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AN EXAMINATION OF SOCIAL INFORMATION PROCESSING PATTERNS IN ANXIOUS CHILDREN

By

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ABSTRACT

The present study examined social information processing patterns in trait and socially anxious children using Dodge's Social Information Processing model (Dodge, 1986; Crick & Dodge, 1994). Based upon the current research (e.g., Bell-Dolan, 1995) and cognitive theories of anxiety (e.g., Beck, 1986), it was hypothesized that children reporting high levels of trait or social anxiety would demonstrate maladaptive social information processing patterns. Specifically, it was expected that anxious children, compared with non-anxious children, would focus more on hostile cues, make more negative attributions, and endorse more passive behaviours. Several levels of Dodge's model were considered including cue encoding, cue interpretation, response generation, and response evaluation. Children (N= 148; 9 to 12 years of age) were given the State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973), Social Phobia Anxiety Inventory for Children (SPAI-C; Beidel, Turner, & Morris, 1995), and Children's Depression Inventory (CDI; Kovacs, 1992) to assess their level of trait anxiety, social anxiety, and depression, respectively. The participants were also shown videotaped vignettes depicting peer entry situations, with the peer behaviour varying as hostile, non-hostile, or ambiguous. Hierarchical regression analyses were conducted with and without first removing the effects of depression. The results provided support for overall maladaptive social processing patterns in children who report higher levels of social or trait anxiety.

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While anxiety is a natural and adaptive response under certain conditions, it is considered an emotional disorder when feelings of uneasiness and apprehension regarding some undefined danger become excessive or intolerable. These feelings can lead to significant disruptions in one's ability to function effectively (Kendall, 1993). Anxiety disorders also have significant bearing upon society since they are considered to be among the most common and troubling emotional disorders for people of all ages (Ingram & Malcarne, 1995). Accordingly, it is fitting that health professionals attach major importance to the goal of understanding the nature and treatment of anxiety disorders (Craig & Dobson, 1995).

This goal has not always been a priority, particularly with regard to children. In the past, childhood fears and anxieties were accepted as common and transitory, which undermined interest in understanding and treating children's anxiety (Barrios & Hartmann, 1988). Within the last decade, however, researchers have increasingly reported serious immediate and long-term consequences associated with childhood anxiety. Childhood anxiety has been linked to impairments in adaptive functioning due to the disruption of critical aspects of life, including school performance, self-esteem, and social adjustment (Dweck & Wortman, 1982; Strauss, Lease, Last, & Francis, 1988). Furthermore, children afflicted with anxiety disorders may continue to suffer from anxiety in their adult life (Last, Phillips, & Statfield, 1987). Consequently, behaviours associated with anxiety that once were regarded as "Kinderspiel" or normal

development, are now regarded as symptomatic manifestations of anxiety disorders. As a result, understanding the nature and treatment of childhood anxiety is now considered an important research topic (Costanzo, Miller-Johnson, & Wencel, 1995).

Childhood anxiety is recognized as a multidimensional construct, involving behavioural, affective, physiological, and cognitive components. Understanding each of these components is necessary for a thorough understanding of childhood anxiety (Bell-Dolan, 1995). Relatively little research has focused specifically on the cognitive aspect of childhood anxiety. Researchers have only recently started to investigate the characteristic thoughts and beliefs of anxious children (Francis, 1988). The paucity of empirical data regarding the cognitive component of childhood anxiety is unfortunate since many theorists have emphasized the role of cognitions as a primary factor in understanding anxiety (e.g., Clark & Beck, 1989). Moreover, recent findings have proven to be enlightening, suggesting that anxious children selectively focus on threatening stimuli, catastrophize events, and evaluate themselves more negatively than do other children (Kendall & Ronan, 1990; Vasey, 1993). However, this research is limited and confined to certain contexts. Additional research is needed to determine the nature and impact of cognitions associated with anxiety in different situations, particularly those of noted difficulty, such as social responding (Bell-Dolan & Wessler, 1994).

The present study will examine the nature of anxious children's maladaptive cognitions within the social context. The first chapter will present an overview of childhood anxiety including epidemiological and developmental aspects. Psychosocial concerns associated with childhood anxiety will be discussed. Current cognitive theories of anxiety as well as the related empirical research for both adults and children will be reviewed. Finally, Crick & Dodge's (1994) reformulated social information processing model will be presented as a framework for investigating the nature of anxious children's maladaptive cognitions within the social context.

Epidemiological Studies of Child Anxiety

Approximately a decade ago, Orvaschel and Weissman (1986) reported that no epidemiological data were available with respect to childhood anxiety disorders. The lack of data was attributed to the fact that studies depended primarily upon surveys of worries and fears. However, epidemiological studies on childhood anxiety have improved significantly within the last ten years. Recent studies have focused upon the prevalence of specific diagnoses and symptom counts (Costello & Angold, 1995). In a comprehensive review of studies examining prevalence rates of childhood anxiety using representative community samples, Costello and Angold (1995) reported prevalence estimates ranging from 5.7 to 17.7%, with several estimates greater then 10% for any anxiety disorder (e.g., Anderson, Williams, McGee, & Siva, 1987; Costello et al.,

1988; Costello, Stouthamer-Loeber, & DeRosier, 1993; Velez, Johnson, & Cohen, 1989). The results of epidemiological studies, in general, suggest that anxiety disorders are among the most common if not the most common type of childhood and adolescent psychopathology (Bernstein & Borchardt, 1991).

Several epidemiological studies have also examined gender differences in the prevalence of anxiety disorders. Women are generally found to be at a higher risk for developing anxiety disorders, with rates 1.5 to 3 times greater for women then for men (e.g., Kessler et al., 1994). The prevalence of anxiety disorders is often reported to be higher for girls then for boys, irrespective of age (Costello & Angold, 1995). However, clear and consistent differences for specific disorders in children have not emerged. A significant sex difference is usually found only when global measures of anxiety are used in contrast to measures assessing more narrowly defined diagnoses (Costello & Angold, 1995).

Developmental Trends in Anxiety

There have also been a number of age-related differences reported in the literature. In terms of clinical diagnoses, younger children (aged 6-11), compared with adolescents, are diagnosed significantly more often with separation anxiety disorder (Bird, Canino, Rubio-Stipec, 1988; Kashini & Orvanschel, 1990). In contrast, adolescents are diagnosed more often with overanxious disorder (Kashini & Orvaschel, 1990).

Other developmental trends have also been noted. Preschoolers, for instance, generally fear stimuli such as animals, the dark, and fictional creatures (e.g., dragons, monsters). As children develop, these fears, which can be characterized as global, undifferentiated, and externalized, are typically replaced with more differentiated, internalized, and realistic fears, often related to social acceptance and school-competence (Vasey, 1993). Since all anxieties are associated with themes of threat to self, the changes in anxiety-related cognitions are partially influenced by changes in children's self-perception (Vasey, 1993).

Changes in self-perception reflect developmental growth in a number of cognitive and social-cognitive areas, including taking another's perspective and participating in social comparisons (Vasey, 1993). Children develop the skills needed to take another's perspective and participate in social comparisons at approximately 8 years of age (Vasey, 1993; Vasey, Crnic, & Carter, 1994). Children younger then 8 years of age typically view themselves in a "physicalistic" sense, focusing on features of their body and belongings. At approximately 8 years of age, children begin to use their peer group as a standard for evaluating their own capabilities, especially competence-related capabilities. At this time, children also become aware of others' attitudes towards them (Costanzo et al., 1995; Secord & Peevers, 1974; Vasey et al., 1994). Consequently, their self-concept becomes significantly influenced by social comparisons (e.g., "they don't want me to participate because I'm not very

good") and less on physical aspects (Vasey et al., 1994). Negative comparisons can result in the escalation of evaluation and performance anxiety (Costanzo et al., 1995). Thus, when the peer group forms part of the child's appraisal system, former anxieties can be lessened and new anxieties generated (Vasey, 1993).

Significant associations have been reported between self-concept development and anxiety-related content. For example, worries regarding physical well-being, such as kidnapping or injury were found to decrease between the ages of 5-6 and 8-9, while worries regarding behavioural competence and social evaluation/psychological content increased with age and self-concept development (Vasey et al. 1994).

Symptoms and Associated Problems of Anxiety in Children

The cognitive model of anxiety acknowledges that anxiety is comprised of a complicated pattern of cognitive, affective, physiological, and behavioural components (Beck & Clark, 1997). Behavioural responses observed in anxious children include avoidance or escape behaviours, trembling voice and hands, rigid posture, crying, nail-biting, and thumb sucking. Physiological symptoms may involve autonomic nervous activity, perspiration, diffuse abdominal aches (commonly referred to as butterflies), flushed face, shaking, and gastrointestinal distress, which can require medical attention. The cognitive component of anxiety involves generalized cognitive expectations and "fears" regarding the self and the social environment (Costanzo et al., 1995). Characteristic

cognitions observed in anxious children include self-critical thoughts,
expectations of danger and harm to one's personal domain, and an
underestimation of one's coping abilities (Kendall, 1993; Vasey, 1993).

These symptoms (e.g., avoidance of feared stimuli and self-critical
statements) have been associated with impairments in various critical areas,
including school performance, peer interactions, and/or independent functioning
(Bell-Dolan, 1995). Strauss, Frame, and Forehand (1987) examined
psychosocial impairments in second- through fifth grade anxious children.
Specific areas of maladjustment included low self-esteem, attention problems,
poor school performance, social rejection, and dysfunctional social behaviours.
Furthermore, peers tended to characterize their anxious classmates as socially
withdrawn and shy. In another study, teachers described anxious children as
generally unhappy and unliked by peers. The teachers also noted that anxious
children chose younger playmates and showed more dysfunctional social
behaviours when compared with nonanxious children (Edelbrock, 1985).

Anxious children, compared with nonanxious children, tend to
demonstrate more problems associated with mood, self-esteem, and social
interactions (Bell-Dolan, 1995; Kashani & Orvaschel, 1990). As the quality of
children's social relations is recognized as a significant factor influencing later
emotional health and development, researchers need to investigate how anxiety
interferes with social interactions in children (LaGreca & Stone, 1993).

Comorbidity of Anxiety and Depression

A strong association between anxiety and depressive disorders in
children and adolescents has been observed in the general population (e.g.,
Anderson et al., 1987; Kashini & Orvaschel, 1988) and in clinical samples
(Bernstein, 1991). One large epidemiological study found that 17% of the
children with an anxiety disorder also had a depressive disorder (Anderson et
al., 1987). Another epidemiological study reported that 12% of the adolescents
with anxiety disorders were also diagnosed with a depressive disorder (McGee
et al., 1992). In a review of epidemiological studies, Costello and Angold (1995)
found that depressed children, compared to nondepressed children, were 3 to 4
times more likely to receive a diagnosis of anxiety. Furthermore, correlational
studies of self-report measures of anxiety and depression often range from .5 to
.8 (Watson & Kendall, 1989).

Negative affectivity and the Tripartite model

The high correlation between measures of anxiety and depression and
the significant comorbidity rates have evoked considerable debate as to whether
anxiety and depression are best represented as a unitary construct, dual
construct, or as part of a three factor tripartite model (Cole, Truglio, & Peeke,
1997). The unitary construct model proposes that the high correlation between
anxiety and depression is indicative of a single underlying factor, often referred
to as negative affectivity, with a common emotional, cognitive, and potentially

genetic substrate (Cole et al., 1997). The dual construct theory posits that anxiety and depression are separate constructs with separate types of affective, cognitive, family, and historical experiences (Akiskal, 1985; Foa & Foa, 1982). The three factor, tripartite model suggests that anxiety and depression share a significant factor of general affective distress (i.e., negative affectivity) while also possessing unique symptoms (e.g., Clark & Watson, 1991). Kendler, Neale, Kessler, Heath, and Eaves (1992) posited that negative affectivity may be a genetic component whereas the unique features of anxiety and depression may stem from environmental factors.

Negative affectivity has been defined as a predisposition for negative emotionality that incorporates components of anxiety and depression (Watson & Clark, 1984). Correlational and factor analytic studies, primarily of self-report studies at the meta-analytic level (e.g., Feldman, 1993) have been used as support for this construct. Factor analysis of mood rating scales revealed that moods frequently related to depression (i.e., sad, blue, depressed, unhappy) and moods frequently related to anxiety (i.e., worried, scared, nervous) loaded highly onto a negative affectivity factor (Watson & Kendall, 1989).

Most studies considering the negative affectivity factor and tripartite theory have considered its applicability to adults with fewer studies considering children or adolescents (Boyd & Gullone, 1997). However, the high comorbidity of depression and anxiety in diagnosed children has been used as support for the idea of a negative affectivity construct in children (King, Ollendick, &

Gullone, 1991). Recently, Cole, Truglio, & Peeke (1997) considered the applicability of a negative affectivity factor and the tripartite model in children. The results of a confirmatory factor analysis of multitrait-multimethod data suggested that a unitary construct may be applicable to younger children (Grade 3 students; mean age= 8.9). However, the data for older children (Grade 6; mean age =11.9 years) were more consistent with a tripartite model of depression and anxiety. Cole et al., (1997) suggested that the dimensions of anxiety and depression may start to separate with age, however, may not fully separate leading to a tripartite model comprised of depression, anxiety, and a negative affectivity factor. Accordingly, a developmental perspective was recommended that could account for the developmental processes of differentiation and integration which contribute to alterations in the constitution of and association of various feelings and cognitions affiliated with depression and anxiety (Cole et al., 1997). Further research investigating the nature of the relationship between anxiety and depression in children is needed.

Cognitive Theories of Anxiety

Anxiety has been conceptualized using a biopsychosocial perspective in which different systems interact to produce the noted anxiety symptoms (Taylor & Arnow, 1988). Past experiences, interpersonal determinants, physiological factors, genetic constitution, and development have all been implicated as variables influencing the etiology, maintenance, and/or exacerbation of anxiety

disorders. There is also increasing support for cognitive theorists' position that perceptions and cognitions play an important role in anxiety (Clark & Beck, 1989; Kendall & Ronan, 1990).

The cognitive models of psychopathology are based on the tenet that dysfunctional information processing (e.g., systematic biases in selecting, transforming, encoding, storing, and/or retrieving information) is associated with the etiology and maintenance of maladaptive emotions, including depression, anxiety, and anger or hostility (Malcarne & Ingram, 1994). Systematic biases can be caused by cognitive deficiencies whereby the child does not possess an adaptive behaviour or mental operation which would be useful in a given situation (e.g., perspective taking, interpersonal problem solving) or performs a mental activity at a very low frequency (Kendall & Ronan, 1990). These problems may stem from deficiencies in cognitive organization and execution skills as well as insufficient verbal mediation skills. Cognitive deficiencies have been primarily associated with the undercontrolled acting out behaviours observed in impulsive and aggressive children (Kendall & Ronan, 1990).

Systematic biases in information processing can also be due to cognitive distortions. Cognitive distortions involve maladaptive thinking processes in which there is some form of extreme negative self-talk (e.g., questioning, hopelessness) (Kendall & Ronan, 1990). Various distortions are considered prominent in childhood anxiety such as an overperception of danger to self, excessive self-focused attention, extreme self-disapproval, and an

underestimation of one's coping skills (Vasey, 1993). Anxious children also tend to extremely concerned about evaluations by others and the possibility of severe negative outcomes (Kendall, 1993). These distortions often lead to an unrealistic anticipation of threat or harm and a decreased sense of self-efficacy. Cognitive distortions have been considered a primary factor in the etiology and maintenance of dysfunctional childhood anxieties and fears (Kendall & Ronan, 1990).

In order to illustrate how cognitions can promote anxiety, one can consider two children involved in a school play. The first child, who considers him or herself to be an accomplished actor, perceives the activity as exciting and fun. The second child, who demonstrates some of the above cognitive distortions, perceives the activity as a great threat and feels endangered. This child thinks he/she will do a terrible job and is very concerned that people will think he/she is stupid and ridicule him/her. It is these types of perceptions of threat and low self-efficacy, which are believed to arouse feelings of anxiety (Kendall & Ronan, 1990).

As noted previously, research examining the cognitive processing styles in anxious children is limited (Bell-Dolan, 1995; Francis, 1988). Consequently, cognitive theories and research directions regarding child anxiety have frequently been adapted from the adult field (Bell-Dolan & Wessler, 1994). Most researchers have used one of two cognitive models to conceptualize the

relationship between cognition and affect; the Schema model and the

Associative network model (Mineka & Sutton, 1992)

Schema model

One of the most influential theoretical models of anxiety is the schema

model proposed by Beck and his colleagues (Eysenck, 1992). The model posits

that cognitive schemas and automatic thoughts have a vital role in the etiology

and maintenance of anxiety disorders. A schema may be defined as a

hypothetical construct which "functions to organize past experience and

knowledge, serves as the individual's internal representation of self and others,

structures the processing of information, and influences the retrieval of

information within the system" (Malcarne & Ingram, 1994, p.144). Information

congruent with the present schemas is encoded while incongruent material is

disregarded. Furthermore, the schema can cluster into groups to oversee

various events. When these clusters become overly-inclusive, attending to

numerous circumstances, a broadly-based superordinate, ordering body referred

to as a 'mode' is functioning.

Beck and Clark (1988) note that certain latent maladaptive schemas can

promote a cognitive susceptibility for anxiety or depression. Anxious individuals

are thought to possess maladaptive schemas, which are focused on perceived

physical or psychological threat or harm to oneself, as well as an exaggerated

sense of vulnerability. The direct effects of this maladaptive schema in anxious

individuals are thought to include (i) a hypervigilance to cues signalling potential threat or danger and a subsequent disregard for neutral or safe cues, (ii) threatening interpretations extending to ambiguous and even neutral events, and (iii) memory retrieval biases for threatening material (Clark & Beck, 1989). Other cognitive errors may include catastrophizing and overgeneralization of negative outcomes. The net result of this faulty processing system is that the general anticipation of harm or threats to oneself is magnified and evaluations of one's coping skills are greatly depreciated, promoting an inflated sense of vulnerability (Clark & Beck, 1989). Therefore, the anxious person could be confronted with an event which would be considered harmless by most individuals, such as having to write on the blackboard, and view the event negatively with accompanying dysfunctional thoughts such as "I probably look silly and am writing this all wrong. I bet they are thinking how stupid I am. I think I even hear them laughing at me. I wish I didn't have to do this, I just want to go home ..."

There is a tendency for anxious individuals under anxiety provoking circumstances to lose their objectivity as well as their ability to problem solve and adapt behaviours flexibly. As a result, anxious individuals may cease to evaluate relevant cues and instead rely on certain maladaptive responses. This pattern can lead to the frequently observed withdrawal and avoidance behaviours (Bell-Dolan, 1995).

A similar cognitive model for childhood anxiety has been proposed by Kendall and Ronan (1990). The model posits that childhood anxiety disorders

stem from the pervasive overactivity of chronic threat-related schemas. Similar to Clark and Beck's (1989) model, these schemas direct a disproportionately high amount of the processing resources towards threat or danger related information (Kendall & Ronan, 1990).

Associative Network Model

The Associative network model has been widely used to explain the relationship between affect and cognition (Bower, 1981; Lang, 1985). In the network model, thoughts, feelings, and experiences are depicted as individual nodes, that are stored in propositional form and joined within an extensive network. Accordingly, when one node is triggered, this stimulation will automatically extend to mood-congruent nodes (Bower, 1981; Lang, 1985).

Lang's (1985) network model, referred to as the bioinformational theory of emotion, proposed that individuals with an anxiety disorder possess a very extensive and stable 'fear network' in their long term memory. These 'fear networks' are comprised of three units of information: (a) information regarding features of the anxiety provoking stimulus, (b) information regarding cognitive, motor, and psychophysiological components of anxiety (e.g., trembling hands and avoidance responses), and (c) information which determines the meaning of the event and reactions for the person (e.g., I will panic if I don't get out of here). Thus, fear information is retained in memory in such a manner that activates cognitive, motor, and physiological responding.

According to the model, anxious individuals are primed to perceive and focus on anxiety-relevant stimuli even if the stimuli are secondary to the present task-related behaviours (Litz & Keane, 1989). Weak or ambiguous fear-related material may trigger the fear network in people with anxiety disorders due to the high probability that other anxiety-related components in the network are simultaneously operating (e.g., arousal and/or imagery which facilitates the processing of fear-related material) (Litz & Keane, 1989).

The complexity of the fear network is hypothesized to increase with age. The types of fear structures, which encode the stimuli, responses, and meaning related to the threatening event, may be found in young children's memory. However, it seems improbable that threatening information can be arranged as a cohesive structure in the memory so that thoughts regarding one kind of threat can activate other threat-related information through an associative link (Vasey, 1993). As noted, "if cognitively mediated, young children's anxiety is likely to be related to associations between specific circumstances and memories of threatening events. In contrast, older children [older then 7 or 8 years] may activate and develop associations among many thoughts of threatening possibilities that have been previously unrelated through a process of spreading activation and elaboration. Consequently, their anxiety may become more generalized in a way not supported by younger children's memory organization" (Vasey, 1993, p.18).

Both models suggest that some aspects of anxiety are automatic without conscious prompting, but they differ with respect to the volitional aspect of cognitive processing. The schema theory posits that the appraisal processes function automatically. However, there is also a volitional component to this process. In contrast, the bioinformational theory suggests that the appraisal processing is completely unconscious and automatic (Dombeck & Ingram, 1993).

Furthermore, the schema theory specifies that it is the mediational cognitive appraisal process and not the affective component which decides whether anxiety will be perceived. Specifically, biased cognitive schema of anxious persons promote hypervigilant exploration of the surroundings which, in turn, raises the likelihood of arousing anxious affect. In contrast, the bioinformational theory suggests that affect and cognition are inseparable and evoked as a single response from one network (Dombeck & Ingram, 1993).

While there are some differences between the models, they advocate the same main assumption in their therapeutic approach, i.e., that the anxious client's cognitive representation of the environment is inaccurate. More specifically, pathological anxiety is attributable, at least in part, to an inaccurate and exaggerated perception of the surroundings as dangerous (Dombeck & Ingram, 1993).

<u>Research examining cognitive models of anxiety</u>

Research based upon these cognitive models of anxiety has typically involved adult subjects and has generally produced evidence supporting the presence of biases in cognitive processing (MacLeod & Mathews, 1991; Mathews & MacLeod, 1994). The current empirical studies, for example, have generally supported the existence of an attentional bias for threat cues in anxious individuals. Researchers have noted that processing resources focus on threat cues through an increased sensitivity, vigilance, or readiness to focus upon these cues (Litz & Keane, 1989).

Attentional probe tasks have been used to assess for the presence of attentional biases in anxious individuals. For example, MacLeod, Mathews, and Tata (1986) employed a probe detection task to examine the effects of anxiety on attention. Participants were presented with pairs of words (a threatening and a neutral word), displayed on a computer screen. Periodically a dot would appear in the place of one of the words. When the participant saw the dot, he or she was required to press a hand-held button. The time taken to make the response depended upon the degree to which the subject had been actively focusing on the word that was replaced by the dot and was therefore used as a measure of attention focus. The results revealed that anxious subjects were quicker to detect the visual dot when it replaced a threatening word as opposed to a non-threatening word. In contrast, non-anxious subjects were faster at detecting the dot when it replaced a non-threatening word. The findings were

interpreted as evidence of selective attention for threatening stimuli in anxious individuals. Furthermore it was suggested that nonanxious subjects preferentially avoid threatening material. Other studies have reported similar findings (e.g., MacLeod & Mathews, 1988).

Broadbent and Broadbent (1988) also found a significant association between response time on the probe detection task and trait anxiety. However, the relationship was non-linear in that attentional biases were not correlated with low or moderate levels of trait anxiety but increased exponentially at the high end of the trait anxiety scores.

Attentional biases have also been observed using interference paradigms. A modified Stroop colour naming task has often been employed in these studies (Mathews & MacLeod, 1994). In this task, the colour of the ink, in which the various words are recorded, has to be named as quickly as possible while disregarding the semantic content of the word. Mathews and MacLeod (1985) found that subjects with generalized anxiety disorder (GAD) demonstrated a longer colour-naming reaction time to threatening words compared with non-threatening words. Longer colour-labelling times are considered to be indicative of increased processing of the given word. Therefore the results of this study have been used as support for the premise that anxiety is associated with an encoding bias favouring threat-related information. Similar findings have been reported in other studies using the Stroop task with different anxiety disorders, such as spider phobia and post

traumatic stress disorder (McNally, Kaspi, Riemann, & Zeitlin, 1990; Watts,

McKenna, Sharrock, & Trezise, 1986).

Other results have revealed that the attentional effects are strongest

when participants are presented with emotional objects related to their area of

concern (Mathews, 1994). For example, the greatest interference for colour

naming words in socially phobic adults was observed when they were presented

with socially threatening words (Hope, Rapee, Heimberg, & Dombeck, 1990).

Similar specificity was observed when studying attentional biases in adults with

panic disorder (McNally et al., 1992). Thus the relationship between the specific

type of anxiety and the relevance of the stimuli appears to influence the degree

of the attentional bias observed (Mathews & MacLeod, 1994).

In sum, there is evidence to support the hypothesis that anxiety is

associated with a processing bias which serves to focus attention on threat cues.

This phenomenon has been observed with various subtypes of anxiety as well

as when different methodological procedures were employed (Beck & Clark,

1997; Fox, 1993; Mathews, 1990; Mathews, MacLeod, & Tata, 1986).

Researchers have also suggested that the noted bias may occur at a

preawareness, automatic level as well as at a strategic voluntary level (e.g.,

Beck & Clark, 1997; Fox, 1993; Mathews, 1990). In terms of clinical

implications, this finding suggests that when individuals cannot explain why they

started to feel anxious, it is still feasible that threat cues in their surroundings

prompted the anxiety (Mathews, 1990).

Additional Cognitive Biases associated with Anxiety

Anxious individuals also demonstrate a greater tendency to interpret ambiguous stimuli as threatening (Mathews, 1990). One common approach used to test for interpretative biases involves presenting participants with stimulus words (Mathews & MacLeod, 1994). For example, trait anxious and clinically anxious individuals have been presented with a series of homophones, each containing a threatening as well as a nonthreatening meaning (e.g., die, dye). Positive correlations have been reported between the number of threatening spellings later produced in a recall test and anxiety levels (Eysenck, MacLeod, & Mathews 1987; Mathews, Richards, & Eysenck, 1989). Similar findings have been reported with other stimuli, including ambiguous sentences (Eysenck, Mogg, May, Richards, & Mathews, 1991) and short passages with an ambiguous sentence (MacLeod & Cohen, 1993). The collective evidence supports the hypothesis that high anxiety is connected with a greater tendency to generate negative interpretations for ambiguous stimuli (Mathews & MacLeod, 1994). The effects of these biases have potentially significant implications when considering the range of stimuli in the environment which are possibly threatening. "On the road, oncoming vehicles are potentially lethal, in dark street passers by are potential assailants, and... minor somatic sensations are potentially symptoms of some serious malady" (MacLeod et al., 1986, p.18).

Other cognitive biases have also been associated with anxiety. Marx, Claridge, and Williams (1992) gave a Means-Ends Problem Solving Test to a

group of depressed subjects, anxious subjects, and normal controls. Both the depressed and anxious group demonstrated deficits when compared to the normal controls with respect to producing relevant ways to resolve social problems and the number of strategies produced. Finally, Dobson (1989) examined students who were dysphoric and generally anxious, anxious but not dysphoric, and nonanxious and dysphoric. Specifically, the subjects' impressions regarding their partners' reactions towards them during a short unstructured interaction with another student were investigated. Both the dysphoric-anxious and the anxious-nondysphoric groups thought the other person would not want to interact with them in the future. Dobson (1989) suggested that the tendency to overestimate rejection may be most strongly connected with anxiety.

Research on the Cognitive Processes in Childhood Anxiety

Contemporary theorists maintain that information processing biases reflected in maladaptive processing have a significant role in the etiology and maintenance childhood anxiety (Kendall & Ronan, 1990). Several types of cognitive biases have been associated with childhood anxiety including misperceptions of environmental demands, anticipation of threats, excessive self-criticism and self-focused attention, and undervaluations of one's skills (Kendall & Ronan, 1990; Vasey, 1993). Accordingly, the information processing system in anxious children has been described as 'laced' with threat,

apprehension, and doubt (Vasey, 1993). These dysfunctional thought processes can lead to an increased sense of vulnerability, impaired task performance, and overcontrolled behaviours (e.g., inhibition) (Vasey, 1993).

Researchers have recently begun testing the hypothesis that anxiety-disordered children demonstrate an attentional bias for emotionally threatening information. Martin, Harder, and Jones, (1992) reported that children with a fear of spiders were considerably slower to report the colour of spider-related words in contrast to neutral words. Non-fearful children did not show the same discrepancy. In addition, Vasey, El-Hag, and Daleiden (1996) adapted MacLeod et al's (1986) probe-detection task to measure reaction times in a nonclinical sample of children. The task was modified for children in that the paired words were presented for 1250 msec as opposed to 500 msec and the words had a fourth-grade level of difficulty. The results indicated that high test anxious children tended to focus their attention on threat words. Finally, Vasey, Daleiden, Williams, and Brown (1995) conducted a similar study using a clinical sample of children aged 9-14 years with a primary diagnosis of anxiety. They also found that anxiety-disordered children demonstrated an attentional bias for threat related words. Interestingly, Martin et al., (1992) proposed that selective processing is a central part of the emotional reaction as opposed to something that is later learned. However, further learning may magnify or diminish the degree to which emotional material is selectively encoded.

Other cognitive studies have considered the types of self-statements and coping self-talk associated with anxiety in children, primarily under test-evaluative circumstances. For instance, Zatz and Chassen (1983) found that when subjected to analogue test conditions, highly anxious children acknowledged a significantly higher number of task-inhibiting (off-task) thoughts compared with low anxious children. These task-inhibiting cognitions involved negative self-evaluations and social comparisons, poor concentration, and a desire to withdraw from the stressful situation. In addition, high test-anxious children endorsed significantly fewer positive evaluation items (e.g., thoughts of proficiency and competence) compared with the low-anxious children.

Leitenberg, Yost, and Carroll-Wilson (1986) compared 4th-, 6th-, and 8th-grade children with high versus low evaluation anxiety. They found that the anxious children were significantly more inclined to catastrophize the event, predict negative consequences, personalize or inappropriately accept personal responsibility for negative occurrences, and focus attention on negative components of a situation.

A series of studies examined the statements made by trait anxious children under evaluative circumstances (Fox, Houston, & Pittner, 1983; Houston, Fox, & Forbes, 1984). Children were asked to record their thoughts prior to taking a math exam. The authors reported that under stressful conditions, trait anxiety was associated with a (i) preoccupation with negative aspects of the situation (e.g. "I'm just worried I guess about what we are going to

do here and if I understand it and what I am going to do and how I am going to

do it" (Fox et al., 1983; p.152)), (ii) justification of positive attitude (e.g.

"Arithmetic tests are easy. I shouldn't worry about that" (Fox et al., 1983; p.152)),

and (iii) derogation of others.

In terms of coping cognitions, anxious children have been found to

generate more coping self-talk and on-task cognitions compared with non-

anxious children (Zatz & Chassin, 1985). However, the coping self-talk was

considered to be excessive and nonfunctional (Kendall & Chansky, 1991). The

higher number of reported coping and on-task thoughts observed in anxious

children may actually be a marker of the noted distracting preoccupative style of

anxious children (Houston et al. 1984).

Most of the studies have considered the cognitions of anxious children in

testing circumstances (e.g., math performance test). Information regarding

cognitions associated with childhood anxiety in circumstances other than test-

taking has been limited (Bell-Dolan, 1995). Wick et al. (1986) reported a

positive correlation between manifest anxiety in children and fear of negative

evaluation, including concerns of being unliked and "looking bad". In a study of

children's social interactions, Stefanek, Ollendick, Boldock, Francis, and Yeager

(1987) examined the number of facilitating and inhibiting self-statements (i.e.,

statements that promote or hinder performance of a social response) in

withdrawn, popular, and aggressive children, across two interpersonal

conditions. The results indicated that popular children endorsed significantly more facilitating than inhibiting self-statements than did withdrawn children.

Section Summary

The studies reviewed demonstrate cognitive biases in anxious children. However, since the research has generally been limited to test-taking situations, the generalization and impact of the observed cognitive biases to other situations remains to be determined. The research needs to be extended to consider the impact of the noted maladaptive cognitions in other situations associated with anxiety arousal, such as social interactions (Bell-Dolan, 1995).

There are several important reasons for studying social information processing in anxious children. First, developmental research of children's fears has constantly indicated that social concerns and evaluations are a significant focus of anxiety, beginning in elementary school age children and continuing through adolescence (LaGreca & Stone, 1993). Several of the anxiety disorders also list significant social impairments in the diagnostic criteria. Furthermore, the literature has consistently noted an association between childhood anxiety and dysfunctional social behaviours (Stavrakaki, Williams, Walker, & Roberts, 1991; Strauss, Frame, & Forehand, 1987). It may be that anxious children possess certain biased social cognitions, which are promoting maladaptive social responding.

Of particular relevance to the study of social information processing (SIP) in anxious children are the findings that anxious individuals are inclined to overperceive threat in their surroundings, are preoccupied with negative evaluation by self and others, and have a diminished sense of their own coping skills. These biases could lead to significant impairments in the processing of social events, promoting the noted dysfunctional behaviours.

Social Information Processing

Given the assumption that people respond mainly to cognitive representations of their surroundings and experiences as opposed to actual experiences, SIP researchers have become increasingly interested in how biased or inaccurate interpretations can lead to atypical or dysfunctional behaviours (Quiggle et al., 1992). Deviations from normative information processing may occur at a number of points in processing, as either distortions or deficits, and may lead to maladaptive behaviours. Furthermore, it has been suggested that the nature of the deviation (e.g., distortion or deficit) and the specific step(s) affected can differentiate one type of psychopathology from another (Quiggle, Garber, Panak, & Dodge, 1992). For example, biases in attention for threatening material have been specifically associated with anxiety while a negative self-related bias in recall has been associated with depression (Mathews & MacLeod, 1994).

In order to investigate how biases in information processing may promote maladaptive social behaviours, theorists and researchers have recently distinguished the cognitive levels involved in social responding (Quiggle et al., 1992). Dodge and his colleagues have done much work on social information processing and have developed the Social Information Processing Model (Dodge, 1986; Crick & Dodge, 1994). The model proposes that children approach a social situation with memories of past experiences and a set of biologically limited abilities including memory, attentional, and mental organizational skills (Crick & Dodge, 1994). Children encounter numerous social cues in their environment which are subjected to several sequential levels of cognitive processing including (i) cue encoding, (ii) cue interpretation, (iii) goal selection, (iv) response access or generation, (v) response evaluation and decision, and (vi) behavioural enactment. Specifically, attentional resources are initially employed to selectively encode specific external and internal cues. The encoded cues are then interpreted and assigned meaning. Information obtained through memory and judgements is used to help with the interpretation process. Once the interpretation(s) are made, children clarify or select goal(s) based upon the new information attained. The next processing level is response access or generation whereby potential behaviours are obtained from memory and/or new responses are formulated in response to the demands of the circumstance. Following this level, the response(s) are evaluated in terms of self-efficacy expectations, outcome expectations, and the appropriateness of the

response. Finally the behaviour with the highest evaluation is chosen for enactment (Crick & Dodge, 1994). Several social processing events may be occurring simultaneously causing a child to be engaged in various levels of processing at one time in a parallel fashion. While the child may be engaged in several processing levels simultaneously, each event (e.g., a peer entry situation) follows a progression of levels from encoding the cues to a behavioural response in a time-related linear fashion (Crick & Dodge, 1994).

The model is used to study the relation between social cognition and dysfunctional social responding as well as different childhood disorders (e.g., depression, anxiety). The recognized advantages of the model are that it describes cognitive processing in terms of a logical progression of levels, thereby producing a comprehensible framework for understanding and organizing the influences of cognitive processes associated with childhood anxiety. While the model allows for the identification and further study of various types of cognitive processes, it also focuses upon the active flow of information within the cognitive structure and the related interactions and interdependence of different levels. For example, focusing on negative cues while disregarding more benign or positive cues could generate more negative attributions and/or more passive/avoidant types of behaviours (Daleiden & Vasey, 1997). Finally, the model is also used as an intervention guide, outlining specific processes that can be taught to children to improve their social functioning (Crick & Dodge, 1994).

Much of the empirical research guided by this model has been conducted with aggressive children (Garber et al., 1991). Dodge and his colleagues have observed differences between aggressive and nonaggressive children at each processing level. The research regarding the applicability of Dodge's model to other childhood problems, such as depression and anxiety, has been limited (Garber et al., 1991). Yet, when one considers the cognitive biases associated with childhood anxiety (i.e., the attentional biases, preoccupation with social-evaluative concerns, and overperception of danger to self), as well as the significant social problems, it seems likely that anxious children will demonstrate dysfunctional social information processing patterns.

Level 1: Encoding Cues

At the cue encoding level, pertinent information is encoded by selectively considering a portion of the broad array of cues present in the environment. Individuals develop heuristic rules and cognitive schema to help effectively encode pertinent cues (Dodge & Crick, 1990). However, a maladaptive schema can lead an individual to focus on certain negative cues, disregarding other relevant and benign social cues. Thus, when maladaptive schemas are used, a person's understanding of the event can be systematically biased (Clark & Beck, 1989; Dodge & Tomlin, 1987). Hochberg (1970) referred to this process as "perceptual readiness" whereby a person's schema can overpower the

perceptual field. Failure to encode pertinent cues raises the probability of deviant social behaviour (Dodge & Crick, 1990).

Studies have reported that aggressive children, compared to nonaggressive children, are more likely to focus on aggressive cues and less likely to attend to relevant, benign cues when interpreting social events (e.g., Gouze, 1987). Furthermore, aggressive children are more inclined to employ self-schemas based upon past experiences and less likely to employ relevant cues when explaining the basis for their interpretation of an event (Dodge & Tomlin, 1987).

Anxious children, as noted, selectively attend to threatening words (e.g., Vasey et al., 1995). This bias in the selection of environmental cues is believed to have a significant role in childhood anxiety (Kendall & Ronan, 1990). Research endeavours need to consider the types of cues encoded by anxious children in social situations. It is expected that under social-evaluative conditions, the threat-related schema becomes strongly primed for anxious children, who then focus on schema-congruent cues.

Level 2: Interpretation of Cues

After the cues have been encoded, they become stored in long term memory and assigned meaning, which in social situations, typically includes making interpretations of another's behaviour and attributions regarding the

cause of an event (Dodge & Crick, 1990). The types of attributions formed are

believed to influence social responding (Crick & Dodge, 1994).

Studies, using both hypothetical scenarios and actual peer interactions,

have found that aggressive children make attributions of hostile intent regarding

the behaviour of their peers (e.g., Dodge et al., 1986; Dodge & Tomlin, 1987;

Quiggle et al., 1992; Steinberg & Dodge, 1983). Steinberg and Dodge (1983),

for instance, presented children with an ambiguous scenario in which a peer

knocked down a block building that the child had constructed. They found that

aggressive children, compared to non aggressive children, were significantly

more likely to attribute hostile intent to the peer's behaviour. A significant

relationship has also been reported between hostile intent attributions and

children with depression (Quiggle et al., 1992). Intent attributions are reportedly

not an artifact of verbal skill or overall cognitive discrimination abilities (Dodge &

Feldman, 1990).

There are several reasons to suspect that anxious children may

demonstrate a negative intent attributional bias. Fenigstein (1979) suggested

that individuals who are very self-focused, tend to react negatively to ambiguous

social events. Anxious children, as previously noted, are high in self-focused

attention (Kendall & Ronan, 1990). Recent research has also provided support

for the presence of a negative intent attributional bias in anxious children.

Chorpita, Albano, and Barlow (1996) presented children, aged 9 to 13 years,

with an ambiguous situation task. Situations were drawn from the social,

physiological, separation, and general domains. The children were asked to provide interpretations and behavioural plans in response to four ambiguous situations. Children with high scores on the STAIC-Trait scale tended to interpret ambiguous information as threatening. Similar findings have been reported with clinically anxious children, aged 7 to 14 years. Specifically, ambiguous situations involving either a potential physical or social threat were more likely to be interpreted as threatening or hostile by the clinically anxious children than the nonclinical children. Anxious children, for example, were more likely to suggest that the reason a group of children was laughing was because they were telling secrets about them (Barrett, Rapee, Dadds, & Ryan, 1996). Based upon the theory and research, it seems likely that anxious children perceive themselves as unskilled in social interactions, particularly in challenging situations, and view peers' behaviour as unfriendly and threatening even when this is not the case (Bell-Dolan, 1995).

Causal attributions are inferences made about the causes of events. These attributions are frequently studied along specific dimensions including the locus (i.e., external versus internal), stability (over time), globality (across situations or events), and controllability (capacity to control perceived cause of a situation). Socially adjusted children (i.e., those with a higher peer status) tend to make attributions which promote positive self-concepts (i.e., internal attributions for positive interactions and external attributions for negative interactions) (e.g., Ames, Ames, & Garrison, 1977). Quiggle et al., (1992)

considered the attributional biases of depressed and/or aggressive children in social situations. They reported that depressed children were more likely then nondepressed children to attribute negative social interactions to internal, stable, and global factors. However, no relationship was found between attributional style and aggression.

Causal attributions have been deemed as important in understanding childhood anxiety (Bell-Dolan & Wessler, 1994). While Beck's theory of anxiety does not specifically consider causal attributions, various aspects of the model as well as research findings have led theorists to propose that certain maladaptive attributions are likely in anxious persons of all ages (Bell-Dolan & Wessler, 1994). For instance, anxious individuals doubt their ability to succeed and believe they will fail (Buss, 1980). Accordingly, it was suggested that the anxious persons may make internal attributions for failures and external attributions for successes (Bell-Dolan & Wessler, 1994). Furthermore, the tendency of anxious individuals to misinterpret or overperceive environmental cues as signalling danger increases the chances that they will generalize the threat (e.g., of negative evaluations) and the inability to cope to numerous situations (i.e., make global and stable attributions). Consequently, it appears likely that anxious individuals of all ages develop a negative attributional style, involving internal, stable, and global attributions for unsuccessful situations (Bell-Dolan & Wessler, 1994).

Level 3: Clarification of Goals

Following the interpretation process, the model posits that children

formulate at least one goal. Goals have been defined as "focused arousal states

that function as orientations towards producing (or wanting to produce) particular

outcomes" (Crick & Dodge, 1994, p.87). These goals may have an internal

focus (i.e., wanting to avoid embarrassment) and/or an external focus (i.e., being

first in line for recess). According to the model, children have inclinations

towards certain goals. However, these goals are infleunced by various factors

such as the cue interpretations and social adjustment of the child (Crick &

Dodge, 1994). For example, if a child thinks (s)he is unaccepted by peers, the

goal of this child may be to withdraw in order to reduce the number of negative

peer encounters and incidences of rejection. Emotions may also influence the

goal. It has been hypothesized that feelings of anxiety promote a goal of

avoidance (Crick & Dodge, 1994).

Level 4: Response Access

Following a mental representation of the situation and the formulation of

one or more goals, the model suggests that children generate at least one

behaviour response from long term memory using associative networks and

other access rules (Dodge & Crick, 1990). Behaviours that are associated with

the encountered situation or are readily available as a result of being "at the top

of the memory bin" (Dodge & Crick, 1990, p.13) may be considered as potential

responses. These responses represent the child's conceptualization of how he or she could act in the encountered social situation (Crick & Dodge, 1994).

Studies have found an association between the types of responses generated and the behavioural pattern demonstrated (Crick & Dodge, 1994). For example, children rated as aggressive tend to generate more aggressive responses (e.g., Gouze, 1987; Richard & Dodge, 1982). Children demonstrating avoidant behavioural patterns tend to access more acquiescent and fewer aggressive responses (Rubin, 1982). Other studies have indicated that rejected children suggest responses that are considered to be more aggressive, avoidant, and less friendly for conflictual situations and responses that are more ineffective, irrelevant or vague for peer entry or object acquisition circumstances (Asher, Renshaw, & Geraci, 1980; Pettit, Dodge, & Brown, 1988). Recent studies have also examined anxious children's behavioural responses. When asked to propose behavioural responses to ambiguous situations, anxious children tended to suggest avoidant behaviours (Barrett at al., 1996; Chorpita et al., 1996). Given that anxious children overperceive threat in their environment and report more inhibiting self-statements (Leitenberg et al., 1986; Zatz & Chassin, 1983), it is consistent to expect that they will suggest more avoidant and unassertive responses in various social situations.

Level 5: Response Decision

Generating a response does not automatically insure that it will be chosen and performed, as in the example of a withheld impulse (Dodge & Crick, 1990). At the response decision level, the child decides which of the generated behaviour(s) will be enacted. The proposed responses are first evaluated in order to determine whether they exceed the 'threshold of acceptability'. A response may be evaluated on several dimensions, including (i) the quality of a response, (ii) possible consequences or outcome expectations for a response, and (iii) consideration of personal skills for performing the response (self-efficacy) (Crick & Dodge, 1994). Biased evaluations at this level also increase the chances of enacting a maladaptive response. For example, the child who rates aggressive responses as promoting positive consequences and who has high efficacy for enacting these behaviours may be more inclined to chose an aggressive behaviour response (Crick & Dodge, 1990).

Quality of a response: It has been suggested that a positive rating of a response is correlated with the performance of that behaviour (Dodge & Crick, 1990). Researchers have found that aggressive children tend to rate aggressive behaviours more positively and prosocial responses less favourably than do their socially competent peers (e.g., Crick & Ladd, 1990; Quiggle et al., 1992). Research examining internalizing children's evaluation of responses has been limited. Children with depression reportedly rate withdrawal responses more

favourably than do their nondepressed peers (Quiggle et al., 1992). In addition, Deluty (1981) found that the cognitive repertoire of "submissive" girls contained many assertive solutions. However, it was suggested that these girls may view these types of responses as aggressive and unacceptable. Research is needed to examine how anxious children evaluate specific types of responses (i.e., aggressive, assertive, inept). It may be that anxious children tend to rate assertive behaviour responses less favourably in social situations, which may help to explain their tendency to withdraw and engage in more passive and unassertive behaviours.

Outcome Expectation: A child's outcome expectation (i.e., understanding of what might happen in a situation following the performance of a specific response) has often been deemed as a significant factor in the understanding of social behaviour (e.g., Bandura, 1977; Mead, 1934; Ross, 1977). Generally, the expectation of a positive consequence following a behaviour is thought to be positively correlated with the performance of the behaviour (Crick & Dodge, 1994).

Aggressive children, when compared to non-aggressive peers, anticipate more advantageous interpersonal consequences to occur for aggressive responses and less advantageous results for submissive or prosocial responses (Crick & Dodge, 1989; Perry, Perry, & Rasmussen, 1986). Research findings also indicate that neglected children perceive the consequences of assertive

responses to be more negative when compared with other children (Crick &

Ladd, 1990). It may be that anxious children view the outcome of assertive

responses as being more negative, particularly in evaluative situations.

Specifically, they may feel that these behaviours place them at greater risk of

exposure and hence embarrassment and negative evaluation by others.

Consequently, they may tend to avoid these behaviours and engage instead in

withdrawn and passive behaviours.

Self-efficacy: The third component of response evaluation is the perceived self-

efficacy for performing the response. Based upon Bandura's (1977) self-efficacy

model, Crick and Dodge (1994) suggested that a child has to believe that he or

she is able to successfully perform a behaviour in order to attempt it.

Accordingly, children with maladaptive social behaviours may not perform the

adaptive responses as a result of feeling unable to successfully perform

competent, prosocial behaviours. Alternatively, these children may feel more

efficacious about engaging in a maladaptive response (Crick & Dodge, 1994).

Studies have found that relative to their non-aggressive peers, aggressive

children reported greater confidence in their ability to engage in aggressive

responses in conflict and peer group entry circumstances (Crick & Dodge, 1989;

Quiggle et al., 1992) and less confidence in their ability to suppress an

aggressive response or to retreat from a confrontation (Perry, Perry, &

Rasmussen, 1986). Interestingly, Crick and Dodge (1989) found that withdrawn

behaviours are associated with a lack of confidence with respect to performing aggressive behaviours. It may be that anxious children feel less confident about successfully performing both aggressive and assertive responses.

Step 6: Response Selection

The last step of processing is the actual performance of the selected response. While performing the behaviour, individuals simultaneously engage in response monitoring whereby the response and its consequences are evaluated and changed accordingly in order to improve the chances of obtaining a desired goal (Crick & Dodge, 1994).

Although work with anxious children has been limited, one can hypothesize how specific cognitive biases may affect social information processing based upon the relevant theory and research. Specifically, the presence of a maladaptive schema, which leads to a selective filtering of threatening cues in the environment, may result in a bias at the cue encoding level. A tendency to overperceive threat or harm as well as a diminished sense of coping abilities may lead to negatively biased attributions at the cue interpretation level (level 2). Feelings of low self-esteem, the anticipation of harm, and feelings of vulnerability may directly impact upon response decisions, such that avoidance and withdrawal are the main types of responses generated (level 4). Other types of responses (e.g., assertiveness, aggressiveness) may increase the risk of exposure and hence negative evaluations by others. Thus

they may be evaluated less favourably (level 5) by anxious children than by nonanxious children.

Research on Social Information Processing in Anxious Children

Bell-Dolan (1995) published the first study on social information processing in anxious children. A sample of 252 fourth and fifth grade children were classified as anxious or nonanxious on the basis of their scores on the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978). Videotaped vignettes, developed by Dodge et al. (1984) were shown to the subjects. Each vignette portrayed two boys or girls engaging in a play activity that resulted in a negative outcome for the target child (i.e., provocation scenarios). The intention of the provocateur's behaviour was changed across vignettes as being either (a) hostile, (b) nonhostile and accidental, or (c) ambiguous (i.e., the purpose of the provocateur was uncertain). The children were asked a series of questions following each vignette to access social information processing (SIP) patterns based upon Dodge's (1986) model. Specifically, the types of attributions made (level 2 of the SIP model) and proposed behaviour responses to the scenario (level 4 of the SIP model) were evaluated.

The results revealed that anxious children were as capable as nonanxious children at recognizing hostile peer interactions. The two groups also performed similarly when presented with ambiguous cues. Both groups had

difficulty interpreting the ambiguous cues and tended to use the "when in doubt interpret as hostile" rule. The anxious children were distinguished from the non-anxious group by an increased tendency to misinterpret nonhostile situations as being hostile (Bell-Dolan, 1995).

Bell-Dolan (1995) found no support for the premise that anxious children tend to attribute peer hostility to internal factors. The subjects generally reported that the provocateur's behaviour was related to some attribute of the provocateur (e.g., the kid was not having a good day). Finally, Bell-Dolan (1995) found that anxious children, compared to non-anxious children, were more likely to suggest soliciting adults' help and were not as likely to suggest adaptive strategies. A significant gender difference was also noted in that girls were more likely to propose maladaptive responses.

There are several methodological limitations that make it difficult to interpret Bell-Dolan's results, including the use of the RCMAS to differentiate anxious from non-anxious children. The RCMAS has been the target of much criticism due to reports of poor discriminant validity. Significant positive correlations have been reported between the RCMAS and self-report measures of depression (Doerfler et al., 1988; Hodges, 1990; Ollendick & Yule, 1990). In fact, it has been suggested that a high score on the RCMAS may be more indicative of depression than anxiety or alternatively may reflect generalized emotional distress (Hodges, 1990).

Limitations in the questionnaire used by Bell-Dolan to assess SIP patterns were also noted. For example, the question assessing peer intent was phrased as whether peer(s) intent was 'mean' or 'not mean'. The inclusion of the word 'mean' may have biased children's responses. Specifically, the suggestion that a peer may have acted mean could evoke a threat-related schema in anxious children. These children may thereafter focus on the word 'mean' when answering questions. Furthermore, providing potential cues in the questions can contribute to a response bias. Anxious children have been repeatedly observed to be eager to please adults and want to present themselves in an appropriate manner (Kendall & Chansky, 1991). Consequently, they may be more inclined to use potential cues from the questions when generating their response (i.e., they may have thought to please the examiner, they were expected to provide an affirmative response).

A further concern relates to the fact that Bell-Dolan (1995) presented the children with possible behavioural responses to the provocateur's behaviour using a multiple choice format (e.g., (a) yell or hit the child; (b) tell the teacher). This format raises questions with regards to the validity of the children's responses since children are typically not presented with a list of possible responses in real life situations. It is also fairly common for anxious individuals to become "frozen", incapable of formulating a response when confronted with an anxiety-provoking circumstance. This "frozen" reaction is usually not desired and the anxious person may want to provide a more appropriate response.

Accordingly, if he or she is then presented with alternative responses, as in the multiple choice format, a suitable or appropriate response could be more easily recognized and chosen. Consequently, recall difficulties and the "frozen" passive behavioural style would not be observed (Bell-Dolan, 1995).

Bell-Dolan (1995) expressed concern that the hypothetical peer provocation scenes used may have been outside society's norms of acceptable behaviour and thus not well suited to the study of causal attributions (i.e., the provocative behaviour may be considered extreme on behalf of the provocateur and clearly not be attributed to internal factors on behalf of the other child). It may be that anxious children tend to make more inappropriate internal attributions when the situation is not as well defined or more complex (Bell-Dolan, 1995).

The current study builds upon the above study by including items designed to detect the presence of biases at other critical levels of Dodge's model, including the cue encoding level (level 1) and the response evaluation level (level 5) as well as addressing the noted methodological concerns. Accordingly, the children were characterized as anxious or nonanxious on the basis of STAIC-Trait scale scores as opposed to the RCMAS. While the STAIC has received less attention in the literature, the results with regards to its psychometric properties have tended to be more positive (Hodges, 1990). However, as the comorbidity rate of anxiety and depression is fairly high, the present study also statistically controlled for depression. Controlling for

depression allowed for a more refined analysis as to whether SIP biases are related to factors more strongly associated with anxiety. The level of social anxiety was also considered in order to determine whether SIP biases are specifically related to social anxiety in children as opposed to general trait anxiety. A general anxiety rating scale which considers multiple aspects of anxiety may obscure any correlations between a processing variable and a specific subtype of anxiety (e.g., social anxiety).

Several modifications were also made to the questionnaire used by Bell-Dolan (1995) and Dodge and his colleagues to elicit SIP patterns. For example, instead of asking subjects whether they considered the peer to have acted "mean" or "not mean", the question was phrased in such a way so as to avoid biasing the response (i.e., Why might the other child have acted the way he or she did?"). The responses were later rated as either benign or hostile. In addition, when examining proposed behavioural responses, a free-response technique as opposed to multiple choice was employed; this format has been considered to have the least influence on responses through suggestion (Chorpita et al., 1996).

Finally, anxious children were presented with a different type of social situation than that used in Bell-Dolan's (1995) study. Bell-Dolan (1995) considered peer provocation situations while the current study considered peer entry situations. Peer entry is considered to be a challenging skill with an evaluative component (Putallaz & Wasserman, 1990). Children's peer entry has

become the focus of considerable attention in the literature. It is regarded as a crucial skill since further peer contact depends upon the mastery of social initiation skills. While the task is extremely important, it is considered difficult for children (Putallaz & Wasserman, 1990). Dodge, McClaskey, & Feldman (1985) noted that peer entry circumstances were viewed by both the teachers and clinicians as being particularly vital and problematic for children. The reason for the noted difficulty appears to be partly due to the number of steps and behaviours that must be executed for successful entry. For example, competent entry skills include initially 'strategic hovering' and observing the children in the group. This information must then be employed to engage in suitable behaviours associated with the group's current project (Putallaz & Wasserman, 1990).

Since anxious individuals overperceive danger in their surroundings, a complex situation which also has a strong evaluative component may be especially likely to be considered harmful and stressful, leading to biases in social information processing. Under these circumstances, anxious children may tend to view the actions of others as threatening and negative, leading to maladaptive responses such as avoidance and withdrawal behaviours (Bell-Dolan, 1995).

Purpose of the Present Study

The purpose of the present study was to examine the social information processing patterns of trait and socially anxious children by considering the overall predictive value of the model as well as the incremental value provided by several interdependent processing levels of the Social Information Processing model (Dodge, 1986; Crick & Dodge, 1994). Anxious and nonanxious school children were shown a number of videotaped peer entry vignettes (Dodge et al., 1984) and asked a series of questions designed to elicit social information processing patterns. Selected levels of the SIP model (Crick & Dodge, 1994) were evaluated including (i) cue encoding (level-1), (ii) cue interpretation (level-2), (iii) response generation (level-4), and (iv) response evaluation (level-5).

Cognitive theorists have suggested that anxious children demonstrate a number of cognitive distortions including overperception of threat, a tendency to catastrophize, excessive self-criticism, and an undervaluation of abilities (Kendall & Ronan, 1990). However, the research has generally been limited to adults and test-taking conditions for children, with little consideration to social situations (Bell-Dolan, 1995). Based upon the literature, it was expected that anxious children would focus on threat-related cues in social situations and interpret peer behaviours as threatening even when they are not. It was also expected that anxious children would propose and evaluate behaviour responses in ways that reflect their misperceptions, including proposing a

greater proportion of withdrawn and passive responses and evaluating assertive and aggressive responses less favourably.

The present study built upon the results of Bell-Dolan's study by statistically controlling for depression, considering social anxiety as well as more general trait anxiety, assessing additional levels of the SIP model, and using a social situation with a strong evaluative component. Furthermore, an open-ended questionnaire format replaced a number of the multiple choice questions (Bell-Dolan, 1995) in order to reduce the chances of biasing the children's responses.

Finally, a second interest of this study stems from the current controversy in the literature regarding whether anxiety and depression constitute two sufficiently distinct pathological syndromes or rather represent different aspects of the same construct (e.g., Clark & Watson, 1991). Accordingly, consideration was given to whether anxiety and depression could be differentiated based upon social-cognitive biases. Therefore, consistent with the cognitive approach to studying an emotional disorder (Kendall, 1991), this study assessed social cognitive biases which may differentiate anxious children from non-anxious children and provided a preliminary examination of the types of cognitions which may be affiliated specifically with anxiety.

<u>Hypotheses</u>

Hypothesis 1- Cue encoding: It was hypothesized that anxious children,

relative to non-anxious children, would be more inclined to focus on

negative/hostile cues and less likely to cite relevant benign cues when

presented with an evaluative type of social situation. This hypothesis was based

upon cognitive theories of anxiety (e.g., Beck & Clark, 1997; Kendall & Ronan,

1990) which posit that a selective bias for threatening information in attention,

interpretation, and memory constitutes a central feature differentiating anxious

from non-anxious states. Accordingly, the schema of anxious individuals

promotes hypervigilant scanning of events for possible threat related cues while

disregarding safe or benign cues (Beck & Clark, 1997; Kendall & Ronan, 1990).

Empirical research indicates that anxious adults preferentially allocate

attentional resources to threatening information (e.g., Dalgleish & Watts, 1990;

Mathews & MacLeod, 1985). While empirical evidence of a similar attentional

bias in anxious children has been limited, recent research suggests that anxious

children also exhibit a threat related attentional bias (Vasey & Daleiden, 1996).

Specifically, children suffering from spider phobia or test anxiety attend more to

threatening information over neutral information (Martin et al., 1992; Vasey et al.,

1995). The applicability of this phenomenon to social situations does not appear

to have been considered in the literature.

Hypothesis 2- Cue Interpretation: It was hypothesized that anxious children, compared with non-anxious children, would demonstrate a negative attributional bias at the cue interpretation level such that they would interpret innocuous peer intent as negative and threatening. Cognitive theories generally maintain that anxious individuals demonstrate an interpretive bias favouring threatening meanings in response to situations that are innocuous (Beck & Clark, 1997; Kendall & Ronan, 1990). Recently, researchers have provided empirical support for this theory (e.g., Barrett et al., 1996; Bell-Dolan, 1995; Chorpita et al., 1996).

It was also hypothesized that anxious children would infer more internal, stable, and global causal attributions for negative social events. Cognitive theories of anxiety suggest that anxious individuals tend to doubt their capacity to succeed which may promote internal attributions for negative events (Bell-Dolan & Wessler, 1994). Furthermore, the tendency of anxious individuals to misinterpret and overperceive environmental cues as signalling danger suggests that they generalize the threat of negative evaluations and their inability to cope to numerous situations (i.e., make global and stable attributions) (Bell-Dolan & Wessler, 1994). While little research has considered causal attributions in anxious children, it has been shown that test-anxious children are inclined to assume personal responsibility for negative situations (Leitenberg et al., 1986).

Hypothesis 3- Response generation and evaluation: It was hypothesized that anxious children would propose more withdrawn and passive behaviours

and would evaluate assertive and aggressive responses more negatively than would non-anxious children when exposed to potentially threatening, evaluative social situations. Theoretical models of anxiety have suggested that feelings of danger and vulnerability associated with anxiety directly impact upon the type of responses given in social situations and the evaluations of suggested behaviour responses such that passive, withdrawn behaviours are favoured (Beck & Clark, 1988). Accordingly, the response repertoire of anxious children in a given social situation and the endorsement of various types of behaviours in terms of their quality and self- and interpersonal efficacy needs to be assessed. Assessment of these cognitions may provide further understanding as to why specific types of maladaptive behaviours and coping skills (e.g., withdrawn, avoidant styles) are associated with childhood anxiety.

CHAPTER II

METHOD

Participants

A total of 148 children (62 boys and 86 girls) participated in this study. Children were drawn from three elementary schools in Southern Ontario. The children ranged in age from 9 to 12 years (M = 10.26, SD = 1.00). The age distribution of the sample is presented in Table 1. The socioeconomic composition of the group is summarized in Appendix A.

Materials and Measures:

State-Trait Anxiety Inventory for Children

The STAIC (Spielberger, 1973) consists of two anxiety scales, each consisting of 20 items. The State-anxiety scale (A-State) assesses transitory and situationally-linked anxiety by requesting the subject to note on a 3-point scale the extent to which they are presently experiencing a certain symptom (e.g., I feel 1-not scared, 2-scared, and 3-very scared). The Trait-anxiety scale (A-Trait) assesses anxiety proneness or relatively stable tendencies to experience anxiety across situations by requesting the subject to determine the frequency with which they experience anxiety symptoms (e.g., I feel troubled: 1-hardly ever, 2-sometimes, and 3-often). The present study only considered the Trait-anxiety scale; the State-anxiety scale was not used.

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Table 1

Age Distribution of Sample

Ages	9	10	11	12
Boys	18	27	9	9
Girls	20	28	25	12

The STAIC is recommended for children aged 9-12 years (Kendall & Ronan, 1990). Normative data are from 1554 children in the fourth, fifth, and sixth grade; 35% were African American children; and all lived in the state of Florida (Spielberger, 1973). While representative samples or stratified samples were not obtained, the norms represent an extensive sample to which comparisons can be made (Kendall & Ronan, 1990). The test manual has normative data for the entire sample as well as for gender and grade level.

The alpha coefficients noted by Spielberger (1973) were .78 and above on the State and Trait scales. Moderate but acceptable test-retest reliability coefficients were found for the Trait scale (.65 for males and .71 for females) (Spielberger, 1973). In terms of validity measures, higher trait-anxiety scores have been reported for subclinically anxious children than for non-anxious controls (Bell-Dolan et al., 1990). The STAIC (Trait scale) was also able to differentiate clinically diagnosed anxiety-disordered children from nonanxiety-disordered children. The STAIC (Trait-scale) did not differentiate depressed from non-depressed or conduct-disordered from non-conduct disordered children, thereby demonstrating evidence of discriminant validity (Hodges, 1990).

Social Phobia Anxiety Inventory for Children:

The Social Phobia Anxiety Inventory for Children (SPAI-C; Beidel, Turner, & Morris, 1995) is designed to measure specific somatic symptoms, cognitions,

and behaviour in various social circumstances. It consists of 26 items that are self-rated on a 3-point Likert scale, and require a 3rd grade reading level. Initial normative data for the SPAI-C were obtained from 52 socially anxious and 48 normal control children, ranging in age from 8 to 17 years. A table is provided with information regarding the ability of different cutoff scores to accurately classify children with significant social anxiety. A cutoff score of 18 was suggested to discriminate well between socially anxious and normal control children (Beidel et al., 1995).

High internal consistency was reported with an alpha coefficient of 0.95. Test-retest reliability was significant following two-week and 10-month intervals (.86 and .63, respectively). Evidence of concurrent validity has been reported, with a significant relationship noted between the SPAI-C and the STAIC-Trait scale (r = .50). The SPAI-C was moderately correlated with the Failure and Criticism subscale of the Fear Survey Schedule Checklist-Revised (FSSC-R; Ollendick, 1983), r = .53. This relationship was anticipated as social phobia is associated with fear of negative evaluation, which is measured by several of the items on this subscale. The SPAI-C score was correlated with the CBCL Internalizing scale, (r = .45, p < .001) but not with the CBCL Externalizing scale (Beidel et al., 1995). Furthermore, a positive relationship has been demonstrated between SPAI-C scores and daily diary ratings of distressing social events (Beidel, Turner, & Fink, 1996).

A factor analysis revealed three factors with eigenvalues greater than

one, that combined accounted for 60% of the variance. Assertiveness/General Conversation accounted for the majority of variance. Items loading onto this factor reflect negative assertion and overall conversational ability. The second factor, termed Traditional Social Encounters, is comprised of items involving fear of specific social events, such as parties and scout meetings. The third factor, Public Performance includes items describing performance circumstances including public speaking and reading aloud in class. The loadings of the factors were also reported to be compatible with the results of Beidel (1991), who noted that for 8 to 12 year olds, the most frequently encountered disturbing social circumstances were unstructured interactions with other children. However, due to the fact that the study represented a initial analysis of the psychometric properties of this newly developed instrument, it was suggested that only the SPAI-C total score be employed until further research data are available (Beidel et al., 1995). In terms of discriminant validity, the SPAI-C successfully discriminates children with social phobia from children with externalizing disorders or no disorder (Beidel et al., 1995; Beidel, et al., 1996).

Children's Depression Inventory:

The Children's Depression Inventory (CDI; Kovacs, 1992) is a 27-item self-report questionnaire designed to measure the severity of depression in children and adolescents between the ages of 7-17 (Kovacs, 1992). It is the most widely used self-report children's measure of depression. The inventory

assesses numerous symptoms of child depression including sadness, anhedonia, ideation, sleep and appetite disturbances. The child is requested to mark one of three statements for each item regarding thoughts and feelings experienced within the last two weeks. The items are keyed 0 to 2 in the direction of increasing severity. Normative data were obtained from 1266 American children, aged 7 to 16, all living in the state of Florida. Separate norms were formed based upon gender and age (7-12 and 13-17 years) (Kovacs, 1992). The mean and standard deviation are also available for 860 Canadian children between the ages of 8 and 13 years (Kovacs, 1992).

Internal consistency reliability coefficients in the form of alpha coefficients have been reported to range from .71 (pediatric medical outpatients) to .89 (grade school children) (Kovacs, 1992). Factor analysis revealed a single factor (eigenvalue=5.95) for the Toronto school group that accounted for 63.7% of the variance (Kovacs, 1992). In addition, CDI scores have been shown to distinguish between different diagnostic groups (Kovacs, 1985). For example, children diagnosed with major depression scored significantly higher on the CDI when compared to children in partial remission from depression (t = 3.42, p < .002) and normal children (t = 2.82, p < .006) (Kovacs, 1992).

Assessment of Social Information Processing Patterns:

Videotaped vignettes designed to assess social information processing patterns were developed by Dodge and his colleagues (Dodge et al., 1984) and

were included in the present study with Dodge's permission. Each vignette is approximately 15-20 seconds and involves different child actors engaging in various types of social interactions (e.g., peer entry and peer provocation scenes). The scenes are shown to each child individually with instructions to pretend that he/she is a particular child in the scene. The target child is identified by a number on the child actor's shirt. The behaviours of the other child actor(s) (or provocateurs) in the vignette are systematically varied across vignettes as being either (i) hostile, (ii) ambiguous, or (iii) nonhostile. The tape is paused at designated intervals in order to ask questions designed to elicit responses that reveal social processing patterns at different levels of the model. Each vignette is also followed by three potential behavioural responses conducted by the actor with whom the child has been asked to identify. The behavioural responses involve either aggressive, competent, or inept behaviour. Again, the tape provides time between each response for the examiner to question the child. The questionnaire employed in the study (see Appendix B) was based upon a questionnaire produced by Dodge and was also used with his permission.

This technique for assessing social information processing was created following piloting work. The behaviours in the vignettes were correctly recognized by two separate panels of adults (Dodge et al., 1984; Dodge & Somberg, 1987). Vignettes were also shown to children to ensure that the scenarios were understandable (Dodge & Price, 1987).

Benefits of using the videotaped vignettes include maintaining a balance between ecological authenticity for the child and consideration of the methodological rigour necessary for empirical examination (Dodge et al., 1986). A training manual accompanies the videotapes in order to familiarize the assessor with the correct administration procedures. The tapes have been demonstrated to detect biases in cognitive interpretations in children, distinguishing between children of high and low sociometric status and between aggressive and nonaggressive children (Dodge & Frame, 1982; Dodge et al., 1984; Dodge & Somberg, 1987).

A pilot study was conducted prior to collecting data in order to ensure that the directions and questions in the study were clear and unambiguous. Three children ranging in age from 9 to 11 years were presented with the videotaped vignettes and the corresponding SIP questionnaire. The children demonstrated no difficulties understanding the directions and questions in the study.

Procedure

Following clearance from the University of Windsor Ethics Committee, four school boards in southwestern Ontario were contacted to request their participation in the study. The school boards were given information packages containing a description of the procedure and a sample of the materials to be used in the study. Two school boards agreed to participate. After obtaining approval, three principals were contacted to ask their permission to conduct the

study in their schools.

When permission to conduct this study was granted from principals, parent information packages comprised of an information letter and consent form were distributed in the classrooms to children aged 9 to 12 years. The letter described the study and asked parents for permission for their child(ren) to participate in the study (see Appendix C). The package also included a brief demographics questionnaire which parents were requested to complete and return with the consent form. The response rate of parents consenting to their child's participation was 38 percent.

After the parents consented, the examiner or trained research assistant met with each child individually in a quiet room in the school. The children were first asked for their assent to participate (Appendix D). Children were also informed that they could withdraw from the study at any time. One child subsequently withdrew from the study.

During the session, the STAIC, CDI, and SPAIC were administered. Standardized administration procedures were adhered to at all times. Instructions and test items were read aloud to the children and they were encouraged to read the items silently at the same time. The order of administration for the STAIC, CDI, and SPAIC was counterbalanced using a random orders table.

Participants were also presented with the video stimuli and the corresponding questionnaire. The order in which the measures were completed

was counterbalanced, with one half of the sample completing the STAIC, CDI, and SPAIC before presented with the video stimuli. The other half of the sample was presented first with the video stimuli and corresponding questionnaire.

Prior to administering the video stimuli and corresponding questionnaire, each child was given a brief explanation of the task requirements. Participants were asked to pretend that they were the child attempting to enter the situation. A practice scene was first presented in order to help the children become acquainted with the task and the corresponding questions. Nine videotaped vignettes, each depicting a peer entry situation were then presented to each child. Three examples of each type of peer behaviour (i.e., hostile, nonhostile, and ambiguous) were shown. All questions were read aloud and the answers audiotaped as well as manually recorded by the examiner. The presentation order of the vignettes was counterbalanced using a random orders table. Testing was completed in one session, which lasted approximately 90 minutes.

The coding system was determined prior to conducting the study and taught to the second examiner. The responses of the open-ended questions were coded following the testing session by both examiners separately and then compared to ensure consistency and accuracy. Inter-rater reliability was high with few differences between the sets of scores.

In order to assess the ability of participants to attend to social cues (processing level 1), children were asked to tell what happened in the story from the beginning to the end. Responses were rated as 0 (no attention), 1 (partial

attention), or 2 (full attention to cues). The mean degree of attention for the hostile stories, referred to as the hostile cue encoding variable, was attained by calculating the mean attention score for the hostile stories. A similar attention score, referred to as the nonhostile cue encoding variable, was calculated based upon the mean attention score for the nonhostile stories.

Subjects were then asked "How likely is it that you would be worrying about whether or not the other kid(s) liked you." The children rated their response on a 4 point scale, ranging from 1 "definitely would not" to 4 "definitely would".

In order to assess attributions regarding peers' intent (processing level 2), participants were asked why the other child performed the behaviour illustrated in the vignette. Answers were rated as 0 (benign intent) or 1 (negative/hostile intent). The mean hostile bias score was derived from the number of times the child misinterpreted a nonhostile or an ambiguous cue as having a hostile intent.

The types of causal attributions (i.e., internal vs external; global vs specific; stable vs temporary) made for the hostile vignettes were also considered. A total of 18 paired attributions were presented to the child, who then chose the statement which best represented what he/she considered to be the most likely explanation for what transpired in the video. For each pair, two of the dimensions (e.g., stable, global) remained constant while the other dimension changed (e.g., internal vs external). The number of occasions that the child selected an internal over an external, a global over a specific, and a

stable over an unstable attribution for a hostile vignette was added. A composite attribution score ranging from 0 to 18 was attained by adding the number of Internal, Global, and Stable attributions. Finally, a mean composite attribution scale was calculated. The questionnaire format for causal attributions employed in this study was based upon the format used in the Quiggle et al. (1992) study.

The type of responses formulated by the children (level 4) was evaluated by asking participants what they would do in the circumstances depicted in the vignette. Responses were recorded and later rated as either aggressive, withdrawn/passive, or assertive/competent, pure affect, or other. Responses were considered aggressive if they contained suggestions of physical or verbal aggression or revenge. Assertive responses were those in which the child asked for information, negotiated, tried again, or worked more. Passive or withdrawal replies referred to suggestions by the children to do nothing, accept the blame, plead, concede, quit, or withdraw from the interaction. Pure affect responses included those responses in which the children stated how they believed they would feel despite being asked what they would do. Responses that could not be included into any of the above categories were rated as "other". The criteria employed were based upon those used by Quiggle et al., (1992).

Finally, the children's response evaluation style was assessed (processing level 5) by presenting the children with three types of behaviour responses, including an aggressive, inept/withdrawn, and assertive response.

Each of the three response types was presented on the video in random order. After the response was shown, the children were asked to rate the quality of the response on a four point scale ranging from 1 "very bad" to 4 "very good". The children were then asked to rate how likely it is that they would do this, using a four point scale ranging from 1 "definitely would not" to 4 "definitely would". Feelings of self-efficacy for specific responses were then assessed by asking the children how easy or hard it would be for them to respond that way, using a 4 point scale ranging from 1 "very easy" to 4 "very hard". Finally, the outcome expectancy was assessed by asking the subjects whether the other children would like them if they performed the given response. A four point rating scale was again used, ranging from 1 "not much" to 4 "a lot".

All questionnaires completed by the children were coded with an identification number in order to maintain confidentiality as well as to identify children reporting high levels of depression on the CDI. Nine children reported a high level of depression attaining a score of 23 or greater on the CDI. A score of 23 is equivalent to a Standard Score of 70 for girls and 67 for boys aged 7-12 years and is suggested to be "much to very much above average". Kovacs (1992) suggested that a T-score of 70 should be used as indicative of problems when one is conducting a routine screening of children from a low base rate population, i.e., those without identified behavioural problems, such as elementary school children. The parents of the nine children with CDI scores of 23 or greater were contacted by phone to inform them that their child had

endorsed a significant number of sad/depressed items. It was suggested that the parents might wish to obtain a more complete assessment of their child's functioning through a mental health professional.

Following the completion of the session, each child was given a certificate thanking them for their participation in the study. The children were encouraged to show the certificate to their parents to inform them of the date of their child's participation in the study.

Analyses:

Analyses included correlations and multivariate analyses (i.e., one way ANOVAs, multiple regression). Hierarchical regression analyses were performed in order to address the hypotheses of this study, with the level of trait or social anxiety as the dependent variables and social information processing scores as the predictor or independent variables. The SIP variables, described above, were entered in a hierarchical fashion based upon the sequence of levels outlined in Dodge's model.

Hypothesis 1- Cue Encoding: The first hypothesis predicted that anxious children, relative to non-anxious children, would be more inclined to focus on threat-related information such that anxious children would recall more threat-related cues compared to non-anxious children. Hierarchical regression analyses were used to determine whether the degree of recall of threat and

nonthreat cues significantly predicted trait and/or social anxiety. Accordingly, in step 1 of the regression model, the mean degree of attention for the hostile stories and the mean degree of attention for the nonhostile stories were entered as predictor variables.

Hypothesis 2-Cue Interpretation: The second hypothesis predicted that anxious children, compared to non-anxious children, would exhibit negative attributional biases such that they would more frequently interpret peer intent as negative or hostile and infer global, stable, and internal causal attributions for hostile situations. In order to investigate this hypothesis, the mean hostile bias score and the composite attribution score were entered as predictor variables in the second step of the regression analysis.

The degree to which the child reported worrying about whether the other children liked him/her was also entered as a predictor variable at this step. This variable was entered at the cue interpretation level as it was thought to reflect the amount of worry associated with the child's interpretation of the given situation and could influence the type of behaviours generated in the next level.

Hypothesis 3- Response Generation and Evaluation: The third hypothesis predicted that anxious children would propose more withdrawn and passive behaviours. In order to test this hypothesis, the mean proportion of passive/withdrawn responses proposed by the child was then entered as a

predictor variable. Furthermore, it was hypothesized that anxious children, compared with non-anxious children, would endorse passive behaviours more favourably and assertive- and aggressive responses less favourably. Accordingly, the predictor variables employed in the last step of the analysis were based upon the mean endorsement ratings assigned to the response evaluation questions (e.g., quality of response, likelihood that they would do a particular behaviour) for the withdrawn, assertive, and aggressive responses.

Due to the limited sample size, only a subset of these processing variables could be entered. Variables which best answered the hypotheses of the study and did not violate the requirements of multicollinearity were selected (Tabachnick & Fidell, 1996). In addition, factor analyses were conducted to combine variables that were highly correlated and had a single underlying factor. Factor analyses were performed for the endorsement of the competent and aggressive responses. Specifically, the questions assessing the quality rating and the likelihood of performing a response were entered in the factor analysis.

This method of analysis permitted examination of the given hypotheses as well as consideration of the amount of variance for anxiety that could be predicted from the social cognitive variables. Specifically, the analyses considered whether measures at four levels of Dodge's social information processing model provided unique increments in the prediction of social and trait anxiety and whether the aggregated prediction was greater than any single measure.

CHAPTER III

RESULTS

Preliminary Analyses

An initial examination of the data was conducted to inspect for missing

data and violations of the assumptions of multivariate analyses (Tabachnick &

Fidell, 1996). Analyses were performed using SPSS Regression and SPSS

Frequencies (Norusis, 1990). No missing data and no suppressor variables

were detected. Univariate outliers were detected through z-scores. The

influence of the outliers was reduced by making outliers scores equivalent to a z

score of 3.29 (Tabachnick & Fidell, 1996). The data were also examined to

determine whether the distribution of the variables followed a normal curve.

Four variables, (i.e., the CDI, endorsement of aggressive responses, nonhostile

cue encoding, and negative causal attributions) were significantly skewed.

Studies have indicated that regression analysis is robust against violations of

normality, especially when sample sizes equal or are greater than 12.

Significance tests can therefore be conducted in large samples even when this

assumption has been violated (Berry & Feldman, 1985; Kirk, 1995). However, if

the skewness is not representative of a realistic pattern of responding,

transformations may be considered. The skewness was considered to represent

a realistic pattern of responding for the CDI and endorsement of aggressive

responses and thus the variables were not transformed. The causal attribution

and nonhostile cue encoding variables were transformed. However, the results did not significantly change as a result of using the transformed variables. Therefore, all reported results involve untransformed variables.

Three multivariate outliers were detected using a $p \leq .001$ criterion for Mahalanobis distance. It has been suggested that two sets of analyses be performed, with and without the multivariate outliers (Hamilton, 1992). As the outliers did not significantly affect the results of the study, they were not removed from the main analyses.

Anxiety distribution in sample

Of the 148 children, 5 boys and 13 girls had a T-score equal to or greater than 60 on the STAIC-Trait scale (12% of the sample). Using Beidel et al.'s (1995) cut-off score of 18 to differentiate socially anxious children from non-socially anxious children, 28 boys and 46 girls were classified as socially anxious (50% of the sample). The mean scores on the STAIC and SPAIC were 34.39 (SD = 7.11; range = 21 to 52) and 18.17 (SD = 8.32; range = 1.00 to 39.92) respectively. Seventy-eight percent (n = 14) of the children reporting high levels of trait anxiety also reported high levels of social anxiety.

Influence of Child Characteristics

The relationship between the SIP cognitive processing variables and gender and age was initially examined through point-biserial and Pearson

correlations, respectively. Given the risk of Type 1 errors when considering numerous correlations, a significance level of $p \leq .001$ was used (Stevens, 1986). The correlations between age or gender and the SIP variables were not significant (see Table 2).

MANOVAS were conducted to further determine whether the SIP variables differed as a function of gender or age. Pillai's criterion was employed to assess the MANOVAs as it is reportedly more robust when cell sizes are unequal (Tabachnick & Fidell, 1996). Separate oneway MANOVAs were performed with the child's age and gender as the independent variables. The 13 SIP variables considered in this study were entered as dependent variables. The overall MANOVA revealed a significant relationship between age and the SIP variables, $F (3,144) = 1.61$, $p = .01$ and a marginally significant relationship between gender and the SIP variables, $F (1,146) = 1.67$, $p = .07$. Post hoc comparison tests using Scheffe test with a significance level of .05 revealed only one significant difference for age. The causal attributions variable was significantly different for 12 year olds compared to 10 and 11 year olds, but not to the 9 year olds. This finding is difficult to interpret and does not suggest a systematic effect between age and the number of negative causal attributions made.

The effect of gender on the SIP variables was explored further with a series of univariate t-tests. Using a Bonferroni correction factor, one variable, namely the degree to which the child reported worrying about whether his/her

Table 2

Correlation Matrix for Age and Gender with the Social Information Processing Variables

	Correlations	
	Age	Gender
Social Anxiety	.01	.14
Trait Anxiety	.04	.03
Depression	.06	.12
Cue encoding		
Hostile cues	.01	.06
Nonhostile cues	.09	.18
Cue interpretation		
Causal attributions	.09	-.09
Hostile peer interpret.	.04	.08
Worrying re. being liked	.17	.26
Response generation		
% of passive responses	-.08	-.11
Response endorsement		
Passive responses		
quality	-.06	.04
how likely	-.16	.10
how easy	-.12	.07
Competent Responses		
overall endorsement	-.21	-.06
how easy	-.09	-.14
interpers. efficacy	-.22	-.08
Aggressive Responses		
overall endorsement	-.04	-.12

peers liked him/her, was significantly different between genders. Girls reported worrying more about whether their peers liked them, $p \leq .01$. Upon further examination, entering the multiplicative interaction term (worrying x gender) after controlling for the main effects of gender and worrying in a hierarchical regression analysis, failed to produce a significant increment contribution to the prediction of anxiety. Given that no systematic or significant differences were found for variables, the sample appeared fairly homogenous. Accordingly, the sample was collapsed across age and gender in the main analyses.

Factor Analyses of Competent and Aggressive Responses

Two principal-components factor analyses were conducted for questions rating the degree of endorsement for competent behaviours and for aggressive behaviours. The questions considered pertained to the quality of the response and the likelihood that the child would perform this response. Correlations for these ratings were high, $r = .77$ and $r = .68$ for competent and aggressive behaviours, respectively. The analyses were conducted in order to limit the number of variables entered into the hierarchical regressions in the main analyses.

Competent Responses. A factor analysis revealed one factor with an eigenvalue greater than one, that accounted for 89% of the variance. Items loading onto this factor reflected a positive endorsement of competent responses.

Aggressive Responses. A factor analysis revealed one factor with an

eigenvalue greater than one, that accounted for 84% of the variance. Items loading onto this factor reflected a positive endorsement of aggressive responses.

Main Analyses

The main analyses were comprised of hierarchical multiple regressions with STAIC and SPAIC entered as dependent variables in separate analyses and the SIP variables entered as predictor variables. The means and standard deviations for the SIP variables are presented in Table 3. A correlation matrix examining the correlations of the anxiety variables with the predictor variables is presented in Table 4. The social information processing variables collectively predicted the level of trait anxiety ($R2$ = .17, F (13, 134) = 2.10, p= .02) and the level of social anxiety ($R2$= .26, F (13, 134) = 3.63, $p \leq$.001) with measures at different levels of the model adding unique increments to the prediction of anxiety (see Tables 5 and 6). The multiple correlations between processing and anxiety were found to be larger than any single bivariate correlation. The findings for each stage of the hierarchical analyses are presented below in order of the hypothesized effects.

Hypothesis 1: Cue encoding

The hypothesis that anxious children attend more to threat-related aspects of an event compared with their less anxious counterparts was tested by

Table 3

<u>Means and Standard Deviations of Social Information Processing Variables</u>
<u>(N=148)</u>

Variables	M	SD
Attention to hostile cues	1.55	0.34
Attention to nonhostile cues	1.68	0.33
Peer Intent Attribution	0.50	0.24
Causal Attributions	5.12	2.78
Worry re: being liked	2.54	0.56
% of Passive Responses		
generated	0.56	0.22
Evaluation of Passive Responses		
-quality	1.79	0.32
-how likely	1.60	0.33
-how easy	2.25	0.60
Evaluation of Competent Responses		
-quality	3.22	0.35
-how likely	2.90	0.41
-how easy	3.32	0.41
-interpers. efficacy	2.92	0.41
Evaluation of Aggressive Responses		
-quality	1.26	0.30
-how likely	1.35	0.35

Table 4
Pearson Correlation Matrix for Social Anxiety and Trait Anxiety with the Social
Information Processing Variables

	Correlations	
Variables	Social Anxiety	Trait Anxiety
Social Anxiety		.65***
Trait Anxiety	.65***	
Depression	.51***	.68***
Age	.01	.04
Gender	.14m	.03
Cue encoding		
Hostile cues	-.03	.09
Nonhostile cues	.09	-.01
Cue interpretation		
Causal attributions	.13m	.24**
Hostile peer interpret.	.01	.02
Worrying re: being liked	.30***	.21**
Response generation		
% of passive responses	.11m	.04
Response endorsement		
Passive responses		
quality	.02	.01
how likely	.23**	.14*
how easy	.01	.01
Competent responses		
overall endorsement	-.06	.08
interpers. efficacy	-.17*	-.10
how easy	-.19**	-.05
Aggressive responses		
overall endorsement	-.02	.01

m $p < .10$; * $p \leq .05$
** $p \leq .01$; *** $p \leq .001$.

Table 5

Summary of Regression Analysis for Social Information Processing Variables
Predicting Trait Anxiety (N=148)

Variables	B	SEB	B (Std.)	R	R2	R2 change
Step 1						
Hostile cues	2.21	1.84	.11			
Nonhostile cues	-1.04	1.91	-.05	.10	.01	.01
Step 2						
Causal attributions	.54	.21	.21**			
Hostile peer interpr.	-.51	2.37	-.02			
Worrying	2.25	1.05	.18*	.31**	.10	.09**
Step 3						
% of passive responses	2.34	2.65	.07	.32*	.10	.005
Step 4						
Passive responses						
-quality	-2.11	2.09	-.10			
-how likely	4.88	2.20	.23*			
-how easy	-.53	1.16	-.04			
Competent responses						
-overall endorsement	1.82	.81	.26*			
-how easy	-1.58	1.84	-.09			
-interpers. efficacy	-3.98	1.84	-.23*			
Aggressive responses						
-overall endorsement	-.25	.62	-.03	.41*	.17	.07

* p≤ .05
** p≤ .01.

Table 6

Summary of Regression Analysis for Social Information Processing Variables
Predicting Social Anxiety (N=148)

Variables	B	SEB	B (Std.)	R	R2	R2 change
Step 1						
Hostile cues	-1.59	2.16	-.07			
Nonhostile cues	2.76	2.23	.11	.11	.01	.01
Step 2						
Causal attributions	.26	.24	.09			
Hostile peer interpr.	.20	2.75	.01			
Worrying	4.26	1.22	.29***	.33**	.11	.09**
Step 3						
% of passive responses	5.63	3.06	.15m	.36**	.13	.02m
Step 4						
Passive responses						
-quality	-3.07	2.30	-.12			
-how likely	8.99	2.43	.36***			
-how easy	.08	1.28	.01			
Competent responses						
-overall endorsement	.76	.90	.09			
-how easy	-4.33	2.03	-.21*			
-interpers. efficacy	-4.00	2.04	-.20*			
Aggressive responses						
-overall endorsement	-0.73	.68	-.09	.51***	.26	.13**

m p≤.10
* p≤.05
** p≤.01
*** p≤.001.

entering the hostile cue encoding variable into the hierarchical regression at the first step of the analyses. This variable did not significantly increase the R2 in the prediction of trait or social anxiety. The nonhostile cue encoding variable was also entered as a predictor variable in the first step of the analyses. Similarly, it did not yield a significant increase to the index of multiple correlation. Thus, neither of these variables was a significant predictor of trait or social anxiety in the regression analyses.

Hypothesis 2: Cue interpretation

The variables associated with cue interpretation, namely the composite causal attribution score, hostile bias score, and degree of worrying about being liked were entered at step 2 of the analyses.

Trait anxiety. The addition of these variables yielded an R2 change of .09, $\underline{F}(5,142) = 2.97$, $\underline{p} = .01$ for trait anxiety. Significant predictors of trait anxiety at this step included the amount of negative causal attributions made for hostile circumstances ($\underline{p} = .01$) and the degree to which the child reportedly worried about whether he/she was liked by peers ($\underline{p} \leq .05$).

Social anxiety. The addition of the cue interpretation variables in step 2 yielded an R2 change of .09, $\underline{F}(5,142) = 3.35$, $\underline{p} \leq .01$ for social anxiety. The degree to which the child worried about whether he/she was liked by peers was a significant predictor of social anxiety, $\underline{p} = .001$. The amount of negative causal attributions was not a significant predictor of social anxiety.

The number of hostile interpretations made with regards to peer behaviour was not a significant predictor of either trait or social anxiety. However, the sample in general made significantly more hostile interpretations regarding peer behaviour than expected given that none of the scenarios contained hostile interactions ($\underline{M}$ = .50; $\underline{t}$(147) = 25, $\underline{p} \leq$ .0001).

A follow-up analysis was done separating the attribution ratings of peer intent for ambiguous circumstances and for nonhostile circumstances. The mean rating of hostile peer intent for ambiguous circumstances was .59 ($\underline{SD}$ = .28). While the mean rating of hostile peer intent for nonhostile circumstances was .41 ($\underline{SD}$ = .34). The attributions ratings made under either circumstance were not significantly correlated with trait or social anxiety. In addition, t-tests were conducted comparing the means of the peer intent attribution ratings for the lower and upper quartiles of the STAIC and SPAIC scores. No significant results were obtained for either the STAIC or SPAIC, $\underline{t}$(1,85) = 0.03 and $\underline{t}$ (1,72) = 0.98 for nonhostile circumstances, respectively and $\underline{t}$ (1,85)= 0.07 and $\underline{t}$(1,72)= 1.12 for ambiguous circumstances, respectively.

Hypothesis 3: Response generation and evaluation

Several predictor variables were entered at steps 3 and 4 of the regression analyses in order to test the hypothesis that anxious children, compared with non-anxious children, generate more passive responses and evaluate passive responses more favourably. The proportion of passive

responses generated by the subjects was entered at step 3 and the evaluations of the passive, competent, and aggressive responses were entered at step 4 of the analyses.

Trait anxiety. No significant increments in the R2 were indicated for trait anxiety at step 3 or 4. While entering the response endorsement variables did not result in an overall significant increment to the prediction of trait anxiety, several of the response endorsement variables were significant in the final regression equation. Significant variables included the positive endorsement of competent and passive responses ($p \leq .05$). Despite the positive endorsement of competent responses, the interpersonal efficacy of competent responses, that is the degree to which children thought that they would be liked if they performed competent responses, was a negative predictor of trait anxiety ($p \leq .05$).

Social anxiety. The proportion of passive responses added a marginal increment in the prediction of social anxiety ($R2$ change = .02; $F(6,141)$ = 3.41, $p \leq .01$. At step 4 of the analysis, response endorsement variables yielded a significant increment to the prediction of social anxiety ($R2$ change = .13; $F(13,134)$ = 3.63, $p \leq .001$). The positive endorsement of passive responses (i.e., likelihood of performing a passive response) and the negative endorsement of competent responses (i.e., difficulty performing a competent response) were significant predictors of social anxiety ($p \leq .001$ and $p \leq .05$, respectively). Furthermore, the interpersonal efficacy rating for competent responses was a negative predictor of social anxiety (p = .05).

The above analyses were repeated removing the effects of age and gender in the first step of the regression. The results did not differ significantly from the findings reported above.

Analyses considering the shared effects of depression.

A further set of regression analyses was conducted with the CDI scores entered as a predictor variable at the first step of the analyses. These analyses were done in order to assess the contribution of the SIP variables to the prediction of anxiety after the partialling out the shared variance of depression. Trait anxiety. The results of the regression analysis changed significantly. The CDI scores accounted for a large proportion of the variance, $R2$ = .47, $F(1,146)$ = 132, $p \leq .0001$. Social information processing variables failed to make a contribution to trait anxiety after the effects of depression were partialled out. This finding was reflected in the lack of change in the cumulative R2 and the nonsignificant t tests at the final step (see Table 7).

Social anxiety. The results were consistent with the results reported above for social anxiety, without partialling out the CDI scores. After controlling for the effects of depression, social information processing variables made a significant contribution, albeit smaller, to the prediction of social anxiety with an R2 change of .15. Significant increments to R2 were observed at levels 2, 4, and 5 of the model. However, at level 5, response endorsement, the only significant variable was the positive endorsement of passive responses (i.e., likelihood of

Table 7

Summary of Regression Analysis for Social Information Processing Variables Predicting Trait Anxiety after removing the effects of depression (N=148)

Variables	B	SEB	B (Std.)	R	R2
Step 1					
Depression	.71	.06	.69***	.69***	.47
Step 2					
Hostile cues	1.52	1.34	.07		
Nonhostile cues	-1.67	1.39	-.08	.69***	.48
Step 3					
Causal attributions	-.001	.17	-.0004		
Hostile peer interpr.	.39	1.78	.01		
Worrying	1.11	.79	.09	.70***	.49
Step 4					
% of passive responses	2.21	1.99	.07	.70***	.49
Step 5					
Passive responses					
-quality	.65	1.63	.03		
-how likely	2.03	1.71	.09		
-how easy	-1.15	.89	-.10		
Competent responses					
-overall endorsement	.91	.63	.13		
-how easy	.23	1.42	.01		
-interpers. efficacy	-1.36	1.44	-.08		
Aggressive responses					
-overall endorsement	-.006	.47	-.0008	.72***	.51

*** p≤.0001.

performing a passive response) (see Table 8).

Depression as the dependent variable

The depression index was also entered as the dependent variable. The mean score on the CDI was 7.20 ($\underline{SD}$ = 6.86). The social information processing variables collectively predicted the level of depression, $\underline{F}(13,134)$ = 2.75, $\underline{p} \leq$ .01. The cue interpretation level (specifically the casual attribution variable) was the only level of the model that provided a significant increment to the prediction of depression, $\underline{R2}$ change = .13, $\underline{p} \leq$ .01. The response evaluation level provided a marginal increment of change, $\underline{R2}$ change= .08, $\underline{p} \leq$ .08. Significant predictors of depression in the final regression equation included causal attributions ($\underline{p} \leq$ .01) and the endorsement of passive responses, i.e. quality and likelihood of performing a passive response ($\underline{p} \leq$ .05).

Analyses of social interpersonal efficacy

The lower and upper quartiles for scores on the STAIC and SPAIC were used as cut-off scores to form groups comprised of low and high trait and low and high socially anxious children. See Table 9 for percentile distributions. The groups were compared on interpersonal efficacy ratings. The interpersonal efficacy score was derived from the overall endorsement children gave to the question of whether they thought that other children would like them if they performed any of the given responses. Using t-tests, the low social anxious

Table 8

Summary of Regression Analysis for Social Information Processing Variables
Predicting Social Anxiety after removing the effects of depression (N=148)

Variables	B	SEB	B (Std.)	R	R2	R2 change
Step 1						
Depression	.63	.09	.52***	.52***	.27	.27***
Step 2						
Hostile cues	-2.20	1.85	-.09			
Nonhostile cues	2.20	1.91	.09	.53***	.28	.01
Step 3						
Causal attributions	-.22	.22	-.07			
Hostile peer interpr.	.98	2.40	.03			
Worrying	3.25	1.07	.22**	.57***	.33	.05*
Step 4						
% of passive responses	5.52	2.65	.15*	.59***	.35	.02*
Step 5						
Passive responses						
-quality	-.89	2.09	-.03			
-how likely	6.75	2.20	.27**			
-how easy	-.42	1.14	-.03			
Competent responses						
-overall endorsement	.05	.81	.01			
-how easy	-2.91	1.82	-.14			
-interpers. efficacy	-1.94	1.85	-.10			
Aggressive responses						
-overall endorsement	-.54	.61	-.06	.65***	.42	.07*

* p≤.05
** p≤.01
*** p≤.0001.

Table 9

<u>Distribution of Anxiety Scores</u>

	25th %ile	50 %ile	75th %ile
STAIC	30.00	34.39	39.75
SPAIC	12.75	18.17	23.40

group, compared with the high social anxious group, had significantly higher

interpersonal efficacy scores ($F(1,72) = 4.67$, $p < .05$).

Chapter 4

Discussion

The results of the present study suggest that anxious children, in particular socially-anxious children, exhibit biases in their cognitive processing of social information. Levels of social and trait anxiety in children were significantly predicted by several of the social cognitive variables outlined in the Social Information Processing model (Dodge, 1986; Crick & Dodge, 1994). Furthermore, the multiple correlation between the social cognitive variables and anxiety was observed to be larger than any single bivariate correlation.

Partial support for the hypotheses in this study was obtained. Specifically, while the types of cues (i.e., hostile, nonhostile) encoded (hypothesis 1) did not predict anxiety levels, the interpretation of cues (hypothesis 2) appeared to be negatively biased in anxious children. Furthermore, the number of passive responses and the endorsement of passive behaviours (hypothesis 3) were significantly predictive of the level of anxiety. Results, however, differed depending upon the type of anxiety considered (i.e., social or trait). Significant increments to the prediction of social anxiety occurred at the cue interpretation, response generation, and response evaluation levels. Significant increments to the prediction of trait anxiety occurred at the cue interpretation level. Finally, several of these social-cognitive biases also appeared to be associated with depression. A discussion of these results is

presented in this chapter. The implications of these findings and possible directions for future research are also presented.

Hypothesis 1-Cue Encoding

It was hypothesized that anxious children, compared to non-anxious children, would recall more threatening cues in a given social situation. Obtained results did not support this prediction. The degree of attention for the hostile vignettes was not a significant predictor of trait or social anxiety. While there were no hostile cues in the nonhostile vignettes, the degree of attention for nonhostile cues encoded in the nonhostile vignettes was not a significant predictor of trait or social anxiety. The findings are in contrast to the considerable number of adult studies which suggest that anxiety is affiliated with a cognitive bias favouring the processing of threat-related information (e.g., Eysenck, MacLeod, & Mathews, 1987; MacLeod, 1990; MacLeod & Mathews, 1991). A recent study with children also suggested that anxious children, compared with non-anxious children demonstrate an attentional bias towards emotionally threatening word stimuli (Vasey et al., 1995).

The findings of the present study may be related to the number of processing options presented to the children. Specifically, the hostile vignettes contained primarily hostile information whereas the nonhostile vignettes contained no hostile information. Accordingly, participants were presented with primarily one processing option (i.e., hostile or nonhostile) and dependent

measures were based upon the processing ability for each type of stimulus matter. Therefore the requirement to prioritize processing options was minimized.

Nonsignificant results may result if the hostile encoding bias is observable primarily in situations in which participants are presented with two distinctive processing options and they must prioritize the processing options during the task (MacLeod & Mathews, 1991). Preliminary empirical results with anxious adults suggest that cue encoding biases are attributed to the allocation of greater processing priorities to threat related cues, compared to the concurrent processing of nonthreatening cues (MacLeod & Mathews, 1991). Therefore, anxiety related biases at the cue encoding stage may not be associated with an enhanced availability of threat related information from memory as was suggested by Bower. Instead the biases may be related to higher priority allocated to the processing of emotionally threatening cues compared to emotionally benign cues, when both processing options are concurrently present (MacLeod & Mathews, 1991).

While the above theory and observations have been formulated with reference to adults, anxiety in children may also be associated with the tendency to assign disproportionately high priority to the processing of threat-related information. Accordingly, the present findings may be observed when the requirement to prioritize processing options is minimized.

The nonsignificant findings may also be due to low levels of state anxiety

in the present sample. Evidence has been accumulating to suggest that state anxiety may mediate the relationship between trait anxiety and encoding biases (e.g., Mogg, Mathews, & Eysenck, 1992). Specifically, heightened state anxiety may be required to elicit anxiety linked encoding biases in trait anxious individuals (Mathews & MacLeod, 1994; Mogg et al., 1992).

Further support for this hypothesis was obtained by MacLeod and Mathews (1988). They employed the dot probe detection paradigm to examine visual attention. High and low trait anxious individuals were tested on two different occasions; once when state anxiety was low and later when state anxiety was high. When state anxiety was low, no selective attention biases were observed for either the low or high trait anxiety group. However, when state anxiety was elevated, students with high levels of trait anxiety demonstrated a selective bias towards emotionally threatening material; while the low trait anxious group displayed a marginally significant effect in the opposite direction. It was concluded that trait anxiety is affiliated with an attentional bias towards threatening stimuli and the bias is elicited by high levels of state anxiety. Accordingly, the nonsignificant findings of the present study may be due to a lack of elevated state anxiety levels in the sample. The gamelike quality of the assessment process and the reassurance each child received by the assessor that there were no wrong answers could have significantly lessened the degree of state anxiety.

Finally the lack of agreement in empirical findings may be partly related to

the different attentional measures employed. Past studies have typically used visual stimuli such as word detection probes, presenting threatening and nonthreatening words to children. The current study provided children with both visual and auditory stimuli. This presentation more closely approximates the various cues found in an actual social situation. It is not clear whether the previously observed bias is manifested in the same way when additional sensory information (i.e., auditory cues) is simultaneously presented. Additional studies are needed to assess for the presence of encoding biases in more naturalistic settings (i.e., in which the child is typically exposed to both visual and verbal stimuli).

Hypothesis 2- Cue interpretation

It was hypothesized that anxious children, compared to non-anxious children, would generate more negative interpretations such that they would provide more internal, stable, and global attributions for negative events and would form more hostile attributions of peer behaviour. The present results provide some support for this hypothesis. Negative causal attributions were significantly predictive of higher levels of trait anxiety. A positive trend was noted in the correlational relationship between social anxiety and the number of negative causal attributions. However, the causal attributions variable was not a significant predictor of the level of social anxiety.

These results are somewhat consistent with those noted in the social

psychology literature which suggest that anxiety in adults is affiliated with negative causal attributions (e.g., Heimberg et al., 1989). The research examining causal attributions in anxious children is limited. Moreover, the findings have been mixed, with general anxiety being associated with a less negative attributional style (Rodriqez & Routh, 1989) and, in contrast, a more negative attributional style (Bell-Dolan & Last, 1990).

The weak relationship observed between causal attributions and social anxiety may be due to moderating factors which influence the association between anxiety and causal attributional style. For example, a potential moderator may be the child's sociometric status. Crick and Ladd (1993) reported that children classified as either popular, average, or controversial (liked by some and disliked by others) and who reported high social distress (i.e., social anxiety, avoidance, and loneliness) demonstrated a non-self-serving attributional style (i.e., formed negative conclusions about the self in response to negative social interactions). In contrast, children classified as rejected (i.e., actively disliked by peers) and who reported high social distress demonstrated a self-serving attributional style (i.e., blamed others for negative social interactions). Further examination of the effects of potential moderating factors is warranted.

The number of hostile peer interpretations made in ambiguous and nonhostile circumstances was not significantly predictive of social or generalized trait anxiety. This finding is inconsistent with recent studies reporting that

anxious children tend to make more hostile interpretations in ambiguous circumstances (e.g., Barrett et al., 1996; Chorpita et al., 1996) and nonhostile circumstances (Bell-Dolan, 1995).

It should be noted that the overall sample in this study generated significantly more threatening interpretations of peers' behaviour than would be expected given that none of the scenarios contained hostile cues. Approximately 50% of the peer intent interpretations for ambiguous and nonhostile stories were hostile attributions. When the number of hostile peer interpretations was considered separately for ambiguous and nonhostile situations, the sample made more hostile attributions for ambiguous circumstances than for nonhostile circumstances (59% vs 41%).

The finding suggests that the overall sample may have had difficulty deciding whether an action was hostile or not. Consequently they appeared to use the "when in doubt interpret as hostile" rule as was observed in previous studies (i.e., Bell-Dolan, 1995). Hostile interpretations have not been uniquely associated with anxiety. In fact, hostile interpretations of peer intent appears to be a prominent phenomenon with various populations including children with externalizing disorders (Barrett et al., 1996), physically abused children (Dodge et al., 1990), and children suffering from depression (Quiggle et al., 1992). It may therefore be important to use stringent controls in future studies assessing for the presence of a hostile peer intent bias in anxious children. Stringent controls may entail excluding children with any type of psychopathology from the

control group. This procedure could clarify the extent to which anxious children's peer intent interpretations are actually biased compared to children with no psychopathologies.

However, hostile peer intent attributions may not only be a function of behavioural or psychological problems. Hostile attributions may also stem from being subjected, either directly or indirectly, to repeated incidences of bullying and violence. The media have featured numerous reports about the serious concern of bullying and violence in Canadian schools and playgrounds. Direct or indirect exposure to recurrent bullying behaviour may cause children to become increasingly cautious of others and more inclined to interpret peers' intentions as hostile. In addition, increased exposure to this problem through various sources is likely to cause parents to become increasingly concerned about their children's safety. The parents may be transmitting negative attributions of others to their children through discussions and additional household rules, e.g., not walking alone to corner store or not talking to any stranger.

The third variable considered at the cue interpretation level was the degree to which the child worried about whether he/she was liked by peers. This variable predicted the level of trait and social anxiety, suggesting a significant association between social-evaluative worry and anxiety. A strong association in adults has been reported between evaluative worry and anxiety, particularly when social anxiety was compared with depression, other anxiety disorders, and

no mental disorder (Rapee & Heimberg, 1997). The DSM-IV (APA, 1994) also considers worry to be a primary hallmark of anxiety for both children and adults. Interestingly, worry has been affiliated with a belief of control over possible harm in anxious adults perhaps through creating a distorted view that one is actively preparing for threats irrespective of the shortage of associated coping skills (Gross & Eifert, 1990). Studies examining similar cognitions in anxious children may prove helpful in understanding the underlying factors responsible for perpetuating socio-evaluative worry.

Hypothesis 3- Response generation and response evaluation

According to the Social Information Processing model, once the social cues have been interpreted and the goal(s) formulated, children generate one or more potential behavioural responses. It was hypothesized that anxious children would propose a higher percentage of passive responses in social situations (e.g., walk away, play with something else). The current findings provided marginal support for this hypothesis. The proportion of passive responses generated was a marginally significant predictor for social anxiety. However, no association was observed between the proportion of passive responses generated in social situations and trait anxiety.

The behaviour response(s) may depend upon the type of anxiety considered and the situation presented. Previous studies have found that behaviour responses generated by anxious subtypes vary as a function of the

type of situation presented. Specifically, Barrett et al. (1996) reported that behavioural responses to different situations (i.e., physical or social threat) was a differentiating factor between various anxiety diagnoses. Accordingly, proposed behavioural responses to peer entry situations may to some extent be different for trait and social anxiety. Socially anxious children may tend to suggest passive/avoidance responses as demonstrated in this study. However, children reporting higher levels of generalized trait anxiety may consider this situation relatively less anxiety provoking and consequently may not be as inclined to withdraw.

The lack of significant findings for trait anxiety may also be related to the limited number of children reporting high levels of trait anxiety. Obtaining more participants with high scores on trait anxiety may reveal a significant association between trait anxiety and the percentage of passive responses generated.

Based upon the current theory and empirical findings, it was also expected that anxious children, compared with non-anxious children, would provide relatively more favourable ratings for passive responses and less favourable ratings for competent responses. The results provided support for the hypothesis. Several predictor variables were significant. Children reporting higher levels of social anxiety, compared with lower levels, tended to report that they would be more likely to engage in the passive responses. Furthermore these children felt that it was more difficult for them to perform a competent response and it was less likely that they would be liked by others if they

performed a competent response.

Socially anxious children tended to have lower expectations of favourable interpersonal outcomes irrespective of the type of behaviour shown (i.e., aggressive, passive, or competent). Past research with adults supports these findings. Socially anxious people tend to view their performance in a social event as more negative (i.e., less favourable impression), even when the actual performance was controlled (Alden, Bieling, & Wallace, 1994; Rapee & Heimberg, 1997). This undervaluation of performance for adults in a social situation has been more closely associated with social anxiety than with depression and other types of anxiety (Rapee & Heimberg, 1997). The present result is significant as the expectation of a favourable outcome has been affiliated with the consequent enactment of the behaviour (Dodge & Crick, 1990). If socially anxious children believe that it is difficult for them to obtain a favourable interpersonal outcome irrespective of the behaviour performed, this may contribute to the uncertain "freezing" behaviours often reported in the literature (e.g., Bell-Dolan, 1995). Similar types of unfavourable interpersonal expectations were not as clearly associated with trait anxiety.

While the overall evaluation of responses was not significantly associated with the level of trait anxiety, several variables were significant predictors in the final regression equation. The likelihood of performing a passive response was predictive of trait anxiety. The positive endorsement of competent responses and negative interpersonal outcome ratings of these competent responses were

also associated with trait anxiety levels. The relatively higher positive endorsement of competent responses by children reporting higher levels of trait anxiety was unexpected. It may be that children with high levels of trait anxiety recognize appropriate types of social responses, however, have difficulty executing them.

Anxiety, Depression and Negative Affectivity

High intercorrelations were observed between self-report measures of social- and trait anxiety and depression. Symptoms of depression accounted for a large portion of the variance particularly for trait anxiety. This large association represents a robust finding in the literature (e.g., Cole et al., 1997; Crowley & Emerson, 1996). It has been suggested that the robust findings of high correlations between anxiety and depression reflects a single common dimension underlying the two constructs (Dobson, 1985; Ollendick & Yule, 1990). Alternatively, the high correlation may be an artifact of the overlapping items on self-report measures of anxiety and depression. These items may be related on a more superficial level as opposed to representing an actual symptom of the disorders (Cole et al., 1997). The measures may also contain the same method variance. For example, self-report measures for anxiety and depression contain the possibility of unwanted response biases such as the inclination to answer items in a socially desirable manner or the degree of willingness to acknowledge undesirable traits in oneself (Cole et al., 1997).

Research has begun to investigate the relationship between depression and anxiety by considering their shared and unique features. The present study suggests that general anxiety and depression may share some similar social-cognitive biases such as the endorsement of passive responses. However, there were certain biased cognitions which appeared to be more strongly related with either depression or anxiety. For example, the causal attributions variable, appeared to be more strongly related to depression. Interestingly, Heimberg, Vermilyea, Dodge, Becker, and Barlow (1987) compared cognitive profiles in distinct adult depressive and anxious states. They found evidence that an attributional style represented by internal, stable, and global attributions for negative circumstances was uniquely associated with depression. This negative attributional pattern was observed in anxious persons only when they were depressed. The findings of the present study suggest that a similar pattern may also be present for children.

When social anxiety was considered, certain cognitive features were found to be more strongly associated with social anxiety than depression including the degree of worrying regarding whether the child is liked by peers, the percentage of passive responses generated, and the positive endorsement of passive responses. However, no social cognitive variable appeared to be more strongly associated with trait anxiety. These findings may be interpreted using Clark and Watson's (1991) tripartite model of anxiety and depression. As noted previously, the model maintains that a general distress factor, referred to

as 'negative affectivity', is present in both anxiety and depression. Accordingly, trait anxiety may not be associated with distinct social cognitive biases if the general measures of anxiety are actually assessing a general and heterogeneous construct reflective of general dysphoria and distress as defined in the negative affectivity construct (Wolfe et al., 1987). Clark and Watson's (1991) model also suggests that distinct anxiety and depression disorders exist which can be distinguished by separate cognitions. The present findings may be used as support for this hypothesis since certain cognitions were found to be more strongly associated with either social anxiety or depression.

The results of the present study and past research (e.g., Boyd & Gullone, 1987; Crowley & Emerson, 1996; Norvell, Brophy, & Finch, 1985) also illustrate the importance of considering specific subtypes of anxiety when examining cognitive features that are uniquely associated with anxiety, particularly given the controversy surrounding the relationship between depression and anxiety (Cole et al., 1997). Clear advantages for determining the cognitive processing patterns of anxiety and depression exist when considering both diagnostic and treatments implications.

Evaluation of the Social Information Processing model

The Social Information Processing model (Dodge, 1986; Crick & Dodge, 1994) provides a useful framework to study social cognitive biases associated with childhood anxiety. Several of the cognitive processes addressed in anxiety-

related cognitive theories and research are described in the model, including attentional, interpretational, and response biases. The model promotes further elaboration of these processes as well as consideration of the active flow of information through the cognitive system and the related interdependence of the specified processes (Daleiden & Vasey, 1997).

The most recent version of the model (Crick & Dodge, 1994) purposes a nonlinear path in an attempt to assimulate previous research findings and connectionist theories. This reformulated model attempts to provide a more realistic account of the neural processes that may be involved in social information processing. Specifically, it suggests that children can process several events in a simultaneous parallel fashion. Furthermore, the reformulated model can better account for the connectionist theories that behavioural responses are not merely a function of the sum of each step but include nonlinear transformations between the processing steps (Crick & Dodge, 1994).

In the present study, the Social Information Processing model accounted for a significant portion of the variance for both trait and social anxiety. However, some of the levels of the model (e.g., cue encoding) were not significant predictors of anxiety. Given the comprehensiveness of the processing levels (e.g., cue encoding), additional studies are needed before statements are made regarding the model's ability to predict anxiety. For example, the attentional component in cue encoding has been separated into two dimensions; intensity (i.e., amount of processing resources used to attend to

cues) and selectivity (i.e., the extent to which resources are directed more toward certain cues) (Dodge, 1991). The specific dimensions involved in anxiety are being considered in empirical studies (Daleiden & Vasey, 1997). The present findings suggest that anxious children are able to encode as much information as nonanxious children (i.e., intensity). Accordingly, these results in conjunction with studies considering attentional biases in nonsocial contexts (e.g., Mathews & MacLeod, 1988) suggest that other dimensions of attention (i.e., selectivity) need to be further explored.

While the model has proven helpful in the conceptualization and organization of cognitively-based anxiety research, some limitations have been observed. For example, additional levels of cognitive processing need to be specified. The model focuses primarily upon the cognitive processing that occurs within a given social situation. However, this focus appears to exclude some of the significant social cognitions associated with anxiety. Anxious cognitions may also be observed before (anticipatory phase) and after ("postmortem" phase) a social situation (Clark, 1997).

According to Clark (1997), there is an anticipatory period in which an anxious individual begins to consider the event prior to its actual occurrence. Upon consideration of the event, the individual becomes anxious and preoccupied with past social failures and negative self-images. The individual also begins to anticipate poor behaviour and rejection. The negative thoughts may cause the individual to avoid the event. In addition to the anticipatory

cognitions, Clark (1997) suggests that there is a "postmortem" phase in which the anxious individual critiques a recent interaction. This detailed critique often involves a negative self-perception and a negative rating of the situation that exaggerates the negative aspects. Often, there is also a reviving of past social problems which promotes additional anxiety and discomfort (Clark, 1997). While these two sociocognitive phases appear to have important implications for anxiety, there appears to be little specification of these phases in the SIP model.

Further specification of the processes subsumed under the cue interpretation level would also be useful in the study of childhood anxiety. Currently there are several cognitive dimensions subsumed under cue interpretation including peer and causal attributional style, evaluation of goal attainment and past performance, and evaluations of self and others (Crick & Dodge, 1994). The model, however, is limited in terms of its theoretical specification of the role of the child's evaluations of self and others in social information processing. In terms of self-evaluations, the model purposes that self-evaluations may be based primarily upon attributions of failed peer exchanges and responses. However, other cognitive models of anxiety provide greater clarification with respect to the hypothesized origins and effects of negative self biases (e.g., Clark & Wells, 1995; Rapee & Heimberg, 1997; Wells & Mathews, 1994). This specification appears to be important given that self-cognitions may have a significant role in promoting other maladaptive cognitions in anxious individuals (eg., Higgins, 1987; Kendall & Ronan, 1990).

Cognitions regarding an individual's expected audience standard for him/herself are also not considered in the model. However, such cognitions may be significant in terms of promoting anxiety. The anxious person may have a preconception of the standard of performance which is assumed of him/her by others (Rapee & Heimberg, 1997). It has been hypothesized that anxiety will lessen if an individual performs in a manner that is compatible with the individual's expectations of his/her audience's standards. However, anxiety is heightened if one's performance is believed to not meet the audience's standards (Rapee & Heimberg, 1997). Studies with socially anxious adults have reported that persons with social phobia assume that the standards which other people set for them are greater than the standards that anxious persons hold for themselves (Wallace & Alden, 1991, 1995). This difference may partly explain why socially anxious persons often report greater anxiety in circumstances involving high performance expectations such as formal events and situations involving sexual attraction (Clark, 1997).

This phenomenon may have been tapped to some degree in the present study by the question assessing how worried the child was about what others thought of him/her. This variable was highly significant in predicting anxiety. Perceptions of audience standards may partly explain why anxious children tend to play with younger children. Anxious children may feel that younger children do not hold as high a standard for them, thereby allowing them to feel less anxious about the social interaction. In sum, while the model was designed to

be broad in order to be applicable to a range of conditions, it does not account for some of the specific social cognitive biases believed to be associated with anxiety.

Another limitation of the model involves the inaccessibility of some important cognitions to empirical measurement. The inaccessibility of some cognitions, particularly those involving automatic as opposed to controlled processing, renders some aspects of the model untestable. Automatic processing refers to processing that is inadvertent, effortless, reflexive, fast, and not within one's awareness. Controlled processing refers to processing that is intentional, volitional, strategic, and present in conscious awareness (Daleiden & Vasey, 1997). The model recognizes that much cognitive processing may be occurring at an automatic level (Crick & Dodge, 1994). However, there is a lack of adequate tools to measure automatic cognitions causing significant aspects of the model to remain untestable. For example, the goal selection level of the model, which has been construed as largely automatic has been especially difficult to assess. A child may not be conscious of the types of goals formulated in a given situation and if asked may not be cognizant of the his/her actual goals. Consequently, this part of the model remains essentially untested. Theoretical clarification of the goal construct is required to help develop an operational definition and measurement tools to assess children's goals (Daleiden & Vasey, 1997).

Finally, the findings from the present as well as past studies suggest that

social cognitive biases associated with anxiety may depend upon the actual situation, moderating factors, and anxiety subtype. For example, some anxious persons are able to focus their attention away from the threatening stimuli through controlled processing (Mathews & MacLeod, 1991). Different coping skills are thought to influence children's attentional processing such that not all anxious children demonstrate an attentional bias towards threat cues (Vasey & Daleiden, 1996). The SIP model recognizes that cognitive biases may be situation specific. It is important to remain cognizant that the model serves as a framework for understanding anxious social cognitions and that individual differences also need to be examined, particularly when considering treatment implications.

Prevalence of trait and social anxiety

The present study revealed that general trait anxiety was not always accompanied by high levels of social anxiety. This finding may be considered to reflect two distinct subtypes of anxiety. Confirmatory factor analyses have demonstrated that anxiety symptoms in children factor into discrete factors or subtypes of anxiety problems corresponding to DSM-IV classification of anxiety disorders (APA, 1994). The factors included panic-agoraphobia, social phobia, separation anxiety, obsessive-compulsive, generalized anxiety, and physical fears (Spence, 1997).

Significantly more children were classified as high in social anxiety than

were classified as high in general trait anxiety. Fifty percent of children in the sample reported high levels of social anxiety. It has been suggested in the literature that the prevalence of social anxiety is underestimated as these children are not always perceived by others as manifesting impairments. Feelings and behaviours related to social anxiety are typically accepted in our society and are often relatively of less concern for teachers and parents (Beidel & Morris, 1995). A study of prevalence rates of anxiety symptoms in a nonclinical sample of children aged 5 to 18 revealed that subclinical phobias and overanxious disorder symptoms were fairly common with approximately 20% of the sample endorsing fear of public speaking and shrinking from contact with others (Bell-Dolan, Last, & Strauss 1990). Thus the present study in conjunction with the past studies (e.g., Bell-Dolan et al., 1990) suggests that anxiety symptoms, including those related to social phobia, may be more prevalent in our society than previously estimated.

The generalizability of this sample also needs to be considered given the high number of children reporting social anxiety. The question of potential sample biasing stemming from the types of parents and children who agree to participate for research studies has been considered in the literature. Several studies have suggested that "representative" samples of school-aged children and their families who agree to participate in studies are more likely to be well-adjusted in comparison to the population from which they are obtained (e.g., Weinberger, Tublin, Ford, & Feldman, 1990). School-aged children who did not

receive parental consent to participate have been differentiated from children whose parents consented for them to participate. Specifically, children who did not participate in the research were found to have poorer peer relationships and were rated as being more socially withdrawn (Beck, Collins, Overholser, & Terry, 1984; Frame & Strauss, 1987). Furthermore, boys with high scores of distress (i.e., anxiety, depression, low self-esteem, and low well-being) and low to moderate self-restraint (i.e., consideration of others, impulse control, suppression of aggression and responsibility) were less inclined to participate in a research project (Weinberger et al., 1990). Finally, in a recent study, Noll, Zeller, Vannatta, Bukowski, and Davies (1997) reported that nonparticipant children were rated by teachers and peers as less socially accepted and less academically competent. However, ratings on a Sensitive-Isolated scale did not differentiate the two groups of children. This finding was noted to be inconsistent with previous reports that social isolation was significantly associated with nonparticipation in children.

It has been suggested that these findings may be partly due to the uncertainty faced by potential participants at the recruitment stage in terms of understanding what the study will actually involve. Given this sense of vagueness, persons who are distressed, compared to nondistressed persons, may be more inclined to consider possible negative situations surrounding their participation and thus not as likely to volunteer (Weinberger et al, 1990). Negative mood states that promote the consideration of personal costs in

volunteering have been associated with lower rates of consent to participate in children and adults (e.g., Aderman & Berowitz, 1983). According to the above findings, it is possible that the present sample under-represents the number of anxious children in the population.

However, the nature of this study also warrants consideration. The description of the study provided in the Parent's Information Sheet highlighted issues which parents of anxious children may have readily identified in their own children. This identification and understanding of the social difficulties faced by some children may have lead families of anxious children to more fully appreciate the value of this research. Interestingly, Betan, Roberts, and McCluskey-Fawcett (1995) hypothesized that individuals who have more problems and who think that they could benefit from volunteering may be more willing to participate. For example, it was suggested that parents of emotionally distressed children would be more inclined to volunteer compared with parents of children in a regular education classroom. However, Betan et al.'s (1995) study was based upon a content analysis of published articles and there was not enough information to adequately assess this hypothesis. Further research is therefore needed to investigate this hypothesis. Given the findings in the literature it is difficult to comment upon the extent to which the prevalency of anxiety reported in the present sample is representative of the population from which it was obtained.

In addition, more girls volunteered to participate for this study. Research

findings on potential gender differences in terms of participation rates have been

mixed with some findings reporting no significant gender differences (Frame &

Strauss, 1987; Noll et al., 1997); while a small tendency for boys to be less likely

to volunteer has also been reported (Weinberger et al., 1990).

Contributions of the Present Study

The present study contributes to the literature by examining anxious

children's endorsement of different types of behavioural responses and their

self- and interpersonal efficacy expectations for these responses. This level of

processing, i.e., response evaluation, is important in understanding the factors

leading to the problematic withdraw/avoidance behaviours and coping

responses frequently observed in anxious children (Daleiden & Vasey, 1997).

Furthermore, this study advances the literature by considering the

relationship between social cognitions and a specific subtype of anxiety (i.e.,

social anxiety). There has been a noted lack of consideration given to the

cognitive processes associated with specific childhood anxiety disorders. A

need for research examining the information processing components of different

subtypes of anxiety has been emphasized as heterogeneity is believed to exist

(Daleiden & Vasey, 1997).

The present study is also the first to consider sociocognitive features

related to anxiety after removing the effects of depression. There is a high

comorbidity of anxiety and depression in children and the nature of the

relationship between the two constructs has been debated (Wolfe et al., 1987). While the presence of cognitive specificity would contribute to our understanding of the relationship (Ingram & Malcarne, 1995), the presence of social information biases that are more strongly related to childhood anxiety as opposed to depression has not yet been examined in the literature.

Implications

The present study revealed several cognitive biases in the social information processing patterns of anxious children. The cumulative effect of the social cognitive biases may cause significant distress given that the process can occur often within a given social interaction. While the direction of causality is uncertain, teaching anxious children alternative ways to think about given social situations may prove to be a beneficial focus in terms of helping to alleviate anxiety and improving their social functioning. Preliminary research focusing upon improving the social cognitive skills in aggressive children has been promising (Dodge & Crick, 1990).

Furthermore the present study observed that some social-cognitive correlates were more closely associated with social anxiety than with depression, while others (i.e., causal attributions) were more closely associated with depression. Ascertaining whether anxiety has a distinctive cognitive profile separate from depression is helpful in understanding the nature of the disorders. According to Beck's original and revised cognitive model (Beck, 1976) anxiety

and depression are disorders that have separate and specific disturbances in thought or cognition. This idea, known as the cognitive specificity hypothesis (Beck, 1976), suggests that the frequent overlap in behaviour of individuals (i.e., frequently employed diagnostic symptoms) with anxiety or depression is not fundamental in distinguishing between the two syndromes. It is not fundamental because the origins of the syndromes are considered to be differentiated in cognition. Accordingly, detecting cognitions associated with the two syndromes may be fundamental to comprehending these emotional disorders and could yield an alternative to symptom-oriented diagnosis (Stark & Laurent, 1993). This line of research could therefore be helpful in forming diagnostic distinctions and treatment plans for the affective syndromes (Malcarne & Ingram, 1994).

Future Research

Further research needs to consider the generalizability of the present findings. As previously suggested, attention should be given to the various types of anxiety provoking social situations encountered by children. Furthermore, the presence of social cognitive biases in different subtypes of anxiety and the potential interactional effects between situation and anxiety subtype needs to be investigated. The degree to which the results are generalizable to a clinically referred group of children who have been diagnosed with anxiety also warrants further research.

Examination of additional variables such as peer ratings would be useful

in determining whether factors such as sociometric status have a moderating influence on different processing biases. For example, sociometric status may moderate the types of causal attributions made by socially anxious children (e.g., Crick & Ladd, 1993).

Another variable that warrants consideration is the effect of peer characteristics on social information processing. The few studies examining this topic suggest that peers' characteristics may influence social cognitions (Crick & Dodge, 1994). The familiarity of the peer (i.e., stranger, acquaintance, friend, authority figure, family member), for example, may moderate social information processing patterns in anxious children. In the present study, hostile peer interpretations were not a significant predictor of anxiety when unfamiliar peers were considered. The entire sample tended to make numerous hostile attributions. However, these results may vary as a function of familiarity. Given their high level of self-criticism and their general belief of low interpersonal efficacy, anxious children, compared with a control group, may be inclined to be more fearful in daily social situations and therefore tend to make more hostile interpretations with acquaintances or friends.

The use of state measures of anxiety, (i.e., assessing the child's level of anxiety at the time of the assessment), could help to further elucidate the influence of anxious affect on social cognitive biases. As previously noted, cognitive biases (e.g., selective encoding) may be more pronounced when the current level of anxiety is high.

The present study did not reveal a strong association between anxiety and causal attributions. This relationship needs to be further investigated considering additional attributional dimensions. For example, Anderson & Arnoult (1985) noted that attributions regarding the degree of controllability (i.e., the capacity to alter or control perceived causes of situations) was the strongest predictor of shyness in undergraduates. In addition, beliefs about the controllability of worry and anxious affect need to be considered (Garber, Braafladt, & Zeman, 1991).

Future research should also include longitudinal studies of social cognition and anxiety in order to better understand the nature of the relationship between the cognitive correlates and anxious affect (i.e., does anxious affect promote social-cognitive biases and/or do cognitive biases promote anxious affect?). Crick and Dodge (1994) suggested that emotions are an essential component of each level of the model. For example, experiencing anxiety when first meeting someone may cause a child to have an immediate dislike of the person and consequently form negative peer interpretations. The social-cognitive biases may also impact upon the intensity of affect such that the child's negative interpretations promote feelings of fear. It would be interesting to determine whether more adaptive social cognitions lead to reductions in anxiety or vice-versa. Understanding the precise nature of the relationship, however, has posed a problem for theories of cognitive mediators of behaviour since internal experiences need to be experimentally altered to show causality (Dodge

& Crick, 1990).

In sum, the findings of this study provide additional support for the tenet of information processing models (e.g., Beck & Clark, 1988) that cognitive processes have a role in psychopathology. Anxiety in children appears to be associated with certain social cognitive biases in peer entry situations. However, the specific cognitive biases appear to depend upon the type of anxiety considered (i.e., trait or social anxiety), emphasizing the importance of examining various anxiety subtypes. Given the fact that social cognitive biases are considered to have a significant role in social interactions, the biases observed in this study likely have a notable impact upon the ability of anxious children to function effectively within their social environment as well as on anxiety levels. In fact, when considering the nature of the social cognitive biases observed in anxious children (i.e., social-evaluative worries, endorsement of passive responses, and low interpersonal efficacy) there appear to be clear implications for how anxious children's social functioning may be negatively affected.

Furthermore, the study suggests that anxiety and depression may share similar social cognitive biases. However, there also appear to be social-cognitive biases that are more strongly related to anxiety or depression. This finding provides preliminary support for the premise of Clark and Watson's (1989) tripartite model that anxiety and depression share a significant factor of general distress while also possessing unique symptoms.

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Appendix A

Level of Socioeconomic Status for Participants

Social Strata	Number of Children
I	6
II	28
III	58
IV	23
V	3

Note

I = Major business and professional;
II = Medium business, minor professional, technical;
III = Skilled craftsmen, clerical, sales workers;
IV = Machine operators, semi-skilled workers and
        unskilled labourers, menial service workers;
V = Unemployed.

Based on Hollingshead (1975).

Appendix B

Social Information Processing Questionnaire

Date _____ ID _____   Page _____

Story _____

1. Tell me what happened in the story from the beginning to the end.

    _____

    _____

    _____

    _____

    0-no attention   1-partial attention   2-clear attention

2. If this happened to you, how likely is it that you would be worrying about whether the other kid(s) liked you?

    1----------------2----------------3----------------4

    definitely   probably   probably   definitely
    would not   would not   would   would

3. Why did the other kid(s) act this way?

    _____

    _____

    0 - benign intent   1 - negative/hostile intent

4. What would you do if this happened to you?

    _____

    _____

    1 2 3 4 5

What else might you do?

2. _____

3. _____

4. _____

(1)	Aggressive	1 2 3 4 5
(2)	Passive/Withdrawn	1 2 3 4 5
(3)	Assertive	1 2 3 4 5
(4)	Pure Affect	1 2 3 4 5

Of the things you mentioned, which would you most likely do?

1 2 3 4 5

Response Evaluation

Now I am going to show you some of the things that could be done when this happened.

5.   What kind of an idea is this?

1----------------2----------------3----------------4

very bad   pretty bad   pretty good   very good

6.   How likely is it that you would do this?

1----------------2----------------3----------------4

| definitely would not | probably would not | probably would | definitely would |

7.   How easy or hard would it be to respond that way?"

1----------------2----------------3----------------4

| very hard | hard | a little hard, sort of easy | not hard very easy |

8.   How much would the other children like you if you said this?

1----------------2----------------3----------------4
not much   a little   OK   a lot

Causal Attributions for Hostile Interactions

Story 5 - Mural

Now I am going to read some possible reasons why the kids wouldn't include you. Choose the reason that is more likely why the kids wouldn't include you.

The reason the kids wouldn't include you is because:

a. (1) These kids are mean kids.
    (2) You are not much fun to be with.

b. (1) You are not much fun to draw with.
    (2) You are not much fun when you do most things.

c. (1) These kids are sometimes mean to you.
    (2) These kids are usually mean to you.

d. (1) Those kids are not very nice.
    (2) You are not very good at drawing.

e. (1) Most of the time you are not much fun to play with.
    (2) Sometimes you are not much fun to play with.

f. (1) These kids are mean to you.
    (2) Most kids are mean to you.

Story 12 - Reading

Now I am going to read some possible reasons why the kids wouldn't include you. Choose the reason that is more likely why the kids wouldn't include you.

The reason the kids wouldn't include you is because:

a. (1) You cannot do things as well as others.
    (2) These kids do not like other kids.

b. (1) These kids do not like you.
    (2) Most kids do not like you.

c.   (1) These kids _sometimes_ do not like you.
       (2) These kids _usually_ do not like you.

d.   (1) You cannot _read aloud_ as well as others.
       (2) You cannot do _most things_ as well as others.

e.   (1) _These_ kids are mean.
       (2) _You_ are not much fun to play with.

f.   (1) You _sometimes_ cannot do things as well as others.
       (2) You _usually_ cannot do things as well as others.

Story 13 - Toss

Now I am going to read some possible reasons why the kids wouldn't include you. Choose the reason that is _more likely_ why the kids wouldn't include you.

The reason the kids wouldn't include you is because:

a.   (1) _These kids_ think they are better at doing things than other kids.
       (2) _You_ are not much fun to play with.

b.   (1) These kids _sometimes_ think they are better at doing things than you.
       (2) These kids _usually_ think they are better at doing things than you.

c.   (1) You are not much fun to _play ball with._
       (2) You are not much fun to _do most things with._

d.   (1) _These_ kids think they can do things better than you.
       (2) _Most_ kids think they can do things better than you.

e.   (1) _Most_ of the time you are not much fun to play with.
       (2) _Sometimes_ you are not much fun to play with.

f.   (1) _These_ kids are not very nice.
       (2) _You_ are not very good at playing ball.

Instructions for the Social Information Processing task

The experimenter begins by saying "I am going to show you a videotape today which has some short scenes on it. After you see each scene, I will be asking you some questions about kids and what you think. There are no right or wrong answers to these questions, and it is very important to tell me what YOU really think. I am going to write everything down and also tape it so that we can work more quickly. Please remember I will not let your teacher or any of the other kids hear your tapes. Do you understand? Do you have any questions before we start?"

Appendix C

<u>**Study of Children's Understanding of Social Information**</u>

Dear Parent(s),

I am writing to request your permission for your child to participate in a study that will be conducted in his/her school. Your principal and the School Board have kindly given their permission for this research to be conducted.

This study will examine how children think about and interpret various social situations. I have enclosed an <u>Information Sheet</u> that describes the study and what your child will be asked to do if you agree for your child to participate.

This study is being conducted as part of the requirements for my doctorate degree in psychology at the University of Windsor. I will be asking children aged 9 to 12 to participate.

If you wish any further information about the study, please do not hesitate to call me at 256-0516. I will be pleased to answer any questions you may have.

Sincerely,

Cathy Bulow, M.A.
Doctoral Student

<u>Parent's Information Sheet</u>

<u>Study of how children think about social interactions</u>

<u>Purpose:</u> Some children feel very uncomfortable in social situations and have a lot of difficulties making friends. Other children appear very confident in social situations and have little difficulty making friends. In this study, I would like to get a better understanding of how children's current feelings and emotions influence their thinking of social situations. This research is important as it may assist in helping certain children who are having problems making or keeping friends. I am also planning to use the information to develop an information package for teachers in order to help many children improve their confidence in social situations.

<u>Who is being asked to participate:</u> I am asking parents of children between the ages of 9 and 12 for permission for their child to participate. I would like to compare a range of children in terms of their understanding of social situations.

<u>What participants do:</u> If you and your child give permission to participate, your child will be asked to complete four questionnaires about his or her thoughts and feelings. Each child will also be shown some videotaped scenes (each scene is approximately 15-20 sec. in duration) of children interacting and then asked some questions about these tapes. The game like quality of the videotapes makes them appealing to children. The answers will be tape-recorded in order to keep the session as short as possible. The tapes will be erased once the information has been transcribed to the questionnaire. The entire session is expected to take approximately 60-90 minutes and will be done on an individual basis at your child's school. Children will receive a certificate on the day they are seen to thank them for their participation.

<u>Participant's Rights:</u> There is little chance that your child will experience discomfort or have a negative reaction as a result of participating in this study. In fact most children find the activities rather interesting and challenging. However, since the questionnaires are made to sample a wide range of feelings for a wide range of children (e.g., some children may have felt that they wanted to hurt themselves at some time and this is one of the possible questions) your child may be reminded of some negative feelings that he/she has or is experiencing. I or my research assistant, Ms. Jammu, will be present at all times and if for any reason your child does not wish to continue to participate once the study has begun, he or she is free to withdraw from further participation.

If it appears to me that your child may be distressed, I will contact you so that you will be aware and appropriate support might be offered. I do not expect this to be

a necessary occurrence. I have left a space at the bottom of the consent form for you to write your name and where I can contact you if needed.

Again, agreement to participate is voluntary and your child may withdraw at any time. Please be assured that all information I receive will remain completely confidential. Participants' names will not appear on any of the questionnaires or response sheets. Questionnaires will be identified by a code number. This code number will allow me to identify those children who may be experiencing emotional distress. A summary of the results may be published. However, at no time will your identity or the identity of your child, or school be revealed in written reports of the research findings.

Feedback: Once the study has been finished, a copy of the results will be available at the Professional Library at the Board Office. I hope that the study will be completed by the Winter of 1997. You may contact me at that time through the University of Windsor (253-4232 Ext. 2218) if you have any questions.

This research has been reviewed by the Ethics Committee of the Psychology Department at the University of Windsor. The chairperson of the committee is Dr. Voelker and she may be contacted for any concerns regarding the procedures in this study (253-4232 Ext. 2249). Dr. Voelker is also the academic advisor for this project.

I have enclosed two copies of the consent form to indicate your agreement to participate. Please keep one copy for your records and return the other to me by May 13th if possible. I would also appreciate it if you would answer the brief questionnaire on family statistics. I require this information so that I may have a short description of the families that have volunteered in this study. I ask that you seal the forms in the envelope addressed to me and have your child return it to his or her school. I will be the only person to view this information.

Again, please feel free to ask questions or obtain clarification about the procedure at any time before, during, or after the study. I may be reached at the University of Windsor (253-4232 Ext.2218) and will be happy to address any questions that you might have. Thank you.

Sincerely,

Cathy Bulow, M.A.
Doctoral Student

Parent Consent Form

Study of Children's Understanding of Social Interactions
Researcher: Ms. Cathy Bulow

I _____
                (Parent's name)
give permission for my child _____
                                      (Child's name)
at _____ school to participate in this
    (Child's school)

study on how feelings may relate to children's understanding and behaviour in social situations, being conducted by Ms. Cathy Bulow. I recognize that participation is voluntary and that my permission may be withdrawn at any time.

I am aware that my child will be asked to complete four brief questionnaires regarding his/her thoughts and feelings. In addition, my child will be shown some videotaped scenes (each scene is approximately 15-20 sec in duration) of children interacting and asked some questions about these scenes. I am aware that these answers will be tape-recorded and that all information will remain confidential. No identifying information will be recorded on the questionnaires or response sheets and at no time will the identity of any of the participants be disclosed. The study will take approximately 60-90 minutes and will be done at my child's school.

I understand that I may contact Ms. Cathy Bulow if I have any questions regarding the study (253-4232 Ext. 2218). I am also aware that this research has been reviewed by the University of Windsor's Psychology Department. I understand that the Ethics Committee is available to me for reporting any concerns about this study. The Chairperson of this Committee is Dr. Sylvia Voelker and she may be contacted at the University of Windsor (253-4232 Ext 2249). Dr. Sylvia Voelker is also the academic advisor for this project.

_____
Parent's Signature

_____
Child's Birth Date

_____
Today's Date

Parent's Name:
Phone Number:

Parent Questionnaire—Family Statistics

1.   Child's name (who will participate in this study).

      _____

2.   Child's grade in school _____

3.   Number of children in the home _____

4.   Parental Information

      (a) Marital status (please circle one):

          married, single, separated, divorced, widowed

      (b) Level of school completed: Mother   Father
          Less than grade 11   _____   _____
          Grade 11   _____   _____
          High School graduate   _____   _____
          Partial college   _____   _____
          Standard college or university   _____   _____
          graduation

          Graduate degree   _____   _____

      (c) Occupation (please list): mother_____

                                     father_____

      (d) Presently employed (circle)

              mother: yes no   full-time or half-time

              father: yes no   full-time or half-time

Appendix D

Child's Assent Form

Hi, my name is Cathy Bulow. I am a student at the University of Windsor and am doing a project about how kids think about certain things.

I would like to know if you would like to help me out today. What I will ask you to do is read some questions with me and then answer them. There are two questionnaires to answer and it probably won't take you very long to finish it. The questions have no right or wrong answers. Its just important that you answer them the way you really think.

Sometimes kids have problems that make them feel unhappy. If I think some of the kids who answer my questions are having some difficulties, I will need to tell their parents and some other people who can help them.

I will also be asking some of you for more help again later on with my project. What I will be asking you do then is watch a videotape and answer some questions about the tape. When I do this part, I will be tape recording the answers so that we can work more quickly, but I won't let your teachers or any of the other kids hear your tape.

When I am finished talking with all the kids that I'd like to see, I am going to be writing up a big project. My teachers will read it and it might be part of a book but no one will know who the kids are that helped me.

Your mom/dad has said it is okay for you to answer these questions today. Do you think you would like to help me by answering my questions. You don't have to if you don't want to --you won't get into any trouble if you say "no", its up to you. You can also stop at any time once we have started. You can also stop at any time if you decide that you don't want to keep going once we have started. What would you like to do?

If you would like to help me, please sign your name on the line below.

_____
Child's Name