Depressed Affect in Early Adolescence:

An Examination of the Role of Gender, Co-Rumination, and Excessive Reassurance Seeking

Marie-Eve Dubois

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By: **Marie-Eve Dubois**

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Signed by the final examining committee:

_____ Chair
Dr. J. Grant

_____ External Examiner
Dr. A. Rose

_____ External to Program
Dr. H. Rose

_____ Examiner
Dr. E. Barker

_____ Examiner
Dr. M. Dugas

_____ Thesis Supervisor
Dr. W. Bukowski

Approved by _____
Dr. A. Chapman, Graduate Program Director

November 8, 2012 _____
Dr. B. Lewis, Dean, Faculty of Arts and Science

ABSTRACT

Depressed Affect in Early Adolescence:

An Examination of the Role of Gender, Co-Rumination, and Excessive Reassurance Seeking

Marie-Eve Dubois, Ph.D.

Concordia University, 2012

Coyne's (1976) Interpersonal Theory of Depression highlighted the idea that mildly dysphoric individuals exhibit behaviours which further increase their risk of becoming depressed. Keeping Coyne's framework in mind, the three studies presented in this dissertation were designed to better understand the role of co-rumination and excessive reassurance seeking in the development of gender differences in depressed affect which are observed starting in adolescence (Wichstrom, 1999). These studies were done with a sample of 270 early adolescents who were assessed at five time points across a school year, although data from only the last two time points were used for this particular project. The goal of the first study was to examine the validity and reliability of newly developed peer-nomination items for the measurement of excessive reassurance seeking and co-rumination, to be used in the other two studies. While the two measures were found to be highly related, model fit indices were significantly better when both measures were kept separate. The aim of the second study was to examine the moderating role of excessive reassurance seeking and co-rumination on the longitudinal association between anxiety and depressed affect. Only excessive reassurance seeking was found to moderate that association, and it was found that when combined with high levels of anxiety, depressed affect was found to be higher 6 weeks later. Excessive reassurance seeking on its own, however, was

found to predict lower levels of depressed affect. No significant results were found in terms of co-rumination. The aim of the third and last paper was to examine how co-rumination and excessive reassurance seeking moderated the association between depressed affect and both isolation and victimization. It was found that co-rumination moderated the association between depressed affect at T4 and later victimization and isolation. Excessive reassurance seeking, on the other hand, only moderated the association between depressed affect and victimization. Together, this series of studies illustrates the important role of co-rumination and excessive reassurance seeking in the depression cycle.

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According to the World Health Organization (WHO, 2012), "depression is the first leading cause of disability when measured in years lived with disability and the fourth leading contributor to the global burden of disease when measured in years of potential life lost to premature mortality and the years of productive life lost to disability." It is expected that by 2020 (i.e., just a few years from now), depression will reach the second rank in terms of contribution to the global burden of disease, a rank which it has already reached for people aged 15-44. Given the important impact of depression, it is important to better understand the different factors which may increase or decrease the risk of developing this disease. Indeed, while the prevalence of depression in children is quite low (0.5-2.5%; Birmaher et al., 1996), recent research has found that the lifetime prevalence of depression in adults is approximately 19.7% (Patten, 2009). This is similar to rates found in adolescents, therefore suggesting the possibility that depression is a recurring disorder which often has its onset during adolescence (Birmaher et al., 1996). This is consistent with research which has shown that rates of depression more than triple during the transition to adolescence, with 1-year prevalence rates increasing from 3% at age 15 to 18% by age 18. (Birmaher et al., 1996; Hankin et al., 1998). Depression is therefore one of the most frequent mental disorder in adolescents (Keenan & Hipwell, 2005). Moreover, approximately 35% of adolescents report significant levels of depressive mood/symptoms believed to be predictive of clinical depression (Petersen et al., 1993).

It is also during adolescence that the female preponderance of depression emerges. Indeed, it appears that the sharp increase in depressive symptoms and diagnoses which occurs during early-to-mid adolescence is particularly evident for girls (Sund, Laarson & Sandstrom,

2003; Hankin et al., 1998). Many efforts have been made to better understand at exactly what age this gender difference emerges, and there appears to be a consensus around the idea that girls report more symptoms of depression than boys starting somewhere between the ages of 13 and 14 (Angold, Costello, & Worthman, 1998; Ge, Lorenz, Conger, Elder & Simons, 1994; Wichstrom, 1999). While Hankin and his colleagues (1998) have found that the largest difference in rates of clinical diagnoses emerges a few years later, i.e., somewhere between the ages of 15 and 18, they have found that a shift emerges starting as early as age 13. Similarly, Wichstrom (1999) found that while boys and girls reported similar levels of depressive symptoms at age 12, a gender difference started emerging at age 13. From age 14 on, girls reported, on average, half a standard deviation more depressive symptoms than their male counterparts. Further evidence from three longitudinal panel studies from Canada, Great Britain and the United States indicated that the gender difference consistently emerged by age 14, regardless of the type of measure or cutoff used (Wade, Cairney & Pevalin, 2002).

Considering that depression has not been found to reoccur more frequently in females than in males, it appears that early adolescence is a key period to understand factors that increase the risk for depression in females (Eberhart, Shih, Hammen & Brennan, 2006). Many different theories have been proposed to explain the emergence and maintenance of the gender difference in depressive symptoms and diagnosis of depression. While the studies in the present dissertation will aim to provide a better understanding of the role co-rumination and excessive reassurance-seeking, a brief overview of some of the other theories and risk factors that have been proposed is first presented.

Biological Risk Factors

Many biological risk factors have been proposed to be associated with the sharp increase in depression rates observed in adolescence (Nantel-Vivier & Pihl, 2008). One of the main candidates to explain the important increase in female prevalence rates are hormonal changes associated with the onset of puberty. Indeed, it has been found that pubertal status may be a more important predictor of depression prevalence in female than age (Angold, Costello, & Worthman, 1998; Patton et al., 1996). In fact, Angold and his colleagues (1998) found that while girls exhibited greater levels of depression after age 12, examining the data in terms of Tanner stages (Tanner, 1962) provided a clearer picture in that girls were found to have consistently higher rates of depression after Tanner stage III. A follow-up study demonstrated that changes in androgen and oestrogen levels accounted for the effects of Tanner Stage, therefore indicating that the increase in depressive symptoms in girls in early adolescence was associated with neurohormonal changes rather than morphological changes associated with puberty (Angold, Costello, Erkanli & Worthman, 1999). Parker and Brotchie (2004) have proposed that these hormones lead to hyperactivity of the limbic system, which in turn, leads to increased levels of depression for girls.

Related to the hyperactivity of the limbic system is the idea that girls are put at an increased risk for depression through HPA axis dysregulation and increased sensitivity to stressful life events, particularly those of an interpersonal nature (Oldehinkel & Bouma, 2010). Moreover, exposure to stressful life events has been found to increase the risk of depression in those genetically at risk, i.e. those with one or two short alleles in the promoter region of the serotonin transporter gene (5-HTTLPR) (Caspi et al., 2003).

There is therefore some evidence suggesting that biological risk factors such as pubertal hormone changes and increased HPA responsivity may play a role in explaining the emerging gender gap in depression. However, it appears that biological risk factors alone do not account for the gender gap in depression (Kuehner, 2003).

Cognitive Risk Factors

In addition to biological risk factors, researchers have identified cognitive variables which may play a role in both the etiology and maintenance of depressive symptoms over time. However, there is some debate as to the timing of the emergence of cognitive vulnerability factors. Research based on the Hopelessness Theory of Depression (Abramson, Metalsky & Alloy, 1989) examining the attributional style of children has found that a depressogenic attributional style in third grade interacted with negative life events to predict depressive symptoms starting in 6th grade (Nolen-Hoeksema, Girgus & Seligman, 1992). It has therefore been suggested cognitive vulnerability for depression in the form of depressogenic attributional style emerges in the transition from middle childhood to early adolescence, as children become more able to think in abstract ways and to project themselves in the future (Shortt & Spence, 2006). However, this conclusion is debated given that findings on depressogenic attributional styles as a risk factor for depression have been mixed (Abela & Hankin, 2008).

Beck's Cognitive Theory, on the other hand, posits that certain individuals possess dysfunctional attitudes about themselves, the world and the future (Beck, 1967, 1983). The diathesis-stress component of his theory proposes that the combination of these cognitive vulnerabilities with stressors or negative life events lead to depression. While only a small number of studies have examined Beck's cognitive triad as a risk factor for depression in

children and adolescents, most of them have yielded as least partial support to his theory (Abela & Hankin, 2008). However, given that only one study included children (Abela & Skitch, 2007; the sample was composed of 6- to 14-year-olds), more research is needed in order to better understand exactly when these cognitive vulnerabilities emerge, and whether this is related to the increase in depression observed in early adolescent girls.

Finally, Nolen-Hoeksema's Response Style Theory (1991) was put forth specifically to explain higher rates of depression in females. It proposes that an individual's responses to their current symptoms of depression (i.e., rumination vs. distraction) influences the severity and duration of their symptoms and that women are more likely to ruminate and therefore, to experience greater levels of depression. While a large number of studies has found that rumination is indeed associated with more severe symptoms of depression over time (e.g. Abela, Aydin, & Auerbach, 2007; Broderick & Korteland, 2004; Schwartz & Koenig, 1996), those studies conducted with samples of children or early adolescents have often failed to demonstrate that girls were more likely to ruminate (e.g. Abela, Aydin, & Auerbach, 2007; Broderick & Korteland, 2004). It is therefore unlikely that rumination serves as a risk factor explaining the emergence of gender differences in depression in early adolescence.

Overall, it is unclear whether cognitive risk factors could serve as a risk factor for depression in early adolescence or if instead they emerge later on, possibly as a consequence of feeling depressed for some time. Indeed, it has been found that contrary to what was expected, the gender difference in cognitive vulnerability emerged later than the sex difference in depressive symptoms (Mezulis, Funasaki, Charbonneau & Hyde, 2010). It may be that in fact, cognitive "risk factors" increase one's vulnerability to subsequent episodes of depression rather than the initial one.

Interpersonal Risk Factors

In addition to the different risk factors previously mentioned, interpersonal relationships have been found to have important implications for an individual's well-being. As early as 1953, Harry Stack Sullivan proposed that depression resulted from adverse events such as interpersonal loss and highlighted the importance of interpersonal relationships in promoting well-being. Coyne (1976) later described depression as a "self-perpetuating interpersonal system" in that the interpersonal situation of the depressed person worsens as depressive symptoms increase. Furthermore, these depressive symptoms also increase as more interpersonal difficulties are encountered, and this cycle therefore perpetuates itself, increasing both intrapersonal and interpersonal distress.

Following from Coyne's interpersonal theory of depression, Rudolph and her colleagues (2008) have proposed a developmentally appropriate model for youth depression. This model relies on three important postulates. First, disruptions in early family experiences (e.g. insecure attachment and parental depression) disturb the normative development of interpersonal skills and competencies. Early family disruption is therefore thought to lead to social-behavioural deficits and disturbances in interpersonal relationships (e.g., excessive reassurance seeking, poor problem solving and conflict resolution skills, negative feedback seeking, etc.) which act as risk factors for depression. Second, normative changes associated with the transition to adolescence interact with the interpersonal deficits already present to increase risk for depression. Finally, early symptoms of depression are believed to hinder one's probability of developing normally and results in further interpersonal difficulties such as victimization, rejection, and poor quality relationships, and depression. Rudolph et al.'s (2008) theory therefore proposes a cycle of risk

whereby interpersonal difficulties are not only a risk factor for, but also a consequence of depression.

While it would be equally important to examine the impact of different family and parent characteristics, it is likely that peer relations begin exerting a larger effect on the well-being of adolescents. Indeed, it appears that peer relations are increasingly important as children age and particularly during adolescence, when youth typically spend more time with their friends than with family members (Csikszentmihalyi & Larson, 1984; Parker, Rubin, Erath, Wojskawowicz & Buskirk, 2006). Moreover, evidence is accumulating that relationships with peers are involved as both risk and protective factors in the development of psychopathology (Parker, Rubin, Erath, Wojslawowicz & Buskirk, 2006). Rudolph and her colleagues (2007) have suggested that girls' well-being and self-worth may be more dependent on their interpersonal relations, thereby making friendships an important candidate to explain the increase in depressive symptoms that is particularly evident for girls starting in early adolescence.

Given the multidimensionality of friendships and peer experiences, a wide range of factors is likely to influence one's well-being. Two factors, however, have emerged in the past few years which are of particular interest here, namely co-rumination and excessive reassurance seeking.

Co-Rumination

Rose (2002) coined the term "co-rumination", a concept believed to represent the intersection of adaptive self-disclosure and maladaptive rumination. It is meant to represent a dyadic experience during which two people will engage in the excessive discussion of problems, discussion which is frequent and repeated, and during which there is a mutual encouragement to

further discuss the problems. Moreover, co-rumination involves speculation about the problems as well as a focus on negative feelings.

This concept was proposed by Rose (2002) to explain why girls, who have closer friendships (Bukowski, Hoza & Boivin, 1994), become more depressed than their males counterparts. Indeed, Rose found that co-rumination was associated with feelings of closeness and high friendship quality as well as with anxiety and depressed affect, for girls but not for boys. Indeed, whereas it was only found to be associated with increased friendship quality in boys, co-rumination was found to predict greater anxiety, depression, and friendship quality in girls during the transition from childhood to adolescence (Rose, Carlson & Waller, 2007). Co-rumination has also been found to mediate the association between gender and the onset of clinically significant depressive episodes over a two-year period (Stone, Hankin, Gibb & Abela, 2011). Although this has yet to be formally tested, it appears that one of the pathways through which co-rumination increases the risk for depression is through increased hormonal response to stress. Indeed, Byrd-Craven and her colleagues (2008) have found that eliciting co-rumination led to increases in cortisol, a well-known risk factor for the development of depression (Goodyer, Hebert, Tamplin & Altham, 2000).

Overall, there is growing evidence that co-rumination may be an important candidate to explain the emergence of the gender gap in depression, although there is little research which examines how co-rumination interacts with other risk factors in predicting depressed affect or how it interacts with depressed affect to lead to poor interpersonal relationships.

Excessive Reassurance Seeking

Excessive reassurance seeking has been argued to be at the center of Coyne's (1976) Interpersonal Theory of Depression (Joiner, Metalsky, Katz & Beach, 1999). Indeed, he proposed that mildly dysphoric individuals tend to seek reassurance of their self-worth from their environment. However, the depressed individual doubts the sincerity of the reassurance provided attributing it instead to expressions of pity. With time, the reassurance provided by the environment becomes discrepant with the tone in which it is delivered as feelings of guilt and irritation in the members of the social circle of the depressed individual become evident. This only serves to make the depressed individual more insecure, depressed, and increasingly likely to seek excessive reassurance regarding their worth in the eyes of others. Coyne therefore saw excessive reassurance seeking as both a risk factor for depression and a consequence of depression having the potential to lead to further negative interpersonal relations.

The work of Joiner and his colleagues (Joiner, 1999; Joiner & Metalsky, 2001) have provided support for both of these aspects of excessive reassurance seeking in adult samples. A few studies then emerged providing additional support for the hypothesis that excessive reassurance seeking is associated with increases in depressive symptoms in children between the ages of 6 and 14 (Abela, Hankin, Haigh, Adams, Vinokuroff & Trayhern, 2005; Abela, Morrison, & Starrs, 2007; Abela, Zuroff, Ho, Adams & Hankin, 2006). Moreover, it was found that the impact of excessive reassurance seeking was moderated by insecure parental attachment, increases in negative or stressful life events, and parental depressive symptoms. Prinstein and his colleagues (2005) provided evidence which supported the premise that excessive reassurance seeking may be a more important risk factor for depression in girls. Indeed, they found that excessive reassurance seeking interacted with poor peer experiences to predict increases in the

depressive symptoms of girls only. Just as is the case for co-rumination, there is a lack of research examining the interpersonal consequences of depressed affect and excessive reassurance seeking combined.

There has been increasing interest in understanding how peer related variables interact with other variables to predict psychopathology and other negative outcomes (Bukowski & Adams, 2005). This will therefore be the approach used in this dissertation, examining both how excessive reassurance seeking and co-rumination as moderators possibly increasing risk for depressed affect when combined with other risk factors as well as how both of these variables, when combined with depressed affect, can lead to negative interpersonal consequences such as isolation and victimization.

Anxiety as Risk for Depression

Anxiety and depression tend to be comorbid in childhood, adolescence, and continuing well into adulthood, a combination which leads to greater impairment than either disorder experienced on its own (Brady & Kendall, 1992; Seligman & Ollendick, 1998). The bulk of the research in this area suggest that anxiety symptoms typically emerge prior to the depressive symptoms (Cole, Peeke, Martin, Truglio, & Seroczynski , 1998; Roza, Hofstra, van der Ende, &Verhulst,2003; Seligman & Ollendick, 1998). More specifically, Roza and colleagues (2003) demonstrated that while anxiety symptoms more often surface during childhood, symptoms of depression are more likely to emerge later on, during adolescence. Given that anxiety disorders impact the lives of approximately 13% of children between the ages of 9 and 17 each year (US Department of Health and Human Services, 1999), it is important to consider how anxiety acts as a risk factor for depression. Moreover, anxiety has been found to be associated with earlier social

problems (Roza et al., 2003), suggesting that social difficulties and anxiety may interact in predicting later depression. The possible moderating role of co-rumination and excessive reassurance-seeking on the association between anxiety and later depressed affect will therefore be the focus of the second paper presented in this dissertation.

While part of understanding why there is such a gender gap in depression starting in early adolescence does lie in the risk factors which make girls more likely to become depressed, it is also important to consider how depressed affect leads to interpersonal consequences which further increase the risk for depression later on.

Interpersonal consequences of depression: Isolation and Victimization

An important premise of interpersonal theories of depression is that depression is associated with social difficulties which further increase the risk for depression (Coyne, 1976; Rudolph, Flynn & Abaied, 2008). While there is a wealth of research examining how social difficulties lead to depression or how they are concurrently associated, little is known about interpersonal consequences of depressed affect which serve to reinforce the depression cycle (Rudolph, Flynn & Abaied, 2008). While a large number of interpersonal variables could be examined, the present dissertation will focus on isolation and victimization.

While a large number of studies have examined the impact of isolation and rejection on depressed affect (e.g. Cillessen, Van Lieshout & Haselager, 1992; Nangle, Erdley, Newman, Mason & Carpenter, 2003; Witvliet, Brendgen, van Lier, Koot, & Vitaro, 2010), little research has taken the reverse approach. Indeed, Joiner (1999) appears to be the only one who examined how depression may lead to perceived isolation in a sample of psychiatric inpatients whose age ranged between 7 and 17. While he found that those who reported high levels of depressive

symptoms and excessive reassurance seeking were also more likely to feel rejected by other inpatients, there are a number of issues that need to be taken into consideration when interpreting these findings. Indeed, the first and most obvious one is that the sample is composed of psychiatric inpatients, thereby precluding generalization to community samples. Moreover, all variables were measured using self-ratings. While this may represent an advantage for the measurement of depression, it is important to take into account information from the social circle of the depressed individual as they have been found to have a perception of increased social difficulties which may or may not reflect reality (Rudolph, Lambert, Clark & Kurlakowsky, 2001). The present dissertation will therefore address these limitations by using newly developed peer ratings of excessive reassurance seeking and co-rumination as described in the first chapter as well as validated peer ratings of isolation in an effort to minimize shared method variance.

Peer victimization is a widespread phenomenon which has been found to be psychologically harmful for children around the world (Slee, 1995). While victimization has been established as a risk factor for depression in children and adolescents (Hawker & Bouton, 2000; Heibron & Prinstein, 2008; Keenan et al., 2010; Reijntjes, Kamphuis, Prinzie & Telch, 2010; Slee, 1995; Sweeting, Young, West & Der, 2006), little research has examined victimization as an interpersonal consequence of depression. Hodges and his colleagues (1997) found in a cross-sectional study that having a greater number of friends reduced the magnitude of the association between internalizing problems and victimization. The protective effects of friendships were demonstrated again in a longitudinal study where it decreased the association between teacher-rated internalizing behaviours and later victimization (Hodges, Boivin, Vitaro & Bukowski, 1999). More recently, it was found that high levels of depressive symptoms predicted prospective increases in relational victimization for girls only (Gibb & Hanley, 2010). The

authors therefore suggested that girls may be more vulnerable to depressive stress generation, i.e. that depression may have a greater impact on the relationships of girls. No study thus far has examined whether the increased risk for victimization in girls is solely due to depression or to negative social correlates such as co-rumination and excessive reassurance seeking. Efforts to better understand how co-rumination and excessive reassurance seeking moderate the association between depressed affect and victimization will therefore be part of the present dissertation.

Summary

It appears that co-rumination and excessive reassurance seeking may have an important role to play in both the development and maintenance of depressive symptoms, perhaps more so for girls than for boys. While this has yet to be tested, it is also possible that these types of negative interpersonal behaviours serve to further alienate dysphoric individuals from their peers.

The goals of this dissertation are therefore threefold. First, to examine the reliability and validity of newly developed peer reported measures of co-rumination and excessive reassurance seeking. Second, to examine whether co-rumination and excessive reassurance seeking moderate the association between anxiety and later depressed affect. Finally, the last of the three studies presented here will explore the moderating effect of co-rumination and excessive reassurance seeking on the association between depressed affect and two potential interpersonal consequences, namely, isolation and victimization.

Chapter 1- Development of Short Peer and Self-Rated Measures of Co-Rumination and Excessive Reassurance Seeking for Use with Early Adolescents

The past decade has brought increased attention to interpersonal factors that exacerbate risk for depression, particularly for adolescent girls (Sund, Laarson & Sandstrom, 2003; Wichstrom, 1999). Among the multitude of factors examined, two have only recently emerged, namely co-rumination and excessive reassurance seeking. Co-rumination was first conceptualized by Rose (2002) in order to explain the paradoxical finding that adolescent girls, despite reporting closer friendships than do boys (Bukowski, Hoza & Boivin, 1994), also report greater depression. Co-rumination represents a construct at the intersection of adaptive self-disclosure and maladaptive rumination. An important aspect of co-rumination is that it is a dyadic rather than an individual experience whereby friends (or otherwise related persons) engage in the frequent and excessive discussion of problems. Specifically, these interactions involve mutual encouragement between friends to extensively focus on negative feelings and speculate about problems.

Excessive reassurance seeking (ERS), on the other hand, was a concept initially discussed in the adult literature, which has been recently studied in adolescents (Abela, Hankin, Haigh, Adams, Vinokuroff & Trayhern, 2005; Abela, Morrison, & Starrs, 2007; Abela, Zuroff, Ho, Adams & Hankin, 2006; Joiner, 1999; Prinstein, Borelli, Cheah, Simon & Wargo Aikins, 2005). Coyne (1976) proposed that mildly depressed individuals may seek and receive reassurance from those in their environment which with time, becomes discrepant with the tone in which it is delivered. Indeed, the depressed individual is likely to doubt the reassurance offered, attributing it instead to expressions of pity. The resulting feelings of guilt and irritation in the members of the social environment of the depressed person are then translated in reassurance that is

increasingly discrepant with the tone in which it is delivered, and therefore even harder to believe for the depressed individual. As the individual feels increasingly insecure, their depression symptoms may increase, along with their tendency to seek additional reassurance in regards to their worth and acceptance.

Both of these concepts have traditionally been measured using self-reports. For example, ERS has been measured with a four-item questionnaire rated on a 3-point scale (0-2), indicating the extent to which each statement describes the participant's own behaviours. Moreover, these four items inquired about adolescents reassurance seeking behaviours with both their friends and parents: "I always need to ask my parents and friends if they like me", "Sometimes when I ask people if they like me, they tell me to stop asking", "I always need to ask my parents and friends if they care about me" and "Sometimes when I ask people if they like me, they get mad." In her Co-Rumination Questionnaire, Rose (2002) also uses self-reports on a dyad (i.e. what behaviours the participant reports engaging in with a particular friend, and also with his/her mother). In this questionnaire, the child reports on each item in two ways: first, how much co-rumination they engage in if they themselves have a problem, and second, how much co-rumination occurs if the friend or their mother is reporting a problem. For example, the child would respond to both "When I have a problem, (FRIEND) and I talk to each other about it for a long time" and "When (FRIEND) has a problem, (FRIEND) and I talk to each other about it for a long time."

However, the use of self-reports in depressed individuals has often been questioned given their propensity to overly negatively evaluate their experiences (Noles, Cash & Winstead, 1985). In an example such as the one above, it is therefore likely that the target child answering the questionnaire would be biased on both counts. Given that the larger context of the present study was to examine interpersonal risk factors associated with increased risk for depression, it was

important to try to disentangle children's perceptions of their relationships from the larger peer group's view of an individual's behaviour. Peers are important informants as they can provide us with a unique perspective on their classmates' behaviours. Indeed, as children spend more and more time with their peers, this affords them ample opportunity to observe their peers' behaviour in a number of different contexts (e.g., instruction time in class, recess, school outings, lunch time, neighbourhood, etc.) (Bukowski, Cillessen & Velasquez, 2011; Weiss, Harris & Catron, 2002). Bukowski and his colleagues (2011) also indicated that using ratings from multiple informants in a single measure increases its reliability. Peer assessment instruments are often used to obtain information about a wide number of characteristics for each individual child by asking his/her peers who fits a given description. Traditionally, a number of peer assessment scales have been used to assess sociability, withdrawal, and aggression, and have subsequently been used to identify a wider number of characteristics (Masten, Morrison, & Pelligrini, 1986; Pekarik, Prinz, Liebert, Weintraub, & Neale, 1976; Wiggins & Winder, 1961; Winder & Wiggins, 1964). Also, given the methodology used in this study, we aimed to develop short versions of both self- and peer-reports for the two concepts of interest. Short measures are indeed an excellent way to collect a maximum of information within a short period of time, a factor which is very important when collecting data in schools.

The goal of this study was therefore threefold: 1) Assess the reliability of newly developed short self- and peer-rating of co-rumination and excessive reassurance seeking; 2) Examine the convergent and discriminant validity of these measures across time, and 3) Examine correlations between these measures and measures of anxiety and depressed affect. It was hypothesized that these short measures would be of acceptable reliability and correlated amongst themselves (i.e., co-rumination associated with excessive reassurance seeking, with the

correlation being greater when measured using the same informant). It was also hypothesized that both co-rumination and excessive reassurance seeking would be positively correlated with anxiety and depression, especially for girls. However, it was expected that co-rumination would be more closely related to depressed affect and excessive reassurance seeking more closely associated with anxiety.

Method

Participants

Out of a total of 337 students eligible to participate in this study, 270 students in 5th and 6th grade obtained parental consent and participated, for a participation rate of 80.12%. Atotal of 19 children had missing data at T4 and T5, and so they were not considered for these analyses.

Our sample was composed of 153 girls and 117 boys who were, on average, 11.15 years old. These participants were from three schools in the Greater Montreal Area and were selected to be representative of the population in terms of language (2 French schools, 1 English school), ethnicity, and socio-economic status.

Procedure

As part of a larger project on depressed affect, emotion regulation and peer relationships, participants completed a series of questionnaires at five time points across the school year. A classroom-based administration procedure was used at all time points. Only data from the last two time points (T4-Mid-March and T5-End of May) will be presented here. The participants filled out a variety of questionnaires, which included a peer assessment procedure as well as a

number of self-reports. Participants received school supplies and a t-shirt to thank them for taking part in this study.

Peer assessment.

The peer assessment procedure was based on the same type of procedure used in the Revised Class Play (Masten, Morrison, & Pelligrini, 1985). Each participant was asked to nominate all the participating children in his or her class which fit a number of characteristics, and the number of same-sex nominations received by each child on a given item was added up to form a same-sex score for each of these.

Co-Rumination.

A total of 3 items were included in the peer assessment procedure to measure co-rumination: "Someone who always talks about the same problems," "Someone who encourages others to always talk about their problems," and "Someone who spends a lot of time talking about their problems with others, even if they could be doing other things." These items were based on the Co-Rumination Questionnaire developed by Rose (2002), and were intended to highlight the main features of co-rumination.

Excessive Reassurance Seeking.

Three items were also included in the peer assessment procedure to measure excessive reassurance seeking (ERS). Again, these were meant to capture the essential features of ERS which would be observable by peers. Items were therefore: "Someone who always asks others if they're still friends," "Someone people get mad at when he/she asks if people still like him/her," and "Someone people tell to stop asking whether they like him/her."

Self-report.

Self-report versions of the same items used for the peer nominations were used as part of a longer questionnaire designed to assess the emotion regulation strategies of early adolescents. These questions were meant to parallel the peer nomination items and were answered on a Likert scale where 1=never true, and 5=always true.

Co-Rumination.

Three items meant to assess co-rumination were included as part of this larger questionnaire. These items were: "I often talk about the same problems," "I encourage others to always talk about their problems," and "I spend a lot of time talking about my problems with others, even if I could do other things."

Excessive Reassurance Seeking.

Another three items were included in the larger questionnaire to measure self-reports of excessive reassurance seeking: "People tell me to stop asking whether they like me or not," "I often ask others if they are still my friends," and "People get mad at me if I ask them if they still like me or not."

Additional measures.

Measures of self-reported anxiety and depression symptoms were also included in the study in order to examine associations between these factors and our newly developed measures of co-rumination and excessive reassurance seeking.

Anxiety.

Three items shown to be reliable measures of anxiety were included in the self-report questionnaire (Dubois, Simard, Lopez & Bukowski, 2011). The following items were rated on a scale from 1=never true to 5=always true: "I am nervous or tense," "I get stressed a lot," "I worry a lot." This measure was found to have good reliability at both time points (T4, α=.87; T5, α=.86).

Depressed Affect.

Nine items were used to measure depressed affect at each time point. Again, each of these items was rated on a scale from 1=never true to 5=always true. Items were: "I am unhappy," "I am in a bad mood," "I feel tired," "I have trouble sleeping," "I don't feel like eating," "I feel lonely," "I feel that nothing will ever work out for me," "I am sad," and "I feel cranky." These items were also found to be highly reliable (T4, α= .89, T5, α= .89).

In order to facilitate the inclusion of these items in a structural equation model, three parcels of three items were created using the method outlined in Little, Cunningham, Shahar & Widaman (2002).

Results

Descriptive statistics for boys and girls separately can be found in Table 1.1 (co-rumination and excessive reassurance seeking) and Table 1.2 (anxiety and depressive symptoms). Intercorrelations between the study variables can be found in Table 1.3 (T4) and Table 1.4 (T5). Reliability analyses for each scale were first conducted. These were conducted using SPSS for each scale separately at each time point.

Co-Rumination – Peer Nominations

Reliability analyses were conducted with all three co-rumination peer nomination items at T4. Reliability for all three items was found to be poor, $\alpha=.49$. It was found that the item "Someone who encourages others to always talk about their problems" was problematic and once excluded, reliability increased to $\alpha=.77$ for the remaining two items. A similar situation arose with the T5 data. Indeed, when all three items were included in the reliability analysis, the reliability was poor ($\alpha=.39$). However, when this same item was removed, reliability was found to be acceptable ($\alpha=.71$).

Excessive Reassurance Seeking – Peer Nominations

All three items at T4 were found to have acceptable reliability, with $\alpha=.69$. Similar results were found at T5, with $\alpha=.70$. Given the acceptable reliability of the peer excessive reassurance seeking peer-nomination items at both times, all three items were kept for subsequent analyses.

Co-Rumination – Self-report

Results found with the self-report were similar to those of the peer report. Indeed, when all three items were included, reliability was found to be poor at both T4 and T5 ($\alpha=.56$ and $\alpha=.34$). Reliability was acceptable after the item "I encourage others to always talk about their problems" was removed (T4 $\alpha=.67$ and T5 $\alpha=.65$). This item was therefore dropped from further analyses as it consistently did not relate to the other two in both self- and peer-reports.

Excessive Reassurance Seeking – Self-report

When reliability analyses were conducted with the self-reported items for excessive reassurance seeking, reliability was found to be adequate at both T4 and T5 ($\alpha=.73$ and $\alpha=.77$,

respectively). All three items were therefore kept for all subsequent analyses, just as with the peer-nomination items.

Models examining self- and peer-reports

In order to examine whether peer- and self-report were correlated with each other for each of the two variables of interest, a series of structural equation models was run using Mplus version 5.2 (Muthén & Muthén, 1998-2008).

Co-Rumination.

Two models were run separately to examine for T4 and T5, with only two items for both self- and peer-report (See Figure 1.1 and Figure 1.2). Fit was excellent for both of these models (T4: $\chi^2(1)$=.58, p=.45, CFI=1.00, RMSEA=0.00; T5: $\chi^2(1)$=.86, p=.35, CFI=1.00, RMSEA=0.00).

Excessive Reassurance Seeking.

Two models were also tested to examine how peer- and self-reported excessive reassurance seeking were associated with each other (See Figure 1.3 and 1.4). These models included all three self- and peer-report items and were found to have an adequate fit (T4: $\chi^2(8)$=12.58, p=.13, CFI=.99, RMSEA=0.05; T5: $\chi^2(8)$=9.42, p=.31, CFI=.99, RMSEA=0.03).

Models examining Co-Rumination and Excessive Reassurance Seeking

Further models were tested to examine the discriminant validity of these two scales. Models including self- and peer-reported co-rumination and excessive reassurance seeking were therefore tested.

Once again, similar patterns emerged for T4 and T5, but each model will be discussed separately. At T4, a model including the CFA for each measure as well as correlations between all of them was found to have acceptable fit ($\chi^2(29)=59.026$, p=.00, CFI=.96, RMSEA=0.06). However, a chi-square difference test indicated that it was significantly improved when correlations were added between one of the peer-reported co-rumination items and two of the peer-reported excessive reassurance seeking items (See Figure 1.5: $\chi^2(27)=42.70$, p=.03, CFI=.98, RMSEA=0.05). Given the high correlations between the peer-rated excessive reassurance seeking and co-rumination items, an additional alternative model was tested with all five peer nominated items included as one factor. However, a chi-square difference test revealed that the fit of this model was significantly worse than that of the model with separated co-rumination and excessive reassurance seeking factors ($\chi^2(32)=71.16$, p=.00, CFI=.95, RMSEA=0.07).

The best model for T5 is very similar to that of T4. Once again, the model with no correlations between the peer-nominated items was found to be adequate ($\chi^2(29)=57.85$, p=.00, CFI=.96, RMSEA=0.06), but adding a correlation between one of the excessive reassurance-seeking item and one of the co-rumination items significantly improved the fit of the model (See Figure 1.6; $\chi^2(28)=41.18$, p=.05, CFI=.98, RMSEA=0.04). An alternative model with all peer-nominated items was once again run but proved to have a poorer fit to the data ($\chi^2(32)=62.89$, p=.00, CFI=.96, RMSEA=0.06).

Models Examining Association with Depressed Affect and Anxiety

Two models were run separately for each time point in order to examine how peer- and self-reported co-rumination and excessive reassurance seeking were associated with anxiety and

depressed affect. Given that the literature suggests that co-rumination and excessive reassurance seeking may be more common in girls, these models were run as multi-group comparisons, comparing boys and girls. Also, gender differences were found in terms of mean peer reported excessive reassurance seeking and co-rumination as well as self-reported co-rumination, with girls obtaining higher mean scores than boys (Table 1.1).

The model for T4 was found to have adequate fit (See Figure 1.7: $\chi^2(198)=298.39$, p=.00, CFI=.94, RMSEA=0.06). It is important to note, however, that the latent variable covariance matrix for boys was not positive definite, mainly because of some issues with the peer-nominated measure of co-rumination. Indeed, the loadings for both items were found to be quite low and appear to indicate that the peer-nominations of co-rumination may not have been as successful for boys. The model worked better for girls, with good loadings for all measures. In terms of the association between depressed affect and the measures of interest, depressed affect was associated with self-rated excessive reassurance seeking and depressed affect, but not associated with the peer-assessed measures (albeit at the trend level for the association between anxiety and peer-nominated excessive reassurance seeking). Anxiety, on the other hand, was found to be associated with both self-reports as well as both peer reports.

Similar results were found for T5, with an adequate model fit (See Figure 1.8: $\chi^2(196)=274.62$, p=.00, CFI=.95, RMSEA=0.06). Once again, the model was found to be a poor fit for boys, for whom the residual and latent variable covariance matrix was found to be non positive definite, and so the results for boys will not be discussed further. For girls, however, depressed affect was again found to be associated with self-rated excessive reassurance seeking and co-rumination. This time, however, depressed affect was also found to be associated with peer-nominated co-rumination. On the other hand, anxiety was found to be associated with both

self-reported measures as well as with peer-nominated co-rumination, but not excessive reassurance seeking.

Discussion

This study had three main goals. The first was to assess the reliability of short peer- and self-rated measures of co-rumination and excessive reassurance seeking. Both measures of excessive reassurance seeking were found to have adequate reliability with three items each. However, our measures of co-rumination were found to have poor reliability if all three original items were included. Indeed, the item "I encourage others to always talk about their problems" and "Someone who encourages others to always talk about their problems" seemingly did not tap into the same construct as the other two items which clearly define a person excessively discussing their problems with others. It appears that this item may have been perceived in a more positive light as evidenced by higher mean levels for this item. Therefore, rather than being perceived as excessively discussing problems, this item may instead have measured an appealing "therapist-like" attitude. These items were therefore dropped from the peer- and self-rated co-rumination measures, leading to an adequate reliability for the co-rumination measure focusing on the excessive discussion of problems. While this measure does not take into account some of what is measured in Rose's (2002) questionnaire, it still fits the definition of co-rumination she put forth.

The second goal was to ensure that our measures differentiated between co-rumination and excessive reassurance seeking and that self- and peer-rated measures were correlated. Overall, it was found that both at T4 and T5, peer reports for excessive reassurance seeking and co-rumination were highly correlated. Given these results, a model with a single peer-nominated

measure was tested but was found to have a poorer fit, therefore indicating that the measures worked better individually despite their high degree of relatedness. It therefore appears that our measures had appropriate discriminant validity.

Our measures were also found to have appropriate convergent validity. Indeed, our self- and peer-reported measures for both excessive reassurance seeking and co-rumination were correlated with each other. However, our measures of co-rumination were found to be somewhat less related to each other than measures of excessive reassurance seeking. While this may appear as a weakness (i.e., our measure does not capture enough of the same "thing" as self-reported co-rumination), it may actually be a strength of the peer nomination method. Indeed, we may be capturing a negative social behaviour that early adolescents would not be as willing to report engaging in. From a friend's perspective, however, it may be easier to report on such an exasperating behaviour on the part of their peer. Moreover, it is important to develop alternative ways to measure co-rumination and excessive reassurance seeking as it has been found that effect sizes were larger when using self-reported measures, pointing towards issues of shared method variance and overreliance on this type of measurement (Starr & Davila, 2008).

The last aim of this study was to examine associations between our new measures and measures of anxiety and depression so as to ensure they were related in ways which we would expect from the literature. Consistent with the literature, we found that both excessive reassurance seeking and co-rumination were more consistently associated with symptoms of anxiety and depression for girls than for boys (Rose, Schwartz & Carlson, 2007; Starr & Davila, 2008). Our findings were also somewhat different from those of Haeffel and his colleagues (2007) and Joiner & Metalsky (2001) in that we observed a fairly similar pattern of association between self-rated excessive reassurance seeking and both anxiety and depression for girls only.

It is important to note, however that the models presented here show concurrent associations only. It is therefore possible that while the concurrent associations are similar, excessive reassurance seeking may only predict greater depression as time goes on and peers become increasingly alienated by the reassurance seeking behaviour to the point where a loss of social support occurs (Haeffel, Voelz, & Joiner, 2007). It may also be that the specific association between excessive reassurance seeking and depression varies as a function of age, as Abela and colleagues (2006) have suggested, emerging between the ages of 11 and 14. Given that a substantial portion of our sample was below that age, this may help explain the results which are not completely consistent with those of previously discussed studies conducted with late adolescents and early adults.

While the results obtained in this study point towards promising results for our short peer- and self-report of excessive reassurance seeking and co-rumination, it is important to acknowledge a few limitations. First, our measures of co-rumination now include only two items rather than the original three which were based on Rose's (2002) measure. We may therefore not be measuring exactly the same construct as what was initially proposed and it may be beneficial to develop additional peer report items. However, given that our results are consistent with the past literature (i.e. co-rumination is consistently associated with depression symptoms for girls and not for boys), we feel that our measures are appropriate. As proposed by Starr and Davila (2008), future research should therefore move towards different methodology which includes different sources of information such as the one presented here. Observational research may also be a promising avenue. Indeed, we found that our measures of co-rumination did not work as well for boys as they did for girls. It would therefore be important to observe whether this is

because it is a type of behaviour which boys do not exhibit frequently, or whether boys are less likely to report on these behaviours given the way items are formulated.

Moreover, it will be important to replicate these findings. Indeed, this is the first study aiming to develop peer reported measures of both co-rumination and excessive reassurance seeking. This therefore deserves a few words of caution: first, co-rumination and excessive reassurance seeking have not, to our knowledge, been examined in conjunction with one another. Given that we have found them to be associated with one another, it will be important for future studies to consider both constructs simultaneously. Also, while most studies of co-rumination have been conducted with children of similar age groups (Rose, 2002; Rose, Carlson & Waller, 2007; Stone, Uhrlass & Gibb, 2010), most studies of excessive reassurance seeking, except from those coming from the collaboration of Abela and his colleagues (2005; 2006; 2007), have been conducted with young adult populations (Burns, Brown, Plant, Sachs-Ericsson & Joiner, 2006; Haeffel, Voelz & Joiner, 2007; Joiner & Metalsky, 2001; Joiner, Metalsky, Katz & Beach, 1999; Weinstock & Whisman, 2007). Future studies should therefore examine the associations between co-rumination, excessive reassurance seeking and maladjustment in adolescents. Indeed, adolescents are a group for whom these types of behaviours may be particularly relevant as they develop closer friendships. Finally, these are the first peer-reported measures of co-rumination and excessive reassurance seeking. Further research should therefore aim to assess the validity and reliability of our new questionnaires in varied samples and compare their utility in predicting maladjustment to that of self-reports.

Table 1.1 Mean levels of peer- and self- reported ERS and CoR

Item	Girls T4 *M (SD)*	Boys T4 *M (SD)*	Girls T5 *M (SD)*	Boys T5 *M (SD)*
Someone who always asks others if they're still friends (Peer rated ERS).	.92 (1.37)	.38 (.99)	.82 (1.29)	.44 (.93)
Someone people get mad at when he/she asks if people like him/her (Peer rated ERS).	.45 (.75)	.22 (.57)	.33 (.67)	.17 (.50)
Someone people tell to stop asking if they like him/her (Peer rated ERS).	.52 (.81)	.29 (.57)	.32 (.67)	.17 (.50)
Someone who always talks about the same problems (Peer rated CoR).	.97 (1.31)	.25 (.68)	.70 (1.05)	.30 (.78)
Some who spends a lot of time talking about the same problems even if they could do other things (Peer rated CoR).	.89 (1.13)	.18 (.49)	.50 (.86)	.15 (.42)
People tell me to stop asking whether they like me or not (Self rated ERS).	1.27 (.70)	1.28 (.65)	1.24 (.67)	1.17 (.53)
I often ask others if they're still my friends (Self rated ERS).	1.42 (.79)	1.31 (.69)	1.36 (.68)	1.30 (.62)
People get mad at me if I ask them whether they still like me or not (Self rated ERS).	1.21 (.56)	1.18 (.56)	1.25 (.66)	1.18 (.55)
I often talk about the same problems (Self rated CoR).	2.02 (1.15)	1.78 (1.08)	1.81 (.97)	1.79 (.87)
I spend a lot of time talking about the same problems, even if I could do other things (Self rated CoR).	1.95 (.99)	1.74 (1.04)	1.84 (.97)	1.69 (.81)

Note. ERS= Excessive Reassurance Seeking; CoR= Co-Rumination

Table 1.2. Mean levels of self-rated anxiety and depressive symptoms

Item	Girls T4 M (SD)	Boys T4 M (SD)	Girls T5 M (SD)	Boys T5 M (SD)
I am nervous or tense (ANX 1).	2.54 (1.15)	2.25 (1.03)	2.46 (1.11)	2.23(1.07)
I get stressed a lot (ANX 2).	2.57 (1.21)	2.34 (1.23)	2.65 (1.25)	2.40 (1.25)
I worry a lot (ANX 3).	2.36 (1.19)	2.02 (1.05)	2.43 (1.19)	2.07 (1.11)
DA parcel 1	5.68 (2.44)	5.33 (1.94)	6.03 (2.13)	5.59 (2.20)
DA parcel 2	7.17 (2.38)	6.73 (2.29)	7.51 (2.33)	6.93 (2.25)
DA parcel 3	5.75 (2.59)	5.01 (2.13)	5.91(2.39)	5.32 (2.49)

Note. ANX= Anxiety (range=1-5); DA= Depressed Affect (range=3-15)

Table 1.3. Bivariate correlations between indicators of anxiety, depressed affect, co-rumination, and excessive reassurance seeking at T4

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. DA1T4	1	.71**	.70**	.49**	.47**	.46**	.05	.15*	.12^t	.34**	.27**	.18**	.18**	.06	.01	.24**	.03	.31**
2. DA2T4		1	.72**	.45**	.43**	.42**	.04	.14*	.07	.23**	.25**	.13*	.13*	.04	.00	.22**	.00	.27**
3. DA3T4			1	.46**	.50**	.51**	.09	.18**	.15*	.32**	.23**	.22**	.22**	.05	.07	.22**	.05	.27**
4. ANX1T4				1	.70**	.62**	.11^t	.08	.09	.23**	.24**	.20**	.14*	.03	.08	.28**	.07	.25**
5. ANX2T4					1	.75**	.12^t	.09	.11^t	.22**	.19**	.19**	.13*	.09	.14*	.18**	.10	.15*
6. ANX3T4						1	.09	.10	.14*	.25**	.15*	.23**	.13*	.09	.15*	.28**	.14*	.25**
7. PERS1T4							1	.49**	.42**	.11^t	.28**	.16*	.54**	.16*	.60**	.15*	.00	.14*
8. PERS2T4								1	.57**	.14*	.21**	.21**	.55**	.05	.46**	.12^t	-.02	.11^t
9. PERS3T4									1	.18**	.27**	.17**	.36**	.15*	.42**	.13*	-.03	.13*
10. SERS1T4										1	.47**	.49**	.15*	-.10	.08	.24**	.06	.27**
11. SERS2T4											1	.49**	.20**	-.03	.15*	.29**	-.01	.25**
12. SERS3T4												1	.22**	-.09	.13*	.25**	.00	.28**
13. PCOR1T4													1	.08	.64**	.12^t	.06	.08
14. PCOR2T4														1	.28**	-.03	.26**	.06
15. PCOR3T4															1	.12^t	.13*	.04
16. SCOR1T4																1	.18*	.51**
17. SCOR2T4																	1	.25**
18. SCOR3T4																		1

Notes: DA= Depressed Affect; ANX=Anxiety; PERS= Peer-rated Excessive Reassurance Seeking; SERS= Self-rated Excessive Reassurance Seeking; PCOR= Peer-rated Co-Rumination; SCOR= Self-rated Co-Rumination; **p<.01; *p<.05; ^{t}p<.10

Table 1.4. Bivariate correlations between indicators of anxiety, depressed affect, co-rumination, and excessive reassurance seeking at T5

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. DA1T5	1	.76**	.68**	.38**	.39**	.41**	.09	.04	.04	.18**	.16*	.12^t	.04	.08	.05	.19**	-.03	.23**
2. DA2T5		1	.66**	.39**	.45**	.43**	.18**	.08	.06	.14*	.14*	.06	.14*	.09	.14*	.21**	-.02	.19**
3. DA3T5			1	.32**	.40**	.40**	.12^t	.04	.02	.27**	.19**	.07	.12^t	-.03	.00	.27**	-.14*	.25**
4. ANX1T5				1	.72**	.64**	.01	.07	.00	.11^t	.09	.06	.03	.07	.03	.16**	.06	.26**
5. ANX2T5					1	.63**	.08	.06	-.02	.14*	.09	.04	.09	.04	.05	.21**	-.02	.23**
6. ANX3T5						1	.11^t	.17**	.10	.19**	.10	.14*	.12^t	.06	.16*	.26**	.11^t	.33**
7. PERS1T5							1	.48**	.55**	.04	.10	.07	.68**	.05	.55**	.15**	.08	.13*
8. PERS2T5								1	.54**	.14*	.08	.13*	.36**	.02	.33**	.12^t	.00	.14*
9. PERS3T5									1	.16**	.13*	.20**	.47**	.05	.45**	.06	-.01	.09
10.SERS1T5										1	.58**	.59**	.03	-.12^t	.09	.11^t	-.10	.23**
11. SERS2T5											1	.40**	.07	-.02	.15**	.16**	-.06	.16**
12. SERS3T5												1	.08	-.10	.13*	.11^t	-.07	.27**
13. PCOR1T5													1	.05	.57**	.11^t	.06	.09
14. PCOR2T5														1	.22**	.03	.26**	.04
15. PCOR3T5															1	.09**	.11^t	.13*
16. SCOR1T5																1	-.04	.49**
17.SCOR2T5																	1	.11^t
18.SCOR3T5																		1

Notes: DA= Depressed Affect; ANX=Anxiety; PERS= Peer-rated Excessive Reassurance Seeking; SERS= Self-rated Excessive Reassurance Seeking; PCOR= Peer-rated Co-Rumination; SCOR= Self-rated Co-Rumination; **p<.01; *p<.05; ^{t}p<.10

Figure 1.1. T4 Self- and Peer-reported Co-Rumination
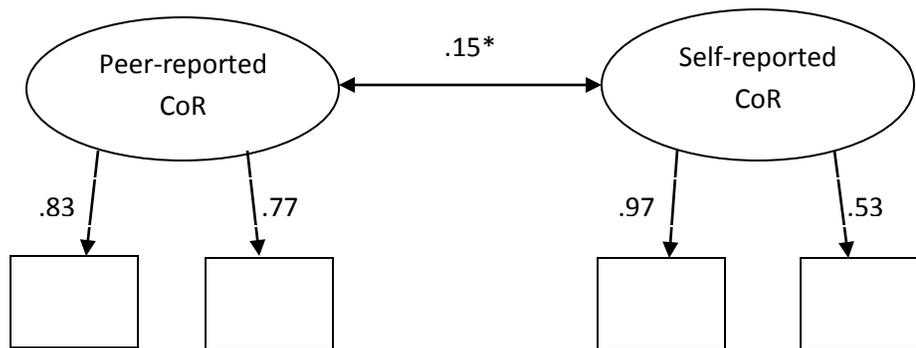
Figure 1.2. T5 Self- and Peer-Reported Co-Rumination
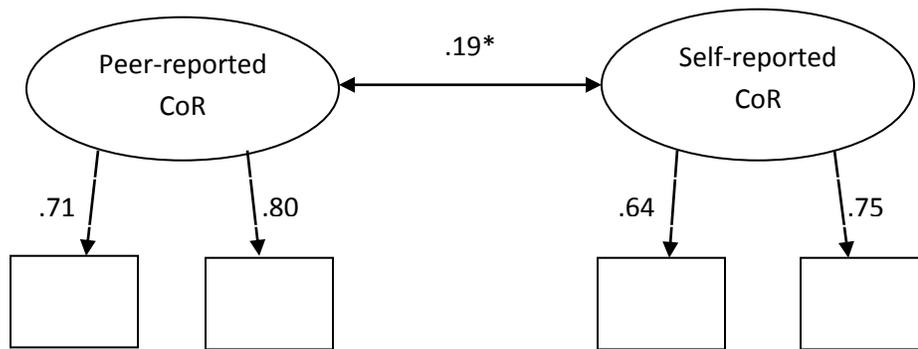
Figure 1.3. T4 Self- and Peer-Reported Excessive Reassurance Seeking
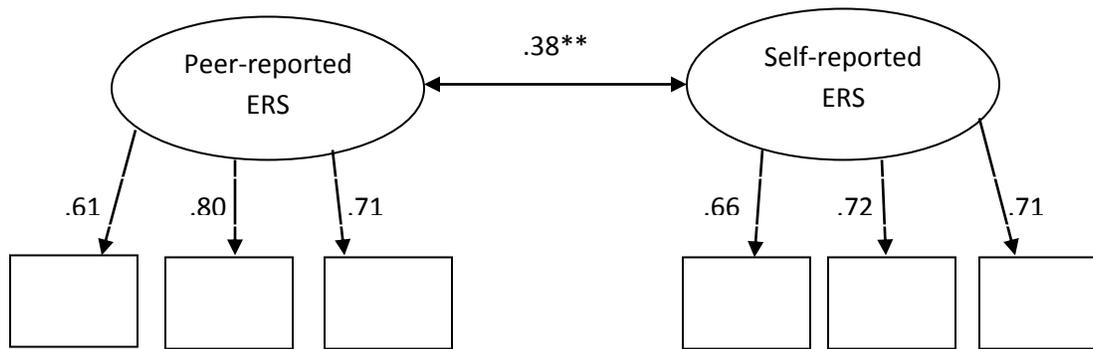
Figure 1.4. T5 Self- and Peer-Reported Excessive Reassurance Seeking
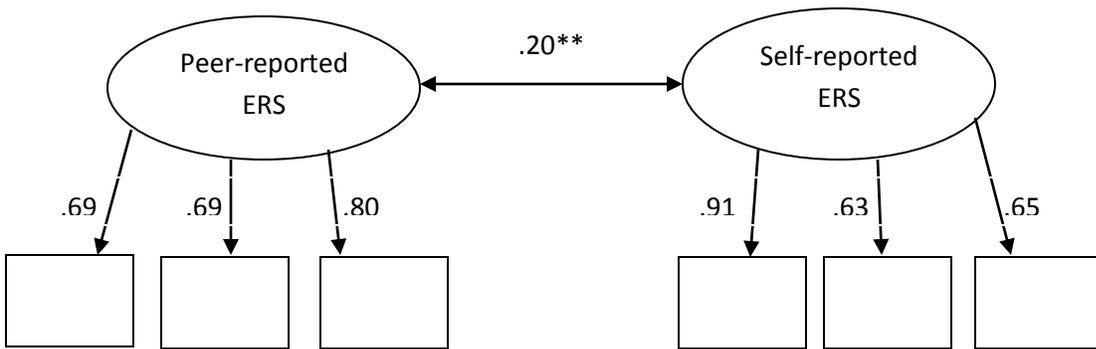
Figure 1.5. T4 Co-Rumination and Excessive Reassurance Seeking
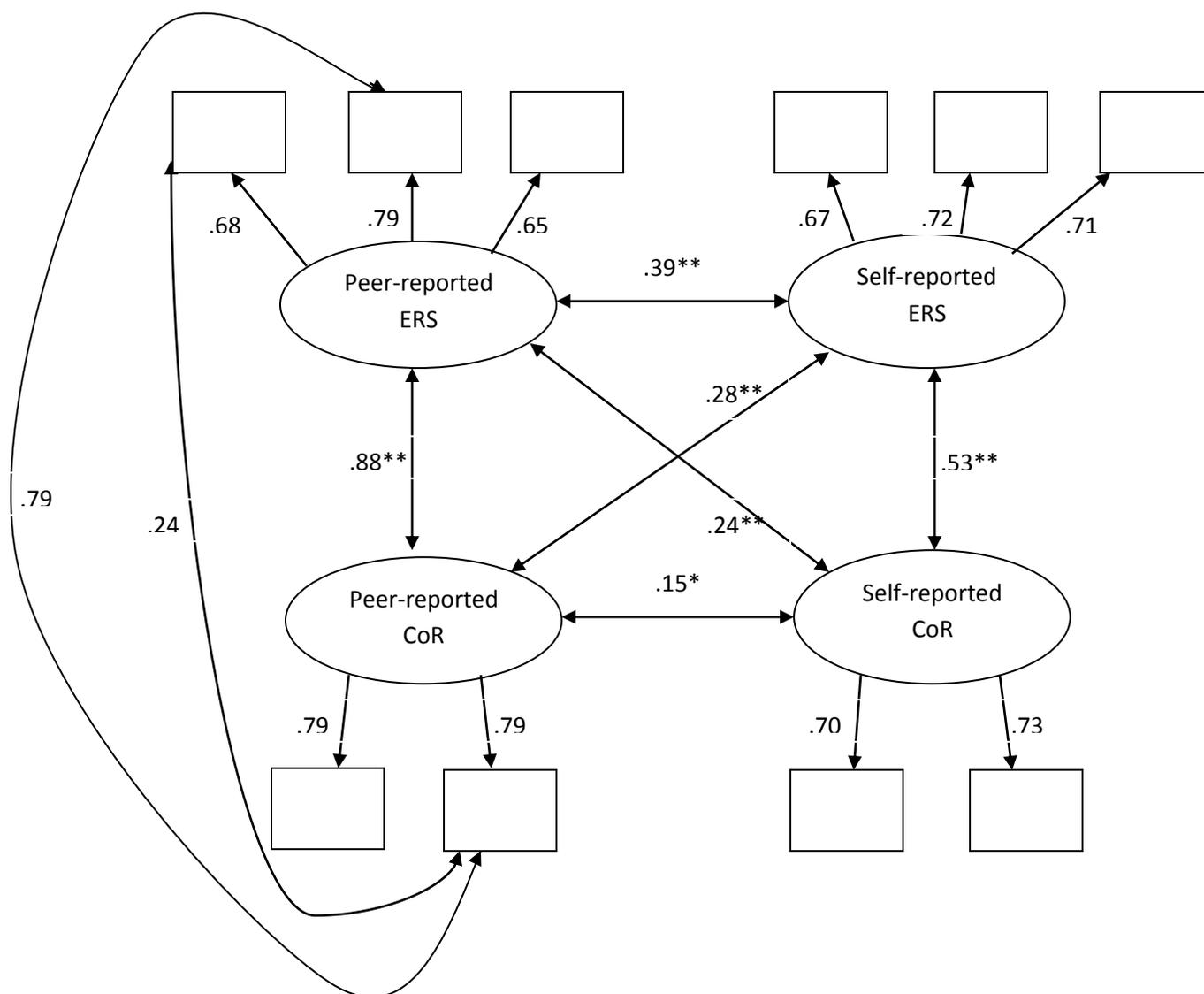
Figure 1.6. T5 Co-Rumination and Excessive Reassurance Seeking
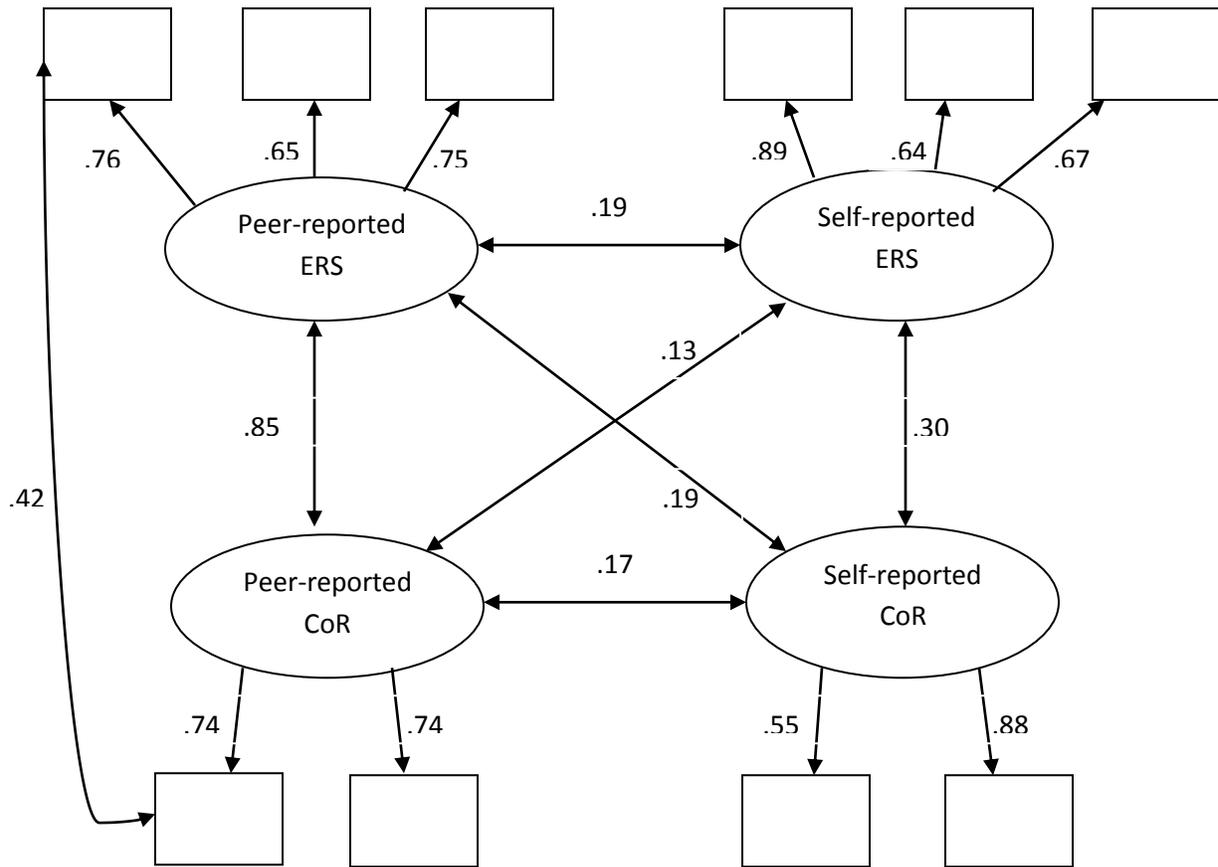
Figure 1.7. T4 Excessive Reassurance Seeking, Co-Rumination, Depressed Affect and Anxiety
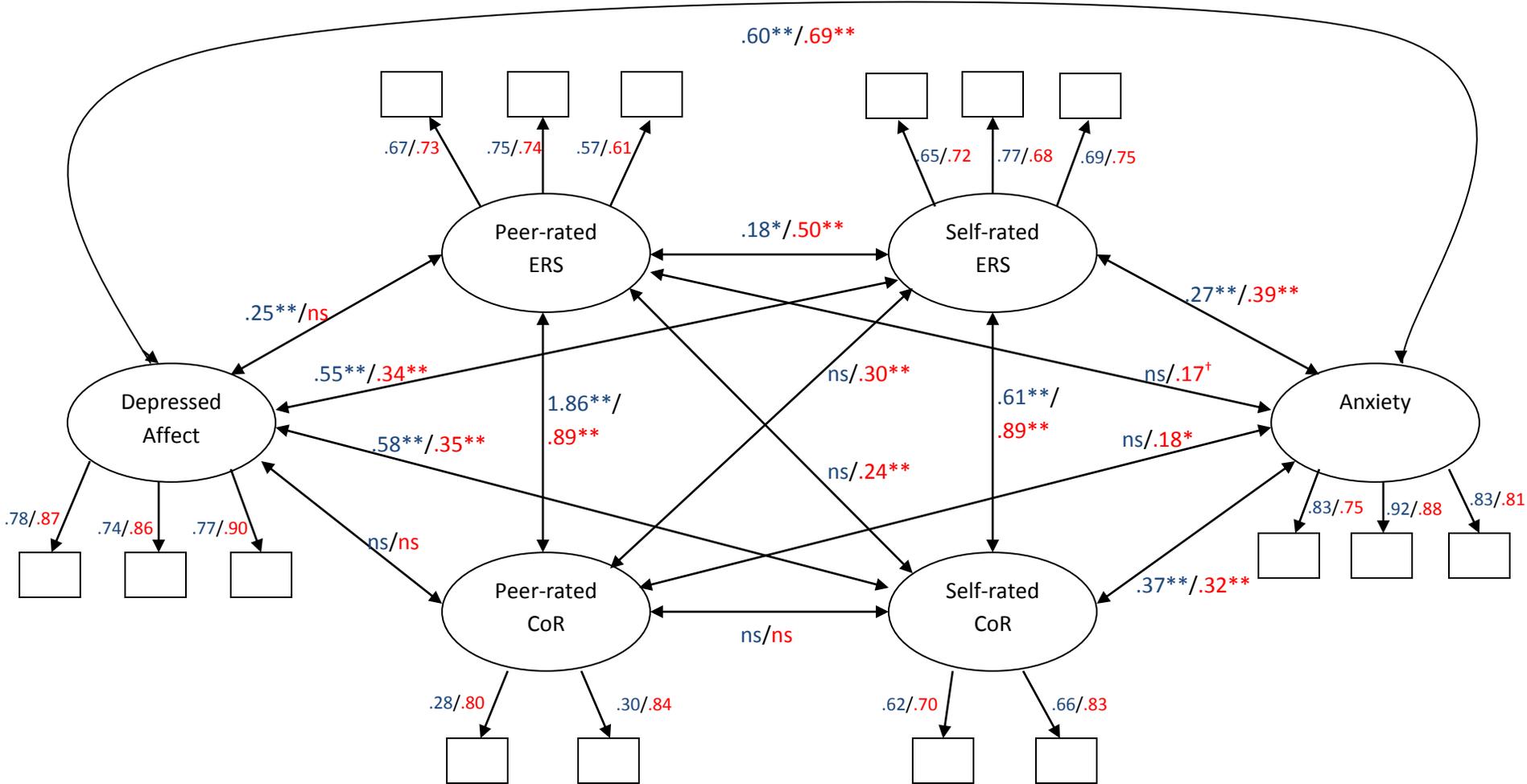
Figure 1.8. T5 Excessive Reassurance Seeking, Co-Rumination, Depressed Affect and Anxiety
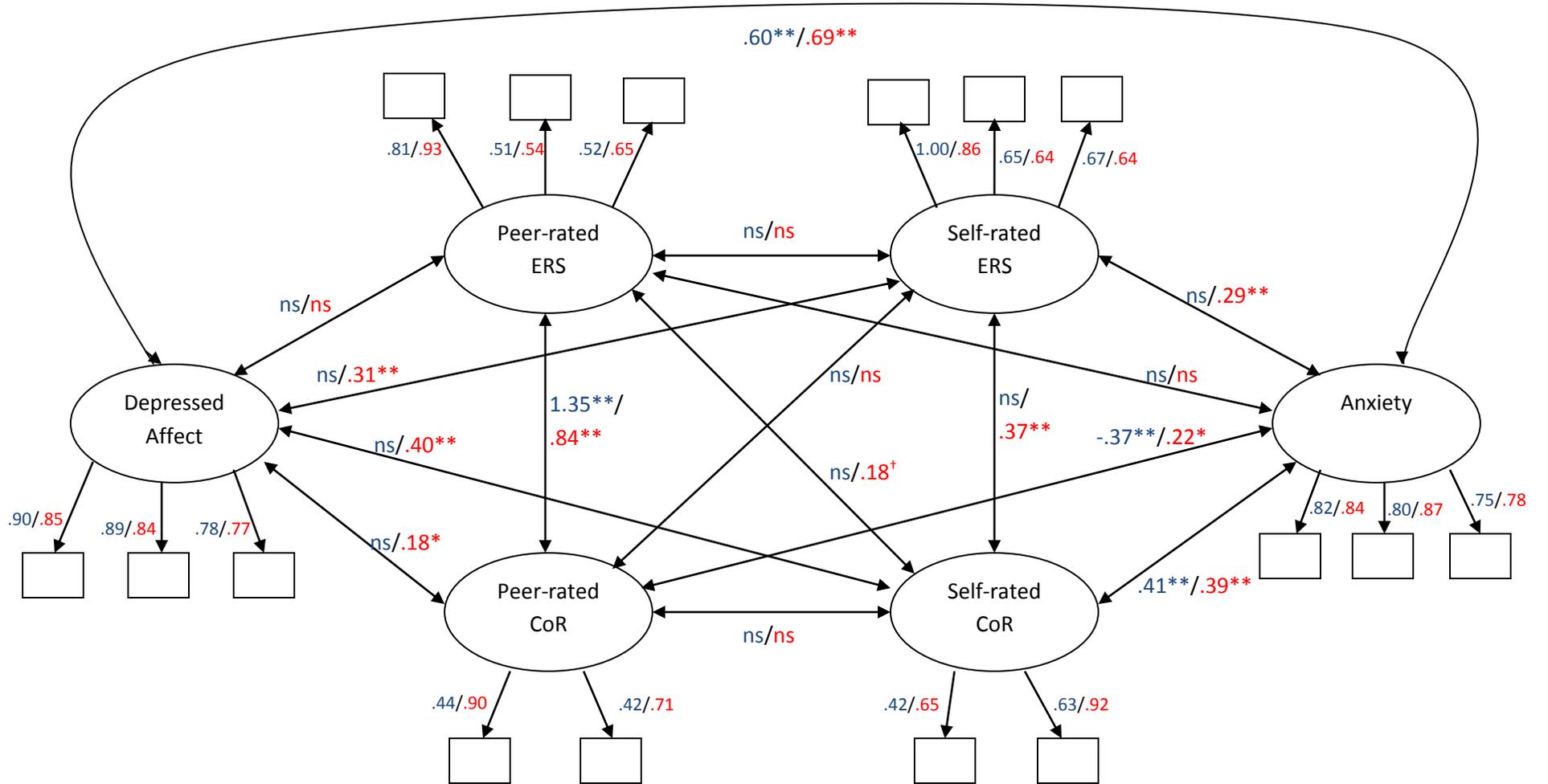
Chapter 2: Anxiety, Excessive Reassurance Seeking and Co-Rumination: Gender Differences in the Prediction of Depressed Affect in Early Adolescence

Accumulating evidence points to early adolescence as an important period to understand the gap in the rates of depression between males and females. Indeed, Roza and her colleagues (2003) have found that while the rates of onset for mood disorders rose sharply starting around age 13, it is only during early adolescence that gender differences became significant. Also, Wichstrom (1999) found that while there was no gender difference in depressive mood at age 12 in a Norwegian sample, girls were found to report slightly more depressive symptoms at age 13, and the magnitude of this difference increased so that girls reported on average half a standard deviation more depressive symptoms than boys by the age of 14. Wichstrom (1999) also found that there was no further increase in the magnitude of this gender difference after the age of 14, therefore indicating that something critical occurs between the ages of 13 and 14. Similar findings have emerged from longitudinal data from Canada, Great Britain, and the United States (Wade, Cairney & Pevalin, 2002). Hankin and his colleagues (1998) have also found some evidence of the beginning of a shift in self-reported depressive symptoms between the ages of 13 and 15, although gender differences in diagnoses of clinical depression were only found a few years later, between the ages of 15 and 18.

Given that there is no sex difference in the rates of re-occurrence of depression, it appears that the key to understanding this important sex difference lies at the moment when this difference first emerges (Eberhart, Shih, Hammen & Brennan, 2006). This is particularly important given that a younger age of onset was found to predict a worse course of depression for females, but not for males (Essau, Lewinsohn, Seeley & Sasagawa, 2010). Early adolescence has therefore been proposed to be an important period to examine factors associated with the

development of depression, especially in order to understand why girls are subsequently at an increased risk (Hankin, Abramson & Siler, 2001; Petersen et al., 1993; Sund, Laarson & Sandstrom, 2003). Indeed, consistent with a diathesis-stress model of depression, it is likely that functioning prior to adolescence interacts with stressors encountered during the important transition from childhood to adolescence to increase one's risk of developing depression (Keenan & Hipwell, 2005). Examining the interaction of different risk factors that may be particularly salient for girls, for example, anxiety, co-rumination, and excessive reassurance seeking, may be particularly useful.

Over the years, there has been some debate as to whether anxiety and depression are separate entities or a broader disorder, often referred to as neuroticism or internalizing syndrome (Brady & Kendall, 1992). However, evidence is accumulating suggesting that while anxiety and depression are highly related, anxiety may act as a risk factor for depression. In a longitudinal study over 14 years, Roza and colleagues (2003) found that in more than two-thirds of cases diagnosed with both an anxiety and mood disorder, the anxiety disorder arose first. Moreover, they found that anxiety was significantly predicted by the earlier occurrence of social problems. Bukowski and his colleagues (2010) have found that avoidant children, whom are presumably socially anxious to some extent, experienced a "snowball" increase in depressed affect when they were also friendless, suggesting that peer relations may be an important moderator of the association between risk factors and depressed affect. Others have also found that negative affectivity and poor emotion regulation (e.g., rumination) predicted anxiety symptoms, which in turn, predicted later depressed affect (Tortella-Feliu, Balle & Sesé, 2010).

Similarly, Connolly and her colleagues (2010) have found that adolescents with internalizing diagnoses (depression, anxiety, or both) were more likely than those without such a

diagnosis to experience dependent or self-generated stress, which tend to be of an interpersonal nature in women (Hammen, 1991). Given this, it is reasonable to ask if the childhood peer relationships of girls with internalizing symptoms (e.g., anxiety) may be a contributing risk factor for subsequent depression in early adolescence. Indeed, it appears that certain aspects of relationships which may otherwise be healthy contribute to the increase in depressive symptoms that is particularly evident for girls during early adolescence. It has been suggested that gendered patterns of interpersonal relations may increase the risk for depression in girls who tend to place a greater importance of those friendships (Rudolph, Ladd & Dinella, 2007). This does not mean that friendships are not important for boys, but rather, that girls' well-being and self-worth may be more dependent upon these relationships. It would therefore be helpful to better understand how peer relations may interact with anxiety to further increase the risk for depressed affect.

One such potentially important peer relation concept is that of co-rumination which was first proposed by Rose (2002) in order to explain why girls who have closer friendships (Bukowski, Hoza & Boivin, 1994), are more depressed than their male counterparts. Rose (2002) proposed that co-rumination is a notion at the intersection of adaptive self-disclosure and maladaptive rumination whereby friends (or otherwise related persons) will engage in the excessive discussion of problems.

While co-rumination is associated with feelings of closeness and high quality friendships, it has also been found to be associated with anxiety and depression (Rose, 2002). This association has been found both cross-sectionally and longitudinally for girls, but not for boys. Indeed, for girls in the transition from childhood to adolescence, co-rumination was found to predict greater anxiety, depression and friendship quality, which in turn, contributed to increases in co-rumination (Rose, Carlson & Waller, 2007). For boys, however, co-rumination

was only found to predict increased friendship quality. Co-rumination has also been found to predict the onset of depressive disorder over a two-year period and to mediate the association between gender and the onset of clinically significant depressive episodes (Stone, Hankin, Gibb & Abela, 2011). This association between co-rumination and depression in females appears to last at least until early adulthood (Calmes & Roberts, 2008). Although this has yet to be tested in early adolescents, it appears that one of the pathways through which co-rumination increases depressive symptoms is through an increased hormonal response to stress. Indeed, Byrd-Craven and her colleagues (2008) have found that elicited co-rumination was associated with an increase in cortisol, similar to the association found between elicited anxiety and significant salivary cortisol elevations (Martel et al., 1999). Co-rumination therefore appears to be an important mechanism through which females are put at an increased risk for depression. However, the impact of co-rumination has rarely been examined in combination with factors other than friendship quality. Assessing how co-rumination interacts with anxiety would therefore help us better understand whether it is co-rumination alone which leads to greater levels of depressed affect or its combination with high levels of anxiety.

Another potentially important moderator of anxiety in the prediction of depressed affect is excessive reassurance seeking, which has been argued to be at the center of Coyne's (1976) Interpersonal Theory of Depression (Joiner, Metalsky, Katz & Beach, 1999). Coyne (1976) proposed that mildly dysphoric individuals may seek reassurance from their environment. After some time, however, the reassurance they receive is given in a discrepant tone (i.e., the tone does not match the message), leading the depressed individual to doubt the offered reassurance, attributing the kind words to an expression of pity. The reassurance offered only becomes harder to believe as the tone becomes more discrepant when friends and family members express it out

of feeling guilty or irritated, and so this may lead the individual to feel increasingly insecure and depressed. Excessive reassurance seeking and depressed affect become part of a vicious circle which only exacerbates the individual's pain.

Coyne's (1976) proposition that excessive reassurance seeking (ERS) leads to greater levels of depressive symptoms and depressive disorder has been supported by research with samples of children and adolescents, as well as in the adult population where the idea originated (Abela, Hankin, Haigh, Adams, Vinokuroff & Trayhern, 2005; Abela, Morrison, & Starrs, 2007; Abela, Zuroff, Ho, Adams & Hankin, 2006; Joiner et al., 1999). While ERS has been found to be associated with depression rather than anxiety (Burns, Brown, Plant, Sachs-Ericsson & Joiner, 2006), it appears that stress moderates the association between excessive reassurance seeking and depressive symptoms (Joiner & Metalsky, 2001). It would therefore appear likely that excessive reassurance seeking would compound the effects of anxiety as a risk factor for depression.

The goals of the present study were therefore two-fold. First, we aimed to examine whether co-rumination and excessive reassurance seeking moderated the association between anxiety and later depressed affect. It was hypothesized that both co-rumination and excessive reassurance seeking would moderate the association between anxiety and depressed affect, in that high levels of anxiety only when combined with high levels of these behaviours would lead to increased depressed affect. Second, we wanted to test whether these moderating effects would be the same for boys and girls. It was hypothesized that the interaction of co-rumination and excessive reassurance seeking with anxiety would be a stronger predictor of depressed affect for girls than for boys.

Method

Participants

Two hundred and seventy fifth and sixth graders participated in this study (117 boys, 153 girls; average age: 11.15 years). These participants were from three schools in the Greater Montreal Area and were selected to be representative of the population in terms of language (2 French schools, 1 English school), ethnicity, and socio-economic status. Given that 337 students were eligible to participate in the study in these three schools, a participation rate of 80.12% was obtained.

Procedure

After obtaining the permission of school boards, schools and teachers, letters explaining the goals of the study were sent to parents of all 5th and 6th graders in mid-October. Parental consent was obtained for 272 children at T1. In addition to obtaining parental consent, participant assent was obtained at the first time point (T1; Early November); two students declined to participate although they had parental consent. The study was performed in the classrooms at the different schools at 5 times across the school year, with each time point approximately 6 weeks apart: T1 in Early November, T2 in Mid-December, T3 at the end of January, T4 in Mid-March, and T5 at the beginning of May. However, data from only the last two time points will be presented here (i.e., T4 and T5). At the end of the study, participants received a small reward for their participation.

At each time point, students filled a number of self-reported questionnaires as well as peer nominations. Each of these will be described in more details below, but only in regards to T4 and T5.

Self-reported measures.

Both anxiety and depressed affect were measured using self-reports.

Anxiety.

Three items which had been shown to be reliable measures of anxiety in prior studies were included to measure anxiety (Dubois, Simard, Lopez & Bukowski, 2011). The following items were rated on a scale from 1=never true to 5=always true: "I am nervous or tense," "I get stressed a lot," "I worry a lot." This measure was found to have good reliability at both time points (T4, α=.87; T5, α=.86), although only data from T4 was used here.

Depressed Affect.

Nine items were used to measure depressed affect at each time point. Again, each of these items was rated on a scale from 1=never true to 5=always true. Items were: "I am unhappy," "I am in a bad mood," "I feel tired," "I have trouble sleeping," "I don't feel like eating," "I feel lonely," "I feel that nothing will ever work out for me," "I am sad," and "I feel cranky." These items were also found to be highly reliable (T4, α= .89, T5, α= .89), and data from these two time points were used in this study.

In order to facilitate the inclusion of these items in a structural equation model, three parcels of three items were created using the method outlined in Little, Cunningham, Shahar & Widaman (2002).

Peer assessed measures.

The peer assessment procedure was based on the same type of procedure used in the Revised Class Play (Masten, Morrison, & Pelligrini, 1985). Each participant was asked to nominate all the participating children in his or her class who fit a number of characteristics, and the number of same-sex nominations received by each child on a given item was added up to form a same-sex score for each of these. Only same-sex nominations were used given that they have been found to be a more valid measure of behaviour in early adolescents (Terry & Coie, 1991). Peer-nomination scores were adjusted according to the strategy outlined in Velasquez, Bukowski and Saldarriaga (2002) so as to diminish the impact of varying class size on the possible number of nominations received by individual participants.

Co-Rumination.

Two items were included in the peer assessment procedure to measure co-rumination at T4: "Someone who always talks about the same problems" and "Someone who spends a lot of time talking about their problems with others, even if they could be doing other things." These items were based on the Co-Rumination Questionnaire developed by Rose (2002), and meant to highlight the main features of co-rumination. An additional item was also initially included but was previously found not to hold well with the other two and was therefore dropped from further analyses ("Someone who encourages others to always talk about their problems", See Paper 1). At T4, the reliability of the two items was found to be adequate (α=.77).

Excessive Reassurance Seeking.

Three items were included in the peer assessment procedure to measure excessive reassurance seeking (ERS). These were meant to capture the essential features of ERS which

would be observable by peers. Items were therefore: "Someone who always asks others if they're still friends," "Someone people get mad at when he/she asks if people still like him/her," and "Someone people tell to stop asking whether they like him/her." Reliability at T4 was found to be acceptable (α=.69).

Results

Multiple Imputation

In order to determine whether the missing data could be imputed, preliminary analyses were performed to assess the percentage of missing data. These analyses were performed on the entire dataset for the larger project, and therefore overestimate of the amount of missing data for these particular analyses. Overall, only 4.352% of the data were missing and the majority of our sample (63.70%, n=172) had complete data. Little's MCAR test (1988) was then used to determine the patterns of missingness in the data. It was found that the data were not missing completely at random (χ^2 (2664, N=270) = 2931.471, p < .001). Multiple imputation for all the variables of the larger project was therefore conducted at the same time using AMELIA II – Version 1.5 (Honaker, King & Blackwell, 2010). The TYPE=IMPUTATION command was used to conduct analyses on all 20 imputed datasets in Mplus Version 5.2 (Muthén & Muthén, 1998-2008). Results were then combined using Rubin's rules (Troop-Gordon & Ladd, 2005).

Descriptive statistics and bivariate correlations

Descriptives for all of the study variables are presented in Table 2.1. Means for all of the study variables were within the expected range (i.e., relatively low levels of anxiety, depressed affect, co-rumination, and excessive reassurance seeking are reported). While levels of anxiety

remained relatively stable over both time points, depressed affect was found to increase from T4 to T5.

Bivariate correlations between the indicators of the different variables included in the study are presented in Table 2.2. Overall, it appears that depressed affect is more consistently associated with our measures of excessive reassurance seeking and co-rumination than anxiety.

Interaction scores

In order to obtain the standard fit indices in Mplus (Muthén & Muthén, 1998-2008), interaction scores had to be created prior to entering them in the structural equation model. In order to take advantage of the benefits of Mplus, however, the following approach was used. First, scores on the individual items for each variable were mean centered. Next, each indicator of anxiety was multiplied by each indicator of the moderators (i.e., 2 indicators for co-rumination and 3 indicators for excessive reassurance seeking). Three parcels were then created and were used as the indicators for the interaction scores. While this is not the preferred method, it was selected in the sake of consistency because of the differing number of indicators for our co-rumination measure (Marsh, Wen & Hau, 2006).

Structural Equation Models

In order to examine the moderating effect of co-rumination and excessive reassurance seeking on the association between T4 anxiety and T5 depressed affect, a model including all predictors and interactions was initially tested. The fit of this model was found to be poor, regardless of whether the analyses were made for boys and girls together or separately. Models were therefore run separately for the two moderators. In all of the models examined here, depressed affect at T5 was the outcome, whereas depressed affect and anxiety at T4 were

included as predictors. Depending on the moderator tested, the moderator and its interaction with anxiety at T4 were also included as predictors. All models were run with both boys and girls together, and separately in order to examine whether associations varied by gender.

Excessive Reassurance Seeking.

The model including excessive reassurance seeking as a moderator with both boys and girls was found to have an adequate fit ($\chi^2(80)$=295.55, p=.00, CFI=.93, RMSEA=0.09). This model (see Figure 2.1) indicated that when depressed affect at T4 was taken into account, anxiety did not predict later depressed affect (although anxiety was concurrently associated with depressed affect). Also, excessive reassurance seeking on its own was found to be associated with lower levels of depressed affect later on. The interaction of anxiety and excessive reassurance seeking was positively associated with later depressed affect, indicating that high levels of anxiety *and* excessive reassurance seeking were necessary in order to predict later depressed affect.

The same model was tested splitting boys and girls into two groups. However, a chi-square difference test showed that the fit of the model was found to be poorer when analyses were performed for boys and girls separately ($\chi^2(180)$=643.09, p=.00, CFI=.84, RMSEA=0.14).

Co-Rumination.

Models including the interaction of anxiety and co-rumination were found to have a poor fit. Models were therefore run without the interaction. First, when performed with boys and girls together, it was found that the residual covariance matrix was not positive definite. When run for boys and girls separately, fit was found to be acceptable ($\chi^2(90)$=250.47, p=.00, CFI=.91, RMSEA=0.11). Results from this model suggested that for boys (see Figure 2.2), depressed

affect was highly related at both time points, and that there was a positive association between anxiety and depressed affect at T4. No other association was significant and the concept of co-rumination did not appear to hold well. While results for girls were somewhat similar (see Figure 2.3), an important difference was found in that the two indicators for co-rumination held well together and were concurrently associated with depressed affect, but not anxiety. Co-rumination at T4 was not found to predict depressed affect at T5.

Discussion

The goal of this study was to examine how three known risk factors for depressed affect, namely, anxiety, co-rumination, and excessive reassurance seeking, interact in predicting increases depressed affect over time, so as to try to better understand why girls are at greater risk for depression than boys starting in early adolescence (Wichstrom, 1999).

First, we found that anxiety, although a known risk factor for depressed affect (Roza et al., 2003), was not found to predict symptoms of depression in our sample over the 6-week time period examined in this study. It was, however, concurrently associated with symptoms of depressed affect. It is possible that 6 weeks was too short a period of time to observe the impact of anxiety symptoms of the risk for depressed affect, especially considering that we accounted for initial levels of depressed affect. Indeed, we found that depressed affect over this short time period was quite stable, therefore making it difficult to observe the impact of any other variable on depressed affect at T5.

While both excessive reassurance seeking and co-rumination were hypothesized to moderate the association between anxiety and later depressed affect for girls only, it was found that only co-rumination followed a gendered pattern of result. It was found that the concept of

co-rumination as measured by our peer nomination items did not fit well for boys, whereas it did for girls. This is important as it highlights that the interpersonal experiences of boys may not necessarily be described in the same terms as those of girls. For girls, however, peer-rated co-rumination was found to be concurrently, but not longitudinally, associated with depressed affect. This lack of longitudinal findings is contrary to the results found by Rose and her colleagues (2007) and Stone, Uhrless, and Gibb (2010). It is important to note, howeer, that the effect size reported by Rose and her colleagues (2007) was very small, despite a sample size almost four times larger than the one for this study. It may therefore be that the impact of co-rumination is rather small and difficult to detect with smaller samples and over shorter periods of time (i.e., 6 weeks rather than 6 months). More research is therefore needed to examine whether co-rumination may be more of a behavioural manifestation of depressed mood rather than a risk factor for it, particularly in girls.

When examining the model including excessive reassurance seeking as a predictor and a moderator of the effect of anxiety on depressed affect, interesting results were found. First, the model fit was substantially better when both boys and girls were included in the same model, indicating that excessive reassurance seeking does not act as a gendered risk factor as co-rumination does. Moreover, excessive reassurance seeking on its own was found to predict lower levels of depressed affect for both boys and girls, rather than the expected higher levels (Abela, Hankin, Haigh, Adams, Vinokuroff & Trayhern, 2005; Abela, Morrison, & Starrs, 2007; Abela, Zuroff, Ho, Adams & Hankin, 2006; Joiner et al., 1999). This result, however, came in the context of a model where both anxiety and the interaction of anxiety and excessive reassurance seeking were controlled for, something which has not been done before. Indeed, it was found that the interaction of anxiety and excessive reassurance seeking was found to be a significant

predictor of depressed affect, over and above initial levels of depressed symptoms. It therefore appears that it is not the quest for reassurance which is maladaptive, but rather its combination with high levels of anxiety. These results are consistent with the Interpersonal Theory of Depression (Coyne, 1976). Indeed, anxious individuals may have negative cognitions about their interpersonal relationships which exceed those of children with low levels of anxiety. In an effort to re-establish positive thoughts and beliefs, these children seek reassurance from their friends on a frequent basis, and the feedback received becomes more and more discrepant with the tone in which it is given, possibly leading to symptoms of hopelessness. For non-anxious child who seek infrequent reassurance, however, the tone may fit better with the content of the reassurance given, thereby leading to decreased depressed affect. These results also fit well with those of Eberhart & Hammen (2006), which highlighted an anxious attachment and fear of abandonment as risk factors for the onset of a major depressive episode 2 years later.

Results from the current study also indicate that excessive reassurance seeking is not concurrently associated with depressed affect. Unlike co-rumination which may be more of a behavioural manifestation of depressed affect, it appears that excessive reassurance seeking, when combined with high levels of anxiety, is truly a prospective risk factor for depressed affect in both girls and boys.

While the effect sizes reported in this study were small, important strengths deserve to be noted. First, while only two of the five possibly available time points were used, this was an intensive short-term prospective longitudinal study. It therefore did not rely on retrospective reports of diagnoses or behaviours as past studies have done (Stone, Uhrless & Gibb, 2010). Moreover, the data used in the present analyses came from multiple informants. Anxiety and depressed affect variables were measured using self-ratings as they are more personal and

internal experiences. The moderators, however, namely co-rumination and excessive reassurance seeking, were measured using newly developed peer nominated measures. This therefore provided a stronger test of this moderation effect considering that the interaction scores participants obtained were not biased by their perception of their behaviours which could be affected by symptoms of anxiety and depressed affect.

Results from this study have both theoretical and practical implications. In terms of theoretical implications, our findings that excessive reassurance seeking moderates the effect of anxiety in predicting later depressed affect provide additional support for Coyne's Interpersonal Theory of Depression (1976). These results can also have important implications in terms of prevention of depression, although they do not necessarily apply to girls alone, as was hypothesized. Indeed, our findings suggest that while co-rumination may be a good indication of current depressed affect, it may not be as helpful as excessive reassurance seeking in identifying early adolescents at risk for later depression. However, even when it comes to excessive reassurance seeking, it is important to be careful in our interpretations as it does not appear to be detrimental in all instances. Rather, early adolescents exhibiting high levels of both anxiety and excessive reassurance seeking should be targets of selective prevention efforts as they appear to be the ones who are at an increased risk for increases in depressive symptoms.

Continued research examining how interpersonal factors such as co-rumination and excessive reassurance seeking interact with personal factors such as anxiety in the prediction of increased depressive symptoms may be particularly important. Also, it is important to consider the role of such potentially problematic behaviours in the perpetuation of the depression cycle. Indeed, future studies should aim at investigating how these co-rumination and excessive

reassurance seeking tendencies interact with depressive symptoms to increase the risk of

interpersonal problems.

Table 2.1. Descriptive statistics for the indicators of all study variables.

Variables		Mean	SD
Depressed Affect			
	Parcel 1 T4	5.56	2.19
	Parcel 2 T4	7.03	2.28
	Parcel 3 T4	5.45	2.38
	Parcel 1 T5	5.87	2.15
	Parcel 2 T5	7.27	2.30
	Parcel 3 T5	5.69	2.45
Anxiety			
	Item 1 T4	2.41	1.10
	Item 2 T4	2.47	1.22
	Item 3 T4	2.22	1.14
	Item 1 T5	2.37	1.08
	Item 2 T5	2.55	1.24
	Item 3 T5	2.28	1.16
Excessive Reassurance Seeking			
	Item 1 T4	0.42	1.02
	Item 2 T4	0.20	0.52
	Item 3 T4	0.23	0.50
Co-Rumination			
	Item 1 T4	0.41	0.92
	Item 2 T4	0.31	0.73

Table 2.2. Bivariate correlations between indicators of anxiety, depressed affect, co-rumination and excessive reassurance seeking

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. DA1T4	1	.70**	.69**	.68**	.56**	.52**	.51**	.47**	.48**	.38**	.38**	.42**	.04	.16**	.14*	.18**	.07
2. DA2T4		1	.70**	.61**	.66**	.59**	.48**	.45**	.45**	.33**	.41**	.45**	.04	.12*	.10	.12*	.06
3. DA3T4			1	.56**	.53**	.71**	.48**	.52**	.54**	.40**	.42**	.46**	.07	.17**	.20**	.22**	.14*
4. DA1T5				1	.77**	.79**	.46**	.42**	.41**	.41**	.42**	.44**	.00	.07	.06	.03	.03
5. DA2T5					1	.67**	.47**	.46**	.43**	.42**	.48**	.46**	.07	.10	.11^t	.09	.11^t
6. DA3T5						1	.39**	.44**	.43**	.37**	.44**	.44**	.02	,01	.10	.12^t	.11^t
7. ANX1T4							1	.71**	.63**	.57**	.59**	.49**	.09	.02	.05	.09	.12*
8. ANX2T4								1	.76**	.55**	.63**	.56**	.09	.00	.04	.05	.11^t
9. ANX3T4									1	.48**	.54**	.60**	.07	.06	.09	.08	.17**
10. ANX1T5										1	.73**	.65**	-.02	.01	.02	.05	.04
11. ANX2T5											1	.64**	-.05	-.07	.02	.02	.05
12. ANX3T5												1	.03	.06	.04	.09	.12*
13. ERS1T4													1	.44**	.36**	.51**	.53**
14. ERS2T4														1	.50**	.58**	.41**
15. ERS3T4															1	.32**	.38**
16. COR1T4																1	.61**
17.COR2T4																	1

Notes: DA= Depressed Affect; ANX=Anxiety; ERS=Excessive Reassurance Seeking; COR= Co-Rumination; **p<.01; *p<.05; ^{t}p<.10

Figure 2.1. Model Examining Anxiety and Excessive Reassurance Seeking in Predicting later Depressed Affect
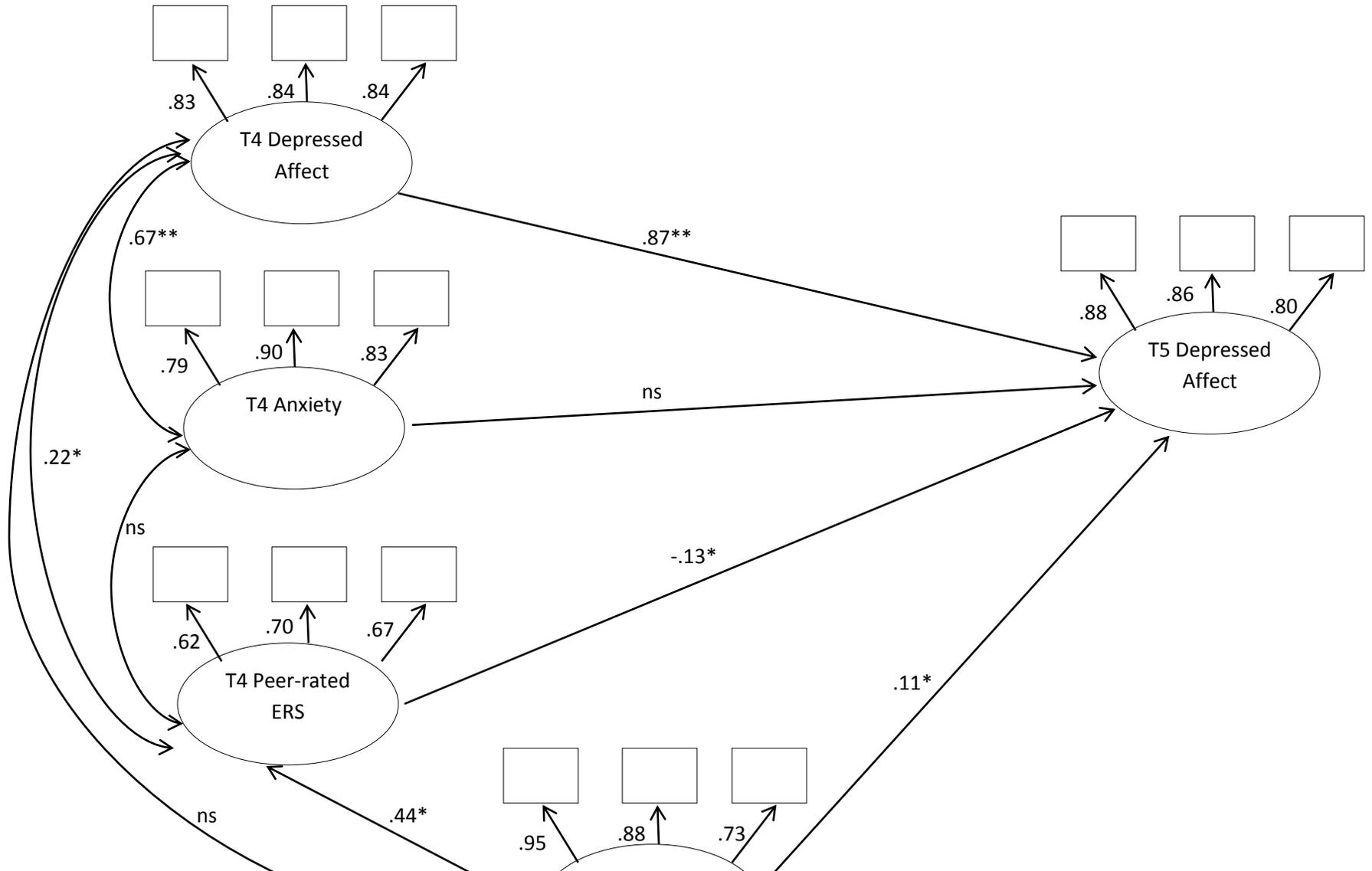
Figure 2.2 Association between Anxiety, Co-Rumination and Depressed Affect for Boys

.80

.76 .75

T4 Depressed
Affect

.61**

.95**

.91 .89 .79

.83 .93 .84

T5 Depressed
Affect

T4 Anxiety

ns

ns

ns

ns

.31 .32

T4 Peer-rated
CoR
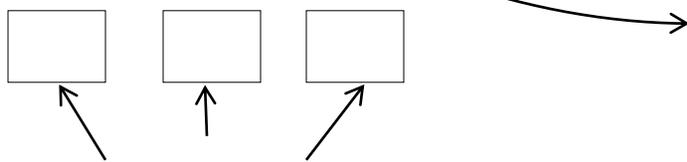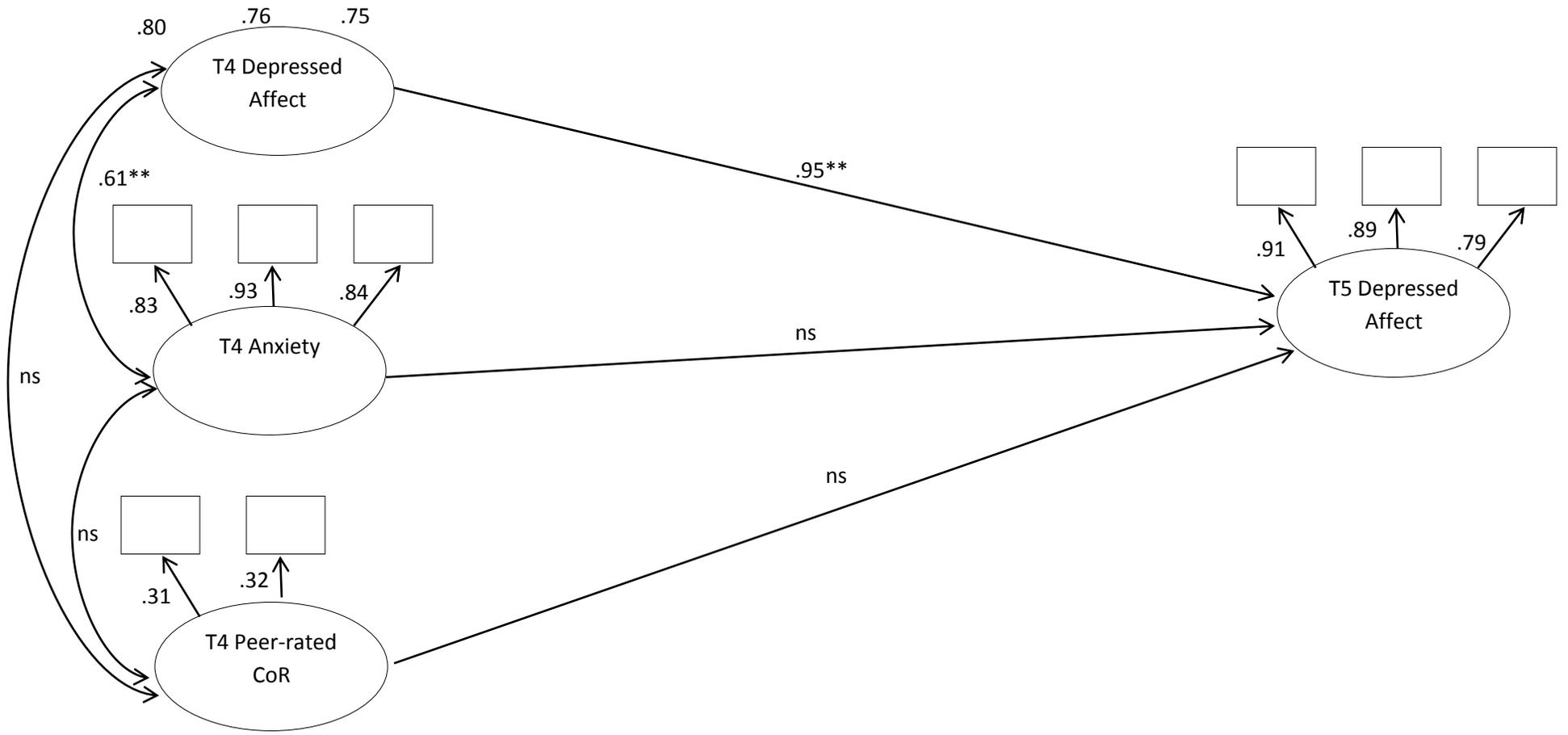
Figure 2.3. Association between Anxiety, Co-Rumination and Depressed Affect for Girls

.85 .86 .90

T4 Depressed
Affect

Chapter 3: Interaction of Depressed Affect, Co-Rumination, and Excessive

Reassurance Seeking in Predicting Negative Peer Relations

Rudolph, Flynn and Abaied (2008) proposed that depression in youth is a disorder which occurs in an interpersonal context. They suggested that early family disruptions lead children to develop maladaptive social-behavioural deficits (e.g., excessive reassurance seeking, poor problem-solving and conflict resolution skills, negative feedback seeking, etc.) which eventually cause them to experience difficulties in their interpersonal relations. Being more likely to be victimized, rejected, and to have poorer quality relationships subsequently places these children at greater risk for depression; a cycle of risk is then created as depression has a detrimental effect on their relationships. Indeed, Rudolph and her colleagues (2008) theorized that depressed youth create an environment around them which promotes negative relationships. This is consistent with Hammen's (1991) Stress Generation Hypothesis. Indeed, she found that women with unipolar depression experienced more interpersonal stress and that a large proportion of the stressors they experienced were dependent (i.e., created or caused by themselves). She therefore suggested that the stressful interpersonal conditions that depressed individuals self-generate may lead to a cycle of depressive symptoms. More recent research suggest that these findings are also supported in adolescent females, who also have a greater likelihood of becoming depressed in reaction to interpersonal stress (Shih, Eberhart, Hammen, & Brennan, 2006).

A number of behaviours could be considered as creating dependent stress for depressed individuals, two of which will be the focus here: co-rumination and excessive reassurance seeking. Co-rumination, a concept put forth by Rose (2002), is believed to be at the intersection of adaptive self-disclosure and maladaptive rumination. It consists of the excessive discussion of problems with friends or family members and has been found to be cross-sectionally and

longitudinally associated with depression (Calmes & Roberts, 2008; Rose, Carlson & Waller, 2007; Stone, Hankin, Gibb & Abela, 2011). While co-rumination has also been found to be associated with increased friendship quality with a single best friend (Rose, Carlson & Waller, 2007), it is conceivable that this behaviour may irritate the larger peer group. Similarly, excessive reassurance seeking, by definition, alienates the social circle of the depressed individual. Indeed, excessive reassurance seeking occurs when an individual constantly seeks reassurance from their peers and family members to compensate for their self-doubt and feelings of worthlessness (Joiner, Metalsky, Katz & Beach, 1999). Over time, the tone of the reassurance provided becomes discrepant with its content (Coyne, 1976). Co-rumination and excessive reassurance seeking have both been associated with depression; further, if friends react negatively to bids to indulge these behaviours, this may contribute to the depressed individual's dependent interpersonal stress. Considering that little is known about the interpersonal consequences of depression (Rudolph, Flynn & Abaid, 2008), the aim of this study is to investigate whether the presence of both depression and one of these negative interpersonal behaviours is more likely than depression or the negative behaviour alone to lead to interpersonal consequences such as isolation and victimization. This is particularly important in trying to better understand the cycle of depression considering that both victimization and isolation have been found to be predictive of later depression.

A wealth of research has examined how isolation and rejection are risk factors for depressed affect. Research suggests that rejection leads to feelings of perceived isolation, low perceived acceptance or loneliness which in turn increase the risk for depressed affect (Cillessen, Van Lieshout & Haselager, 1992; Nangle, Erdley, Newman, Mason & Carpenter, 2003; Witvliet, Brendgen, van Lier, Koot, & Vitaro, 2010). On the other hand, research examining isolation and

rejection as an interpersonal consequence of depression has been scarcer. In the only study on the topic so far, Joiner (1999) found that, among a sample of psychiatric inpatients aged 7 to 17, those who reported high levels of depressive symptoms and excessive reassurance seeking were the most likely to report interpersonal rejection. However, it is important to note that all variables were measured using self-report and may therefore represent the likely biased depressed individual's perception, rather than what would be observed by peers. This is particularly important as symptoms of depression have been found to be associated with the perception of increased interpersonal difficulties (Rudolph, Lambert, Clark & Kurlakowsky, 2001). There is therefore a need for further research examining whether excessive reassurance seeking and depressed affect can lead to isolation and rejection with more stringent methodology, for example by using data from multiple informants. This will therefore be part of the aim of this paper.

Victimization is another peer group phenomenon which has been extensively linked with depression, both concurrently and prospectively (Hawker & Bouton, 2000; Heibron & Prinstein, 2008; Keenan et al., 2010; Reijntjes, Kamphuis, Prinzie & Telch, 2010; Slee, 1995; Sweeting, Young, West & Der, 2006). Once again, however, little research has examined how depression may lead to further victimization. In an early and cross-sectional attempt by Hodges, Malone and Perry (1997), it was found that the association between internalizing problems and victimization was weaker for children who had a greater number of friends. Hodges and his colleagues (1999) later found in a one-year longitudinal study that internalizing behaviours as reported by teachers predicted increases in peer-reported victimization. Their results also highlighted the important moderating effect of friendship in protecting children against a cycle of internalizing problems and victimization. More recently, Gibb and Hanley (2010) found that high levels of depressive

symptoms predicted increases in relational victimization for girls two months later. However, these results were not significant for overt victimization or for boys, therefore suggesting that girls may be more vulnerable to depressive stress generation. While these studies have examined the moderating effects of gender and friendship, none have examined the impact that negative behaviours such as co-rumination and excessive reassurance seeking have on the association between depressed affect and victimization.

The goal of this study will therefore be to contribute to the small body of research on interpersonal consequences of depression by examining the moderating role of negative behaviours associated with depression, more specifically co-rumination and excessive reassurance seeking. It was predicted that co-rumination and excessive reassurance seeking would increase the association between depressed affect and both isolation and victimization, particularly for girls.

Method

Participants

The sample for this study was composed of 117 boys and 153 girls, for a total of 270 participants out of a possible 337 (participation rate: 80.12%). These participants attended fifth or sixth grade (average age: 11.15 years) and were from three school in the Greater Montreal Area. These schools were selected to represent the population in terms of language (2 French schools, 1 English school), socio-economic status, and ethnicity.

Procedure

Data presented in this paper was collected as part of a larger study which spanned an entire school year. Permission from school boards and individual schools was initially obtained, followed by teacher permission to recruit participants in their classes. Recruitment was done by sending letters to parents of potential participants explaining the goals of the larger study in mid-October. Attached consent forms were picked up daily for the following week. While a total of 272 consent forms were collected, two potential participants elected not to participate when asked for their assent at the first time point (T1; Early November). Each of the subsequent data collection occurred approximately 6 weeks apart (T2 in Mid-December, T3 at the end of January, T4 in Mid-March, and T5 at the beginning of May). Participants received a t-shirt to thank them for their involvement in our study.

At each time point, the participants filled out a number of questionnaires in a classroom-based administration. However, only data from T4 and T5 were used as part of the analyses for the present study. The data was collected using both self-reported and peer-reported measures.

Self-reported measures.

Depressed affect was the only variable measured through self-reports for this particular study. Indeed, it has been suggested that it is best to assess the social relations and behaviours of depressed individuals from different informants so as to reduce the possibility of shared method variance and to avoid having reports which are influenced by the negative feelings of depressed individuals (Hammen & Glass, 1975; Hawker & Boulton, 2000; Kupersmidt & Patterson, 1991).

Depressed Affect.

At each of the two time points, a total of nine items were used to measure depressed affect. These items were: "I am unhappy", "I am in a bad mood", "I feel tired", "I have trouble sleeping", "I don't feel like eating", "I feel lonely", "I feel that nothing will ever work out for me", "I am sad", and "I feel cranky." Participants rated each of these items on a scale from 1 to 5 where 1=never true and 5=always true. These nine items were found to be highly reliable at both time points (T4, α= .89; T5, α= .89). The parceling method described in Little, Cunningham, Shahar & Widaman (2002) was used to create 3 parcels of 3 items, therefore facilitating the inclusion of these nine items in a latent variable.

Peer assessed measures.

Four variables were measured using peer assessment, namely, co-rumination, excessive reassurance seeking, isolation and victimization. The peer assessment procedure was based on the Revised Class Play (Masten, Morrison, & Pelligrini, 1985), a questionnaire in which each participant is asked to nominate all the participating children in his or her class who fit a number of characteristics. The number of same-sex nominations received by each child on a given item is then added up as they have been found to be a more valid measure of behaviours in early adolescents (Terry & Coie, 1991). The procedure outlined by Velasquez, Bukowski and Saldarriaga (2012) was used to adjust the peer nomination score in order to minimize the effect of class size on the number of nominations received by individual participants.

Co-Rumination.

Co-rumination items were developed based on Rose's (2002) Co-Rumination Questionnaire. While three items were initially developed for this peer assessment, one of them

was found not to hold well with the other two and was therefore removed from further analyses.

The remaining two items were included in the peer assessment procedure to measure co-

rumination at T4 and T5: "Someone who always talks about the same problems" and "Someone

who spends a lot of time talking about their problems with others, even if they could be doing

other things." The reliability of these two items was found to be adequate at both time points

(T4: α=.77; T5: α=.67).

Excessive Reassurance Seeking.

Three items meant to assess the essential features of excessive reassurance seeking which

would be observable by peers were included in the peer assessment. Those three items are:

"Someone who always asks others if they're still friends", "Someone people get mad at when

he/she asks if people still like him/her", and "Someone people tell to stop asking whether they

like him/her." These items were found to have adequate reliability at T4 and T5 (respectively,

α=.69 and α=.71).

Isolation.

In order to measure isolation, the items "Someone who has trouble making friends" and

"Someone who is left out by other kids at school" were included in the peer assessment

procedure at T5. Reliability for these two items was found to be excellent (α=.91).

Victimization.

Victimization was also assessed only at T5 through the peer nomination questionnaire.

The two items "Others treat him/her badly" and "Others call him/her bad names" were found to

have good reliability (α=.85).

Results

Multiple Imputation

Preliminary analyses were first conducted to determine the percentage of missing data. It was found that overall, only 4.352% of the data were missing and that 63.70% of our sample (n=172) had complete data (note, however, that these figures are for all of the variables used in the larger project). The MCAR test (Little, 1988) was used to determine the patterns of missingness in the data. It was found that the data were not missing completely at random (χ^2 (2664, N=270) = 2931.471, p < .001). Multiple imputation was therefore conducted using AMELIA II –Version 1.5 (Honaker, King & Blackwell, 2010) and was done for all variables including in the present study as well as additional data collected as part of the larger research project. Analyses were conducted using Mplus Version 5 (Muthén & Muthén, 1998-2008), using the TYPE=IMPUTATION option which allowed for the analyses of all 20 imputed data sets as well as the combination of these results according to Rubin's rules for ease of presentation (Troop-Gordon & Ladd, 2005).

Descriptive statistics and bivariate correlations

Table 3.1 displays descriptive statistics for all of the indicators of the variables included in this study. A closer examination of these statistics reveals that depressed affect, co-rumination and excessive reassurance seeking appear to increase slightly over the six-week period covered by the present study. No such observations can be made regarding isolation and victimization, as data regarding these are only available at T5. Intercorrelations among all of the indicators for the different variables used in the study are presented in Table 3.2. These correlations show that

isolation and victimization at T5 are associated with depressed affect, excessive reassurance seeking and co-rumination at T4.

Interaction scores

In order to obtain the standard fit indices in Mplus (Muthén & Muthén, 1998-2008), interaction scores had to be created prior to entering them in the structural equation model. In order to take advantage of the benefits of Mplus, however, the following approach was used. First, scores on the individual items for each variable were mean centered. Next, each indicator of depressed affect at T4 was multiplied by each indicator of the moderators at T4 (i.e., 2 indicators for co-rumination and 3 indicators for excessive reassurance seeking). Three parcels were then created and were used as the indicators for the latent interaction scores. While this is not the preferred method, it was selected in the sake of consistency because of the differing number of indicators for our co-rumination measure (Marsh, Wen & Hau, 2006).

Isolation

Models examining the contributions of excessive reassurance seeking and co-rumination were run separately.

First, when examining how the interaction of depressed affect and co-rumination predicted later isolation, it was found that the model which included all participants (i.e., not split by sex) was a better fit. Indeed, the model split by sex was found to have a non-positive residual covariance matrix, and overall a poorer fit. The final model, including both boys and girls, was found to fit the data well (χ^2(119)=326.250, $p=$ .000, CFI=.947, RMSEA==.080). It was found that co-rumination at T4 predicted lower levels of isolation at T5 ($\beta=$ -.240, $p=$ 0.054), whereas concurrent co-rumination was found to be positively associated with isolation ($\beta=$ .641, $p=$

0.000). Depressed affect at T4 and T5 was not found to be associated with isolation at T5 (respectively, β= .138, p= 0.164 and β= .052, p= 0.592). However, the interaction of depressed affect and co-rumination at T4 was found to predict T5 isolation (β= .219, p= 0.006), and this, above the effect of the same interaction at T5 (β= .095, p= 0.197). (See Figure 3.1 for complete model).

Next, a model examining the interaction of depressed affect and excessive reassurance-seeking in predicting isolation was tested. However, excessive reassurance seeking and isolation appeared to be too highly covaried and led to a non-positive definite covariance matrix. This model could therefore not be estimated.

Victimization

Once again, two models were run separately to assess the effects of co-rumination and excessive reassurance seeking.

Similar to the results found in predicting isolation, it was found that that splitting the analyses by sex led to a non-positive residual covariance matrix. The model including both girls and boys adequately fit the data (χ^2(120)=334.479, p= .000, CFI=.941, RMSEA==.083; See Figure 3.2). Once again, co-rumination at T4 was found to lead to lower levels of victimization at T5 (β= -.302, p= 0.040), while co-rumination at T5 was associated with higher levels of concurrent victimization (β= .813, p= 0.000). Also, depressed affect at T4 and T5 were not found to predict T5 victimization (respectively, β= .125, p= 0.193 and β=-.051, p= 0.587). The interaction of co-rumination and depressed affect at T4, however, was found to predict victimization at T5 (β= .408, p= 0.000), despite a trend for concurrent co-rumination and depressed affect to predict lower levels of victimization (β= -.116, p= 0.071).

A last model was estimated to examine the effects of excessive reassurance seeking and depressed affect on later victimization ($\chi^2(152)=425.432$, *p*= .000, CFI=.930, RMSEA==.082). Both depressed affect and excessive reassurance seeking at T4 were not found to have a significant effect on victimization at T5 (respectively, β= .069, *p*= 0.522 and β= -.187, *p*= 0.237). The interaction of depressed affect and excessive reassurance seeking at T4, however, was found to predict T5 victimization (β= .273, *p*= 0.000). At T5, only excessive reassurance seeking on its own was found to be concurrently associated with victimization (β= .685, *p*= 0.000). These results are illustrated in Figure 3.3.

Discussion

The goal of this study was to examine the moderating effect of co-rumination and excessive reassurance seeking on the association between depressed affect and subsequent interpersonal consequences. More specifically, we were interested in understanding how the interaction of depressed affect and negative behaviours such as co-rumination and excessive reassurance seeking may lead to victimization and isolation. Indeed, while some research has emerged showing that isolation and victimization may be interpersonal consequences of depressed affect (Gibb & Hanley, 2010; Hodges, Boivin, Vitaro & Bukowski, 1999; Hodges, Malone & Perry, 1997; Joiner, 1999), it was unclear whether those consequences were the result of depression symptoms themselves or of behaviours associated with depression which may serve to alienate peers. While Hodges and his colleagues (1997; 1999) have found that friendship protected depressed children from victimization, no study had examined factors which may increase the risk for depressed children to become victimized.

Our findings are the first to suggest that interpersonal consequences of depressed affect may not be occurring as a result of depressed affect on its own. Indeed, we found that the interaction of depressed affect and co-rumination at T4 predicted higher levels of both isolation and victimization at T5. Similar results emerged in regards to the interaction of excessive reassurance seeking and depressed affect. Indeed, children who had high levels of depressive symptoms and sought an excessive amount of reassurance from their peers were found to be at a greater risk of victimization six weeks later. There was, however, no main effect of depressed affect once these interactions were accounted for. Moreover, when co-rumination was considered on its own, it appeared to reduce the risk for later isolation and victimization. It therefore seems that it is the combination of depressed affect and potentially irritating behaviours which leads to negative interpersonal consequences, rather than depressed affect, co-rumination, or excessive reassurance seeking independently. These results are consistent with Hammen's (1991) Stress Generation Hypothesis and with Coyne's (1976) Interpersonal Theory of Depression. Indeed, both of these theories argue that depressed individuals contribute to their own difficulties by exhibiting social-behavioural deficits which eventually alienate their peers. However, as Rudolph and her colleagues (2008) have noted, there is little prospective longitudinal research examining this component of their theories. The present study therefore adds to the very scarce literature on interpersonal consequences of depression in early adolescence, and provides additional evidence that experiencing high levels of depressed affect may result in an "interpersonal scar," thereby causing disturbances in peer relations long after the symptoms are no longer exhibited (Rohde, Lewinsohn & Seeley, 1990). This is particularly important as these scars then increase the likelihood of further depressive episodes later on as depressed children and youth fail to acquire the social skills necessary to sustain protective friendships. Moreover, our findings suggest that

the expression "interpersonal consequences of depression" (Hammen & Peters, 1978) is not quite accurate. Rather, it appears that it is depressed affect combined with potentially irritating behaviours such as co-rumination and excessive reassurance seeking which leads to negative social experiences such as isolation and victimization. This has important implications in terms of the prevention of isolation and victimization, and by extension, the prevention of depression. Indeed, it appears that it is those children who, in addition to experiencing high levels of depressive symptoms also engage in behaviours which they may believe help them feel better, that are most at risk for poor peer relationships characterized by isolation and victimization. It is therefore crucial to identify these children and provide them with the necessary help to decrease their risk of becoming isolated and victimized and therefore, their risk of becoming increasingly depressed subsequently.

Contrary to our expectations, however, the model fit was better when boys and girls were considered together rather than separately, suggesting that there are no gender difference in how the interaction of depressed affect and these negative interpersonal behaviours lead to victimization and isolation. While there is evidence that suggests that girls react more negatively to interpersonal stress than boys (Prinstein, Borelli, Cheah, Simon & Aikins, 2005; Rudolph & Hammen, 1999; Rudolph, Lambert, Clark & Kurlakowsky, 2001), it appears from the results of the present study that the combination of depressed affect and negative social behaviours such as co-rumination and excessive reassurance seeking leads to similar consequences regardless of gender, at least in terms of isolation and victimization. While these results are inconsistent with those of Rudolph, Ladd and Dinella (2007), it is important to acknowledge key differences between the two studies. First, they did not account for negative social behaviours such as co-rumination and excessive reassurance seeking. Also, their outcomes were *perceived* quality of

best friendship and peer acceptance. Given that it has been found that depressed individuals have more negative views of their interpersonal relationships (Rudolph, Lambert, Clark & Kurlakowsky, 2001), these results are not surprising but need to be interpreted with caution. Therefore, it may be that while interpersonal stressors are more likely to be risk factors for depression in girls, the peers of both boys and girls react in similar ways when depressed affect and potentially irritating social behaviours are combined. This would therefore suggest that the key to understanding the gender difference in depressed affect that emerges in early adolescence in is terms of interpersonal risk factors, rather than because of interpersonal consequences.

While the results from this study are promising, it would be important to follow up this study with longitudinal studies which span a longer time period so as to assess the long-term effects of the interaction of depressed affect and negative interpersonal behaviours such as co-rumination and excessive reassurance seeking. This would help in gaining a better understanding of their possible long-term negative impact. Also, this was among the first studies to use a peer-reported measure of co-rumination and excessive reassurance seeking. Although this represents an important advantage in terms of minimizing shared method variance, it would be crucial to continue validating and possibly improving these measures in the future.

Future research should also aim at examining other potential moderators of "interpersonal consequences of depression" as well as possible three-way interactions. For example, it would be important to understand whether it is insecure attachment style or low self-esteem, in combination with excessive reassurance seeking and depressed affect, that leads to negative peer relations, which then further increases the risk for depressed affect by alienating the depressed individual from their friends and family. Similarly, examining the impact of the interaction of depressed affect and negative social behaviours on other interpersonal experiences which may

increase the risk for depression (e.g. conflict with friends and family members, low social support, etc.) would help to better understand which interpersonal experiences may serve to reinforce the depression cycle.

Table 3.1. Descriptive statistics for the indicators of all study variables.

Variables		Mean	SD
Depressed Affect			
	Parcel 1 T4	5.56	2.19
	Parcel 2 T4	7.03	2.28
	Parcel 3 T4	5.45	2.38
	Parcel 1 T5	5.87	2.15
	Parcel 2 T5	7.27	2.30
	Parcel 3 T5	5.69	2.45
Co-Rumination			
	Item 1 T4	0.41	0.92
	Item 2 T4	0.31	0.73
	Item 1 T5	0.51	0.89
	Item 2 T5	0.34	0.64
Excessive Reassurance Seeking			
	Item 1 T4	0.42	1.02
	Item 2 T4	0.20	0.52
	Item 3 T4	0.23	0.50
	Item 1 T5	0.64	1.10
	Item 2 T5	0.27	0.57
	Item 3 T5	0.27	0.57
Isolation			
	Item 1 T5	0.89	1.80
	Item 2 T5	0.75	1.32
Victimization			
	Item 1 T5	0.69	1.12
	Item 2 T5	0.50	1.03

Table 3.2. Bivariate correlations between indicators of depressed affect, co-rumination, excessive reassurance seeking, isolation and victimization

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. DA1T4	1	.70**	.69**	.68**	.56**	.52**	.18**	.07	.12t	.10t	.04	.16**	.14*	.11t	.17**	.11t	.23**	.19**	.12*	.18**
2. DA2T4		1	.70**	.61**	.66**	.59**	.12*	.06	.10	.09	.04	.12*	.10t	.13*	.17**	.08	.20**	.17**	.12*	.10t
3. DA3T4			1	.56**	.53**	.71**	.22**	.14*	.19**	.10t	.07	.17**	.20**	.13*	.17**	.11t	.24**	.21**	.17**	.20**
4. DA1T5				1	.77**	.79**	.03	.03	.03	.04	.00	.07	.06	.08	.05	.02	.11t	.11t	.00	.04
5. DA2T5					1	.67**	.09	.11t	.11t	.10t	.07	.10	.11t	.16**	.09	.03	.17**	.16*	.06	.11t
6. DA3T5						1	.12t	.11t	.13*	.37**	.00	.02	.01	.10	.13*	.00	.25**	.23**	.11t	.21*
7. COR1T4							1	.61**	.56**	.41**	.51**	.58**	.32**	.44**	.37**	.44**	.35**	.27**	.40**	.42**
8. COR2T4								1	.47**	.46**	.53**	.41**	.38**	.44**	.33**	.38**	.29**	.24**	.33**	.31**
9. COR1T5									1	.53**	.51**	.34**	.32**	.67**	.36**	.48**	.56**	.48**	.60**	.56**
10. COR2T5										1	.47**	.20**	.25**	.53**	.36**	.47**	.28**	.24**	.33**	.37**
11. ERS1T4											1	.44**	.36**	.62**	.36**	.41**	.25**	.19**	.32**	.28**
12. ERS2T4												1	.50**	.37**	.48**	.37**	.30**	.25**	.32**	.31**
13. ERS3T4													1	.42**	.37**	.36**	.30**	.25**	.28**	.29**
14. ERS1T5														1	.48**	.54**	.57**	.46**	.47**	.52**
15. ERS2T5															1	.57**	.27**	.22**	.29**	.31**
16. ERS3T5																1	.30**	.24**	.41**	.40**
17.ISO1T5																	1	.87**	.68**	.74**
18. ISO2T5																		1	.63**	.76**
19. VIC1T5																			1	.75**
20. VIC2T5																				1

Notes: DA= Depressed Affect; COR= Co-Rumination; ERS=Excessive Reassurance Seeking; ISO= Isolation; VIC=Victimization **p<.01; *p<.05; ᵗp<.10

Figure 3.1. Co-Rumination and Depressed Affect Predicting Isolation
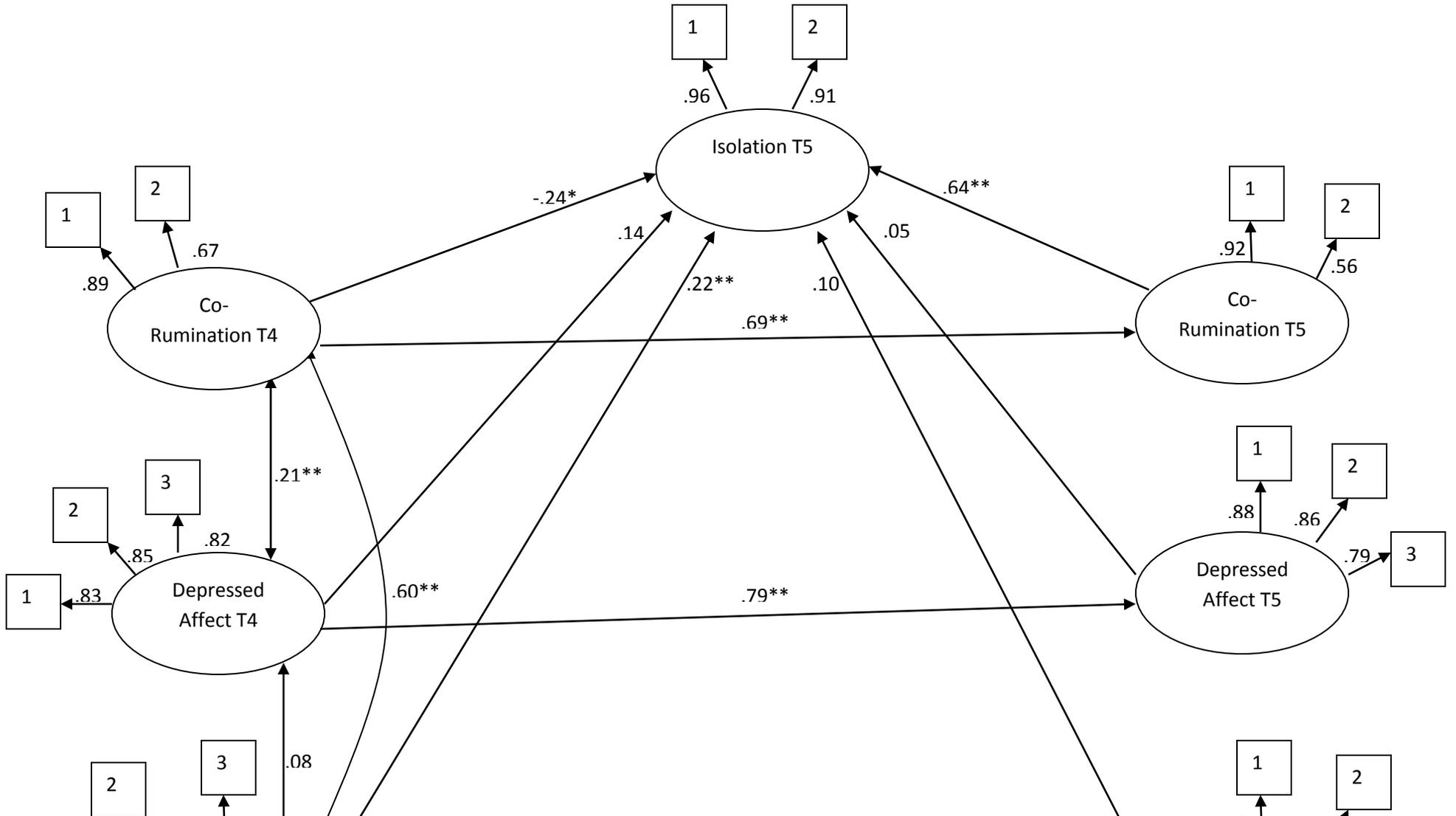
Figure 3.2. Co-Rumination and Depressed Affect Predicting Victimization

.88   .85

-.30*   .81**

.69   .13   -.05   .88   .60

.89   .41**   -.12ᵗ

.74**

.21**

.82   .88   .86

.85   .79**   .79

.83

.08

.94

.87   .90

.93   .87
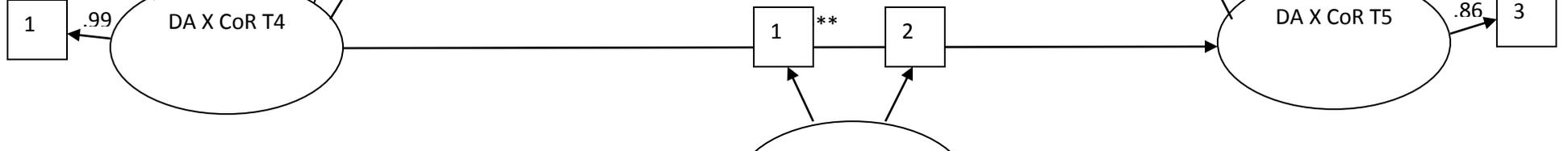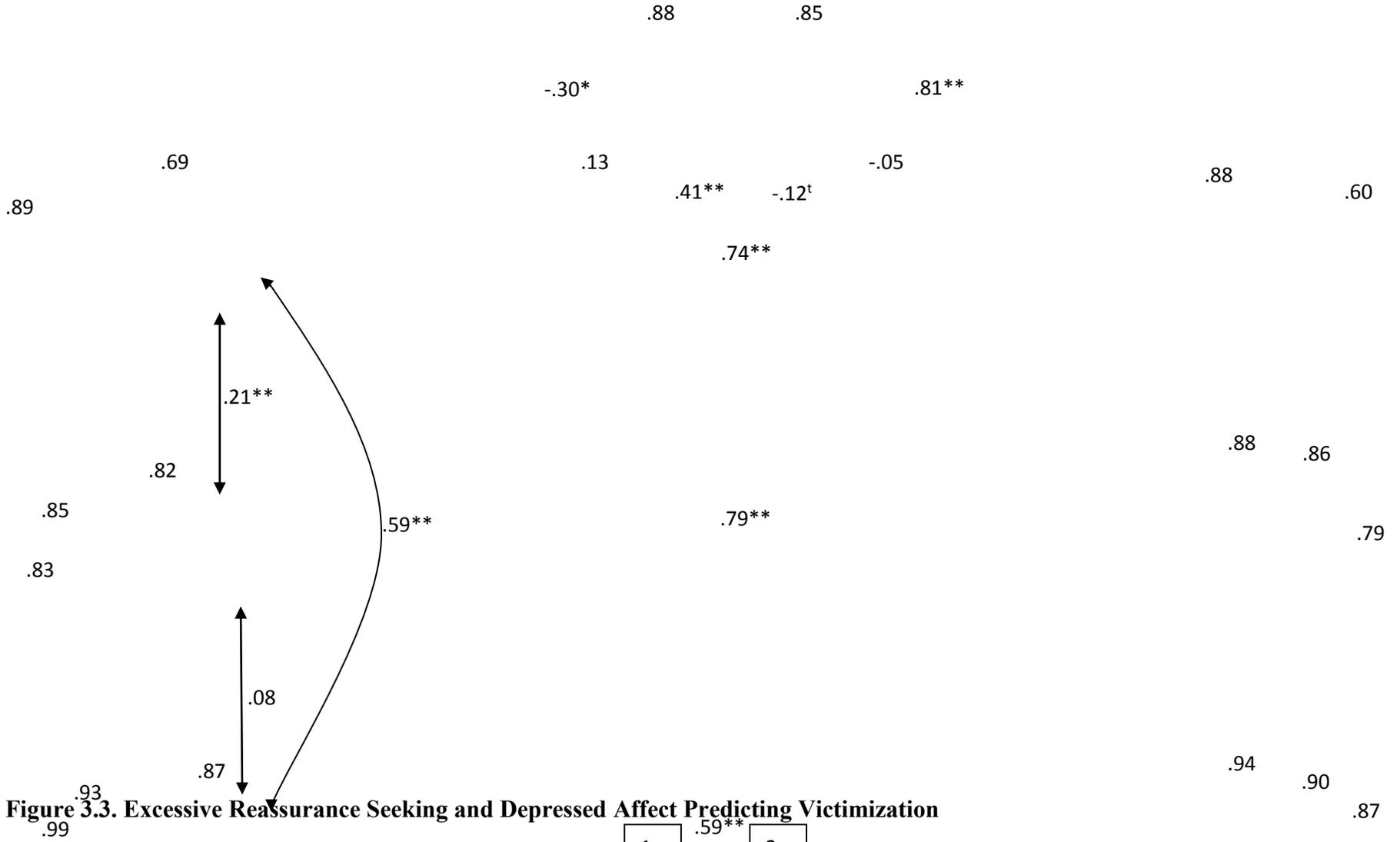
Figure 3.3. Excessive Reassurance Seeking and Depressed Affect Predicting Victimization

.99   .59**

| 1 | | 2 |

.82   .91

Victimization   .69**
T5

| 3 | | 1 | | 2 |

| 2 |

-.19

.07   .02

.69   .73   .69

.73   .27**   -.05   Excessive

Excessive   .79**   Reassurance-   .75

Reassurance-   Seeking T5

.57   Seeking T4

.23**

.88

.82   .86

.85   .79**   .79

.83

.47**

.04

.88

.92   .94

.91   .29**

.97   .93
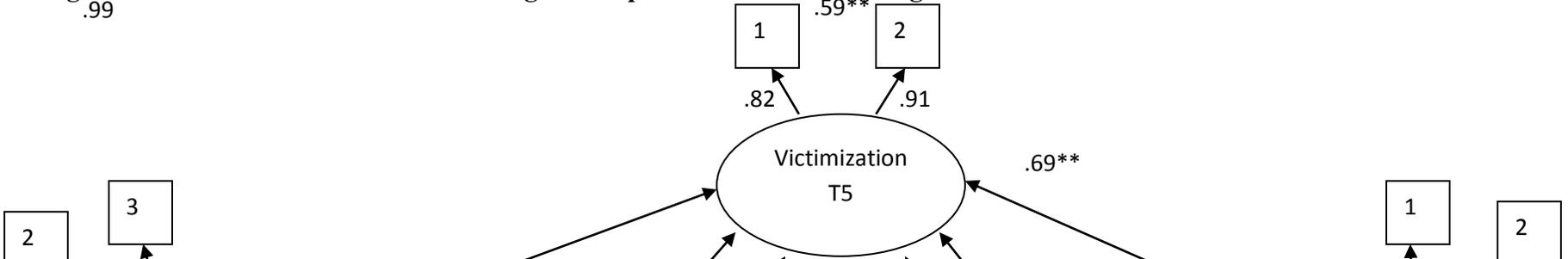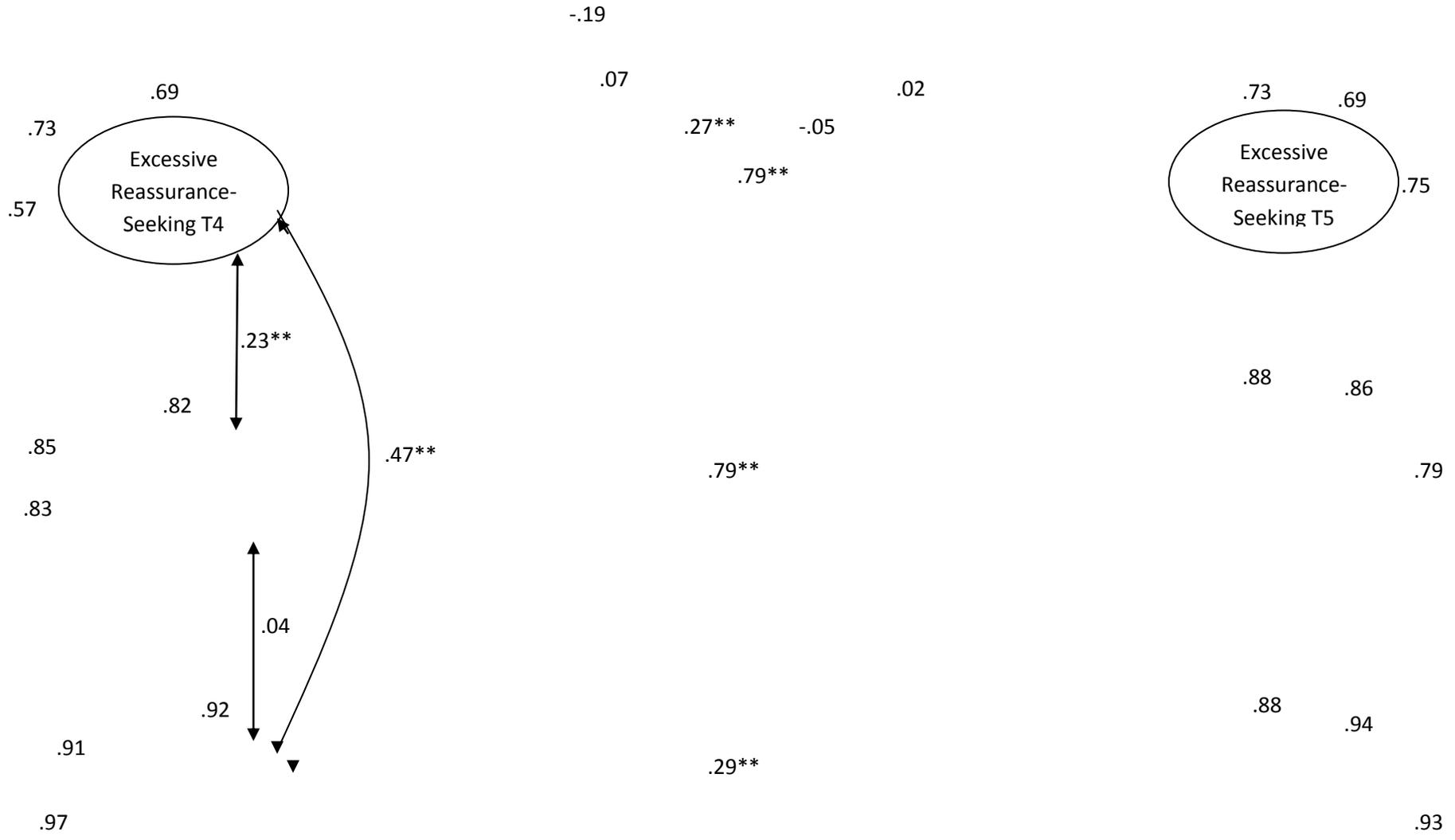
General Discussion

Depression is one of the most important causes of disability worldwide (WHO, 2012). While rates are much higher starting in late adolescence, an important shift occurs in early adolescence. Indeed, it is at this time the rates of depression triples and that girls become more depressed than their male counterparts (Birmaher et al., 1996; Hankin et al., 1998; Sund, Laarson & Sandstrom, 2003). While a number of biological and cognitive theories attempted to explain this phenomenon, it appears that interpersonal theories of depression hold some promise in terms of helping us better understand why girls become more at risk for depression from early adolescence on (Coyne, 1976; Rudolph et al., 2008). This is therefore the approach that was taken in the present dissertation.

The goal of this dissertation was to better understand the role of co-rumination and excessive reassurance seeking in increasing the risk for depression and interpersonal consequences of depression, most particularly for girls. A set of three papers was therefore developed to examine different aspects of this broad topic. In the first paper, validity and reliability data were presented for new peer reported measures of co-rumination and excessive reassurance seeking. In the second paper, the impact of the interaction between these new peer reported measures as well as measures of anxiety on the increase in depressive symptoms over time was examined. Finally, the third paper examined whether the interaction of depressed affect and co-rumination or excessive reassurance seeking was associated with an increased likelihood of being isolated and victimized over time. The results of these three studies will first be discussed individually, and a discussion of overall theoretical and practical implications as well as strengths and weaknesses will follow.

Peer-Reported Measures of Co-Rumination and Excessive Reassurance Seeking

Traditionally, both co-rumination and excessive reassurance seeking have been measured using self-reports. However, there are a number of reasons why peer reports may be more suited measures. Indeed, depressed individuals have a well-documented tendency to evaluate their experiences more negatively (Rudolph, Lambert, Clark & Kurlakowsky, 2001), which is likely to artificially inflate the associations between self-reported depressive symptoms and negative social experiences. Moreover, peers become very useful informants as they spend increasing amounts of time with their classmates in a multitude of contexts (Bukowski, Cillessen & Velasquez, 2011; Weiss, Harris & Catron, 2002).

For the purpose of the different studies presented in this dissertation, peer reports including three items each were developed for both excessive reassurance seeking and co-rumination. However, one co-rumination item had to be dropped from further analyses given its poor loadings. Indeed, it appeared that some behaviours associated with co-rumination, in this case, encouraging others to discuss their problems, are seen in a positive, therapist-like light which does not fit with the more negative behaviours. Moreover, the concept of co-rumination as measured by our items did not appear to fit well for boys, suggesting that either boys do not co-ruminate, or exhibit behaviours potentially different than the ones we have measured.

While these peer-reported measures were found to be highly related to each other, models were found to have a better fit to the data when the measures were kept separate, therefore indicating that we indeed measured two different, albeit highly related, constructs. Interesting sex differences were also found. Indeed, anxiety and depression symptoms were more consistently associated with excessive reassurance seeking and co-rumination for girls than for

boys, therefore suggesting that these two concepts may have an important role to play in the development and maintenance of depressive symptoms over time.

Anxiety, Co-Rumination and Excessive Reassurance Seeking as Predictors of Depressed Affect

Given that anxiety is a well-known risk factor for depressed affect (Roza et al., 2003) and that results from the first chapter of this dissertation indicated that co-rumination and excessive reassurance seeking were associated with both anxiety and depressive symptoms for girls, we decided to examine how anxiety interacted with both negative social behaviours to predict later depressed affect. Indeed, it appeared reasonable to think that anxious children and particularly girls who sought reassurance and comfort from their friends may in fact not receive the support they expected and therefore be more likely to become increasingly depressed as a consequence, consistent with Coyne's (1976) Interpersonal Theory of Depression.

Our model including co-rumination was found to better fit the data with boys and girls considered as separate groups, indicating a gendered pattern of results and consistent with the fact that our measure of co-rumination was not found to fit well for boys in the first paper. Moreover, models including the interaction of co-rumination and anxiety were not found to fit the data well, and so the interaction term was dropped from these analyses, which suggest that co-rumination does not moderate the association between anxiety and later depressed affect. Also, while concurrent associations were found between co-rumination and depressed affect, co-rumination was not found to predict later depressive symptoms. More research is needed to determine whether co-rumination is a behavioural manifestation of depressed affect in girls or

whether it really is a predictor of depression as others have found (Rose et al, 2007; Stone, Uhrless & Gibb, 2010).

On the other hand, models including the interaction of excessive reassurance seeking and anxiety in predicting later depressed affect were found to adequately fit the data, fit which was found to be best when both boys and girls were considered together rather than separately. Interestingly, we found that excessive reassurance seeking on its own predicted lower levels of depressed affect later on. While these results were contrary to what was hypothesized given the literature on the topic (Abela, Hankin, Haigh, Adams, Vinokuroff & Trayhern, 2005; Abela, Morrison, & Starrs, 2007; Abela, Zuroff, Ho, Adams & Hankin, 2006), it is important to take into account that these studies did not control for anxiety. Indeed, when anxiety was taken into account, high levels of excessive reassurance seeking combined with anxiety at the first time point predicted higher depressive symptoms later on, for both boys and girls, results which are consistent with Coyne's (1976) Interpersonal Theory of Depression.

While these results provided additional support for the Interpersonal Theory of Depression and for the role of excessive reassurance seeking in exacerbating the effects of anxiety on later depressed affect, they did not help to explain why girls become at a greater risk for depression than boys as the results fit equally well for both. This therefore suggest that if co-rumination and/or excessive reassurance seeking have a role to play in the increased rates of depression observed in females starting in adolescence, in may be in increasing the interpersonal stress associated with depression by leading to negative interpersonal experiences which are then more likely to further increase risk for depression.

Interpersonal "Consequences" of Depressed Affect

Interpersonal theories of depression stipulate that depressed individuals create an environment for themselves which is more conducive to negative relationships, environment which in turn serves to reinforce the cycle of risk associated with depression (Coyne, 1976; Rudolph et al., 2008). Moreover, Hammen (1991) found that depressed women were more likely to experience dependent interpersonal stress, i.e., stress in their relationships which they themselves created. We therefore hypothesized that co-rumination and excessive reassurance seeking may be two negative behaviours which may interact with depression to increase the likelihood of girls becoming isolated and victimized. Isolation and victimization were chosen as they are two well-known risk factors for depressed affect, therefore helping us to better understand the cycle of risk affect (Cillessen, Van Lieshout & Haselager, 1992; Hawker & Bouton, 2000; Heibron & Prinstein, 2008; Keenan et al., 2010; Nangle, Erdley, Newman, Mason & Carpenter, 2003; Reijntjes, Kamphuis, Prinzie & Telch, 2010; Slee, 1995; Sweeting, Young, West & Der, 2006; Witvliet, Brendgen, van Lier, Koot, & Vitaro, 2010).

Contrary to what was expected, it was found that co-rumination on its own predicted *lower* levels of isolation and victimization. This appears to be consistent with results showing that co-rumination is associated with increased intimacy and friendship quality (Rose, Carlson & Waller, 2007). Expected results did come through regarding the interaction of co-rumination and depressed affect. Indeed, the combination of high levels of depressed affect and co-rumination was found to predict isolation and victimization six weeks later. Interestingly, the model fit was better when both boys and girls were included in the same models, therefore suggesting that the interpersonal consequences of co-rumination and depressed affect are the same for boys and girls.

The model examining excessive reassurance seeking and isolation could not be estimated. On the other hand, the model predicting later victimization showed that there was no main effect of excessive reassurance seeking. However, the interaction of depressed affect and excessive reassurance seeking led to higher levels of victimization later on. Again, the effect was the same for both boys and girls.

The most striking result from this study is that a main effect of depressed affect was not found in any of the models. This therefore suggests "interpersonal consequences of depression" (Hammen & Peters, 1978) are not really due to depression itself, but rather to the negative interpersonal behaviours associated with it such as co-rumination and excessive reassurance seeking. These results are therefore consistent with the Coyne's (1976) Interpersonal Theory of Depression and Hammen's (1991) Stress Generation Hypothesis. Indeed, both have argued that the social-behavioural deficits of depressed individuals eventually alienate their social support system.

Overall Summary of Findings

On the whole, it appears that co-rumination and excessive reassurance seeking as measured through our new peer reports may have an important role to play in the development and maintenance of depressive symptoms. Indeed, we have found that while excessive reassurance seeking appears to have a greater role to play in moderating the effect of anxiety on later depressed affect (i.e. on predicting the emergence of depressive symptoms), co-rumination may have a greater role to play in predicting interpersonal consequences of depression. One important finding did not come through. While we expected gender differences in these results,

none was found, therefore indicating that once behaviours are present, they represent the same risk for both boys and girls.

Strengths and Limitations

A number of strengths and limitations are worth mentioning and should be taken into account when interpreting the results of the three studies comprised in this dissertation. First, an important strength of these studies is that they were based on a sample from the general population. Therefore, and unlike, for example, Joiner's (1999) study performed with a sample of psychiatric inpatient, results from these three studies are representative of what we should find in the population of early adolescents at large.

The three studies reported in this dissertation were also based on a longitudinal project, using two time points that were six weeks apart. While this is a relatively short time-period for a longitudinal design, it represents an important advantage over cross-sectional ones which do not allow for actual prediction. The innovative approach of the last two studies, using co-rumination and excessive reassurance seeking, is also an important strength as it allowed the examination of these two variables as moderators of individual risk for depressed affect (i.e., anxiety) and "consequences of depressed affect" (i.e., isolation and victimization). It would be particularly interesting to examine whether the results obtained here would hold over a longer time period, which would increase both their theoretical and practical significance.

Another strength of the studies reported here is the new and innovative use of peer-reported measures of co-rumination and excessive reassurance seeking. While our measures should be validated in other samples, results reported here are promising and most importantly, reduce issues of shared method variance which can be particularly problematic when asking

depressed individuals who have been found to have more negative views of their relationships (Rudolph, Lambert, Clark & Kurlakowsky, 2001). Moreover, peer-reported measures take into account the important opinion of the social circle of the depressed individual who may be directly affected by the potentially irritating behaviours measured.

In addition to the aforementioned strengths in the design of the study, the use of the Mplus statistical analysis software is worth mentioning for a number of reasons. First, structural equation models come with fit indices which are not provided when performing multiple regressions in software such as SPSS. While results in SPSS may come out to be significant for example when split by sex, it is impossible to know whether the fit to the data would actually be best if the groups were kept as a unit. Secondly, the use of Mplus allowed for more complex analyses with latent variables, therefore reducing measurement error in each of our variables. While interactions could not be calculated in the ideal way for the sake of consistency (because of the differing number of items for the cor measure), the strategy used is still superior to that of calculating interaction terms with observed variables in SPSS, for example.

While the sample in these three studies is relative large, an important limitation of this study is that is that the sample is still significantly smaller than those used in other research on the topic of co-rumination (e.g., 999 youths in Rose, Carlson & Waller, 2007). Although multiple imputations were used in the last two studies to insure that data from all 270 participants could be used, there may still have been a possible lack of power to detect gender differences. Additional evidence for this possibility comes from our models split by gender. Indeed, while the fit indices were significantly worse when split for boys and girls, the results were somewhat suggestive of significant interactions for girls and not for boys.

Theoretical and Practical Implications

The findings reported in this dissertation have a number of both theoretical and practical implications. An overview of theoretical implications will be discussed first, followed by how these can be applied.

The findings from the three studies presented here have important theoretical implications. First, this set of findings support both Coyne's Interpersonal Theory of Depression (1976) and Hammen's Stress Generation Hypothesis (1991). Indeed, it was found that risk for depression (i.e., anxiety) combined with social-behavioural deficits such as excessive reassurance seeking lead to increased levels of depressed affect over time. It therefore appears that the behaviours of mildly dysphoric individuals do place them at an increased risk for depression, most probably because of the stress they themselves create in their lives. Also, it was found that depressed affect has important interpersonal consequences which have been found to themselves be risk factors for depression (Cillessen, Van Lieshout & Haselager, 1992; Hawker & Bouton, 2000; Heibron & Prinstein, 2008; Keenan et al., 2010; Nangle, Erdley, Newman, Mason & Carpenter, 2003; Reijntjes, Kamphuis, Prinzie & Telch, 2010; Slee, 1995; Sweeting, Young, West & Der, 2006; Witvliet, Brendgen, van Lier, Koot, & Vitaro, 2010). It is important to note, however, that our findings also have important implications for the expression "interpersonal consequences of depression" (Hammen & Peters, 1978). Indeed, the results of the third study suggest that it is not depression itself which leads to interpersonal consequences such as isolation and victimization, but rather the combination of depressed affect and associated social-behavioural deficits such as co-rumination and excessive reassurance seeking. Finally, while it has generally been assumed that interpersonal factors may have a more important role to play as risk factors for depression in females than males, our findings do not support that idea. While co-

rumination as a measure does not seem to work quite as well for boys as it did for girls, it appears to act in a similar way in increasing the risk for depressed affect and for negative interpersonal consequences. Therefore, while our hypotheses about gender differences were not supported, the studies in this dissertation do point to co-rumination and excessive reassurance seeking as important variables to take into consideration when trying to better understand the risk for depression in early adolescence.

The findings of this study, in addition to having interesting theoretical implications, also have important practical significance. First, the findings of the second paper suggest that there may be a subgroup of anxious children who may be more at risk of later becoming depressed at least in part because of their own behaviours. Indeed, high levels of excessive reassurance seeking combined with high levels of anxiety were found to be most predictive of depressed affect later on. However, excessive reassurance seeking on its own was found to predict lower levels of depressed affect. These findings therefore have important implications in terms of both primary and secondary prevention efforts. While more research should be done to examine whether similar findings emerge when anxiety is controlled for (which a great majority of studies on excessive reassurance seeking and depression has not done, e.g. Abela, Morrisson & Starrs, 2007), these findings suggest that excessive reassurance seeking is not necessarily a behaviour which should be targeted in universal prevention efforts as we have found it to be associated with lower levels of depressed affect later on. However, when identifying children who may benefit from targeted prevention efforts (i.e., children who have early signs of risk for depression), it may be particularly important to identify anxious children who also tend to seek excessive amounts of reassurance from their social network as the combination of these two risk factors appear more important than anxiety or excessive reassurance seeking alone.

Findings from the third and last study of this dissertation also have very important practical implications. Indeed, these findings indicate that children with high levels of depressed affect who also co-ruminate and seek high levels of reassurance from their peers are at a higher risk of becoming victimized and socially isolated than those who are solely exhibiting high levels of depressed affect. Identifying children who exhibit these behaviours should therefore be a priority so as to decrease the likelihood that their negative social experiences further increase the risk for later episodes of depression.

Concluding Statement

The three studies comprised in this dissertation were developed so as to better understand the role of co-rumination and excessive reassurance seeking in the development of depressive symptoms in early adolescence, particularly for girls. Three important contributions stem from this research: 1) co-rumination and excessive reassurance seeking can be reliably measured using short peer-nomination measures; 2) excessive reassurance seeking moderates the risk associated with anxiety in predicting later depressive symptoms, for both boys and girls, and 3) co-rumination and excessive reassurance seeking increase the risk that dysphoric early adolescents will become isolated and victimized. While replication for these findings is warranted, we feel that these original findings prove to be valuable additions to the literature on interpersonal factors associated with depression.

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