# ANXIETY PREDICTORS ACROSS CHILD DEVELOPMENT: THE ROLE OF PARENTAL OVERPROTECTION AND CHILD LOCUS OF CONTROL

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# Anxiety predictors across child development:

# The role of parental overprotection and child locus of control

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Abstract

Parental overprotection has been previously identified as a risk factor for child anxiety. Research efforts are now focusing on the control-related cognition locus of control as a cognitive mediator to explain the relationship between parental overprotection and child anxiety. The purpose of the present study was to identify the different ages at which locus of control functions as a mediator or a moderator of the relationship between overprotection and anxiety in children. A non-clinical sample of children ($N = 146$) ranging in age from 7 to 19 years comprised three age groups (8-10, 12-14, and 16-18 years). Participants completed self-report measures that assessed parental overprotection, child locus of control, and child anxiety. Contrary to predictions, significant correlations between the main constructs were found only in the full sample, but not within separate age groups. The lack of statistically significant findings precluded further testing of mediation or moderation models within the age groups. However, testing of these models in the full sample suggested that a non-significant mediation model was a better fit than a moderation model. Differences in the relationships among overprotection, locus of control, and child anxiety may exist when examined across a wide age range compared to when examined by age groups and thus, further investigation with respect to the role of child age is warranted.

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# Anxiety predictors across child development: The role of parental overprotection and child locus of control

Anxiety is one of the most commonly recognized forms of psychopathology in children and adolescents (McLeod, Wood, & Weisz, 2007). Despite its high prevalence in children, researchers have yet to fully understand the development of anxiety and continue to strive to identify relevant risk factors. One risk factor for child anxiety is parental overprotection (McLeod et al., 2007; Rapee, 1997). Efforts to elucidate the cognitive mediators explaining the relationship between parental overprotection and child anxiety have suggested that locus of control may be one such causal mechanism (Chorpita & Barlow, 1998). While control-related cognitions have been examined previously (Chorpita, Brown, & Barlow, 1998; Muris, Meesters, Schouten, & Hoge, 2004), the current study was designed to specifically investigate the relationship between parental overprotection and child anxiety across child age, as well as to gain insight into the role that locus of control plays in this relationship throughout childhood.

## Family Environment and Child Psychopathology

Anxiety often exists as normal developmental phenomena, but in the 15-20% of children and adolescents with anxiety disorders, elevated levels of anxiety can lead to impairments in daily functioning (Beesdo, Knappe, & Pine, 2009; Bolton et al., 2006). Elevated anxious symptomatology in children and adolescents can be concerning, especially when the levels of anxiety remain elevated and stable over time. Excessive levels of anxiety are associated with severe distress and can result in impairment in normal childhood activities. In the most extreme cases, the disabling emotions and

behaviours associated with anxiety can result in a child's avoidance of developmentally related tasks for their age (Mash & Barkley, 2003).

**Parental Overprotection and Child Psychopathology**

The development of child psychopathology, including emotional disorders such as anxiety and depression, has been repeatedly linked to family environment and child upbringing (Bögels, van Oosten, Muris, & Smulders, 2001; Karevold, Røysamb, Ystrom, & Mathiesen, 2009). Parenting variables, specifically overprotective and controlling parenting behaviours, have been identified as some of the most empirically supported risk factors in the development of childhood anxiety (McLeod et al., 2007; Rapee, 1997). Although many parents might consider themselves protective of their children, the way in which a parent demonstrates their protective behaviour can vary dramatically and have significantly different effects on a child.

Parents can use controlling or protective behaviours in a positive way, and those who employ a balance between caring and controlling rearing behaviours are often referred to as "authoritative" (Warash & Markstrom, 2001). The "authoritative" parenting style is characterized by give and take interactions between the parent and child such that the parent enforces a policy while providing the rationale or reasoning behind the decision. In this kind of relationship the parent uses control to help the child shape his or her own independence without imposing excessive restrictions (Baumrind, 1966; Onatsu-Arvilommi et al., 1998), which can encourage positive development of a child's abilities and coping skills.

In contrast, some parents exert stronger control and restrictions than may seem necessary. Parental overprotection, also referred to as parental control (Rapee, 1997), indicates intrusive, restrictive behaviours from the parents that are used to protect children from any perceived harm. Whereas it is adaptive for parents to act protectively when their child is exposed to a dangerous situation, overprotective actions by parents can be unnecessary and maladaptive if the controlling and protective behaviours tend to appear when no real threat to the child exists. Overprotective parenting behaviours may consist of isolating a child from normal experiences (Bögels et al., 2001), which can impede the child's ability to develop autonomous behaviour.

Siqueland, Kendall, and Steinberg (1996) assessed whether parenting differences existed between families with a child diagnosed with an anxiety disorder, and families with no anxious children. Parental variables, including psychological control, were assessed through child reports, independent observers, and parent self-reports. Siqueland and colleagues found that the observers rated the families of children with anxiety disorders as less granting of psychological autonomy than control families, which is consistent with previous studies suggesting that parental control and overprotection throughout early development can be associated with child anxiety (McLeod et al., 2007).

Sideridis and Kafetsios (2008) examined the effects of perceived parental overprotection on children's anxiety during test-taking in elementary school and during class presentations in college. In the first part of the study, the elementary school aged students completed self-report questionnaires that assessed perceived parental bonding, fear of failure, anxiety, and depression. The results demonstrated that high parental caring

scores were associated with lower levels of child anxiety, child depression, and fear of failure. The authors also noted that maternal overprotection was a significant predictor of child worry. In the second part of the study, Sideridis and Kafetsios found that college students who reported having overprotective parents had higher levels of stress and fear during the presentation, as well as poorer performance on the task.

Taken together, these findings offer support for the adverse effects that overprotective parenting behaviours can have on children's well being and psychological development. Within the body of research concerning the relationship between parental overprotection and child psychopathology, a significant focus has been put on child anxiety in particular. Specifically, it has been suggested that overprotective behaviours by the parents are associated with the development of anxiety problems in children, and as discussed by Rapee (1997), there are various methods for assessing this relationship.

**Parental Overprotection, Child Anxiety, & Methods to Assess the Relationship**

The relationship between overprotection and child anxiety has been investigated using offspring studies, parent studies, and observational studies. Although each method has limitations and advantages, one of the benefits of using different research methods is that recurring trends between methods may be considered to have more reliability and construct validity than one individual method (Kerlinger & Lee, 2000).

The most common method of assessing the relationship between parents and their children is through the use of offspring studies in which questionnaires about childrearing practices are administered to offspring. This method can either be used with children who assess their parents' current behaviours, or adults who retrospectively assess their

parents' behaviours. For example, in a self-report study, Bögels and collegues (2001) sampled clinical and non-clinical groups of children to examine their perceptions of their parents' current child-rearing behaviours. The children were also assessed on ratings of their own levels of social anxiety. Although the results were inconclusive, they suggested that non-clinical children did not differ significantly from the clinical children with respect to perceived parental overprotection. However, the analyses did show that overall perceived maternal overprotection was predictive of social anxiety in children. Another self-report study by Muris, Meesters, and van Brakel (2003) used a sample of non-clinical children and adolescents to investigate the relationship between perceived parental rearing behaviours and children's anxiety symptoms. Significant relationships were noted between parental overprotection and child anxiety symptoms. Specifically, analyses revealed that negative rearing behaviours by the parents, such as rejection and overprotection, were predictive of anxiety in the children.

While the most common method of assessing rearing practices is offspring reports, the type of offspring report varies between retrospective reports by adults about their past experiences, and child reports about their current experiences. Retrospective reports by adults of perceived parental behaviours are more common than child reports of their parent's current rearing practices. However, this retrospective method has been criticized for its limitations, such as the possibility that an observation may only represent a correlation between the reporter's current symptoms and their interpretation of past events, rather than an accurate portrayal of what truly happened (Rapee, 1997). While such limitations exist, researchers have often used the retrospective method to gain an

initial understanding of the parent-child relationship. In one retrospective study, Parker (1979) evaluated a clinical group of adults with social phobia and agoraphobia, as well as a non-clinical control group, for differences in perceived parental overprotection. A strong association was found between reported parental overprotection and the social phobia group, such that compared to controls, participants with social phobia perceived their parents as highly overprotective.

Parental self-reports of child-rearing behaviour and observations of parent-child interactions are less common methods of evaluating the relationship between parental overprotection and child anxiety. Barrett, Fox, and Farrell (2005) investigated parent-child interactions with anxious children compared to parent-child interactions with their non-symptomatic siblings. Parent-child interactions were also observed for families with non-clinical children. Observations took place during anxiety-provoking situations, and variables such as control, warmth, and reward of coping behaviour were coded during the parent-child interactions. Parents of anxious children displayed more control, as well as less paternal warmth and less maternal reward of coping behaviour. In contrast, parents' interactions with the non-anxious siblings and non-clinical children were characterized by less control than the anxious children.

Similar studies have also examined populations in various cultures to compare the effects of parental overprotection on the development of child anxiety. Pomerantz and Wang (2009) compared the effects of overprotective parental behaviours on children's psychological functioning in China and the United States. The results suggested that in certain contexts, such as academic achievement, the effects of parental control may be

more severe in the West due to different culture-specific perspectives surrounding the acceptance of parental control in academia. However, in both cultures parental control had negative effects on children's psychological functioning.

Taken together, the above findings seem to suggest that there can be widespread negative outcomes for children of controlling and overprotective parents. Moreover, substantial research points to overprotection as a specific risk factor, and predictor, for the development of child anxiety. As the possible negative effects of overprotection on the development of child anxiety continue to be documented, researchers are now attempting to identify causal mechanisms that may act within this relationship.

**Role for Locus of control**

Control-related cognitions continue to emerge as possible links between parental overprotection and child anxiety. The importance of control-related cognitions relates to the fact that when an individual encounters a sufficient amount of uncontrollable events early in life they can develop a reduction in their levels of perceived control (Chorpita & Barlow, 1998). This diminished sense of control may, in turn, lead to a general tendency to perceive events as not within an individual's control, which may result in an increase in anxious symptomatology.

The sense of perceived control over one's own events was defined by Rotter (1966) as locus of control, which is theorized to range on a continuum from internal to external. Locus of control is characterized as the extent to which each person perceives individual control over events in their personal environment. A person with an internal locus of control may believe that personal events in his/her life and environment are

attributed to their own actions, such that the individual expects the outcome of a situation to be contingent on his/her own behaviour (Spokas & Heimberg, 2009). Alternatively, a person with an external locus of control may expect that personal events in his/her life are controlled by another person, an external cause, or are completely unpredictable.

The role of restrictive parenting, specifically parental overprotection, has been found to be associated with a reduced sense of control in children. Overprotective parenting behaviours can limit opportunities in which a child would normally develop independence and new skills (Vasey & Dadds, 2001). Instead of acquiring autonomy and proper coping mechanisms, children become unable to establish a sense of control over their environment, which fosters external locus of control beliefs. Furthermore, lack of perceived control has been associated with anxiety and the development of anxious symptomatology (Vasey & Dadds, 2001).

Spokas and Heimberg (2009) sampled a non-clinical group of college students to investigate the relationship between trait anxiety and recollections of their parents' rearing behaviours. Similar to other studies, ratings of high parental overprotection and low parental warmth were associated with social anxiety. The relationship between perceived parental overprotection and social anxiety was partially explained by an external locus of control. This finding illustrates the potential role for external locus of control within the relationship between parental overprotection and child anxiety.

Li and Chung (2009) administered the State Anxiety Scale for Children and the Chinese version of the Nowicki-Strickland Locus of Control (NSLOC) questionnaire to school children who were between the ages of 7 and 12. Results indicated that an external

locus of control was positively correlated with ratings of state anxiety in the school-aged children. Additionally, scores indicating an external locus of control were significant predictors of state anxiety during the stressful situation, suggesting a role for control-related cognitions in state anxiety as well as trait anxiety.

Although several studies concerning the relations among parental behaviours, child anxiety, and locus of control have taken place, Chorpita and Barlow (1998) were among the first researchers to investigate these constructs concurrently. In a substantive review article, they discussed findings from a number of diverse research disciplines focusing primarily on the notion that early exposure to diminished control can lead to certain cognitive styles which are characterized by a greater likelihood of believing that events are not within one's own control. As mentioned previously, this kind of thought processing can foster an external locus of control which is considered to be a possible psychological risk factor for the development of anxiety.

Chorpita and Barlow (1998) theorized that the relationship between parental risk factors and child anxiety may be mediated by the control-related cognition locus of control. As explained by Baron and Kenny (1986), a mediator is generally a variable that accounts for a relationship between the predictor variable and the criterion variable. Mediator variables specify why certain outcome effects exist and explain how the relationship between two variables occurs (Holmbeck, 1997). Using Chorpita and Barlow's theory as an example, a mediation model would have locus of control as the mediator variable because it would specify why child anxiety is a possible outcome effect of parental overprotection. In this case, locus of control would be the variable that

accounts for the relationship between parental overprotection and the development of child anxiety.

In their 1986 article, Baron and Kenny also discuss moderator variables and attempt to distinguish them from mediator variables. Whereas mediator variables explain the relationship between the predictor variable and the criterion variable, moderator variables affect the strength, direction, or both, of the relationship between the predictor variable and the criterion variable. Consequently, whereas mediator variables explain why an outcome effect occurs, moderator variables illustrate when, and for which cases, a certain outcome effect will be likely to occur.

Chorpita and Barlow (1998) posited that in contrast to the mediation model for locus of control in child populations, perhaps a moderation model for locus of control would better represent adolescent and adult populations. The authors speculated that control related cognitions, such as locus of control, would have already been established by the time an individual reaches adolescence. Consequently, an external locus of control would function as a moderator by strengthening the relationship between high parental control and adolescent anxiety. Chorpita and colleagues (1998) hypothesized that across child and adolescent development, locus of control changes from a mediator to a moderator as a result of continued experience with perceived control over time. Therefore, in adolescents, a moderation model would hold locus of control as the moderator with the outcome being affected by an internal or external locus of control. Specifically, whether the adolescents' locus of control was internal or external would specify when anxiety would be a possible outcome effect of parental overprotection.

To test their theory of a mediation model in children, Chorpita, Brown, and Barlow (1998) investigated a sample of children ranging in age from 6-15 years old. The sample was comprised of children who were referred to a clinic for childhood anxiety disorders and children from a non-clinical group. All of the children and parents completed multiple questionnaires including the Nowicki-Strickland Locus of Control Scale (NSLOC), the Revised Children's Manifest Anxiety Scale (RCMAS), and the Family Environment Scale (FES), to measure control in the family. Chorpita and colleagues found support for the mediational role of locus of control in the relationship between control in the family and child negative affectivity (a component of anxiety and depression). Specifically, the authors concluded that a mediation model was supported during childhood, suggesting that high family control fostered an external locus of control, thereby resulting in the development of anxious symptomatology.

Muris, Meesters, Schouten, and Hoge (2004) examined the effects of perceived control on the relationship between parental rearing behaviours and symptoms of anxiety and depression in a sample of nonclinical youth aged 11-14 years old. The "My Memories of Upbringing" (EMBU-C) questionnaire for children was used to measure perceptions of parental rearing behaviours. Perceived control was measured using the Perceived Control Scale (PCS). Anxiety and depression symptoms were assessed with the Revised Children's Anxiety and Depression Scale (RCADS). Muris and colleagues found that high levels of negative parental rearing behaviours were correlated with higher levels of anxiety, which were also correlated with lower levels of perceived control. In contrast to the findings reported by Chorpita et al. (1998), this study did not find support for a

mediation model for locus of control. While Chorpita and colleagues found support for locus of control as an explanatory variable for the relationship between family control and child anxiety, Muris and colleagues found that a mediation role was not supported for perceived control within this relationship in their pre-adolescent population. Instead, they found support for a moderation effect of perceived control within the relationship between anxious child-rearing and child anxiety. Specifically, low perceived control and high anxious parental rearing behaviours led to high anxiety levels in youth. In addition, high perceived control and low anxious parental rearing behaviours led to the lowest anxiety levels in youth. The findings offer support for locus of control as a moderator in pre-adolescent populations, such that locus of control may change the degree or magnitude of the relationship between anxious parental rearing and child anxiety.

Muris and colleagues agreed with the discussion in Chorpita et al. (1998) about the possible reasons for finding a moderation versus mediation model. While both studies assessed similar constructs, the methods and samples of the studies were quite different. One of the possible explanations for the studies' different findings is the ages of the participants. Chorpita et al. (1998) used children ranging in age from 6-15 years old. Younger children are thought to still be in the process of cognitive formation, which could have promoted the manifestation of the mediation model. Specifically, overprotection for young children may lead to changes in their locus of control, thereby affecting their levels of anxiety. In contrast, Muris et al. (2004) used an older, more limited age range, 11-14 year old preadolescents. They suggested that in older children and adolescents, control-related cognitions may be more matured than in young children,

and therefore perceived control may strengthen the relationship between parenting and adolescent anxiety. A further difference between the studies was that while the constructs in the two studies were similar, Chorpita et al. (1998) measured the child's locus of control with the Nowicki-Strickland Locus of Control Scale (NSLOC; Nowicki & Strickland, 1973) while Muris et al. (2004) measured control with the Perceived Control Scale for Children (PCS-C). Although both studies examined the child's sense of control over their lives, differences may exist between a locus of control questionnaire and a perceived control questionnaire such that the cognitive constructs being measured are not exactly the same. The age at which cognitions, such as locus of control, function as possible precursors to anxiety in children and adolescents has not been well established. Unfortunately, because many of the studies produce discrepant findings, conclusive evidence still remains to be shown for the role of control-related cognitions and the ages at which they function.

**The Present Study**

The primary purpose of this study was to examine and test a model of parental overprotection and child anxiety. Specifically, the present study attempts to gain further understanding of parent-child relationships with respect to the role that the child's locus of control plays in the relationship between overprotection and child anxiety across multiple ages. Indeed, there is previous research that has examined parental rearing behaviours, child locus of control, and child anxiety in various child, adolescent, and adult populations (Chorpita et al., 1998; Muris et al., 2004; Spokas & Heimberg, 2009). However, no study to date has examined the relationship between parental

overprotection, locus of control, and anxiety as it relates to the transition between mediation and moderation models over a wide age range during childhood. Given this initial purpose, the goal of the proposed research is to offer further clarification for the role that locus of control plays in parental overprotection and child anxiety, and to give insight into the ages at which locus of control functions as a mediator or moderator. In younger children, when locus of control appears to act as a mediator (Chorpita et al., 1998), parental overprotection might be a precursor to the development of childhood anxiety, whereas in adolescents, an external locus of control might explain more of the variance in child anxiety relative to parental overprotection (Muris et al., 2004).

This study was also designed to address several limitations that exist in previous empirical studies of the relationship between parental overprotection and child anxiety (Rapee, 1997). One methodological limitation of this research area is the lack of specific models to explain the parent-child relationship. The absence of a clear theoretical rationale leads researchers to vary their hypotheses, methods, and variables making it difficult to draw conclusions. Another potential limitation is the frequent use of retrospective reports of child-rearing behaviours because problems with validity can arise, such as biases in recollection and the temporal range for which each researcher defines "childhood". Rapee (1997) suggests that although child reports of parental behaviours may be less consistent than adult reports, direct research on young children, either through observation or child report, could minimize retrospective problems. However, most studies use retrospective adult reports, and those that do use child reports rarely examine the effect of age differences on the relationships among these variables.

The present study will address these methodological limitations by (i) testing a previously examined model with a clear rationale and which builds on established findings; and (ii) utilizing child self-report measures, instead of retrospective parental reports, and testing well-defined age groups.

This research study will attempt to address two specific goals. The first goal will be to test child locus of control as i) a mediator between parental overprotection and child anxiety, and ii) a moderator between parental overprotection and adolescent anxiety. The second goal will be to test whether the role of locus of control changes over child and adolescent ages from a mediation to moderation variable. Both mediation and moderation models will be tested in all age groups to determine which model is a better fit.

It is hypothesized that for all children there will be a significant relationship between parental overprotection and child locus of control, such that high parental overprotection will be associated with an external locus of control in the child. Secondly, it is hypothesized that for all children a significant relationship will exist between a child's locus of control and symptoms of child anxiety, such that an external locus of control will be associated with more anxious symptomatology. Thirdly, it is hypothesized that a mediation model would be supported for young children, and a moderation model for older children.

## Methods

### Participants

Participants were comprised of a community sample of children ranging in age from 7 to 19 years. Participants were recruited from a selection of schools in the Eastern School District in Newfoundland. Ten schools agreed to participate in the study (5 elementary, 2 junior high, and 3 high schools). Consent rates at the schools ranged from 1% to 24%. The participants comprised three groups. For Group 1, participants were recruited from grades three and four. For Group 2, participants were recruited from grades seven and eight. For Group 3, participants were recruited from grades eleven and twelve.

Group 1 consisted of 60 third and fourth grade participants, comprised of 36 girls and 24 boys. The participants in Group 1 ranged in age from 7 years, 11 months to 10 years, 5 months ($M$ = 8.9 years; $SD$ = 7 months). Group 2 consisted of 69 seventh and eighth grade participants, comprised of 51 girls and 18 boys. The participants in Group 2 ranged in age from 11 years, 11 months to 14 years, 1 month ($M$ = 13.0 years; $SD$ = 7 months). Group 3 consisted of 20 eleventh and twelfth grade participants, comprised of 17 girls and 3 boys. The participants in Group 3 ranged in age from 15 years, 11 months to 19 years, 1 month ($M$ = 17.1 years; $SD$ = 11 months). The three groups yielded a total sample size of 146 participants, comprised of 104 girls and 42 boys. The sample was 94% ($n$ = 140) White, 3.4% ($n$ = 5) mixed, 0.7% (n = 1) East Asian, 0.7% (n = 1) Native, and 0.7% (n = 1) other. One participant did not indicate his/her ethnic group.

### Measures

**Demographic information questionnaire.** A questionnaire requesting demographic information (see Appendix A) was administered to all of the participants. Information requested included the participants' age, gender, grade, number of brothers and sisters, ethnicity, living arrangements, and the mother's and father's occupation.

**'My memories of upbringing' – child version (EMBU-C; Castro, Toro, Van der Ende, & Arrindell, 1993; Gruner, Muris, & Merckelbach, 1999).** The EMBU-C was used to measure child perceptions of current parental control and parental rearing behaviour. The EMBU-C (see Appendix B) is a 39-item child report questionnaire that assesses four parental factors: Emotional Warmth, Rejection, Overprotection, and Anxious Rearing. The factors represent four separate subscales of the EMBU-C. All of the items for the four subscales are rated using a 4-point Likert scale (1 = *No, never*; 2 = *Yes, but seldom*; 3 = *Yes, often*; 4 = *Yes, most of the time*). The total scores for the EMBU-C range from 39 to 156. For the purposes of the present study, only the Control/Parental Overprotection subscale (EMBU-C_C/O) was used for the analyses.

The EMBU-C has a Flesch-Kincaid reading level of 4.8 (Flesch, 1948), and has been evaluated in children ranging in age from 7 to 18 years. As the reading level of the EMBU-C may be above the reading level of some of the participants, this instrument was read aloud to participants in grades 3 and 4. The approximate time to complete the EMBU-C is 10 minutes. The EMBU-C has moderate to high internal consistency depending on the subscale, and has been reported as ranging from .60 - .94 (Brown & Whiteside, 2008; Muris et al., 2004, Spokas & Heimberg, 2009). The reliability for the subscales has been found to range from .75 - .89 for the Emotional Warmth subscale,

from .72 - .83 for the Rejection subscale, from .64 - .69 for the Parental Overprotection subscale, and from .74 - .81 for the Anxious Rearing subscale. The EMBU-C has been found to be positively correlated with the Parental Care and Overprotection subscales of the Parental Bonding Instrument (Spokas & Heimberg, 2009). The standardized scores of the Care subscale from the PBI were found to be positively correlated with standardized scores of the Emotional Warmth subscale from the EMBU-C (Spearman's $\rho$, non-parametric correlation coefficient; $\rho = .75, p < .01$ for mothers; $\rho = .81, p < .01$ for fathers). The Overprotection subscale from the PBI was positively correlated with the Overprotection subscale from the EMBU-C ($\rho = .75, p < .01$ for mothers; $\rho = .81, p < .01$ for fathers).

**'My memories of upbringing' – adolescent version (EMBU-A; Castro, Toro, Van der Ende, & Arrindell, 1993; Gruner, Muris, & Merckelbach, 1999).** To measure adolescent perceptions of past parental control and parental rearing behaviour, Group 3 participants also completed the EMBU-C questionnaire a second time (EMBU-A), reflecting on when they were 9 years old. The EMBU – Adolescent version (see Appendix C) was given at the end of the packet of questionnaires. The EMBU-A serves as a comparison against the EMBU-C to ensure that adolescent participants were assessed on consistent parental rearing behaviours rather than age-related rearing behaviours.

**Revised child anxiety and depression scale (RCADS; Chorpita, Yim, Moffitt, Umemoto, & Francis, 2000).** The RCADS (see Appendix D) is a 47-item child report questionnaire used to measure child anxiety. It is comprised of six subscales that correspond to the DSM-IV dimensions of depressive disorder and anxiety disorders

(American Psychiatric Association, 2000). The subscales are Major Depressive Disorder (MDD), Separation Anxiety Disorder (SAD), Panic Disorder (PD), Generalized Anxiety Disorder (GAD), Social Phobia (SP), and Obsessive Compulsive Disorder (OCD). The items for the RCADS are answered using a 4-point Likert scale (0 = *never*; 1 = *sometimes*; 2 = *often*; 3 = *always*). The total scores for the RCADS range from 0-141. The RCADS also yields a composite anxiety score obtained by summing across the five anxiety subscales.

The RCADS has a Flesch-Kincaid reading level of 3.5 (Flesch, 1948), and has been evaluated in children ranging from 8 to 18 years. As the reading level of the RCADS may be above the reading level of some of the participants, this instrument was read aloud to participants in grades 3 and 4. The approximate time to complete the RCADS is 7 minutes. The scale has been found to have high internal consistency. The reliabilities for the subscales have been found to range in reports from .65 - .85 (Chorpita et al., 2000; Muris et al., 2004). The alpha coefficient for the MDD subscale has been found to be .76. The alpha coefficient for the anxiety subscales has been found to be .78 for the SAD subscale, .85 for the PD subscale, .80 for the GAD subscale, .81 for the SP subscale, and .71 for the OCD subscale. Muris et al. (2004) reported that Cronbach's alpha was .64 for the depression subscale, and was .85 for the anxiety subscales overall, in a sample of non-clinical preadolescents. Chorpita et al. (2000) compared the RCADS to the Children's Depression Inventory (CDI) and the Revised Children's Manifest Anxiety Scale (RCMAS) in a sample of non-clinical Hawaiian children and adolescents. The MDD subscale positively correlated with the CDI, while the anxiety subscales from

the RCADS correlated positively with the RCMAS. For the present study, the composite anxiety score (RCADS_ANX) was used as a measure of anxious symptoms.

**Nowicki-Strickland locus of control scale for children (NSLOC-C; Nowicki & Strickland, 1973).** The NSLOC-C (see Appendix E) is a 40-item questionnaire used to measure generalized locus of control for children, and was chosen to facilitate comparison between the previously discussed study (Chorpita et al., 1998) and the present investigation. The items are answered in a yes/no format and the responses are coded zero or one. The total scores for the NSLOC-C range from 0 to 40 with higher scores indicating a greater external locus of control.

The NSLOC-C has a Flesch-Kincaid reading level of 6.2 (Flesch, 1948), and has been evaluated in children 8 years and older (Nowicki & Strickland, 1973; McClure, Chinsky, & Larcen, 1978). As the reading level of the NSLOC-C may be above the reading level of some of the participants, this instrument was read aloud to participants in grades 3 and 4. The approximate time to complete the NSLOC-C is 7 minutes. Nowicki & Strickland (1973) assessed the internal consistency of their measure using the split-half method. The reliability for various age groups was found to be moderate but consistent across the ages. For grades 3, 4, and 5, the split-half reliability was found to be .63. For grades 6, 7, and 8, the split-half reliability was found to be .68. For grades 9, 10, and 11, the split-half reliability was found to be .74. For grade 12, the split-half reliability was found to be .81. Test-retest reliability at six week intervals was found to range from .66 for grade 3 students to .71 for grade 10 students.

**Procedure**

Data was collected from 10 public schools in the Eastern School District in Newfoundland. In order to conduct research in the Eastern School District, a proposal seeking ethical approval was first submitted to Memorial's Interdisciplinary Committee on Ethics in Human Research (ICEHR). Subsequent to receiving ethical approval from ICEHR (see Appendix F), the Eastern School District was also approached for ethical approval. Following ethical approval from the Eastern School District (see Appendix G), twenty schools within the district with children ranging in age from 7 to 18 years were selected to be contacted regarding the study. The principals were contacted via an information letter (see Appendix H) which explained the purpose of the present study. The letter also requested permission for research assistants to solicit participants from the school. Ten schools granted permission, and were subsequently contacted with a phone call from the researcher to the principal to arrange dates and times for an initial school visit.

During the initial visit to a school, the research assistant(s) gave a brief introductory speech to the participating classes that explained the general purpose of the study (see Appendix I). The research assistants explained that the answers provided on the questionnaires would be anonymous and confidential. It was also explained that the study was voluntary, and that participants could withdraw from the study at any time. The research assistants explained that consent forms had to be signed by the parents in order for the students to be involved in the study. All students were given introduction letters about the study, as well as the consent forms to be signed by a parent or guardian (see Appendix J). The students were asked to return the signed consent forms to the school the

following day, regardless of whether the parents gave consent to participate in the study. An incentive was used later in data collection to increase the low consent rates at the schools. All participants who returned their consent forms signed by their parent or guardian were entered into a draw to win a gift certificate ($10) for a movie theatre. The average consent rate was 12% for the nine schools without the incentive and 21% for the one school that had the incentive.

The research assistants returned to the school on the following day to proceed with data collection. Only those students who were given parental consent to participate were asked to gather in a quiet room (for example, the school library) to complete the questionnaires. The participants were seated at tables or desks, and the research assistant once again explained the study (see Appendix K). It was emphasized to the participants that they could ask questions at any time throughout the process. Participants were also assured that they could stop at any point in the process if they wished.

The research assistant read the child's assent form aloud to all participants and explained that the assent form was where the participants could indicate whether they wanted to take part in the study. The participants were asked to write their name and the date on the assent form if they wished to participate. The assent forms were collected and only those participants who signed the assent form were administered the questionnaires. One child decided not to participate in the study and did not sign the assent form; therefore, the assent rate was 99%.

The research assistants administered packets of questionnaires. The packets included the EMBU-C, EMBU-A, NSLOC, and RCADS, as well as the demographic

questionnaire. The demographic questionnaire was attached to the front of all the questionnaire packets. The questionnaires were counterbalanced according to a Latin squares design. All participants were allowed to proceed through the questionnaire packets on their own. However, for grades 3 and 4, research assistants read the statements on each questionnaire out loud to the group as a whole. For any participants requiring individual attention, a research assistant was available to administer the questionnaires one on one. The total time to complete the questionnaire packets ranged from 15 to 60 minutes. Following the completion of all questionnaires, the participants were asked if they had any questions or concerns.

## Results

### Descriptive Statistics

A total of 176 participants completed the present study. Following an initial examination of the data, 27 participants were excluded. Exclusion criteria included participants repeating the exact same response across questions or inventories, having substantial amounts of missing data (e.g., full inventories not completed in the questionnaire packets), or being outside of the specified age brackets for the study.

Preliminary analyses were used to investigate the interrelationships between three of the demographic variables (age group, sex, and family living composition) and parental overprotection (EMBU-C_C/O), child locus of control (NSLOC-C), and the child anxiety composite score (RCADS_ANX). Table 1 illustrates the means, standard deviations, indices of degree of normalcy, and internal consistencies for measures of parental overprotection, child LOC, and child anxiety in three age groups (ages 8 - 10, 12 - 14, and 16 - 18) and the full sample.

Tests of internal consistency were performed for boys and girls in each group separately, as well as across the full sample for the parental overprotection scale, child LOC scale, and anxiety scale (see Table 1). In general, internal consistencies are considered acceptable when greater than $\alpha = .70$, but internal consistencies of $\alpha = .60$ may still be considered acceptable for scales with less than 20 items (Nunnally, 1967). In the full sample, the EMBU-C_C/O, which is comprised of 10 items, had moderate internal consistencies in both sexes ($\alpha = .81$ - $.87$). However, within individual age groups, the internal consistencies differed between girls and boys. Across age groups,

Table 1.

*Means, standard deviations, range, tests of normalcy, and internal consistencies (α) for the EMBU-C_C/O, the NSLOC-C, and the RCADS_ANX across three age groups and in the full sample (N = 149)*

| Measure | *M (SD)* | Range | Skew | Kurtosis | α - Girls | α - Boys |
|---|---|---|---|---|---|---|
| EMBU-C_C/O | | | | | | |
| Group 1 | 25.40 (4.57) | 15 - 40 | -.69 | -1.42 | .79 | .92 |
| Group 2 | 22.72 (4.27) | 13 – 31 | .39 | .85 | .82 | .41 |
| Group 3 | 22.15 (4.74) | 16 – 35 | 1.99* | 1.40 | .78 | .11 |
| Full Sample | 23.72 (4.64) | 13 – 40 | 1.04 | .58 | .81 | .87 |
| NSLOC-C | | | | | | |
| Group 1 | 11.63 (3.71) | 2 – 23 | .39 | 1.00 | .69 | .62 |
| Group 2 | 10.39 (4.09) | 2 – 21 | 1.91* | -.23 | .70 | .65 |
| Group 3 | 9.65 (3.46) | 4 - 18 | 1.00 | -.21 | .63 | .23 |
| Full Sample | 10.79 (3.90) | 2 – 23 | 1.79 | -.11 | .68 | .64 |
| RCADS_ANX | | | | | | |
| Group 1 | 38.15 (20.57) | 2 – 87 | 2.38* | -.330 | .95 | .96 |
| Group 2 | 27.22 (15.61) | 1 - 66 | 3.11** | .58 | .94 | .94 |
| Group 3 | 38.15 (18.84) | 15 – 81 | 1.37 | .21 | .93 | .96 |
| Full Sample | 33.09 (18.87) | 1 – 87 | 4.39** | .54 | .95 | .96 |

*Note. EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_ANX = Revised Child Anxiety and Depression Scale, Anxiety composite score*

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

girls had moderate reliability for the EMBU-C_C/O ($\alpha$ = .78 - .82). Conversely, boys in Group 1 showed a high reliability for the EMBU-C_C/O ($\alpha$ = .92), and boys in Groups 2 and 3 had very low internal consistencies ($\alpha$ = .41 and $\alpha$ = .11, respectively), which were much lower than expected (Castro et al., 1993).

The internal consistencies for the NSLOC-C, which was comprised of 39 items, were low but acceptable for both sexes in the full sample ($\alpha$ = .64 - .68). Similar reliabilities for the NSLOC-C were found in the separate age groups for boys and girls (ranging from $\alpha$ = .62 - .70), except for boys in Group 3 ($\alpha$ = .23). Both the reliabilities for the EMBU-C_C/O and NSLOC-C ($\alpha$ = .11 and $\alpha$ = .23, respectively) were extremely low for boys in Group 3. Furthermore, the sample size for this group was very low ($n$ = 3). Therefore, it would not be possible to draw accurate conclusions about this group. As such, the boys in the Group 3 sample were removed from further analyses. Finally, for the RCADS_ANX, which is comprised of 37 items, internal consistencies were high in both sexes for the full sample, and across all age groups (ranging from $\alpha$ = .93 - .96). The final sample size consisted of 146 participants who were used in the main analyses.

As is shown in Table 1, several of the variables were significantly skewed. The NSLOC-C was significantly skewed in Group 2 and the EMBU-C_C/O was significantly skewed in Group 3. Therefore, a square root transformation was used for the NSLOC- C and the EMBU-C_C/O in Group 2 and 3, respectively. Additionally, the RCADS_ANX was significantly skewed for the full sample; therefore, a square root function was applied to the RCADS_ANX variable for the full sample.

Following the transformations, one-way analyses of variance (ANOVAs) were used to test the differences between age groups on the parental overprotection, locus of control, and child anxiety. Age groups differed with regards to overprotection ($F$ (2, 143) = 6.86, $p < .01$), and child anxiety ($F$ (2, 143) = 6.75, $p < .01$). Therefore, subsequent follow-up contrasts were used to investigate the age differences. Age group comparisons were conducted using Bonferroni adjusted alpha levels of .017 for each test (.05/3 = .017). For parental overprotection, follow up contrasts revealed a significant difference between Group 1 and Group 3 ($t$ (143) = 2.57, $p$ = .011), indicating that the youngest age group had significantly higher levels of parental overprotection than the oldest age group. Additionally, follow up contrasts revealed a significant difference between Group 1 and Group 2 ($t$ (143) = 3.39, $p$ = .001), indicating that the youngest age group also had significantly higher levels of parental overprotection than the middle age group. However, no significant differences were found between Group 2 and Group 3, suggesting that levels of overprotection did not differ in the two older age groups. In addition, a paired samples t-test revealed that Group 3 reported significantly higher scores for overprotection using the EMBU-A compared to the EMBU-C ($t$ (16) = -4.44, $p < .01$), suggesting that the scores on the EMBU-C in the adolescent sample were representative of their current perception of overprotection.

For child anxiety (RCADS_ANX), follow up contrasts revealed no significant differences between Group 1 and Group 3, suggesting that the youngest and oldest groups did not differ on levels of anxiety. However, follow up contrasts between Groups 1 and 2 revealed significant differences ($t$ (143) = 3.37, $p$ = .001), and follow up contrasts

between Groups 2 and 3 revealed differences that approached significance ($t$ (143) = 2.41, $p$ = .017). These findings suggest that the youngest and oldest age groups both had higher levels of anxiety than the middle age group.

To further examine the comparable levels of anxiety in the youngest and oldest groups, one-way analyses of variance (ANOVAs) were used to test the differences between age groups on the individual subscales of the RCADS following square root transformations. Again, tests were conducted using Bonferroni adjusted alpha levels of .017 for each test (.05/3 = .017). Results revealed that age groups differed depending on the subscale. Namely, significant between-group differences were observed on the separation anxiety disorder (SAD) subscale ($F$ (2, 143) = 23.80, $p$ < .001), and the obsessive-compulsive disorder (OCD) subscale ($F$ (2, 143) = 16.42, $p$ < .001). The age groups did not significantly differ on the social phobia (SP) subscale ($F$ (2, 143) = 3.39, $p$ = .036), the panic disorder (PD) subscale ($F$ (2, 143) = 3.39, $p$ = .019), or the generalized anxiety disorder (GAD) subscale ($F$ (2, 143) = 2.45, $p$ = .09).

Follow-up contrasts were used on the individual subscales of the RCADS that had significant age differences. Tests were conducted using Bonferroni adjusted alpha levels of .017 for each test. For the separation anxiety disorder (SAD) subscale, follow up contrasts between Groups 1 and 2 revealed significant differences ($t$ (143) = 6.90, $p$ < .001), suggesting that SAD scores were higher in the younger group than the middle group. Follow up contrasts between Groups 1 and 3 revealed no significant differences ($t$ (143) = 2.16, $p$ = .029) and follow up contrasts between Groups 2 and 3 also revealed no significant differences ($t$ (143) = -2.22, $p$ = .026). For the obsessive-compulsive disorder

(OCD) subscale, follow up contrasts between Groups 1 and 2 revealed significant differences ($t$ (143) = 5.43, $p < .001$), and follow up contrasts between Groups 1 and 3 revealed significant differences ($t$ (143) = 3.58, $p < .001$). Conversely, follow up contrasts between Groups 2 and 3 revealed no significant differences ($t$ (143) = .09, $p$ = .93), which suggests that OCD scores were higher in the youngest group than either of the two other groups.

Independent-samples $t$-tests were used to test differences between girls and boys on mean scores for the EMBU-C Control/Overprotection subscale (EMBU-C_C/O), the NSLOC-C, and the RCADS anxiety composite (RCADS_ANX) score (see Table 2) in three age groups and the full sample. No significant differences were found between girls and boys on mean scores of measures of parental overprotection, child LOC, and anxiety composite scores. Subsequent planned analyses were collapsed across sex.

Table 2.

*Means and standard deviations (M(SD)) for the EMBU-C Control/Overprotection subscale, the NSLOC-C, and the RCADS anxiety composite for girls and boys across three age groups and the full sample (N = 146)*

| Group | Group 1 | | Group 2 | | Group 3 | | Full Sample | |
|---|---|---|---|---|---|---|---|---|
| | Girls | Boys | Girls | Boys | Girls | Boys | Girls | Boys |
| EMBU-C_C/O | 25.56 (3.49) | 25.17 (5.90) | 22.57 (4.18) | 23.17 (4.60) | 22.24 (4.96) | n/a | 23.55 (4.31) | 24.31 (5.42) |
| NSLOC-C | 11.44 (3.79) | 11.92 (3.65) | 10.39 (3.99) | 10.39 (4.49) | 10.00 (3.62) | n/a | 10.69 (3.87) | 11.26 (4.05) |
| RCADS_ANX | 40.67 (20.03) | 34.38 (21.21) | 28.80 (15.93) | 22.72 (14.12) | 38.71 (19.65) | n/a | 34.53 (18.75) | 29.38 (19.21) |

*Note. EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_ANX = Revised Child Anxiety and Depression Scale, Anxiety composite score*

One-way analyses of variance (ANOVAs) were used to test the differences between family living composition groups (i.e. child spends most of their time with their mother, father, neither, both parents who live separately, or both parents who live together) on measures of parental overprotection, child LOC, and child anxiety. No significant differences were found between family living composition groups (see Table 3). All subsequent analyses and comparisons were collapsed across family composition.

Table 3.

*ANOVA – Between groups comparison of Family Living Composition on the EMBU-C_C/O, the NSLOC-C, and the RCADS_ANX (N = 146)*

| | EMBU-C_C/O | NSLOC-C | RCADS_ANX |
|---|---|---|---|
| Group | *M (SD)* | *M (SD)* | *M (SD)* |
| Mostly with mother | 25.50 (4.31) | 11.72 (3.29) | 36.61 (15.00) |
| Mostly with father | 17.00 (n/a) | 21.00 (n/a) | 27.00 (n/a) |
| Both parents together | 23.70 (4.59) | 10.50 (3.99) | 32.04 (18.69) |
| Both parents separately | 23.15 (4.86) | 11.85 (3.24) | 37.62 (26.78) |
| Neither | 19.50 (7.78) | 11.50 (0.71) | 31.00 (16.97) |
| TOTAL | 23.77 (4.65) | 10.86 (3.91) | 33.05 (18.97) |
| *F*-ratio (*p*-value) | 1.67 (.16) | 2.45 (.05) | .40 (.81) |

*Note. EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_ANX = Revised Child Anxiety and Depression Scale, Anxiety composite score*

**Relationships between Parental Overprotection, Child LOC, and Child Anxiety**

The main hypotheses of the present investigation were that i) parental overprotection would be positively related to child LOC, ii) child LOC would be positively related to child anxiety, and that iii) a mediation model would be supported for early childhood development, and a moderation model for adolescent development. Given that mediation and moderation analyses were planned to test the study hypotheses, correlation analyses (see Table 4) and regression analyses were first used to depict the relationships between parental overprotection, child LOC, and child anxiety.

Table 4.

*Correlation analyses of the EMBU-C_C/O, the NSLOC-C, and the RCADS_ANX across three age groups and the full sample (N = 146)*

| | Group 1 ($n$ = 60) | | Group 2 ($n$ = 69) | | Group 3 ($n$ = 17) | | Full sample | |
|---|---|---|---|---|---|---|---|---|
| | EMBU C_C/O | NSLOC-C | EMBU C_C/O | NSLOC-C | EMBU C_C/O | NSLOC-C | EMBU C_C/O | NSLOC-C |
| NSLOC-C | .26* | _ | .11 | _ | .46 | _ | .23** | _ |
| RCADS_ANX | .43** | .16 | .16 | .39** | .20 | .22 | .32** | .28** |

*Note. Pearson correlations; EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_ANX = Revised Child Anxiety and Depression Scale, Anxiety composite score*

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

As predicted in the first hypothesis, the overprotection scale was positively correlated with the child LOC scale in the full sample ($r = .23$, $p < .01$), with overprotection accounting for 6% of the variance in child LOC. Within separate age groups, only Group 1 displayed a significant correlation between the overprotection scale

and the child LOC scale, and overprotection accounted for 7% of child LOC ($r = .26$, $p < .05$). Overprotection and child LOC were not significantly related in Groups 2 and 3.

As predicted in the second hypothesis, the child LOC scale was found to be positively correlated with the child anxiety scale in the full sample, with child LOC accounting for 8% of the variance in child anxiety ($r = .28$, $p < .01$). A positive correlation was found in Group 2 between the child LOC scale and the child anxiety scale, and child LOC was found to account for 15% of the variance in child anxiety ($p < .01$). Significant correlations were not found in Groups 1 and 3.

Furthermore, although the overprotection scale was positively correlated with the child anxiety scale in the full sample and in Group 1, and accounted for 10% and 18% of the variance in child anxiety ($p < .01$), respectively, non-significant relationships were found between the overprotection scale and the child anxiety scale in Groups 2 and 3.

**Effects of Child LOC on the Relation between Overprotection and Child Anxiety**

The purpose of the study was to test mediation and moderation models of parental overprotection and child anxiety. In particular, the study planned to investigate the role that child LOC plays in the relationship between overprotection and child anxiety over a wide childhood age range. Given that the third hypothesis involved tests of mediation and moderation models, several steps needed to be satisfied to proceed with the analyses.

To test for mediation (Baron & Kenny, 1986): (1) the independent variable must be significantly associated with the mediator (child LOC regressed on overprotection); (2) the dependent variable must be significantly associated with the independent variable (child anxiety regressed on overprotection); (3) the mediator must significantly affect the

dependent variable when controlling for the independent variable (child anxiety regressed on child LOC and overprotection); and (4) the association between the independent variable and the dependent variable must be reduced when the mediator is controlled (child anxiety regressed on overprotection while controlling for child LOC).

To test for moderation (Baron & Kenny, 1986): (1) the dependent variable must be regressed on the independent variable (child anxiety regressed on overprotection); (2) the dependent variable must be regressed on the moderator (child anxiety regressed on child LOC); and (3) the dependent variable must be regressed on the interaction between the independent variable and the moderator (child anxiety regressed on the interaction between overprotection and LOC). For a moderation model to be supported, the third path, which includes the interaction, must be significant.

Contrary to predictions, many of the relationships between the main variables in the study were not observed within the individual age groups. Importantly, a significant relationship between child LOC and child anxiety was not found in Group 1. As a result, it was not possible to proceed with mediation or moderation analyses. Moreover, a significant relationship between parental overprotection and child anxiety was not observed in Groups 2 and 3. Therefore, it was not possible to proceed with the mediation or moderation analyses for either of those age groups.

Alternatively, since the relationships between overprotection, child LOC, and child anxiety were present in the full sample, mediation and moderation could be tested when the age groups were collapsed. To control for age group membership as a variable in the analyses, age groups were dummy coded and entered first into the analyses. In

testing mediation in the full sample (see Table 5), the age group (dummy coded) variables were first entered, followed by EMBU-C_C/O scores as a predictor of the child anxiety composite scores (RCADS_ANX). It was predicted that overprotection would be a significant predictor of child anxiety. Age group accounted for a significant amount of variance in child anxiety [$F$ (2, 143) = 6.75, $p < .01$, $R^2 = .09$], and consistent with hypotheses, overprotection accounted for a significant amount of additional variance in child anxiety [$F_{change}$ (1, 142) = 12.07, $p < .01$, $R^2_{change} = .07$]. Secondly, the EMBU-C_C/O scores were entered as a predictor of the NSLOC-C scores. It was expected that overprotection would predict child LOC. Analyses revealed that overprotection accounted for a significant amount of additional variance (beyond the amount of variance accounted for by age group) in child LOC [$F_{change}$ (1, 142) = 5.73, $p < .05$, $R^2_{change} = .04$]. Finally, the EMBU-C_C/O and the NSLOC-C scores were entered as predictors of the child anxiety composite scores (RCADS_ANX). It was predicted that child LOC would have a significant effect on child anxiety. Analyses revealed that child LOC was a significant predictor of child anxiety. Specifically, when the EMBU-C_C/O and the NSLOC-C were both entered as predictors, a significant amount of variance in child anxiety was accounted for by child LOC [$F_{change}$ (1, 141) = 7.08, $p < .01$, $R^2_{change} = .04$].

The fourth prediction for mediation was that the association between the independent and dependent variables would be reduced when controlling for the mediator. Consistent with predictions, the relationship between parental overprotection and child anxiety was reduced when controlling for child LOC, as illustrated by the

reduction in beta weights ($\beta = .29$ to $\beta = .24$). However, the Sobel test (Baron & Kenny, 1986) confirmed that the mediation model was not significant ($z$-value = 1.78, $p = .08$).

Table 5.

*Multiple regression analyses predicting the RCADS_ANX from the EMBU-C_C/O and the NSLOC-C in the full sample (N = 146)*

| Predictor | | RCADS_ANX | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | $t$ |
| Step 1 | .09 | | | | |
| Age 1 (Dummy variable) | | -.09 | .44 | -.03 | -.21 |
| Age 2 (Dummy variable) | | -1.04 | .43 | -.31 | -2.41* |
| Step 2 | .08 | | | | |
| Age 1 (Dummy variable) | | -.41 | .43 | -.12 | -.96 |
| Age 2 (Dummy variable) | | -1.09 | .42 | -.33 | -2.63* |
| EMBU-C_C/O | | .10 | .03 | .29 | 3.56** |
| Step 3 | .04 | | | | |
| Age 1 (Dummy variable) | | -.51 | .42 | -.15 | -1.21 |
| Age 2 (Dummy variable) | | -1.12 | .41 | -.34 | -2.75** |
| EMBU-C_C/O | | .09 | .03 | .24 | 3.04** |
| NSLOC-C | | .09 | .03 | .21 | 2.71** |
| Total $R^2$ | .20 | | | | |

*Note. EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_ANX = Revised Child Anxiety and Depression Scale, Anxiety composite score; Age dummy variables are coded so that Age 1 compares Group 1 to Group 2 and Age 2 compares Group 2 to Group 3*

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

Child LOC was also tested as a moderating variable within the relationship between parental overprotection and child anxiety in the full sample (see Table 6). Similar to the mediation analysis, the age group variables (dummy coded) were first entered, followed by the EMBU-C_C/O scores as a predictor of the child anxiety composite scores (RCADS_ANX). Again, it was hypothesized that parental overprotection would significantly predict child anxiety. As shown in the mediation

model, age group accounted for a significant amount of variance in child anxiety [$F_{change}$ (2, 143) = 6.75, $p < .01$, $R^2_{change} = .09$], and parental overprotection accounted for a significant proportion of additional variance in child anxiety [$F_{change}$ (1, 142) = 12.07, $p < .01$, $R^2_{change} = .07$]. Secondly, the NSLOC-C scores were entered as a predictor of the child anxiety composite scores (RCADS_ANX). It was predicted that child LOC would predict child anxiety. As expected, child LOC accounted for a significant amount of additional variance (beyond the amount of variance accounted for by age group) in child anxiety [$F_{change}$ (1, 142) = 10.37, $p < .01$, $R^2_{change} = .06$]. Finally, an interaction term of parental overprotection and child LOC was entered as a predictor of child anxiety. For the moderation model to be supported, the path including the interaction needed to be significant. However, analyses revealed that the addition of the interaction term (parental overprotection and child LOC) did not account for a significant proportion of the variance in child anxiety [$F_{change}$ (1, 140) = 1.35, $p = .25$, $R^2_{change} = .01$].

Therefore, although the planned analyses (mediation and moderation models) could not be tested in separate age groups, the same analyses were tested using the full sample. The analyses revealed that when age groups were collapsed and age was controlled for statistically, there was no support for a statistically significant partial mediation model or moderation model across the full sample.

Table 6.

*Multiple regression analyses predicting the RCADS_ANX from the EMBU-C_C/O, the NSLOC-C, and the interaction EMBU-C x NSLOC-C, in the full sample (N = 146)*

| Predictor | | RCADS_ANX | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | $t$ |
| Step 1 | .09 | | | | |
| Age 1 (Dummy variable) | | -.09 | .44 | -.03 | -.21 |
| Age 2 (Dummy variable) | | -1.04 | .43 | -.32 | -2.41* |
| Step 2 | .08 | | | | |
| Age 1 (Dummy variable) | | -.41 | .43 | -.12 | -.96 |
| Age 2 (Dummy variable) | | -1.09 | .42 | -.33 | -2.63* |
| EMBU-C_C/O | | .10 | .03 | .29 | 3.56** |
| Step 3 | .05 | | | | |
| Age 1 (Dummy variable) | | -.48 | .42 | -.14 | -1.14 |
| Age 2 (Dummy variable) | | -1.08 | .41 | -.33 | -2.63** |
| EMBU-C_C/O | | .09 | .03 | .24 | 2.90** |
| NSLOC-C | | .09 | .03 | .21 | 2.72** |
| EMBU-C_C/O x NSLOC-C | | .01 | .01 | .07 | .94 |
| Total $R^2$ | .21 | | | | |

*Note. EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_ANX = Revised Child Anxiety and Depression Scale, Anxiety composite score; Age dummy variables are coded so that Age 1 compares Group 1 to Group 2 and Age 2 compares Group 2 to Group 3*

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

In addition to testing mediation and moderation models in the full sample, further analyses were used to investigate whether gender differences existed within the relationships among overprotection, child LOC, and child anxiety. Correlation analyses were used first to determine if significant relationships existed between the main variables in girls and boys (see Table 7). Analyses revealed that for girls all variables were significantly correlated. For boys, although the RCADS_ANX was correlated with both the EMBU-C ($r = .42$, $p < .01$) and the NSLOC-C ($r = .47$, $p < .01$), the EMBU-C

and the NSLOC-C were not significantly correlated. As such, mediation and moderation analyses were only tested for girls.

Table 7.

*Correlation analyses of the EMBU-C_C/O, the NSLOC-C, and the RCADS_ANX across gender (N = 146)*

| | Girls ($n$ = 104) | | Boys ($n$ = 42) | |
|---|---|---|---|---|
| Measure | EMBU-C | RCADS_ANX | EMBU-C | RCADS_ANX |
| NSLOC-C | .31** | .21* | .09 | .47** |
| RCADS_ANX | .29** | | .42** | |

*Note. Pearson correlations; EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_ANX = Revised Child Anxiety and Depression Scale, Anxiety composite score*

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

Mediation analyses revealed that in girls (see Table 8), the relationship between parental overprotection and child anxiety was reduced when controlling for child LOC, as illustrated by the reduction in beta weights ($\beta$ = .24 to $\beta$ = .20). However, the reduction was not significant, as confirmed by the Sobel test ($z$-value = 1.15, $p$ = .25). The moderation analysis (see Table 9) was also non-significant for girls, as the addition of the interaction term (parental overprotection and child LOC) did not account for a significant proportion of the variance in anxiety [$F_{change}$ (2, 98) = .96, $p$ = .39, $R^2_{change}$ = .02].

Table 8.

*Multiple regression analyses predicting the RCADS_ANX from the EMBU-C_C/O and the NSLOC-C in girls (N = 103)*

| Predictor | | RCADS_ANX | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | *B* | *t* |
| Step 1 | .10 | | | | |
| Age 1 (Dummy variable) | | .15 | .44 | .05 | .33 |
| Age 2 (Dummy variable) | | -.86 | .42 | -.28 | -2.04* |
| Step 2 | .05 | | | | |
| Age 1 (Dummy variable) | | -.14 | .45 | -.04 | -.32 |
| Age 2 (Dummy variable) | | -.89 | .41 | -.29 | -2.16* |
| EMBU-C_C/O | | .09 | .04 | .24 | 2.45* |
| Step 3 | .02 | | | | |
| Age 1 (Dummy variable) | | -.17 | .45 | -.05 | -.39 |
| Age 2 (Dummy variable) | | -.90 | .41 | -.29 | -2.21* |
| EMBU-C_C/O | | .07 | .04 | .20 | 1.99 |
| NSLOC-C | | .05 | .04 | .13 | 1.38 |
| Total $R^2$ | .16 | | | | |

*Note. EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_ANX = Revised Child Anxiety and Depression Scale, Anxiety composite score; Age dummy variables are coded so that Age 1 compares Group 1 to Group 2 and Age 2 compares Group 2 to Group 3*

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

Table 9.

*Multiple regression analyses predicting the RCADS_ANX from the EMBU-C_C/O, the NSLOC-C, and the interaction EMBU-C x NSLOC-C, in girls (N = 103)*

| Predictor | | RCADS_ANX | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | *t* |
| Step 1 | .10 | | | | |
| Age 1 (Dummy variable) | | .15 | .44 | .05 | .33 |
| Age 2 (Dummy variable) | | -.86 | .42 | -.28 | -2.04* |
| Step 2 | .05 | | | | |
| Age 1 (Dummy variable) | | -.14 | .45 | -.04 | -.32 |
| Age 2 (Dummy variable) | | -.89 | .41 | -.29 | -2.16* |
| EMBU-C_C/O | | .09 | .04 | .24 | 2.45* |
| Step 3 | .02 | | | | |
| Age 1 (Dummy variable) | | -.17 | .45 | -.05 | -.37 |
| Age 2 (Dummy variable) | | -.90 | .41 | -.29 | -2.18* |
| EMBU-C_C/O | | .07 | .04 | .20 | 1.98 |
| NSLOC-C | | .05 | .04 | .14 | 1.39 |
| EMBU-C_C/O x NSLOC-C | | .00 | .01 | .02 | .18 |
| Total $R^2$ | .16 | | | | |

*Note. EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_ANX = Revised Child Anxiety and Depression Scale, Anxiety composite score; Age dummy variables are coded so that Age 1 compares Group 1 to Group 2 and Age 2 compares Group 2 to Group 3*

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

Lastly, the mediation and moderation analyses were tested with each anxiety subscale of the RCADS (i.e., SAD, OCD, PD, SP, and GAD). Correlation, mediation, and moderation analyses revealed similar trends to the findings reported when using the anxiety composite score (see Appendices L - Q). Given that in all anxiety subscales, neither mediation nor moderation models were significant, it was determined that the results observed in the full anxiety scale were representative of the relationships among parental overprotection, child LOC, and child anxiety in this population.

## Discussion

The purpose of this study was to assess mediation and moderation models of parental overprotection and child anxiety. Specifically, the study sought to investigate the role of child locus of control in the relationship between parental overprotection and child anxiety in a sample of youths ranging in age from 7 to 19 years. The first goal was to test child LOC as (i) a mediator between parental overprotection and child anxiety, and (ii) a moderator between parental overprotection and adolescent anxiety. The second goal was to assess whether the role of child LOC changed over child and adolescent development from a mediational variable to a moderational variable. Unexpectedly, the main finding from the present study was that although statistically significant relationships were found between parental overprotection, child LOC, and child anxiety in the full sample, these relationships were not significant within age groups. The two goals of the study were directly affected by these findings, since the lack of statistically significant relationships among the three variables of interest in the separate age groups precluded any further testing of mediation or moderation models in any of the age groups. However, both mediation and moderation were tested in the full sample, and results suggested that a non-significant mediation model was a better fit than a moderation model.

As discussed in further detail below, the correlations were significant in the full sample but not within age groups. This finding may suggest that there are important differences between wide age ranges compared to separate age groups, and it could highlight the need to examine these relationships by age group. This unexpected finding may be particularly important for researchers who are examining these relationships in

youth that are not sub-divided into age groups, since different findings emerge when examining the relationships globally across a wide age range compared to examining them by age group. In particular, studies that use a wide age range to examine these relationships could miss the different patterns of correlations that exist within separate age groups, and additionally, could suggest support for a mediation model that may only exist with a wide age range of youths. Overall, the lack of significant relationships between overprotection, child LOC, and child anxiety within age groups indicates the need for further investigation into the role of child age among these variables.

Since the present investigation was designed to assess child age as a key variable, the first goal of the study was to test child LOC as a mediator and moderator of parental overprotection and child anxiety in children and adolescents. Therefore, the relationships between the main variables were first assessed using bi-variate correlations. In particular, it was predicted that there would be a significant relationship between parental overprotection and child LOC, such that higher levels of overprotection would be associated with an external locus of control in the child. Surprisingly, this relationship was demonstrated only in the youngest children. Although these findings were not consistent with predictions, small to medium non-significant correlations between parental overprotection and child LOC were observed within the separate age groups (see Table 4). Furthermore, the oldest group (Group 3), which had fewer participants than both other age groups ($n$ = 17 vs. $n$ = 60 & 69), had the strongest correlation between overprotection and child LOC ($r$ = .41), yet the correlation was not significant. In the current study, it is not possible to rule out whether the non-significant correlations

between overprotection and child LOC are due to insufficient power, therefore future studies should employ larger sample sizes.

It was also predicted that there would be a significant relationship between child LOC and child anxiety, such that an external child locus of control would be associated with higher levels of child anxiety. Contrary to predictions, this relationship was confirmed only in Group 2 ($r$ = .39). This finding is comparable to Muris et al. (2004) who also found significant correlations between perceived control and anxiety in their pre-adolescent sample ($r$ = -.28). It is a likely possibility that although the expected trends were observed in the other age groups, significant correlations were not found between child LOC and child anxiety due to insufficient power. Again, since the findings may be due to low power, future studies should use larger sample sizes for separate age groups.

Following the findings of non-significant relationships between variables in the separate age groups, mediation and moderation models were only tested using the full sample. Although neither model was significant in the full sample, a mediation model better supported the relationship among overprotection, LOC, and child anxiety. Specifically, with regards to the moderation model in the full sample, the results revealed that the addition of the interaction term of overprotection and child LOC only accounted for an additional 1% of the variance in child anxiety. There have been discrepant theories between researchers regarding whether a moderation model explains the relationship among overprotection, child LOC, and adolescent anxiety (Chorpita & Barlow, 1998; Muris et al., 2004). The results from the present investigation are consistent with several previous studies that have not found support for a moderation model (Ballash, Leyfer,

Buckley, & Woodruff-Borden, 2006; Spokas & Heimberg, 2009). However, Muris and colleagues (2004) concluded that although their results did not offer support for a moderation model for overprotection, perceived control, and anxiety, other forms of maladaptive parenting, such as anxious rearing, may support a moderational relationship with perceived control and anxiety.

The results from the present study revealed non-significant evidence of a partial mediation model in the full sample. Specifically, all of the steps in the mediation model were significant (see Table 5), but the Sobel test used to determine the effect of the mediator on the relationship between overprotection and anxiety did not reach significance for the partial mediation model ($z$-value = 1.78, $p = .08$). Mediation analyses in the full sample controlled for the child's age group, and age group accounted for a significant amount of variance in child anxiety ($F$ (2, 143) = 6.75, $p < .01$, $R^2 = .09$). As discussed previously, this finding suggests that the child's membership to a particular age group affected the relationship between overprotection, child LOC, and child anxiety.

Although the partial mediation model was not statistically significant, the data from the present study are more indicative of a potential mediation relationship rather than a moderation relationship. Moreover, if the sample size was larger, and therefore the study had greater power, it may have been possible to reach statistical significance. As the model stands with the current sample, the Sobel test for a partial mediation approached significance. This explanation could be tested by collecting more data to obtain higher $n$ values for separate age groups. A power analysis was conducted prior to the beginning of the current investigation, in which a medium effect size was predicted

(G*Power Analysis). As such, the total sample size for each group was required to be $n$ = 74. However, it is possible that the effect is smaller than what was originally predicted, and therefore, the analyses could require as many as 543 participants to observe a small effect. Thus, the samples obtained in Groups 1 and 2 would not be sufficient to observe an effect. Again, the explanation of low power for the non-significant findings is one potential alternative explanation of the results that at this time, cannot be ruled out. Certainly, further investigations are necessary to elucidate the specific mechanisms in which parental rearing styles and child cognitions contribute to child anxiety.

Although the non-significant correlation findings precluded tests of mediation and moderation amongst the separate age groups, similar correlation analyses across gender revealed that mediation and moderation could be tested for girls. Specifically, in girls, results revealed small to medium correlations between all of the main variables (see Table 7). In contrast, for boys, while significant correlations were observed between the RCADS_ANX and EMBU-C, and the RCADS_ANX and NSLOC-C, a non-significant correlation was found between the EMBU-C and the NSLOC-C. This finding precluded further testing in boys. The mediation and moderation analyses using only girls revealed non-significant models, which was similar to the findings in the full sample. Although the findings may seem to suggest gender differences, it is important to interpret the findings with caution as the samples may not have been of sufficient size to observe an effect. Further investigation with more boys, or larger samples of both girls and boys, is necessary to test whether the findings were due to low power. In addition, given that a mediation or moderation relationship could have been present in only one type of anxiety,

similar tests were also conducted in using the anxiety subscales (i.e., SAD, OCD, PD, SP, and GAD). However, all of the analyses with the anxiety subscales yielded non-significant mediation and moderation models. As such, it was concluded that the results observed with the anxiety composite score were indicative of the relationships among overprotection, child LOC, and child anxiety in this population.

The results from the present study did yield other findings of interest. Specifically, the analyses of the present investigation revealed that (1) younger children reported higher levels of parental overprotection than older children, and (2) the youngest and oldest age groups reported higher overall levels of anxiety than the middle age group, but differed depending on the type of anxiety assessed (namely, separation anxiety disorder and obsessive compulsive disorder).

Firstly, the results of the present investigation revealed that younger children reported significantly different levels of parental overprotection than adolescents. Specifically, levels of parental overprotection were highest in the youngest group, and levels of overprotection in the youngest group were found to be significantly higher than levels of parental overprotection in the adolescent group. These findings provide further validation that the EMBU-C is measuring what it is intended to measure; specifically, one would expect to find that higher scores on the EMBU-C_C/O are associated with younger children. During the development of the EMBU-C (the measure used for assessing parental overprotection in children), Castro and colleagues (1993) assessed the relationships between EMBU-C subscales and the age of the children (ranging from 7 - 12 years). Castro et al. (1993) reported negative associations between child age and three

of the subscales from the EMBU-C. In particular, negative correlations were observed between the child's age and the control subscale for both mothers and fathers ($r$ = -.29 and $r$ = -.36, respectively), indicating that younger children reported higher levels of parental control compared to older children in the sample.

The findings that levels of parental overprotection are higher in younger children than older children are also consistent with more recent investigations. Muris, Meesters, and van Brakel (2003) investigated the psychometric properties of the EMBU-C in a sample of youths ranging in age from 9 to 17 years old. The study found that the ages of the children had small, yet significant, effects on levels of overprotection such that both maternal and paternal overprotection declined with increasing child age. Similarly, Brown and Whiteside (2008) reported findings concerning child age and levels of overprotection in a sample comprised of children with comparable ages to the present investigation (ranging from 7 – 18 years). Given the wide age range of participants, statistical analyses were completed with two age groups, younger children (7 – 12 years old) and older children (13 – 18 years old). Although no age differences were found for three of the four subscales of the EMBU-C, a significant difference was observed between the younger and older children on the overprotection subscale. Again, such findings offer support for the theory that younger children report more overprotective behaviours from their parents as compared to older children or adolescents.

Previous bodies of research have examined the detrimental effects of parental overprotection, as well as the specific psychological difficulties for children associated with limited opportunities to develop a sense of autonomy in their environment (McLeod

et al., 2007). However, several theories in the past have suggested that the age of the child plays a role in the differential effects that parental control or overprotection can have on a child's psychological well-being. The developmental theories in previous work by Barber, Olsen, and Shagle (1994) highlight the importance of considering whether the type of parental control is appropriate for the child's age because not all forms of control are the same (Kakihara & Tilton-Weaver, 2009).

Barber et al. (1994) suggest that there are important conceptual differences between the psychological control and the behavioural control of a child. Psychological control refers to the attempts made by parents to manipulate the child's thoughts or emotions, and can lead to problems if autonomy is limited. Conversely, behavioural control refers to managing a child's behaviour by creating a structured environment and establishing household rules or limits. These types of control can be compared to the types of parenting styles described by Baumrind (1966) as both approaches support a positive role for control. Baumrind defines an authoritative parent as one who is high in control and high in warmth. Authoritative parents show control by setting limits and rules for their children and enforcing them, but they also show warmth by discussing the reasons for the actions and demonstrating affection for the child. Authoritative parenting utilizes parental control techniques that are similar to the behavioural control described by Barber et al. (1994) such that the control is used in a positive way. Furthermore, Barber and colleagues (1994) suggest that while children are developing, they actually require a certain amount of behavioural regulation in order to learn the structure or rules associated with social interactions and societal functioning. Thus, it follows that younger

children, with less knowledge about behavioural regulation and social expectations, may report higher levels of parental overprotection since they require greater control from their parents, as was found in the present study.

Since psychological control and behavioural control were not explicitly measured in the current investigation, it is not possible to determine exactly which type of parental control might have been higher for the youngest children. However, it is possible to compare items from the EMBU-C in the present study to items from other inventories which assess psychological and behavioural control. Barber and colleagues (1994) analyzed the Child Report of Parent Behavior Inventory (CRPBI) and the Colorado Self-Report of Family Functioning Inventory (CSRFFI) to empirically distinguish between psychological and behavioural control. Many of the items from the EMBU-C are closely related to items that were classified as representative of psychological control, while few items may be representative of behavioural control. For example, similar items are "Your parents take care that you behave by the rules" from the EMBU-C, and "Mother insists that I must do exactly as I am told" from the CRPBI, which was classified as measuring psychological control. It is possible that the EMBU-C assesses constructs that are more closely related to psychological control, which Barber et al. (1994) found was associated with internalizing problems in their investigation with an adolescent sample. Further investigation into psychological and behavioural control in youths is needed to determine the exact nature of the control being measured with the EMBU-C.

An additional finding of the present study was that the youngest children and the adolescents had higher overall levels of anxiety than the middle age group, but differed

depending on the type of anxiety reported (i.e., SAD, OCD). First, the results revealed that younger children had higher scores on the separation anxiety disorder (SAD) subscale of the RCADS (anxiety measure) compared to the older children or adolescents. The main feature of SAD is excessive or inappropriate fear/anxiety regarding the separation from home or from people to whom the individual is attached (Mash & Barkley, 2003). Since it is developmentally appropriate for young children (up until the age of approximately 6 years old) to be anxious regarding their separation from their parents, it is not surprising that younger children display more separation anxiety than older children or adolescents (Bernstein & Borchardt, 1991).

Francis, Last, and Strauss (1987) assessed the expression of SAD symptoms in relation to child age and gender in a clinical sample. While no differences in SAD symptoms were found between boys and girls, the authors reported that interesting age differences were present for the total amount of SAD symptoms present. Similar to the present study, the authors divided the children into three age groups for the statistical comparisons. Note however, Francis and colleagues used younger age groups compared to the current investigation (5 - 8, 9 - 12, 14 - 16 years compared to 8 - 10, 12 - 14, 16 - 18 years). The authors revealed that the youngest children in the study reported a greater number of DSM-III diagnostic criteria for separation anxiety than the middle children did. Interestingly, no significant differences were found in the number of SAD symptoms between the youngest children and the adolescents, indicating that young children and adolescents both had significantly more SAD symptoms that the middle children.

The present study found that SAD scores did not differ significantly between the young children and the adolescents, which suggests that adolescents had SAD scores similar to the young children. Also, a non-significant trend was observed such that SAD scores were higher in the adolescent group (Group 3) than the middle group (Group 2). As these findings were unexpected in both studies, and other investigations (Allen, Lavalleea, Herrena, Ruhea, & Schneider, 2010) have not reported an effect of age on SAD scores, replication in a larger sample of clinical and non-clinical youths is recommended. One possible explanation for these findings is the low number of adolescents in the studies (Francis et al., 1987, $n = 9$; present study, $n = 17$) which may not be representative of the adolescent population. Another possible explanation may be related to the fact that SAD has been associated with the development of panic disorder, which typically emerges in adolescence (Klein, 1995; Last & Strauss, 1989). Therefore, it is possible that adolescents are responding to the SAD items that may be closely related to the physiological hyper-arousal symptoms associated with panic. Overall, there are inconclusive findings regarding the effects of child age on levels of SAD symptoms, and therefore further investigation is warranted.

The present study also found that the child's age was related to their reported levels of obsessive-compulsive (OCD) scores. The main features of OCD are intrusive and reoccurring obsessions and compulsions that cause distress. Specifically, the youngest group (Group 1) had higher OCD scores than the two older age groups (Groups 2 and 3). Additionally, no difference was found in OCD scores for Group 2 and Group 3,

suggesting that rather than a decreasing age trend for OCD scores, perhaps a meaningful difference in OCD scores exists between the youngest group and the older participants.

For children and adolescents, previous findings have suggested that the mean age of onset for OCD symptoms is between 10 and 13 years old. However, some cases have reported younger onset (Mash & Barkley, 2003). In a review of 70 children and adolescents with OCD, Swedo, Rapoport, Leonard, Lenane, & Cheslow, (1989) described some children with the age of onset as young as 2 years old for the appearance of symptoms. However, the mean age of onset for the children was 10.1 years ($SD$ = 3.52 years). This finding is similar to the present study in which Group 1, with the age range of 8 - 10 years old, had the highest OCD scores. Although the onset for OCD symptoms may be at a young age, it does not necessarily explain why the OCD scores would be highest in the youngest group. One possible explanation may be that parental overprotection scores were also highest in the youngest group, and researchers have argued that parental overprotection contributes to OCD symptoms (Smari, Martinsson, & Einarsson, 2010). Smari and colleagues (2010) revealed that parental overprotection and OCD symptoms were positively correlated in a non-clinical sample of young adults, such that higher levels of overprotection were associated with higher OCD scores. Additionally, other studies in the area of OCD research (Frost et al., 1994; Cavedo & Parker, 1994) have found that in sub-clinical populations, parental overprotection is related to symptoms of OCD. Although this hypothesis was not tested in the present study, parental overprotection may play a role in the elevated reported levels of OCD symptoms in the youngest group compared to the older age groups.

**Strengths and Limitations**

A strength of the present study was addressing limitations from previous parent-child research (Rapee, 1997). One of the main methodological limitations in this line of parent-child research is the absence of a concise theoretical model within studies. Researchers have used a variety of measures, variables, and methods for assessing similar constructs due to this lack of unified rationale for investigating the relationship between parental overprotection and child anxiety. Despite having a common research goal, the discrepancy between studies can lead to difficulties in drawing consistent conclusions. As such, the current investigation employed a model that has been examined and tested in previous empirical studies (e.g. Chorpita, et al., 1998; Muris, et al., 2004; Spokas & Heimberg, 2009). The similarity between the current investigation and past studies will allow researchers to make meaningful comparisons, and build on a unified model.

A further strength of the present study is the use of child self-reports, rather than retrospective adult reports. Retrospective data collection from an adult sample may be more consistent than child-reports. However, as Rapee (1997) discusses, the validity of the adult reports may be questioned due to a possible recollection bias, or the amount of time between childhood and adult data collection. Additionally, the studies that do utilize child samples rarely specify the child's age group or developmental stage. Therefore, the present investigation used a child self-report method, which increased the external validity of the findings. Furthermore, the present investigation tested well-defined age groups, which allowed for clear comparisons with other studies utilizing defined age groups. However, a potential limitation also exists when researchers attempt to

investigate psychological or behavioural constructs within specific age groups when they are actually looking for a correspondence with a developmental stage. The present study used only chronological age as a marker for defining groups (i.e. childhood, adolescence), but there may not be a perfect correlation between certain cognitive or emotional attributes and chronological age. Thus, it is important to note that the age groups defined and discussed in the present study may not perfectly represent or correspond to the developmental stages of childhood and adolescence.

There are other limitations from the present study that are also worth noting. An acceptable, yet low, internal consistency was found for the NSLOC-C scale in the full sample ($\alpha$ = .64 - .66). A moderate internal consistency is usually considered to be above .70. However, the internal consistency found in this study was comparable to previous studies using this subscale (Nowicki & Strickland, 1973). Specifically, in previous investigations, the internal consistency was .63 for grades three and four, .68 for grades seven and eight, and .74 for grade eleven. These estimates of reliability are comparable to those found across grades in the present study (ranging from $\alpha$ = .62 - .70). Yet, results using the NSLOC-C scale should still be interpreted with caution. An exception to the acceptable findings of internal consistencies for the NSLOC-C is the Group 3 boys, in which the reliability was $\alpha$ = .23, which is extremely low. Furthermore, the EMBU-C_C/O subscale was found to have moderate to high reliability in most age groups. However, analyses revealed that the samples of boys in Group 2 and Group 3 had very low internal consistencies ($\alpha$ = .41 and $\alpha$ = .11, respectively). Because of the low reliability in the NSLOC-C and the EMBU-C_C/O, the sample of boys in Group 3 ($n$ = 3)

was excluded from the analyses. Despite the low reliability in the EMBU-C_C/O for the sample of boys in Group 2, the sample was not excluded due to the acceptable levels of internal consistency for the RCADS and the NSLOC-C. Although the boys were not excluded, the reports of parental overprotection in Group 2 should be interpreted with caution since the boy and girl samples were combined in further analyses.

A second limitation was that only one measure was used to assess each of the main constructs in the present study. Therefore, it is not possible to analyze the validity of the reported findings. Using additional self-report measures for each construct or using concurrent parental reports to assess the constructs of interest may have increased the validity. Specifically for the parental overprotection, the EMBU-C in the present study is a child self-report and reflects the child's perception of their parents' controlling behaviours, rather than an actual measure of the parenting behaviours themselves. Furthermore, the parent did not provide a self-report so it is not possible to investigate how the parent perceives the nature of the parent-child relationship. Thus, in addition to using child self-report measures, researchers could consider using different modalities to investigate these research questions. Possible techniques could include interviewing the child, parent, or both, or using a longitudinal design in order to obtain a more information about the parent-child relationships. Also, since many of the studies assess similar constructs with varying labels or measures (ex. NSLOC vs. PCS, or EMBU-C vs. FES), it may be important to use multiple measures in order to determine whether or not the constructs have a significant amount of shared variance.

Thirdly, due to the time constraints of the study, and the low consent rate at the high schools, a lower than expected number of participants was obtained in the Group 3 (grade 11 and 12) sample. While other grades had slightly higher consent rates, the grade 11 and 12 sample only had a 5% consent rate, which resulted in a sample size of 20 for Group 3. A small sample size can lead to misinterpretations and show an inaccurate representation of the true population. Also, there may have been a self-selection bias such that parents may have been interested in the study either because their children are well-adjusted or because they have many problems. In addition, the boys in the Group 3 sample were excluded due to low internal consistencies on the inventories, and therefore, the results from Group 3 may only be representative of adolescent girls. There was also a gender inequity across the full sample, and therefore the findings should be interpreted with caution as the present results may be more representative of girls than boys.

Two additional limitations of the current study are i) the lack of diversity in the ethnic background of the participants, and ii) the absence of parental relationship information. First, there was little diversity of participants' ethnic backgrounds in the present study, as the sample was drawn from St. John's, Newfoundland, which is a very homogeneous population. As such, it is not possible to extend the findings of the current investigation to all ethnic backgrounds, but further studies should include participants with more ethnically diverse backgrounds in order to increase the external validity of the findings. In addition, obtaining information about the person that the child considered the parent might be useful in order to determine whether the nature of the parent-child relationship has an influence on the link between overprotection, locus of control, and

child anxiety. Specifically, parenting differences may exist between mothers and fathers, as well as within various parental relationships (i.e., biological, adopted, step-parent, etc). A question regarding this relationship could be included on a demographic form.

**Future Directions**

The findings from the present study suggest that additional research is necessary to properly evaluate the theory proposed by Chorpita & Barlow (1998) regarding the role of locus of control as a mediator or moderator of the relationship between parental rearing styles, particularly parental overprotection, and child anxiety. Because it was not possible to evaluate the mediation and moderation models in separate age groups, this research remains an area for future investigation. The present results, however, may suggest that the patterns of correlations differ by age and that by combining all age groups together, the results not only offer support for significant relationships between the variables, but also offer support for a mediation model. Therefore, while the results of the present study can still contribute to the growing body of research concerning perceived control in the relationship between parent rearing styles and anxiety, further investigations are crucial for appropriate evaluation of Chorpita and Barlow's theory.

In addition to cross-sectional investigations of the models in the separate age groups, it would be beneficial to conduct longitudinal studies with children and their parents to assess the changes in the parent-child relationship across development. To date, there are few studies that have critically assessed the relationship among parental overprotection, child locus of control, and child anxiety, and a longitudinal investigation has yet to be conducted. Future studies that utilize a longitudinal design may be able to

obtain a clearer understanding of the parent-child relationship, rather than solely discuss the cross-sectional nature of the relationships.

As discussed above, another aim for future studies could be to use multiple measures, modalities, or both to assess the main constructs of interest. Specifically, the present investigation used three empirically supported self-report measures, but using additional measures for each construct could increase the validity of the findings. Furthermore, although a substantial amount of parent-child research employs parent report or observation of the family, there is little, if any, research on the Chorpita and Barlow (1998) model using these methods of assessment. In particular, it would be useful to obtain parent reports of their perceived parenting behaviours or of their perception of their child's anxiety to corroborate child reports of the same constructs. It would also be beneficial to conduct studies with observational techniques to gain further information of the parent-child interactions, which could ascertain behavioural levels of parental overprotection, or anxious behaviour by the child. The use of various valid and reliable methodology will allow researchers to draw appropriate inferences about the relationships between parental rearing styles, locus of control, and anxiety, as well as gain insight into the possible mechanisms contributing to the parent-child relationship.

While there is a growing body of research regarding the effects of parenting styles and control-related cognitions on the development of child anxiety, it is evident many issues must still be resolved in order to draw appropriate conclusions about the relationships among these variables. Although many studies suggest that overprotection and locus of control are risk factors for the development of child anxiety, other related

factors, such as the child's age, must be more thoroughly investigated with regards to these relationships. If future investigations are able to clarify the relationships among overprotection, child LOC, and child anxiety, the research findings could contribute to our understanding of parent-child relationships in general. Specifically, researchers could target further investigations towards certain age groups that may be the most vulnerable to the detrimental effects of overprotection or external locus of control.

**Conclusion**

The purpose of the present investigation was to assess the role of child locus of control within the relationship between parental overprotection and child anxiety. This relationship could not be tested within the proposed age groups due to the lack of significant relationships among the main variables. Therefore, the results from the present study suggest that findings are still inconclusive regarding the mediation and moderation models proposed by Chorpita and Barlow (1998), and that further studies are required to draw conclusions about their parent-child theory. Despite the fact that the models could not be tested within separate age groups, the present study was able to shed light on the possibility that important age differences exist in these relationships. Specifically, the findings that there were no significant relationships among overprotection, child LOC, and child anxiety within separate age groups is of importance, particularly if researchers are investigating these relationships without looking at age as a related contributor. As such, the current study contributes to the larger body of research concerning parent-child relationships, and provides support for investigating the role of child age, as well as parenting and cognitive risk factors, in the development of child anxiety.

**References**

Allen, J. L., Lavalleea, K. L., Herrena, C., Ruhea, K., & Schneider, S. (2010). DSM-IV criteria for childhood separation anxiety disorder: Informant, age, and sex differences. *Journal of Anxiety Disorders, 24,* 946-952. doi: 10.1016/j.janxdis.2010.06.022

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Ballash, N., Leyfer, O., Buckley, A. F., & Woodruff-Borden, J. (2006). Parental Control in the Etiology of Anxiety. *Clinical Child and Family Psychology Review, 9(2),* 113-133. doi: 10.1007/s10567-006-0007-z

Barber, B. K., Olsen, J. E., & Shagle, S. C. (1994). Associations between Parental Psychological and Behavioral Control and Youth Internalized and Externalized Behaviors. *Child Development, 65*, 1120-1136. doi: 10.2307/1131309

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(6),* 1173-1182. doi: 10.1037/0022-3514.51.6.1173

Barrett, P. M., Fox, T., & Farrell, L. J. (2005). Parent–Child Interactions With Anxious Children and With Their Siblings: An Observational Study. *Behaviour Change, 22(4),* 220–235. doi: 10.1375/bech.22.4.220

Baumrind, D. (1966). Effects of Authoritative Parental Control on Child Behavior. *Child Development, 37(4)*, 887-907. doi: 10.2307/1126611

Beesdo, K., Knappe, S., & Pine, D. S. (2009). Anxiety and Anxiety Disorders in Children and Adolescents: Developmental Issues and Implications for DSM-V. *Psychiatric Clinics of North America, 32(3)*, 483-524. doi: 10.1016/j.psc.2009.06.002

Bernstein, G. A., & Borchardt, C. M. (1991). Anxiety disorders of childhood and adolescence: A critical review. *Journal of the American Academy of Child & Adolescent Psychiatry, 30(4),* 519-532. doi: 10.1097/00004583-199107000-00001

Bögels, S. M., van Oosten, A., Muris, P., & Smulders, D. (2001). Familial correlates of social anxiety in children and adolescents. *Behaviour Research and Therapy, 39*, 273-287. doi: 10.1016/S0005-7967(00)00005-X

Bolton, D., Eley, T. C., O'Connor, T. G., Perrin, S., Rabe-Hesketh, S., Rijsdijk, F., & Smith, P. (2006). Prevalence and genetic and environmental influences on anxiety disorders in 6- year-old twins. *Psychological Medicine, 36*, 335-344. doi:10.1017/S0033291705006537

Brown, A. M., & Whiteside, S. P. (2008). Relations among perceived parental rearing behaviors, attachment style, and worry in anxious children. *Anxiety Disorders, 22,* 263–272. doi: 10.1016/j.janxdis.2007.02.002

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

Cavedo, L. C., & Parker, G. (1994). Parental bonding instrument: Exploring for links between scores and obsessionality. *Social Psychiatry and Psychiatric Epidemiology, 29,* 78–82.

Chorpita, B. F., & Barlow, D. H. (1998). The development of anxiety: The role of control in the early environment. *Psychological Bulletin, 124*, 3–21. doi: 10.1037/0033-2909.124.1.3

Chorpita, B. F., Brown, T. A., & Barlow, D. H. (1998). Perceived Control as a Mediator of Family Environment in Etiological Models of Childhood Anxiety. *Behavior Therapy, 29*, 457-476. doi: 10.1016/S0005-7894(98)80043-9

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

Flesch, R. (1948). A new readability yardstick. *Journal of Applied Psychology, 32(3)*, 221–233. doi: 10.1037/h0057532

Francis, G., Last, C. G., & Strauss, C. C. (1987). Expression of Separation Anxiety Disorder: The Roles of Age and Gender. *Child Psychiatry and Human Development, 18(2),* 82-89. doi: 10.1007/BF00709952

Frost, R. O., Steketee, G., Cohn, L., & Griess, K. (1994). Personality traits in subclinical and non-obsessive-compulsive volunteers and their parents. *Behaviour Research and Therapy, 32*, 47–56. doi: 10.1017/S1352465803003023

Gruner, K., Muris, P., & Merckelbach, H. (1999). The relationship between anxious rearing behaviors and anxiety disorders symptomatology in normal children. *Journal of Behavior Therapy and Experimental Psychiatry, 30,* 27–35. doi: 10.1016/S0005-7916(99)00004-X

Holmbeck, G. N. (1997). Toward Terminological, Conceptual, and Statistical Clarity in the Study of Mediators and Moderators: Examples From the Child-Clinical and Pediatric Psychology Literatures. *Journal of Consulting and Clinical Psychology,* 65(4), 599-610. doi: 10.1037/0022-006X.65.4.599

Kakihara, F., & Tilton-Weaver, L. (2009). Adolescents' Interpretations of Parental Control: Differentiated by Domain and Types of Control. *Child Development, 80(6),* 1722–1738. doi: 10.1111/j.1467-8624.2009.01364.x

Karevold, E., Røysamb, E., Ystrom, E., & Mathiesen, K. S. (2009). Predictors and Pathways From Infancy to Symptoms of Anxiety and Depression in Early Adolescence. *Developmental Psychology, 45*, 1051–1060. doi: 10.1037/a0016123

Kerlinger, F. N., & Lee, H. B. (2000). *Foundations of Behavioural Research* (4th ed., pp. 674-675). Toronto, ON: Nelson Thompson Learning.

Klein, R. G. (1995). Is panic disorder associated with childhood separation anxiety disorder? *Clinical Neuropharmacology, 18(Suppl 2),* S7-S14.

Last, C. G., & Strauss, C. C. (1989). Panic disorder in children and adolescents. *Journal of Anxiety Disorders, 3(2)*, 87-95. doi: 10.1016/0887-6185(89)90003-0

Li, H. C. W., & Chung, O. K. J. (2009). The Relationship Between Children's Locus of Control and Their Anticipatory Anxiety. *Public Health Nursing, 26,* 153-160. doi: 10.1111/j.1525-1446.2009.00766.x

Mash, E. J., & Barkley, R. A. (2003). *Child Psychopathology* (2nd ed., pp. 279). New York, NY: The Guilford Press.

McClure, L. F., Chinsky, J. M., & Larcen, S. W. (1978). Enhancing Social Problem-Solving Performance in an Elementary School Setting. *Journal of Educational Psychology, 70,* 504-513. doi: 10.1037/0022-0663.70.4.504

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

Muris, P., Meesters, C., Schouten, E., & Hoge, E. (2004). Effects of Perceived Control on the Relationship Between Perceived Parental Rearing Behaviors and Symptoms of Anxiety and Depression in Nonclinical Preadolescents. *Journal of Youth and Adolescence, 33,* 51–58. doi: 10.1023/A:1027334314021

Muris, P., Meesters, C., & van Brakel, A. (2003). Assessment of Anxious Rearing Behaviors with a Modified Version of "Egna Minnen Betr¨affande Uppfostran" Questionnaire for Children. *Journal of Psychopathology and Behavioral Assessment, 25(4),* 229-237. doi: 10.1023/A:1025894928131

Norwicki, S., & Strickland, B. (1973). A Locus of Control Scale for Children. *Journal of Clinical and Consulting Psychology, 40*, 148-154. doi: 10.1037/h0033978

Onatsu-Arvilommi, T., Nurmi, J., & Aunola, K. (1998). Mothers' and fathers' well-being, parenting styles, and their children's cognitive and behavioural strategies at primary school. *European Journal of Psychology of Education, 13(4)*, 543-556. doi: 10.1007/BF03173104

Parker, G. (1979). Reported parental characteristics of agoraphobics and social phobics. *British Journal of Psychiatry, 135,* 555-560. doi: 10.1192/bjp.135.6.555

Pomerantz, E. M., & Wang, Q. (2009). The Role of Parental Control in Children's Development in Western and East Asian Countries. *Current Directions in Psychological Science, 18,* 285-289. doi: 10.1111/j.1467-8721.2009.01653.x

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

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs, 80* (No. 609). In Vasey, M. W., and Dadds, M. R., (eds.), The Developmental Psychopathology of Anxiety, Oxford University Press, New York. pp. 119.

Sideridis, G. D., & Kafetsios, K. (2008). Perceived parental bonding, fear of failure and stress during class presentations. *International Journal of Behavioral Development, 32(2)*, 119–130. doi: 10.1177/0165025407087210

Siqueland, L., Kendall, P. C., & Steinberg, L. (1996). Anxiety in children: Perceived family environments and observed family interaction. *Journal of Clinical Child Psychology, 25(2),* 225-237. doi: 10.1207/s15374424jccp2502_12

Smari, J., Martinsson, D. R., & Einarsson, H. (2010). Rearing practices and impulsivity hyperactivity symptoms in relation to inflated responsibility and obsessive-compulsive symptoms. *Scandinavian Journal of Psychology, 51(5)*, 392-397.

Spokas, M., & Heimberg, R. G. (2009). Overprotective Parenting, Social Anxiety, and External Locus of Control: Cross-sectional and Longitudinal Relationships. *Cognitive Therapy Research, 33*, 543-551. doi: 10.1007/s10608-008-9227-5

Swedo, S. E., Rapoport, J. L., Leonard, H. L., Lenane, M., & Cheslow, D. (1989). Obsessive-compulsive disorder in children and adolescents: Clinical phenomenology of 70 consecutive cases. *Archives of General Psychiatry, 46(4),* 335-341.

Vasey, M. W., & Dadds, M. R. (2001). *The Developmental Psychopathology of Anxiety* (1st ed., pp. 117-128). New York, NY: Oxford University Press.

Warash, B. G., & Markstrom, C. A. (2001). Parental perceptions of parenting styles in relation to academic self-esteem of pre-schoolers. *Education, 121(3),* 485-493.

# APPENDIX A

Demographic Information Questionnaire

Demographic Information Questionnaire

1. What grade are you in? (circle one) 3rd 4th 7th 8th 11th 12th
2. How old are you? _____
3. What month were you born?_____
4. What year were you born?_____
5. Circle which one you are.
    a. Boy
    b. Girl
6. Who do you live with?
    a. I live mostly or only with my mom.
    b. I live mostly or only with my dad.
    c. I spend about the same time living with my mom and dad but they do not live together
    d. I do not live with my mom or dad, but I live with _____
    e. I live with my mom and dad together.
7. How many sisters do you have? (write 0 if you do not have any sisters) ___
8. How many brothers do you have? (write 0 if you do not have brothers) ___
9. Which of the following is your ethnic group
    a. White
    b. Black
    c. East Asian (e.g. Chinese, Japanese, Korean)
    d. South Asian (e.g. Indian, Pakistani, Sri Lankan)
    e. Native (e.g. Inuit, Metis)
    f. Mixed
    g. Other _____
10. What do your parent's do (even if they do not work now)?
    a. Father's type of work _____
    b. Mother's type of work _____

## APPENDIX B

"My Memories of Upbringing" Child Questionnaire (EMBU-C)

"My Memories of Upbringing" Child Questionnaire (EMBU-C)

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

| | | 1<br>No, never | 2<br>Yes, but seldom | 3<br>Yes, often | 4<br>Yes, most of the time |
|---|---|---|---|---|---|
| 1. | When you come home, you have to tell your parents what you have been doing | ○ | ○ | ○ | ○ |
| 2. | When you are unhappy, your parents console you and cheer you up | ○ | ○ | ○ | ○ |
| 3. | Your parents want you to reveal your secrets to them | ○ | ○ | ○ | ○ |
| 4. | Your parents tell you that they don't like your behaviour at home | ○ | ○ | ○ | ○ |
| 5. | Your parents like you just the way you are | ○ | ○ | ○ | ○ |
| 6. | Your parents worry about what you are doing after school | ○ | ○ | ○ | ○ |
| 7. | Your parents play with you and are interested in your hobbies | ○ | ○ | ○ | ○ |
| 8. | Your parents treat you unfairly | ○ | ○ | ○ | ○ |
| 9. | Your parents are afraid that something might happen to you | ○ | ○ | ○ | ○ |
| 10. | Your parents listen to you and consider your opinion | ○ | ○ | ○ | ○ |
| 11. | Your parents wish that you were like somebody else | ○ | ○ | ○ | ○ |
| 12. | Your parents want to decide how you should be dressed or how you should look | ○ | ○ | ○ | ○ |
| 13. | Your parents worry about you getting into trouble | ○ | ○ | ○ | ○ |
| 14. | Your parents blamed you for everything that goes wrong | ○ | ○ | ○ | ○ |
| 15. | Your parents punish you for no reason | ○ | ○ | ○ | ○ |
| 16. | Your parents tell you what you should do after school hours | ○ | ○ | ○ | ○ |
| 17. | Your parents want to be with you | ○ | ○ | ○ | ○ |
| 18. | Your parents worry about you doing dangerous things | ○ | ○ | ○ | ○ |

| | | 1<br>No, never | 2<br>Yes, but seldom | 3<br>Yes, often | 4<br>Yes, most of the time |
|---|---|---|---|---|---|
| 19. | Your parents show that they love you | ○ | ○ | ○ | ○ |
| 20. | Your parents criticize you in front of others | ○ | ○ | ○ | ○ |
| 22. | Your parents worry about you making a mistake | ○ | ○ | ○ | ○ |
| 23. | You feel disappointed because your parents don't give you what you want | ○ | ○ | ○ | ○ |
| 24. | Your parents allow you to decide what you want to do* | ○ | ○ | ○ | ○ |
| 25. | Your parents take care that you behave by the rules | ○ | ○ | ○ | ○ |
| 26. | Your parents are afraid when you do something on your own | ○ | ○ | ○ | ○ |
| 27. | Your parents and you like each other | ○ | ○ | ○ | ○ |
| 28. | Your parents are mean and grudging towards you | ○ | ○ | ○ | ○ |
| 29. | Your parents are anxious people and therefore you are not allowed to do as many things as other children | ○ | ○ | ○ | ○ |
| 30. | When you have done something stupid, you can make it up with your parents | ○ | ○ | ○ | ○ |
| 31. | Your parents watch you very carefully | ○ | ○ | ○ | ○ |
| 32. | Your parents think that they have to decide everything for you | ○ | ○ | ○ | ○ |
| 33. | Your parents give you compliments | ○ | ○ | ○ | ○ |
| 34. | If something happens at home, you are the one who gets blamed for it | ○ | ○ | ○ | ○ |
| 35. | Your parents warn you of all possible dangers | ○ | ○ | ○ | ○ |
| 36. | Your parents help you when you have to do something difficult | ○ | ○ | ○ | ○ |
| 37. | Your parents are worried when they don't know what you are doing | ○ | ○ | ○ | ○ |
| 38. | Your parents keep a check on you | ○ | ○ | ○ | ○ |
| 39. | Your parents want to keep you from all possible dangers | ○ | ○ | ○ | ○ |

## APPENDIX C

"My Memories of Upbringing" Adolescent Questionnaire (EMBU-A)

"My Memories of Upbringing" Adolescent Questionnaire (EMBU-A)

Please mark the circle under the word that shows how often each of these things happened to you when you were 9 years old. There are no right or wrong answers.

| | | 1<br>No, never | 2<br>Yes, but seldom | 3<br>Yes, often | 4<br>Yes, most of the time |
|---|---|---|---|---|---|
| 1. | When you come home, you have to tell your parents what you have been doing | ○ | ○ | ○ | ○ |
| 2. | When you are unhappy, your parents console you and cheer you up | ○ | ○ | ○ | ○ |
| 3. | Your parents want you to reveal your secrets to them | ○ | ○ | ○ | ○ |
| 4. | Your parents tell you that they don't like your behaviour at home | ○ | ○ | ○ | ○ |
| 5. | Your parents like you just the way you are | ○ | ○ | ○ | ○ |
| 6. | Your parents worry about what you are doing after school | ○ | ○ | ○ | ○ |
| 7. | Your parents play with you and are interested in your hobbies | ○ | ○ | ○ | ○ |
| 8. | Your parents treat you unfairly | ○ | ○ | ○ | ○ |
| 9. | Your parents are afraid that something might happen to you | ○ | ○ | ○ | ○ |
| 10. | Your parents listen to you and consider your opinion | ○ | ○ | ○ | ○ |
| 11. | Your parents wish that you were like somebody else | ○ | ○ | ○ | ○ |
| 12. | Your parents want to decide how you should be dressed or how you should look | ○ | ○ | ○ | ○ |
| 13. | Your parents worry about you getting into trouble | ○ | ○ | ○ | ○ |
| 14. | Your parents blamed you for everything that goes wrong | ○ | ○ | ○ | ○ |
| 15. | Your parents punish you for no reason | ○ | ○ | ○ | ○ |
| 16. | Your parents tell you what you should do after school hours | ○ | ○ | ○ | ○ |
| 17. | Your parents want to be with you | ○ | ○ | ○ | ○ |
| 18. | Your parents worry about you doing dangerous things | ○ | ○ | ○ | ○ |

| | | 1<br>No, never | 2<br>Yes, but seldom | 3<br>Yes, often | 4<br>Yes, most of the time |
|---|---|---|---|---|---|
| 19. | Your parents show that they love you | ○ | ○ | ○ | ○ |
| 20. | Your parents criticize you in front of others | ○ | ○ | ○ | ○ |
| 22. | Your parents worry about you making a mistake | ○ | ○ | ○ | ○ |
| 23. | You feel disappointed because your parents don't give you what you want | ○ | ○ | ○ | ○ |
| 24. | Your parents allow you to decide what you want to do* | ○ | ○ | ○ | ○ |
| 25. | Your parents take care that you behave by the rules | ○ | ○ | ○ | ○ |
| 26. | Your parents are afraid when you do something on your own | ○ | ○ | ○ | ○ |
| 27. | Your parents and you like each other | ○ | ○ | ○ | ○ |
| 28. | Your parents are mean and grudging towards you | ○ | ○ | ○ | ○ |
| 29. | Your parents are anxious people and therefore you are not allowed to do as many things as other children | ○ | ○ | ○ | ○ |
| 30. | When you have done something stupid, you can make it up with your parents | ○ | ○ | ○ | ○ |
| 31. | Your parents watch you very carefully | ○ | ○ | ○ | ○ |
| 32. | Your parents think that they have to decide everything for you | ○ | ○ | ○ | ○ |
| 33. | Your parents give you compliments | ○ | ○ | ○ | ○ |
| 34. | If something happens at home, you are the one who gets blamed for it | ○ | ○ | ○ | ○ |
| 35. | Your parents warn you of all possible dangers | ○ | ○ | ○ | ○ |
| 36. | Your parents help you when you have to do something difficult | ○ | ○ | ○ | ○ |
| 37. | Your parents are worried when they don't know what you are doing | ○ | ○ | ○ | ○ |
| 38. | Your parents keep a check on you | ○ | ○ | ○ | ○ |
| 39. | Your parents want to keep you from all possible dangers | ○ | ○ | ○ | ○ |

## APPENDIX D

Nowicki-Strickland Locus of Control Scale for Children (NSLOC-C)

Nowicki-Strickland Locus of Control Scale for Children (NSLOC-C)

Please read each item carefully and put a circle around the word that shows how you feel about the question. There are no right or wrong answers.

| | | |
|---|---|---|
| 1. Do you believe that most problems will solve themselves if you just don't fool with them? | YES | NO |
| 2. Do you believe that you can stop yourself from catching a cold ? | YES | NO |
| 3. Are some kids just born lucky? | YES | NO |
| 4. Most of the time do you feel that getting good grades means a great deal to you? | YES | NO |
| 5. Are you often blamed for things that just aren't your fault? | YES | NO |
| 6. Do you believe that if somebody studies hard enough he or she can pass any subject? | YES | NO |
| 7. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway? | YES | NO |
| 8. Do you feel that if things start out well in the morning that it's going to be a good day no matter what you do? | YES | NO |
| 9. Do you feel that most of the time parents listen to what their children have to say? | YES | NO |
| 10. Do you believe that wishing can make good things happen? | YES | NO |
| 11. When you get punished does it usually seem it's for no good reason at all? | YES | NO |
| 12. Most of the time do you find it hard to change a friend's (mind) opinion? | YES | NO |
| 13. Do you think that cheering more than luck helps a team to win? | YES | NO |
| 14. Do you feel that it's nearly impossible to change your parent's mind about anything? | YES | NO |
| I5. Do you believe that your parents should allow you to make | YES | NO |

most of your own decisions?

| | | |
|---|---|---|
| 16. Do you feel that when you do something wrong there's very little you can do to make it right? | YES | NO |
| 17. Do you believe that most kids are just born good at sports? | YES | NO |
| 18. Are most of the other kids your age stronger than you are? | YES | NO |
| 19. Do you feel that one of the best ways to handle most problems is just not to think about them? | YES | NO |
| 20. Do you feel that you have a lot of choice in deciding who your friends are? | YES | NO |
| 21. If you find a four leaf clover do you believe that it might bring you good luck? | YES | NO |
| 22. Do you often feel that whether you do your homework has much to do with what kind of grades you get? | YES | NO |
| 23. Do you feel that when a kid your age decides to hit you, there's little you can do to stop him or her? | YES | NO |
| 24. Have you ever had a good luck charm? | YES | NO |
| 25. Do you believe that whether or not people like you depends on how you act? | YES | NO |
| 26. Will your parents usually help you if you ask them to? | YES | NO |
| 27. Have you felt that when people were mean to you it was usually for no reason at all? | YES | NO |
| 28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today? | YES | NO |
| 29. Do you believe that when bad things are going to happen they just are going to happen no matter what you try to do to stop them? | YES | NO |
| 30. Do you think that kids can get their own way if they just keep trying? | YES | NO |
| 31. Most of the time do you find it useless to try to get your | YES | NO |

own way at home?

| | | |
|---|---|---|
| 32. Do you feel that when good things happen they happen because of hard work? | YES | NO |
| 33. Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters? | YES | NO |
| 34. Do you feel that it's easy to get friends to do what you want them to? | YES | NO |
| 35. Do you usually feel that you have little to say about what you get to eat at home? | YES | NO |
| 36. Do you feel that when someone doesn't like you there's little you can do about it? | YES | NO |
| 37. Do you usually feel that it's almost useless to try in school because most other children are just plain smarter than you are? | YES | NO |
| 38. Are you the kind of person who believes that planning ahead makes things turn out better? | YES | NO |
| 39. Most of the time, do you feel that you have little to say about what your family decides to do? | YES | NO |
| 40. Do you think it's better to be smart than to be lucky? | YES | NO |

## APPENDIX E

Revised Child Anxiety and Depression Scale (RCADS)

Revised Child Anxiety and Depression Scale (RCADS)

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 (like numbers or words) to stop bad things | Never | Sometimes | Often | Always |

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. | I think about death. | Never | Sometimes | Often | Always |
| 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 F

Memorial's Interdisciplinary Committee on Ethics in Human Research (ICEHR)

Approval Letter

Memorial's Interdisciplinary Committee on Ethics in Human Research (ICEHR)

July 30, 2010

**ICEHR No. 2009/10-162-SC**

Ms. Stephanie Fung
Department of Psychology
Memorial University of Newfoundland

Dear Ms. Fung:

Thank you for your e-mail correspondence of July 28, 2010 addressing the issues raised by the Interdisciplinary Committee on Ethics in Human Research (ICEHR) concerning your research project *"Parent-child relationships and child anxiety"*.

The ICEHR has re-examined the proposal with the clarification and revisions submitted and is satisfied that concerns raised by the Committee have been adequately addressed. In accordance with the *Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans (TCPS)*, the project has been granted *full ethics clearance* for one year from the date of this letter.

If you intend to make changes during the course of the project which may give rise to ethical concerns, please forward a description of these changes to Mrs. Brenda Lye at blye@mun.ca for the Committee's consideration.

The *TCPS* requires that you submit an annual status report on your project to the ICEHR, should the research carry on beyond July 2011. Also to comply with the *TCPS*, please notify us upon completion on your project.

We wish you success with your research.

Yours sincerely,

Lawrence F. Felt, Ph.D.
Chair, Interdisciplinary Committee on
Ethics in Human Research

LF/en

copy: Supervisor – Dr. Sarah Francis, Department of Psychology

Telephone: (709) 737 2561 / 737 2861 Fax: (709) 737 4612 

## APPENDIX G

Eastern School District Ethics Approval Letter

# Eastern School District Ethics Approval Letter


*Office of the Assistant Director*
*Rural Education and Corporate Services*
*Dr. Albert Trask*

*Telephone: 709-758-2341*

*Chairperson: Milton Peach*
*C.E.O./Director of Education: Ford Rice*

August 30, 2010

Ms. Stephanie Fung
Psychology Dept, Science Building
Memorial University
St. John's, NL
A1B 3X9

Dear Ms. Fung:

***RE: Research Request – "Parent-child relationships and child anxiety".***

Thank you for your email correspondence dated August 23, 2010 requesting approval to conduct research within the Eastern School District.

Please be advised that permission has been granted to conduct your research study.

It is the expectation of the Eastern School District that the requirements of this our research policy be strictly adhered to during the conduct of the research.

Thank you for involving Eastern School District in what appears to be a very worthwhile study. Our District looks forward to receiving a copy of the results of your study.

Please feel free to contact this office should you have further questions.

Sincerely,

A. Trask

Dr. Albert Trask
Assistant Director
Rural Education and Corporate Services

/jh

*Suite 601, Atlantic Place, 215 Water Street*
*Box 64-66, St. John's, NL A1C 6C9*

*Telephone: 709-758-2341*
*Facsimile: 709-758-2387*

## APPENDIX H

Letter to Principals and Teachers

Letter to Principals and Teachers

Dear Principals and Teachers,

My name is Stephanie Fung and I am a graduate student in the Department of Psychology at Memorial University. I am hoping that I may interest you in a research project about childhood anxiety. I am writing to you to request permission to solicit participants at your convenience. Please find below information concerning my study and the potential involvement in your school.

**Purpose of the Study**

Anxiety is one of the most commonly recognized forms of psychopathology in children and adolescents; yet, despite its high prevalence, associated risk factors are still not fully understood. Previous work has suggested that parental overprotection is a risk factor for child anxiety and research efforts are now focusing on identifying causal mechanisms to explain the relationship between parental overprotection and child anxiety. The purpose of the present study is to examine thoughts and feelings related to anxiety, such as locus of control and perfectionism, which may explain the relationship between parental overprotection and child anxiety.

**Procedure and time commitment**

This study will measure anxious thoughts and feelings of the child, parental overprotection as perceived by the child, child locus of control, and child perfectionism in a school sample of students between ages 8 – 18. The study seeks to recruit 70 students from each of three groups (grades 3 & 4; 7 & 8; 11 & 12) across multiple schools in the Eastern School District, yielding a total sample size of 210 participants.

Participants with parental consent will be given a questionnaire package consisting of 5 questionnaires. The package will be administered within a 40 minute session at a time during the school day that is convenient for the student participants and their teachers.

At the beginning of the session, the questionnaire packages will be given out and there will be an assent form attached to the front. It is at this time that participants who do not wish to participate in the study may leave the session. After completion of the session, the questionnaires will be collected, and will only be identifiable by the participant number. There will be no link between participant name and number from this point on.

**Foreseeable Risks and Benefits**

There are few foreseeable risks or benefits to participation; however, there is a slight risk of mild discomfort involved when reading the items on the questionnaires. This risk is uncommon. All participants will be informed that they can terminate their participation at any point, and suffer no consequences whatsoever for doing so.

Also, my supervisor, Dr. Sarah Francis, is a Registered Clinical Psychologist. She has worked extensively with children, parents, and families. Dr. Francis will be on call during the time the questionnaires are being administered, so that in the unlikely event a participant is in distress, she will be available to come to the school and provide assistance.

**Confidentiality**
Participant data will be anonymous. There will be no link between the participant and his or her questionnaire data. All forms will be coded with only the participant's study code (no other identifying information will be on these forms). The paper copies of the forms will be retained by the principal researcher. Information will be accessible by only the researcher and the supervisor of the researcher.

**Consent**
Study questionnaires will only be given to a child if written evidence of both parental consent and child assent has been obtained. Children who do not wish to participate at any time before or during the study may stop their participation at any time. Any data collected from these children will be destroyed.

**School Resources**
To conduct this study I would like to use some space, at your convenience, in the school to administer the questionnaires to the participants as a group. I would only need for the teachers to allow me and/or a research assistant to make a brief announcement about the study in the classroom and to collect the consent forms. Everything will be at the convenience of the school and in coordination with the children's schedules.

**Findings from this Study**
Following the completion of data collection in this study, a summary of the findings will be available to you. If a causal mechanism is found between parental overprotection and child anxiety, it may be identified as a potential risk factor for childhood anxiety, which could improve the identification of children who are at risk for developing anxiety.

If you have any questions or concerns regarding this investigation please feel free to contact me by email: stephanie.fung@mun.ca or by phone: 749-4723. You can also contact my supervisor, Dr. Sarah Francis, by email: sfrancis@mun.ca or by phone: 864 - 4897.

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research (such as the way you have been treated or your rights as a participant), you may contact the **Chairperson of the ICEHR** at **icehr@mun.ca** or by telephone at **(709) 864-2861**.

Thank you for your consideration and I look forward to hearing from you.

# APPENDIX I

Classroom Script

Classroom Script

Hello,

My name is _____ and I am a graduate student studying psychology at the University. We are conducting a study on children's thoughts and feelings and their parents' behaviours. We are looking for students to take part in the study.

If you decide to take part, you will be asked to fill out some questionnaires . You will be asked questions about how you get along with your parents and the kinds of things your parents do with you at home, as well as questions about how you feel and think about things. Many of the questions will ask about how you get along with your parents, such as how your parents feel about things you do. For example, a question might be: "Your parents worry about what you are doing after school is out", and the answers you could choose would be "true" or "false".

All of your responses will be anonymous – that means that no will ever associate your answers with your name or that no one will be able to tell what your answers were on these questionnaires. It should take between thirty and forty minutes to complete the questionnaires, and you will fill out the questionnaires at school.

In order to take part in the study, you will need the permission of a parent of guardian. I am going to pass around some information sheets now for you to take home to your parent/guardian. Please return the permission slip to your homeroom teacher whether your parent says "yes" or "no".

Even if your parents have given permission for you to participate, your participation is entirely voluntary – this means that it is up to you whether you take part in this study or not. You can leave out any question/s that you do not want to answer. Taking part in this study is not related to your schoolwork or grades in any way.

Does anyone have any questions?

## APPENDIX J

Letter to Parents/Informed Consent

Letter to Parents/Informed Consent

Dear Parents,

My name is Stephanie Fung and I am a graduate student in Psychology at Memorial University. The Interdisciplinary Committee on Ethics in Human Research and the Eastern School District School Board have granted me permission to conduct a study in children about feelings of anxiety. I am hoping that I may interest you and your child in this study. Details of the study are outlined in the attached consent form.

Please read the attached consent form carefully. If, after reading this form, you are interested in your child participating in the study, please complete the last page of the consent form and sign your name and write the date on the last page. In addition to parent consent, your child will also have to agree to participate and this is entirely voluntary even if you have consented to the study. If your child agrees to participate, they are free not to answer any question/s that they do not want to answer.

If you are not interested in your child participating in this study, please return the blank consent form to your child's teacher.

Please return this form to your child's teacher by:_____ .

***If you have any questions or concerns regarding this study please feel free to contact me by email: stephanie.fung@mun.ca or by phone: 749-4723. You can also contact my supervisor, Dr. Sarah Francis, by email: sfrancis@mun.ca or by phone: 864 - 4897.***

***The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's ethics policy. If you have ethical concerns about the research (such as the way you have been treated or your rights as a participant), you may contact the Chairperson of the ICEHR at icehr@mun.ca or by telephone at (709) 864-2861.***

Thank you for your time in reviewing these materials.
Sincerely,

Stephanie Fung
MSc. Candidate (Experimental Clinical)
Psychology Department
Memorial University of Newfoundland
St. John's, NL, Canada, A1B 3X9
Tel (709) 749-4723
email: stephanie.fung@mun.ca

Sarah Francis
Assistant Professor
Psychology Department
Memorial University of Newfoundland
St. John's, NL, Canada A1B 3X9
Tel (709) 864 – 4897
email: sfrancis@mun.ca

**Parent/Guardian Informed Consent Form**

**Title**: Parent-Child Relationships and Child Anxiety
**Researcher**: Stephanie Fung

**What is the project about?**
Some children may experience feelings of anxiety. This project is looking at factors that may be related to feelings of anxiety in school-aged children. Some of these factors may be related to parent-child relationships or the way children think about things.

**How will my child be involved?**
The participants in this project will fill out 5 questionnaires. There will also be a form where the child will indicate whether he or she wishes to take part in the project. It is at this time that children who do not wish to take part in the project may leave the session. Here are some sample statements where your child would mark down whether they felt the statements were true for them, and if so, how much: "*Are you often blamed for things that just aren't your fault?*", "*Your parents worry about what you are doing after school is out*", & "*I worry about what is going to happen*". The researcher will visit the school to give the questionnaires. The visit will last 30-40 minutes.

**What are the possible risks and benefits?**
There are no expected or likely risks or discomforts. The supervisor of the researcher is available to any participant with questions or concerns. She is a Registered Clinical Psychologist and has worked with children, parents, and families.

It is not known whether this project will benefit your child. Some potential benefits to your child could include learning new vocabulary and having practice reading.

**Liability statement:**
Signing this form gives us your consent for your child to be in this project. It tells us that you understand the information about the research project. When you sign this form, you do not give up your legal rights.

**What about my child's privacy and confidentiality?**
Information your child provides on the questionnaires is confidential. Your child's responses will remain anonymous. Your child's name or any information that can identify your child will never be associated with presentations, reports, or articles using information collected in this project.

---

If you have any questions about your child taking part in this project, please contact the researcher **Stephanie Fung 749-4723** or her supervisor **Dr. Sarah Francis 864-4897.**

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University's

ethics policy. If you have ethical concerns about the research (such as the way you have been treated or your rights as a participant), you may contact the **Chairperson of the ICEHR** at **icehr@mun.ca** or by telephone at **(709) 864-2861**.

**Signature Page**

**Project title**: Parent-Child Relationships and Child Anxiety

**Researcher**: Stephanie Fung

To be filled out and signed by parent/guardian of the participant:

Your signature on this form means that:

- You have read the information about the research
- You have been able to ask questions about this study
- You are satisfied with the answers to all of your questions
- You understand what the study is about and what your child will be doing
- You understand that your child is free to withdraw from the study at any time, without having to give a reason, and that doing so will not affect your child now or in the future.

If you sign this form, you do not give up your legal rights, and do not release the researchers from their professional responsibilities.

I agree for my child to take part in this project. Yes { } No { }

Name of Child: _____
First name Last name

_____ _____
Signature of parent/guardian Date

## APPENDIX K

Study Instructions

## Study Instructions

*Instructions will be read aloud to all participants.*

You will be presented with a series of five short questionnaires and a short form asking some questions about you, such as how old you are. Please answer the questions honestly and accurately.

Your answers will be anonymous – this means that your answers will only have a number on them, not your name. No one will know what answers you have given, and no one will ask you any questions about your answers. Please do not write your name anywhere on the questionnaires.

You can leave out any question/s that you do not want to answer. You can ask the researcher questions at any point during the study. If at any time you become uncomfortable with the study you can stop filling out the questionnaires without penalty whatsoever. If you become uncomfortable at any point during the study, please let the researcher know.

Your participation in this study is entirely voluntary – this means that it is up to you whether you take part in this study or not. Taking part in this study is not related to your schoolwork or grades in any way.

Thank you for taking part in this study.

## APPENDIX L

Correlation analyses using anxiety subscales

Correlation analyses using anxiety subscales

*Correlation analyses of the EMBU-C_C/O, the NSLOC-C, and the RCADS (SAD, SP, OCD) in the full sample (N = 146)*

| Measure | EMBU-C | RCADS_ SAD | RCADS_ OCD | RCADS_ PD | RCADS_ SP | RCADS_ GAD |
|---|---|---|---|---|---|---|
| NSLOC-C | .23** | .13 | .32** | .25** | .22** | .23** |
| EMBU-C | | .36** | .41** | .23** | .20* | .19* |

*Note. Pearson correlations; EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_SAD = Revised Child Anxiety and Depression Scale, Separation Anxiety Disorder subscale; RCADS_OCD = Obsessive-Compulsive Disorder subscale; RCADS_PD = Panic Disorder subscale; RCADS_SP = Social Phobia subscale; RCADS_GAD = Generalized Anxiety Disorder subscale.*

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

## APPENDIX M

Mediation and moderation analyses using the RCADS_SAD subscale

Mediation and moderation analyses using the RCADS_SAD subscale

| Predictor | | RCADS_SAD | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | $t$ |
| Step 1 | .24 | | | | |
| Age 1 (Dummy variable) | | 2.10 | .97 | -.26 | 2.16* |
| Age 2 (Dummy variable) | | -2.12 | .96 | -.26 | -2.22* |
| Step 2 | .06 | | | | |
| Age 1 (Dummy variable) | | 1.41 | .96 | .17 | 1.47 |
| Age 2 (Dummy variable) | | -2.23 | .93 | -.28 | -2.41* |
| EMBU-C_C/O | | .22 | .06 | .25 | 3.37** |
| Step 3 | .00 | | | | |
| Age 1 (Dummy variable) | | 1.40 | .97 | .17 | 1.45 |
| Age 2 (Dummy variable) | | -2.23 | .93 | -.28 | -2.40* |
| EMBU-C_C/O | | .21 | .07 | .25 | 3.27** |
| NSLOC-C | | .01 | .08 | .01 | .14 |
| Total $R^2$ | .30 | | | | |

*Sobel test (z-value = .12, p = .90)*

| Predictor | | RCADS_SAD | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | $t$ |
| Step 1 | .24 | | | | |
| Age 1 (Dummy variable) | | 2.10 | .97 | -.26 | 2.16* |
| Age 2 (Dummy variable) | | -2.12 | .96 | -.26 | -2.22* |
| Step 2 | .06 | | | | |
| Age 1 (Dummy variable) | | 1.41 | .96 | .17 | 1.47 |
| Age 2 (Dummy variable) | | -2.23 | .93 | -.28 | -2.41* |
| EMBU-C_C/O | | .22 | .06 | .25 | 3.37** |
| Step 3 | .00 | | | | |
| Age 1 (Dummy variable) | | 1.43 | .97 | .18 | 1.47 |
| Age 2 (Dummy variable) | | -2.19 | .94 | -.27 | -2.34* |
| EMBU-C_C/O | | .21 | .07 | .24 | 3.18** |
| NSLOC-C | | .01 | .08 | .01 | .15 |
| EMBU-C_C/O x NSLOC-C | | .01 | .01 | .03 | .41 |
| Total $R^2$ | .21 | | | | |

*Note. EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_SAD = Revised Child Anxiety and Depression Scale, Separation Anxiety Disorder subscale; Age dummy variables are coded so that Age 1 compares Group 1 to Group 2 and Age 2 compares Group 2 to Group 3; *p < .05, **p < .01*

## APPENDIX N

Mediation and moderation analyses using the RCADS_OCD subscale

Mediation and moderation analyses using the RCADS_OCD subscale

| Predictor | | RCADS_OCD | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | $t$ |
| Step 1 | .19 | | | | |
| Age 1 (Dummy variable) | | 3.37 | 1.04 | .40 | 3.24** |
| Age 2 (Dummy variable) | | -.44 | 1.03 | -.05 | -.43 |
| Step 2 | .08 | | | | |
| Age 1 (Dummy variable) | | 2.51 | 1.01 | .30 | 2.48* |
| Age 2 (Dummy variable) | | -.57 | .97 | -.07 | -.59 |
| EMBU-C_C/O | | .27 | .07 | .30 | 4.07** |
| Step 3 | .04 | | | | |
| Age 1 (Dummy variable) | | 2.27 | .99 | .27 | 2.29* |
| Age 2 (Dummy variable) | | -.64 | .95 | -.08 | -.67 |
| EMBU-C_C/O | | .24 | .07 | .26 | 3.54** |
| NSLOC-C | | .22 | .08 | .20 | 2.80** |
| Total $R^2$ | .32 | | | | |

*Sobel test (z-value = 1.82, p = .07)*

| Predictor | | RCADS_OCD | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | $t$ |
| Step 1 | .19 | | | | |
| Age 1 (Dummy variable) | | 3.37 | 1.04 | .40 | 3.24** |
| Age 2 (Dummy variable) | | -.44 | 1.03 | -.05 | -.43 |
| Step 2 | .08 | | | | |
| Age 1 (Dummy variable) | | 2.51 | 1.01 | .30 | 2.48* |
| Age 2 (Dummy variable) | | -.57 | .97 | -.07 | -.59 |
| EMBU-C_C/O | | .27 | .07 | .30 | 4.07** |
| Step 3 | .04 | | | | |
| Age 1 (Dummy variable) | | 2.32 | 1.00 | .27 | 2.33* |
| Age 2 (Dummy variable) | | -.57 | .96 | -.07 | -.60 |
| EMBU-C_C/O | | .23 | .07 | .26 | 3.43** |
| NSLOC-C | | .22 | .08 | .20 | 2.80** |
| EMBU-C_C/O x NSLOC-C | | .01 | .01 | .04 | .62 |
| Total $R^2$ | .32 | | | | |

*Note. EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_OCD = Revised Child Anxiety and Depression Scale, Obsessive-Compulsive Disorder subscale; Age dummy variables are coded so that Age 1 compares Group 1 to Group 2 and Age 2 compares Group 2 to Group 3; *p < .05, **p < .01*

## APPENDIX O

Mediation and moderation analyses using the RCADS_PD subscale

Mediation and moderation analyses using the RCADS_PD subscale

| Predictor | | RCADS_PD | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | $t$ |
| Step 1 | .04 | | | | |
| Age 1 (Dummy variable) | | -.43 | 1.52 | -.04 | -.28 |
| Age 2 (Dummy variable) | | -2.58 | 1.50 | -.23 | -1.72 |
| Step 2 | .04 | | | | |
| Age 1 (Dummy variable) | | -1.21 | 1.53 | -.11 | -.79 |
| Age 2 (Dummy variable) | | -2.70 | 1.48 | -.24 | -1.83 |
| EMBU-C_C/O | | .25 | .10 | .21 | 2.44* |
| Step 3 | .04 | | | | |
| Age 1 (Dummy variable) | | -1.54 | 1.51 | -.14 | -1.02 |
| Age 2 (Dummy variable) | | -2.79 | 1.45 | -.25 | -1.93 |
| EMBU-C_C/O | | .20 | .10 | .16 | 1.94 |
| NSLOC-C | | .30 | .12 | .21 | 2.54* |
| Total $R^2$ | .12 | | | | |

*Sobel test: (z-value = 1.74, p = .08)*

| Predictor | | RCADS_PD | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | $t$ |
| Step 1 | .04 | | | | |
| Age 1 (Dummy variable) | | -.43 | 1.52 | -.04 | -.28 |
| Age 2 (Dummy variable) | | -2.58 | 1.50 | -.23 | -1.72 |
| Step 2 | .04 | | | | |
| Age 1 (Dummy variable) | | -1.21 | 1.53 | -.11 | -.79 |
| Age 2 (Dummy variable) | | -2.70 | 1.48 | -.24 | -1.83 |
| EMBU-C_C/O | | .25 | .10 | .21 | 2.44* |
| Step 3 | .04 | | | | |
| Age 1 (Dummy variable) | | -1.45 | 1.51 | -.13 | -.96 |
| Age 2 (Dummy variable) | | -2.67 | 1.46 | -.24 | -1.83 |
| EMBU-C_C/O | | .19 | .10 | .16 | 1.83 |
| NSLOC-C | | .30 | .12 | .21 | 2.54* |
| EMBU-C_C/O x NSLOC-C | | .02 | .02 | .06 | .75 |
| Total $R^2$ | .12 | | | | |

*Note. EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_PD = Revised Child Anxiety and Depression Scale, Panic Disorder subscale; Age dummy variables are coded so that Age 1 compares Group 1 to Group 2 and Age 2 compares Group 2 to Group 3; *p < .05, **p < .01*

## APPENDIX P

Mediation and moderation analyses using the RCADS_SP subscale

Mediation and moderation analyses using the RCADS_SP subscale

| Predictor | | RCADS_SP | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | $t$ |
| Step 1 | .05 | | | | |
| Age 1 (Dummy variable) | | -3.86 | 1.47 | -.35 | -2.62* |
| Age 2 (Dummy variable) | | -3.91 | 1.45 | -.36 | -2.69** |
| Step 2 | .06 | | | | |
| Age 1 (Dummy variable) | | -4.78 | 1.47 | -.43 | -3.26** |
| Age 2 (Dummy variable) | | -4.05 | 1.41 | -.37 | -2.86** |
| EMBU-C_C/O | | .29 | .10 | .25 | 3.01** |
| Step 3 | .04 | | | | |
| Age 1 (Dummy variable) | | -5.10 | 1.45 | -.46 | -3.52** |
| Age 2 (Dummy variable) | | -4.14 | 1.39 | -.38 | -2.98** |
| EMBU-C_C/O | | .25 | .10 | .21 | 2.52* |
| NSLOC-C | | .28 | .11 | .20 | 2.52* |
| Total $R^2$ | .15 | | | | |

*Sobel test: (z-value = 1.76, p = .08)*

| Predictor | | RCADS_SP | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | $t$ |
| Step 1 | .05 | | | | |
| Age 1 (Dummy variable) | | -3.86 | 1.47 | -.35 | -2.62* |
| Age 2 (Dummy variable) | | -3.91 | 1.45 | -.36 | -2.69** |
| Step 2 | .06 | | | | |
| Age 1 (Dummy variable) | | -4.78 | 1.47 | -.43 | -3.26** |
| Age 2 (Dummy variable) | | -4.05 | 1.41 | -.37 | -2.86** |
| EMBU-C_C/O | | .29 | .10 | .25 | 3.01** |
| Step 3 | .05 | | | | |
| Age 1 (Dummy variable) | | -4.94 | 1.45 | -.45 | -3.42** |
| Age 2 (Dummy variable) | | -3.92 | 1.39 | 0.36 | -2.82** |
| EMBU-C_C/O | | .23 | .10 | .19 | 2.33* |
| NSLOC-C | | .28 | .11 | .20 | 2.54* |
| EMBU-C_C/O x NSLOC-C | | .03 | .02 | .11 | 1.42 |
| Total $R^2$ | .16 | | | | |

*Note. EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_SP = Revised Child Anxiety and Depression Scale, Social Phobia subscale; Age dummy variables are coded so that Age 1 compares Group 1 to Group 2 and Age 2 compares Group 2 to Group 3; *p < .05, **p < .01*

## APPENDIX Q

Mediation and moderation analyses using the RCADS_GAD subscale

Mediation and moderation analyses using the RCADS_GAD subscale

| Predictor | RCADS_GAD | | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | $t$ |
| Step 1 | .04 | | | | |
| Age 1 (Dummy variable) | | -1.74 | 1.10 | -.21 | -1.59 |
| Age 2 (Dummy variable) | | -2.44 | 1.08 | -.30 | -2.25* |
| Step 2 | .04 | | | | |
| Age 1 (Dummy variable) | | -2.32 | 1.10 | -.28 | -2.10* |
| Age 2 (Dummy variable) | | -2.53 | 1.06 | -.31 | -2.38* |
| EMBU-C_C/O | | .18 | .07 | .21 | 2.49* |
| Step 3 | .04 | | | | |
| Age 1 (Dummy variable) | | -2.56 | 1.09 | -.31 | -2.35* |
| Age 2 (Dummy variable) | | -2.59 | 1.05 | -.32 | -2.48* |
| EMBU-C_C/O | | .15 | .07 | .17 | 2.00* |
| NSLOC-C | | .21 | .09 | .21 | 2.51* |
| Total $R^2$ | .12 | | | | |

*Sobel test: (z-value = 1.68, p = .09)*

| Predictor | RCADS_GAD | | | | |
|---|---|---|---|---|---|
| | $\Delta R^2$ | B | SE | $\beta$ | $t$ |
| Step 1 | .04 | | | | |
| Age 1 (Dummy variable) | | -1.74 | 1.10 | -.21 | -1.59 |
| Age 2 (Dummy variable) | | -2.44 | 1.08 | -.30 | -2.25* |
| Step 2 | .04 | | | | |
| Age 1 (Dummy variable) | | -2.32 | 1.10 | -.28 | -2.10* |
| Age 2 (Dummy variable) | | -2.53 | 1.06 | -.31 | -2.38* |
| EMBU-C_C/O | | .18 | .07 | .21 | 2.49* |
| Step 3 | .05 | | | | |
| Age 1 (Dummy variable) | | -2.45 | 1.09 | -.30 | -2.25* |
| Age 2 (Dummy variable) | | -2.44 | 1.05 | -.30 | -2.33* |
| EMBU-C_C/O | | .14 | .07 | .16 | 1.82 |
| NSLOC-C | | .21 | .08 | .21 | 2.53* |
| EMBU-C_C/O x NSLOC-C | | .02 | .02 | .11 | 1.36 |
| Total $R^2$ | .13 | | | | |

*Note. EMBU-C_C/O = "My memories of Upbringing" Child version, Control/Overprotection subscale; NSLOC-C = Nowicki-Strickland Locus of Control Scale for children; RCADS_GAD = Revised Child Anxiety and Depression Scale, Generalized Anxiety Disorder subscale; Age dummy variables are coded so that Age 1 compares Group 1 to Group 2 and Age 2 compares Group 2 to Group 3; *p < .05, **p < .01*