

**RUMINATIONS ON RUMINATION:
ANGER AND SADNESS RUMINATION IN A NORMATIVE
AND CLINICAL SAMPLE**

by

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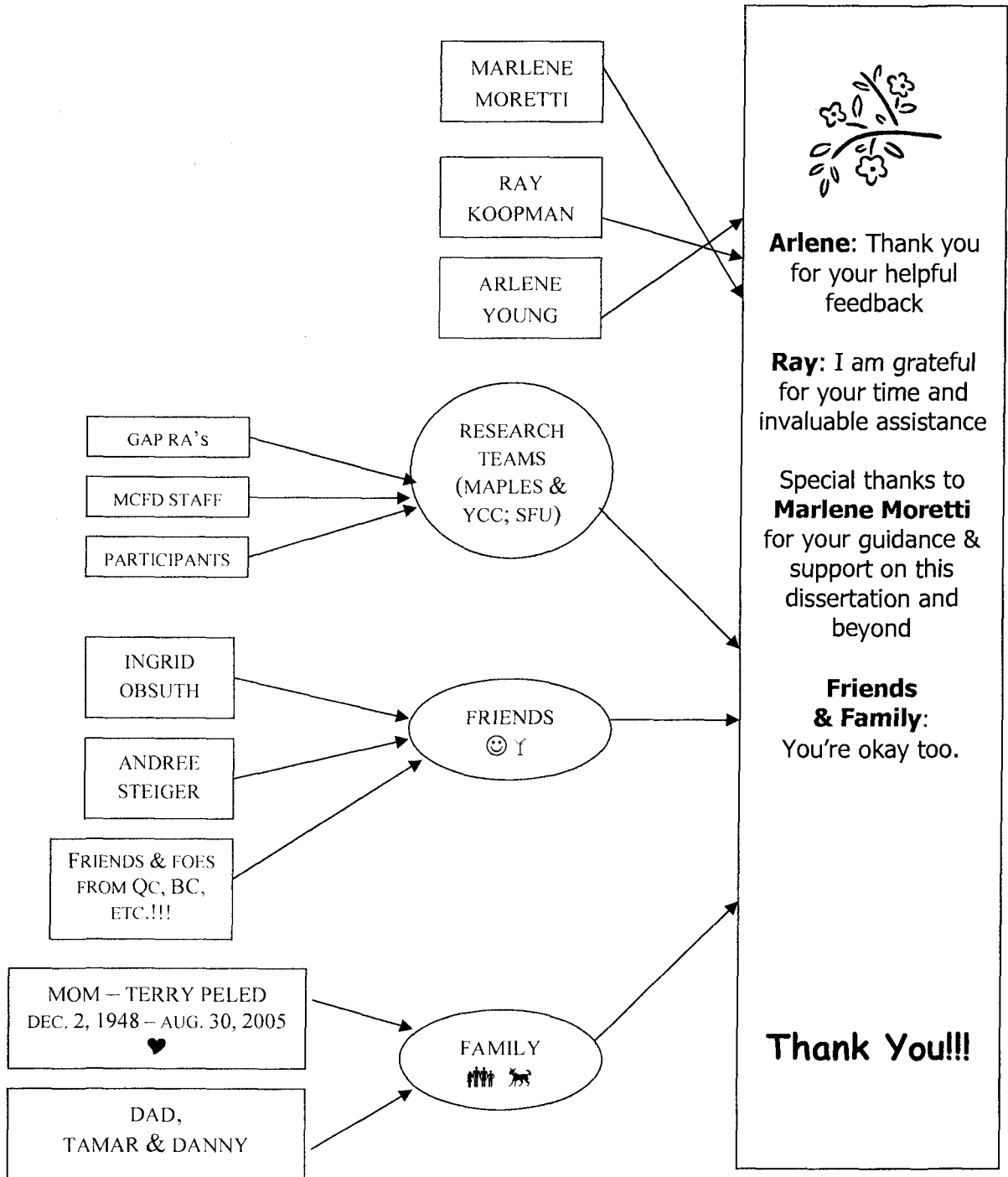
Abstract

Anger rumination and sadness rumination were examined concurrently in a normative sample of adults (Study 1) and a clinical adolescent sample (Study 2). The purpose of this research was to assess if rumination on anger and sadness have distinct emotional and behavioural associations, and whether it is warranted to conceptualize them as separate constructs. In both studies, factor analysis indicated that items from analogous anger rumination and sadness rumination measures loaded onto two factors tapping anger rumination and sadness rumination, respectively. Structural equation modeling confirmed unique relations among each form of rumination and specific emotional or behavioural conditions (i.e., anger, aggression and depression). In Study 1, women scored higher than men on sadness rumination and comparable to men on anger rumination. In Study 2, adolescent girls scored higher than boys on both forms of rumination. In both studies, sex did not moderate the relations among rumination and the outcome variables. Findings supported the conceptualization of anger rumination and sadness rumination as two separate constructs. Directions for future research are discussed.

Keywords: Rumination, anger, sadness, aggression, depression

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Ruminations on Rumination:

Anger and Sadness Rumination in a Normative and Clinical Sample

Rumination refers to conscious, repetitive thoughts that revolve around a common theme. The term usually has a negative connotation implying cognitions that are intrusive and aversive (e.g., Carson & Cupach, 2000; Nolen-Hoeksema, 1987, 1991, 1996; Sukhodolsky, Golub, & Cromwell, 2001). Many studies have been conducted on sadness rumination and depression, particularly in adults. In contrast, few studies have focused on anger rumination and its correlates, and those few have been conducted only on adults. The main goal of this dissertation was to assess anger rumination and sadness rumination concurrently to determine if they have distinct emotional and behavioural associations, and whether it is warranted to conceptualize them as separate constructs. In Study 1, rumination was examined in a normative sample of young adults ($N = 226$). Study 2 focused on a clinical adolescent sample ($N = 121$) and contributed to the field by extending research on anger rumination to adolescents.

Sadness Rumination

Sadness rumination has been defined as “repetitive thoughts concerning one’s present distress and the circumstances surrounding the sadness” (Conway, Csank, Holm, & Blake, 2000, p. 404). Ruminative thoughts on sadness relate to individuals’ attempts to analyze their sadness in order to understand the roots and meaning of the negative affect (Conway et al., 2000). The intense and repetitive negative ideation is not goal directed and does not facilitate the resolution of problems (Nolen-Hoeksema, 1991). Although it has primarily been regarded as maladaptive and unidimensional (e.g., Nolen-Hoeksema, 1996), sadness rumination has more recently been reconceptualized as a two-factor

construct comprised of an adaptive and maladaptive factor (Treyner, Gonzalez, & Nolen-Hoeksema, 2003). Reflection is construed as the adaptive component in that it fosters effective problem-solving skills that might lead to reduced negative affect and depressive symptoms. Brooding—comparing one's current situation with an unachieved standard—is regarded as the maladaptive factor and is associated with increased depression.

Measures. A number of sadness rumination measures have been developed (e.g., Martin, Tesser, & McIntosh, 1993; Scott & McIntosh, 1999; Trapnell & Campbell, 1999). One measure that has been used extensively is Nolen-Hoeksema and Morrow's (1991) 22-item Ruminative Responses Scale (RRS). Participants are asked to describe on a four-point scale (*never, sometimes, often, always*) their behaviours and thoughts when feeling sad or depressed. Items pertain to focusing on oneself and one's symptoms, and on causes and consequences of depressed mood. Nolen-Hoeksema and Morrow reported high internal consistency (coefficient $\alpha = .89$). The RRS has been used in a number of studies although questions have arisen regarding its construct validity. For example, Roberts, Gilboa, and Gotlib (1998) conducted a factor analysis on the measure and detected a three-factor solution. They found that each of these three factors was related to other significant variables (e.g., gender and neuroticism) but in different ways. Conway et al. (2000) argued that the measure is not well defined given its multi-factorial structure coupled with the finding that the factors are differentially related to other significant variables. Treyner et al. (2003) modified the RRS by eliminating 12 items that overlapped in content with depression. A principal component analysis on the revised 10-item scale yielded the two components of reflection and brooding. However, the

investigators acknowledge that further work is needed to improve the scale's reliability and validity.

Conway et al. (2000) created the Rumination on Sadness Scale (RSS), a 13-item self-report questionnaire that addresses various aspects of ruminative thinking including the intense and repetitive quality of the thoughts, attempts to analyze and understand one's distress, and the lack of instrumental goal orientation. Respondents indicate on a five-point scale, ranging from *not at all* (1) to *very much* (5), the extent to which each item reflects their responses to sadness. Principal component analysis yielded a one-factor solution. Conway et al. (2000) reported high internal reliability ($\alpha = .91$) and good convergent and discriminant validity. Moreover, the RSS compared to the RRS was found to predict more variance with the Beck Depression Inventory.

Correlates and consequences. Sadness rumination is strongly associated with depression (e.g., Morrow & Nolen-Hoeksema, 1990) and is believed to prolong and exacerbate a depressed mood by increasing the salience of negative emotions and maladaptive cognitions. Further, this form of rumination can interfere with the ability to solve interpersonal problems and with the initiation of instrumental behaviours that may alleviate depression (Morrow & Nolen-Hoeksema, 1990). Although the link between sadness rumination and depression has been examined extensively, no studies to date have also examined the relation between anger rumination and depression, using analogous rumination measures, to ascertain whether the two forms of rumination predict distinct conditions.

In addition to depression, sadness rumination is positively correlated with neuroticism (Roberts et al., 1998) and low self-concept clarity (i.e., the extent to which

the contents of one's self-concept are clearly defined, internally consistent, and temporally stable; Campbell, Trapnell, Heine, Katz, Lavalley, & Lehman, 1996). Sadness rumination is negatively correlated with conscientiousness (i.e., persistence and motivation in goal-directed behaviour) and extraversion (Conway et al., 2000).

Sex differences. A finding that holds for both adolescents (Broderick & Korteland, 2002; Schwartz & Koenig, 1996) and adults (Nolen-Hoeksema & Jackson, 2001) is that females ruminate on sadness more than do males. Females report experiencing more intense feelings of sadness compared to males (Stapley & Haviland, 1989). Even after statistically controlling for the sex difference in reported sadness, the sex difference in sadness rumination remains significant (Nolen-Hoeksema & Jackson, 2001).

Gender role socialization has been implicated in many of the explanations for these sex differences. Socialized masculinity (instrumentality/agency) has been found to be a negative predictor of sadness rumination when biological sex is controlled (Wupperman & Neumann, 2006). Male sex-role stereotypes emphasize confidence and persistence, characteristics that are believed to be incongruent with a passive ruminative style (Ruble, Greulich, Pomerantz, & Gochberg, 1993). The expression and discussion of feelings is considered more "natural" for girls than boys (Birnbaum, 1983; Brody & Hall, 1993), and starting in infancy mothers are more likely to initiate conversations about feeling states (e.g., sadness) with their daughters compared to sons (Dunn, Bretherton, & Munn, 1987). As a result, females might be more likely to express and ruminate on their sadness whereas males might inhibit their expressions of sadness or engage in more instrumental ways of alleviating their sadness (Wupperman & Neumann, 2006; Zahn-Waxler, Cole, & Barrett, 1991).

Anger Rumination

Although many studies have been conducted on sadness rumination and depression, fewer exist on anger rumination and its consequences. Anger rumination has been described as thinking repeatedly about the emotion of anger (Sukhodolsky et al., 2001). The tendency to ruminate about past anger episodes may be partially responsible for the maintenance and intensification of anger (Sukhodolsky et al., 2001).

Measures. The few anger rumination measures that exist entail somewhat different operational definitions of the construct. Caprara (1986) regarded rumination as a continuum of a hypothetical personality dimension. He differentiated between low ruminators (high dissipators) who recover quickly from anger and the desire to retaliate, and high ruminators (low dissipators) whose anger and desires for revenge are maintained and possibly intensified over time. Caprara (1986) developed the Dissipation-Rumination scale that contains 15 anger-rumination items (and five filler items). Participants are asked to indicate their “reaction to each statement” on a six-point scale ranging from *completely false for me* (0) to *completely true for me* (5). A factor analysis extracted one factor, suggesting that the scale measures a unified construct. Items pertain to respondents’ tendencies to hold grudges (e.g., “I hold a grudge for a very long time toward people who have offended me”) and to seek revenge (e.g., “When somebody offends me, sooner or later I retaliate”), in addition to difficulties forgetting injustices that have been committed toward them (e.g., “I will always remember the injustices I have suffered”). Caprara (1986) reported relatively high reliability coefficients (i.e., internal consistency and test-retest reliability) but there is no evidence of validity. It is not clear

that the scale in fact measures rumination because, for example, it includes items pertaining to acts of revenge rather than thoughts.

Sukhodolsky et al. (2001) posited that Caprara's (1986) Dissipation-Rumination scale reflects a narrow construal of rumination as retaliatory tendencies after an insult. They developed the 19-item Anger Rumination Scale (ARS) that includes a self-report rating scale ranging from *almost never* (1) to *almost always* (4). A factor analysis yielded four factors: angry afterthoughts (e.g., "I re-enact the anger episode in my mind after it has happened"), thoughts of revenge (e.g., "I have long living fantasies of revenge after the conflict is over"), memories of past anger episodes (e.g., "I ponder about the injustices that have been done to me"), and thoughts about the causes and consequences of anger experiences (e.g., "I analyze events that make me angry"). Sukhodolsky et al. (2001) found high intercorrelations among the ARS factors and thus surmised that anger rumination may be a unidimensional construct. The Chinese version of the ARS was validated in Hong Kong, with factor analysis results yielding the same factor structure as was found in British and American samples (Maxwell, Sukhodolsky, Chow, & Wong, 2005).

Sukhodolsky et al. (2001) reported that the ARS yielded adequate internal consistency and test-retest reliability over a one-month period. Scores on the ARS were positively correlated with variables that relate conceptually to anger rumination such as trait anger (i.e., experiencing anger frequently across various contexts), negative affectivity (a dispositional tendency to experience aversive emotional states), and Spielberger's (1988) "anger-in" and "anger-out" modalities of anger expression (i.e.,

containing one's anger inside without an outlet, and behavioural expression of anger, respectively). These findings lend support to the convergent validity of the ARS.

Other investigators (e.g., Bushman, 2002; Rusting & Nolen-Hoeksema, 1998) have studied anger rumination without using a structured rumination scale. For example, Rusting and Nolen-Hoeksema (1998) induced an angry mood in participants and then assigned half to a rumination condition and half to a distraction condition. Participants in the rumination condition were instructed to attend to emotion-focused and self-focused thoughts such as "why people treat you the way they do" and "why you react the way you do." Participants in the distraction condition were told to attend to external non-emotional content such as "the layout of the local post-office." In another study, Rusting and Nolen-Hoeksema (1998) gave participants a choice to engage either in an emotion-focused task or a neutral non-emotional task. Choosing the emotion-focused task was interpreted as a preference for rumination in response to anger, whereas choosing the non-emotional task was interpreted as a preference for distraction.

Consequences of anger rumination. Rusting and Nolen-Hoeksema (1998) found that provoked participants who engaged in emotion-focused tasks (i.e., rumination) experienced increased anger compared to provoked participants who engaged in non-emotional tasks. The investigators concluded that anger rumination exacerbates an angry mood. Similarly, Bushman (2002) found that provoked participants who were instructed to hit a punching bag while thinking about their anger (rumination condition) exhibited more anger compared to provoked participants who hit a punching bag while thinking about becoming physically fit (distraction condition) and those who sat quietly for two minutes (control condition). Additionally, individuals who engage in high levels of anger

rumination and are unable to distract from their anger (low-distraction condition) have been found to exhibit longer durations of elevated blood pressure after recalling anger-provoking experiences (i.e., poorer recovery time), compared to high ruminators in a distraction condition and low ruminators (Gerin, Davidson, Christenfeld, Goyal, & Schwartz, 2006).

Rumination on anger may be associated with a variety of negative conditions beyond anger, such as aggression. High compared to low ruminators have been found to exhibit greater retaliation after provocation (Caprara, 1986; Collins & Bell, 1997). However, the Dissipation-Rumination scale (Caprara, 1986) was used to differentiate between high and low ruminators in the two studies, which likely introduced problems of construct validity. Further, these two laboratory experiments may have yielded results of questionable ecological validity. Collins and Bell (1997) asked participants to read a short passage and then answer questions about the passage. *Provocation* was operationalized as participants receiving negative feedback about their answers to the questions. Participants were then told that they would be playing a game with an ‘opponent’ in an adjoining room. *Retaliation* was operationally defined as participants deducting points from, and delivering a loud noise to, the opponent. Similarly, Caprara (1986) operationalized *provocation* as participants receiving an “insulting communication” from a confederate, and *retaliation* as participants submitting a negative evaluation about the confederate. Thus, the conclusion that high compared to low ruminators exhibit greater retaliation after provocation may be valid only within these laboratory settings and may not generalize to more realistic contexts in which provocation and retaliation are defined differently.

Anger rumination has more recently been found to predict displaced aggression (i.e., aggression directed toward an innocent target) after provocation (Bushman, Bonacci, Pedersen, Vasquez, & Miller, 2005). Similar to previous laboratory studies (i.e., Caprara, 1986; Collins & Bell, 1997), provocation was defined as participants receiving negative feedback about their performance (solving anagrams and essay writing skills), and aggression was defined as providing negative evaluations about a 'research assistant' (Study 1) or delivering a loud noise to an 'opponent' in the laboratory eight hours after being provoked (Study 3). A provocation, or "minor triggering annoyance," was needed for anger rumination to increase displaced aggression (Study 2; Bushman et al., 2005).

Maxwell (2004) found that anger rumination, as measured by higher scores on the ARS (Sukhodolsky et al., 2001), predicts aggression among competitive athletes. Conducting further ecologically-valid studies on other populations is important for further elucidating the relation between anger rumination and aggression. No studies to date have examined sadness rumination in relation to anger and aggression to assess specificity of outcomes for the two forms of rumination.

Sex differences. In general, women and men appear to engage in comparable levels of anger rumination (Maxwell, 2004; Rusting & Nolen-Hoeksema, 1998; Sukhodolsky et al., 2001). Maxwell and colleagues (Maxwell, Sukhodolsky, Chow, & Wong, 2005) found an exception in Hong Kong where Chinese men engaged in more anger rumination compared to women. Within North American samples, some sex differences have been found pertaining to certain aspects of anger rumination. For example, Sukhodolsky et al. (2001) reported that men scored higher than women on the 'thoughts of revenge' factor. Further, Rusting and Nolen-Hoeksema (1998) found that

women were more likely to ruminate on anger when not provoked (i.e., opting to participate in an emotion-focused rather than non-emotional task) and to distract from anger when provoked, whereas men were equally likely to ruminate or distract regardless of whether or not they were provoked.

The finding that provoked women distract from anger instead of ruminating on it (Rusting & Nolen-Hoeksema, 1998) is the reverse of how they cope with sadness. Beginning in infancy, girls may be discouraged from expressing anger. Mothers interacting with daughters compared to sons talk about anger for shorter amounts of time (Fivush, cited in Rusting & Nolen-Hoeksema, 1998) and express more disapproval of daughters' displays of anger (Zahn-Waxler et al., 1991) and aggression (Broderick & Korteland, 2002). Men and women might experience comparable levels of anger (Kring & Gordon, 1998) but women may experience the *expression* of their anger as unacceptable and thus engage in anger distraction after being provoked. When females distract, their anger might dissipate somewhat. Alternatively, their anger might be denied from consciousness, resulting in the anger being turned inward and manifesting as sadness or depression (Freud, 1917/1995).

Rumination and Worry

Rumination and worry have both been characterized as maladaptive cognitive processes involving repetitive thoughts (e.g., Segerstrom, Stanton, Alden, & Shortridge, 2003; Segerstrom, Tsao, Alden, & Craske, 2000). Just as sadness rumination contributes to the maintenance of depressed mood (e.g., Morrow & Nolen-Hoeksema, 1990), worry is regarded as contributing to the maintenance of anxiety because it interferes with emotional processing and the execution of adaptive affect regulation strategies

(Borkovec, 1994). However, a difference may be that rumination involves focusing more on *past* negative events, such as failures and losses (e.g., Martin & Tesser, 1996), whereas worry pertains to thinking more about *future* negative events (Borkovec, Robinson, Pruzinsky, & DePree, 1983; Watkins, Moulds, & Mackintosh, 2005).

There is a strong positive correlation between worry and rumination (Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Segerstrom et al., 2000; Watkins, 2004), and both are positively correlated with depression and anxiety (e.g., Fresco et al., 2002). However, results from factor analysis have indicated that items from sadness rumination and worry measures load onto two separate factors tapping rumination and worry, respectively (Fresco et al. 2002; Muris, Roelofs, Meesters, & Boomsma, 2004). Further, multidimensional scaling has indicated that rumination and worry have different purposes in that sadness rumination is associated with *searching* for understanding and meaning, whereas worry is more closely related to attempts at *solving* problems (Segerstrom et al., 2003). Therefore, despite some overlap between worry and rumination (e.g., negative valence), they appear to be distinct constructs.

Present Studies

Although researchers have conceptualized rumination on anger and sadness as separate constructs with distinct outcomes, to date no studies have differentiated these two forms of rumination and demonstrated their unique relations to predicted emotional or behavioural conditions. Analogous measures of anger and sadness rumination were created based on preexisting measures (i.e., items in each measure are identical except for the words sad/sadness and angry/anger) so that the two forms of rumination could be compared and evaluated in a systematic manner.

Using analogous rumination items rules out the possibility that differences in the emotional and behavioural correlates of the two types of rumination are due to differences in the form of the items rather than their focus (i.e., sadness vs. anger). Similarly, finding distinct factor loadings for each type of rumination even though the form of the items is analogous is a compelling demonstration of the uniqueness of sadness and anger rumination. If specificity of correlates and factor loadings are found for sadness rumination and anger rumination, despite the use of analogous measures, then a strong case can be made for the distinctiveness of these two constructs and their associations with unique psychological and behavioural conditions.

The purpose of the current studies was to gain a better understanding of rumination on anger and sadness. Such an understanding could ultimately assist in developing interventions that target specific forms of rumination and their associated negative correlates, if in fact the two forms of rumination are distinct. In Study 1, rumination was examined in a normative sample of young adults ($N = 226$). Study 2 focused on a clinical adolescent sample ($N = 121$) and appears to be the first to have extended the examination of anger rumination to adolescents.

STUDY 1

Rumination was examined in relation to depressive symptoms, anger, overt aggression and relational aggression. Overt aggression is conceptualized as direct behaviours intended to hurt others, including insults, threats and physical abuse. Relational aggression is construed as indirect, socially-based behaviours intended to harm others, such as spreading rumors or ostracizing individuals from social groups (Little, Jones, Henrich, & Hawley, 2003). There is evidence that females are less likely than males to engage in overt aggression (Underwood, 2003) but that starting at a young age girls may be equally or more likely to engage in other forms of social aggression (e.g., Linder, Crick, & Collins, 2002; Ostrov & Keating, 2004). Therefore, both overt and relational aggression were measured in an attempt to capture a wider range of aggressive behaviours and possibly tap women's predominant mode of aggressive expression.

Based on previous research (e.g., Maxwell, 2004; Rusting & Nolen-Hoeksema, 1998), it was hypothesized that anger rumination would positively predict anger, relational aggression and overt aggression. Anger rumination was expected to be a stronger predictor of these variables as compared to sadness rumination. Sadness rumination was expected to be a positive predictor of depression (e.g., Morrow & Nolen-Hoeksema, 1990), and a stronger predictor than anger rumination.

A related issue was whether anger rumination predicted relational and overt aggression even when anger was controlled (i.e., it was hypothesized that anger would not mediate the relation between anger rumination and aggression). This finding would provide evidence that not only the affective experience of anger but also the cognitive

process of anger rumination independently predicts aggression, and could have important implications for intervention strategies.

Women were expected to demonstrate more sadness rumination compared to men (even when controlling for depression), as has been found in previous research conducted on youth (Broderick & Korteland, 2002; Schwartz & Koenig, 1996) and adults (Nolen-Hoeksema & Jackson, 2001). However, sex differences were not expected in the relation between sadness rumination and depression (i.e., moderation was not expected). Given previous findings on overall levels of anger rumination (Maxwell, 2004; Rusting & Nolen-Hoeksema, 1998; Sukhodolsky et al., 2001), it was hypothesized that women and men would report comparable levels of anger rumination. However, anger rumination was expected to be more strongly related to relational than overt aggression in women, whereas anger rumination in men was not expected to correlate more strongly with one form of aggression than the other.

Preliminary analyses were conducted on worry and rumination to further elucidate the similarities and distinctions between these constructs. It was hypothesized that worry and sadness rumination, as well as worry and anger rumination, would be positively correlated. Sadness rumination and worry were each expected to be an independent predictor of depression.

Method

Participants

Participants were 226 undergraduate students (155 women and 71 men) enrolled in introductory psychology courses at Simon Fraser University who completed the study for course credit. They ranged in age from 17 to 45 years ($M = 19.70$ years; $SD = 3.08$). The majority were born in Canada ($n = 141$; 62%) and spoke English as their native language ($n = 132$; 58%). For those whose mother tongue was not English ($n = 31$ Cantonese, 13 Chinese, 10 Mandarin, 8 Punjabi, 7 Korean, 25 Other), the majority (71%) reported being very fluent in English, rating themselves as 6 or 7 on a 7-point scale where 1 represented “not at all fluent” and 7 represented “very fluent.” None reported marked difficulties with English fluency (i.e., there were no fluency ratings below 4, and only ten participants rated themselves at 4). In terms of ethnicity, 44% ($n = 100$) identified themselves as Caucasian, 38% as Asian Canadian (e.g., Chinese, Korean, Vietnamese; $n = 86$), 10% as South-Asian Canadian (e.g., East Indian, Pakistani; $n = 23$), and 8% as Other (e.g., Hispanic, African-Canadian, mixed; $n = 17$).

Measures¹

Sadness and Anger Rumination Inventory (SARI). Existing rumination scales were reviewed to identify key items that could be modified to create two analogous scales for anger rumination and sadness rumination. Care was taken to avoid redundancy among the items and to avoid overlap between the items and predicted outcomes (i.e., items directly tapping depression, anger, or aggression were not included). Although the wording of some items was modified, their original meaning remained the same. Five items with

¹ See Appendix A for all measures used in Study 1.

high factor loadings from Conway et al.'s (2000) Rumination on Sadness Scale and four items with high factor loadings from Sukhodolsky et al.'s (2001) Anger Rumination Scale were included. Items were used with permission of the authors. One *intensification* item from Caprara's (1986) Dissipation-Rumination scale was used ("when I am angry [sad], the more I think about it the angrier [sadder] I feel"), and a new intensification item was created ("when I think about my anger [sadness], I become more upset").

The final version of the SARI thus consists of 11 items for each type of rumination. Items are analogous, with the words *angry* and *anger* in the anger rumination measure replaced with *sad* and *sadness* in the sadness rumination measure. Participants indicate on a 5-point scale (*never, almost never, sometimes, almost always, always*) how often they "do the following things" when they are angry (anger rumination questionnaire) or sad (sadness rumination questionnaire).

Rumination on Sadness Scale (RSS; Conway et al., 2000). The RSS was included in this study to assess whether the sadness rumination component of the SARI demonstrated acceptable convergent validity. As described previously, this 13-item self-report measure has shown acceptable internal consistency and convergent and discriminant validity. Internal consistency (i.e., Cronbach alpha) in this study was adequate ($\alpha = .91$).

Anger Rumination Scale (ARS; Sukhodolsky et al., 2001). The ARS was included in this study to ascertain whether the anger rumination component of the SARI displayed acceptable convergent validity. As previously described, this 19-item self-report measure has shown adequate internal consistency, test-retest reliability, and convergent validity. The scale demonstrated acceptable internal consistency in this study ($\alpha = .91$).

The Integrated Measurement Framework of Aggression (Little et al., 2003) is a unique self-report instrument because it enables independent examination of the forms of aggressive behaviour (overt and relational) and functions of aggression (instrumental and reactive). The forms (items adapted from Crick & Grotpeter, 1995) and functions (items adapted from Dodge & Coie, 1987) are incorporated into six subscales, three tapping overt aggression (pure overt, reactive overt, instrumental overt) and three tapping relational aggression (pure relational, reactive relational, instrumental relational). Overt aggression includes physical and verbal behaviours directed toward another person whereas relational aggression involves purposeful damage to another's social relationships.

Little et al. (2003) found strong support for the validity of their measure, including good model fit; generalizability across sex, age-cohort and ethnicity; and criterion validity (i.e., the different types of aggression were found to have differentiated patterns of relations with outcome variables). The original 36-item measure was reduced to 25 items (12 overt and 13 relational aggression) on the basis of maintaining items with the highest factor loadings (T. Little, personal communication with M. Moretti, April 2003). Participants rate on a 4-point scale how true each statement is for them (*not at all, somewhat, mostly, completely*). Sample items tapping overt aggression are "I'm the kind of person who hits, kicks, or punches others" and "I'm the kind of person who puts others down." Sample items measuring relational aggression are "I'm the kind of person who gossips or spreads rumors" and "I'm the kind of person who tells my friends to stop liking someone." In this study, internal consistency was acceptable for overt aggression ($\alpha = .78$) and relational aggression ($\alpha = .84$).

Depression. Seven items assessing depressive symptoms were adapted from the depression scales of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2; Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989). The MMPI-2 depression scales have demonstrated good criterion validity for differentiating between depressed and normative groups (e.g., Bence, Sabourin, Luty, & Thackrey, 1995), and depressed and schizophrenic groups (Bagby et al., 2005). In this study, care was taken to select items that were not redundant with ruminative thoughts. Examples of selected items are “I am sad and discouraged about life” and “I frequently have spells of the blues.” An additional item was included that tapped suicidal thoughts (“I have thought about killing myself”). Participants were asked to answer *true* or *false* based on how well each statement described them. Common factor analysis in this study indicated that all eight items loaded onto one factor, accounting for 45.5% of the variance (root mean square residual [RMR] = .06; RMR values are residual correlations). Examination of the scree plot (see Appendix B), eigenvalues, RMRs, residual variances and factor loadings for a one- through four- factor solution supported the retention of one factor. The items had acceptable internal consistency ($\alpha = .81$).

Anger. Anger was assessed with the State-Trait Anger Expression Inventory (STAXI; Spielberger, 1996), a widely used self-report measure found to have adequate convergent and discriminant validity, internal consistency, and test-retest reliability (e.g., Deffenbacher et al., 1996). In this study, items not overlapping with anger rumination or aggression were included. Four items were adopted from the Angry Temperament subscale of the Trait Anger scale. Angry temperament taps individual differences in the tendency to experience anger without provocation, and is positively correlated with State

Anger (i.e., the intensity of one's anger at any given time; Spielberger, 1996). Items pertain to how participants "generally feel" and are rated on a 4-point scale (*almost never, sometimes, often, almost always*). A sample item is "I have a fiery temper." With four items, only one factor could be identified, accounting for 57.8% of the variance (RMR = .00; see Appendix C for scree plot). Internal consistency in this study was acceptable ($\alpha = .84$).

Worry. The Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990) is a self-report measure of excessive and uncontrollable worry. Participants rate 16 items on a five-point scale (*not at all typical to very typical*). Sample items are "I worry all the time" and "Once I start worrying I can't stop." The PSWQ is a unidimensional measure of worry (Brown, 2003) that is widely used in clinical anxiety research. It has shown good criterion validity for distinguishing between individuals with generalized anxiety disorder (GAD) and those with other anxiety disorders (e.g., Brown, Antony, & Barlow, 1992). It also has demonstrated good convergent validity, test-retest reliability, and internal consistency (e.g., Meyer et al., 1990). Internal consistency in this study was acceptable ($\alpha = .94$).

Procedure

The order of questionnaires was randomized for each participant. To minimize potential confounds, the sadness and anger rumination scales were never positioned consecutively. Further, the order of the rumination measures was alternated so that half the participants completed anger rumination before sadness rumination whereas the other half completed them in the reverse order. The study took approximately 35 minutes to complete, and occurred outside of class time. Participants were informed that the study

examined the relations among thoughts, feelings and behaviours, and were asked to answer every item. They provided signed consent prior to completing the study (Appendix D) and were debriefed afterwards.

Results

There were only three missing data points due to one participant skipping one item and another participant skipping two items. The participant's mean score on the given scale was assigned to each missing item.

Preliminary Analyses

Anger rumination questionnaire. Skewness values (G_1) for the distribution of responses to individual items ranged from -.22 to .44, and kurtosis values (G_2) ranged from -.80 to .03. Total scores (sum of 11 items for each participant) ranged from 11 to 55, and the distribution approximated a normal distribution (skewness = -.11; kurtosis = .18). The mean total score was 31.25 ($SD = 8.19$). Reliability analysis of the 11 anger rumination items yielded an internal consistency coefficient (Cronbach's alpha) of .91.

Sadness rumination questionnaire. Skewness values (G_1) for individual items ranged from -.34 to .31, and kurtosis values (G_2) ranged from -.88 to -.19. Total scores ranged from 12 to 55, and the distribution approximated a normal distribution (skewness = -.20; kurtosis = -.02). The mean total score was 33.71 ($SD = 8.61$), and was significantly higher than the mean anger rumination total score in the overall sample, $t(225) = 6.02, p < .001$, and in separate analyses for women, $t(154) = 5.68, p < .001$, and men, $t(70) = 2.46, p = .02$. Reliability analysis of the 11 sadness rumination items yielded an internal consistency coefficient of .92.

Factor Analysis

Principal axis factoring with direct quartimin (i.e., $\delta = 0$) oblimin rotation² was conducted on all 22 items of the SARI rumination scales (i.e., 11 items from each rumination measure). Four factors emerged with eigenvalues greater than one (10.36, 1.70, 1.55, 1.03) but the scree plot (Appendix E) suggested the appropriateness of a one-factor solution. However, the root mean square residual (RMR) for a one-factor solution was .09, whereas the RMR for a two-factor solution showed an improved reduction to .07.³ The RMR for a three- and four- factor solution was .05 and .04, respectively. Thus, the scree plot suggested one factor, but examination of the RMRs pointed to more than one factor.

An item was considered to load onto a factor if its factor loading exceeded .40, and an item was considered to load onto more than one factor if the difference between the factor loadings was less than .10. The factor loadings for a forced one-factor solution indicated that two items (item 6 for anger and sadness rumination) failed to load onto the factor. The residual variances of these items were markedly higher than those of the others, in both a one- and two- factor solution (Appendix F). The factor loadings and unrotated factor plot (Appendix G) for a two-factor solution indicated that the anger rumination and sadness rumination items loaded onto two separate factors. One exception

² The results of factor analysis (FA; pattern matrix) rather than principal components analysis (PCA) were reported because FA is recommended when the goal of the analysis is to detect structure whereas PCA is preferred as a method of data reduction. Further, solutions yielded by PCA are more difficult to replicate in other samples (see Floyd & Widaman, 1995). Direct oblimin rotation was performed because this is the standard method for non-orthogonal solutions (i.e., the factors are allowed to be correlated). It is important to note that other methods (e.g., PCA with varimax rotation) yielded the same factor structure as FA with oblimin rotation.

³ RMR values closer to zero reflect better fit.

was item 11 from the sadness rumination measure that loaded (.41) onto the factor containing anger rumination items.

When the two items with highest residuals and item 11 from the sadness rumination measure were dropped, four factors again emerged with eigenvalues greater than one (9.59, 1.58, 1.08, 1.01). The scree plot again suggested a one-factor solution (Appendix H). However, the RMR for a one-factor solution was .08, whereas the RMR for a two-factor solution was reduced to .06. As was the case when all 22 items were included, the RMR for a three- and four- factor solution was .05 and .04, respectively (see Appendix I for the residual variances from a one- and two- factor solution comprising 19 items).

Examination of the scree plot, eigenvalues, root mean square residuals, residual variances and factor loadings for a one- through four- factor solution supported the retention of two conceptually identifiable factors, accounting for 54% of the variance. There appears to be one general rumination factor, comprised of two sub-factors of anger rumination and sadness rumination. Factor loadings and item-total correlations for the forced two-factor solution (19 items), as well as item means and standard deviations, are presented in Table 1. The anger rumination and sadness rumination items loaded onto two separate factors, tapping anger rumination and sadness rumination, respectively (see also Appendix J for the 19-item unrotated factor plot). The correlation between the two factors was $r = .68$. Two composite scores were created by summing the ten anger rumination items (Cronbach's alpha = .91) and nine sadness rumination items (Cronbach's alpha = .92).

Table 1
Sadness and Anger Rumination Inventory (SARI) Factor Analysis and Item Descriptives (Study 1)

Item	<i>M</i>	<i>SD</i>	Item-Total Correlation	Factor Loading ^a	
				1	2
Ang 4. When I think about my anger, I become more upset.	3.12	1.01	.68	.87	-.17
Ang 2. I have difficulty getting myself to stop thinking about how angry I am.	2.67	.96	.72	.79	-.03
Ang 11. When I am angry, the more I think about it the angrier I feel.	3.06	1.08	.59	.70	-.08
Ang 7. When something makes me angry, I turn this matter over and over again in my mind.	2.96	1.05	.76	.68	.13
Ang 9. Whenever I feel angry, I keep thinking about it for a while.	3.08	1.01	.73	.68	.11
Ang 5. I get absorbed in thinking about why I am angry and find it difficult to think about other things.	2.79	1.10	.70	.65	.12
Ang 8. I tire myself out by thinking so much about myself and the reasons for my anger.	2.42	1.13	.71	.58	.24
Ang 10. I think about certain events from the past and they still make me angry.	2.60	.99	.60	.55	.12
Ang 1. I keep thinking about past experiences that have made me angry.	2.67	.95	.62	.52	.18
Ang 3. I keep thinking about the reasons for my anger.	3.11	1.02	.61	.51	.15
Sad 3. I keep thinking about the reasons for my sadness.	3.17	1.00	.68	-.19	.88
Sad 5. I get absorbed in thinking about why I am sad and find it Difficult to think about other things.	3.05	1.08	.81	.07	.80
Sad 7. When something makes me sad, I turn this matter over and over again in my mind.	3.15	1.10	.75	.05	.76
Sad 2. I have difficulty getting myself to stop thinking about how sad I am.	2.84	.98	.80	.13	.73
Sad 1. I keep thinking about past experiences that have made me sad.	2.94	.97	.72	.03	.73
Sad 8. I tire myself out by thinking so much about myself and the reasons for my sadness.	2.61	1.22	.73	.16	.66
Sad 9. Whenever I feel sad, I keep thinking about it for a while.	3.42	1.01	.74	.19	.63
Sad 4. When I think about my sadness, I become more upset.	3.31	1.05	.63	.30	.41
Sad 10. I think about certain events from the past and they still make me sad.	2.97	1.03	.57	.26	.41

^aAbsolute values greater than .40 are in boldface.

Descriptive Information on all Variables

Table 2 presents descriptive information on all the variables of interest, including the SARI anger rumination and sadness rumination composite scores (see also Appendix K for histograms).

Table 2

Descriptive Information on the Variables (Study 1)

Variable	<i>M</i>	<i>SD</i>	Possible Range	Observed Range	Q1	Median (Q2)	Q3	Skew (G ₁)	Kurtosis (G ₂)
Anger rumination	28.49	7.65	10-50	10-50	24	29	33	-.07	.13
Sadness rumination	27.46	7.37	9-45	10-45	23	28	33	-.19	-.15
Anger	6.47	2.40	4-16	4-15	4	6	8	1.15	1.29
Overt aggression	15.97	3.48	12-48	12-29	13	15	18	1.24	1.39
Relational aggression	19.21	4.83	13-52	13-40	15	18	22	1.20	1.73
Depression	2.23	2.32	0-8	0-8	0	2	3	1.04	.19

$N = 226$; S.E.(Skew) = .16; S.E.(Kurtosis) = .32

Zero-order Correlations

There was a positive correlation between anger rumination and sadness rumination for the overall sample ($r = .74, p < .001$), with women ($r = .76, p < .001$) and men ($r = .68, p < .001$) demonstrating similar patterns when examined separately. As demonstrated in Table 3 below, each form of rumination was positively correlated with anger, relational aggression and depression ($p < .001$). Anger rumination was correlated with overt aggression ($r = .21, p < .01$) whereas sadness rumination was not ($r = .04, p = ns$). See Appendix L for scatterplots categorized by sex.

Table 3

Zero-Order Correlations among Anger Rumination, Sadness Rumination, Anger, Aggression, and Depression (N = 226)

Variable	1	2	3	4	5	6
1. Anger rumination	--	.74 ^{***}	.33 ^{***}	.21 ^{**}	.33 ^{***}	.41 ^{***}
2. Sadness rumination		--	.25 ^{***}	.04	.22 ^{***}	.48 ^{***}
3. Anger			--	.44 ^{***}	.29 ^{***}	.18 ^{**}
4. Overt aggression				--	.42 ^{***}	.08
5. Relational aggression					--	.18 ^{**}
6. Depression						--

* $p < .05$. ** $p < .01$. *** $p < .001$.

As illustrated in Table 4, the anger rumination component of the SARI produced similar zero-order correlations with the variables of interest as compared to the Anger Rumination Scale (ARS; Sukhodolsky et al., 2001). Further, the SARI anger rumination component and the ARS were highly correlated ($r = .72, p < .001$). The sadness rumination component of the SARI and the Rumination on Sadness Scale (RSS; Conway et al., 2001) also produced comparable correlations with the variables of interest (Table 4), and were highly inter-correlated ($r = .73, p < .001$). These results demonstrate good convergent validity for both components of the SARI.

Sex Differences

Women ($M = 28.18; SD = 7.46$) scored higher than men ($M = 25.87; SD = 6.97$) on sadness rumination, $t(224) = 2.20, p = .03$, even when controlling for depression, $F(2, 223) = 4.40, p = .04$. There was no significant difference in anger rumination between women ($M = 28.99; SD = 7.54$) and men ($M = 27.41; SD = 7.83$), $t(224) = 1.44, p = .15$, also when controlling for anger, $F(2, 223) = .77, p = .38$. These findings were consistent with the hypotheses (see Table 5 for other sex differences).

Williams' modified Hotelling procedure was carried out separately for each sex to assess whether men's and women's anger rumination were differentially correlated with the two forms of aggression. As predicted, women's anger rumination was correlated more strongly with relational aggression ($r = .36, p < .001$) compared to overt aggression ($r = .18, p = .02$), $t(152) = 2.09, p < .05$. For men, anger rumination yielded comparable correlations with overt aggression ($r = .31, p = .01$) and relational aggression ($r = .30, p = .01$), $t(68) = -.09, p > .05$, as expected.

Table 4

Comparison of SARI with Other Rumination Measures: Zero-Order Correlations with Anger, Aggression and Depression (N = 226)

Variable	Anger Rumination Measures		Sadness Rumination Measures	
	ARS	SARI-angrum	RSS	SARI-sadrum
SARI-angrum	.72 ^{***}	--	.60 ^{***}	.74 ^{***}
SARI-sadrum	.58 ^{***}	.74 ^{***}	.73 ^{***}	--
RSS	.57 ^{***}	.60 ^{***}	--	.73 ^{***}
ARS	--	.72 ^{***}	.57 ^{***}	.58 ^{***}
Anger	.30 ^{***}	.33 ^{***}	.21 ^{***}	.25 ^{***}
Overt aggression	.27 ^{***}	.21 ^{**}	.06	.04
Relational aggression	.35 ^{***}	.33 ^{***}	.19 ^{**}	.22 ^{***}
Depression	.47 ^{***}	.41 ^{***}	.57 ^{***}	.48 ^{***}

Note. ARS = Anger Rumination Scale (Sukhodolsky et al., 2001); RSS = Rumination on Sadness Scale (Conway et al., 2000); SARI-angrum = Sadness and Anger Rumination Inventory—anger rumination component; SARI-sadrum = Sadness and Anger Rumination Inventory—sadness rumination component.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5

Sex Differences (N = 226)

Variable	<i>M (SD)</i>		<i>t</i>
	Women	Men	
Age	19.57 (3.11)	19.85 (3.02)	0.61
Anger rumination	28.99 (7.54)	27.41 (7.83)	-1.44
Sadness rumination	28.18 (7.46)	25.87 (6.97)	-2.20*
Anger	6.67 (2.45)	6.03 (2.26)	-1.88 [†]
Overt aggression	15.56 (3.15)	16.87 (3.99)	2.47*
Relational aggression	19.04 (4.73)	19.58 (5.04)	0.78
Depression	2.30 (2.29)	2.06 (2.39)	-0.74

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

SEM Analyses

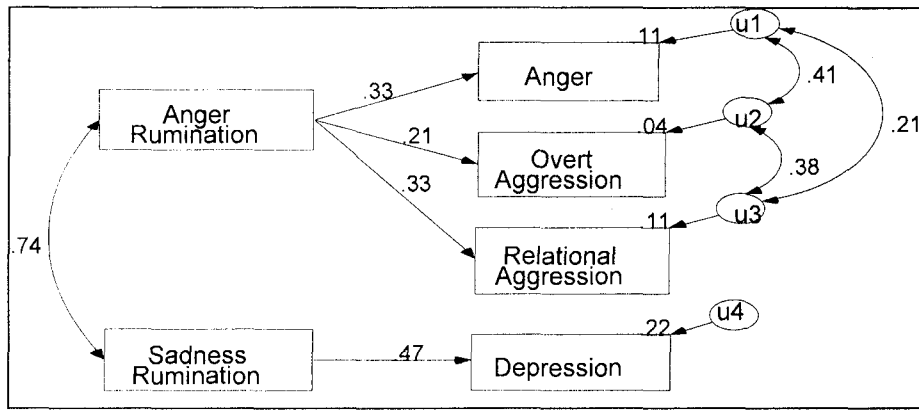
The principal question of interest was whether anger rumination and sadness rumination were differentially associated with particular emotional and behavioural conditions. This question was addressed using structural equation modeling (SEM) with AMOS Version 5.0 (Arbuckle, 2003). SEM is a confirmatory approach to data analysis in which the expected set of relations among variables can be modeled simultaneously. Anger rumination was expected to predict anger, overt aggression and relational aggression, whereas sadness rumination was expected to predict depression. The two forms of rumination were specified as correlating with each other. Anger, overt aggression and relational aggression also were specified as correlating with one another. Composite scores were used rather than latent indicators due to sample size considerations (i.e., Bentler, 1988, has suggested a ratio of at least 5:1 of subjects to estimated parameters).

The model was a good fit to the data, $\chi^2(7, N = 226) = 11.1, p = .13$; RMSEA = .05 (.00 - .11); CFI = .99.⁴ Anger rumination predicted anger ($\beta = .33, p < .001$), overt aggression ($\beta = .21, p = .001$), and relational aggression ($\beta = .33, p < .001$). Sadness rumination predicted depression ($\beta = .47, p < .001$). Multiple-group analysis for sex indicated structural invariance, meaning that the same model held for women and men, producing comparable regression weights, $\Delta\chi^2 = 2.6, 4 df, p = .63$.

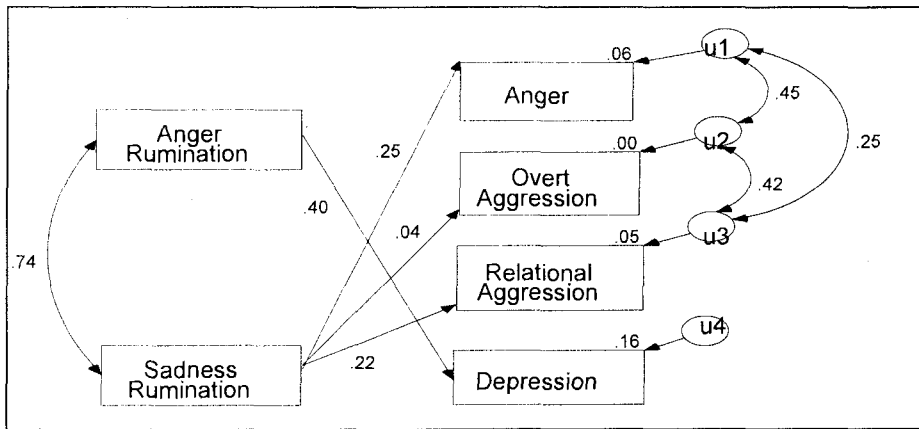
⁴ The chi-square value should *not* be significant if there is good model fit (i.e., want smaller value and $p > .05$), whereas a significant chi-square value (i.e., larger value and $p < .05$) indicates lack of satisfactory fit. However, a significant chi-square value in itself is not necessarily a reason to modify a model, given certain limitations with this statistic. For the RMSEA fit index, Hu and Bentler (1999) have suggested values less than or equal to .06 as the cutoff for a good model fit. There is adequate fit if RMSEA is less than or equal to .08. RMSEA 90% confidence intervals are reported in parentheses. The CFI ranges from 0 to 1, with values closer to 1 indicating a better fit. By convention, CFI should be equal to or greater than .90 to accept a model.

The model was tested against an alternative, reversed model to verify that the hypothesized model was a better fit. In the reversed model, depression was regressed onto anger rumination, while anger, overt aggression and relational aggression were regressed onto sadness rumination. Relations between the two forms of rumination and among the outcome variables (i.e., anger, aggression, depression) were left unchanged from the original model. Results indicated that the reversed model was a poor fit to the data, RMSEA = .16 (.12 - .20); CFI = .89; $\chi^2(7, N = 226) = 46.8, p < .001$. The Bollen-Stine bootstrap method indicated that the data departed significantly from the reversed model ($p = .001$), whereas the data did not depart significantly from the original model ($p = .21$). In addition, the Akaike information criterion (AIC)—a measure for comparing fit among models, where a lower value reflects better fit—indicated that the reversed model (AIC = 86.8) was a worse fit than the original model (AIC = 51.1).

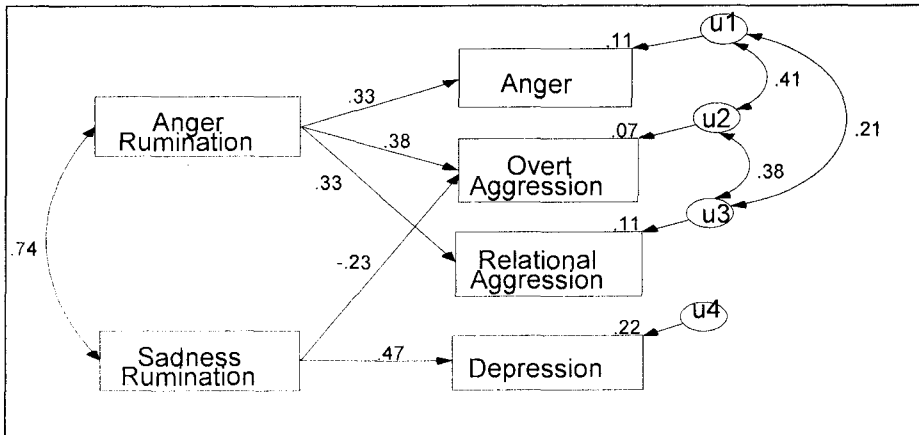
The modification indices from the original model indicated that specifying a relation between sadness rumination and overt aggression would further increase the model fit. Overt aggression was regressed onto sadness rumination, and results indicated that sadness rumination was a *negative* predictor of overt aggression ($\beta = -.23, p = 0.01$). Although the original model was a good fit, the revised model was a better fit, RMSEA = 0.00 (0.00 - .06); CFI = 1.0, producing a significantly lower chi-square statistic, $\Delta\chi^2 = 7.5, 1 df, p < .01$. In the revised model, as in the original, multiple-group analysis indicated that the same model held for men and women, $\Delta\chi^2 = 4.7, 5 df, p = .46$. Figure 1 illustrates the original model (a), reversed model (b), and revised model (c).



(a)



(b)



(c)

Figure 1. Structural equation models (Study 1) for (a) original model, RMSEA = .05; (b) reversed model, RMSEA = .16; and (c) revised model, RMSEA = .00.

Neither the original model ($\Delta\chi^2 = 11.1, 7 df, p > .05$) nor revised model ($\Delta\chi^2 = 3.6, 6 df, p > .05$) were worse predictors than the saturated or “just-identified” model that specifies all possible relations among the variables and fits the data perfectly. Table 6 provides regression information from the saturated model on the relations among each form of rumination (with the other form partialled out) and the outcome variables. Results were consistent when multiple regressions rather than SEM were used.⁵

Table 6

Saturated Model: Rumination on Anger and Sadness as Predictors of Anger, Overt Aggression, Relational Aggression, and Depression (Study 1)

Outcome variable	Anger Rumination			Sadness Rumination		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Anger	.10	.03	.32 ^{***}	.00	.03	.01
Overt aggression	.18	.04	.39 ^{***}	-.12	.05	-.24 ^{**}
Relational aggression	.24	.06	.38 ^{***}	-.04	.06	-.06
Depression	.03	.02	.11	.11	.02	.39 ^{***}

* $p < .05$. ** $p < .01$. *** $p < .001$.

⁵ Two highly correlated predictors, such as rumination on anger and sadness, could potentially pose problems associated with collinearity, whereby estimates of individual regression weights would not be reliable (the regression weights would be negatively correlated, with larger standard errors). However, the accuracy of the predictions would not be affected. Further, the TOL (.46), VIF (2.20) and Condition Indices (1; 8.6; 13) indicated that collinearity was not a problem in this study. Indicators of collinearity problems would be TOL < .1; VIF > 10; and Condition Index > 15.

Anger Rumination and Anger in Relation to Aggression

The next step was to evaluate whether anger rumination predicted aggression when anger was controlled. A general linear model (GLM) multivariate regression was conducted with anger rumination, sadness rumination and anger entered as covariates⁶ (i.e., predictor variables), and overt aggression and relational aggression entered as dependent variables. The parameter estimates indicated that both anger, $t(225) = 6.76, p < .001, \eta^2 = .17$, and anger rumination, $t(225) = 2.82, p < .01, \eta^2 = .04$, were independent positive predictors of overt aggression, whereas sadness rumination was a negative predictor, $t(225) = -2.82, p < .01, \eta^2 = .04$. Independent predictors of relational aggression were anger, $t(225) = 3.15, p < .01, \eta^2 = .04$, and anger rumination, $t(225) = 3.34, p = .001, \eta^2 = .05$. These analyses demonstrate that the relation between anger rumination and aggression is not solely a function of anger (i.e., anger does not mediate the relation). Rather, both the cognitive process of anger rumination and its affective correlate (i.e., anger) independently contribute to predicting aggressive behaviour.

Preliminary Exploration: Rumination and Worry

Worry was positively correlated with sadness rumination ($r = .51, p < .001$) and anger rumination ($r = .44, p < .001$), as predicted. Worry, sadness rumination, and anger rumination were all positively correlated with depression (p 's $< .001$; see Table 7 for other zero-order correlations pertaining to worry).

⁶ For GLM, covariates can be used with dependent variables to define a regression model.

Table 7

Comparisons among Worry and Rumination: Zero-Order Correlations

	Worry	Sadness rumination	Anger rumination
Sadness rumination	.51 ^{***}	--	--
Anger rumination	.44 ^{***}	.74 ^{***}	--
Depression	.44 ^{***}	.48 ^{***}	.41 ^{***}
Anger	.13 [*]	.25 ^{***}	.33 ^{***}
Overt aggression	-.04	.04	.21 ^{***}
Relational aggression	.14 [*]	.22 ^{***}	.33 ^{***}

* $p < .05$. ** $p < .01$. *** $p < .001$.

To assess the distinctiveness of rumination and worry, a GLM multivariate regression was conducted with anger rumination, sadness rumination and worry entered as covariates, and depression, anger, overt aggression and relational aggression entered as dependent variables. As expected, both sadness rumination, $t(225) = 3.29, p = .001, \eta^2 = .05$, and worry, $t(225) = 3.86, p < .001, \eta^2 = .06$, were independent predictors of depression. Unlike anger rumination, worry did not predict anger, $t(225) = -.29, p = .77, \eta^2 = .00$, overt aggression, $t(225) = -1.62, p = .11, \eta^2 = .01$, or relational aggression, $t(225) = .05, p = .96, \eta^2 = .00$. Sadness rumination was a negative predictor (albeit weak) of overt aggression, $t(225) = -1.94, p = .05, \eta^2 = .02$, whereas worry was not, $t(225) = -1.62, p = .11, \eta^2 = .01$.

Discussion

The goal of Study 1 was to examine anger rumination and sadness rumination in a normative sample of young adults to assess if the two forms of rumination have distinct emotional and behavioural associations. Although rumination on anger and sadness were highly correlated for women and men, factor analysis indicated that items from the sadness and anger rumination scales loaded onto separate factors, suggesting two separate rumination constructs. Further, each form of rumination had unique emotional and/or behavioural correlates. When shared variance was controlled, elevated levels of anger rumination but not sadness rumination predicted increased anger, relational aggression and overt aggression.

These findings were consistent with the hypothesis and with previous research demonstrating a link between anger rumination and anger (Bushman, 2002; Rusting & Nolen-Hoeksema, 1998), and anger rumination and aggression (e.g., Maxwell, 2004). The current findings extend previous research by demonstrating the unique relation of anger rumination (i.e., controlling for sadness rumination) with both relational and overt forms of aggression. Further, anger rumination was found to predict overt and relational aggression even when anger was controlled (i.e., anger did not mediate the relation).

Results also confirmed that when shared variance was controlled, sadness rumination but not anger rumination predicted depression. An unexpected finding was that sadness rumination, when controlling for anger rumination, was a *negative* predictor of overt aggression. Therefore, among individuals who experience the same amount of anger rumination (i.e., anger rumination is controlled), those with higher levels of sadness

rumination display less overt aggression. This finding underscores that the two forms of rumination are unique in terms of their emotional and behavioural associations.

As predicted, and consistent with previous research (e.g., Nolen-Hoeksema & Jackson, 2001), women reported higher levels of sadness rumination compared to men, even though the relation between sadness rumination and depression appears similar for men and women (i.e., sex did not moderate the relation). Results also supported the prediction that women and men would engage in comparable levels of anger rumination. As anticipated, increased anger rumination was associated with greater levels of overt and relational aggression for men and women. However, examination of within-sex effects indicated that women's anger rumination was more strongly associated with relational than overt aggression. For men, anger rumination equally predicted relational and overt aggression. Thus, although women ruminated on anger as much as did men—and women's rumination predicted both forms of aggression as did men's rumination—women's anger rumination seems more likely to result in relational demonstrations of anger (e.g., spreading rumors, ostracizing others from social groups) than in overt aggression (e.g., physical acts or threats of aggression).

As hypothesized, preliminary analyses indicated that worry was positively correlated with both forms of rumination, but sadness rumination and worry were independent predictors of depression. These results indicate that although rumination and worry are similar, they seem to be independent constructs at least in terms of their relation with depressive symptoms. It will be important for future research to incorporate anxiety, the affective component of worry, into the rumination model to assess if worry

and sadness rumination are independent predictors of anxiety or whether only worry predicts anxiety (when worry and rumination are covaried).

Results from Study 1 were based on a university sample which generates questions about the generalizability of findings to other groups, such as clinical populations. In Study 2, rumination on anger and sadness were examined in a clinical sample of adolescents with defining features of anger, aggression and depression.

STUDY 2

Study 1 examined anger rumination and sadness rumination in a normative sample of young adults and found distinctions between the two forms of rumination in terms of their associations with particular emotional and behavioural conditions. A goal of Study 2 was to assess if these distinctions were consistent in a sample of clinic-referred adolescents struggling with anger, aggression and depression. Focusing on this population allowed for testing unique relations among anger rumination and sadness rumination in a population where significant peaks in rumination, aggression and depression were expected.

This study appears to be the first to extend research on anger rumination to adolescents. Studying rumination in adolescence and how it relates to anger, aggression and depression offers an opportunity to better understand how cognition and affect unfold developmentally. Adolescence is a period of significant biological, cognitive and social change. Changes in neurological structure and function, cognitive systems, and socio-emotional processes occur at different rates, and disjointed coordination among the developing systems may increase youths' vulnerability to psychopathology (Steinberg, 2005). Adolescence is in fact associated with the onset or intensification of a number of problems, including depression (Birmaher et al., 1996) and antisocial and delinquent behaviour (Moffitt, 1994).

Biological changes during adolescence include developments in the prefrontal cortex implicated in improvements in executive functioning (e.g., Giedd et al., 1999). Executive functioning encompasses abilities such as emotion regulation, coordination of affect and cognition, and response inhibition (Keating, 2004), processes that are likely

closely linked to rumination which can be regarded as a maladaptive emotion regulation strategy (Broderick & Korteland, 2002; Papageorgiou & Wells, 2001). Other changes in adolescence include cognitive advances in metacognition (thoughts about thinking) and representational capacity (Case, 1985; Selman, 1980) that may increase vulnerability to rumination due to newly developed opportunities for self-reflection.

In addition to biological and cognitive developments, adolescence is characterized by marked social and psychological transitions. Adolescents spend less time with family and more time with peers (Larson, Richards, Moneta, & Holmbeck, 1996), and struggle with balancing their striving for autonomy and maintenance of connection with parents (e.g., Moretti & Peled, 2004). The need to find balance between autonomy and connectedness triggers the search for meaning and understanding of oneself in relation to others. The pursuit of understanding and meaning is implicated not only in adolescent identity development but also in rumination (Segerstrom et al., 2003).

It would not be surprising to find that rumination increases during adolescence, given the rapid and pervasive changes that occur in biological, cognitive and social-psychological processes. In fact, some evidence (Hampel & Petermann, 2005) suggests a rise in general rumination (e.g., “The situation rushes into my mind over and over again”) from late childhood (ages 8 to 10 years) to adolescence (ages 11 to 13 years).

In Study 2, as in Study 1, it was hypothesized that anger rumination would be a positive predictor of anger, relational aggression and overt aggression. Anger rumination was expected to be a stronger predictor of these variables compared to sadness rumination. No sex differences were expected in the relations among anger rumination, anger and aggression (i.e., sex was not expected to moderate the relations). Also

investigated was the question of whether anger rumination predicted relational and overt aggression even when anger was controlled.

Girls and boys were expected to engage in comparable overall levels of anger rumination, based on previous findings for adults (Maxwell, 2004; Rusting & Nolen-Hoeksema, 1998; Sukhodolsky et al., 2001). Given the relatively high levels of overt aggression among both girls and boys in this clinical population (e.g., Moretti, Holland, & McKay, 2001), adolescent girls' anger rumination was not expected to be more strongly correlated with relational aggression compared to overt aggression as was hypothesized and found for women in Study 1. Rather, anger rumination for both sexes was expected to show comparable correlations with overt aggression and relational aggression.

Sadness rumination was expected to be a positive predictor of depression, and a stronger predictor than anger rumination. Sadness rumination was expected to be a negative predictor of overt aggression, based on findings from Study 1. Girls were expected to demonstrate more sadness rumination compared to boys (even when controlling for depression), as was found in Study 1 and in previous research (Broderick & Korteland, 2002; Nolen-Hoeksema & Jackson, 2001; Schwartz & Koenig, 1996). However, sex differences were not expected in the relation between sadness rumination and depression (i.e., moderation was not predicted).

Method

Participants

This study was part of a larger CIHR project on gender and aggression. At the time of data analysis, a total of 140 adolescents (75 girls, 65 boys) had participated in the project. Participants had been referred to an assessment program for youth with severe conduct problems ($n = 60$; 31 girls, 29 boys) or admitted to youth correctional facilities ($n = 80$; 44 girls, 36 boys) in Burnaby, British Columbia. Of those, 121 adolescents (65 girls, 56 boys) completed the measures relevant to this dissertation, with 63 participants (35 girls, 28 boys) from the forensic facilities (open and secure custody) and 58 participants (30 girls, 28 boys) from the Maples Adolescent Centre (residential assessment unit). Reasons for non-completion (19 participants; 17 from forensic sites, 2 from the Maples assessment program) included insufficient time allotted for protocol completion (11 forensic youth); withdrawal due to disinterest (4 forensic youth, 2 Maples youth); and transfer to another institution (2 forensic youth).

Preliminary analyses confirmed comparability of results across referral sources. Forensic participants were older and rated themselves as engaging in more overt aggression than Maples participants, but otherwise did not differ on the variables of interest (see Table 8). Participation was voluntary, with adolescents at the Maples receiving thirty dollars and those at the custody centres receiving ten dollars and snacks for their participation. Given that more boys than girls enter these facilities, all eligible girls were approached first to maximize the number of girls in the sample, and boys were matched with the girls at each site, based on chronological age. The exclusionary

criterion for participation was a Full Scale IQ of less than 70 as measured by the WISC-IV.

Table 8

Effects of Location (Maples vs. Forensic) on Relevant Variables (N = 121)

Variable	<i>M (SD)</i>		<i>t</i>
	Maples	Forensic	
Age	14.34 (1.12)	15.95 (1.25)	-7.44***
Anger rumination	30.19 (11.92)	33.27 (10.59)	-1.51
Sadness rumination	29.29 (13.13)	28.92 (10.84)	.17
Anger	3.29 (1.93)	3.97 (1.83)	-1.97
Overt aggression	21.74 (6.79)	26.76 (9.10)	-3.42**
Relational aggression	20.22 (6.47)	22.21 (7.66)	-1.53
Depression	5.91 (4.90)	5.16 (3.66)	.97

* $p < .05$. ** $p < .01$ *** $p < .001$.

Participants ranged in age from 12 to 18 years ($M = 15.18$, $SD = 1.43$). Figure 2 displays the breakdown of participants' ages by location (i.e., Maples and forensic sites). The majority of youth were under the legal care of their biological parents (60%). Youth not under the care of their biological parents indicated social workers (22%), foster parents (8%), another relative (e.g., grandparent; 7%), or adoptive parents (3%) as their legal guardians. Participants were of Caucasian (64%), First Nations (23%), African Canadian (1%) and mixed ethnic backgrounds (12%). Figure 3 illustrates the breakdown of ethnicities by location.

Based on the computerized Diagnostic Interview for Children and Adolescents – IV (DICA-IV; Reich, Welner, & Herjanic, 1997), administered by trained interviewers, 59% of participants met *DSM-IV* criteria for Conduct Disorder (59% of boys and 58% of girls); 42% for marijuana dependence (41% of boys and 43% of girls); 36% for alcohol dependence (33% of boys and 39% of girls); 24% for Major Depressive Disorder (15% of boys and 32% of girls); and 15% for Generalized Anxiety Disorder (10% of boys and 19% of girls). Similar percentages of girls compared to boys met criteria for all disorders except Major Depressive Disorder where a greater proportion of girls than boys met criteria, $t(119) = 2.15$, $p = .03$.

According to participants' accounts of their past behaviours, 56% had engaged in Break and Enters (62% of boys and 51% of girls), 44% had participated in gang activity (43% of boys and 45% of girls), and 42% had physically attacked someone with the intent of seriously hurting or killing the person (46% of boys and 38% of girls). Comparable percentages of boys compared to girls reported engaging in these behaviours ($p > .05$).

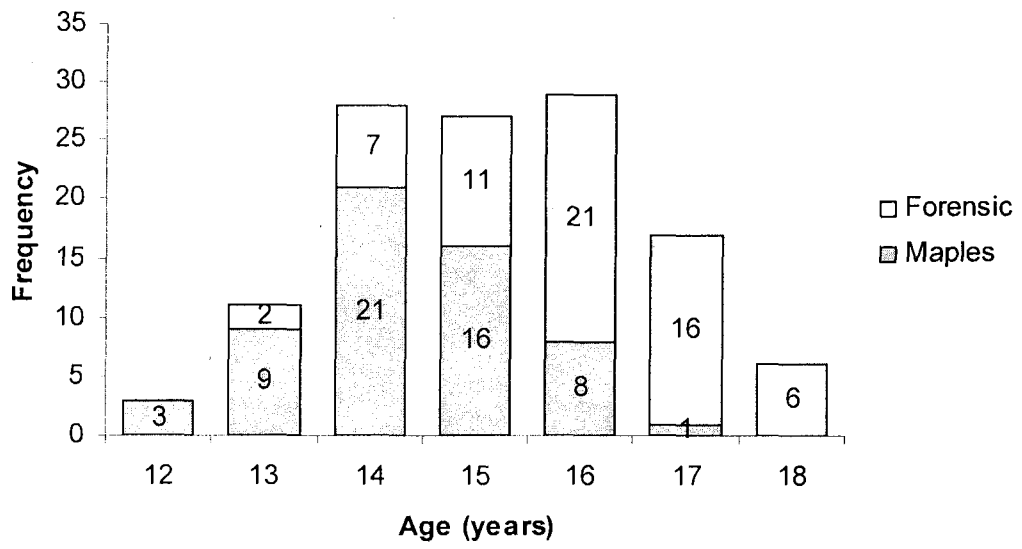


Figure 2. Age distributions of participants at Maples and forensic sites.

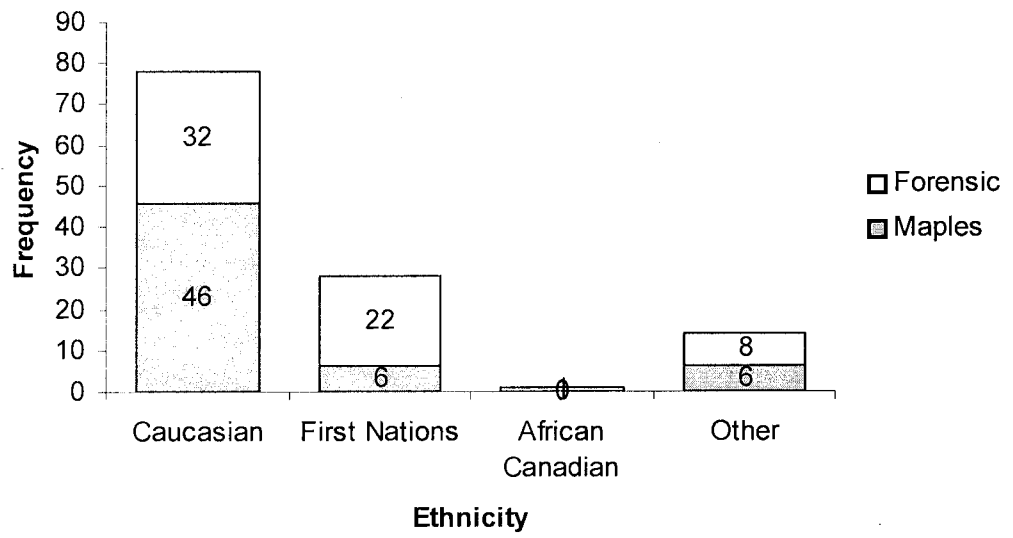


Figure 3. Ethnic composition of participants at Maples and forensic sites.

Measures

The measures relevant to this study represented only a subset of all measures administered to participants. Attempts were made to use comparable measures across Studies 1 and 2.

The Sadness and Anger Rumination Inventory (SARI), described in Study 1, was used to measure both forms of rumination.

As in Study 1, *The Integrated Measurement Framework of Aggression* (Little et al., 2003) assessed overt and relational aggression. In this study, internal consistency was acceptable for overt ($\alpha = .93$) and relational aggression ($\alpha = .91$).

Anger and Depression were assessed using items from the Ontario Child Health Study scales (OCHS; Offord et al., 1987; Offord et al., 1992), a measure with good psychometric properties (for detailed information see Boyle et al., 1987; Boyle et al., 1993), which was developed based on *DSM* descriptions of childhood disorders and items contained in the widely-used and well-validated *Youth Self Report* (YSR; Achenbach & Rescorla, 2001). Respondents indicate whether items are *never or not true* (0), *sometimes or somewhat true* (1), or *often or very true* (2) based on their behaviour and experiences within the past six months (see Appendix M for items included in this study).

Four items tapping anger were summed to produce an anger score, with higher scores reflecting elevated anger. Sample items are “I am angry and resentful” and “I have a hot temper.” With four items only one factor could be identified, accounting for 38% of the variance ($RMR = .03$; see Appendix N for scree plot). Internal consistency in this study was $\alpha = .70$.

Nine items tapping depressive symptoms were summed to produce a depression score. Sample items are “I am unhappy, sad or depressed” and “I get no pleasure from my usual activities.” As in Study 1, one item tapped suicidal thoughts (“I think about killing myself”). Factor analysis in this study indicated that all nine items loaded onto one factor, accounting for 43% of the variance ($RMR = .05$). Examination of the scree plot (Appendix N), eigenvalues, RMRs, residual variances and factor loadings for a one-through four- factor solution supported the retention of one factor. Internal consistency was $\alpha = .87$.

Procedure

Measures for the Gender and Aggression Project were divided into three modules, with each module completed in a different session. The measures relevant to this study were in Modules 1 and 2, and the questionnaires for anger rumination and sadness rumination were in separate modules (Modules 1 and 2, respectively). The order of the modules was randomly alternated so that participants could start and finish with any one of the three modules. Each module took between one and two hours to complete, and participants received their honorarium after finishing the last module. Participants and their legal guardians provided signed consent prior to beginning the study (see Appendix O). Participants were reminded at the start of each session about the limits of confidentiality and their right to withdraw at any time. All data were collected by trained graduate students who tried to ensure that participants completed all items within the questionnaires.

Results

Nineteen participants were not administered one or more of the relevant questionnaires, and these cases were dropped from all analyses. When items were missing (i.e., not completed) within a questionnaire (6 occurrences: three cases had one item missing, two had two missing items, and one had three items missing), the participant's mean score on the given scale was assigned to those items.

Preliminary Analyses

Table 9 below provides descriptive information on all the variables of interest (see also Appendix P for histograms).

Table 9

Descriptive Information on the Variables (Study 2)

Variable	<i>M</i>	<i>SD</i>	Possible Range	Observed Range	Q1	Median (Q2)	Q3	Skew (G ₁)	Kurtosis (G ₂)
Anger rumination	31.79	11.31	11-55	11-55	23	31	40	.09	-.79
Sadness rumination	29.10	11.94	11-55	11-55	18.5	29	37	.27	-.66
Anger Overt	3.64	1.90	0-8	0-8	2	4	5	.01	-.80
aggression	24.36	8.43	12-48	12-48	18	23	29	.75	.22
Relational aggression	21.26	7.16	13-52	13-52	16.5	19	24.5	1.72	4.27
Depression	5.52	4.30	0-18	0-18	2	5	8	.68	-.23

$N = 121$; $S.E.(\text{Skew}) = .22$; $S.E.(\text{Kurtosis}) = .44$

Anger rumination questionnaire. Skewness values (G_1) for the distribution of responses to individual items ranged from -.14 to .38, and kurtosis values (G_2) ranged from -1.21 to -.53. Total scores (sum of 11 items for each participant) ranged from 11 to 55, and the distribution approximated a normal distribution (skewness = .09; kurtosis = -.79). The mean total score was $M = 31.79$ ($SD = 11.31$). Reliability analysis of the 11 anger rumination items yielded an internal consistency coefficient of $\alpha = .95$.

Sadness rumination questionnaire. Skewness values (G_1) for individual items ranged from .05 to .60, and kurtosis values (G_2) ranged from -1.34 to -.48. Total scores ranged from 11 to 55, and the distribution approximated a normal distribution (skewness = .27; kurtosis = -.66). The mean total score was $M = 29.10$ ($SD = 11.94$) and was significantly lower than the mean anger rumination total score in the overall sample, $t(120) = 3.43, p = .001$, and in separate analyses for girls, $t(64) = 2.27, p = .03$, and boys, $t(55) = 2.55, p = .01$. Reliability analysis of the 11 sadness rumination items yielded an internal consistency coefficient of $\alpha = .96$.

Factor Analysis

A common factor analysis (principal axis factoring) with direct quartimin oblimin rotation was conducted on all 22 items of the SARI rumination scales. Two factors emerged with eigenvalues greater than one (12.79, 2.15), accounting for 65.0% of the variance. The RMR for a one-factor solution was .09, and the RMR for a two-factor solution dropped to .04. Examination of the scree plot (Appendix Q), eigenvalues, RMRs, residual variances (Appendix R) and factor loadings for a one- through four- factor solution supported the retention of two factors. As illustrated in Table 10, the sadness rumination and anger rumination items loaded onto two separate factors tapping sadness rumination and anger rumination, respectively. (See Appendix S for unrotated factor plot.)

Table 10

SARI Factor Analysis and Item Descriptives (Study 2)

Item	<i>M</i>	<i>SD</i>	Item-Total Correlation	Factor Loading ^a	
				1	2
Sad 5. I get absorbed in thinking about why I am sad and find it difficult to think about other things.	2.57	1.35	.88	.95	-.07
Sad 7. When something makes me sad, I turn this matter over and over again in my mind.	2.60	1.32	.86	.92	-.05
Sad 9. Whenever I feel sad, I keep thinking about it for a while.	2.67	1.26	.84	.89	-.04
Sad 3. I keep thinking about the reasons for my sadness.	2.57	1.27	.83	.86	-.01
Sad 4. When I think about my sadness, I become more upset.	2.85	1.35	.84	.85	.02
Sad 8. I tire myself out by thinking so much about myself and the reasons for my sadness.	2.36	1.29	.79	.84	-.03
Sad 2. I have difficulty getting myself to stop thinking about how sad I am.	2.46	1.27	.84	.79	.09
Sad 10. I think about certain events from the past and they still make me sad.	2.75	1.29	.75	.76	-.01
Sad 11. When I am sad, the more I think about it the sadder I feel.	2.91	1.48	.77	.72	.09
Sad 6. I search my mind for events or experiences in my past that may help me understand my sad feelings.	2.63	1.25	.67	.62	.09
Sad 1. I keep thinking about past experiences that have made me sad.	2.72	1.16	.70	.61	.15
Ang 4. When I think about my anger, I become more upset.	3.17	1.34	.83	-.08	.93
Ang 2. I have difficulty getting myself to stop thinking about how angry I am.	2.83	1.29	.80	-.10	.90
Ang 11. When I am angry, the more I think about it the angrier I feel.	3.15	1.36	.83	-.02	.88
Ang 3. I keep thinking about the reasons for my anger.	2.97	1.23	.76	-.12	.87
Ang 9. Whenever I feel angry, I keep thinking about it for a while.	2.88	1.27	.84	.10	.78
Ang 5. I get absorbed in thinking about why I am angry and find it difficult to think about other things.	2.84	1.40	.83	.11	.78
Ang 7. When something makes me angry, I turn this matter over and over again in my mind.	2.91	1.23	.78	.06	.75
Ang 10. I think about certain events from the past and they still make me angry.	3.11	1.29	.74	.09	.69
Ang 8. I tire myself out by thinking so much about myself and the reasons for my anger.	2.51	1.26	.76	.35	.52
Ang 1. I keep thinking about past experiences that have made me angry.	2.69	1.20	.64	.21	.51
Ang 6. I search my mind for events or experiences in my past that may help me understand my angry feelings.	2.73	1.18	.52	.08	.47

^aAbsolute values greater than .40 are in boldface.

The correlation between the two factors was $r = .71$. Composite scores for each form of rumination were created by summing the 11 items from each rumination questionnaire.

Zero-order Correlations

There was a positive correlation between anger rumination and sadness rumination in the overall sample ($r = .72, p < .001$), and in separate analyses for girls ($r = .71, p < .001$) and boys ($r = .65, p < .001$). As illustrated in Table 11, each form of rumination was correlated positively with anger, aggression and depression. Age was not significantly correlated with any of the variables. See Appendix T for scatterplots by sex and location.

Sex Differences

As expected, girls ($M = 33.24; SD = 10.92$) scored higher than boys ($M = 24.29; SD = 11.33$) on sadness rumination, $t(119) = -4.42, p < .001$, even after controlling for depression, $F(2, 118) = 4.93, p = .03$. Girls ($M = 35.51; SD = 10.15$) also scored higher than boys ($M = 27.48; SD = 11.12$) on anger rumination, $t(119) = -4.15, p < .001$, even after controlling for anger, $F(2, 118) = 17.71, p < .001$. This finding was inconsistent with the prediction that there would be no sex difference in overall levels of anger rumination. See Table 12 for other sex differences.

Table 11

Intercorrelations among Rumination, Anger, Aggression, Depression, and Age (Study 2)

Variable	1	2	3	4	5	6	7
1. Anger rumination	--	.72 ^{***}	.50 ^{***}	.48 ^{***}	.46 ^{***}	.52 ^{***}	-.02
2. Sadness rumination		--	.36 ^{***}	.20 [*]	.33 ^{***}	.66 ^{***}	-.06
3. Anger			--	.63 ^{***}	.49 ^{***}	.37 ^{***}	.12
4. Overt aggression				--	.65 ^{***}	.18	.17
5. Relational aggression					--	.28 ^{**}	.10
6. Depression						--	-.15
7. Age							--

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 12

Sex Differences (N = 121)

Variable	<i>M (SD)</i>		<i>t</i>
	Girls	Boys	
Age	15.03 (1.33)	15.36 (1.53)	1.25
Anger rumination	35.51 (10.15)	27.48 (11.12)	-4.15 ^{***}
Sadness rumination	33.24 (10.92)	24.29 (11.33)	-4.42 ^{***}
Anger	3.80 (1.84)	3.46 (1.97)	-0.97
Overt aggression	24.17 (8.93)	24.57 (7.87)	0.26
Relational aggression	22.62 (7.98)	19.68 (5.75)	-2.29 [*]
Depression	6.94 (4.52)	3.88 (3.37)	-4.17 ^{***}

* $p < .05$. ** $p < .01$. *** $p < .001$.

Williams' modified Hotelling procedure was carried out separately for each sex to assess whether boys' and girls' anger rumination were differentially correlated with the two forms of aggression. As predicted, girls' anger rumination was not differentially correlated with relational aggression ($r = .41, p < .001$) compared to overt aggression ($r = .46, p < .001$), $t(62) = 0.59, p > .05$, and boys' anger rumination also was not differentially correlated with relational ($r = .45, p < .001$) and overt aggression ($r = .61, p < .001$), $t(53) = 1.67, p > .05$.

SEM Analyses

Structural equation modeling was used to address the question of whether anger rumination would positively predict anger, overt aggression and relational aggression, and whether sadness rumination would positively predict depression and negatively predict overt aggression. The two forms of rumination were specified as correlating with each other, as were anger, overt aggression and relational aggression.

The model was a good fit to the data, $\chi^2(6, N = 121) = 6.2, p = .41$; RMSEA = .02 (.00 - .12); CFI = 1.0. As illustrated in Figure 4, anger rumination predicted anger ($\beta = .50, p < .001$), overt aggression ($\beta = .69, p = .001$), and relational aggression ($\beta = .46, p < .001$). Sadness rumination was a positive predictor of depression ($\beta = .66, p < .001$) and negative predictor of overt aggression ($\beta = -.29, p = .001$). Multiple-group analysis for sex indicated structural invariance, meaning that the same model held for girls and boys, producing comparable regression weights, $\Delta\chi^2 = 4.0, 5 df, p = .55$. Therefore, sex did not moderate the relations among rumination and the outcome variables. Similarly, multiple-group analysis for location indicated structural invariance, meaning that the same model held for participants at the Maples and forensic sites, $\Delta\chi^2 = 4.1, 5 df, p = .53$.

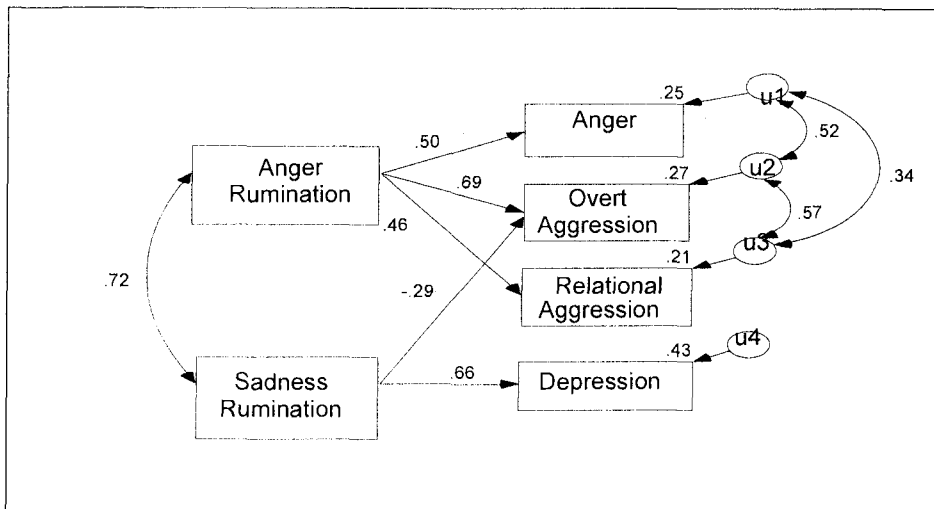


Figure 4. Structural equation model (Study 2): Anger rumination positively predicting anger, overt aggression and relational aggression, and sadness rumination positively predicting depression and negatively predicting overt aggression. RMSEA = .02; $\chi^2 = 6.2, p = .41$.

Table 13 provides regression information from the saturated model on the relations among each form of rumination (with the other form partialled out) and the outcome variables. As hypothesized, anger rumination but not sadness rumination was a positive predictor of anger, overt aggression and relational aggression. Sadness rumination but not anger rumination was a negative predictor of overt aggression and a positive predictor of depression. Results were consistent when multiple regressions rather than SEM were carried out.⁷

Table 13

Saturated Model: Rumination on Anger and Sadness as Predictors of Anger, Overt Aggression, Relational Aggression, and Depression (Study 2)

Outcome variable	Anger Rumination			Sadness Rumination		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Anger	.09	.02	.52***	-.00	.02	-.02
Overt aggression	.52	.08	.70***	-.21	.08	-.30**
Relational aggression	.29	.08	.46***	-.01	.07	-.01
Depression	.04	.04	.09	.21	.04	.59***

* $p < .05$. ** $p < .01$. *** $p < .001$.

⁷ The TOL (.48), VIF (2.10) and Condition Indices (1; 6.09; 9.26) indicated that collinearity was not a problem in this study.

Anger Rumination and Anger in Relation to Aggression

The next step was to evaluate whether anger rumination predicted aggression when anger was controlled. A GLM multivariate regression was conducted with anger rumination, sadness rumination and anger entered as covariates (i.e., predictor variables), and overt aggression and relational aggression entered as dependent variables. The parameter estimates indicated that both anger, $t(120) = 6.59, p < .001, \eta^2 = .27$, and anger rumination, $t(120) = 4.10, p < .001, \eta^2 = .13$, were independent positive predictors of overt aggression, whereas sadness rumination was a negative predictor of overt aggression, $t(120) = -2.99, p < .01, \eta^2 = .07$. Independent predictors of relational aggression were anger, $t(120) = 3.92, p < .001, \eta^2 = .12$, and anger rumination, $t(120) = 2.33, p = .02, \eta^2 = .04$. As in Study 1, these analyses demonstrate that both the cognitive process of anger rumination (i.e., repetitive thoughts) and its affective correlate (i.e., angry feelings) independently contribute to predicting aggression.

Discussion

Results demonstrated support for the same SEM model in a clinic-referred sample of adolescents as was supported in a normative sample of young adults (Study 1). Findings from Study 2 provide further evidence that anger rumination and sadness rumination are best conceptualized as two distinct constructs that are uniquely associated with specific emotional and behavioural conditions. However, some sex differences in rumination were found across the two samples.

Results from Study 2 indicated that adolescent girls reported higher levels of anger rumination compared to boys, which was contrary to the prediction and to previous research on adults (Study 1; Maxwell, 2004; Rusting & Nolen-Hoeksema, 1998; Sukhodolsky et al., 2001) that showed comparable overall levels of anger rumination for women and men. Although adolescent girls reported elevated levels of anger rumination compared to boys, the relation between anger rumination and aggression appears similar for boys and girls in this sample (i.e., sex did not moderate the relation). Further, as predicted, girls' anger rumination showed comparable correlations with overt aggression and relational aggression (as did boys' anger rumination), unlike women's anger rumination in Study 1 that was more strongly associated with relational aggression compared to overt aggression.

As predicted and consistent with previous research on youth and adults (e.g., Study 1; Broderick & Korteland, 2002; Schwartz & Koenig, 1996), adolescent girls reported higher levels of sadness rumination compared to boys, even when controlling for depressive symptoms. However, as in Study 1, the relation between sadness rumination and depression appears similar for boys and girls (i.e., sex did not moderate the relation).

General Discussion

The goal of this dissertation was to assess if anger rumination and sadness rumination are associated with distinct emotional and behavioural conditions, and whether it is warranted to conceptualize them as separate but related constructs. Factor analyses from Studies 1 and 2 indicated that items from the sadness rumination and anger rumination scales loaded onto separate factors, suggesting two separate rumination constructs. Further, when shared variance was controlled, each form of rumination was associated with unique emotional and behavioural correlates. Specifically, anger rumination was significantly related to increased anger, as well as relational and overt aggression even when anger was controlled. This latter finding indicates that anger does not mediate the relation between anger rumination and aggression. The cognitive process of anger rumination has a direct relation with aggression, independent of angry affect.

The finding that anger rumination and anger are independent predictors of aggression suggests that interventions should target both the cognitive component (i.e., identifying and exiting rumination cycles) and affective component (i.e., reducing and controlling feelings of anger). Mindfulness-based cognitive therapy (MBCT; Broderick, 2005; Ma & Teasdale, 2004) has shown promising results in reducing sadness rumination and depressive relapses. It might be useful to evaluate whether this approach—when integrated into a treatment plan encompassing “a coherent context of understanding” (Teasdale, Segal, & Williams, 2003, p. 158)—could decrease anger rumination, anger and aggression.

Results also confirmed that sadness rumination was positively correlated with depression, replicating previous research on rumination and depression, as well as

extending the field by demonstrating the specificity of sadness rumination (and not anger rumination) to depressive symptoms even when using analogous rumination measures. Further, elevated sadness rumination was related to lower levels of overt aggression, when anger rumination was controlled. Among individuals who experience the same amount of anger rumination, higher levels of sadness rumination might inhibit overt aggression because focusing on sadness may provoke feelings of self-blame as well as inhibited arousal, both of which could result in reduced hostility and overt aggression toward others. The finding that sadness rumination is a negative predictor of overt aggression whereas anger rumination is a positive predictor highlights that the two forms of rumination are distinct processes with unique associations.

Potential Limitations

The Sadness and Anger Rumination Inventory (SARI) was explicitly designed to contain analogous scales for each form of rumination to ensure that results of specificity were not due to different question content and format. A potential limitation with this approach is that unique characteristics of each form of rumination might not have been fully captured. For example, a feature of anger rumination—"thoughts of revenge"—was not included in the anger rumination questionnaire because analogous items could not be devised for the sadness rumination questionnaire. However, the SARI demonstrated good criterion-related validity in Study 1 and was important for the purpose of this dissertation, which was to examine both forms of rumination using a methodology that minimized measurement variance. Further, the finding of distinct factor loadings for the anger rumination and sadness rumination items, and the specificity of each type of rumination with particular correlates—*even though the form of the rumination items was*

analogous—is a compelling demonstration of the distinctiveness of sadness rumination and anger rumination. Nonetheless, further research is required to validate the psychometric properties of the SARI.

The current research examined rumination in a normative adult sample (Study 1) and a clinical adolescent sample (Study 2). However, given that the participants in Study 1 were university students, it may be inaccurate to describe the sample as a ‘normative’ group of young adults. It will be important for future rumination research to be conducted on non-clinical groups of adults that extend beyond the university setting. Further, the sample in Study 2 allowed for testing unique relations in a group where significant elevations in rumination, emotional difficulties and behavioural problems would be expected. Nonetheless, this research is clearly limited by the absence of a normative group of adolescents and a clinic-referred group of adults for comparison purposes, and to assess generalizability of the findings.

Research with clinical adult populations and normative groups of adolescents is necessary to determine whether the sex differences found between Study 1 and 2 are due to developmental or to clinical differences between the samples. For example, research with a clinical adult sample with defining features of anger and aggression—such as adults in forensic facilities—would be valuable for determining whether women in these settings demonstrate higher levels of anger rumination compared to men, as was found for clinic-referred adolescent girls compared to boys (Study 2) but not for women in normative samples (Study 1; Maxwell, 2004; Rusting & Nolen-Hoeksema, 1998; Sukhodolsky et al., 2001).

Similarly, it is possible that the sex difference in anger rumination found in Study 2 (i.e., girls reported higher levels of anger rumination compared to boys) stemmed solely from the clinical characteristics of the sample and otherwise would not appear in a normative group of adolescents. Alternatively, it may be that anger rumination is particularly elevated during adolescence for girls, and findings from Study 2 might simply reflect a general difference between adolescent boys and girls which then shifts as youth move into adulthood. Future research involving both normative and clinical adolescent samples will help clarify this issue.

Ideally, developmental questions about changes in rumination would be addressed through longitudinal research tracking the transition to adolescence and adulthood in both normative and high-risk samples. Such research could address key questions such as whether the percentage of individuals classified as ‘high ruminators’ decreases from adolescence to adulthood due to a greater capacity to terminate ruminative thoughts as a function of developmental enhancement in meta-cognitive and meta-emotional capacities.

It is important to point out that this work was limited by reliance on self-report measures, thereby introducing the possibility of response bias. Future studies using alternative assessment modalities such as a diary measure will be important to supplement these findings. A diary methodology (and more recently electronic diaries on handheld devices) has been used to assess emotions and behaviours in youth and adults (e.g., Siemer, 2005; Whalen et al., 2006). Diary studies would enable investigation of both the intensity and frequency of people’s ruminative thoughts and could shed light on the interplay between the two forms of rumination. For instance, rumination on anger and

sadness were found to be highly correlated in these current studies but the results do not address whether both forms of rumination are typically experienced concurrently or separately in different contexts, or the extent to which one type of rumination temporally precedes the other. Diary studies, compared to self-report questionnaires, may be able to better address these issues.

It will also be important to tap outcome variables using measures other than self-reports, such as clinician-rated or parent-rated questionnaires, or a diary approach. Further, future research could include outcome variables that extend beyond those investigated in the current studies. The intent of this dissertation was to integrate variables that have previously been examined in separate studies on anger rumination and sadness rumination (i.e., anger, aggression, and depression). However, future studies could include more comparable outcome variables, such as anger and sadness (rather than depression), or 'externalizing' and 'internalizing' latent variables each comprised of indicators that have minimally-correlated errors.

Additionally, this dissertation did not address whether ethnic and cultural differences influence how each form of rumination is related to particular emotions, psychological conditions, and behaviours. It will be important for future research to examine whether the same rumination model holds across ethnicities in order to assess generalizability of findings. Cultural differences in rumination could also be examined by investigating whether the same rumination model is, for example, supported for Chinese individuals raised in North America compared to Chinese individuals raised in Hong Kong.

Rumination and Social Information Processing

Rumination is likely associated with a variety of maladaptive cognitive and interpersonal processes beyond those assessed in this dissertation, including hostile attribution bias (Dodge, 1980; Dodge & Coie, 1987). Hostile attribution bias refers to the tendency to interpret neutral social situations as hostile and to attribute malicious intent to others. This social information-processing bias is associated with increased reactive aggression (i.e., aggressive retaliation or defensive reaction to perceived threat; Crick & Dodge, 1996), and there is reason to believe that hostile attribution bias is related also to anger rumination. Anger and hostility roused during the process of anger rumination may intensify a focus on others and increase the likelihood of anger being projected onto others who will be viewed as possessing hostile intent toward the self. In turn, this perception may lead to intensified feelings of anger, exacerbation of anger rumination and an increased likelihood of acting aggressively. Future research examining the link between anger rumination, hostile attribution bias and aggression, while controlling for sadness rumination, could increase our understanding of how anger rumination operates in conjunction with other maladaptive cognitive processes to increase the risk for aggression.

Rejection sensitivity is another cognitive process associated with negative interpersonal consequences that might be related to rumination. Rejection sensitivity is a social information-processing bias that refers to the tendency to anxiously or angrily expect, perceive, and overreact to social rejection. It is associated with increased anger and aggression in youth and adults (Downey, Feldman, & Ayduk, 2000; Downey, Lebolt, Rincón, & Freitas, 1998; Purdie & Downey, 2000), as well as depression and social

anxiety (Ayduk, Downey, & Kim, 2001; Hammen, Burge, Daley, & Davila, 1995). Given the link between rejection sensitivity and externalizing and internalizing disorders, it is likely that rejection sensitivity is related to both anger rumination and sadness rumination. Future studies could investigate the associations and interactions among these variables and their relations to particular emotional and behavioural disorders to further our knowledge of the links between cognitive processes and interpersonal relations.

Developmental Roots and Trajectories of Rumination

The question arises of why some people are prone to maladaptive emotion regulation strategies such as rumination. A key factor in the development of emotion regulation strategies is the quality of the parent-child attachment bond (Sroufe, 1996). Examining rumination from an attachment framework (e.g., Bowlby, 1973) may shed light on the development of individual differences in rumination. For instance, children whose caregivers reject, ignore, or respond unreliably to their signs of distress may learn that expression of their emotions is unacceptable or that sharing their feelings with others is an ineffective way to regulate their emotions (Cassidy, 1994). As a result, over time some of these individuals might develop a tendency to ruminate rather than turn to others for comfort and assistance in dealing constructively with their negative affect. In turn, rumination may exacerbate attachment anxiety when cognitions focus on attachment-related issues. Thus, examining the relations among attachment patterns and rumination may be a promising avenue for future research.

As previously noted, longitudinal developmental research is necessary to elucidate the precipitating factors and processes that contribute to the development of

anger rumination and sadness rumination. This type of research would also shed light on the roles of anger rumination and sadness rumination in the persistence of problems in the respective domains of anger and aggression versus sadness and depression. Rumination on anger and sadness might influence developmental trajectories by 'locking in' people to dysfunctional patterns of thoughts, feelings and behaviours, thereby extending the duration and intensity of periods of poor functioning. As a result, individuals engaging in higher levels of rumination might be more likely to persist along trajectories of poor adjustment and demonstrate maladaptive interpersonal interactions.

Conclusion

The purpose of this dissertation was to gain a better understanding of anger rumination and sadness rumination by assessing them in a systematic manner using a methodology that minimizes measurement variance. Study 1 focused on a normative adult sample and Study 2 extended this line of research to a clinical sample of adolescents.

Despite the limitations of these studies, they can serve as a springboard for future research in the field. In light of the findings suggesting two types of rumination that are uniquely related to particular emotional and behavioural conditions, it is advisable that researchers continue to simultaneously examine both forms of rumination when investigating how rumination relates to various emotional and behavioural problems. Doing so will provide greater insight into the antecedents, correlates and consequences of specific forms of rumination. Extending this line of research into younger populations and adopting a developmental framework could elucidate the cognitive-affective roots of rumination and its impact on adjustment throughout the lifespan.

References

- Achenbach, T.M., & Rescorla, L.A. (2001). *Manual for the ASEBA school-age forms and profiles*. Burlington: University of Vermont Research Center for Children, Youth, & Families.
- Arbuckle, J.L. (2003). *Amos 5.0: Update to the Amos User's Guide*. Chicago, IL: Smallwaters Corporation.
- Ayduk, O., Downey, G., & Kim, M. (2001). Rejection sensitivity and depressive symptoms in women. *Personality and Social Psychology Bulletin, 27*, 868-877.
- Bagby, R.M., Marshall, M.B., Basso, M.R., Nicholson, R.A., Bacchiochi, J., & Miller, L.S. (2005). Distinguishing bipolar depression, major depression, and schizophrenia with the MMPI-2 clinical and content scales. *Journal of Personality Assessment, 84*, 89-95.
- Bence, V.M., Sabourin, C., Luty, D.T., & Thackrey, M. (1995). Differential sensitivity of the MMPI-2 depression scales and subscales. *Journal of Clinical Psychology, 51*, 375-377.
- Bentler, P.M. (1988). Comparative fit indexes in structural models. *Psychological Bulletin, 107*, 238-246.
- Birmaher, B., Ryan, N.D., & Williamson, D.E. (1996). Childhood and adolescent depression: A review of the past 10 years, Part 1. *Journal of the American Academy of Child & Adolescent Psychiatry, 35*, 1427-1439.
- Birnbaum, D. W. (1983). Preschoolers' stereotypes about gender differences in emotionality: A reaffirmation. *Journal of Genetic Psychology, 143*, 139-140.
- Borkovec, T.D. (1994). The nature, functions, and origins of worry. In G.C.L. Davey & F. Tallis (Eds.), *Worrying: Perspectives on theory, assessment and treatment* (pp. 5-33). Chichester, England: Wiley.
- Borkovec, T.D., Robinson, E., Pruzinsky, T., & DePree, J.A. (1983). Preliminary exploration of worry: Some characteristics and processes. *Behaviour Research and Therapy, 21*, 9-16.
- Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. New York: Basic Books.
- Boyle, M.H., Offord, D.R., Hofman, H.E., Catlin, G.P., Byles, J.A., Cadman, D.T., et al. (1987). Ontario Child Health Study, I. Methodology. *Archives of General Psychiatry, 44*, 826 - 831.
- Boyle, M.H., Offord, D.R., Racine, Y., Sanford, M., Szatmari, P., & Fleming, J.E. (1993). Evaluation of the original Ontario Child Health Study scales. *Canadian Journal of Psychiatry, 38*, 397 - 405.

- Broderick, P.C. (2005). Mindfulness and coping with dysphoric mood: Contrasts with Rumination and Distraction. *Cognitive Therapy and Research, 29*, 501–510.
- Broderick, P.C., & Korteland, C. (2002). Coping styles and depression in early adolescence: Relationships to gender, gender role, and implicit beliefs. *Sex Roles, 46*, 201-213.
- Brody, L. R., & Hall, J. A. (1993). Gender and emotion. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (pp. 447–460). New York: Guilford.
- Brown, T.A. (2003). Confirmatory factor analysis of the Penn State Worry Questionnaire: Multiple factors or method effects? *Behaviour Research & Therapy, 41*, 1411-1426.
- Brown, T. A., Antony, M. M., & Barlow, D. H. (1992). Psychometric properties of the Penn State Worry Questionnaire in a clinical anxiety disorders sample. *Behaviour Research and Therapy, 30*, 33–37.
- Bushman, B.J. (2002). Does venting anger feed or extinguish the flame? Catharsis, rumination, distraction, anger, and aggressive responding. *Personality and Social Psychology Bulletin, 28*, 724-731.
- Bushman, B.J., Bonacci, A.M., Pedersen, W.C., Vasquez, E.A., & Miller, N. (2005). Chewing on it can chew you up: Effects of rumination on triggered displaced aggression. *Journal of Personality and Social Psychology, 88*, 969-983.
- Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A., & Kaemmer, B. (1989). *Manual for the restandardized Minnesota Multiphasic Personality Inventory: MMPI-2. An interpretive and administrative guide*. Minneapolis: University of Minnesota Press.
- Campbell, J.D., Trapnell, P.D., Heine, S.J., Katz, I.M., Lavalley, L.F., & Lehman, D.R. (1996). Self-concept clarity: Measurement, personality correlates, and cultural boundaries. *Journal of Personality and Social Psychology, 70*, 141-156.
- Caprara, G.V. (1986). Indicators of aggression: The dissipation-rumination scale. *Personality and Individual Differences, 7*, 763-769.
- Carson, C.L., & Cupach, W.R. (2000). Fueling the flames of the green-eyed monster: The role of ruminative thought in reaction to romantic jealousy. *Western Journal of Communication, 64*, 308-330.
- Case, R. (1985). *Intellectual development: Birth to adulthood*. New York: Academic Press.
- Cassidy, J. (1994). Emotion regulation: Influences of attachment relationships. *Monographs of the Society for Research in Child Development, 59*, 228-283.
- Collins, K., & Bell, R. (1997). Personality and aggression: The dissipation-rumination scale. *Personality and Individual Differences, 22*, 751-755.

- Conway, M., Csank, P.A.R., Holm, S.L., & Blake, C.K. (2000). On assessing individual differences in rumination on sadness. *Journal of Personality Assessment*, *75*, 404-425.
- Crick, N.R., & Dodge, K.A. (1996). Social information-processing mechanisms in reactive and proactive aggression. *Child Development*, *67*, 993-1002.
- Crick, N.R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, *66*, 710-722.
- Deffenbacher, J. L., Oetting, E. R., Thwaites, G. A., Lynch, R. S., Baker, D. A., Stark, R. S., et al. (1996). State-trait anger theory and the utility of the Trait Anger Scale. *Journal of Counseling Psychology*, *43*, 131-148.
- Dodge, K. A. (1980). Social cognition and children's aggressive behavior. *Child Development*, *51*, 162-170.
- Dodge, K. A. & Coie, J. D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality & Social Psychology*, *53*, 1146-1158.
- Downey, G., Feldman, S., & Ayduk, O. (2000). Rejection sensitivity and male violence in romantic relationships. *Personal Relationships*, *7*, 45-61.
- Downey, G., Lebolt, A., Rincón, C., & Freitas, A.L. (1998). Rejection sensitivity and children's interpersonal difficulties. *Child Development*, *69*, 1074-1091.
- Dunn, J., Bretherton, I., & Munn, P. (1987). Conversations about feeling states between mothers and their young children. *Developmental Psychology*, *23*, 132-139.
- Floyd, F.J., & Widaman, K.F. (1995). Factor analysis in the development and refinement of clinical assessment instruments. *Psychological Assessment*, *7*, 286-299.
- Fresco, D.M., Frankel, A.N., Mennin, D.S., Turk, C.L., & Heimberg, R.G. (2002). Distinct and overlapping features of rumination and worry: The relationship of cognitive production to negative affective states. *Cognitive Therapy and Research*, *26*, 179-188.
- Freud, S. (1917/1995). Mourning and melancholia. In P. Gay (Ed.), *The Freud reader*. New Haven: Yale University Press.
- Gerin, W., Davidson, K.W., Christenfeld, N.J.S., Goyal, T., & Schwartz, J.E. (2006). The role of angry rumination and distraction in blood pressure recovery from emotional arousal. *Psychosomatic Medicine*, *68*, 64-72.
- Hammen, C. L., Burge, D., Daley, S. E., & Davila, J. (1995). Interpersonal attachment cognitions and prediction of symptomatic responses to interpersonal stress. *Journal of Abnormal Psychology*, *104*, 436-443.
- Hampel, P., & Petermann, F. (2005). Age and gender effects on coping in children and adolescents. *Journal of Youth and Adolescence*, *34*, 73-83.

- Hu, L., & Bentler, P.M. (2001). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criterion versus new alternatives. *Structural Equation Modeling, 6*, 1-55.
- Keating, D.P. (2004). Cognitive and brain development. In R.J. Lerner & L.D. Steinberg (Eds.), *Handbook of adolescent psychology, 2nd Edition* (pp. 45–84). Wiley.
- Kring, A.M., & Gordon, A.H. (1998). Sex differences in emotion: Expression, experience, and physiology. *Journal of Personality and Social Psychology, 74*, 686-703.
- Linder, J.R., Crick, N.R., & Collins, W.A. (2002). Relational aggression and victimization in young adults' romantic relationships: Associations with perceptions of parent, peer, and romantic relationship quality. *Social Development, 11*, 69-86.
- Little, T.D., Jones, S.M., Henrich, C.C., Hawley, P.H. (2003). Disentangling the 'whys' from the 'whats' of aggressive behavior. *International Journal of Behavioral Development, 27*, 122-133.
- Ma, S.H., & Teasdale, J.D. (2004). Mindfulness-based cognitive therapy for depression: Replication and exploration of differential relapse prevention effects. *Journal of Consulting and Clinical Psychology, 72*, 31-40.
- Martin, L.L. & Tesser, A. (1996). Some ruminative thoughts. In R.S. Wyer (Ed.), *Ruminative thoughts* (pp. 1-47). Mahwah, NJ: Erlbaum.
- Martin, L.L., Tesser, A., & McIntosh, D. (1993). Wanting but not having: The effects of unattained goals on thoughts and feelings. In D.M. Wegner & J.W. Pennebaker (Eds.), *Handbook of mental control* (pp. 552-572). Englewood Cliffs, NJ: Prentice Hall.
- Maxwell, J.P. (2004). Anger rumination: An antecedent of athlete aggression? *Psychology of Sport and Exercise, 5*, 279–289
- Maxwell, J.P., Sukhodolsky, D.G., Chow, C.C.F., & Wong, C.F.C. (2005). Anger rumination in Hong Kong and Great Britain: Validation of the scale and a cross-cultural comparison. *Personality and Individual Differences, 39*, 1147-1157.
- Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behavior Research and Therapy, 28*, 487–495.
- Moffitt, T.E. (1994). Natural histories of delinquency. In E.G.M. Weitekamp & H.J. Kerner (Eds.), *Cross-national longitudinal research on human development and criminal behavior*. Netherlands: Kluwer.
- Moretti, M.M., Holland, R., & McKay, S. (2001). Self-other representations and relational and overt aggression in adolescent girls and boys. *Behavioral Sciences and the Law, 19*, 109-126.

- Moretti, M.M., & Peled, M. (2004). Adolescent-parent attachment: Bonds that support healthy development. *Paediatrics & Child Health, 9*, 551-555.
- Morrow, J., & Nolen-Hoeksema, S. (1990). Effects of responses to depression on the remediation of depressive affect. *Journal of Personality and Social Psychology, 58*, 519-527.
- Muris, P., Roelofs, J., Meesters, C., & Boomsma, P. (2004). Rumination and worry in nonclinical adolescents. *Cognitive Therapy and Research, 28*, 539-554.
- Nolen-Hoeksema, S. (1987). Sex differences in depression: Evidence and theory. *Psychological Bulletin, 101*, 259-282.
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology, 100*, 569-582.
- Nolen-Hoeksema, S. (1996). Chewing the cud and other ruminations. In R.S. Wyer (Ed.), *Ruminative thoughts* (pp. 135-144). England: Lawrence Erlbaum Associates.
- Nolen-Hoeksema, S., & Jackson, B. (2001). Mediators of the gender difference in rumination. *Psychology of Women Quarterly, 25*, 37-47.
- Nolen-Hoeksema, S., & Morrow, J. (1991). A prospective study of depression and posttraumatic stress symptoms after a natural disaster: The 1989 Loma Prieta earthquake. *Journal of Personality and Social Psychology, 61*, 115-121.
- Offord, D.R., Boyle, M.H., Racine, Y., Fleming, J. E., Cadman, D. T., Munroe Blum, H., et al. (1992). Outcome, prognosis and risk in a longitudinal follow-up study. *Journal of the Academy of Child and Adolescent Psychiatry, 31*, 916 – 923.
- Offord, D.R., Boyle, M.H., Szatmari, P., Rae-Grant, N.I., Links, P.S., Cadman, D.T., et al. (1987). Ontario Child Health Study: II. Six-month prevalence of disorder and rates of service utilization. *Archives of General Psychiatry, 44*, 832 – 836.
- Ostrov, J.M., & Keating, C.F. (2004). Gender differences in preschool aggression during free play and structured interactions: An observational study. *Social Development, 13*, 255-277.
- Papageorgiou, C., & Wells, A. (2001). Positive beliefs about depressive rumination: Development and preliminary validation of a self-report scale. *Behavior Therapy, 32*, 13-26.
- Purdie, V., & Downey, G. (2000). Rejection sensitivity and adolescent girls' vulnerability to relationship-centered difficulties. *Child Maltreatment, 5*, 338-349.
- Reich, W., Welner, Z., & Herjanic, B. (1997). Diagnostic Interview for Children and Adolescents – IV (DICA–IV). Toronto, Canada: Multi-Health Systems.
- Roberts, J.E., Gilboa, E., & Gotlib, I.H. (1998). Ruminative response style and vulnerability to episodes of dysphoria: Gender, neuroticism, and episode duration. *Cognitive Therapy and Research, 22*, 401-423.

- Ruble, D.N., Greulich, F., Pomerantz, E.V., & Gochberg, B. (1993). The role of gender-related processes in the development of sex differences in self-evaluation and depression. *Journal of Affective Disorders, 29*, 97-128.
- Rusting, C.L., & Nolen-Hoeksema, S. (1998). Regulating responses to anger: Effects of rumination and distraction on angry mood. *Journal of Personality and Social Psychology, 74*, 790-803.
- Schwartz, J.A.J., & Koenig, L.J. (1996). Response styles and negative affect among adolescents. *Cognitive Therapy and Research, 20*, 13-36.
- Scott, Jr., V.B., & McIntosh, W.D. (1999). The development of a trait measure of ruminative thought. *Personality and Individual Differences, 26*, 1045-1056.
- Seegerstrom, S.C., Stanton, A.L., Alden, L.E., & Shortridge, B.E. (2003). A multidimensional structure for repetitive thought: What's on your mind, and how, and how much? *Journal of Personality and Social Psychology, 85*, 909-921.
- Seegerstrom, S.C., Tsao, J.C.I., Alden, L.E., & Craske, M.G. (2000). Worry and rumination: Repetitive thought as a concomitant and predictor of negative mood. *Cognitive Therapy and Research, 24*, 671-688.
- Selman, R.L. (1980). *The growth of interpersonal understanding: Developmental and clinical analyses*. New York: Academic Press.
- Siemer, M. (2005). Moods as multiple-object directed and as objectless affective states: An examination of the dispositional theory of moods. *Cognition and Emotion, 19*, 815-845.
- Spielberger, C.D. (1988). *Manual for the State-Trait Anger Expression Inventory (STAXI)*. Odessa, FL: Psychological Assessment Resources.
- Spielberger, C.D. (1996). *State-Trait Anger Expression Inventory: Professional manual*. Odessa, FL.: Psychological Assessment Resources.
- Sroufe, L.A. (1996). *Emotional development: The organization of emotional life in the early years*. Cambridge: Cambridge University Press.
- Stapley, J., & Haviland, J. (1989). Beyond depression: Gender differences in normal adolescents' emotional experiences. *Sex Roles, 20*, 295-309.
- Steinberg, L. (2005). Cognitive and affective development in adolescence. *Trends in Cognitive Science, 9*, 69-74.
- Sukhodolsky, D.G., Golub, A., & Cromwell E.N. (2001). Development and validation of the anger rumination scale. *Personality and Individual Differences, 31*, 689-700.
- Teasdale, J.D., Segal, Z.V., & Williams, J.M.G. (2003). Mindfulness training and problem formulation. *Clinical Psychology: Science and Practice, 10*, 157-160.

- Trapnell, P.D., & Campbell, J.D. (1999). Private self-consciousness and the five-factor model of personality: Distinguishing rumination from reflection. *Journal of Personality and Social Psychology, 76*, 284-304.
- Treynor, W., Gonzalez, R., & Nolen-Hoeksema, S. (2003). Rumination reconsidered: A psychometric analysis. *Cognitive Therapy and Research, 27*, 247-259.
- Underwood, M.K. (2003). *Social aggression in girls*. New York: Guilford.
- Watkins, E. (2004). Appraisals and strategies associated with rumination and worry. *Personality and Individual Differences, 37*, 679-694.
- Watkins, E., Moulds, M., & Mackintosh, B. (2005). Comparisons between rumination and worry in a non-clinical population. *Behaviour Research and Therapy, 43*, 1577-1585.
- Whalen, C.K., Henker, B., Ishikawa, S.S., Jamner, L.D., Floro, J.N., Johnston, J.A., & Swindle, R. (2006). An electronic diary study of contextual triggers and ADHD: Get ready, get set, get mad. *Journal of the American Academy of Child and Adolescent Psychiatry, 45*, 166-174.
- Wupperman, P., & Neumann, C.S. (2006). Depressive symptoms as a function of sex-role, rumination, and neuroticism. *Personality and Individual Differences, 40*, 189-201.
- Zahn-Waxler, C., Cole, P.M., & Barrett, K.C. (1991). Guilt and empathy: Sex differences and implications for the development of depression. In J. Garber & K.A. Dodge (Eds.), *The development of emotion regulation and dysregulation* (pp. 243-272). Cambridge: Cambridge University Press.

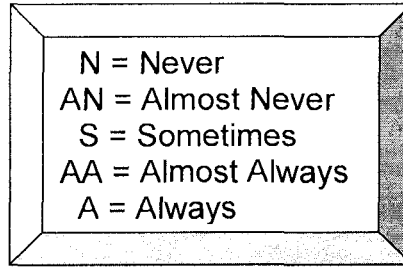
Appendix A

Measures (Study 1)

- Demographics
- Sadness and Anger Rumination Inventories (SARI)
- Rumination on Sadness Scale (RSS)
- Anger Rumination Scale (ARS)
- Little's Aggression Inventory
- Depression Items (Adapted from MMPI-2)
- State-Trait Anger Expression Inventory (STAXI)
- Penn State Worry Questionnaire (PSWQ)

SARI – Sadness Rumination

Please circle how often you do the following things *when you are sad*.



1. I keep thinking about past experiences that have made me sad.	N	AN	S	AA	A
2. I have difficulty getting myself to stop thinking about how sad I am.	N	AN	S	AA	A
3. I keep thinking about the reasons for my sadness.	N	AN	S	AA	A
4. When I think about my sadness, I become more upset.	N	AN	S	AA	A
5. I get absorbed in thinking about why I am sad and find it difficult to think about other things.	N	AN	S	AA	A
6. I search my mind for events or experiences in my past that may help me understand my sad feelings.	N	AN	S	AA	A
7. When something makes me sad, I turn this matter over and over again in my mind.	N	AN	S	AA	A
8. I tire myself out by thinking so much about myself and the reasons for my sadness.	N	AN	S	AA	A
9. Whenever I feel sad, I keep thinking about it for a while.	N	AN	S	AA	A
10. I think about certain events from the past and they still make me sad.	N	AN	S	AA	A
11. When I am sad, the more I think about it the sadder I feel.	N	AN	S	AA	A

SARI – Anger Rumination

Please circle how often you do the following things *when you are angry*.

N = Never
 AN = Almost Never
 S = Sometimes
 AA = Almost Always
 A = Always

1. I keep thinking about past experiences that have made me angry.	N	AN	S	AA	A
2. I have difficulty getting myself to stop thinking about how angry I am.	N	AN	S	AA	A
3. I keep thinking about the reasons for my anger.	N	AN	S	AA	A
4. When I think about my anger, I become more upset.	N	AN	S	AA	A
5. I get absorbed in thinking about why I am angry and find it difficult to think about other things.	N	AN	S	AA	A
6. I search my mind for events or experiences in my past that may help me understand my angry feelings.	N	AN	S	AA	A
7. When something makes me angry, I turn this matter over and over again in my mind.	N	AN	S	AA	A
8. I tire myself out by thinking so much about myself and the reasons for my anger.	N	AN	S	AA	A
9. Whenever I feel angry, I keep thinking about it for a while.	N	AN	S	AA	A
10. I think about certain events from the past and they still make me angry.	N	AN	S	AA	A
11. When I am angry, the more I think about it the angrier I feel.	N	AN	S	AA	A
	N	AN	S	AA	A

RUMINATION ON SADNESS SCALE (RSS)

For each statement, please circle the number that best describes your response to sadness.

1	2	3	4	5
Not At All				Very Much

When I am sad, down, or feeling blue...

- 1 2 3 4 5 1. I have difficulty getting myself to stop thinking about how sad I am.
- 1 2 3 4 5 2. I repeatedly analyze and keep thinking about the reasons for my sadness.
- 1 2 3 4 5 3. I search my mind many times to try and figure out if there is anything about my personality that may have led me to feel this way.
- 1 2 3 4 5 4. I get absorbed in thinking about why I am sad and find it difficult to think about other things.
- 1 2 3 4 5 5. I search my mind repeatedly for events or experiences in my childhood that may help me understand my sad feelings.
- 1 2 3 4 5 6. I keep wondering about how I was able to be happy at other points in my life.
- 1 2 3 4 5 7. I lie in bed and keep thinking about my lack of motivation and wonder about whether it will ever return.
- 1 2 3 4 5 8. If people try to talk to me or ask me a question it feels as though they are interrupting an ongoing silent conversation I am having with myself about my sadness.
- 1 2 3 4 5 9. I question and keep wondering about the meaning of life to find clues that may help me understand my sadness.
- 1 2 3 4 5 10. I repeatedly think about what sadness really is by concentrating on my feelings and trying to understand them.
- 1 2 3 4 5 11. I get the feeling that if I think long enough about my sadness I will find that it has some deeper meaning and that I will be able to understand myself better because of it.
- 1 2 3 4 5 12. I keep thinking about my problems to try and examine where things went wrong.
- 1 2 3 4 5 13. I exhaust myself by thinking so much about myself and the reasons for my sadness.

ANGER RUMINATION SCALE (ARS)

Please read each statement and circle the number that best describes yourself and your responses to anger.

1	2	3	4
Almost Never			Almost Always

- 1 2 3 4 1. I ruminate about my past anger experiences.
- 1 2 3 4 2. I ponder about the injustices that have been done to me.
- 1 2 3 4 3. I keep thinking about events that angered me for a long time.
- 1 2 3 4 4. I have long-living fantasies of revenge after the conflict is over.
- 1 2 3 4 5. I think about certain events from a long time ago and they still make me angry.
- 1 2 3 4 6. I have difficulty forgiving people who have hurt me.
- 1 2 3 4 7. After an argument is over, I keep fighting with this person in my imagination.
- 1 2 3 4 8. Memories of being aggravated pop up into my mind before I fall asleep.
- 1 2 3 4 9. Whenever I experience anger, I keep thinking about it for a while.
- 1 2 3 4 10. I have had times when I could not stop being preoccupied with a particular conflict.
- 1 2 3 4 11. I analyze events that make me angry.
- 1 2 3 4 12. I think about the reasons people treat me badly.
- 1 2 3 4 13. I have daydreams and fantasies of a violent nature.
- 1 2 3 4 14. I re-enact the anger episode in my mind after it has happened.
- 1 2 3 4 15. I feel angry about certain things in my life.
- 1 2 3 4 16. When someone makes me angry I can't stop thinking about how to get back at this person.
- 1 2 3 4 17. When someone provokes me, I keep wondering why this should have happened to me.
- 1 2 3 4 18. Memories of even minor annoyances bother me for a while.
- 1 2 3 4 19. When something makes me angry, I turn this matter over and over again in my mind.

LITTLE'S AGGRESSION INVENTORY

Overt Aggression: items 1, 2, 3, 11, 12, 15, 16, 17, 18, 19, 20, 21.

Relational Aggression: items 4, 5, 6, 7, 8, 9, 10, 13, 14, 22, 23, 24, 25.

Please rate how well each of the following statements describes you
 Not at all True (1); Somewhat True (2); Mostly True (3); or Completely True (4)

I'm the kind of person who:	Not at all True	Somewhat True	Mostly True	Completely True
1. often fights with others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
2. hits, kicks, or punches others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
3. puts others down	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
4. tells my friends to stop liking someone	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
5. keeps others from being in my group of friends	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
6. says mean things about others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
7. ignores others or stops talking to them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
8. gossips or spreads rumors	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
I often:				
9. tell my friends to stop liking someone to get what I want	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
10. keep others from being in my group of friends to get what I want	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
11. threaten others to get what I want	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
12. hit, kick, or punch others to get what I want	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
To get what I want, I often:				
13. ignore or stop talking to others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
14. gossip or spread rumors about others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
15. put others down	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
16. say mean things to others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
17. hurt others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
When I'm hurt or threatened by others, I often:				
18. When I'm hurt by someone, I often fight back	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
19. When I'm threatened by someone, I often threaten back	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
20. If others have angered me, I often hit, kick or punch them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
21. If others make me mad or upset, I often hurt them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
22. If others upset or hurt me, I often tell my friends to stop liking them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
23. If others have hurt me, I often keep them from being in my group of friends	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
24. When I am upset with others, I often ignore or stop talking to them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
25. When I am mad at others, I often gossip or spread rumors about them	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

Little Aggression Inventory: Overt Aggression Items

“Pure” Overt Aggression

I’m the kind of person who often fights with others.

I’m the kind of person who hits, kicks, or punches others.

I’m the kind of person who puts others down.

Reactive Overt Aggression

When I’m hurt by someone, I often fight back.

When I’m threatened by someone, I often threaten back.

If others have angered me, I often hit, kick or punch them.

If others make me mad or upset, I often hurt them.

Instrumental Overt Aggression

I often threaten others to get what I want.

I often hit, kick, or punch others to get what I want.

To get what I want, I often put others down.

To get what I want, I often say mean things to others.

To get what I want, I often hurt others.

Little Aggression Inventory: Relational Aggression Items

“Pure” Relational Aggression

I’m the kind of person who tells my friends to stop liking someone.

I’m the kind of person who keeps others from being in my group of friends.

I’m the kind of person who says mean things about others.

I’m the kind of person who ignores others or stops talking to them.

I’m the kind of person who gossips or spreads rumors.

Reactive Relational Aggression

If others upset or hurt me, I often tell my friends to stop liking them.

If others have hurt me, I often keep them from being in my group of friends.

When I am upset with others, I often ignore or stop talking to them.

When I am mad at others, I often gossip or spread rumors about them.

Instrumental Relational Aggression

I often tell my friends to stop liking someone to get what I want.

I often keep others from being in my group of friends to get what I want.

To get what I want, I often ignore or stop talking to others.

To get what I want, I often gossip or spread rumors about others.

Note. By T.D. Little et al.(2003). Used with permission.

DEPRESSIVE SYMPTOMS

Items 1, 3, 5, 8, 10, 12, 16, 17 (shaded below).

Please answer True or False based on how well each statement describes you.

1. I am not as happy as others seem to be.	<input type="checkbox"/> True	<input type="checkbox"/> False
2. I worry a great deal.	<input type="checkbox"/> True	<input type="checkbox"/> False
3. My life feels empty.	<input type="checkbox"/> True	<input type="checkbox"/> False
4. I have cut or injured myself on purpose.	<input type="checkbox"/> True	<input type="checkbox"/> False
5. I often feel sad.	<input type="checkbox"/> True	<input type="checkbox"/> False
6. I frequently find myself worrying about something.	<input type="checkbox"/> True	<input type="checkbox"/> False
7. I am often tired and fatigued.	<input type="checkbox"/> True	<input type="checkbox"/> False
8. I frequently have spells of the blues.	<input type="checkbox"/> True	<input type="checkbox"/> False
9. I feel anxiety about something or someone almost all the time.	<input type="checkbox"/> True	<input type="checkbox"/> False
10. I have thought about killing myself.	<input type="checkbox"/> True	<input type="checkbox"/> False
11. I don't have enough energy to do very much.	<input type="checkbox"/> True	<input type="checkbox"/> False
12. I am sad and discouraged about life.	<input type="checkbox"/> True	<input type="checkbox"/> False
13. I sometimes feel that I'm about to go to pieces.	<input type="checkbox"/> True	<input type="checkbox"/> False
14. I worry too much.	<input type="checkbox"/> True	<input type="checkbox"/> False
15. I have tried to kill myself.	<input type="checkbox"/> True	<input type="checkbox"/> False
16. Life is a strain for me much of the time.	<input type="checkbox"/> True	<input type="checkbox"/> False
17. I am unhappy much of the time.	<input type="checkbox"/> True	<input type="checkbox"/> False
18. At times it has seemed that everything in my life was going wrong and that nothing would ever be alright again.	<input type="checkbox"/> True	<input type="checkbox"/> False
19. I believe that I am more nervous than most people.	<input type="checkbox"/> True	<input type="checkbox"/> False

STAXI (TRAIT ANGER) – Items 6, 7, 8, 10.

Indicate how you feel right now, how you generally feel, and what you do when you're angry or furious.

<u>HOW I FEEL RIGHT NOW:</u>	Not at All	Somewhat	Moderately	Very Much
1. I feel irritated	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
2. I feel angry	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
3. I feel like yelling at somebody	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
4. I feel like breaking things	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
5. I feel like hitting someone	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

<u>HOW I GENERALLY FEEL:</u>	Almost Never	Some-times	Often	Almost Always
6. I am quick tempered	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
7. I have a fiery temper	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
8. I am a hot-headed person	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
9. I feel annoyed when I am not given recognition for doing good work	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
10. I fly off the handle	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
11. It makes me furious when I am criticized in front of others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

<u>WHEN ANGRY OR FURIOUS:</u>	Almost Never	Some-times	Often	Almost Always
12. I express my anger	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
13. I keep things in	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
14. I control my behaviour	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
15. I argue with others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
16. I boil inside but I don't show it	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
17. I strike out at whatever infuriates me	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
18. I can stop myself from losing my temper	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
19. I am angrier than I am willing to admit	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
20. I try to be tolerant and understanding	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
21. I'm irritated a great deal more than people are aware of	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
22. I lose my temper	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
23. I control my angry feelings	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4

WORRY

PSWQ

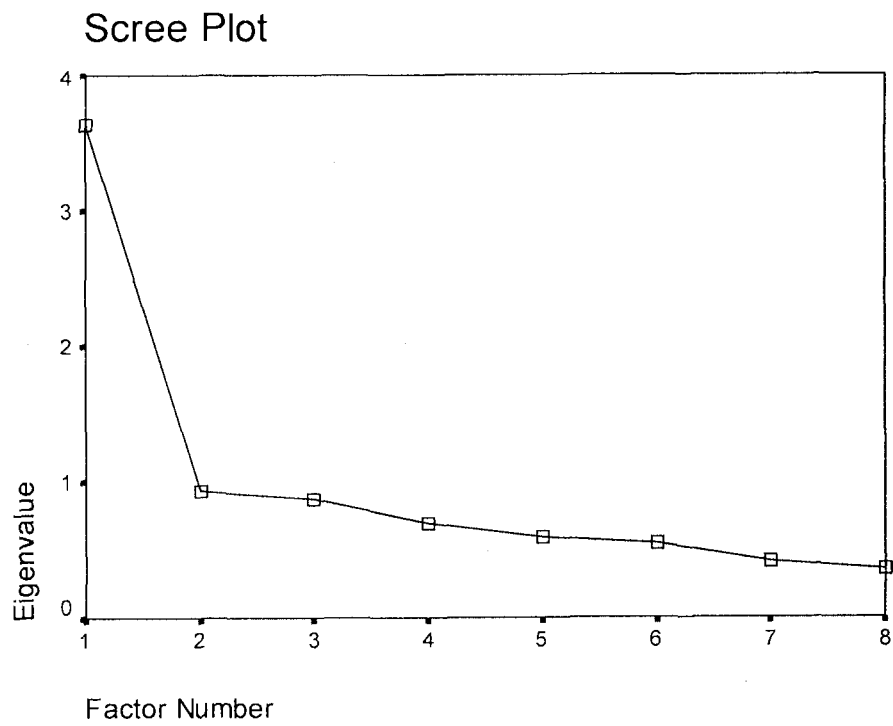
The statements below concern the amount of worry you experience. Please indicate how typical or characteristic each item is of you by choosing one number (1 to 5) for each statement.

	Not at all Typical		Some- what Typical		Very Typical
	1	2	3	4	5
1. If I don't have enough time to do everything, I don't worry about it.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2. My worries overwhelm me.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3. I do not tend to worry about things.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4. Many situations make me worry.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
5. I know I shouldn't worry about things, but I just cannot help it.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
6. When I am under pressure I worry a lot.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
7. I am always worrying about something.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
8. I find it easy to dismiss worrisome thoughts.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
9. As soon as I finish one task, I start to worry about everything else I have to do.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
10. I never worry about anything.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
11. When there is nothing more I can do about a concern, I don't worry about it anymore.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
12. I've been a worrier all my life.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
13. I notice that I have been worrying about things.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
14. Once I start worrying, I can't stop.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
15. I worry all the time.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
16. I worry about projects until they are done.	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Appendix B

Scree Plot from Depression Factor Analysis (Study 1)

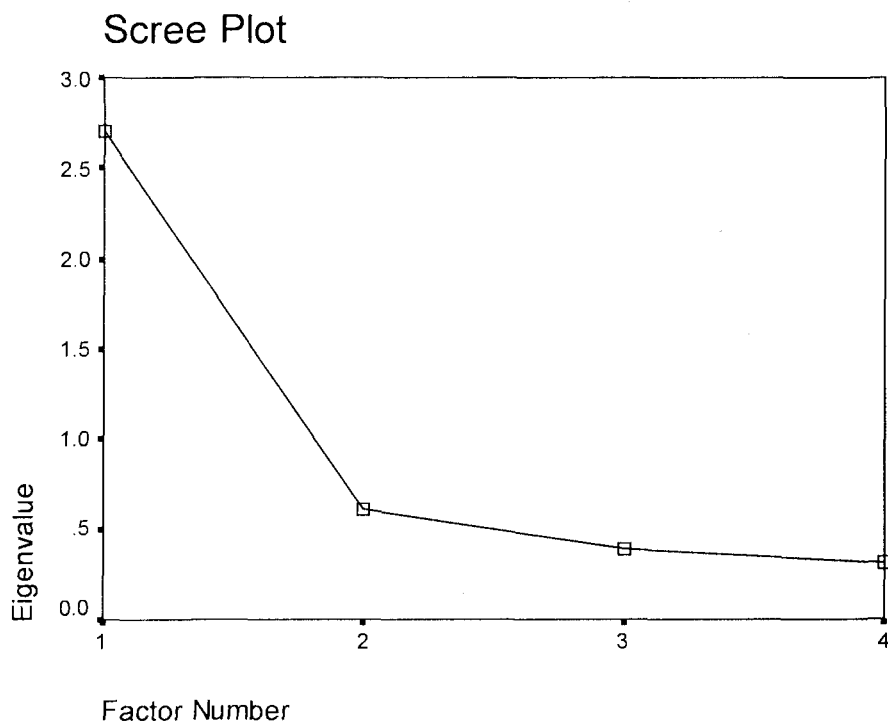
- Eight items; Principal Axis Factoring.
- One factor emerged (eigenvalue = 3.6).



Appendix C

Scree Plot from Anger Factor Analysis (Study 1)

- Four items; Principal Axis Factoring.
- One identified factor (eigenvalue = 2.7).



Appendix D
Consent Form (Study 1)

SIMON FRASER UNIVERSITY
Consent Form

The University and those conducting this project subscribe to the ethical conduct of research and to the protection at all times of the interests, comfort, and safety of subjects. This research is being conducted under permission of the Simon Fraser Research Ethics Board. The chief concern of the Board is for the health, safety and psychological well-being of research participants.

Should you wish to obtain information about your rights as a participant in research, or about the responsibilities of researchers, or if you have any questions, concerns or complaints about the manner in which you were treated in this study, please contact the Director, Office of Research Ethics by email at hweinber@sfu.ca or phone at 604-268-6593.

Your signature on this form will signify that you have received a document which describes the procedures, possible risks, and benefits of this research project, that you have received an adequate opportunity to consider the information in the documents describing the project or experiment, and that you voluntarily agree to participate in the project or experiment.

Any information that is obtained during this study will be kept confidential to the full extent permitted by the law. Knowledge of your identity is not required. You will not be required to write your name or any other identifying information on research materials. Materials will be maintained in a secure location.

Having been asked by Maya Peled of the Psychology Department of Simon Fraser University to participate in a research project, I have read the procedures specified in the information document.

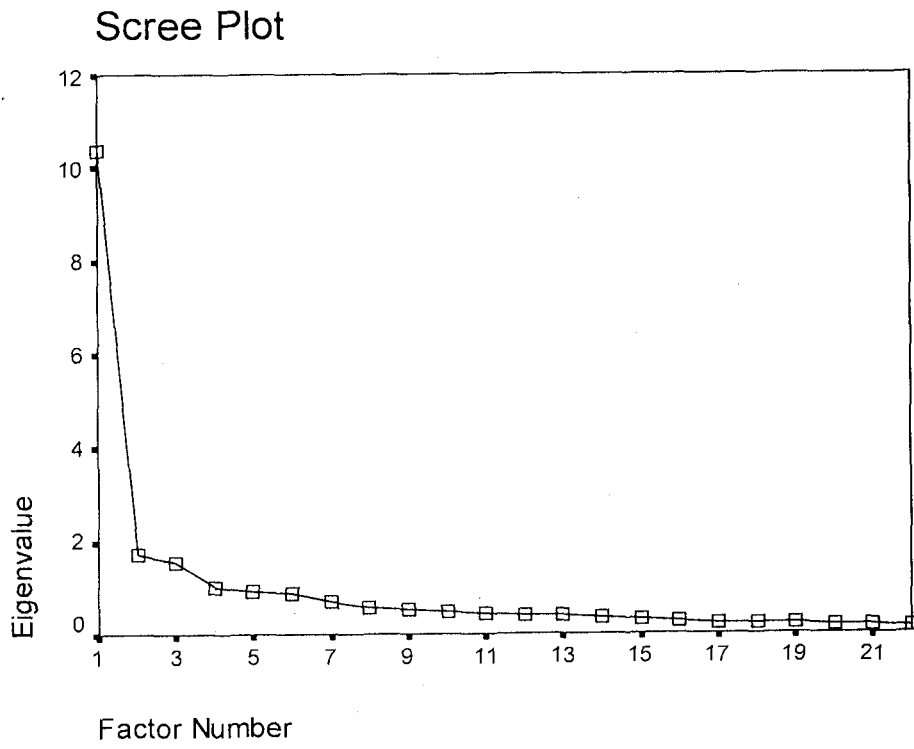
- ♦ I understand the procedures to be used in this experiment and the potential risks to me in taking part.
- ♦ I agree to participate by completing questionnaires about my feelings, thoughts, and behaviours. The questionnaires will take approximately 40 minutes to complete.
- ♦ I understand that the research material will be kept strictly confidential.
- ♦ I understand that I may withdraw my participation at any time.
- ♦ I understand that I may register complaints with Dr. Daniel Weeks, Chair of the Department of Psychology, at 291-3358.
- ♦ I may obtain copies of the results of this study, upon its completion, by contacting Maya Peled at mpeled@sfu.ca

Name (please print): _____	Signature: _____
Email: _____	Date: _____
	Witness: _____

Appendix E

Scree Plot from SARI Factor Analysis, All 22 Items (Study 1)

- Four factors emerged with eigenvalues greater than one (10.36, 1.70, 1.55, 1.03).



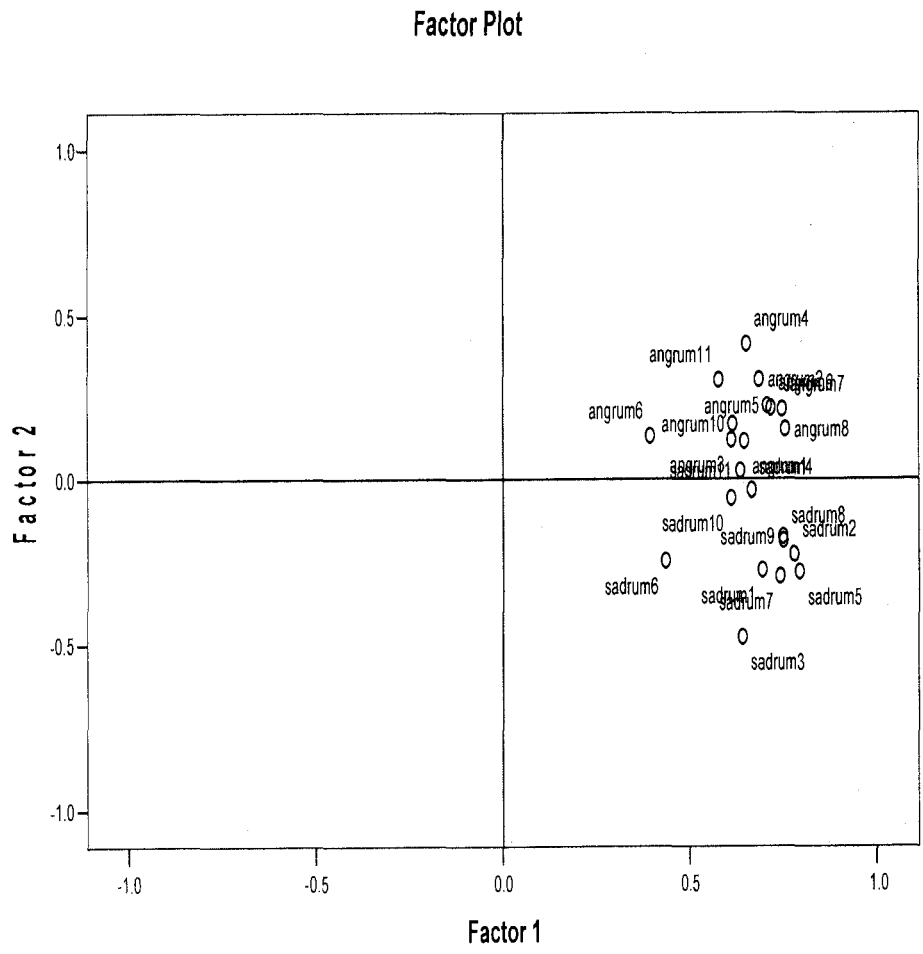
Appendix F

Residual Variances for All 22 Rumination Items (Study 1)

	1 Factor (RMR = .09)	2 Factors (RMR = .07)
Angrum 1	.60	.57
Angrum 2	.55	.44
Angrum 3	.64	.61
Angrum 4	.61	.43
Angrum 5	.50	.44
Angrum 6	.86	.82
Angrum 7	.46	.39
Angrum 8	.43	.40
Angrum 9	.50	.44
Angrum 10	.64	.60
Angrum 11	.68	.58
Sadrum 1	.52	.45
Sadrum 2	.38	.33
Sadrum 3	.59	.40
Sadrum 4	.55	.55
Sadrum 5	.36	.28
Sadrum 6	.82	.76
Sadrum 7	.44	.37
Sadrum 8	.41	.39
Sadrum 9	.43	.41
Sadrum 10	.63	.64
Sadrum 11	.59	.59

Appendix G

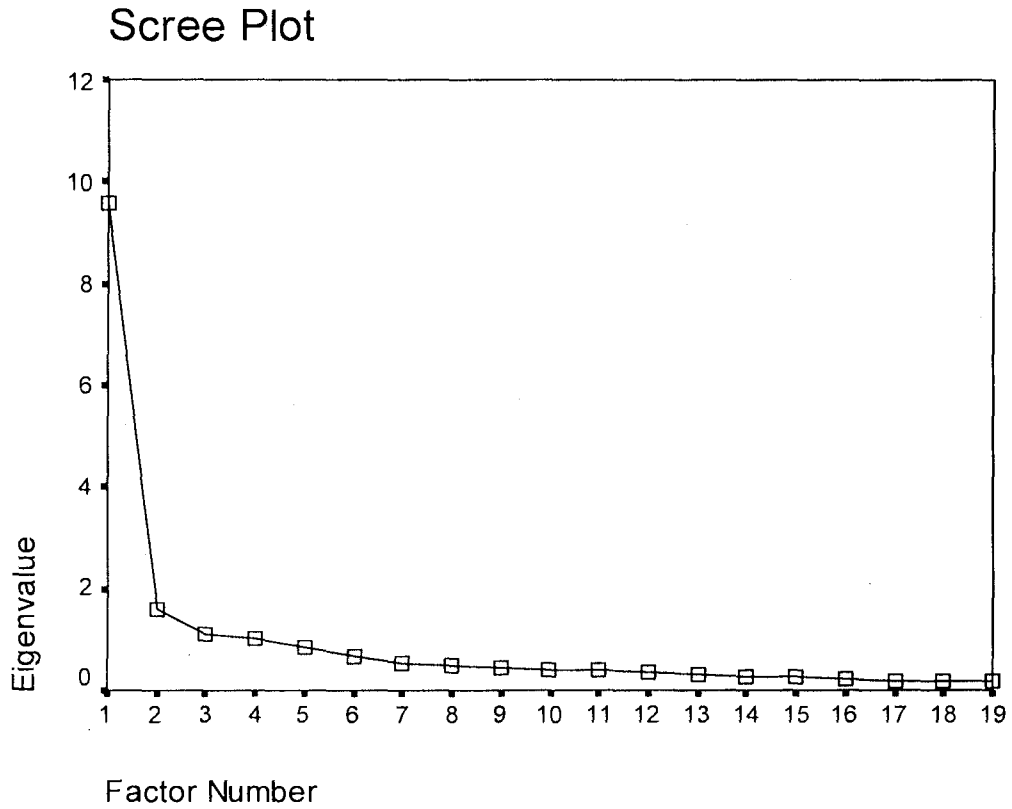
Unrotated Factor Plot, All 22 Rumination Items (Study 1)



Appendix H

Scree Plot from SARI Factor Analysis, 19 Items (Study 1)

- After three items were dropped, four factors again emerged with eigenvalues greater than one (9.59, 1.58, 1.08, 1.01).



Appendix I

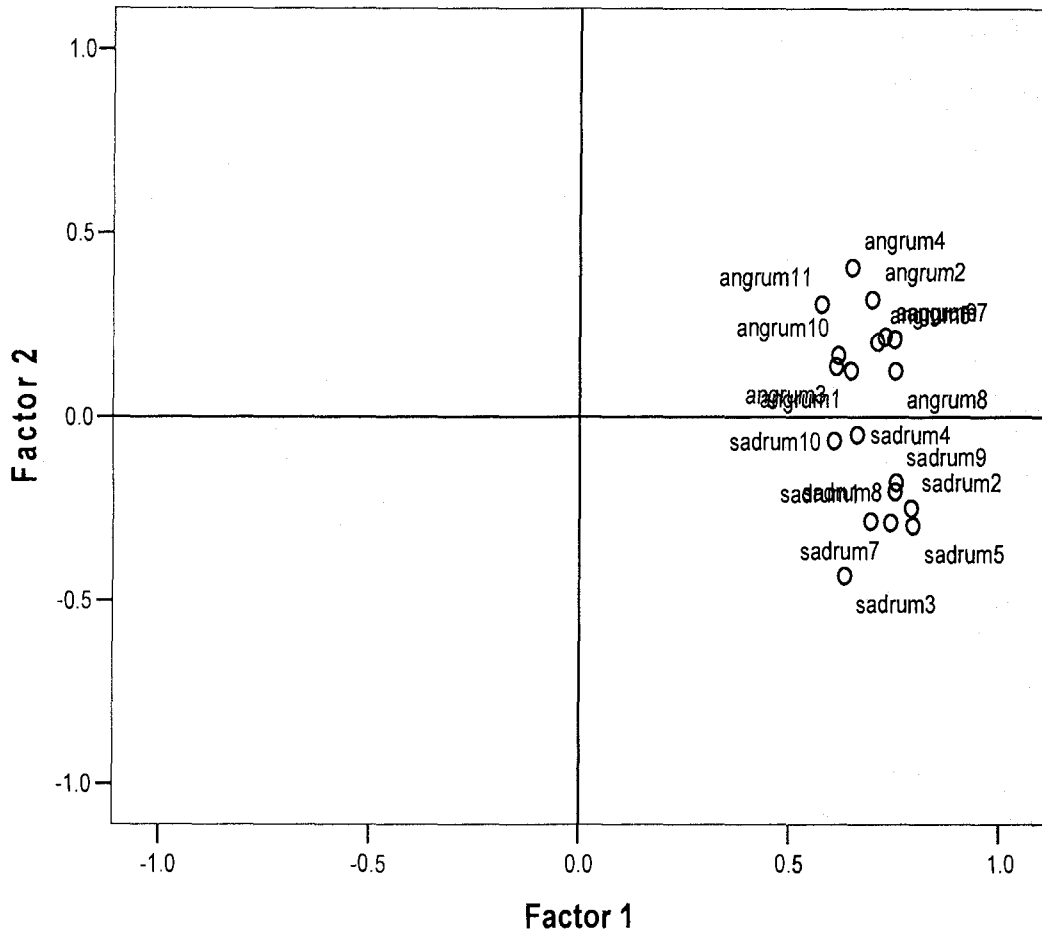
Residual Variances for 19 Rumination Items (Study 1)

	1 Factor (RMR = .08)	2 Factors (RMR = .06)
Angrum 1	.60	.57
Angrum 2	.55	.43
Angrum 3	.64	.60
Angrum 4	.61	.44
Angrum 5	.50	.45
Angrum 7	.46	.39
Angrum 8	.43	.41
Angrum 9	.49	.42
Angrum 10	.64	.60
Angrum 11	.69	.58
Sadrum 1	.52	.44
Sadrum 2	.38	.32
Sadrum 3	.60	.43
Sadrum 4	.56	.56
Sadrum 5	.36	.27
Sadrum 7	.44	.37
Sadrum 8	.42	.38
Sadrum 9	.43	.41
Sadrum 10	.64	.64

Appendix J

Unrotated Factor Plot, 19 Rumination Items (Study 1)

Factor Plot

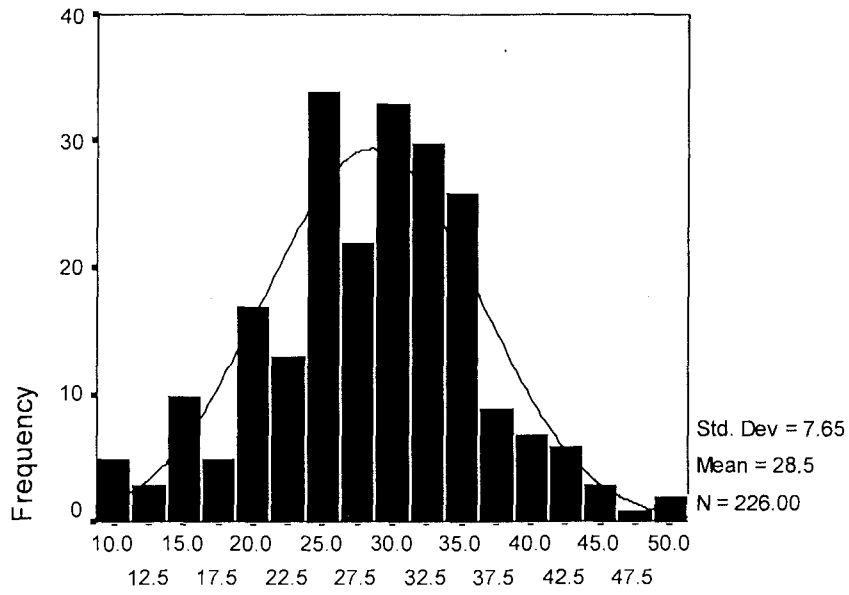


Appendix K

Histograms (Study 1)

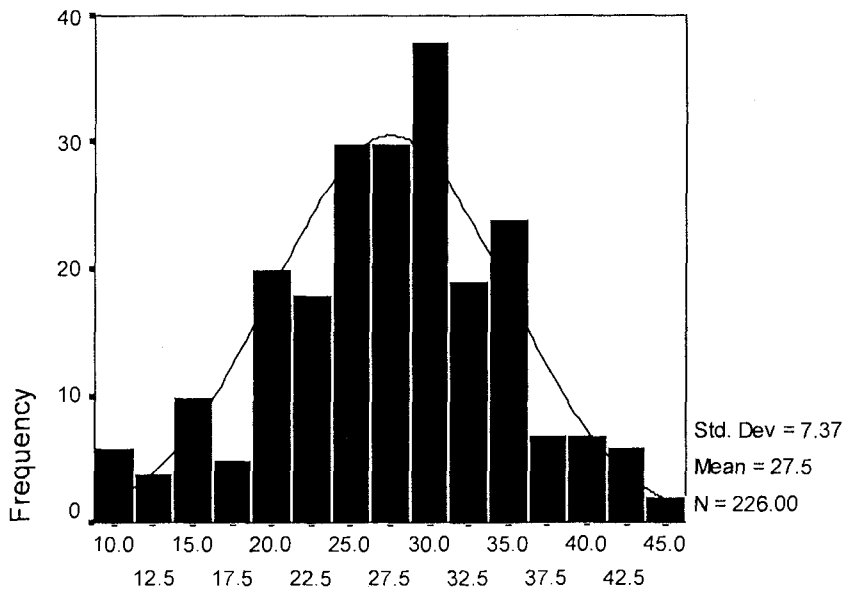
- Anger Rumination
- Sadness Rumination
- Overt Aggression
- Relational Aggression
- Anger
- Depression

Anger Rumination



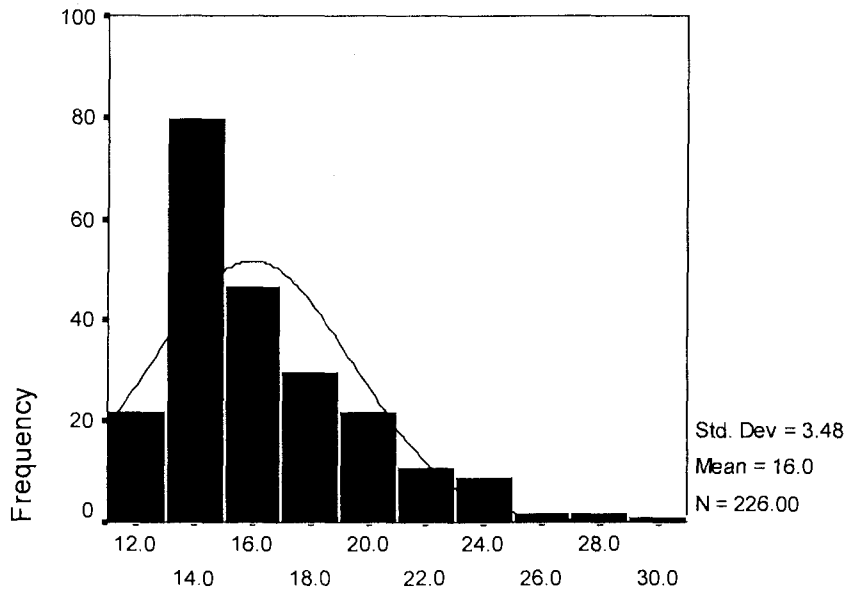
Anger Rumination

Sadness Rumination



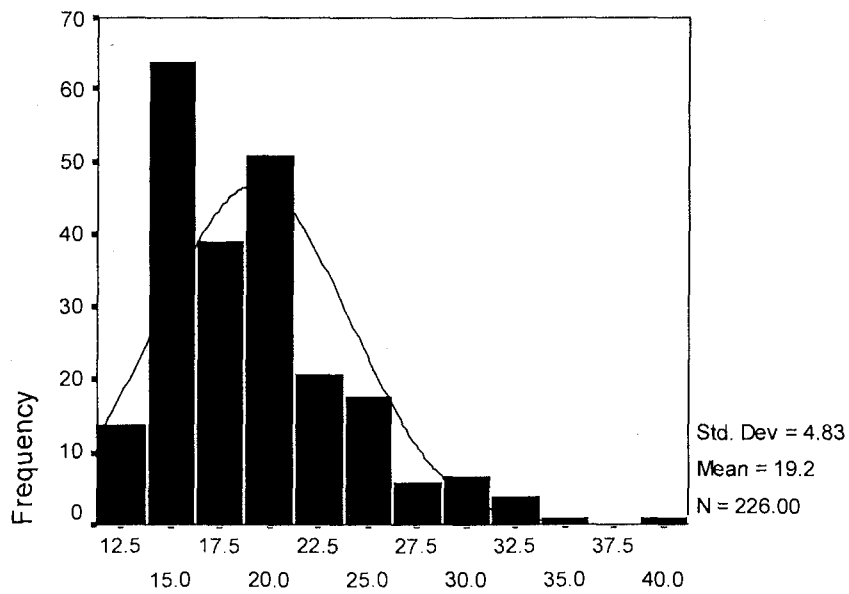
Sadness Rumination

Overt Aggression

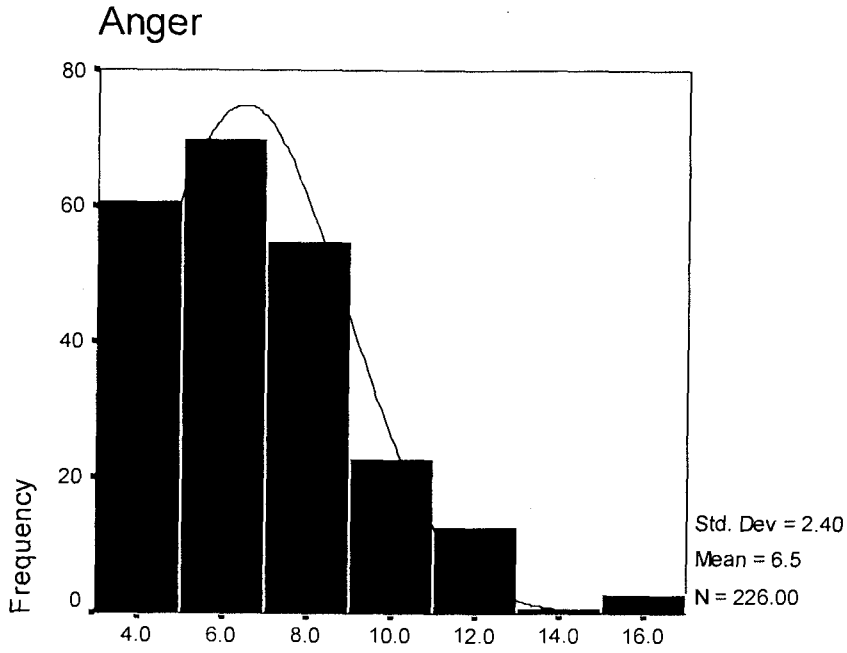


Overt Aggression

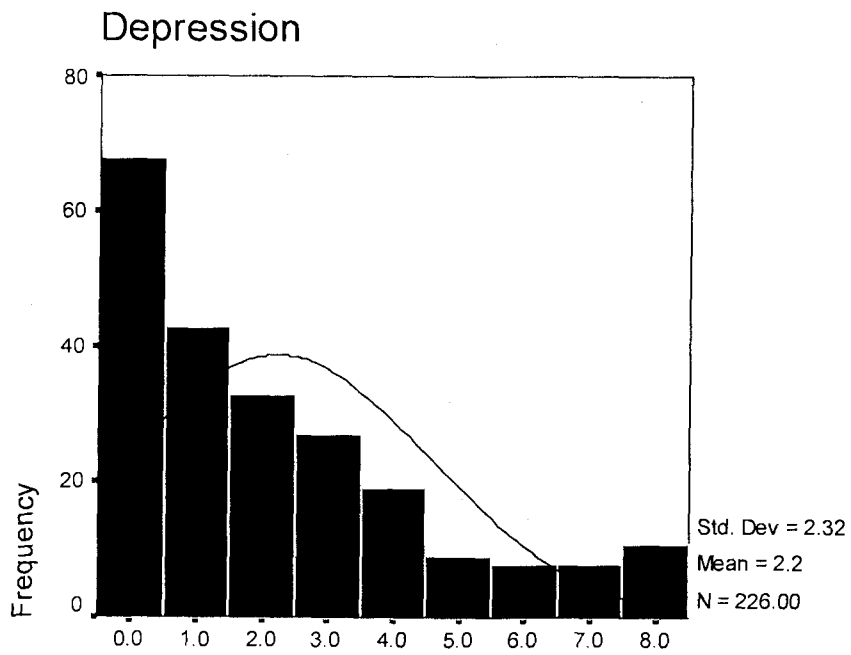
Relational Aggression



Relational Aggression



Anger



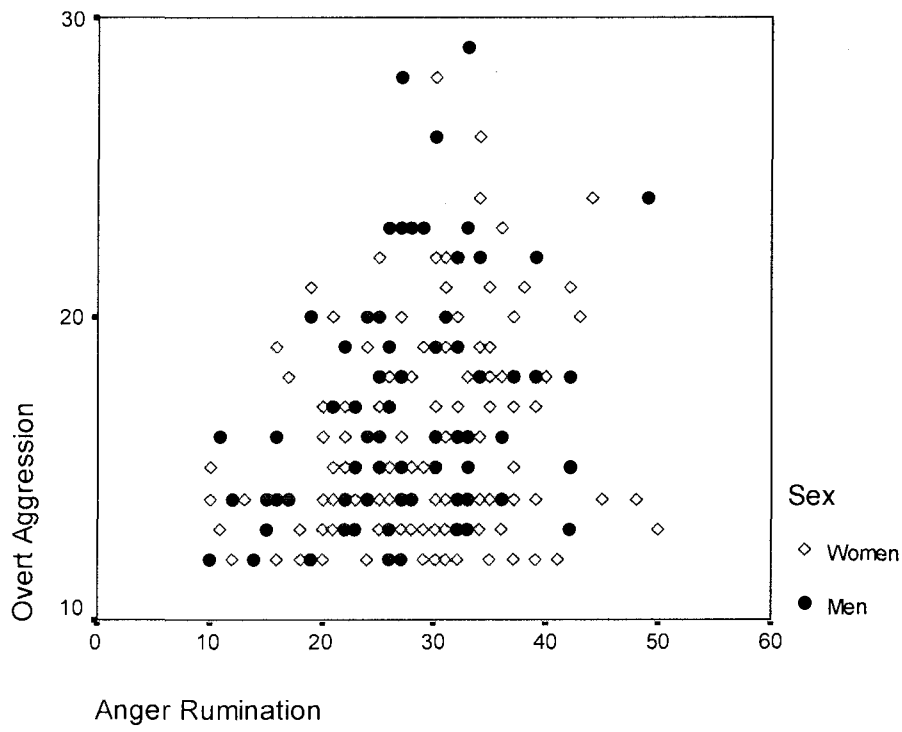
Depression

Appendix L

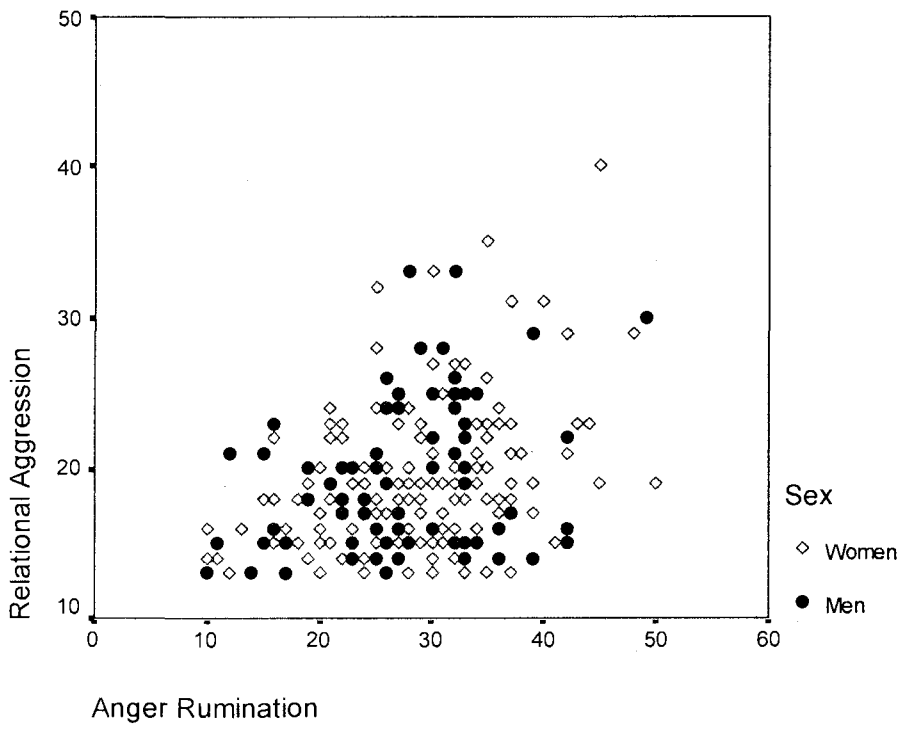
Scatterplots by Sex (Study 1)

- Anger Rumination and Overt Aggression
- Anger Rumination and Relational Aggression
- Anger Rumination and Anger
- Sadness Rumination and Depression

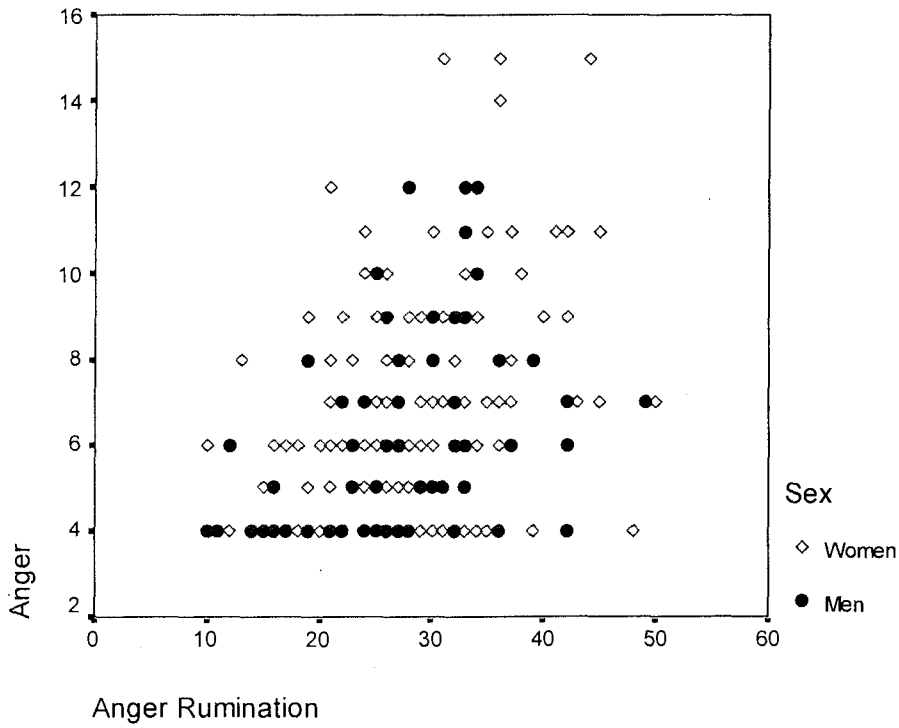
Anger Rumination and Overt Aggression by Sex:



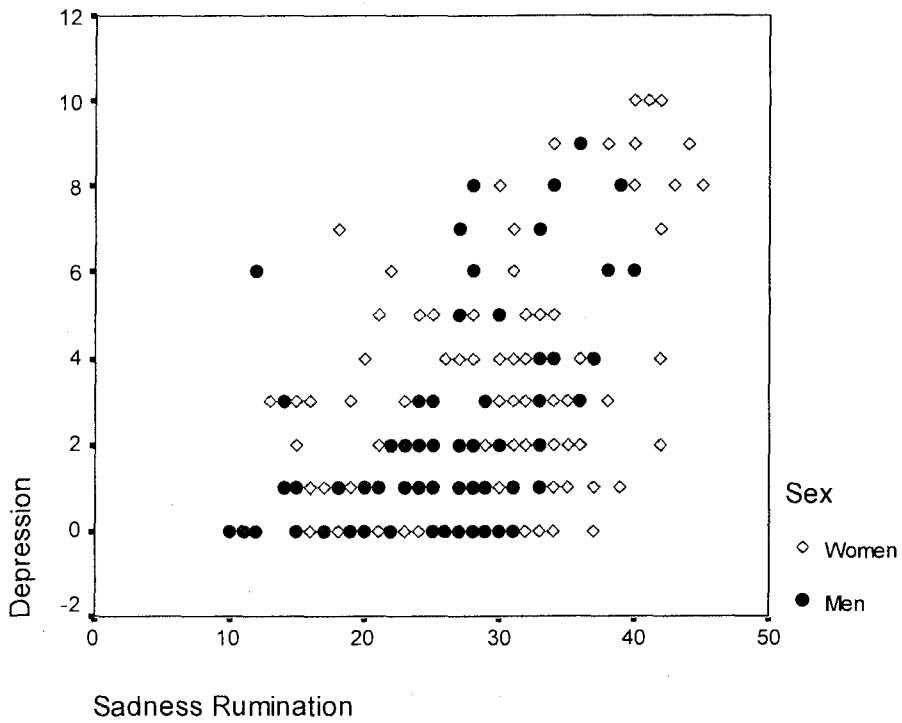
Anger Rumination and Relational Aggression by Sex:



Anger Rumination and Anger by Sex:



Sadness Rumination and Depression by Sex:



Appendix M

OCHS Items for Anger and Depression (Study 2)

OCHS – Anger: items 3, 15, 35, 41 (in black). Depression: items 5, 9, 19, 21, 22, 29, 30, 38, 51 (in grey).

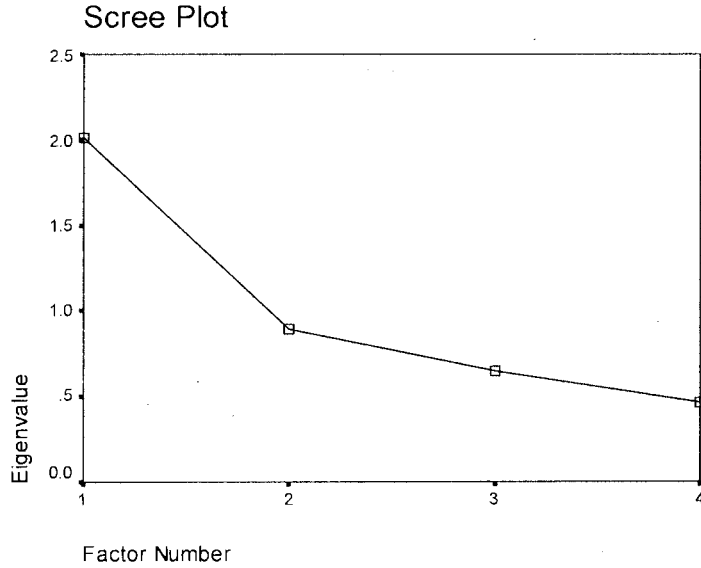
Below is a list of items that describe kids. For each item please tell me if the statement is:
**never or not true of you (0), somewhat or sometimes true of you (1),
 or often or very true of you (2) now or within the past 6 months.**

1. I worry that something bad will happen to people that I am close to	31. I become overly upset when I am leaving someone I am close to
2. I become overly upset while away from someone that I am close to	32. I've gained a lot of weight without trying to
3. I have a hot temper	33. I interrupt or butt in on others
4. I get back at people	34. I set fires
5. I get no pleasure from my usual activities	35. I blame others for my mistakes
6. I steal from places other than home	36. I avoid being alone
7. I have difficulty playing quietly	37. I threaten to hurt people
8. I use weapons when fighting	38. I think about killing myself
9. I feel overtired	39. I am cranky
10. I have trouble concentrating and paying attention	40. I have trouble listening
11. I lie or cheat	41. I am angry and resentful
12. I interrupt or blurt out the answer to the question too soon	42. I have difficulty following directions or instructions
13. I deliberately try to hurt or kill myself	43. I have trouble sitting still
14. I have trouble sleeping	44. I am nervous or tense
15. I am easily annoyed by others	45. I have nightmares about being abandoned
16. I can't stay seated when required to do so	46. I do things to annoy others
17. I worry about being separated from those I am close to	47. I am easily distracted and have difficulty sticking to any activity
18. I am mean to animals	48. I am mean to others
19. I have trouble making decisions	49. I talk too much
20. I jump from one activity to another	50. I physically attack people
21. I feel too guilty	51. I feel worthless or inferior
22. I am unhappy, sad or depressed	52. I argue a lot
23. I steal at home	53. I avoid school and stay home
24. I have lost a lot of weight without trying to	54. I sleep more than most kids during the day and/or night
25. I cut classes or skip school	55. I blame others for my mistakes
26. I've broken into someone else's house, building or car	56. I have difficulty waiting my turn in games or groups
27. I fidget	57. I lose things
28. I am scared to go to sleep without my parents nearby	58. I feel sick when being separated from those that I am close to
29. I have no interest in my usual activities	59. I am defiant and talk back to people
30. I don't have much energy	 OCHS

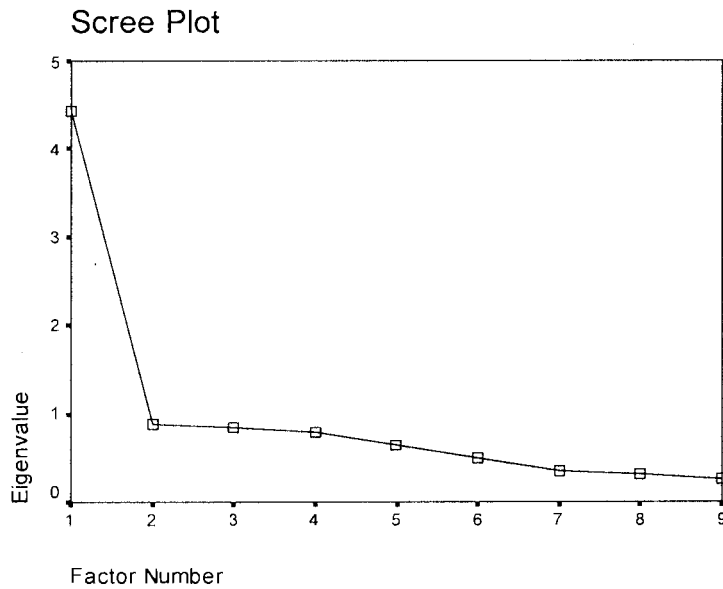
Appendix N

Scree Plots for Anger and Depression (Study 2)

- Scree plot for anger. One factor identified (from four items):



- Scree plot for depression (9 items). One factor with an eigenvalue greater than one:



Appendix O

Consent Forms (Study 2)

SIMON FRASER UNIVERSITY
INFORMED CONSENT TO PARTICIPATE IN A RESEARCH PROJECT
Maples Adolescent Treatment Centre

We are conducting a research study through Simon Fraser University looking at things that affect the lives of teens, the problems they face, and how they develop over time. We do not believe that you will face any risks by participating in our study. Some of the questions in this study are personal, however, and they may or may not make you feel upset. If you do become really upset, we will make sure that there is someone for you to talk to about this and who will help you.

What Participating in this Project involves:

1. Your participation in this study will involve completing questionnaires and interviews in three separate 1 to 2 hour sessions. You have the option of completing these questionnaires and interviews after you finish your regular psychology and education testing.
2. If you decide to participate, information from the interviews and questionnaires completed by you and your caregiver for the Care Plan, and information contained in your file at this facility may be used in the study.
3. Some information from your participation in the study may be shared with staff for the purposes of your Care Plan if it is viewed as in your best interests. However, after your Care Plan is completed, all information used for research will have your name removed, and it will not be used in any way that could lead to you being personally identified. Information will only be used by trained researchers and trainees.
4. Agreeing to participate in the project gives us permission to look in government databases that contain information on your medical, educational and forensic history, and services that have been provided to you. It also involves giving us permission to look at this information as you get older so we can see what services you receive and whether they are helpful.
5. We may also contact you over the next five years to collect similar information, and at that time, you can decide whether or not you wish to participate further.
6. You will receive a gift certificate in the amount of \$30.00 once you have completed your participation in this study.

Your Participation is Voluntary:

We want you to know that you can choose not to answer any questions and you can choose to stop participating at any time. **Deciding to be, or not to be, a participant in this study is completely up to you and does not affect your Care Plan.**

How Confidential is the Information You Provide:

Your name and any other identifying information will be removed from all interview forms and/or questionnaires after your Care Plan is completed. For the purposes of this study, we need to tape-record the interviews. The tapes will be kept in a secure place, and will only be listened to by research assistants on the project who have signed a confidentiality agreement.

Information you share with us will be kept confidential by the researchers to the extent of the law. There are two things that we can't keep secret and will have to notify authorities: 1) if you say that you plan to cause serious physical harm to yourself or anyone else, and/or 2) if you say that you are being abused or are at risk of being abused. The Court may require us to reveal other information that you share.

If you want to know the results of this study when it's done, you can write to:

Dr. Marlene Moretti, Psychology Department,
 Simon Fraser University, Burnaby, BC, V5A 1S6
 (604) 291-3604

If you wish to file a concern regarding the study, you can write to the person named above, or to Dr. D. Weeks, Chair of the Psychology Department at Simon Fraser University, (604) 291-3354.

 I agree to participate by completing interviews and questionnaires and I agree to be contacted to further participate over the next five years. Also, I know my caregiver may complete some similar questionnaires and interviews. Information from the interviews, questionnaires, files from this institution and files from my medical and school records may be used in the study. I understand that the information may be shared with other researchers, but my name and other identifying information will not be included and my identity will be protected. All information will be kept confidential to the extent permitted by law.

Name

(please print):

Witness:

Signature:

Date:

SIMON FRASER UNIVERSITY
INFORMED CONSENT TO PARTICIPATE IN A RESEARCH PROJECT
Youth Forensic Settings

We are conducting a research study through Simon Fraser University looking at things that affect the lives of teens, the problems they face, and how they develop over time. We do not believe that you will face any risks by participating in our study. Some of the questions in this study are personal, however, and they may or may not make you feel upset. If you do become really upset, we will make sure that there is someone for you to talk to about this and who will help you.

What Participating in this Project involves:

1. Your participation in this study will involve completing questionnaires and interviews in three separate 1 to 2 hour sessions.
2. If you decide to participate, information from the interviews and questionnaires completed by you, and information contained in your file at this facility may be used in the study.
3. Agreeing to participate in the project gives us permission to look in government databases that contain information on your medical, educational and forensic history, and services that have been provided to you. It also involves giving us permission to look at this information as you get older so we can see what services you receive and whether they are helpful.
4. We may also contact you over the next five years to collect similar information, and at that time, you can decide whether or not you wish to participate further.
5. You will receive _____ once you have completed your participation in this study.

Your Participation is Voluntary:

We want you to know that you can choose not to answer any questions and you can choose to stop participating at any time. **Deciding to be, or not to be, a participant in this study is completely up to you and will not affect any services that you receive.**

How Confidential is the Information You Provide:

Your name and any other identifying information will not be recorded on interview forms or on the questionnaires that you complete. For the purposes of this study, we need to tape-record the interviews. The tapes will be kept in a secure place, and will only be listened to by research assistants on the project who have signed a confidentiality agreement.

Information you share with us will be kept confidential by the researchers to the extent of the law. There are two things that we can't keep secret and will have to notify authorities: 1) if you say that you plan to cause serious physical harm to yourself or anyone else, and/or 2) if you say that you are being abused or are at risk of being abused. The Court may require us to reveal other information that you share.

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Name

(please print):

Witness:

Signature:

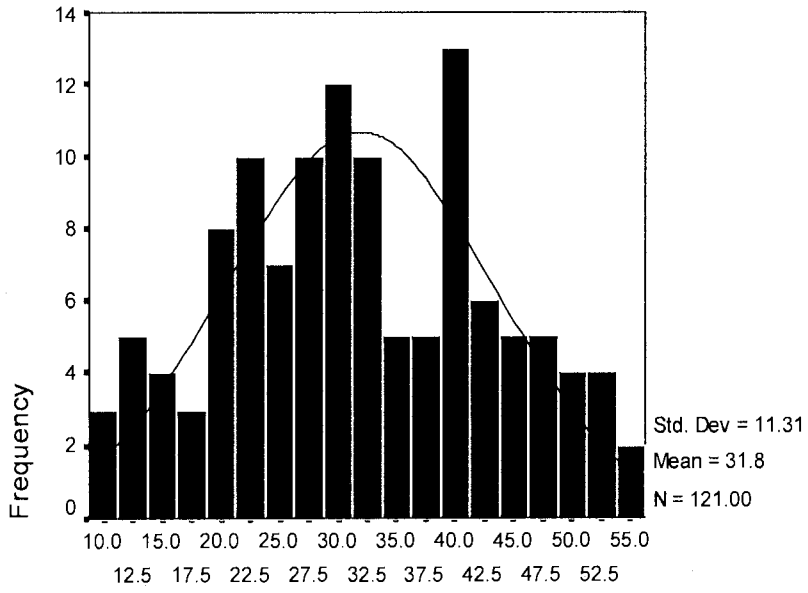
Date:

Appendix P

Histograms (Study 2)

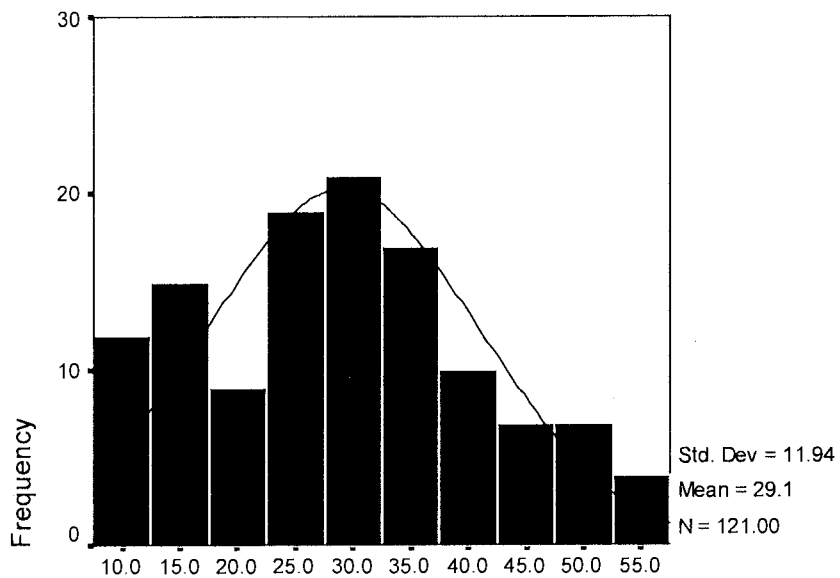
- Anger Rumination
- Sadness Rumination
- Overt Aggression
- Relational Aggression
- Anger
- Depression

Anger Rumination



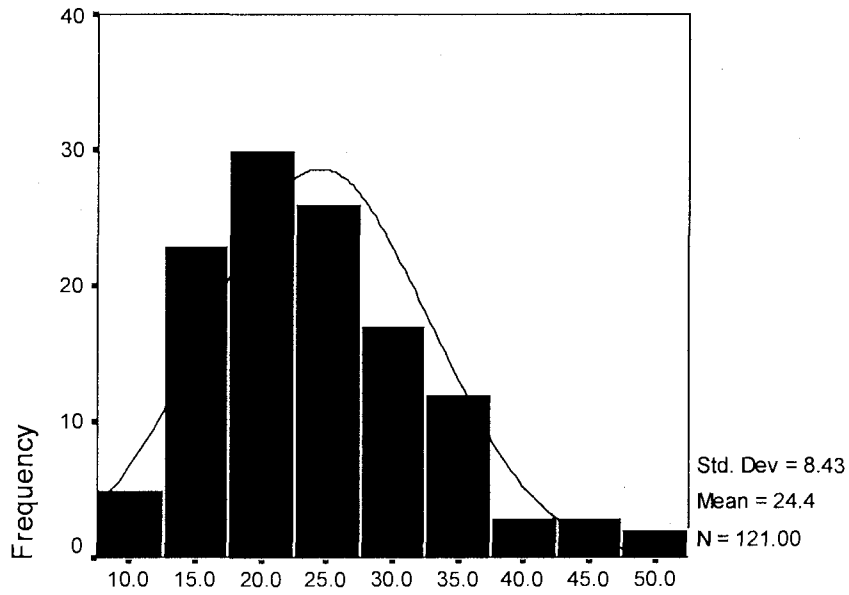
ANGRUM

Sadness Rumination



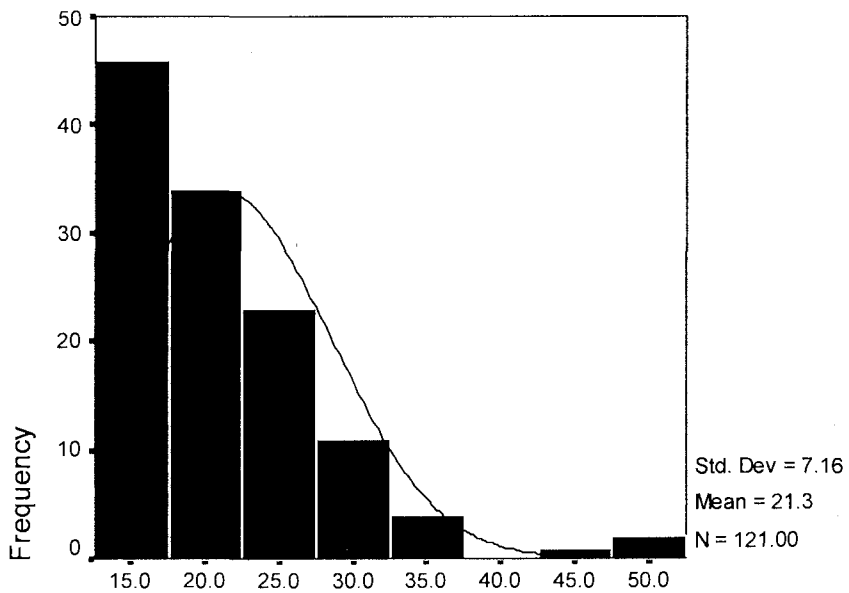
SADRUM

Overt Aggression



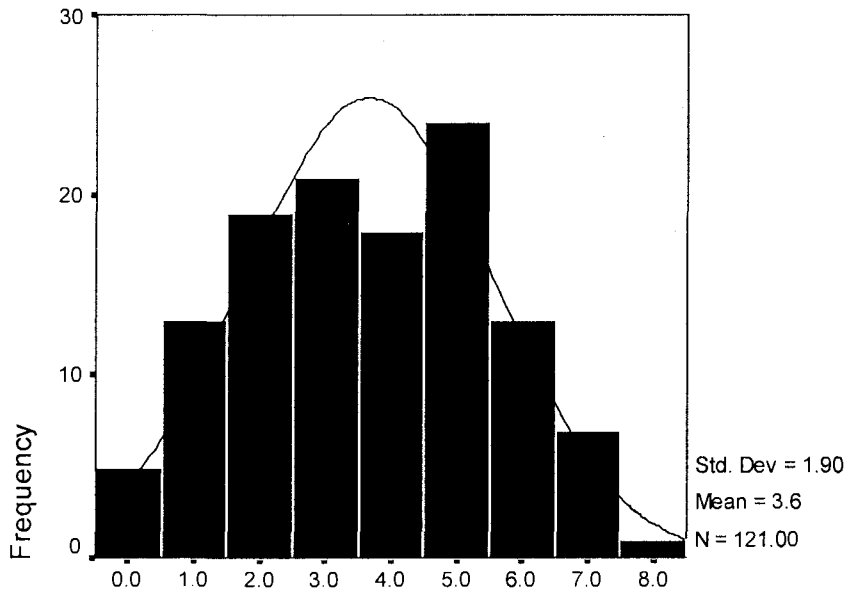
OVERTAGG

Relational Aggression



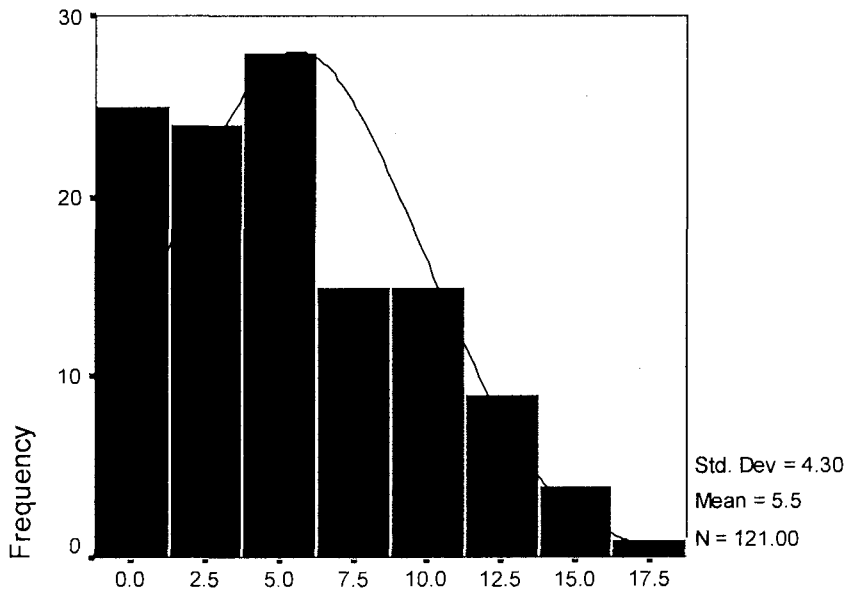
RELATAGG

ANGER



ANGER

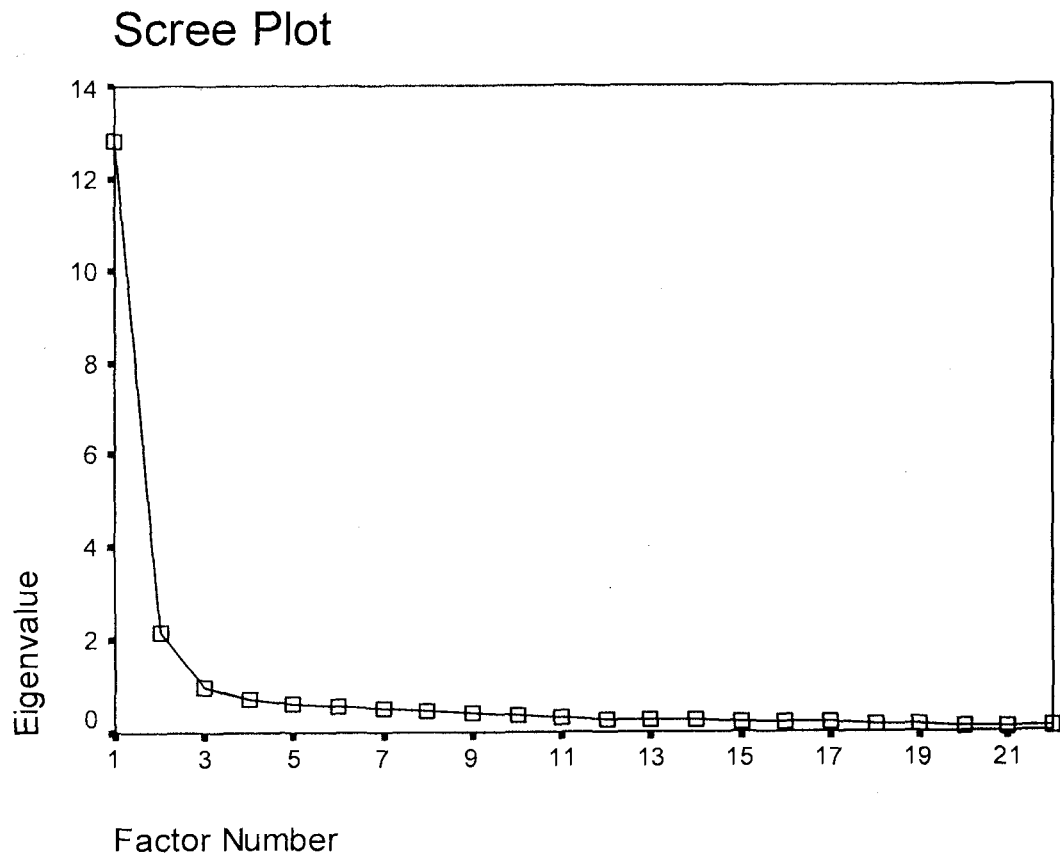
Depression



DEPRESS

Appendix Q

Scree Plot from SARI Factor Analysis (Study 2)



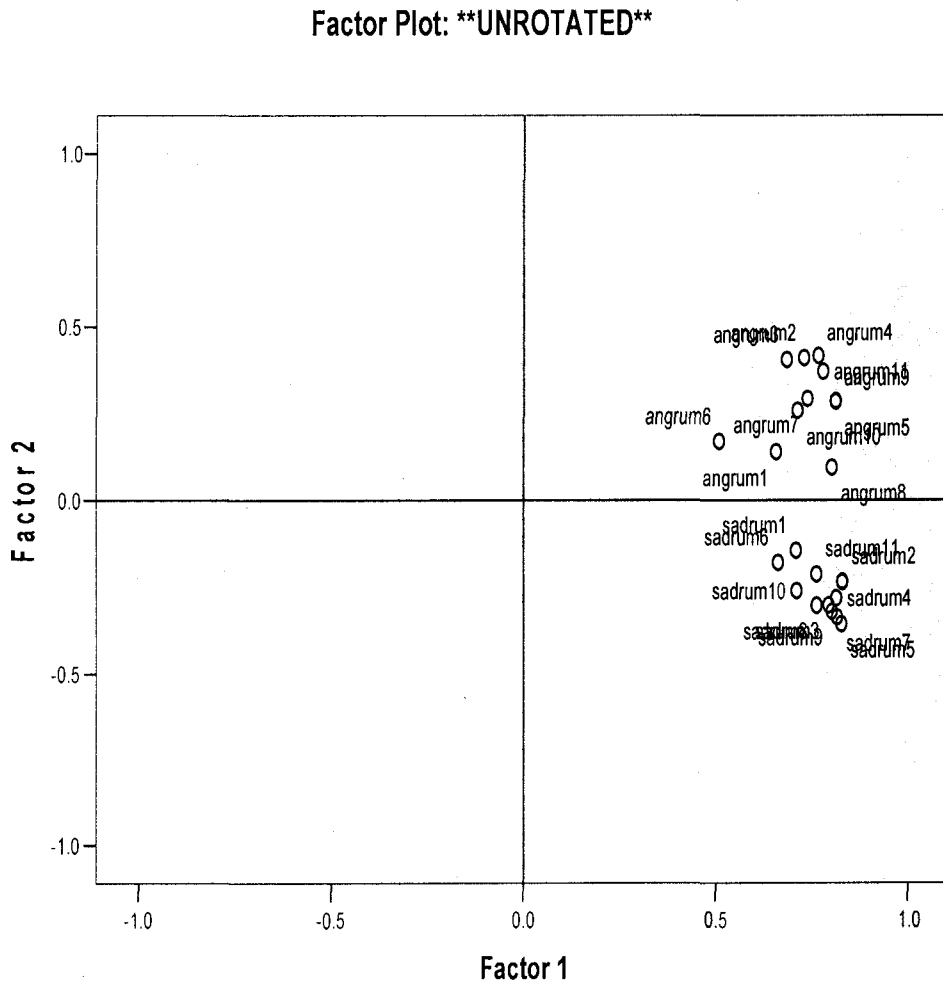
Appendix R

Residual Variances for All 22 Rumination Items (Study 2)

	1 Factor (RMR = .09)	2 Factors (RMR = .04)
Angrum 1	.59	.57
Angrum 2	.51	.29
Angrum 3	.58	.37
Angrum 4	.47	.24
Angrum 5	.38	.26
Angrum 6	.76	.73
Angrum 7	.49	.38
Angrum 8	.36	.35
Angrum 9	.38	.26
Angrum 10	.53	.43
Angrum 11	.44	.25
Sadrum 1	.50	.50
Sadrum 2	.29	.27
Sadrum 3	.35	.27
Sadrum 4	.31	.25
Sadrum 5	.29	.18
Sadrum 6	.55	.55
Sadrum 7	.31	.22
Sadrum 8	.38	.31
Sadrum 9	.33	.26
Sadrum 10	.48	.44
Sadrum 11	.40	.39

Appendix S

Unrotated Factor Plot, All 22 Rumination Items (Study 2)

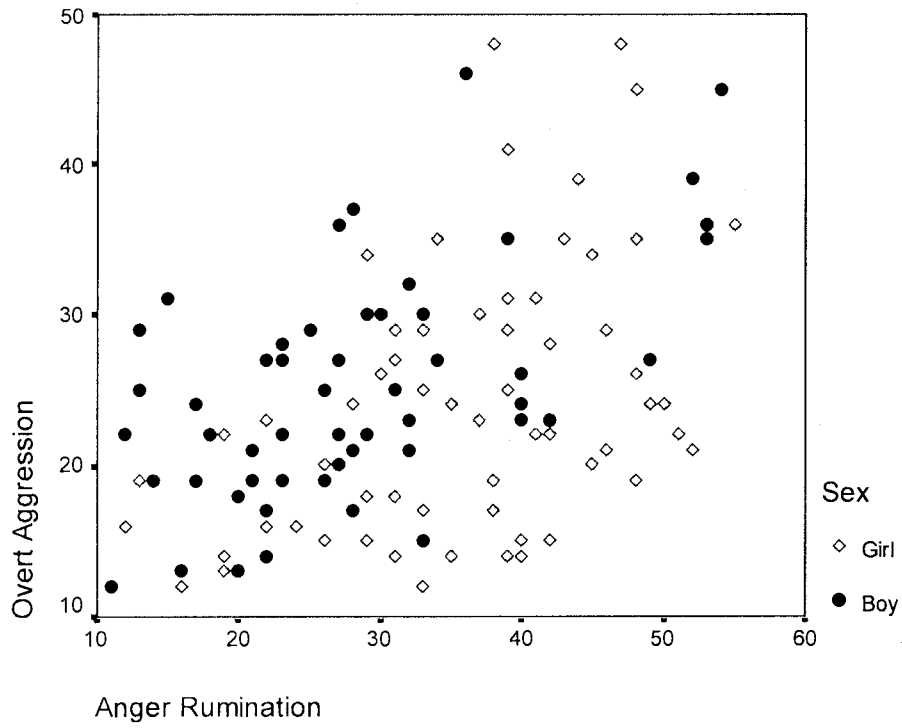


Appendix T

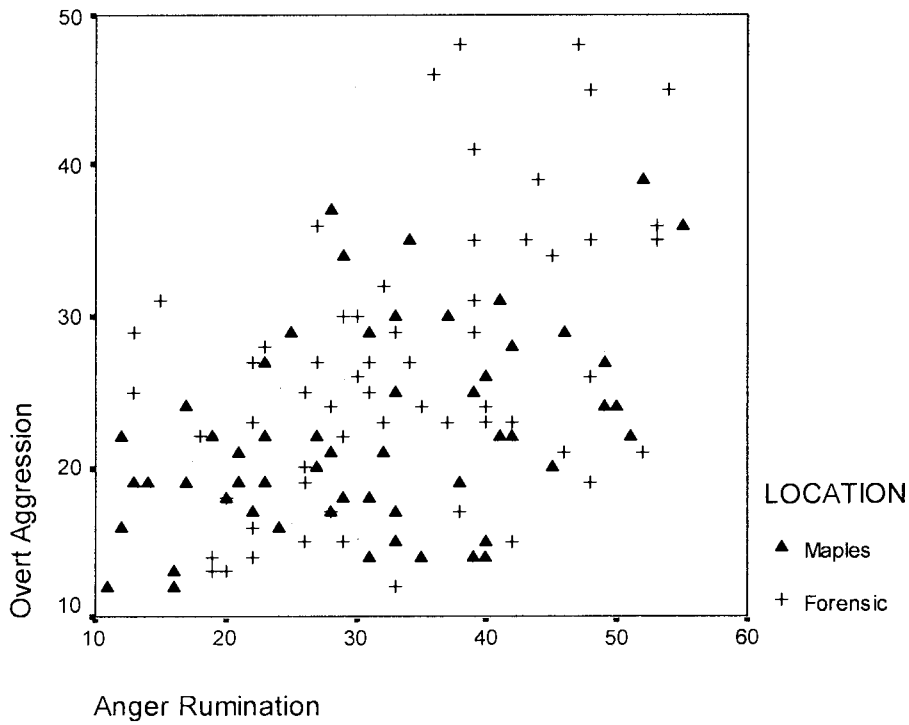
Scatterplots by Sex and Location (Study 2)

- Anger Rumination and Overt Aggression
- Anger Rumination and Relational Aggression
- Anger Rumination and Anger
- Sadness Rumination and Depression

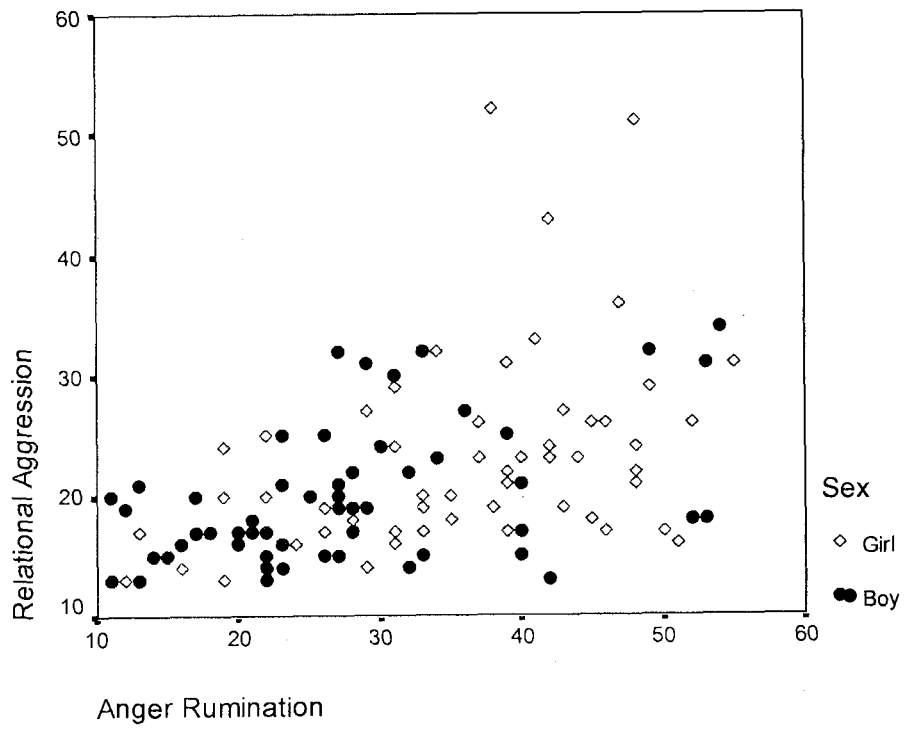
Anger Rumination and Overt Aggression by Sex:



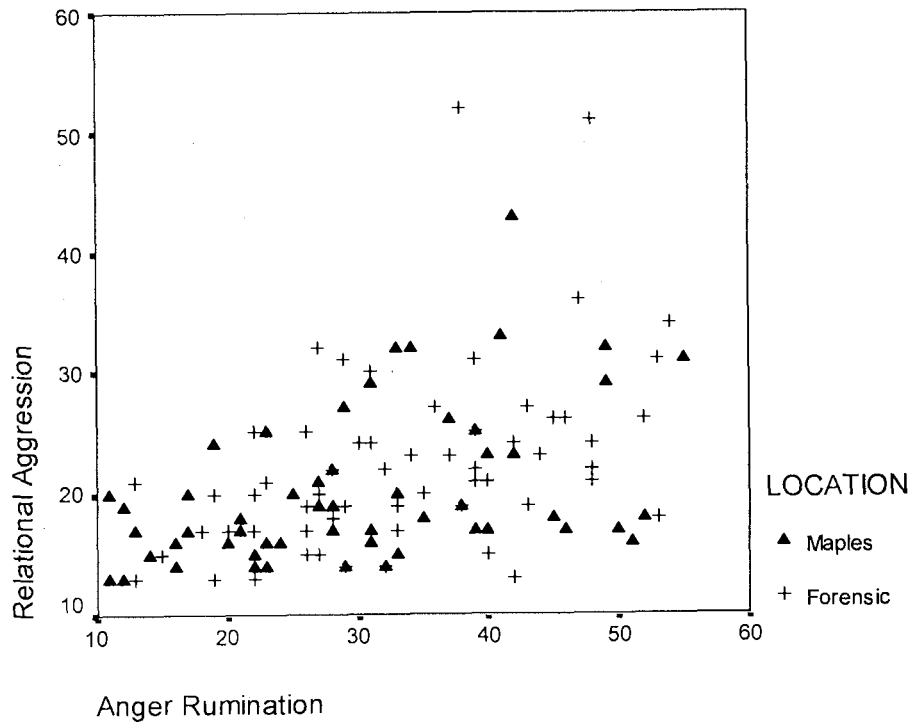
Anger Rumination and Overt Aggression by Location:



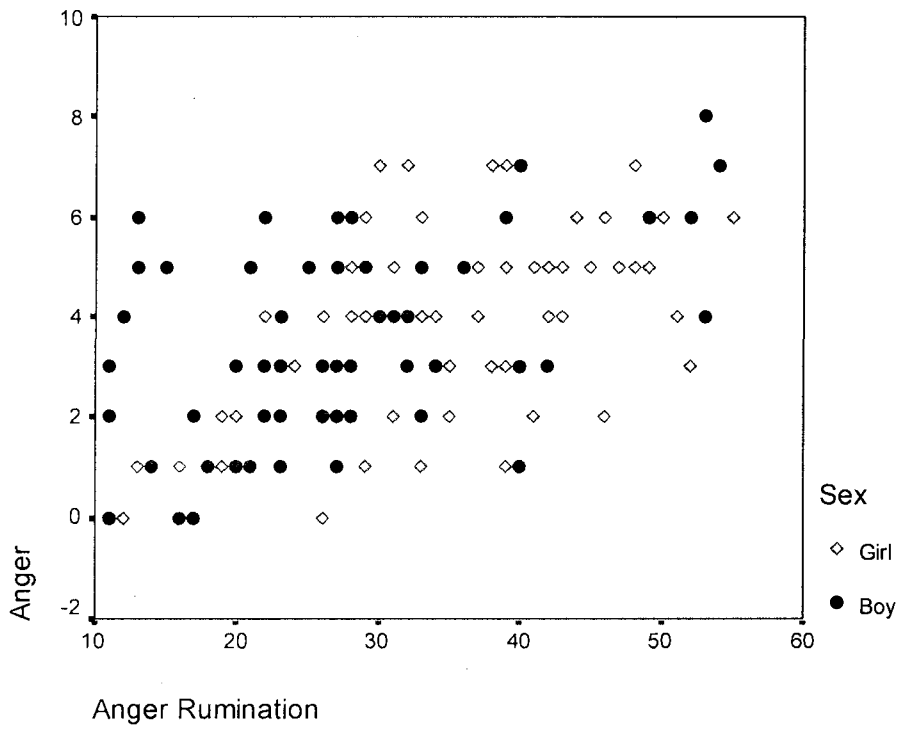
Anger Rumination and Relational Aggression by Sex:



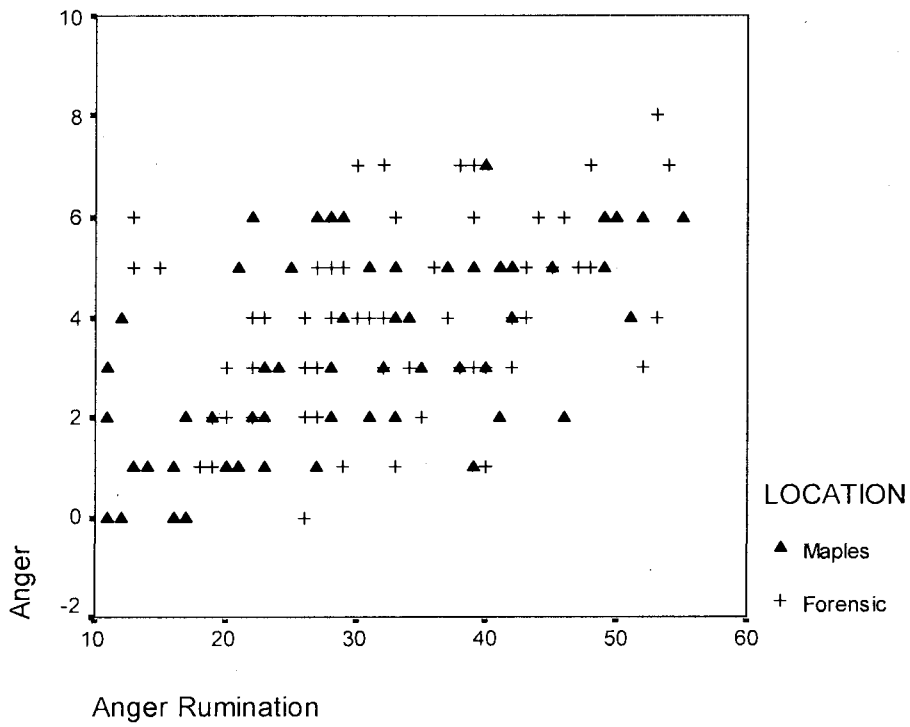
Anger Rumination and Relational Aggression by Location:



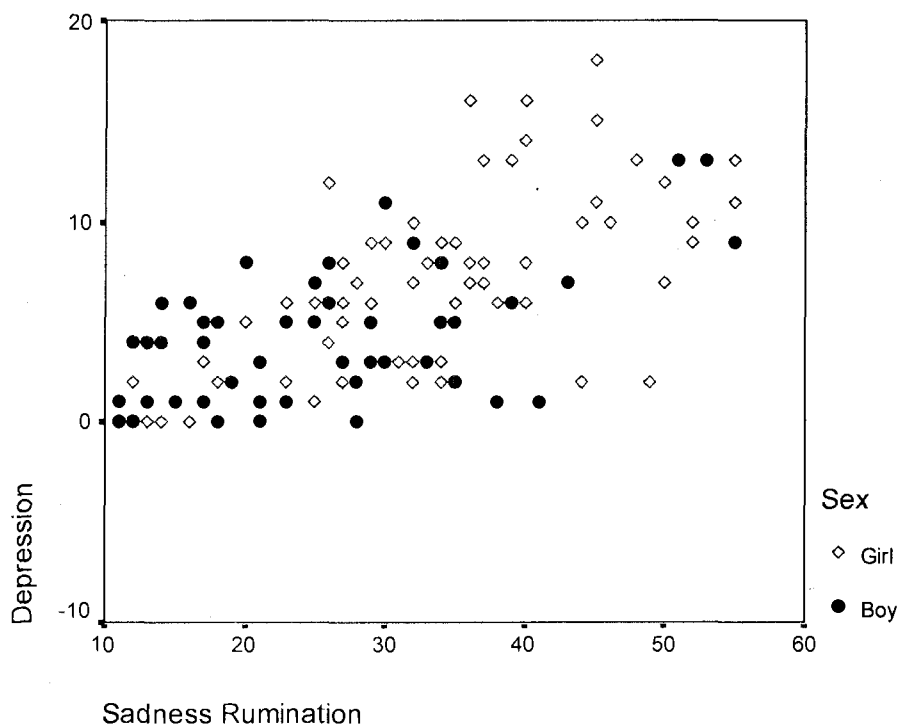
Anger Rumination and Anger by Sex:



Anger Rumination and Anger by Location:



Sadness Rumination and Depression by Sex:



Sadness Rumination and Depression by Location:

