MULTIFACETED ORIGINS OF CHILD SOCIAL ANXIETY: ASSESSING TEMPERAMENTAL AND PSYCHOLOGICAL VULNERABILITIES

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Multifaceted origins of child social anxiety:

Assessing temperamental and psychological vulnerabilities

by

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Abstract

The purpose of the present study was to assess youth temperamental and psychological variables that interact in the expression of social anxiety. Specifically, this study examined whether significant associations exist between a) behavioural inhibition system (BIS) sensitivity and social anxiety, negative affect and social anxiety, and positive affect and social anxiety, and b) whether parental control moderates the predicted relationships between BIS sensitivity and child social anxiety, negative affect and child social anxiety, and positive affect and child social anxiety. Finally, this study examined c) whether parental expressiveness moderates the predicted relationship between child social anxiety and positive affect. BIS sensitivity, positive affect, and negative affect were assessed in a non-clinical sample of children aged 9 to 13. Parental control and expressiveness were assessed in one of each of the children's parents. As predicted, BIS sensitivity and negative affect were both significantly and positively correlated with social anxiety, and parental control moderated the BIS sensitivity-social anxiety relationship. In contrast with predictions, the negative affect-social anxiety relationship was not moderated by parental control and positive affect was not significantly correlated with social anxiety. This study highlights some important implications of these findings as well as some possible limitations. Future directions are discussed.

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Table of Contents

List of Tables

List of Appendices

Multifaceted Origins of Child Social Anxiety: Assessing Temperamental and Psychological Vulnerabilities

Social anxiety disorder (SAD), also referred to as social phobia, is an enduring and intense fear of social situations, in particular when they involve unfamiliar people (American Psychiatric Association, 2000). Although it is normal for an individual to experience low to moderate anxiety in social situations (in particular when under the scrutiny of others), it is abnormal for an individual to experience anxiety that interrupts his or her daily functioning.

Social anxiety is an important area of psychological research for a number of reasons. First, it has been associated with high prevalence rates (Kessler et al., 2012; Merikangas et al., 2010). Merikangas et al. (2010) reported lifetime prevalence rates of 11.2% and 7.0% for adolescent females and males respectively. In another adolescent study, a 12-month prevalence rate of 8.2% was reported (Kessler et al., 2012). Aside from the high prevalence rates, SAD is characterized by a young mean age of onset, typically first expressed in early adolescence. One study in particular found the mean age of onset for SAD to be 11.3 years of age (Last, Perrin, Hersen, & Kazdin, 1992). Moreover, SAD is associated with high stability rates; one epidemiological study showed a mean duration of 16.3 years (Grant et al., 2005). Furthermore, social anxiety has been associated with increased substance use with drugs such as alcohol and marijuana (Buckner, Heimberg, Matthews, & Silgado, 2012; Thomas, Randall, & Carrigan, 2003). In an attempt to become more relaxed before engaging in social situations, socially anxious individuals will often self medicate (Buckner et al., 2012; Thomas et al., 2003).

As a result of the high prevalence rates, long duration, and strong associations with substance misuse, identifying efficacious treatment options has become vital.

Additionally, throughout the years many modifications have been made to the Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria for SAD. Particularly, with the publication of the DSM-IV, overanxious disorder (a disorder whereby social symptoms overlapped with SAD) was removed from the manual resulting in social symptoms becoming more exclusive to SAD (American Psychiatric Association, 2000). As a result of the DSM-IV description, research examining how to treat SAD as it is defined today, as opposed to how it may have been defined prior to its modification in the DSM IV, is of importance. However, for researchers and clinicians to better treat social anxiety, the mechanisms underlying and maintaining it must be made known.

Barlow (2002), in discussing his triple vulnerability model of anxiety, posited that the development of anxiety is multifaceted or multi-factorial. That is, an anxiety disorder is less likely to be expressed if an individual has a single vulnerability, but in contrast, has its highest chance of being expressed if the individual holds two or three of the following vulnerabilities: a generalized biological vulnerability, a generalized psychological vulnerability, and a specific psychological vulnerability. Generalized biological vulnerabilities include factors such as personality traits and temperaments, or aspects of an individual that have demonstrated some genetic or heritable component (Barlow, 2002; DiLalla, Kagan & Reznick, 1994). Generalized psychological vulnerabilities include variables such as parenting styles and early experiences relating to feelings of control, or aspects believed to be primarily a product of one's environment. Specific psychological vulnerabilities include such things as learned alarms or conditioned responses, by which

one learns to "focus anxiety on specific objects or situations" (Barlow, 2000, p.1256). It is important to mention that, although Barlow (2000) describes generalized biological vulnerabilities as demonstrating genetic components, that this is not the central message conveyed in the present study; instead, the central message is that individuals who both possess specific temperamental styles and are subject to specific environments are at an increased likelihood of developing anxiety relative to individuals who have only one or the other (or neither). This is regardless of the origin of the temperament (whether it is genetically based, environmentally based or a combination of both). The intent of this study is not to determine whether temperamental or environmental variables are responsible for the relationships being examined; rather the intent is to observe the extent to which the relationships of interest are present in a "normal" sample of children. Research has been conducted on both the temperamental and psychological factors linked to anxiety, and social anxiety in particular.

Generalized Biological Vulnerabilities

Positive and negative affect are two temperamental variables that are often, although not necessarily, first apparent in infancy, and that demonstrate high temporal stability (Lonigan, Phillips, & Hooe, 2003; Putnam, Rothbart, & Gartstein, 2008). Negative affect can be defined as a temperament associated with high rates of negative emotions (such as sadness, guilt, fear, and anger) (Laurent et al., 1999). Studies have shown strong positive correlations between negative affect and the personality trait neuroticism (Watson & Clark, 1992). In contrast, positive affect is a temperament associated with high levels of positive emotions (including happiness and excitement) (Laurent et al., 1999). Strong positive associations have linked positive affect with the

personality trait extraversion (Watson & Clark, 1992). The most common method by which positive and negative affect are assessed is through parent and child report measures.

Research has shown positive correlations between negative affect and social anxiety (Anderson, Veed, Inderbitzen-Nolan, & Hansen, 2010; Dia & Bradshaw, 2008; Hayward et al., 2008; Hughes & Kendall, 2009; Moscovitch, Suvak, & Hoffman, 2010). This correlation has been shown in both clinical (Hughes & Kendall, 2009; Moscovitch et al., 2010) and community samples (Anderson et al., 2010; Hayward et al., 2008) and has been demonstrated in adults (Moscovitch et al., 2010) as well as adolescents (Anderson et al., 2010; Dia & Bradshaw, 2008; Hayward et al., 2008); less research, however, has been conducted on this relationship in a sample of non-clinical school-aged children. Furthermore, although limited research has been conducted on the direction of this relationship, one longitudinal study of an adolescent sample showed negative affect to be a risk factor or predictor of social anxiety (Hayward et al., 2008) and additional longitudinal studies have demonstrated negative affect to be a risk factor for anxiety more generally (Lonigan et al., 2003; Rende, 1993). One longitudinal study in particular found a link between maternal report of negative affect in infancy and maternal report of child's anxiety at seven years of age (Rende, 1993). Collectively, these studies have provided evidence to suggest that having a negative affect predisposes the individual to developing SAD, rather than the reverse; that is; it appears less likely that SAD predisposes the individual to developing a negative affect.

The correlation between positive affect and anxiety, however, has been more inconsistent and thus more controversial (Hughes & Kendall, 2009; Laurent et al., 1999).

The tripartite model of depression and anxiety, a model outlining the origins of both disorders, posits that the underlying factors that distinguish anxiety and depression are physiological hyperarousal and positive affect (Clark & Watson, 1991; Laurent et al., 1999). Whereas both depression and anxiety share the same underlying temperamental variable of negative affect, depression is uniquely related to positive affect (Clark & Watson, 1991; Laurent et al., 1999) and anxiety is uniquely related to physiological hyperarousal (Laurent et al., 1999). In more recent years, however, researchers have found (in contrast to the tripartite model of anxiety and depression) negative correlations between positive affect and social anxiety specifically (Anderson et al., 2010; Chorpita, Plummer, & Moffitt, 2000; Hughes & Kendall, 2009; Moscovitch et al., 2010). Due to the inconsistent results, additional research on these variables is necessary for a better understanding of the true origins of SAD, and how it can be distinguished from other forms of anxiety. Perhaps some forms of anxiety, such as social anxiety, are even more closely linked to depression than initially thought. That is, SAD specifically may be more closely linked to features of depression (such as rumination and worry) than features of anxiety (such as panic).

Another possibility is that, rather than being a risk factor for SAD, reduced positive affect may be a consequence. Substantial research has been conducted on the association between social behaviour and positive affect or mood (Larson, 1990; Watson, Clark, McIntyre, & Hamaker, 1992; Weinstein & Mermelstein, 2007). In one study of undergraduate students, researchers showed that, when asked to give weekly reports on mood and frequency of social activities, positive affect levels were significantly associated with frequency of overall social activity (Watson et al., 1992). That is,

frequency of social activity was strongly associated with mood, with increased social activities being associated with increased positive mood. Moreover, when positive affect was separated into its four subscales including joviality, sociability, assurance, and attentiveness, frequency of social activity was related to all four (Watson et al., 1992). A similar positive association between positive affect and interactions with others was obtained in an adolescent sample with a mean age of 14.36 (Weinstein & Mermelstein, 2007). In a similar vein, researchers have shown positive associations between solitariness, and loneliness- a mood negatively related to positive affect (Larson, 1990). This association has been found across age groups, with adolescents reporting the strongest relationship, or being the most negatively affected by solitariness (Larson, 1990). These results may imply that individuals high in positive affect are more likely to engage in social activities than their low positive affect counterparts but they may also suggest that social behaviour increases positive affect (and a lack of social activity decreases positive affect).

On the whole, social interactions are an adaptive and evolutionary part of our existence as human beings. It seems entirely plausible that, with the comfort of these social interactions removed, as is often seen in the case of socially anxious individuals, that components of positive affect (such as excitement, happiness, energy, and cheerfulness), would be substantially reduced (Kashdan & Steger, 2006). The likelihood of this proposition is increased by the fact that the majority of studies revealing significant correlations between positive affect and social anxiety are those in which the sample is clinical (Anderson et al., 2010; Chorpita, Plummer, et al., 2000; Hughes &

Kendall, 2009). This finding suggests that once an individual's social anxiety becomes very extreme, a reduction in positive affect may ensue.

Another generalized biological vulnerability that has been linked to social anxiety is Behavioural Inhibition (BI). BI, often discussed in conjunction with negative affect and believed to overlap with it, is a temperamental trait that is often characterized by shyness and withdrawal (Carver & White, 1994). Kagan, Reznick, and Snidman (1986), who were the first to coin the term, defined it as "the tendency [for a child] to display or not to display an initial period of inhibition of speech and play, associated with a retreat to a target of attachment, when the child encounters an unfamiliar or challenging event" (p.54). Following this definition, BI is an indication of a child's sensitivity to an unfamiliar, potentially punishing situation.

Behaviourally inhibited individuals are believed by some researchers and theorists to be under the control of their behavioural inhibition system (BIS) (Kimbrel, 2008), a system purported to function in the septo hippocampal system, the subiculum, the amygdala, and the prefrontal cortex of the brain (Degroot & Treit, 2004; Gray, 1987; McNaughton, 2006; McNaughton & Gray, 2000). This system is believed to "inhibit behaviour that may lead to negative or painful outcomes," and in turn "cause inhibition of movement towards goals" (Carver & White, 1994, p. 319). Individuals high in BIS sensitivity are said to have heightened "sensitivity to punishment" and "concern over the possibility of a bad occurrence" (Carver & White, 1994, p.322). These individuals are more likely than their low BIS-sensitivity peers to perceive neutral situations as threatening, assess the situation as hostile, and consequently behave in an increasingly inhibited manner (McNaughton & Gray, 2000). Researchers have demonstrated that the

BIS and its sensitivity to cues of punishment can be modified by environmental conditions such as high levels of stress (Korte, 2001; Takahashi et al., 2007).

BI can be measured in a number of ways, including via self-report and observation; in observational paradigms, when placed in an unfamiliar situation with unfamiliar people (a potentially punishing situation for infants), experimenters make note of behaviours such as toddler cessation of play, cessation of speech, latency before interaction, and difficulty separating from the mother (Biederman, Rosenbaum, Hirshfeld, & Faraone, 1990). BIS sensitivity, as well, can be measured both via self-report and behavioral observational tasks. In one example of a laboratory assessment of BIS sensitivity in school-aged children, researchers measured BIS sensitivity through a computer task; participants were presented with stimuli on a computer screen (a colored circle presented above a two-digit number), and on each trial were asked to discriminate odd and even numbers. Participants were rewarded for correct discriminations (they gained points) and were punished for incorrect discriminations (they lost points) (Colder & O'Connor, 2004). In this study, the researchers linked a single stimulus to punishment by informing participants that they would lose extra points if they responded incorrectly on trials where the cue was present. Participants who were reported by their parents as being high in BIS sensitivity demonstrated higher reaction time discrepancies between trials when the punishing cue was absent and trials when the punishment cue was present (Colder & O'Connor, 2004). This was taken as an indication that these children were more sensitive to punishment (Colder & O'Connor, 2004).

Similar to negative affect, BI has been correlated with social anxiety (Hayward, Killen, & Kraeman, 1998; Mick & Telch, 1998; Muris, Meesters, & Spinder, 2003). This

relationship between BI and social anxiety has been found in both clinical (Biederman et al., 1990; Schwartz, Snidman, & Kagan., 1999) and community samples (Biederman et al., 1990; Hayward et al., 1998; Kagan, 1989; Mick & Tech, 1998; Schwartz et al., 1999), as well as when assessed through paper-and-pencil report measures (Hayward et al., 1998; Mick & Tech, 1998; Muris et al., 2003) and tasks (observed child inhibition) (Biederman et al., 1990; Hirshfield-Becker et al., 2007; Schwartz et al., 1999). The relationship has been yielded in adolescent (Hayward et al., 1998), undergraduate (Mick & Tech, 1998), and school-aged samples (Muris et al., 2003). Moreover, through the use of longitudinal studies, researchers have shown BI to be a risk factor for social anxiety (Biederman et al., 1990; Hayward et al., 1998; Hirshfield-Becker et al., 2007; Schwartz et al., 1999). In one longitudinal study, when assessed at 13 years of age, 61% of children who were described at age 2 as being behaviourally inhibited were shown to have high levels of social anxiety (Schwartz et al., 1999). This was in contrast to the 27% of behaviourally uninhibited two year olds who demonstrated social anxiety when assessed at 13 years (Schwartz et al., 1999). In the same study, 34% of children described at age 2 as being behaviourally inhibited were shown to have clinical levels of generalized social anxiety, whereas only 9% of subjects assessed as being behaviourally uninhibited, had comparable levels of social anxiety (Schwartz et al., 1999). This study suggests that, although BI is a risk factor for SAD, not everyone who is behaviourally inhibited will develop SAD (66% did not). Therefore, psychological vulnerabilities such as familial and peer variables are likely to play significant roles in the relationship as well, and thus it is important to research these factors as well.

Research conducted on the relationship between BIS sensitivity and social anxiety is somewhat more limited; this is particularly true in children, due largely to a deficiency of valid and reliable measures of child BIS sensitivity in the past. In more recent years, additional measures of BIS sensitivity have been developed or modified (Field, 2006; Muris, Meesters, de Kanter, & Timmerman, 2005). Nevertheless, only a few studies have been conducted on the relationship between BIS sensitivity and social anxiety specifically (Coplan, Wilson, Frohlick, & Zelenski, 2006; Lorian & Grisham, 2010; Sportel, Nauta, de Hullu, de Jon, & Hartman, 2011). The majority of BIS studies have looked at the relationship between BIS sensitivity and internalizing or anxiety disorders more generally (Colder & O'Connor, 2004; Johnson, Turner, & Iwata, 2003; Kimbrel, Nelson-Gray, & Mitchell, 2007; Muris et al., 2005). Furthermore, with regards to the aforementioned studies assessing the relationship between BIS sensitivity and anxiety, many have been conducted on young adults and undergraduate students as opposed to children or youth (Johnson et al., 2003; Kimbrel et al., 2007; Lorian & Grisham, 2010), and a number of those that were conducted in school-aged children employed measures that were developed for adults (Coplan et al., 2006; Sportel et al., 2011). Finally, many of these studies have assessed BIS sensitivity via laboratory tasks or behavioural observation as opposed to self-report measures (Colder & O'Conner, 2004; Newman, Wallace, Schmitt, & Arnett, 1997). In the current study BIS sensitivity, not BI, was assessed. A self-report measure was utilized.

Generalized Psychological Vulnerabilities

Studies have yielded significant positive correlations between parental control and child social anxiety (Arrindell, Kwee, Methorst, & van der Ende, 1989; Bandelow et al.,

2004; Festa & Ginsburg, 2011; Lieb et al., 2000; Rapee, 1997; Rork & Morris, 2009; Spokas & Heimberg, 2009). Whereas parental control and overprotection have been linked to child anxiety in general (Rork & Morris, 2009), some research has focused on social anxiety specifically (Arrindell et al.,1989; Festa & Ginsburg, 2011). Some researchers have even noted that the correlation exists more strongly in socially anxious children and their parents than in parents and children presenting with other anxiety disorders such as agoraphobia (Arrindell et al., 1989). This correlation has been shown in both clinical (Arrindell et al., 1989; Bandelow et al., 2004) and community samples (Lieb et al., 2000; Rork & Morris, 2009; Spokas & Heimberg, 2008), and has been demonstrated across various age groups including school aged children from 7 to 12 years old (Festa & Ginsburg, 2011) and from 10 to 13 years old (Rork & Morris, 2009), adolescents (Lieb et al., 2000), and adults (Arrindell et al., 1989; Bandelow et al., 2004). Furthermore, it has been demonstrated through the use of retrospective offspring reports (Arrindell et al., 1989; Bandelow et al., 2004; Lieb et al., 2000; Rork & Morris, 2009; Spokas & Heimberg, 2008) and current childhood reports of their parent's behaviour towards them (Festa & Ginsburg, 2011), although the bulk of the research has referred to the former. Current parental control has also been assessed by observing children and parents interact. This, too, has yielded significant correlations between parental control and child social anxiety (Festa & Ginsberg, 2011; Rork & Morris, 2009).

Another psychological vulnerability that has been linked to anxiety is emotional expressiveness (Eisenberg, Cumberland, & Spinrad, 1998; Grant, Beck, Farrow, & Davila, 2007). Studies have shown positive correlations between social anxiety and avoidance or suppression of emotion (Grant et al., 2007). Moreover, in school aged

children currently presenting with an anxiety disorder (including generalized anxiety disorder, social anxiety disorder, separation anxiety disorder and specific phobia) and their parents, child emotional suppression and difficulty regulating emotions is associated with parental discouraging of emotions (Suveg, Zeman, Flannery-Schroeder, & Cassano, 2005; Suveg et al., 2008). That is, children with emotionally inexpressive parents and parents who discourage the expression of emotion have been shown to suppress emotion significantly more than their nonclinical counterparts (Suveg et al., 2005; Suveg et al., 2008). Because this finding was shown in anxiety-disordered children but not their nonclinical counterparts, it suggests that parental discouraging of emotions might be a factor that predisposes or maintains an individual's social anxiety.

In a study assessing the three-way association between emotional expressiveness, social anxiety, and positive emotions in an undergraduate sample, results showed a) an inverse relationship between social anxiety and positive emotions, b) a positive relationship between social anxiety and emotion suppression, and c) a negative relationship between positive emotions and emotion suppression (Kashdan & Steger, 2006). These findings are interesting for a number of reasons. First, although the direction of the relationship is unknown, the results of the study demonstrate that there is a three-way relationship between expressiveness, positive affect, and social anxiety; second, the results illustrate that emotional inexpressiveness is related to both social anxiety (positively) and positive emotions (negatively). From these results the authors speculate that social anxiety may predispose an individual to become emotionally inexpressive (out of fear of rejection), which in turn, may cause the socially anxious individual to develop decreased positive emotions (Kashdan & Steger, 2006). Taken with

the previous studies (Suveg et al., 2005; Suveg et al., 2008), these findings suggest that parental discouragement of expressed emotion might serve to maintain youth anxiety disorders; however, with SAD specifically, the disordered youth is already struggling with suppression of emotion (quite possibly due to a fear of rejection). As a result, discouraging the expression of emotions might result in an even stronger fear of expressing emotions, and thus, a further reduced positive affect.

The Present Study

The first goal of the present study is to ascertain whether there exists a) a significant positive correlation between BIS sensitivity and child social anxiety, b) a significant positive correlation between negative affect and child social anxiety, and c) a significant negative correlation between positive affect and child social anxiety. Although at least partial support has previously been demonstrated for the association amongst these variables, particularly for a) and b), these relationships will be analyzed in the present study as well for reasons discussed below.

With reference to a), the majority of the aforementioned studies regarding youth social anxiety have observed the relationship between social anxiety and BI (the actual behaviour) instead of the relationship between social anxiety and the child's sensitivity to punishment, or his or her propensity towards inhibited behaviour (BIS sensitivity) (Biederman et al., 1990; Hayward et al., 1998; Hirshfield-Becker et al., 2007; Mick & Tech, 1998; Schwartz et al., 1999). This is due largely to a lack of appropriate measures of child BIS sensitivity in the past. Assessing the relationship between BIS sensitivity and social anxiety in youth above and beyond the relationship between BI and social anxiety might prove to be of additional interest. If inhibited behaviour is a product of and

an observable manifestation of heightened BIS sensitivity, as is suggested by various researchers (Carver & White, 1994; Gray, 1978; Kimbrel, 2008; Muris, Rassin, Franken, & Leemreis, 2007; Rothbart & Mauro, 1990), detecting a relationship between social anxiety and BIS sensitivity might indicate that targeting BIS sensitivity levels could potentially prevent the actual inhibited, shy, and withdrawn behaviour from being expressed in youth or prevent it from becoming too extreme or disordered. Subsequently, if fearful and anxious cognitions regarding potentially punishing situations are reduced, the possibility exists that youth might become increasingly social, curious, and explorative. As some researchers believe that avoiding potentially punishing social situations and inhibiting one's behaviour in these situations can exacerbate social anxiety (Sportel et al., 2011), the reduction of inhibited behaviour and a following move towards exploration and sociability, in turn, could possibly offset the child's probability of becoming severely socially anxious.

Overall, the main reasoning for studying the relationship between BIS sensitivity and social anxiety above and beyond the relationship between BI and social anxiety relates to the conceptual difference between the two terms. Whereas the term BI, as operationalized by Kagan and colleagues, conceptualizes a tendency towards shy and withdrawn behavior, BIS sensitivity conceptualizes sensitivity towards punishment more generally (which is possibly implicated in BI). Researchers have discussed BIS sensitivity as being associated with inhibited behaviour (Field, 2006; Gray, 1978), but have also discussed it as being associated with fear, anxiety, and negative affect states, amongst other traits (Field, 2006; Gray, 1978). Consequently, it appears as though BI is only one possible outcome, among many, of BIS sensitivity.

Finally, studies assessing BI and BIS sensitivity have done so predominantly through observational paradigms as opposed to self-report measures (Biederman et al., 1990; Colder & O'Conner, 2004; Newman et al., 1997; Schwartz et al., 1999). In the current study, BIS sensitivity will be assessed using a self-report questionnaire; instead of observing how children react to a "potentially punishing" situation or event (e.g. being placed in an unfamiliar place with unfamiliar people or responding to a particular letter or number when told that it is a "punishing cue"), children will have to report on how they would react to specific potentially punishing situations (e.g. how they would react if someone was angry at them).

Although the intent of the current study is to assess whether there is a significant relationship between BIS sensitivity and social anxiety, if a significant relationship is observed, it would be of additional benefit for future studies to determine whether the relationship is mediated by BI. It may be that BIS sensitivity (or sensitivity towards punishment) is directly implicated in the development of social anxiety. However, it may be that it is the inhibited behaviour itself that plays the most significant role in the development of social anxiety; perhaps a lack of interactive and explorative behaviour on the behalf of the child might directly affect the child's comfort level in these potentially punishing situations, thereby creating or enhancing social anxiety. BIS sensitivity, on the other hand, may be only indirectly involved.

With regards to b), as was said previously, the majority of findings associating negative affect and social anxiety have been observed and yielded in samples of high school youth, undergraduate students, and adults (Anderson et al., 2010; Dia &

Bradshaw, 2008; Hayward et al., 2008; Moscovitch et al., 2010). In the present study, these relationships are examined in a younger sample.

Furthermore, little research has been conducted on the impact that psychological vulnerabilities have on pre-existing relationships between youth temperament and anxiety. In the present study, this gap in the literature regarding the interaction between psychological and temperamental vulnerabilities will be addressed. If the first three hypotheses prove to be correct and the relationships are significant, the possible moderating effects of parental control will be assessed on the relationship between a) BIS sensitivity in children and child social anxiety, b) negative affect in children and child social anxiety, and c) low positive affect in children and child social anxiety. It is hypothesized that parental control will significantly moderate all three of the aforementioned relationships such that, whether the temperamental vulnerabilities are negatively related to social anxiety (as in the case of positive affect) or positively related to social anxiety (as in the case of BIS sensitivity and negative affect), the relationships will be stronger in children with controlling parents than children whose parents are less controlling.

As discussed previously, the possibility exists that rather than being a risk factor for SAD, reduced positive affect may be a consequence of the disorder. As a result, in the third part of this study positive affect will be assessed as a dependent variable. Because of the aforementioned negative association between socially anxious children's inexpressiveness and their positive emotionality (Kashdan & Steger, 2006), and because family inexpressiveness has been shown to negatively affect the individual's own inexpressiveness (Suveg et al., 2005; Suveg et al., 2008), it seems plausible that family

suppression of emotion may exacerbate the child's current suppression of emotion, and in turn further reduce the child's positive affect. That is, taking into account the findings yielded from three previously conducted studies, one study concluding that socially anxious youth are prone to emotional inexpressiveness which may lead to a reduced positive affect (Kashdan & Steger, 2006), and the other two studies concluding that family inexpressiveness may serve to maintain or exacerbate this suppression of emotion (Suveg et al., 2005; Suveg et al., 2008), it is hypothesised that family inexpressiveness will significantly moderate the relationship between social anxiety and positive affect. It is hypothesised that children who are high in social anxiety and who are members of families that are emotionally inexpressive will have lower positive affect scores than children who are high in social anxiety and are not members of emotionally inexpressive families; the predicted negative relationship between social anxiety and positive affect will be stronger in children who are members of emotionally inexpressive families than in children who are not members of emotionally inexpressive families.

Moreover, as discussed previously, positive affect has been associated with depression (Clark & Watson, 1991; Kashdan & Steger, 2006; Laurent et al., 1999). It is possible that, in some instances, the progression of depression follows a course that starts with social anxiety. The social anxiety may serve to create a state of reduced positive emotionality in the individual. Finally, this reduced positive emotionality may progress into a depressive disorder. The credibility of this notion is strengthened by research which has demonstrated anxiety, in the majority of cases, to be a precursor to depression, rather than the reverse (Mineka, Watson, & Clark, 1998; Schneier, Johnson, Hornig, & Liebowitz, 1992). Additionally, in one particular study, significant correlations between

social anxiety and emotion suppression (positive), emotion suppression and positive affect (negative), and emotion suppression and depressive symptoms (positive) were observed (Kashdan & Steger, 2006). More interestingly, however, was that positive affect scores were shown to be the lowest on days when anxious individuals felt the most social anxiety and suppressed the most emotions, in contrast to days when participants expressed only high social anxiety or only high emotion suppression (Kashdan & Steger, 2006). Although causal or directional inferences cannot be made as a result of the correlational and cross-sectional nature of the study, inferences can be made. If it is in fact the case that, in some instances depressive disorders and depressive symptoms originate with social anxiety which leads to reduced positive affect, through targeting and treating factors that exacerbate an already low positive affect, such as parental or family inexpressiveness, the therapist may be, in effect, decreasing the individual's probability of becoming depressed.

Method

The current study is part of a larger ongoing study in the Department of Psychology.

Participants

In total, 42 school aged children were recruited, as well as one of each of their parents. The child participants ranged in age from 9 years, 0 months to 13 years, 3 months; 30.95 % (N = 13) of the sample were 9 year olds, 59.52% (N = 25) of the sample were 11 year olds, and 9.50% (N = 4) of the sample were 13 year olds. The mean age of the final sample was 10. 48 years (SD = 1.21). The participants included 57.14% boys (N = 24) and 42.86% girls (N = 18). From this sample, 83.33% (N = 35) of parent reports

were by mothers, and 16.67% ($N = 7$) of parent reports were by fathers. With respect to ethnicity, 85.71% ($N = 36$) of youth were white, and 14.29% ($N = 6$) were various other ethnicities (including Latin American, Chinese, Portuguese, Irish, Arab, and Indian). Mothers in this sample ranged in age from 35 years to 48 years, with a mean age of 41.97 ($SD = 3.50$). Fathers in this sample ranged from 32 years to 53 years with a mean age of 44.00 ($SD = 7.05$). With respect to family annual income, 4.8% ($N = 2$) of families earned $0-$36,378, 19% ($N = 8$) of families earned $36,379-$72,756, 28.6% ($N = 12$) of families earned $72,757-$118,285, and 47.6% ($N = 20$) of families earned over $118, 286. Therefore, the majority of participants in this study were in the middle to upper class range. All of the participants were recruited from elementary and junior high public schools in the St. John's area.

Measures-Parent Report

Family Environment Scale (FES; Moos & Moos, 1981). The Family Environment Scale (FES) is a 90-item scale designed to measure ten aspects of family functioning (Moos & Moos, 1981). These aspects include family cohesion, expressiveness, conflict, achievement orientation, moral-religious emphasis, intellectual-culture, active-recreational orientation, independence, control, and organization. Participants respond to the FES by selecting true (1) or false (2) depending on whether the statement is true for most or all members of the family or false for most or all members of the family. Scores can range from 90 to 180 with higher scores indicating higher levels of each respective family attribute. The FES has moderately good psychometric properties with alpha coefficients ranging from .64 to .79 for each of the

subscales, and eight-week test-retest reliability scores ranging from .68 to .86 (Moos & Moos, 1981).

In the larger study on which the current study is based on, a 36-item version of the FES is employed. For the purpose of the present study, however, only two of the subscales, the control subscale and the expressiveness subscale, will be observed and analyzed. The control subscale, which represents "the extent to which set rules and procedures are used to run family life," includes nine items (See Appendix A, items 4, 8, 12, 16, 20, 24, 28, 32, and 36) (Moos & Moos, 1981). An example of a control item is "There is a strong emphasis on following the rules in my family." The expressiveness subscale, which represents "How much family members are encouraged to act openly and to express their feelings directly," includes nine items (See Appendix A, items 2, 6, 10, 14, 18, 22, 26, 30, and 34) (Moos & Moos, 1981). An example of an expressiveness item is "There are a lot of spontaneous discussions in our family." Both the control subscale and the expressiveness subscale have demonstrated moderate coefficient alphas (α = .67 and α = .69, respectively).

Demographic Information Sheet. The demographic information sheet (See Appendix B) includes questions relating to sociological attributes of the child and parent. It assesses child age (in years and months), gender, ethnicity, school grade, and academic performance amongst various other attributes. It also includes questions about the parent's ethnicity, the child's relationship to parent, the child's living arrangement, and the number of brothers, sisters, grandparents, and other relatives that the child has. Additionally, questions are posed regarding the age, occupation, and highest education

level attained by the child's mother and father, as well as the annual family income.

Measures- Child Report

Revised Child Anxiety and Depression Scales (RCADS; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000). The Revised Child Anxiety and Depression Scale (RCADS) is a 47-item self report measure of child anxiety and depression that includes six different subscales: Separation Anxiety Disorder (SAD), Social Phobia (SP), Generalized Anxiety Disorder (GAD), Panic Disorder (PD),Obsessive Compulsive Disorder (OCD), and Major Depressive Disorder (MDD) (Chorpita, Yim, et al., 2000). Each item on the RCADS can be answered using a 4-Point Likert Scale with responses ranging from 0 (never) to 3 (always) and scores ranging from 0 to 141. Higher scores indicate increased levels of anxiety and depression. In a non-clinical school sample, all subscales of the RCADS demonstrated moderate coefficient alphas ranging from .71 to .85 (Chorpita, Yim, et al., 2000) and one-week test-retest reliability scores ranging from .64 and .80 for males, and .64 to .87 for females (Chorpita, Yim, et al., 2000).

In the current study, only the social phobia subscale, the major depressive subscale, and the anxiety composite score of the RCADS will be analyzed. The social phobia subscale includes nine items (See Appendix C, items 4, 7, 8, 12, 20, 30, 32, 38, and 43). An example of an item of this subscale is "I worry what other people think of me." The social phobia subscale has been demonstrated to have good psychometric properties; it has an internal consistency of .81 and one week test-retest reliability scores of .70 and .87 for males and females respectively (Chorpita, Yim, et al., 2000). The major depressive disorder subscale includes 11 items (See Appendix C, items 2, 6, 11, 15, 17, 19, 21, 25, 29, 40, and 47). An example of an item of this subscale is "Nothing is

much fun anymore." This subscale has demonstrated moderate to good psychometric properties; it has an internal consistency of .76 and one week test-retest reliability scores of .85 and .64 for females and males respectively. Finally, the anxiety composite score of the RCADS is a summation of all of the anxiety subscale items. It includes all of the items in the RCADS aside from the MDD subscale items.

Affect and Arousal Scale (AFARS; Chorpita, Daleiden, Moffitt, Yim, & Umemoto, 2000). The Affect and arousal scale (AFARS) is a 27-item self report measure of child affect and arousal that includes three different subscales; positive affect, negative affect, and physiological hyperarousal (Chorpita, Daleiden, et al., 2000). The positive affect subscale includes ten items (See Appendix D, items 1, 6, 9, 11, 14, 17, 19, 21, 23, and 24) and has an internal reliability of .77, the negative affect scale includes eight items (See Appendix D, items 2, 4, 8, 12, 15, 18, 22, and 26) and has an internal reliability of .80, and the physiological hyperarousal scale includes nine items (See Appendix D, items 3, 5, 7, 10, 13, 16, 20, 25, and 27) and has an internal reliability of .81 (Chorpita, Daleiden, et al., 2000). One week test-retest reliability scores were demonstrated to be moderately high for all three subscales (r = .68, r = .68, and r = .72 for PA, NA, and PH subscales respectively) (Daleiden, Chorpita & Lu, 2000). An example of a negative affect item is "Little things bother me," an example of a positive affect item is "When good things happen to me I feel full of energy," and an example of a physiological hyperarousal item is "My heart beats too fast." Each item on the AFARS can be answered using a 4-Point Likert Scale with responses ranging from 0 (never true) to 3 (always true). Scores on the positive affect scale range from 0 to 30, scores on the negative affect scale range from 0 to 24, and scores on the physiological hyperarousal

subscale range from 0 to 27. Higher scores indicate higher levels of positive affect, negative affect and physiological hyperarousal.

Carver White Behavioural Inhibition System (CW-BIS; Field, 2006). Adapted from Carver and White's (1994) original adult inhibition sensitivity scale, The Carver White Behavioural Inhibition System scale (CW-BIS) (See Appendix E) is a seven-item self-report measure of child BIS sensitivity or sensitivity regarding anxiety-provoking events (Field, 2006). The Carver White Behavioural Inhibition System has good psychometric properties; it has high convergent and discriminate validity which is demonstrated through significant positive correlations with negative affect (as measured by the Positive and Negative Affect Schedule), and harm avoidance (as measured by the Tridimensional personality questionnaire) (Carver & White, 1994), as well as through a high correlation with Muris et al.'s (2005) child adaptation of the CW-BIS ($r = .87$) (Field, 2006). The CW-BIS includes seven items and has demonstrated an alpha coefficient of .78 (Field, 2006). An example of an item on the CW-BIS is "I feel worried when I think I have done poorly at something." Each item on the CW-BIS can be answered using a 4-Point Likert Scale with responses ranging from 1 (not at all) to 4 (always) and scores ranging from 7 to 28. Higher scores indicate higher levels of BIS sensitivity.

Procedure

Prior to each administration of the child psychological assessment instruments a classroom script was read to students by the researcher. In this script, students were informed, in lay speech, as to the purpose of the study and of their ethical rights as participants. Youth were told that the questionnaires were private and that their parents

would not be informed of their answers. They were also told that the study was voluntary and, if they chose to participate, the length of time it would take them to complete it. Finally, they were given examples of items on the questionnaires. Following the speech, children were given parental consent forms for their parents to sign, and were asked to bring them back the following day if they chose to participate. Upon consent, parents were emailed an online code by which to complete the demographic form and the FES online, or, if preferred, were told that they could request a hard copy of these questionnaires to complete and mail back to the researcher in a prepaid envelope.

The child questionnaire packages included an assent form, the RCADS, the AFARS, and the CW-BIS. The questionnaire packages were numbered with the same code designated to the parents to allow for subsequent matching of child and parent questionnaires. The child questionnaire package was administered in a quiet, well-lit room, either in the school cafeteria or the school library, to students who choose to participate in the study. Entire questionnaire packages were completed in two 30-minute sessions by children aged 9 to 12 and one 60-minute session by children aged 13. However, as mentioned previously, because the current study is part of a larger study, duration of time to complete the RCADS, AFARS, and CW-BIS was substantially shorter.

Prior to the administration of the instruments, the children were told that the final choice to participate was to be made by them and that they did not have to take part in the study if they did not want to. They were told that there are no right or wrong answers and were encouraged to ask for help if they did not understand what was being asked at any point throughout the study. Finally, after choosing to participate in the study, children

were required to give their assent by printing or writing their name and the date of which they participated in the study on the assent form. The primary researcher read the items to the children in elementary schools. Children in junior high however, were given the questionnaires to read and answer on their own. Subsequent to the completion of the questionnaires, all information connecting numerical codes to names was discarded.

The study was granted ethics approval by the Human Investigation Committee and the Eastern School District.

Results

The following analyses were planned analyses; as such, no correction for Type I error was made (Scheirs, 1992).

Demographic Differences

An independent samples *t*-test was first conducted amongst children to determine possible gender differences in mean scores on the CWBIS, the RCADS social anxiety subscale, the RCADS major depressive disorder subscale, the RCADS anxiety composite scale, and the AFARS subscales (positive affect, negative affect, and physiological hyperarousal subscale) (see Table 1). Results showed no significant differences between boys and girls on any of the aforementioned scales. Subsequently, a second independent samples *t*-test was conducted amongst parents to determine whether parent gender differences in mean scores were present on the FES control and expressiveness subscales (see Table 1). Similarly, the results showed no significant differences between mothers and fathers on either subscale. Consequently, subsequent analyses were conducted across the entire sample as opposed to by gender. Conducting analyses by age groups as well as

ethnicity was precluded due to a limited age range in the current sample, as well as a predominantly Caucasian sample.

Table 1

Means and Standard deviations for the CWBIS, the FES control subscale, the FES expressiveness subscale, the RCADS social anxiety subscale, the RCADS major depressive disorder subscale, the RCADS anxiety composite, and the AFARS subscales (positive affect, negative affect, and physiological hyperarousal) for males and females

Measure	Males	Females
	Mean (SD)	Mean (SD)
CWBIS	17.88 (3.57)	19.17 (3.54)
FES-CONT	13.71 (2.06)	14.00 (1.19)
FES-EXP	15.43 (2.07)	15.29 (1.62)
RCADS-SOC	9.29 (5.47)	10.72 (5.81)
RCADS-MDD	6.79 (4.82)	6.33 (4.28)
RCADS-ANX	28.67 (19.72)	28.78 (15.44)
AFARS-PA	22.96 (3.88)	23.67 (5.54)
AFARS-NA	8.25 (3.70)	7.94 (3.84)
AFARS-PH	4.04 (3.74)	3.89 (3.66)

Note. CWBIS = Carver White Behavioral Inhibition System; FES-CONT = Family Environment Scale control subscale; FES-EXP = Family Environment Scale expressiveness subscale; RCADS-SOC = Revised Child Anxiety and Depression Scale social anxiety subscale; RCADS-MDD = Revised Child Anxiety and Depression Scale major depressive disorder subscale; RCADS-ANX = Revised Child Anxiety and Depression Scale anxiety composite score; AFARS-PA = Affect and Arousal Scale positive affect subscale; AFARS-NA = Affect and Arousal Scale negative affect subscale; AFARS-PH = Affect and Arousal Scale physiological hyperarousal subscale
*$p < .05$, **$p < .01$

Descriptive Statistics, Reliability, and Correlations

Means, standard deviations, internal consistencies, and bivariate correlations for the CWBIS, the FES expressiveness and control subscales, the RCADS social anxiety subscale, the RCADS major depressive disorder subscale, the RCADS anxiety composite scale, and the AFARS subscales (negative affect, positive affect, and physiological hyperarousal) were conducted across the full sample (see Table 2). Tests of internal consistency were conducted for all of the subscales and scales employed in the current study across the full sample (see Table 2). Although internal consistencies greater than α =.70 are generally considered acceptable, if a scale is comprised of fewer than 20 items, the acceptable lower bound may be decreased to α =.60 (Nunnally, 1967). Moderate internal consistencies were found for the RCADS-MDD subscale (α = .81), the RCADS-SOC subscale (α = .87), and the AFARS-PH subscale (α = .81). Adequate internal consistencies were found for the AFARS-PA subscale (α = .76) and the AFARS-NA subscale (α = .72). The FES-Control subscale, which is comprised of nine items, demonstrated a low but acceptable internal consistency (α = .65). Below adequate internal consistencies were yielded for both the FES-Expressiveness subscale (α = .43), which is comprised of nine items, and the CW-BIS scale (α = .56), which is comprised of seven items. As per the inadequate internal consistency scores, results using the FES-Expressiveness subscale and the CW-BIS should be interpreted with caution.

To confirm that the measures selected for this study were working as expected in this sample, the predictions of the well-supported tripartite model were assessed. In this sample, results were predominantly as expected. Significant positive correlations were

revealed between physiological hyperarousal and social anxiety, ($r = .46$, $p < .001$) and between negative affect and major depressive disorder ($r = .61$, $p < .001$). Additionally, a significant negative correlation was observed between major depressive disorder and positive affect ($r = -.48$, $p < .001$). However, in contrast to the tripartite model of anxiety and depression, physiological hyperarousal was significantly correlated with major depressive disorder in this sample ($r = .51$, $p < .001$). Despite this inconsistency, the relationship between negative affect and major depressive disorder is larger in magnitude than the relationship between physiological hyperarousal and major depressive disorder thereby providing partial support for the tripartite model of anxiety and depression.

In concordance with the first hypothesis, the results revealed a significant positive correlation between child BIS sensitivity and child social anxiety for the total sample of participants ($r = .81$, $p < .001$). This relationship is of a large effect size in that 65.61% of the variance in the child's social anxiety score can be attributed to the child's BIS sensitivity. Moreover, consistent with the tripartite model of anxiety and depression, the second hypothesis of the current study was also confirmed; a significant positive correlation was found between child negative affect and child social anxiety ($r = .65$, $p < .001$). This relationship is also of a large effect size in that 42.25% of the variance in the child's social anxiety score can be attributed to the child's negative affective temperament.

Conversely, the third hypothesis of the current study was disconfirmed as the results revealed a non-significant relationship between child positive affect and child social anxiety ($r = -.05$, $p = .78$).

Table 2. *Intercorrelations, Means, Standard Deviations and Internal Consistencies for Parent and Child scores on the CWBIS, FES, RCADS, and AFARS (n = 42)*

Measures	1	2	3	4	5	6	7	8	9
1. CWBIS	---								
2. FES-CNT	-.05	---							
3. FES-EXP	-.35*	-.06	---						
4. RCADS-SOC	.81**	-.11	-.26	---					
5. RCADS-MDD	.29	-.10	-.20	.30	---				
6. RCADS-ANX	.63**	-.19	-.29	.81**	.59**	---			
7. AFARS-NA	.57**	-.03	-.28	.65**	.61**	.67**	---		
8. AFARS-PA	-.04	-.01	-.09	-.05	-.48**	-.18	-.15	---	
9. AFARS-PH	.32*	-.13	-.36*	.46**	.51**	.64**	.49**	-.34*	--
M	18.43	13.95	15.31	9.90	6.60	28.71	8.12	23.26	3.98
SD	3.57	1.34	1.67	5.60	4.55	17.80	3.72	4.62	3.66
α	.56	.65	.43	.87	.81	.94	.72	.76	.81

Note. CWBIS = Carver White Behavioral Inhibition System; FES-CNT = Family Environment Scale control subscale; FES-EXP = Family Environment Scale expressiveness subscale; RCADS-SOC = Revised Child Anxiety and Depression Scale social anxiety subscale; RCADS-MDD = Revised Child Anxiety and Depression Scale major depressive disorder subscale; RCADS-ANX = Revised Child Anxiety and Depression Scale anxiety composite score; AFARS-PA = Affect and Arousal Scale positive affect subscale; AFARS-NA = Affect and Arousal Scale negative affect subscale; AFARS-PH = Affect and Arousal Scale physiological hyperarousal subscale

**p<.05, **p<.01*

As said previously, it was hypothesised that the BIS sensitivity-social anxiety, the negative affect-social anxiety, and the positive affect-social anxiety relationships would be moderated by parental control. Additionally, it was hypothesised that the social anxiety-positive affect relationship would be moderated by parental expressiveness. However, only the BIS sensitivity-social anxiety and the negative affect-social anxiety relationships were shown to be significant. As such, moderational models were only assessed for these two relationships.

The hypothesis that parental control would moderate, or change, the relationship between child BIS sensitivity and child social anxiety was assessed. It was predicted that high parental control would enhance or strengthen the relationship between BIS sensitivity and social anxiety such that the relationship would be stronger in children who had controlling parents than in children who had less controlling parents. More specifically, it was hypothesised that children high in BIS sensitivity would have higher social anxiety scores if their parents were also controlling than if their parents were not controlling.

To test parental control as a moderator of this relationship, regression analyses were performed according to Baron and Kenny's (1986) model. Variables entered into the first step included the proposed independent variable of BIS sensitivity, the proposed moderator of parental control, and the predictor by moderator interaction term (BIS sensitivity x parental control). Prior to conducting the regression analysis, values of BIS sensitivity and parental control were centered around the mean.

As predicted, the analyses revealed that child BIS sensitivity scores and parental control scores, when combined, accounted for a significant portion of the variance in

child social anxiety scores ($R^2 = .67$, F (2, 39) = 38.87, $p < .001$). However, while BIS sensitivity was a significant independent predictor of child social anxiety ($\beta = .81$, t (2, 39) = 8.74, $p < .001$), parental control was not ($\beta = -.07$, t (2, 39) = -.76, $p = .45$). Results further demonstrated that a significant proportion of the variance in child social anxiety scores was accounted for by the interaction between child BIS sensitivity and parental control ($\Delta R^2 = .04$, ΔF (1, 38) = 4.63, $p = .04$). This indicates that parental control moderates the BIS sensitivity-child social anxiety relationship.

To further examine the nature of the interaction, a simple slope analysis was conducted. To conduct this analysis, parental control was first trichotomized according to Aiken, West, and Reno's (1991) model. Participants were categorized as "low" in control if their score fell beneath one standard deviation below the mean, "medium" in control if their score fell between one standard deviation below and one standard deviation above the mean, and "high" in control if their score exceeded one standard deviation above the mean. Subsequently, three regressions were conducted separately for participants from families with low levels of control ($n = 5$), participants from families with moderate levels of control ($n = 32$), and participants from families with high levels of control ($n = 5$). The simple slope of the regression line was tested for each of the three groups.

Results from this analysis demonstrated that BIS sensitivity was not significantly related to social anxiety in participants from families low in control, though the effect size was of a large magnitude ($\beta = .85$, $t(4) = 2.81$, $p = .07$). In participants from families moderate in control ($\beta = .83$, $t(31) = 8.19$, $p < .001$), and participants from families high in control ($\beta = .93$, $t(4) = 4.32$, $p = .02$), there was a significant relationship between BIS sensitivity and social anxiety. Through examining the effect sizes of these relationships it

is apparent that the magnitude of this relationship was stronger in the high control group than in the moderate and low control groups; 86.12% of the variance in social anxiety scores was accounted for by child BIS scores in the high control group, 69.06% of the variance in social anxiety scores was accounted for by BIS scores in the moderate control group, and 72.42% of the variance in social anxiety was accounted for child BIS scores in the low control group.

The next analysis that was conducted in the present study was an examination of the hypothesis that parental control moderates the relationship between negative affect and social anxiety. In the introduction, it was proposed that the relationship between negative affect and social anxiety would be stronger in children who had controlling parents than in children who had parents who were less controlling. In other words, it was proposed that low levels of family control would act as a protective factor towards the development or enhancement of social anxiety that has already been shown to be a risk due to the child's negative affectivity or negative emotionality. To test parental control as a moderator of the relationship between negative affect and social anxiety, regression analyses were again performed according to Baron and Kenny's (1986) model. Variables entered into the first analysis included the proposed independent variable of negative affect, the proposed moderator of control, and the predictor by moderator interaction term (negative affect x parental control). Prior to conducting the regression analysis, values of negative affect and control were centered around the mean.

As predicted, analyses revealed that child negative affect and parental control scores, when combined, accounted for a significant portion of the variance in child social anxiety scores ($R^2 = .43$, $F\ (2, 39) = 14.58$, $p < .001$). However, while negative affect

was a significant independent predictor of child social anxiety ($\beta = .65$, t (2, 39) = 5.33, $p < .001$), parental control was not ($\beta = -.09$, t (2, 39) = -.74, $p = .46$). Additionally, a non-significant proportion of the variance in child social anxiety scores was accounted for by the interaction between child negative affect and parental control scores ($\Delta R^2 = .02$, ΔF (1, 38) = 1.07, $p = .31$). These results indicate that parental control did not moderate the negative affect-social anxiety relationship; parental control does not modify the impact that negative affect has on the child's social anxiety levels.

The third planned moderation analysis was to assess parental control as a moderator of the relationship between positive affect and social anxiety. In the same vein as the previous two predictions, it was hypothesised that high parental control would enhance the effect that the child temperament (in this case low positive affect) has on a child's social anxiety; parental control would strengthen the relationship. However, the non-significant relationship between positive affect and social anxiety revealed in the current sample precluded testing parental control as a moderator.

Finally, for the fourth and final moderation analysis, it was hypothesized that, rather than being a risk factor for social anxiety, reduced positive affect may be a consequence or side effect of social anxiety. This conceptualization was based on a number of facts including a paucity of longitudinally based studies examining the relationship between positive affect and social anxiety, research demonstrating that anxiety tends to precede depression (Mineka et al., 1998; Schneier et al., 1992) coupled with research determining that positive affect levels are associated with depression (Clark & Watson, 1991; Laurent et al., 1999), and research demonstrating that a decrease in social activity (a likely consequence of social anxiety) coincides with increased loneliness

(Larson, 1990). Lastly, most studies that have attained a significant relationship between positive affect and social anxiety have recruited clinical samples (Anderson et al., 2010; Chorpita et al., 2000; Hughes & Kendall, 2009) suggesting further that social anxiety may be the precursor, not the side effect, in this relationship. As such, the final predicted analysis in the current study was to assess positive affect as the dependent variable and social anxiety as the independent variable. In this analysis, family expressiveness was hypothesised to moderate the relationship. Family expressiveness was chosen because for socially anxious children parental discouraging of expressing emotions has been linked with child emotion suppression (Suveg et al., 2005; Suveg et al., 2008) and emotion suppression has been negatively linked with positive emotions (Kashdan & Steger, 2006). This suggests that parental discouraging of emotions could cause the child to exacerbate their emotion supression, thereby decreasing positive affect levels. However, once more, the non-significant relationship between child social anxiety and child positive affect precluded testing family expressiveness as a moderator of the social anxiety-positive affect relationship.

Discussion

The purpose of the current study was twofold. The first purpose of this study was to assess the predictive relationships between 1) BIS sensitivity and social anxiety, 2) negative affect and social anxiety, and 3) positive affect and social anxiety in a school-based sample of children ages 9 to 13. The second purpose of this study was to determine whether these relationships were moderated by family environmental factors, namely parental control and parental expressiveness.

In the triple vulnerability model of anxiety (Barlow, 2000; Barlow, 2002), children are purported to have an increased likelihood of developing an anxiety disorder if they are predisposed to three vulnerabilities: (1) a generalized biological vulnerability, or a temperament that is controlled to a degree by genetics; (2) a generalized psychological vulnerability, or an aspect of an individual's environment; and (3) a specific psychological vulnerability whereby the child learns to "focus anxiety on specific objects or situations" (Barlow, 2000, p.1256). Barlow considers individuals with two or three of these vulnerabilities to have an increased likelihood of developing anxiety relative to children who have only one of these vulnerabilities. As such, this study examined two of these three core vulnerabilities: generalized biological and generalized psychological vulnerabilities. More specifically, this study examined the relationship between three biological vulnerabilities, or temperamental traits, and social anxiety. The traits BIS sensitivity, negative affect, and positive affect were chosen due to evidence that has demonstrated that they are related to social anxiety. Two generalized psychological vulnerabilities, parental control and expressiveness, were hypothesised as moderators of the aforementioned relationships.

From the analyses conducted in this study, it was observed that 1) BIS sensitivity is significantly and positively correlated with social anxiety, 2) negative affect is significantly and positively correlated with social anxiety, 3) positive affect, in concordance with the tripartite model of anxiety and depression but in contrast to the hypothesis of the current study, is not significantly correlated with social anxiety, and 4) parental control moderates the relationship between BIS sensitivity and social anxiety such that the relationship between BIS sensitivity and social anxiety is stronger in the

context of high parental control than in the contexts of moderate and low parental control. Parental control was not shown to moderate the negative affect-social anxiety relationship. As per the non-significant relationship between positive affect and social anxiety in this study, parental control was not tested as a moderator of the predicted relationship between positive affect and social anxiety. For the same reason, parental expressiveness was not tested as a moderator of the predicted social anxiety-positive affect relationship.

Although ample research has demonstrated a significant positive relationship between BI and social anxiety, both through using cross-sectional designs (Mick & Telch, 1998; Muris et al., 2003) as well as longitudinal designs (Biederman et al., 1990; Hayward et al., 1998; Hirshfeld-Becker et al., 2007; Schwartz et al., 1999), far fewer studies have analyzed the relationship between BIS sensitivity and social anxiety in children (Coplan et al., 2006; Sportel et al., 2011). As such, the first aim of this study was to determine whether BIS sensitivity was predictive of social anxiety symptoms in children. This was hypothesised to be true. Consistent with findings from previous literature (Coplan et al., 2006; Lorian & Grisham, 2010; Sportel et al., 2011), the results yielded a significant positive correlation between these two variables. Moreover, in the present study BIS sensitivity was also significantly related to overall anxiety as measured by the RCADS and negative affect as measured by the AFARS. These results are consistent with the reports of various other researchers who have found links between BIS sensitivity and feelings and emotions such as fear, anxiety, and negative affect (Field, 2006; Gray, 1978).

One limitation of the current study is the very strong relationship between BIS sensitivity and social anxiety attained in the present sample ($r = .81$). Although this relationship may indicate that the two traits are highly related as was predicted, the magnitude of the relationship may also be due to both scales measuring the same, or a very similar, underlying trait or construct. Indeed, examination of the items comprising each of the respective scales measuring these constructs revealed considerable overlap amongst three items in the RCADS social anxiety subscale and the CW-BIS.

Given that data from the current study were pulled from the larger study from which this one is based on, participant scores on the Multidimensional Anxiety Schedule for Children (MASC; March, Parker, Sullivan, Stallings, & Conners, 1997) were available. The MASC is a 39-item self report measure of child anxiety that includes four subscales; physical symptoms, social anxiety, harm avoidance, and separation anxiety. The MASC social anxiety subscale has demonstrated good internal reliability ($\alpha = .80$, $\alpha = .82$, and $\alpha = .82$ in a sample of girls, boys, and the total sample respectively) and satisfactory mean test-retest scores when assessments were given three weeks and three months apart (.79 and .83 respectively) (March et al., 1997).

To assess whether a true relationship between BIS sensitivity and social anxiety actually exists, and to ascertain that the current findings were not simply a result of overlapping constructs and overlapping item endorsement in the CW-BIS and RCADS-social anxiety subscale, the relationship between BIS sensitivity and social anxiety was assessed once more using the MASC-social anxiety subscale as the measure of social anxiety. Results from this analysis revealed an internal reliability of .89 for the MASC-social anxiety subscale. Furthermore, a significant relationship between BIS sensitivity

and social anxiety was observed ($r = .63, p < .001$). Given that there is no item overlap between the MASC-social anxiety subscale and the CW-BIS, these results confirm the relationship between BIS sensitivity and social anxiety in the current sample of children. However, for future studies, the construct of social anxiety might best be measured with items that are not directly overlapping with those of the measure of BIS sensitivity.

The second aim of this study was to determine whether negative affect was predictive of social anxiety symptoms in children. Although this association has been widely documented in the past (Anderson et al., 2010; Dia & Bradshaw, 2008; Hayward et al., 2008; Hughes & Kendall, 2009; Moscovitch et al., 2010) there is a paucity of research referencing this relationship in school-aged, non-clinical samples. Consistent with theory, negative affect and social anxiety were significantly related in this study. Given that the relationship held up in the current study, this indicates that it is present in young children. This finding suggests to clinicians to be mindful of negative affective states (i.e. sadness, fear, anger) in young children as these emotional states could be indicative of children's future problems with social anxiety. In the current study, and as is commonly found, negative affect was also significantly related to anxiety more generally.

The third aim of this study was to determine whether positive affect was predictive of social anxiety symptoms in children. Results of this analysis were non-significant and also suggest that even if the study had increased power, the effect size of the relationship would be small. This finding, though in contrast to the hypotheses of this study as well as in contrast with various additional studies (Anderson et al., 2010; Chorpita, Plummer, et al., 2000; Hughes & Kendall, 2009; Moscovitch et al., 2010) is

consistent with the tripartite model of anxiety and depression (Clark & Watson, 1991; Laurent et al., 1999). This model posits that (high) negative affect acts as an underlying vulnerability towards both anxiety and depression, whereas (high) physiological hyperarousal is an underlying vulnerability specific to anxiety and (low) positive affect is an underlying vulnerability specific to depression (Clark & Watson, 1991; Laurent et al., 1999).

There are several explanations that could account for the non-significant relationship between positive affect and social anxiety in the current study. One possible explanation relates to a combination of both the age and symptom severity of the sample recruited in the present study. Most researchers who have previously demonstrated evidence of a relationship between positive affect and social anxiety did so using samples that were clinical (Anderson et al., 2010; Chorpita, Plummer, et al., 2000; Hughes & Kendall, 2009), older (Anderson et al., 2010; Chorpita, Plummer, et al., 2000; Moscovitch et al., 2010), or clinical and older (Anderson et al., 2010; Chorpita, Plummer, et al., 2000). As has been suggested, low positive affect may be a consequence or side effect of social anxiety rather than a risk factor for it (Anderson et al., 2010). This concept proposes that positive affect levels are not significantly affected until social anxiety levels become very elevated, to the point where the anxiety is maladaptive to the person's quality of life and to the point where the individual may be avoiding many, if not all, social situations. This effect would be apparent in a clinical sample but maybe not present in a community sample.

Regarding the mean age of the current sample (M = 10.48), it is possible that positive affect levels were not low in the present study, even in children who had

moderately high social anxiety levels, because a reduction in positive affect may be a long-term consequence of social anxiety rather than a short-term one. It may be that it is not the severity of anxiety that has the biggest impact on an individual's subsequent positive affect levels but instead the duration of time that the individual struggles with the problem that plays the largest role. Because the mean age of the current sample is slightly younger than the mean onset for SAD, it is plausible that even children who have begun to exhibit problematic symptoms have not endured these symptoms for a long enough time to be severely impacted by them; positive affect levels have not been too affected at this point.

To examine this concept empirically social anxiety scores observed in this sample were compared to social anxiety scores found in other community samples. Through this it was shown that the mean social anxiety score observed here ($M = 9.9$) is comparable to mean social anxiety scores found in other community samples ($M = 9.77$ and $M = 10.30$ for youth in grades 3-4 and grades 5-6 - grades that correspond to the majority of youth in this study- respectively). As such, the non-significant positive affect-social anxiety relationship observed does not appear to be a consequence of below average social anxiety scores in this sample. Second, the mean positive affect score in this study was compared to positive affect levels in studies with somewhat older samples. While others have reported mean positive affect scores of 21.73 (Daleiden et al., 2000) and 21.93 (Chorpita, Daleiden, et al., 2000) in school-based samples with a mean age of 11.7 and 13.0 respectively, the mean positive affect score in this study was 23.26. These comparisons demonstrate that positive affect scores in this study are somewhat higher than those revealed in slightly older samples.

To examine whether the high positive affect scores yielded in this study were a result of participant's social anxiety scores, positive affect scores were examined by social anxiety. First, participants were dichotomized as "high" or "low" in social anxiety based on whether they exceeded, or fell below, the clinical cutoff score on the RCADS social anxiety subscale (Chorpita, Moffitt, & Gray, 2005). Subsequently an independent samples *t*-test was conducted between these two groups of participants. Results from this analysis demonstrated no significant differences between participants who scored below the social anxiety cutoff ($M = 23.59$, $SD = 3.53$) and participants who scored above it ($M = 22.67$, $SD = 6.22$) ($t\ (40) = .62$, $p = .54$). This non-significant positive affect discrepancy between socially anxious and non-socially anxious participants suggests that positive affect was not impacted by social anxiety levels in this sample. As such, the possibility remains that, due to the young age of this sample, social anxiety symptoms were not endured long enough to reduce positive affect levels. However, as per the cross sectional design of this study, in addition to the fact that various other factors may have been affecting children's positive affect in this study, it is difficult to say this for certain. To elucidate these findings, future studies should further examine children's positive affect levels as they compare to social anxiety scores across age using a longitudinal design.

The fourth aim of this study was to determine if the relationship between BIS sensitivity and social anxiety is moderated by parental control levels. Because studies have demonstrated relationships between youth inhibition and youth social anxiety (Hayward et al., 1998; Mick & Telch, 1998; Muris et al., 2003), and between parental control and youth social anxiety (Arrindell et al., 1989; Bandelow et al., 2004; Festa &

Ginsburg, 2011; Lieb et al., 2000; Rapee, 1997; Rork & Morris, 2009; Spokas & Heimberg, 2009), it was hypothesised that levels of parental control would moderate, or strengthen, the BIS sensitivity-social anxiety relationship.

This hypothesis was partially supported; parental control moderated the BIS sensitivity-social anxiety relationship such that the relationship was strongest in children with highly controlling parents. However, results also demonstrated that the relationship between BIS sensitivity and social anxiety did not linearly increase as parental control increased. Instead, children with families low in control demonstrated a similar, not smaller, BIS sensitivity-social anxiety relationship when compared to children with families moderate in control. Especially surprisingly, however, was that a main effect of parental control on child social anxiety was not observed. This finding is in contrast with various studies that have analyzed the relationship between these two variables and have yielded significant effects (Arrindell et al., 1989; Bandelow et al., 2004; Festa & Ginsburg, 2011; Lieb et al., 2000; Rork & Morris, 2009; Spokas & Heimberg, 2008).

One likely reason for the non-significant relationship between parental control and child social anxiety, and a limitation of the current study, is the relatively low internal consistency of the FES. Specifically, both the FES control and expressiveness subscales had relatively low internal consistencies in the current sample ($\alpha = 65$ and $\alpha = .43$ for the control and expressiveness subscales respectively). These low reliability scores reduce the confidence of the results and suggest that for the present sample, the lack of consistency among the items may account for the inconsistent results.

Regarding the FES, it appears as though the poor internal consistencies may be a result of the measure itself rather than the sample recruited for the present study. Roosa

and Beals (1990) criticised the FES for its low internal consistency, reporting reliability coefficients much lower than those originally reported by Moos and Moos. Specifically, whereas Moos and Moos (1981) reported subscale internal consistencies ranging from .67 to .78, Roosa and Beals (1990) reported reliability coefficients between .36 (expressiveness) and .76 (conflict) amongst their six chosen participant groups (alcoholic families, asthma families, bereaved families, divorced families, control families, and the whole sample). Low internal consistencies on the FES were also reported by Boyd, Gullone, Needleman, and Burt (1997), who recruited and tested 1,289 normative participants, aged 11 to 18. In their study they report internal consistencies ranging from .26 to .71 for 11-14 year olds and internal consistencies between .34 and .73 for youth aged 15-18 (Boyd et al., 1997). Similar to results from these prior studies, results from the current study suggest that support for employing the FES as an indicator of family environment is unequivocal. Accordingly, results yielded from the FES scales in this study must be interpreted with caution due to issues with its psychometric properties.

Another possible contribution to the non-significant relationship between parental control and child social anxiety obtained in the current study relates to the format of the measure that was employed. In the current study, the measure employed for assessing control was a parent-report measure. As such, instead of children reporting on their perceptions of their parent's level of control, as is the case in the majority of studies that measured this trait (Arrindell et al., 1989; Lieb at al., 2000; Spokas & Heimberg, 2009), the parents were reporting on their own perceptions of the controlling nature of their families. Consequently, there may have been a possible response bias whereby parents were responding in a particular manner either to appear more desirable themselves or to

give their family a more positive stance. The likelihood of this notion is strengthened by results from studies that have found significant relationships between parental control and child social anxiety when operationally defining parental control through the constraints of a laboratory study. In these studies, parental control was coded and measured through behaviours such as criticisms, commands, instructions, questions, idea generations, and overall attempts to control the tasks (Festa & Ginsburg, 2011; Rork & Morris, 2009). This finding suggests that parental accounts of their own rearing behaviour (as measured in the present study by the FES) may differ substantially from their actual rearing behaviour (as coded and measured by researchers in laboratory studies).

Alternatively, the non-significant finding in the current study might suggest that in child-report studies children may be over-reporting the level of control exhibited by their parents. That is, studies that assess a youth's perception of controlling parental rearing behaviors are subject to distortions that may be related to their symptomatology or disorder, or subject to memory deterioration. This notion is particularly important to the parental control-child social anxiety relationship as a number of the studies finding these results had asked participants to give accounts of their parent's rearing behaviour years prior, when they were still living at home (Bandelow et al., 2004; Spokas & Heimberg, 2009).

Fourth, various studies have revealed poor relationships between cross-informant reports of the same childhood behaviour (Achenbach, McConaughy, & Howell, 1987; Renk & Phares, 2004). For example, in a meta-analysis by Achenbach et al. (1987), the authors demonstrated a mean Pearson correlation, or *r* value, of .22 between the child's ratings of his or her own emotional and behavioural problems and an adult-informant's

(parent, teacher, or mental-health worker) rating of the child's emotional and behavioural problems. Additionally, this cross-informant discrepancy has been demonstrated concerning parenting behaviours in the same way that it has been found for childhood emotions and behaviours (Verhoeven et al., 2011). In one such study, researchers revealed low to moderate associations between child-reports of their parent's levels of rejection, autonomy granting, and over control and the parent's self-report of his or her own levels of rejection, autonomy granting, and over controlling parenting (Verhoeven et al., 2011). In this study, cross-informant correlation coefficients ranged from .13 to .22.

When taking into account findings such as those presented above, it makes conceptual sense that the non-significant relationship between parental control and child social anxiety yielded in the current study could have been partly a product of the study's cross-informant nature. If the same informant (i.e. the child) had reported on both the parental control as well as the child social anxiety, as is the case in many of the studies that found this relationship (Festa & Ginsburg, 2011; Rork & Morris, 2009; Spokas & Heimberg, 2009), the FES control score would likely be more strongly related to the RCADS social anxiety score. Indeed, authors of one of these studies suggested single-informant reporting, and the shared method variance associated with it, as helping to explain the significant child social anxiety-parental control relationship that was found when they measured parental control using a child-report questionnaire but that was not found when they measured it through a laboratory task (Festa & Ginsburg, 2011).

A final possible explanation for the inconsistent non-significant relationship between parental control and child social anxiety resulting in the present study relates to the phrasing of the FES items. Many measures of parental rearing behaviour, including

the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979), the Egna Minnen Beträffande Uppfostran or, as translated in English, the Own Memories of Child Rearing Experiences scale (EMBU-C; Castro, Toro, van der Ende, & Arrindell, 1993), and the Fragebogen zum erinnerten elterlichen Erziehungsverhalten, or, as translated in English, the Questionnaire of Recalled Parental Rearing Behaviour (FEE; Schumacher, Eisemann, & Brähler, 1999), which were used in a number of studies yielding significant parental control-child social anxiety relationships (Arrindell et al., 1989; Festa & Ginsburg, 2011; Lieb et al., 2000; Rork & Morris, 2009; Spokas & Heimberg, 2009), address behaviours of the parent(s) specifically. The FES, on the other hand, addresses behaviours of the family more generally. Examples of control items on the FES that demonstrate this discrepancy include "there are very few rules to follow in our family," and "everyone has an equal say in family decisions." Although rules are most frequently established by one or both parents in the family, by telling the parent to "decide which of these statements are true of [their] family and which are false," instead of asking the parent to decide which of the statements are true or false of themselves, the possibility arises for a response to be made by taking into consideration rules "made" by children. For example, if a child in a family has many fears, "rules" may be produced that stem primarily from the child's needs. It is impossible to assert that control in the family is produced by only parents and that other family members (particularly older siblings) do not have an impact on control levels within the family. Consequently, the operational definition of control employed by the FES is somewhat inherently distinct from the control referenced by other measures such as the PBI, the EMBU-C, and the FEE. In sum, in previous studies in which significant associations have been observed between

parental control and social anxiety, control has been defined and measured as a parenting variable, whereas in this study control was operationalized and measured as a family environment variable.

Overall, additional research is needed examining the relationship between controlling environments and child social anxiety with methodologies that: (a) incorporate psychometrically sound scales that include influences of all family members, (b) combine laboratory measures of environmental control with multi-informant paper-and-pencil reports of environmental control, (c) assess youth's perceived rearing behaviours currently as opposed to retrospectively, and d) assess control and social anxiety longitudinally. Through this, a greater understanding may be gained regarding the impact that environment has on social anxiety in children. Additionally, studies such as these may elucidate the findings from the current study and answer the question: were results of this study primarily a product of measurement limitations or can they be accounted for by other factors?

Despite the non-significant relationship between parental control and child social anxiety, the finding that parental control moderates the BIS sensitivity-social anxiety relationship is interesting for a number of reasons. Primarily, as has been proposed by other researchers, this finding further suggests that the family environment may have an effect on childhood psychopathology such that it can act either as a detriment to the child's mental health or as a protective factor to the child's mental health (Wood, McLeod, Sigman, Hwang, & Chu, 2003). This finding implies that although children may have specific temperaments that predispose them to developing particular problems

or disorders, by adopting a particular parenting style parents may have the potential to modify or lessen these negative effects.

Baumrind (1971) has defined three prototypes of adult behaviour that she believes to play a substantial role in parenting: permissive parenting, authoritative parenting, and authoritarian parenting. Permissive parenting, she states, is characterized by low control and relatively high warmth. Conversely, authoritarian parenting is characterized by high control and relatively low warmth. Finally, authoritative parenting is viewed as the in-between parenting style as it is characterized by both moderate control and moderate warmth. The warmth dimension of these parenting styles was not assessed in the current study. Although less consistently associated with children's anxiety problems (McLeod et al., 2007; Rork & Morris, 2009; van Gastel, Legerstee, & Ferdinand, 2009) relative to parental control, parental warmth has also been shown to play an important role in children's internalizing problems (Wood et al., 2003). However, despite not assessing parental warmth, findings from this study might tentatively suggest effects of these types of parenting on children. Specifically, findings from the current study might suggest that parenting styles of a more authoritative nature may protect children with particular temperaments from developing social anxiety (or may reduce their social anxiety) while parenting of an authoritarian nature may predispose these children to develop social anxiety (or, more likely, exacerbate the child's existent social anxiety).

The fifth aim of this study was to determine if the relationship between negative affect and social anxiety is moderated by family control levels. Results from this study demonstrated that although negative affect and family control, when combined, accounted for a significant amount of the variance in social anxiety scores, family control did not

moderate the negative affect-social anxiety relationship. The most probable explanation for this finding relates, once more, to the moderator variable employed in the current study. As a result of the small effect size attained from the parental control-social anxiety relationship, when parental control was combined with negative affect to create an interaction variable, a moderating effect was not observed. This result is likely a product of psychometric issues including the low internal reliability of the FES control subscale.

The last two major aims of the current study were to determine if 1) parental control moderates the positive affect-social anxiety relationship and if 2) parental expressiveness moderates the social anxiety-positive affect relationship. However, as mentioned previously, a relationship between positive affect and social anxiety was not yielded. As such, these models were not tested.

Although family expressiveness could not be examined as a moderator of the social anxiety-positive affect relationship, it is still of interest to examine how it related to positive affect. The present study revealed that there was not a relationship between parental expressiveness and child positive affect levels. However, the below adequate internal consistency of the FES expressiveness subscale in the present sample makes it difficult to discern the meaning behind this finding. Most likely this finding is a product of the scale's inconsistency. However, several other explanations may help explain the lack of a relationship between family expressiveness and positive affect. First, although studies have demonstrated a positive association between an individual's own expressiveness and their levels of positive affect (Kashdan & Steger, 2006) and have shown that parents can reduce children's level of expressivity through discouraging communication (Suveg et al., 2005; Suveg et al., 2008), this parental effect was

demonstrated in clinically anxious children only and a direct link between parental expressiveness, or communication, and child positive affect has not been shown.

Moreover, the finding that expressiveness is positively associated with positive affect was revealed in an undergraduate sample instead of a child or youth sample (Kashdan & Steger, 2006). As such, it may be that expressing oneself and communicating with others is particularly important for young adults, specifically when it comes to maintaining their positive affect, but that communication plays a lesser role in the well-being and positive affect of children. If it is in fact the case that expressing oneself has a smaller impact on positive affect for middle-school aged children than for young adults, it makes sense conceptually that communicating with ones parents would also have a smaller impact on individuals of this age. Future research should strive to look further at the relationship between parental expressiveness and child positive affect in a developmentally-specific way.

Finally, results from the present study suggest that, although the tripartite model of anxiety and depression may not be without problems, the problem may be in the hypothesis that physiological hyperarousal is associated with anxiety but not depression (as it was also associated with depression in the current sample), and not that positive affect is associated with depression but not anxiety (as this was demonstrated to be true in the current sample). According to the tripartite model of anxiety and depression, a relationship between these variables should not have been observed. However, further examination of this seemingly inconsistent result yielded similar outcomes to those found in the current study. Specifically, prior research has yielded results whereby physiological hyperarousal, in contrast to the tripartite model of anxiety and depression,

was found to be significantly related to both anxiety and depression when the sample consisted of children (De Bolle, Decuyper, De Clercq, & De Fruyt, 2010; Jacques & Mash, 2004). For example, in their study, De Bolle et al. (2010) found that physiological hyperarousal was significantly associated with depression across all four of their chosen participant groups (clinically referred boys aged 8-14, non-clinical boys aged 8-14, clinically referred girls aged 8-14, and non-clinical boys aged 8-14). In De Bolle's study, physiological hyperarousal was found to be the only common factor between anxiety and depression; surprisingly, negative affect was not significantly related to either depression or anxiety. This significant relationship between physiological hyperarousal and depression was also observed when physiological hyperarousal was measured in a laboratory study (high heart rate in standing position) instead of a self-report measure (Greaves-Lord et al., 2007).

Researchers have noted that the relationship between physiological hyperarousal and depression may be age-specific whereby somatic complaints are associated with depression much more so in children than in adults (Greaves-Lord et al., 2007; Jacques & Mash, 2004). One possible explanation of this finding is that children may not have the higher order cognitive and mental functioning to enable verbal expression of their depression, and as such, it becomes expressed physiologically instead, through somatic complaints. Additional research should be conducted on the relationship between physiological hyperarousal and depressive symptoms as it relates to age and what this may mean for future research involving the tripartite model of anxiety and depression.

Limitations and Future Directions

In general, overlapping constructs may be a limitation of the current study. In this study, BIS sensitivity was significantly related to social anxiety, overall anxiety, and negative affect. Although these relationships could imply that BIS sensitivity is a risk factor for social anxiety, anxiety, and negative affect, as has been suggested by various other researchers (Carver & White, 1994; Coplan et al., 2006; Lorian & Grisham, 2010; Sportel et al., 2011) it is also possible that these variables are related due to overlapping items and shared variance amongst measurement scales. For example, due to shared physiological (Beidel, Turner, & Dancu, 1985; Rosenberg & Kagan, 1989) and behavioural (Neal, Edelmann, & Glachan, 2002) features, researchers have debated whether BI and SAD are separate problems, or whether BI is the childhood manifestation of SAD (Clauss & Urbano Blackford, 2012; Rapee & Spence, 2004; Stein, Ono, Tajima, & Muller, 2004). Additionally, negative affect and BI are similar in that they both incorporate the feeling of fear. Collectively, these findings suggest that relationships amongst temperamental traits, such as negative affect, BIS sensitivity, and social anxiety, as they are studied here, could be partly an "artifact of methods of scale construction and evaluative bias" (Erdle & Rushton, 2010, p. 766). However, it is evident that BIS sensitivity and social anxiety are not identical constructs as per the fact that, if this were the case, the "BIS sensitivity/social anxiety" construct would not have interacted with parental control to predict that exact construct; some level of distinction must exist between these constructs.

Another limitation of the present study is the relatively small sample size that was recruited. Prior to the enactment of the study, a power analysis was conducted which

resulted in a suggested participant number of 84 to detect a medium sized treatment effect at an alpha level of .05 when producing a multiple regression correlation analyses. However, due to challenges with participant recruitment (including the willingness of schools and individual families to participate in this study), only 42 participants were actually recruited. It is important to note that the results of the present study may have been impacted by the sample size. Specifically, had the sample size been larger, the negative correlation between positive affect and social anxiety may have reached statistical significance, the relationship between BIS sensitivity and social anxiety in the low control group may have reached statistical significance, and parental control might have been shown to moderate the negative affect-social anxiety relationship. However, despite the relatively small sample size of this study, relationships of a large magnitude were still observed between BIS sensitivity and social anxiety and between negative affect and social anxiety suggesting that these relationships are very strong. Nevertheless studies should strive to look at these relationships as they exist within a larger sample.

A third limitation to the present study is the possibility of low external validity. Because the results of the present study were obtained from a very specific sample of individuals, they may not generalize to the population as a whole. That is, participants in the current sample were predominantly middle-to-upper class citizens, 85.71% of participants were Caucasian, and the sample of parents was composed predominantly of mothers. Future studies should strive to examine these relationships as they exist in samples that are less affluent, more ethnically diverse, and composed of equal sizes of mothers and fathers to determine whether the results remain consistent. It is possible that,

had the sample been comprised of less affluent participants or participants from a variety of cultural backgrounds the results would have been different.

Furthermore, results may have varied if the sample recruited had consisted predominantly of father-child dyads as opposed to mother-child dyads. In one particular study, researchers examined gender differences in levels of over control and found mothers to have significantly higher over-control scores than fathers (Verhoeven et al., 2011). However, for children over the age of 13 only paternal over-control was shown to impact levels of child anxiety. In contrast, maternal and paternal over-control had similar impacts on levels of child anxiety when children were 12 years of age and younger (Verhoeven et al., 2011). As per the fact that the sample of children recruited in the present study were all 13 years of age or younger, this suggests that results may not have varied if the sample had been predominantly father-child dyads. However, it is impossible to know the effects for certain.

Moreover, all of the participants in this study self-selected themselves to participate. It is important to bear this potential selection bias in mind when interpreting findings. Additionally, all of the participants recruited for this study were from the same city. Perhaps there is something unique about volunteers, or those who self-select to participate in studies such as this one, and/or individuals living in the particular area that led to these results and that prevent us from generalizing the results to other "types" of people. For example, on the one hand it may be that parents with anxious children are more interested in participating in an anxiety study than those without anxious children. On the other hand, particularly anxious parents may be less likely to take part.

An area of future direction arising from the current study relates to the substantial discrepancies between the amount of variance explained by temperamental variables (negative affect and BIS sensitivity) and environmental variables (parental control) in this study. Through observing the simple effects of each variable, it is apparent that 65.61% of the variance in social anxiety scores can be attributed to BIS sensitivity scores and that 42.25% of the variance in social anxiety scores can be attributed to negative affect scores. Conversely, only 1.2% of the variance in social anxiety scores can be attributed to parental control scores. The sizeable effect that BIS sensitivity (or the main effect) had on social anxiety in the present study may have falsely inflated the effect of parental control when child BIS sensitivity and parental control were summed to create an interaction. As such, the results need to be interpreted cautiously. The finding of a substantially larger temperamental effect relative to the environmental effect may be largely a product of methodological issues, including both item overlap between the CW-BIS and the RCADS social anxiety subscale (which likely inflated the relationship) as well as the poor internal reliability of both the CW-BIS and the FES control subscale. Conversely, in this sample, there may truly have been a minimal effect of family environment on child social anxiety while the temperamental effect (i.e. BIS sensitivity) was much larger.

On the one hand a minor effect of parenting on childhood anxiety is in concordance with various studies that have examined the direct role of parenting on child anxiety. For example, researchers of one meta-analytic study examined the role of parental control and rejection on child anxiety and demonstrated a small effect size (.21) of these two parenting types on child anxiety; together they accounted for only 4% of the

variance in childhood anxiety scores (McLeod, Wood, & Weisz, 2007). On the other hand parenting and the family environment are both significantly influenced by child and parent genetics (Kendler & Baker, 2007). By this logic, although the environment appeared to play a very minimal role on child anxiety in this study, because parent and child temperament can modify the family environment, it may have had an indirect effect. Future research should further examine these temperamental and environmental relationships as they exist with psychometrically improved measures and measures without overlapping items. Results from these studies would demonstrate whether the findings here are predominantly due to measurement limitations or are more meaningful.

Despite the measurement limitations of this study, as per the large affect of BIS sensitivity on child social anxiety scores, future studies might want to probe further into this relationship. For example, it would be of additional interest to determine possible temperamental or environmental mediators of the BIS-SA relationship (e.g. cognitive biases, levels of rumination, peer influence, family factors, etc). For instance, it would be interesting to observe whether the relationship between BIS sensitivity and social anxiety is mediated by BI. It may be that BIS sensitivity is directly implicated in the development of social anxiety. Conversely, it may be that it is the inhibited behavior itself that plays the most significant role in the development of social anxiety; perhaps a lack of interactive and explorative behaviour on the behalf of the child might directly affect the child's comfort level in these potentially punishing situations, thereby creating or enhancing social anxiety. BIS sensitivity, on the other hand, may be only indirectly involved. It would be important to know if this is the case, as clinicians could then target and treat these vulnerabilities in therapy.

Finally, the current study was cross sectional in nature. This suggests that the directions of the BIS sensitivity-social anxiety and the negative affect-social anxiety relationships are not known for certain. Longitudinal relationships have predominantly been reported between negative affect and anxiety more generally (Lonigan et al., 2003; Rende, 1993), as well as between BI and social anxiety (Biederman et al., 1990; Hayward et al., 1998; Hirshfield-Becker et al., 2007; Schwartz et al., 1999), while substantially less research has examined the negative affect-social anxiety and BIS sensitivity-social anxiety relationships longitudinally. Longitudinal studies of these relationships would provide a more detailed account of the interplay between these variables.

Potential Implications

Although measurement limitations must be kept in mind when interpreting the findings of this study and, as such, results must be discussed tentatively, the results yielded here may propose a number of suggestions for alleviating child social anxiety and may present possible implications concerning treatment options.

First, the significant relationship between BIS sensitivity and social anxiety yielded in the present study is a meaningful one. Research has demonstrated that inhibited behaviour is a product of and an observable manifestation of heightened BIS sensitivity (Carver & White, 1994; Gray, 1978; Kimbrel, 2008; Muris et al., 2007; Rothbart & Mauro, 1990). As such, results from the present study provide initial evidence to suggest that targeting and treating the cognitions and behaviours that underlie BIS sensitivity could possibly prevent the actual inhibited, shy, and withdrawn behaviour from being expressed in children or prevent it from becoming too extreme or disordered.

In turn, the reduction of inhibited behaviour and a following move towards sociability could offset the child's probability of becoming severely socially anxious.

Second, as mentioned previously, in this study BIS sensitivity was significantly related to social anxiety as measured by the RCADS, overall anxiety as measured by the RCADS, and negative affect as measured by the AFARS. Although these findings may be partly a result of shared method variance, they may also suggest that BIS sensitivity is causally related to these variables. Subsequently, intervening and treating children high in BIS sensitivity through targeting their underlying cognitions could serve to reduce not only social anxiety, but also fear, anxiety, and negative affect in these children.

Third, the significant relationships between negative affect and social anxiety and negative affect and overall anxiety revealed in this study allude to the importance of being cognizant of all forms of childhood anxiety and aware of the impact that negative emotional states may be playing on this anxious symptomatology. In addition, these findings may speak to the magnitude of the associations. The relationships were yielded in a non-clinical sample suggesting that even children who do not present with severe psychopathology may benefit from monitoring, and possibly even treatment, if they are demonstrating higher than average levels of negative emotionality. Monitoring and subsequently treating children high in negative affect has the potential of preventing anxious symptomatology from becoming exacerbated.

Finally, in this study parental control moderated the BIS sensitivity-social anxiety relationship. This suggests that although children high in BIS sensitivity are more likely to develop social anxiety than uninhibited children, by working with both children and

their parents to address social anxiety concerns, it may be possible to decrease the child's probability of developing SAD by regulating parental control levels.

References

Achenbach, T.M., McConaughy, S.H., & Howell, C.T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin, 101*, 213-232. doi: 10.1037/0033-2909.101.2.213

Aiken, L.S., West, S.G., & Reno, R.R. (1991). *Multiple regression: Testing and interpreting interactions.* Newbury Park, California: Sage Publications.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders: DSM-IV. (4th ed., text rev.).* Washington, DC: American Psychiatric Association.

Anderson, E.R., Veed, G.J., Inderbitzen-Nolan, H.M., & Hansen, D.J. (2010). An evaluation of the applicability of the tripartite constructs to social anxiety in adolescents. *Journal of Clinical Child and Adolescent Psychology, 39*, 195-207. doi:10.1080/15374410903532643

Arrindell, W. A., Kwee, M.G., Methorst, G.J., & Van der Ende, J. (1989). Perceived parental rearing styles of agoraphobic and socially phobic in-patients. *The British Journal of Psychiatry, 155*, 526-535. doi: 10.1192/bjp.155.4.526

Bandelow, B., Torrente, A. C., Wedekind, D., Broocks, A., Hajak, G., & Ruther, E. (2004). Early traumatic life events, parental rearing styles, family history of mental disorders, and birth risk factors in patients with social anxiety disorder. *European Archives of Psychiatry and Clinical Neuroscience, 254*, 397-405. doi: 10.1007/s00406-004-0521-2

Barlow, D.H. (2000). Unraveling the mysteries of anxiety and its disorders from the perspective of emotion theory. *American Psychologist, 55*, 1247-1263. doi: 10.1037/0003066X.55.11.1247

Barlow, D.H. (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic (2nd ed.)*. New York: The Gulliford Press.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182. doi: 10.1037/0022-3514.51.6.1173

Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology, 4*, 1-103. doi: 10.1037/h0030372

Beidel, D.D., Turner, S.M., & Dancu, C.V. (1985). Physiological, cognitive and behavioral aspects of social anxiety. *Behaviour Research and Therapy, 23*, 109-117.doi: 10.1016/0005-7967(85)90019-1

Biederman, J., Rosenbaum, J.F., Hirshfeld, D.R., & Faraone, S.V. (1990). Psychiatric correlates of behavioral inhibition in young children of parents with and without psychiatric disorders. *Archives of General Psychiatry, 47*, 21-26. doi: 10.1001/archpsyc.1990.01810130023004

Boyd, C.P., Gullone, E., Needleman, G.L., & Burt, T. (1997). The family environment scale: Reliability and normative data for an adolescent sample. *Family Process, 36*, 369-373. doi: 10.1111/j.1545-5300.1997.00369.x

Buckner, J.D., Heimberg, R.G., Matthews, R.A., & Silgado, J. (2012). Marijuana-related problems and social anxiety: The role of marijuana behaviors in social situations.

Psychology of Addictive Behaviors, 26, 151-156. doi: 10.1037/a0025822

Carver, C.S., & White, T.L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS scales. *Journal of Personality and Social Psychology, 67*, 319-333. doi: 10.1037/0022-3514.67.2.319

Castro, J., Toro, J., Van der Ende, J., & Arrindell, W.A. (1993). Exploring the feasibility of assessing perceived parental rearing styles in Spanish children with the EMBU. *International Journal of Social Psychiatry, 39*, 47-57. doi: 10.1177/002076409303900105

Chorpita, B.F., Daleiden, E.L., Moffitt, C., Yim,L., & Umemoto, L.A. (2000). Assessment of tripartite factors of emotion in children and adolescents I: Structural validity and normative data of an affect and arousal scale. *Journal of Psychopathology and Behavioral Assessment, 22*, 141-160. doi: 10.1023/A:1007584423617

Chorpita, B.F., Moffitt, C.E., & Gray, J. (2005). Psychometric properties of the Revised Child Anxiety and Depression Scale in a clinical sample. *Behaviour Research and Therapy, 43*, 309-322. doi: 10.1016/j.brat.2004.02.004

Chorpita, B.F., Plummer, C.M., & Moffitt, C.E. (2000). Relations of tripartite dimensions of emotion to childhood anxiety and mood disorders. *Journal of Abnormal Child Psychology, 28*, 299-310. doi: 10.1023/A:1005152505888

Chorpita, B.F., Yim, L., Moffitt, C., Umemoto, L.A., & Francis, S.E. (2000). Assessment of symptoms of DSM-IV anxiety and depression in children: A revised child anxiety and depression scale. *Behaviour Research and Therapy, 38*, 835-855.

doi: 10.1016/S0005-7967(99)00130-8

Clark, L.A., & Watson, D. (1991). Tripartite model of anxiety and depression: Psychometric evidence and taxonomic implications. *Journal of Abnormal Psychology, 100*, 316-336. doi: 10.1037/0021-843X.100.3.316

Clauss, J.A., & Blackford, J.U. (2012). Behavioral inhibition and risk for developing social anxiety disorder: A meta-analytic study. *Journal of the American Academy of Child & Adolescent Psychiatry, 51*, 1066-1075. doi: 10.1016/j.jaac.2012.08.002

Colder, C.R., & O'Connor, R.M. (2004). Gray's reinforcement sensitivity model and child psychopathology: Laboratory and questionnaire assessment of the BAS and BIS. *Journal of Abnormal Child Psychology, 32*, 435-451. doi: 10.1023/B:JACP.0000030296.54122.b6

Coplan, R.J., Wilson, J., Frohlick, S.L., & Zelenski, J. (2006). A person-oriented analysis of behavioral inhibition and behavioral activation in children. *Personality and Individual Differences, 41*, 917-927. doi: 10.1016/j.paid.2006.02.019

Daleiden, E., Chorpita, B.F., & Lu, W. (2000). Assessment of tripartite factors of emotion in children and adolescents II: Concurrent validity of the affect and arousal scales for children. *Journal of Psychopathology and Behavioral Assessment, 22*, 161-182. doi: 10.1023/A:1007536507687

De Bolle, M., Decuyper, M., De Clercq, B., & De Fruyt, F. (2010). Relevance of the tripartite dimensions of affect for anxiety and depression in youth: Examining sex and psychopathology status. *Journal of Abnormal Child Psychology, 38*, 935-948. doi: 10.1007/s10802-010-9413-2

Degroot, A., & Treit, D. (2004). Anxiety is functionally segregated within the septo-

Hippocampal system. *Brain Research, 1001*, 60-71. doi: 10.1016/j.brainres.2003.10.065

Dia, D.A., & Bradshaw, W. (2008). Cognitive risk factors to the development of anxiety and depressive disorders in adolescents. *Child & Adolescent Social Work Journal, 25*, 469-481. doi: 10.1007/s10560-008-0156-7

DiLalla, L.F., Kagan, J., & Reznick, J.S. (1994). Genetic etiology of behavioral inhibition among 2-year-old children. *Infant Behavior & Development, 17*, 405-412. doi: 10.1016/0163-6383(94)90032-9

Eisenberg, N., Cumberland, A., & Spinrad, T.L. (1998). Parental socialization of emotion. *Psychological Inquiry, 9*, 241-273. doi: 10.1207/s15327965pli0904_1

Erdle, S., & Rushton, J.P. (2010). The general factor of personality, BIS-BAS, expectancies of reward and punishment, self-esteem, and positive and negative affect. *Personality and Individual Differences, 48*, 762-766. doi: 10.1016/j.paid.2010.01.025

Festa, C.C., & Ginsburg, G.S. (2011). Parental and peer predictors of social anxiety in youth. *Child Psychiatry and Human Development, 42*, 291-306. doi: 10.1007/s10578-011-0215-8

Field, A. P. (2006). The behavioral inhibition system and the verbal information pathway to children's fears. *Journal of Abnormal Psychology, 115*, 742-752. doi: 10.1037/0021-843X.115.4.742

Grant, B.F., Hasin, D.S., Blanco, C., Stinson, F.S., Chou, S.P., Goldstein, R.B.,... Huang, B. (2005). The epidemiology of social anxiety disorder in the United States:

Results from the national epidemiologic survey on alcohol and related conditions. *Journal of Clinical Psychiatry, 66*, 1351-1361. doi: 10.4088/JCP.v66n1102

Grant, D.M., Beck, J.G., Farrow, S.M., & Davila, J. (2007). Do interpersonal features of social anxiety influence the development of depressive symptoms? *Cognition and Emotion, 21*, 646-663. doi: 10.1080/02699930600713036

Gray, J.A. (1978). The neuropsychology of anxiety. *British Journal of Psychology, 69*, 417-434. doi: 10.1111/j.2044-8295.1978.tb02118.x

Greaves-Lord, K., Ferdinand, R.F., Sondeijker, F.E.P.L., Dietrich, A., Oldehinkel, A.J., Rosmalen.,...Verhulst, F.C. (2007). Testing the tripartite model in young adolescents: Is hyperarousal specific for anxiety and not depression? *Journal of Affective Disorders, 102*, 55-63. doi: 10.1016/j.jad.2006.12.009

Hayward, C., Killen, J.D., Kraemer, H.C., & Taylor, C.B. (1998). Linking self-reported childhood behavioural inhibition to adolescent social phobia. *Journal of the American Academy of Child and Adolescent Psychiatry, 37*, 1308-1316. doi: 10.1097/00004583-199812000-00015

Hayward, C., Wilson, K.A., Lagle, K., Kraemer, H.C., Killen, J.D., & Taylor, C.B. (2008). The developmental psychopathology of social anxiety in adolescents. *Depression and Anxiety, 25*, 200-206. doi: 10.1002/da.20289

Hirshfeld-Becker, D.R., Biederman, J., Henin, A., Faraone, S.V., Davis, S., Harrington, K., & Rosenbaum, J.F. (2007). Behavioral inhibition in preschool children at risk is a specific predictor of middle childhood social anxiety: A five-year follow-up. *Journal of Developmental and Behavioral Pediatrics, 28*, 225-233. doi: 10.1097/01.DBP.0000268559.34463.d0

Hirshfeld-Becker, D.R., Micco, J., Henin, A., Bloomfield, A., Biederman, J., & Rosenbaum, J. (2008). Behavioral inhibition. *Depression and Anxiety, 25*, 357-367. doi: 10.1002/da.20490

Hughes, A.A., & Kendall, P.C. (2009). Psychometric properties of the positive and negative affect scale for children (PANAS-C) in children with anxiety disorders. *Child Psychiatry and Human Development, 40*, 343-352. doi: 10.1007/s10578-009-0130-4

Jacques, H.A., & Mash, E.J. (2004). A test of the tripartite model of anxiety and depression in elementary and high school boys and girls. *Journal of Abnormal Child Psychology, 32*, 13-25. doi: 10.1023/B:JACP.0000007577.38802.18

Johnson, S.L., Turner, R.J., & Iwata, N. (2003). BIS/BAS levels and psychiatric disorder: An epidemiological study. *Journal of Psychopathology and Behavioral Assessment, 25*, 25-36. doi: 10.1023/A:1022247919288

Kagan, J. (1989). Temperamental contributions to social behavior. *American Psychologist, 44*, 668-674. doi: 10.1037/0003-066X.44.4.668

Kagan, J., Reznick, J. S., & Snidman, N. (1986). Temperamental inhibition in early childhood. In R. Plomin & J. Dunn (Eds.), *The study of temperament: Changes, continuities and challenges* (pp. 53-67). Hillsdale, NJ: Erlbaum

Kashdan, T.B., & Steger, M.F. (2006). Expanding the topography of social anxiety: An experience-sampling assessment of positive emotions, positive events, and emotion suppression. *Psychological Science, 17*, 120-128. doi: 10.1111/j.1467-9280.2006.01674.x

Kendler, K.S., & Baker, J.H. (2007). Genetic influences of the environment: A systematic

review. *Psychological Medicine, 37*, 615-626. doi: 10.1017/S0033291706009524

Kessler, R.C., Avenevoli, S., Costello, E., Georgiades, K., Green, J.G., Gruber, M.J.,... Merikangas, K.R. (2012). Prevalence, persistence, and sociodemographic correlates of DSM-IV disorders in the National Comorbidity Survey Replication Adolescent Supplement. *Archives of General Psychiatry, 69*, 372-380. doi: 10.1001/archgenpsychiatry.2011.160

Kimbrel, N.A. (2008). A model of the development and maintenance of generalized social phobia. *Clinical Psychology Review, 28*, 592-612. doi: 10.1016/j.cpr.2007.08.003

Kimbrel, N.A., Nelson-Gray, R.O., & Mitchell, J.T. (2007). Reinforcement sensitivity and maternal style as predictors of psychopathology. *Personality and Individual Differences, 42*, 1139-1149. doi: 10.1016/j.paid.2006.06.028

Korte, S.M. (2001). Corticosteroids in relation to fear, anxiety, and psychopathology. *Neuroscience and Biobehavioral Reviews, 25*, 117-142. doi: 10.1016/S0149-7634(01)00002-1

Larson, R.W. (1990). The solitary side of life: An examination of the time people spend alone from childhood to old age. *Developmental Review, 10*, 155-183. doi: 10.1016/0273-2297(90)90008-R

Last, C.G., Perrin, S., Hersen, M., & Kazdin, A.E. (1992). DSM-III-R anxiety disorders in children: Sociodemographic and clinical characteristics. *Journal of the American Academy of Child and Adolescent Psychiatry, 31*, 1070-1076. doi: 10.1097/00004583-199211000-00012

Laurent, J., Catanzaro, S.J., Joiner, T.E., Rudolph, K.D., Potter, K.I., Lambert, S., Osborne, L., & Gathright, T. (1999). A measure of positive and negative affect for children: Scale development and preliminary validation. *Psychological Assessment, 11*, 326-338. doi: 10.1037/1040-3590.11.3.326

Lieb, R., Wittchen, H., Hofler, M., Fuetsch, M., Stein, M.B., & Merikangas, K.R. (2000). Parental psychopathology, parenting styles, and the risk of social phobia in offspring: A prospective-longitudinal community study. *Archives of General Psychiatry, 57,* 859-866. doi: 10.1001/archpsyc.57.9.859

Lonigan, C.J., Phillips, B.M., & Hooe, E.S. (2003). Relations of positive and negative affectivity to anxiety and depression in children: Evidence from a latent variable longitudinal study. *Journal of Consulting and Clinical Psychology, 71*, 465-481. doi: 10.1037/0022-006X.71.3.465

Lorian, C.N., & Grisham, J.R. (2010). The safety bias: Risk-avoidance and social anxiety pathology. *Behaviour Change, 27*, 29-41. doi: 10.1375/bech.27.1.29

March, J.S., Parker, J.D.A., Sullivan, K., Stallings, P., & Conners, C.K. (1997). The multidimensional anxiety scale for children (MASC): Factor structure, reliability, and validity. *Journal of the American Academy of Child & Adolescent Psychiatry, 36*, 554-565. doi: 10.1097/00004583-199704000-00019

McLeod, B.D., Wood, J.J., & Weisz, J.R. (2007). Examining the association between parenting and childhood anxiety: A meta-analysis. *Clinical Psychology Review, 27*, 155-172. doi: 10.1016/j.cpr.2006.09.002

McNaughton, N. (2006). The role of the subiculum within the behavioural inhibition system. *Behavioural Brain Research, 174*, 232-250.

doi: 10.1016/j.bbr.2006.05.037

McNaughton, N., & Gray, J.A. (2000). Anxiolytic action on the behavioural inhibition system implies multiple types of arousal contribute to anxiety. *Journal of Affective Disorders, 61*, 161-176. doi: 10.1016/S0165-0327(00)00344-X

Merikangas, K.R., He, J., Burstein, M., Swanson, S.A., Avenevoli, S., Cui, L.,... Swendsen, J. (2010). Lifetime prevalence of mental disorders in U.S. adolescents: Results from the National Comorbidity Survey Replication-Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry, 49*, 980-989. doi: 10.1016/j.jaac.2010.05.017

Mick, M.A., & Telch, M.J. (1998). Social anxiety and history of behavioral inhibition in young adults. *Journal of Anxiety Disorders, 12*, 1-20. doi: 10.1016/S0887-6185(97)00046-7

Mineka, S., Watson, D., & Clark, L.A. (1998). Comorbidity of anxiety and unipolar mood disorders. *Annual Review of Psychology, 49*, 377-412. doi:10.1146/annurev.psych.49.1.377

Moos, R. H., & Moos, B. S. (1981). *Family Environment Scale Manual.* Palo Alto, CA: Consulting Psychologists Press.

Moscovitch, D.A., Suvak, M.K., & Hoffman, S.G. (2010). Emotional response patterns during social threat in individuals with generalized social anxiety disorder and non-anxious controls. *Journal of Anxiety Disorders, 24*, 785-791. doi:10.1016/j.janxdis.2010.05.013

Muris, P., Meesters, C., de Kanter, E., & Timmerman, P.E. (2005). Behavioural inhibition and behavioural activation system scales for children: Relationships with

Eysenck's personality traits and psychopathological symptoms. *Personality and Individual Differences, 38*, 831-841. doi: 10.1016/j.paid.2004.06.007

Muris, P., Meesters, C., & Spinder, M. (2003). Relationships between child-and parent-reported behavioural inhibition and symptoms of anxiety and depression in normal adolescents. *Personality and Individual Differences, 34*, 759-771. doi:10.1016/S0191-8869(02)00069-7

Muris, P., Rassin, E., Franken, I., & Leemreis, W. (2007). Psychometric properties of the behavioral inhibition scale in young adults. *Journal of Individual Differences, 28*, 219-226. doi: 10.1027/1614-0001.28.4.219

Neal, J.A., Edelmann, R.J., & Glachan, M. (2002). Behavioural inhibition and symptoms of anxiety and depression: Is there a specific relationship with social phobia? *British Journal of Clinical Psychology, 41*, 361-374. doi: 10.1348/014466502760387489

Newman, J.P., Wallace, J.F., Schmitt, W.A., & Arnett, P.A. (1997). Behavioral inhibition system functioning in anxious, impulsive and psychopathic individuals. *Personality and Individual Differences, 23*, 583-592. doi: 10.1016/S0191-8869(97)00078-0

Nunnally, J. C. (1967). *Psychometric theory*. New York: McGraw-Hill.

Parker, G., Tupling, H., & Brown, L.B. (1979). A parental bonding instrument. *British Journal of Medical Psychology, 52*, 1-10. doi: 0.1111/j.2044-8341.1979.tb02487.x

Putnam, S.P., Rothbart, M.K., & Gartstein, M.A. (2008). Homotypic and heterotypic continuity of fine-grained temperament during infancy, toddlerhood, and early childhood. *Infant and Child Development, 17*, 387-405.

doi: 10.1002/icd.582

Rapee, R.M. (1997). Potential role of childrearing practices in the development of anxiety and depression. *Clinical Psychology Review, 17*, 47-67. doi:10.1016/S0272-7358(96)00040-2

Rapee, R.M., & Spence, S.H. (2004). The etiology of social phobia: Empirical evidence and an initial model. *Clinical Psychology Review, 24*, 737-767. doi: 10.1016/j.cpr.2004.06.004

Rende, R.D. (1993). Longitudinal relations between temperament traits and behavioral syndromes in middle childhood. *Journal of the American Academy of Child & Adolescent Psychiatry, 32*, 287-290. doi: 10.1097/00004583-199303000-00008

Renk, K., & Phares, V. (2004). Cross-informant ratings of social competence in children and adolescents. *Clinical Psychology Review, 24*, 239-254. doi: 10.1016/j.cpr.2004.01.004

Roosa, M.W., & Beals, J. (1990). Measurement issues in family assessment: The case of the family environment scale. *Family Process, 29,* 191-198. doi: 10.1111/j.1545-5300.1990.00191.x

Rork, K.E., & Morris, T.L. (2009). Influence of parenting factors on childhood social anxiety: Direct observation of parental warmth and control. *Child & Family Behavior Therapy, 31*, 220-235. doi: 10.1080/07317100903099274

Rosenberg, A.A., & Kagan, J. (1989). Physical and physiological correlates of behavioral inhibition. *Developmental Psychobiology, 22*, 753-770. doi: 10.1002/dev.420220802

Rothbart, M.K., & Mauro, J. (1990). Temperament, behavioral inhibition, and shyness in

childhood. In H. Leitenberg (Ed.), *Handbook of social and evaluation anxiety* (pp.139-160). New York, NY: Plenum Press.

Scheirs, J. G. (1992). A priori and a posteriori tests on repeated measurements. *Educational Psychology 12,* p. 63-72. doi: 10.1080/0144341920120105

Schneier, F.R., Johnson, J., Hornig, C.D., & Liebowitz, M.R. (1992). Social phobia: Comorbidity and morbidity in an epidemiologic sample. *Archives of General Psychiatry, 49*, 282-288.

Schumacher, J., Eisemann, M., & Brähler, E. (1999). Rückblick auf die Eltern: der Fragebogen zum erinnerten elterlichen Erziehungsverhalten [Looking back on parents: the questionnaire of recalled parental rearing behavior]. *Diagnostica, 45,* 194–204. doi: 10.1026//0012-1924.45.4.194

Schwartz, C.E., Snidman, N., & Kagan, J. (1999). Adolescent social anxiety as an outcome of inhibited temperament in childhood. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*, 1008-1015. doi: 10.1097/00004583-199908000-00017

Spokas, M., & Heimberg, R.G. (2009). Overprotective parenting, social anxiety, and external locus of control: Cross-sectional and longitudinal relationships. *Cognitive Therapy and Research, 33*, 543-551. doi: 10.1007/s10608-008-9227-5

Sportel, B.E., Nauta, M.H., de Hullu, E., de Jong, P.J., & Hartman, C.A. (2011). Behavioral inhibition and attentional control in adolescents: Robust relationships with anxiety and depression. *Journal of Child and Family Studies, 20*, 149-156. doi: 10.1007/s10826-010-9435-y

Stein, D.J., Ono, Y., Tajima, O., & Muller, J.E. (2004). The social anxiety disorder

spectrum. *Journal of Clinical Psychiatry, 65*, 27-33.

Suveg, C., Sood, E., Barmish, A., Tiwari, S., Hudson, J.L., & Kendall, P.C. (2008). 'I'd rather not talk about it': Emotion parenting in families of children with an anxiety disorder. *Journal of Family Psychology, 22*, 875-884. doi: 10.1037/a0012861

Suveg, C., Zeman, J., Flannery-Schroeder, E., & Cassano, M. (2005). Emotion socialization in families of children with an anxiety disorder. *Journal of Abnormal Child Psychology, 33*, 145-155. doi: 10.1007/s10802-005-1823-1

Takahashi, Y., Yamagata, S., Kijima, N., Shigermasu, K., Ono, Y., & Ando, J. (2007). Continuity and change in behavioral inhibition and activation systems: A longitudinal behavioral genetic study. *Personality and Individual Differences, 43*, 1616-1625. doi: 10.1016/j.paid.2007.04.030

Thomas, S.E., Randall, C.L., & Carrigan, M.H. (2003). Drinking to cope in socially anxious individuals: A controlled study. *Alcoholism: Clinical and Experimental Research, 27*, 1937-1943. doi: 10.1097/01.ALC.0000100942.30743.8C

van Gastel, W., Legerstee, J.S., & Ferdinand, R.F. (2009). The role of perceived parenting in familial aggregation of anxiety disorders in children. *Journal of Anxiety Disorders, 23*, 46-53. doi: 10.1016/j.janxdis.2008.03.014

Verhoeven, M., Bögels,S.M., & van der Bruggen, C.C. (2011). Unique roles of mothering and fathering in child anxiety; Moderation by child's age and gender. *Journal of Child and Family Studies, 21*, 331-343. doi: 10.1007/s10826-011-9483-y

Watson, D., & Clark, L.A. (1992). On traits and temperament: General and specific factors of emotional experience and their relation to the five-factor model. *Journal of Personality, 60*, 441-476. doi: 10.1111/j.1467-6494.1992.tb00980.x

Watson, D., Clark, L.A., McIntyre, C.W., & Hamaker, S. (1992). Affect, personality, and social activity. *Journal of Personality and Social Psychology, 63*, 1011-1025. doi: 10.1037/0022-3514.63.6.1011

Weinstein, S.M., & Mermelstein, R. (2007). Relations between daily activities and adolescent mood: The role of autonomy. *Journal of Clinical Child and Adolescent Psychology, 36*, 182-194. doi: 10.1080/15374410701274967

Wood, J.J., McLeod, B.D., Sigman, M., Hwang, W.C., & Chu, B.C. (2003). Parenting and childhood anxiety: Theory, empirical findings, and future directions. *Journal of Child Psychology and Psychiatry, 44*, 134–151. doi: 10.1111/1469-7610.00106

Appendix A

Family Environment Scale- parental control and expressiveness scale

FES- 36 (Adapted from Moos & Moos, 1981)

Your relationship to child: Mother Father Other:_____

Here are 36 statements about families. You are to decide which of these statements are true of your family and which are false. If you think the statement is *True* or mostly *True* of your family, circle the T (*True*) to the left of the statement. If you think the statement is *False* or mostly *False* of your family, circle the F (*False*) to the left of the statement.

You may feel that some of the statements are true for some family members and false for others. Circle T if the statement is *True* for most members. Circle F if the statement is *False* for most members. If the members are evenly divided, decide what is the stronger overall impression and answer accordingly. Please circle either T or F for each statement.

Remember, we would like to know what your family seems like to *you*. So *do not* try to figure out how other members see your family, but *do* give us your general impression of your family for each statement.

1	Family members really help and support one another.	T	F
2	Family members often keep their feelings to themselves.	T	F
3	Activities in our family are pretty carefully planned.	T	F
4	Family members are rarely ordered around.	T	F
5	We often seem to be killing time at home.	T	F
6	We say anything we want to around home.	T	F
7	We are generally very neat and orderly.	T	F
8	There are very few rules to follow in our family.	T	F
9	We put a lot of energy into what we do at home.	T	F
10	It's hard to "blow off steam" at home without upsetting somebody.	T	F
11	It's often hard to find things when you need them in our household.	T	F

12	There is one family member who makes most of the decisions.	T	F
13	There is a feeling of togetherness in our family.	T	F
14	We tell each other about our personal problems.	T	F
15	Being on time is very important to our family.	T	F
16	There are set ways of doing things at home.	T	F
17	We rarely volunteer when something has to be done at home.	T	F
18	If we feel like doing something on the spur of the moment we often just pick up and go.	T	F
19	People change their minds often in our family.	T	F
20	There is a strong emphasis on following rules in our family.	T	F
21	Family members really back each other up.	T	F
22	Someone usually gets upset if you complain in or family.	T	F
23	Family members make sure their rooms are neat.	T	F
24	Everyone has an equal say in family decisions.	T	F
25	There is very little group spirit in our family.	T	F
26	Money and paying bills is openly talked about in our family.	T	F
27	Each person's duties are clearly defined in our family.	T	F
28	We can do whatever we want to in our family.	T	F
29	We really get along well with each other.	T	F
30	We are usually careful about what we say to each other.	T	F
31	Money is not handled very carefully in our family.	T	F
32	Rules are pretty inflexible in our household.	T	F

33	There is plenty of time and attention for everyone in our family.	T	F
34	There are a lot of spontaneous discussions in our family.	T	F
35	Dishes are usually done immediately after eating.	T	F
36	You can't get away with much in our family.	T	F

Appendix B

Demographic Information Sheet

Background Information

1. Child's age years_____ months_____

2. Child's gender (circle one): M F

3. Child's ethnicity (please check one):

_____Aboriginal (Inuit, Metis, North American Indian) *please specify* _____

_____Arab/West Asian (e.g., Armenian, Egyptian, Iranian, Lebanese, Moroccan)

_____Black (e.g., African, Haitian, Jamaican, Somali) *please specify* _____

_____Chinese

_____Filipino

_____Japanese

_____Korean

_____Latin American

_____South Asian

_____South East Asian

_____White (Caucasian)

_____Other *please specify* _____

4. Mother's ethnicity: __ Same as child's __ Other (please describe):_____

5. Father's ethnicity: __ Same as child's __ Other (please describe):_____

6. What is your relationship to the child? Mother Father Grandparent Other

7. Who lives at home with your child? (please check all that apply):

_____ Parents. If yes, how many? _____

_____ Siblings. If yes, how many? _____ Brothers _____ Sisters

_____ Grandparents. If yes, how many? _____

_____ Other relatives. If yes, how many? _____

_____ Other individuals who are not relatives. If yes, how many?

_____ Children _____ Adults

8. Are you and your child's father/mother currently:

_____ Married to each other

_____ Divorced/separated and living separately

_____ Never married and living together with child

_____ Never married and living separately

_____ Other; please explain: _____

9. What grade is your child *currently* in at school? _____

10. At what age did your child begin school/preschool? _____

11. **Usual** academic performance (please circle):

A B C D F

12. **Current** academic performance (please circle):

A B C D F

13. Academic problems? YES NO

If yes, please describe: _____

_____

14. Other significant events (skipping or repeating a grade, changing schools, etc.)?

YES NO

If yes, please describe: _____

_____

_____

15. Behaviour problems (at home or at school)? YES NO

If yes, please describe: _____

_____

16. Problems with peers (at school or in the neighborhood)? YES NO

If yes, please describe: _____

_____

17. Child's father:

Age: _____ Occupation:_____

Highest education level attained (check one):

_____ Grade 8 or less

_____ More than grade 8, but did not graduate from High School

_____ Went to a business, trade, or vocational school instead of High School

_____ High School Graduate

_____ Went to a business, trade, or vocational school after High School

_____ Went to university, but did not graduate

_____ Graduated university with a bachelor's degree (B.A., B.Sc.)

_____ Graduate education at the Master's degree level (M.A., M.Sc., etc.)

_____ Graduate education at the doctoral level (M.D., Ph.D., etc.)

Is father living? (circle one): YES NO

18. Child's mother:

Age: _____ Occupation:_____

_____ Grade 8 or less

_____ More than grade 8, but did not graduate from High School

_____ Went to a business, trade, or vocational school instead of High School

_____ High School Graduate

_____ Went to a business, trade, or vocational school after High School

_____ Went to university, but did not graduate

_____ Graduated university with a bachelor's degree (B.A., B.Sc.)

_____ Graduate education at the Master's degree level (M.A., M.Sc., etc.)

_____ Graduate education at the doctoral level (M.D., Ph.D., etc.)

Is mother living? (circle one): YES NO

19. Estimated annual family income (please check one):

_____ $0 - $36,378

_____ $36, 379 - $72, 756

_____ $72,757 - $118,285

_____ over $118,286

Appendix C

Revised Child Anxiety and Depression Scales

RCADS (Chorpita, Yim, et al., 2000)

Please put a circle around the word that shows how often each of these things happen to you. There are no right or wrong answers.

1.	I worry about things.	Never	Sometimes	Often	Always
2.	I feel sad or empty.	Never	Sometimes	Often	Always
3.	When I have a problem, I get a funny feeling in my stomach.	Never	Sometimes	Often	Always
4.	I worry when I think I have done poorly at something.	Never	Sometimes	Often	Always
5.	I would feel afraid of being on my own at home.	Never	Sometimes	Often	Always
6.	Nothing is much fun anymore.	Never	Sometimes	Often	Always
7.	I feel scared when I have to take a test.	Never	Sometimes	Often	Always
8.	I feel worried when I think someone is angry with me.	Never	Sometimes	Often	Always
9.	I worry about being away from my parents.	Never	Sometimes	Often	Always
10.	I get bothered by bad or silly thoughts or pictures in my mind.	Never	Sometimes	Often	Always
11.	I have trouble sleeping.	Never	Sometimes	Often	Always
12.	I worry that I will do badly at my school work.	Never	Sometimes	Often	Always
13.	I worry that something awful will happen to someone in my family.	Never	Sometimes	Often	Always
14.	I suddenly feel as if I can't breathe when there is no reason for this.	Never	Sometimes	Often	Always

15.	I have problems with my appetite.	Never	Sometimes	Often	Always
16.	I have to keep checking that I have done things right (like the switch is off, or the door is locked)	Never	Sometimes	Often	Always
17.	I feel scared if I have to sleep on my own.	Never	Sometimes	Often	Always
18.	I have trouble going to school in the mornings because I feel nervous or afraid.	Never	Sometimes	Often	Always
19.	I have no energy for things.	Never	Sometimes	Often	Always
20.	I worry I might look foolish.	Never	Sometimes	Often	Always
21.	I am tired a lot.	Never	Sometimes	Often	Always
22.	I worry that bad things will happen to me.	Never	Sometimes	Often	Always
23.	I can't seem to get bad or silly thoughts out of my head.	Never	Sometimes	Often	Always
24.	When I have a problem, my heart beats really fast.	Never	Sometimes	Often	Always
25.	I cannot think clearly.	Never	Sometimes	Often	Always
26.	I suddenly start to tremble or shake when there is no reason for this.	Never	Sometimes	Often	Always
27.	I worry that something bad will happen to me.	Never	Sometimes	Often	Always
28.	When I have a problem, I feel shaky.	Never	Sometimes	Often	Always
29.	I feel worthless.	Never	Sometimes	Often	Always
30.	I worry about making mistakes.	Never	Sometimes	Often	Always
31.	I have to think of special thoughts	Never	Sometimes	Often	Always

(like numbers or words) to stop bad things from happening.

32.	I worry what other people think of me.	Never	Sometimes	Often	Always
33.	I am afraid of being in crowded places (like shopping centers, the movies, buses, busy playgrounds).	Never	Sometimes	Often	Always
34.	All of a sudden, I feel really scared for no reason at all.	Never	Sometimes	Often	Always
35.	I worry about what is going to happen.	Never	Sometimes	Often	Always
36.	I suddenly become dizzy or faint when there is no reason for this.	Never	Sometimes	Often	Always
37.	BLANK				
38.	I feel afraid if I have to talk in front of my class.	Never	Sometimes	Often	Always
39.	My heart suddenly starts to beat too quickly for no reason.	Never	Sometimes	Often	Always
40.	I feel like I don't want to move.	Never	Sometimes	Often	Always
41.	I worry that I will suddenly get a scared feeling when there is nothing to be afraid of.	Never	Sometimes	Often	Always
42.	I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order).	Never	Sometimes	Often	Always
43.	I feel afraid that I will make a fool of myself in front of people.	Never	Sometimes	Often	Always
44.	I have to do some things in just the right way to stop bad things from happening.	Never	Sometimes	Often	Always
45.	I worry when I go to bed at night.	Never	Sometimes	Often	Always

46.	I would feel scared if I had to stay away from home overnight.	Never	Sometimes	Often	Always
47.	I feel restless	Never	Sometimes	Often	Always

Appendix D

Affect and Arousal Scales

AFARS (Chorpita, Daleiden, et al., 2000)

Directions: This form is about how your feel. For each sentence that you read, circle the answer that best tells how true that sentence is about how you usually feel. Remember, there are no right or wrong answers, just circle what you think describes you best.

1.	When I'm doing well at something, I really feel good.	never true	sometimes true	most times true	always true
2.	Other people upset me.	never true	sometimes true	most times true	always true
3.	Often I have trouble getting my breath.	never true	sometimes true	most times true	always true
4.	I get upset easily.	never true	sometimes true	most times true	always true
5.	My mouth gets dry.	never true	sometimes true	most times true	always true
6.	I have fun at school.	never true	sometimes true	most times true	always true
7.	My heart beats too fast.	never true	sometimes true	most times true	always true
8.	Little things bother me.	never true	sometimes true	most times true	always true
9	I will try something new if I think it will be fun.	never true	sometimes true	most times true	always true
10.	My hands get shaky.	never true	sometimes true	most times true	always true
11.	When I get something I want, I feel excited.	never true	sometimes true	most times true	always true
12.	I over-react to things.	never true	sometimes true	most times true	always true
13.	I have trouble swallowing.	never true	sometimes true	most times true	always true
14.	I love going to new places.	never true	sometimes true	most times true	always true
15.	I get upset by little things.	never true	sometimes true	most times true	always true
16.	I feel shaky.	never true	sometimes true	most times true	always true
17.	I would love to win a contest.	never true	sometimes true	most times true	always true
18.	I don't like to wait for things.	never true	sometimes true	most times true	always true

19.	I like being with people.	never true	sometimes true	most times true	always true
20.	I have trouble breathing.	never	sometimes	most times	always
21.	When I see a chance for fun, I take it.	never true	sometimes true	most times true	always true
22.	I get upset.	never true	sometimes true	most times true	always true
23.	When good things happen to me, I feel full of energy.	never true	sometimes true	most times true	always true
24.	I have plenty of friends.	never true	sometimes true	most times true	always true
25.	I sometimes feel faint.	never true	sometimes true	most times true	always true
26.	I can't calm down once I'm upset.	never true	sometimes true	most times true	always true
27.	Often I feel sick in my stomach.	never true	sometimes true	most times true	always true

Appendix E

Carver White Behavioural Inhibition System Scale

CW-BIS (Field, 2006)

Please read each statement below carefully. Circle the response that best describes how much that statement is true for you.

1.	If I think something unpleasant is going to happen, I usually get pretty "worked up".	not at all	not really	sometimes	always
2.	I worry about making mistakes.	not at all	not really	sometimes	always
3.	Getting told off upsets me.	not at all	not really	sometimes	always
4.	I feel pretty worried or upset when I think or know somebody is angry at me.	not at all	not really	sometimes	Always
5.	Even if something bad is about to happen to me, I don't get scared.	not at all	not really	sometimes	Always
6.	I feel worried when I think I have done poorly at something.	not at all	not really	sometimes	Always
7.	My friends get more scared than I do.	not at all	not really	sometimes	Always