forms will be kept separate from the data in a secure environment and will be destroyed after 2 years. Participation is strictly voluntary. You and your child have the right to withdraw at any time without any penalty or questions. In such an event, any and all information collected on your child to that point will be destroyed. It will be possible for you to receive a copy of a summary of the results of this study once it has been completed. This study has received clearance by the Carleton University Psychology Research Ethics Board (12-235), and all researchers associated with this project have had police record checks.

You and your child's participation in this study would be very much appreciated and important in understanding the social experiences and feelings of young children. Findings from our research may lead to new resources for children who experience social difficulties. If you have any questions concerning this study, please feel free to contact me: Laura Ooi (looi@connect.carleton.ca, 613-520-2600, ext. 2680), or my faculty advisor, Dr. Robert Coplan (robert_coplan@carleton.ca, 613-520-2600 ext. 8691). If your child is experiencing any social or emotional difficulties, here are some resources you might find helpful: www.helpforkids.com, <http://kidshealth.org>. Should you have any ethical concerns about this research, please contact Dr. Monique Sénéchal (Ethics Chair, monique_sénéchal@carleton.ca, 613-520-2600 ext. 1155). For any other concerns, please contact Dr. Anne Bowker (Chair, Department of Psychology anne_bowker@carleton.ca, 613-520-2600, ext. 8218).

Sincerely,

Laura Ooi
MA Candidate
Department of Psychology
Carleton University

THE CHILD SOCIAL EXPERIENCES STUDY: CONSENT FORM

The information collected for this project is confidential and protected under the Municipal Freedom of Information and Privacy Act, 1989.

This study has received clearance by the Carleton University Psychology Research Ethics Board (12-235)

Date: _____

(Name of child - please print)

(Name of parent or guardian - please print)

Child's Age (in months) _____ Child's birth date _____
Month Day Year

Child's gender _____

Name of child's preschool/childcare centre _____

Please check one:

_____ I give my permission for my child and me to participate in the **Child Social Experiences Study**

_____ I do not give my permission for my child and me to participate the **Child Social Experiences Study**

(Signature of parent or guardian)

(dd/mm/yyyy)

Please keep the first two information pages for your own records and return this signed consent form and questionnaires to your child's teacher (sealed in the enclosed envelope) as soon as possible even if you are not going to be participating in the study.

If you would like to receive a summary of the findings from this study please indicate an e-mail address to which we can send the results. Please note that only group results will be provided, and not individual feedback about particular children.

Appendix D

Demographic Information Form

The following information is gathered in order to get a better overall understanding of the participants involved. All information is confidential. No personal information will be released.

Child's Name: _____

Child's Birth date: _____ dd/ mm/yyyy Child's age (in years): _____

Boy: _____ Girl: _____

How long has your child been attending his/her current preschool/childcare centre (in months)? _____

How many hours per week does your child attend this particular preschool/childcare centre?

Mother's highest level of formal education completed (please check one):

- Elementary school _____
- High school diploma or equivalent _____
- Community college or equivalent _____
- University degree _____
- Graduate school degree _____

Father's highest level of formal education completed (please check one):

- Elementary school _____
- High school diploma or equivalent _____
- Community college or equivalent _____
- University degree _____
- Graduate school degree _____

Mother's ethnic group (optional):

- Caucasian _____
- Asian _____
- Hispanic _____
- Aboriginal _____
- Black _____
- Other _____

Father's ethnic group (optional):

- Caucasian _____
- Asian _____
- Hispanic _____
- Aboriginal _____
- Black _____
- Other _____

Appendix E

The Child Social Preference Scale (CSPS; Coplan, Prakash, O’Neil, & Armer, 2004)

CHILD SOCIAL PREFERENCE SCALE

Name of child: _____

Please answer the items on this page about the behaviour of your child by *circling* one of the numbers following each item. We know that no item will apply to the child in every situation, but try to consider his/her usual or general behaviour. Please answer all questions-- there are no right or wrong answers.

	How much is your child like that?				
	<u>Not at All</u>		← →		<u>A Lot</u>
1. My child often seems content to play alone.	1	2	3	4	5
2. My child seems to want to play with other children, but is sometimes nervous to.	1	2	3	4	5
3. My child is just as happy to play quietly by his/herself than to play with a group of children.	1	2	3	4	5
4. My child is happiest when playing with other children.	1	2	3	4	5
5. My child will turn down social initiations from other children because he/she is 'shy'.	1	2	3	4	5
6. My child often approaches other children to initiate play.	1	2	3	4	5
7. My child 'hovers' near where other children are playing, without joining in.	1	2	3	4	5
8. My child rarely initiates play activities with other children.	1	2	3	4	5
9. If given the choice, my child prefers to play with other children rather than alone.	1	2	3	4	5

	How much is your child like that?				
	<u>Not at All</u>		← →		<u>A Lot</u>
10. My child often watches other children play without approaching them.	1	2	3	4	5
11. Although he/she appears to desire to play with others, my child is sometimes anxious about interacting with other children.	1	2	3	4	5

Appendix F

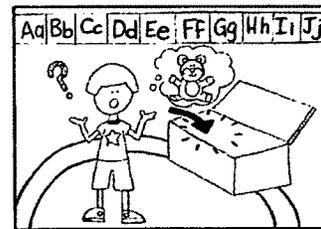
Ambiguous Situations Questionnaire

(ASQ; Barrett, Rapee, Dadds, & Ryan, 1996)

Adapted Version

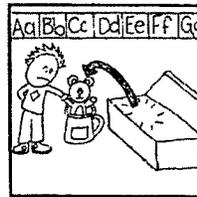
I am going to tell you some stories about things that could happen to you. These things might have happened to you before or you might have to imagine what it would be like if it did happen to you. The important thing is that you tell me what you would really think if it happened to you. After I have read each story, please point to the picture that is most like what you would think.

1. You notice at school one day that your favourite toy is missing.



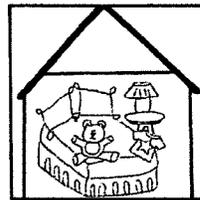
Do you think:

- a) Someone has stolen the toy

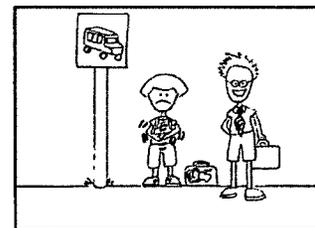


OR

- b) You left the toy at home today



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



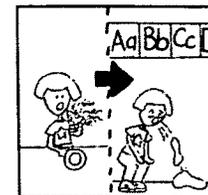
Do you think:

- a) You didn't have enough breakfast and are just feeling hungry

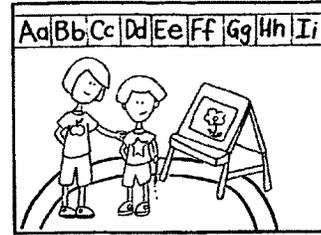


OR

- b) You ate some bad food and are going to be really sick at school

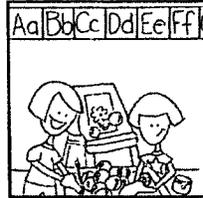


3. The teacher pulls you aside to talk to at school.



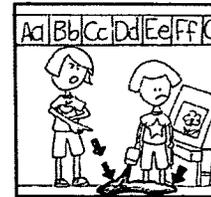
Do you think:

a) The teacher wants your help

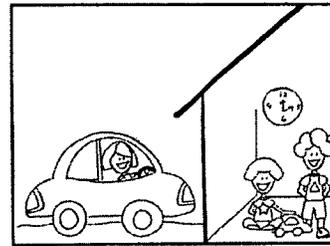


OR

b) The teacher thinks you have done something wrong



4. You are at a friend's house and your mom shows up early.



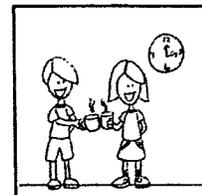
Do you think:

a) Something bad has happened at home

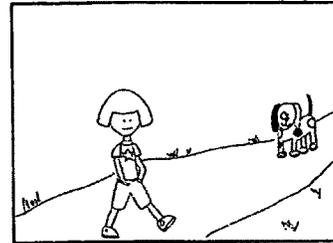


OR

b) She came to visit with your friend's mom



5. You are walking outside and a big dog comes up to you.



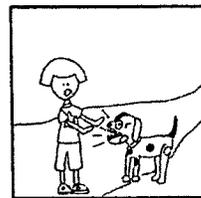
Do you think:

a) The dog wants to say hi

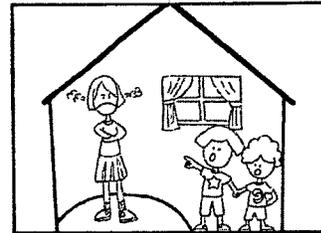


OR

b) The dog is going to bite you

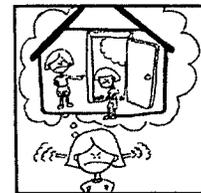


6. You are visiting a friend's house and your friend's mom seems to be very angry.



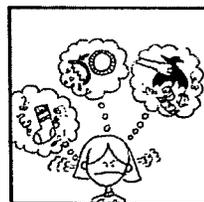
Do you think:

a) She doesn't want you to be there and is mad at you

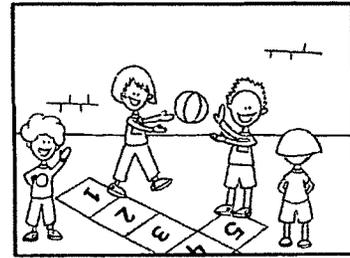


OR

b) She's having a bad day



7. You see a group of children playing a fun game.
When you walk over to join in, they are laughing.



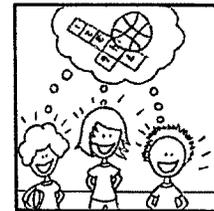
Do you think:

a) One of them has told a mean joke about you

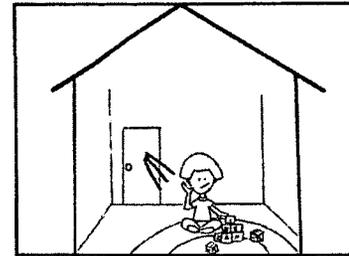


OR

b) They are laughing about something in the game



8. You are playing at home and you hear a knock at the door.



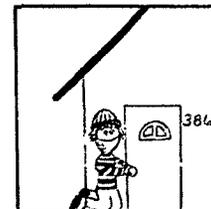
Do you think:

a) Someone you know is coming for a visit

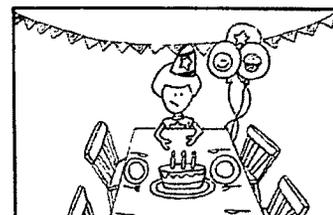


OR

b) Someone you don't know is trying to get into your house



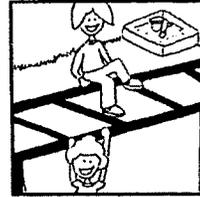
9. You are having a birthday party and no one has



arrived at your house yet.

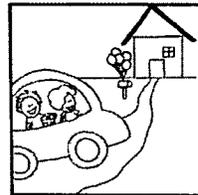
Do you think:

a) No one wants to come to the party

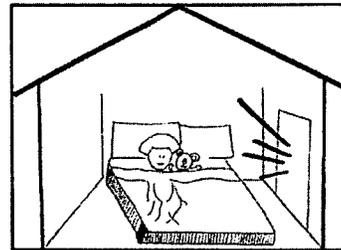


OR

b) They are running a little late

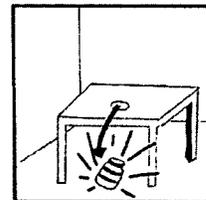


10. You are lying in bed at night when you hear a big crash in the house.



Do you think:

a) Someone has dropped something on the floor

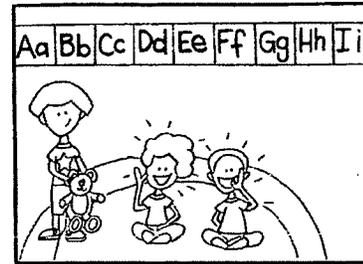


OR

b) One of your parents has fallen and is hurt

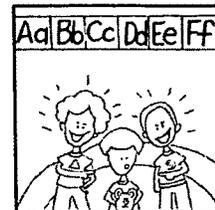


11. It's "show and tell" and you are in front of the class and two children are laughing.



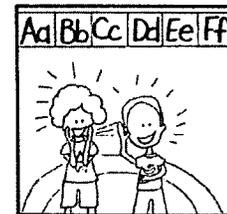
Do you think:

a) They are laughing at something you said

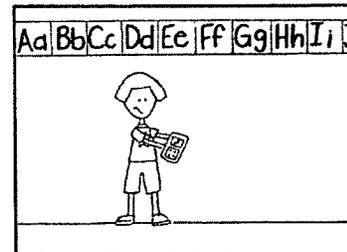


OR

b) One of them told a joke and they are laughing at that

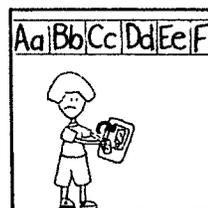


12. You go to play with a new toy and it doesn't work.



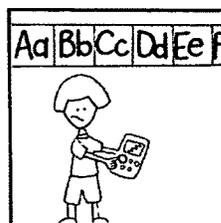
Do you think:

a) It needs new batteries



OR

b) You broke it



Appendix G

The Child Behavior Scale, Anxious-Fearful and Excluded by Peers Subscales

(CBS-AF, CBS-EP; Ladd & Profilet, 1996)

Please rate each item based on how characteristic or applicable each item is for the child

	Doesn't apply	Applies sometimes	Certainly applies
Is worried *	1	2	3
Appears miserable, distressed*	1	2	3
Fearful or afraid *	1	2	3
Cries easily *	1	2	3
Not much liked †	1	2	3
Peers refuse to let child play †	1	2	3
Not chosen as playmate †	1	2	3
Peers avoid this child †	1	2	3
Excluded from peers' activities †	1	2	3
Ignored by peers †	1	2	3
Ridiculed by peers †	1	2	3

14. * = items from the CBS-AF

15. † = items from the CBS-EP

Appendix H

The Preschool Peer Victimization Measure – Teacher Report

(PPVM-TR; Crick, Casas, & Ku, 1999)

Please rate each item based on how true you believe each statement to be for the child.

	Never to almost never true → Always or almost always true				
	1	2	3	4	5
This child gets hit, kicked, or pinched by peers	1	2	3	4	5
This child gets pushed or shoved by peers	1	2	3	4	5
This child is called mean names (e.g., baby)	1	2	3	4	5
This child gets ignored by playmates when they are mad at him/her	1	2	3	4	5
This child gets left out of the group when someone is mad at them or wants to get back at them	1	2	3	4	5
This child gets told “you aren’t my friend/buddy” if they do not comply with a playmate’s request	1	2	3	4	5
This child gets invited to join a group of playmates when he/she is playing alone	1	2	3	4	5
This child gets help from peers when he/she needs it	1	2	3	4	5
This child gets cheered up by playmates when he/she is sad or upset about something	1	2	3	4	5

Appendix I

The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997)

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of the child's behavior over the last six months or this school year.

Child's name Male/Female

Date of birth

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restless, overactive, cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often complains of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shares readily with other children, for example toys, treats, pencils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often loses temper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rather solitary, prefers to play alone *	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally well behaved, usually does what adults request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many worries or often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has at least one good friend *†	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often fights with other children or bullies them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often unhappy, depressed or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally liked by other children *†	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easily distracted, concentration wanders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nervous or clingy in new situations, easily loses confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often lies or cheats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Picked on or bullied by other children *	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often offers to help others (parents, teachers, other children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thinks things out before acting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steals from home, school, elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gets along better with adults than with other children *	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many fears, easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Good attention span, sees work through to the end	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Signature Date

Parent/Teacher/Other (Please specify):

* = item from the "peer problems" subscale; † = item is reverse scored

Appendix J

The Revised Preschool Anxiety Scale, Social Anxiety Subscale

(PAS- R-SOC; Edwards, Rapee, Kennedy, & Spence, 2010)

Please rate each item based on how true it is of your child's behaviour.

		Not at all true	—————→			Very often true
1	Worries that he/she will do something to look stupid in front of other people	0	1	2	3	4
2	Is scared to ask an adult for help (e. g., a preschool or school teacher)	0	1	2	3	4
3	Is afraid of meeting or talking to unfamiliar people	0	1	2	3	4
4	Is afraid of talking in front of the class (preschool group; e.g., show and tell)	0	1	2	3	4
5	Worries that he/she will do something embarrassing in front of other people	0	1	2	3	4
6	Is afraid to go up to a group of children and join their activities	0	1	2	3	4
7	Acts shy and quiet around new people	0	1	2	3	4