THE ROLE OF RISK REGULATION IN INTIMATE RELATIONSHIPS AMONG INDIVIDUALS WITH SOCIAL ANXIETY DISORDER AND HEALTHY CONTROLS

by

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Abstract

Individuals with social anxiety disorder (SAD) experience heightened concern about rejection and negative evaluation by other people. However, limited research has assessed the extent to which individuals with SAD also experience elevated concerns about rejection within the context of their intimate relationships. In the present study, individuals with SAD (n = 21) and healthy controls (HCs; n = 25) who were in current intimate relationships completed daily diaries each evening for 14 days. Daily diaries assessed the extent to which participants experienced feelings of rejection and acceptance in their intimate relationships, as well as the extent to which they responded to feelings of rejection by using behaviours characterized by withdrawal ("withdrawal" processes) versus efforts to reaffiliate with their partners ("approach" processes). Results revealed that individuals with SAD reported greater levels of intimate partner rejection and marginally lower levels of intimate partner acceptance than HCs. Further, feelings of rejection were associated with an increased use of next-day withdrawal processes among SAD, but not HC participants. These findings provide insight into the nature of rejection concerns and responses to rejection among individuals with SAD.

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Chapter I: Introduction

The Role of Risk Regulation in Intimate Relationships Among Individuals with Social Anxiety Disorder and Healthy Controls

Social anxiety disorder (SAD) is characterized by marked fear or anxiety surrounding social situations in which one may be scrutinized by other people. According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; American Psychiatric Association, 2013), individuals with the disorder fear that the ways in which they act, or the symptoms of anxiety that they display, will be negatively evaluated by others and result in embarrassment, humiliation, or rejection. This fear of negative evaluation is considered to be a core feature of SAD (Clark & Wells, 1995; Hofmann, 2007; Rapee & Heimberg, 1997).

SAD is a widespread anxiety disorder, with lifetime prevalence rates in Canada ranging from 8-13% (Government of Canada, 2006; Stein & Kean, 2000). The disorder typically begins early, at a mean age of 14 years (Beidel, Turner, & Morris, 1998; Keller, 2003; Schneier, Johnson, Hornig, Liebowitz, & Weissman, 1992; Thyer, Parrish, Curtis, Nesse, & Cameron, 1985), and follows a chronic course, though symptoms wax and wane in tandem with stress levels (Kasper, 1998; Statistics Canada, 2015). Likelihood of natural remission from SAD is also low (e.g., Davidson, Hughes, George, & Blazer, 1993; Keller, 2006); preliminary findings from a longitudinal assessment of adults with SAD revealed that only 34% had fully recovered at 10-year follow-up, though many experienced partial symptom improvement. These remission rates were lower than those for individuals with agoraphobia, generalized anxiety disorder, major depressive disorder, and panic disorder without agoraphobia (Keller, 2006). Moreover, individuals with SAD experience increased rates of comorbid mental disorders, including other anxiety disorders, major depression, and substance use disorders (Chartier, Walker, & Stein,

2003; Davidson et al., 1993; Pini et al.,1997; Sanderson, Di Nardo, Rapee, & Barlow, 1990), and are at an increased risk for suicide attempts (Davidson et al., 1993; Weiller, Bisserbe, Boyer, Lepine, & Lecrubier, 1996).

SAD is associated with functional impairment in numerous domains and substantial reductions in perceived quality of life (e.g., Eng, Coles, Heimberg, & Safren, 2005). Individuals with the disorder tend to have less educational attainment (Magee, Eaton, Wittchen, McGonagle, & Kessler, 1996; Weiller et al., 1996), perform poorer at school and work (Davidson et al., 1993; Stein & Kean, 2010), are more likely to be unemployed (Magee et al., 1996; Wittchen & Beloch, 1996), and report greater dysfunction in daily activities compared to individuals without SAD (Stein & Kean, 2000). People with SAD also have fewer social relationships compared with those lower in social anxiety. Social anxiety symptoms are associated with difficulty forming relationships (Parade, Leerkes, & Blankson, 2010; Schneier et al., 1994; Turner, Beidel, Dancy, & Keys, 1986), having fewer friendships (La Greca & Lopez, 1998) and sexual experiences (Leary & Dobbins, 1983), and reduced likelihood of being married (Amies, Gelder, & Shaw, 1983; Schneier et al., 1994). A recent prospective study of Finnish adolescents also demonstrated that SAD status in adolescence was associated with not being involved in an intimate relationship at a 2-year follow-up for both male and female participants, as well as with poor support from friends and significant others for male participants, suggesting that relationship difficulties associated with SAD begin early on in the disorder's development (Klaus, La Greca, Kaltiala-Heino, & Marttunen, 2016).

Relationship Impairment in Social Anxiety

In a seminal review on the topic, Alden and Taylor (2004) note that, according to interpersonal models of psychopathology, healthy social relationships are viewed as pivotal to

one's psychological wellbeing. This finding has been demonstrated specifically within the context of social anxiety. Individuals with SAD who are single, rather than involved in an intimate relationship, often experience poorer life satisfaction (Heinrichs, 2003), higher levels of fear during social interactions and performance events, and greater avoidance of social interaction situations (e.g., attending a party; Hart, Turk, Heimberg, & Liebowitz, 1999). Further, because individuals with SAD tend to have fewer close relationships, there is greater significance for the functioning of those that they do have.

Despite the apparent importance of healthy relationship functioning in predicting more positive outcomes for individuals with SAD, relatively little research has focused on how socially anxious individuals interact with, and relate to, their close relationship partners. Instead, SAD is typically conceptualized mainly in terms of intrapsychic (rather than interpersonal) symptoms (Alden & Taylor, 2004). Furthermore, research that has investigated interpersonal processes implicated in the disorder has focused primarily on cognitions and behaviours that are activated in the presence of strangers, rather than close relationship partners (Afram & Kashdan, 2015). The following is a brief overview of the limited extant research investigating how people with high levels of social anxiety function differentially in their close relationships than those lower in social anxiety.

Communication. Much early research on social anxiety operated under the assumption that people with SAD experience social skills deficits (Stravynski, Kyparissis, & Amado, 2014). However, much of this research relied on participants' self-reports of their own social skills, leaving open the possibility that socially anxious individuals merely perceive their social aptitude as being inferior (Cartwright-Hatton, Tschernitz & Gomersall, 2005). In line with this interpretation, some studies have failed to reveal social skills deficits based on objective, third-

party ratings (Segrin, 1999; Segrin & Kinney, 1995), and cognitive models of SAD centre on individuals' beliefs that they are socially inept, rather than social ineptitude per se (Clark & Wells, 1995; Rapee & Heimberg, 1997).

On the other hand, many studies demonstrate that individuals with SAD do indeed exhibit social skills deficits. For example, Beidel, Rao, Scharfstein, Wong, and Alfano (2010) conducted a study of social skills among individuals with SAD (either with or without DSM-IV-defined generalized type), and healthy controls. These researchers used a comprehensive assessment of social skills based on three interaction tasks involving simulated social interactions, unstructured conversations, and impromptu speeches. The interactions were video-recorded and independent observers rated the participants' social skills. Results from this study indicated that, across the tasks, participants with generalized SAD displayed the greatest social skills deficits, and although participants with nongeneralized social anxiety disorder were better, they were also rated as having worse social skills than the healthy control participants. The relative social skills deficits among participants with generalized SAD were further identified as being clinically, in addition to statistically, significant.

Previous research using independent observer ratings also has limitations. Notably, the vast majority of research studies on the topic have only examined strangers' judgments of participants' social aptitude. However, social skills are also important in the context of close relationships, which necessitate the repeated and often sensitive negotiation of both partners' needs. Only a small handful of studies have begun to investigate social skills in close relationships among individuals with SAD. In one such study, Wenzel, Graff-Dolezal, Macho, and Brendle (2005) had participants engage in three conversations with their intimate partners, which were subsequently coded to determine the frequency of various conversational tactics. The

authors found that participants high in social anxiety displayed more "very negative" behaviours (e.g., jumping to conclusions, putting their partner down, asserting blame) when discussing a relationship issue. They also displayed fewer positive behaviours (e.g., "I feel..." statements, providing a compliment, expressing empathy, accepting responsibility) across positive, neutral, and negative discussion topics. Another study demonstrated that socially withdrawn and anxious young adolescents exhibited more passive attitudes toward their close friends during three observational tasks (Schneider, 2009). For example, when negotiating ownership of a desired item, socially withdrawn/anxious participants made fewer “sensitive counterproposals” (i.e., those reflecting accommodations to a suggestion made by their friends), and were more likely to accept their friends’ proposals without attempting to modify them or suggest a compromise for their own benefit. Other research has demonstrated that, within intimate relationships, people high in social anxiety tend to both receive and provide less supportive responses following shared positive events, and this pattern was associated with a greater likelihood of relationship termination and reductions in relationship quality at 6-month follow-up (Kashdan, Ferssizidis, Farmer, Adams, & McKnight, 2013). These initial findings suggest that socially anxious individuals may be less skillful in their communication with close relationship partners.

Intimacy. Though intimacy has been operationalized in different ways in the literature, it can be generally defined as feelings of "closeness, connectedness, and bondedness in loving relationships" (Sternberg, 1997, p. 315). Research has established an association between self-reported relationship intimacy and both psychological and physiological well-being (Hook, Gerstein, Detterich, & Gridley, 2003), though only a few studies have investigated intimacy specifically within the context of SAD. One study by Sparrevohn and Rapee (2009) had participants with SAD and healthy controls complete a self-report questionnaire that assessed

social, emotional, sexual, intellectual, and recreational domains of intimacy. They found that participants with SAD reported lower intimacy on the social and intellectual subscales, and marginally lower intimacy on the other subscales. This finding is consistent with previously research by Wenzel (2002), who demonstrated that individuals with SAD reported reduced social and emotional intimacy in their intimate relationships. It is also in line with other work suggesting that individuals high in social anxiety experience lower intimacy in their friendships (Rodebaugh, Lim, Shumaker, Levinson, & Thompson, 2015; Vernberg, Abwender, Ewell, & Beery, 1992).

Self-disclosure and emotional expression. Self-disclosure is the process whereby individuals reveal personal information about themselves to others. Similarly, emotional expression refers to self-disclosure specifically of one's emotions. Self-disclosure is considered to be a feature of intimacy in relationships, in that it encourages feelings of love, trust, and mutual understanding (Hook et al., 2003). Openly disclosing information about the self is therefore widely accepted to be an important element of relationship functioning. Research has demonstrated that self-disclosure is associated with having a secure attachment style (Keelan, Dion, & Dion, 1998), being more well-liked by others (Collins & Miller, 1994), and having higher levels of self-reported satisfaction, love, and commitment in intimate relationships (Sprecher & Hendrick, 2004).

Sparrevohn and Rapee (2009) found that, compared to community controls, participants with SAD reported lower self-disclosure and emotional expression within their intimate relationships, even when controlling for a diagnosis of depression. Similarly, Cuming and Rapee (2010) found that, among female participants, social anxiety was negatively correlated with disclosure in both intimate relationships and friendships. Their findings further demonstrated that

reduced disclosure is correlated with lower support and marginally greater conflict in intimate relationships, suggesting that avoidance of self-disclosure contributes to relationship dysfunction.

In contrast, others have argued that the avoidance of emotional expression is actually adaptive for highly socially anxious people. Kashdan, Volkmann, Breen, and Han (2006) proposed that, whereas open expression of one's emotional experience may bolster closeness and satisfaction in the relationships of nonsocially anxious individuals, it may erode relationship satisfaction for those with increasing social anxiety. High levels of emotional expression by individuals with SAD may burden their partners (Wenzel et al., 2005), result in frustration over missing out on potentially enjoyable social experiences, and may cause partners to experience negative affect due to mood contagion effects (Kashdan et al., 2007). Further, purposefully withholding one's emotions may benefit relationships by reducing one's automatic negative responses to socially threatening stimuli (e.g., avoidance), and providing opportunity for positive, reassuring communications and behaviours within the relationship (Kashdan et al., 2007). Indeed, their study demonstrated that, for individuals with higher levels of social anxiety, relationship closeness improved over a 12-week period for those participants who actively withheld the expression of negative emotions. Further research is needed to determine the influence of emotional expression on relationship satisfaction among individuals with high levels of social anxiety.

Dependence and attachment. Regardless of whether self-disclosure avoidance deteriorates or bolsters relationship satisfaction, the fact that socially anxious individuals intentionally withhold personal information as a self-protective strategy in their intimate relationships suggests that they are concerned with negative evaluation and potential rejection by

their partners. However, it has also been argued that socially anxious individuals are less concerned about being negatively evaluated by close relationship partners as compared to more removed acquaintances.

In a study by Davila and Beck (2002), participants completed the *Social Anxiety Relationship Interview*, in which interviewers assessed participants' use of various interpersonal styles associated with chronic interpersonal stress, including the avoidance of emotional expression, desire to avoid conflict, actual avoidance of conflict, lack of assertion, over- and under-reliance on others, and fear of rejection. Similar to the studies mentioned above, their results indicated that symptoms of social anxiety were negatively associated with lack of assertion, as well as with the avoidance of conflict and emotional expression, even when controlling for symptoms of depression. Interestingly, and in contrast to well-established patterns of social avoidance among highly socially anxious individuals, social anxiety was also positively associated with overreliance on others. Davila and Beck's findings demonstrate that socially anxious individuals engage in both avoidant behaviours (i.e., reduced self-disclosure and emotional expression; lack of assertion) and dependent behaviours (i.e., overreliance). This latter finding has since been replicated in at least two other studies (Darcy, Davila, & Beck, 2005; Grant, Beck, Farrow, & Davila, 2007), demonstrating that socially anxious individuals exhibit excessive dependence on their intimate relationship partners.

These findings are further supported by research on attachment styles among individuals with SAD. In an initial study on this topic, Eng, Heimberg, Hart, Schneier, and Liebowitz (2001) demonstrated that participants with SAD were best characterized as having anxious or secure attachment styles based on the *Revised Adult Attachment Scale* (Collins & Read, 1990), but that those with higher levels of social anxiety and related symptoms were better represented by

anxious attachment styles. Since then, it has been demonstrated that social anxiety is associated both with patterns of preoccupied (i.e., dependent) and fearful (i.e., avoidant) attachment (Darcy et al., 2005; Nielsen & Cairns, 2009).

Summary. Research investigating interpersonal processes in social anxiety has begun to elucidate how people with SAD function in the context of their close relationships. People with higher levels of social anxiety tend to exhibit impaired communication and reduced intimacy and self-disclosure with their close relationship partners. Moreover, research has demonstrated that highly socially anxious individuals exhibit a tendency toward both avoidant and dependent relationship styles. Given the somewhat contradictory nature of these findings, recent research has begun to consider the conditions under which socially anxious individuals manifest these opposing attachment styles. Notably, Afram and Kashdan (2015) recently sought to investigate this question by drawing on the *Risk Regulation Model* (Murray, Holmes, & Collins, 2006), a model of relational dependence that explains fluctuations in individuals' dependence on their intimate relationship partners as reactions to levels of perceived acceptance or rejection by those partners. Given that socially anxious individuals fear negative evaluation, Afram and Kashdan posit that social anxiety may result in heightened risk regulation. That is, they suggest that individuals with high levels of social anxiety may have a lower threshold for feeling rejected by their partners, and may thus be more inclined to manage their vulnerability by reducing dependence on those partners. In contrast, they posit that social anxiety may be associated with overly enhanced perceptions of partners in the absence of perceived rejection by them. The following section provides a more thorough overview of the Risk Regulation Model and the study conducted by Afram and Kashdan (2015).

The Risk-Regulation Model

The Risk Regulation model is formed around the basic tenet that, as closeness grows in a developing intimate relationship, so too does the psychological cost of rejection. Accordingly, intimate partners are confronted with competing goals – on the one hand, they are motivated to risk relationship dependence in an effort to facilitate closeness, yet on the other, they are motivated to protect the self against the potential pain of rejection by minimizing relational dependence (Murray, Holmes, & Griffin, 2000).

Murray et al. (2006) propose that a cognitive, affective, and behavioural response system operates to resolve these competing needs. The overarching goal of this system is to maximize feelings of assurance and safety that one experiences when acting dependently in their relationship. This system depends on three contingency rules – the "appraisal," "signaling," (or "emotion") and "dependence regulation" rule systems (discussed below), which in tandem operate to prioritize either self-protection or connectedness, depending on whether the perceived risk of rejection is high or low, respectively, at any given point in the relationship. The system is also influenced by individuals' chronic perceptions of their partners' regard, which is said to modulate perceived risk and feelings of safety and assurance in the relationships.

The "appraisal" system depends on the contingency rule, "if dependent, then gauge acceptance or rejection" (Murray et al., 2006, p. 643). Based on this rule, when individuals seek to prioritize the need for connectedness by acting dependently on their partners, they experience an increased need to assess their partners' regard in order to gauge the risk associated with that dependency. To do so, individuals draw on their beliefs about the self, their partner, and the dyad. If, based on these appraisals, individuals conclude that there is sufficient reason to trust in their partner's responsiveness and acceptance, then this will increase their willingness to risk dependence and prioritize closeness promotion goals.

Based on Leary and Baumeister's (2000) sociometer model of self-esteem, the "signaling" or "emotion" system purports that the result of these appraisals (i.e., an individual's conclusions about the extent of a partner's regard) also motivates self-evaluation, as reflected in the contingency rule, "if accepted or rejected, then internalize" (Murray et al., 2006, p. 644). Accordingly, the perception of a partner's regard is thought to elicit positive emotion and self-evaluation, increasing one's desire for further connection. Conversely, perceiving reductions in a partner's acceptance, or recognizing discrepancies between perceived versus desired levels of partner regard, is thought to elicit hurt feelings and result in negative self-evaluation and diminished self-esteem. This aversive experience promotes the avoidance of future dependency risk (MacDonald & Leary, 2005; Murray et al., 2000, Murray et al., 2006).

Perceptions of partner regard, as well as the emotional experiences that emerge from the perception that one is being accepted or rejected, are thought to influence people's motivation to prioritize connectedness and, consequently, their willingness to risk dependence (Murray, Holmes et al., 2000; Murray et al., 2006). In the risk regulation model, the "behavioural response" system operates according to the contingency rule, "if feeling accepted or rejected, then regulate dependence" (Murray et al., 2006 p. 644). Accordingly, if one's perception of their partner's regard is low, an individual will be motivated to limit future dependence on that partner. This process occurs both directly, as well as indirectly (i.e., as a response to hurt feelings and diminished self-esteem). To limit dependence, an individual may use behaviours such as reducing disclosure to their partner or devaluing their partner's attributes and the relationship as a source of connection (Murray et al., 2006). These behaviours function to protect the self by minimizing the pain of potential rejection. In contrast, if an individual feels positively regarded by their partner, they will consequently be more willing to risk future dependence on them.

Individual variation in the risk regulation system. The risk regulation system also recognizes the role of individual-level variation in sensitivity to the "if-then" contingencies proposed by the model. Importantly, Murray et al. (2006) explain that chronic perceptions of a partner's regard will influence sensitivity to rejection in any individual situation during which one risks dependence on their partner. That is, if Partner A is not confident in Partner B's regard, then even a seemingly minor rejection by Partner B (e.g., refusing to see a movie that Partner A requested; Murray et al., 2006) may trigger Partner A to feel concerned about her vulnerability and modulate her dependence accordingly. Conversely, if Partner A is confident of Partner B's regard, her threshold for feeling rejected will be higher, and more serious transgressions or high-stakes scenarios will be needed to trigger relational vulnerability. Moreover, for these people, individual instances of rejection by a partner may be recognized as minor, isolated transgressions that do not qualify or compromise the overarching pattern of a partner's regard. Consequently, individuals who are confident in their partners' regard may be more likely to prioritize connectedness goals and act in ways that promote and reaffirm closeness with their partner.

In support of this, a 3-week daily diary study conducted with married partners demonstrated that people who felt generally less positively regarded by their partners reported feeling more hurt on days following negative (i.e., rejecting) behaviours by their partners, and more frequently responded by behaving in negative ways toward their partners. In contrast, people who generally felt more highly regarded by their partners responded to these instances of perceived rejection by acting in prosocial ways toward their partner in an effort to restore closeness (Murray, Bellavia, Rose, & Griffin, 2003). Similar findings have also been demonstrated in the literature on *sentiment override* (Weiss, 1980), indicating that spouses often ignore situation-relevant information when reacting to their partners, and instead respond based

on global patterns of marital satisfaction or sentiment toward the partner, leading them to form more positive (or negative) appraisals of their partners than are warranted by their current behaviour (e.g., Fincham, Garnier, Gano-Phillips, & Osborne, 1995).

Finally, others have demonstrated that self-esteem may play a similar role as general perceptions of partner regard in buffering against situational instances of rejection. Murray, Rose, Bellavia, Holmes, and Kusche (2002) used an experimental paradigm that compared participants with high and low self-esteem on their responses to rejection by their intimate partners. Low self-esteem is associated with high expectancies of rejection (Leary & Baumeister, 2000), so the authors predicted that low self-esteem, but not-high self-esteem, participants would respond to rejection with greater partner derogation and diminished closeness. Their results supported this hypothesis.

Risk regulation processes. There are numerous risk regulation processes that people may use to decrease relational dependence when they feel rejected by their intimate partners (Afram & Kashdan, 2015). For example, Murray et al. (2006) note that people may regulate their dependence by engaging in withdrawal-focused risk regulation processes, such as reducing self-disclosure, refraining from seeking support from their partners, or avoiding situations in which outcomes are contingent on their partners' actions. Instead, they may turn to others for support and bolster the perceived value of those alternative relationships. Murray and his colleagues also note that people may regulate dependency by following exchange norms, whereby the provision of relational support is contingent on the receipt of similar benefits, rather than communication norms, in which support is granted on the basis of need (Clark & Mills, 1979). Further, people may respond to rejection by reducing the value of their partner and the relationship as a source of connection, such as by becoming less willing to dismiss transgressions, or by beginning to

interpret their partner's traits as irritating rather than charming. They may also "lash out" or act aggressively to communicate their diminished regard for their partner (Murray et al., 2006). Conversely, individuals may engage in any number of approach-focused risk regulation processes as a means of increasing interpersonal dependence in response to feelings of acceptance. These processes may involve increasing intimacy or self-disclosure to one's partner.

Heightened risk regulation in social anxiety. Afram and Kashdan (2015) proposed that, because individuals with high levels of social anxiety experience heightened fear of negative evaluation, they may consequently be more motivated to protect the self against the pain associated with rejection, and may therefore display enhanced risk regulation processes compared with those lower in social anxiety. The authors looked specifically at the risk-regulation strategy of partner devaluation. As stated above, partner devaluation refers to a process whereby an individual judges their partner more negatively to reduce the pain associated with rejection by that individual (Leary, Twenge, & Quinlivan, 2006).

Afram and Kashdan (2015) hypothesized that, for participants who were exposed to the threat of rejection, social anxiety would be associated with greater concern about that rejection, as well as greater devaluation of that partner. To test this idea, they led socially anxious participants to think that their partners were listing their negative characteristics, thereby inducing the threat of rejection. Control participants completed a filler task and were not induced to feel rejected by their partners. Before and after the rejection induction or filler task, all participants rated their partners' attributes on five different dimensions (i.e., intelligence, physical attractiveness, social skill, athletic ability, artistic ability). They found that greater social anxiety was associated with greater concern about rejection by partners, and that the interaction between the level of social anxiety and condition (i.e., rejection induction or filler task) predicted

changes in partner assessments after the task. That is, participants with higher levels of social anxiety who were induced to feel rejected by their partners responded by devaluing their partners to a greater extent. In contrast, for control participants who were not induced to feel rejected by their partners, greater social anxiety was associated with more positive valuations of one's partner.

The authors were surprised by this latter finding, because social anxiety is typically associated with diminished positive experiences (Kashdan, Weeks, & Savostyanova, 2011). Their interpretation was that, in the absence of rejection threat, intimate relationships may afford sufficient security such that socially anxious individuals can override their need for self-protection to prioritize affiliative goals. However, in the presence of rejection, this sense of security is easily derailed for those high in social anxiety. Moreover, it is possible that the very act of participating in a research study with one's partner may have been interpreted as a meaningful sign of commitment to the relationship for socially anxious control participants, leading them to see their partners in an especially positive light during the study. It is also possible that a social desirability bias might have occurred, whereby socially anxious participants were motivated to provide flattering ratings of their partners to avoid negative evaluation by the researcher.

Processes Underlying Impaired Relationship Functioning in Social Anxiety

The limited research conducted thus far suggests that social anxiety affects functioning in interpersonal relationships. Individuals with high levels of social anxiety are less satisfied with their intimate relationships, are not as skilled in communicating with their partners, perceive reduced intimacy in their relationships, and engage in less self-disclosure and emotional expression with their relationship partners. In addition, highly socially anxious individuals

demonstrate exacerbated avoidance, but also dependence, in their intimate relationships. However, despite these findings, there is a paucity of research examining processes that may underlie the impaired close relationship functioning observed among individuals high in social anxiety.

As discussed above, Afram and Kashdan (2015) proposed that the threat of rejection by one's intimate partner may alter how people behave in the context of their relationship. When people feel rejected by their partner, they may take action to reduce their dependence on that partner, with the goal of self-protection. Socially anxious individuals may have even greater incentive to do so because the fear of negative evaluation may exacerbate the pain associated with rejection threat. Further, findings that people with higher levels of social anxiety limit self-disclosure to their partners and experience less intimacy in their intimate relationships can be plausibly explained through this framework. That is, socially anxious individuals may strategically limit closeness to protect the self against the pain of potential rejection. Afram and Kashdan's results seem to support this interpretation, demonstrating that compared to those with low levels of social anxiety, individuals higher in social anxiety (a) are more concerned about rejection by their intimate partners, and (b) use the risk-regulation strategy of partner devaluation to a greater extent than do participants lower in social anxiety in order to cope with the pain of rejection. However, several limitations with this study preclude these conclusions.

First, in order to induce participants to feel rejected by their partners, the members of each couple were separated into different rooms and both partners were told that they would be completing identical tasks. After a few filler surveys, the target participant received instructions to list their partner's negative characteristics. Given that participants thought their partners were being given the same tasks, this instruction led target participants to believe that their partners

would be listing their own negative characteristics as well. The problem is that having target participants list their partner's negative characteristics may have partially contributed to their diminished ratings of their partners' attributes.

Afram and Kashdan (2015) also chose to assess a single risk regulation process - partner devaluation. This decision was made in part due to practical concerns; other processes, such as aggressive behaviour towards one's partner, cannot be easily or ethically induced in an experimental paradigm. However, future research is needed to assess the role of other risk regulation processes in the context of social anxiety. Finally, no research to date has looked at risk regulation processes in a clinical sample of individuals diagnosed with SAD. Such research would help to elucidate whether these issues are characteristic of a clinical population, as well as whether the use of maladaptive risk-regulation strategies may be an important area of focus in treatment for SAD.

Another important limitation concerns the study's ecological validity. Whereas the rejection induction used in this study was relatively extreme, instances of objective rejection that occur in day-to-day life are likely to be subtler, or even nonexistent. That is, socially anxious individuals may imagine that their partners are rejecting them even when no such rejection is intended. There is ample evidence that social anxiety is associated with inappropriately negative interpretations outside the context of close relationships (e.g., Amir, Foa, & Coles, 1998; Stopa & Clark, 2000), and people with high levels of social anxiety have also been shown to erroneously believe that others judged them negatively following social interactions (e.g., Niels-Christensen, Stein, & Means-Christensten, 2003), suggesting that the experience of perceived rejection is commonplace. If socially anxious individuals perceive their partners' ambiguous

behaviour as threatening and rejecting, maladaptive risk regulation processes may be expected to occur frequently and contribute substantially to relationship dissatisfaction.

One means of improving ecological validity is to use naturalistic observation of relationship processes via daily diary methodology. Diary studies have been used broadly in recent decades to assess dyadic processes in intimate relationships. In one of the first such studies, Wills, Weiss, and Patterson (1974) examined the association between partner behaviours over a 2-week period and global assessments of marital satisfaction (Laurenceau & Bolger, 2005). Diary studies have since been used to assess a variety of questions about intimate relationships, including how relationship satisfaction, intimacy, and functioning are influenced by factors such as attachment styles (Campbell, Simpson, Boldry, & Kashy, 2005; Cooper, Totenhagen, Curran, Randall, & Smith, 2017; Overall & Sibley, 2008), evaluation of and regard for one's partner (Kanat-Maymon, Argaman, & Roth, 2017; LeBel & Campbell, 2012), self-esteem (DeHart, Tennen, Armeli, Todd, & Affleck, 2008), negative interactions within the relationship (Li & Fung, 2013), time devoted to the relationship and to work (Repetti, 1989; Unger, Niessen, Sonnentag, Neff, 2014), and physical intimacy (Debrot, Schoebi, Perrez, & Horn, 2013).

Recent research has also used daily diary methodology to better understand the impact of psychological disorders on relationship outcomes. Although several daily diary studies have been conducted in the context of social anxiety disorder specifically (e.g., Antony, Rowa, Liss, Swallow, & Swinson, 2005; Dodge, Heimberg, Nyman, & O'Rien, 1987; Kashdan et al., 2014; Kivity & Huppert, 2016), to date, only two diary studies have explored functioning in intimate relationships among individuals with SAD (Bar-Kalifa, Hen-Weissberg, & Rafaeli, 2015; Kashdan et al., 2013). The use of diary methods offers improved ecological validity by allowing

for the observation of naturally-occurring dyadic processes and by repeatedly measuring the occurrence of these processes rather than relying on retrospective self-reports.

Present Study

The present study used daily diary methodology (adapted from Murray et al., 2003) to assess group differences between individuals with SAD and healthy controls on their experiences of rejection and acceptance in their intimate relationships, their use of risk regulation processes, and additional measures of relationship quality. Two categories of risk regulation processes were assessed in the present study: Withdrawal-oriented processes, which involve actions aimed at protecting the self by reducing dependency on one's partner, and Approach-oriented processes, which involve actions aimed at increasing affiliation with and dependency on one's partner[1]. Based on the reviewed literature, it was hypothesized that:

1. Individuals with SAD would report lower relationship satisfaction, intimacy, and self-disclosure to their romantic partners than would healthy control (HC) participants, as well as higher levels of anxious and avoidant attachment.
2. As compared to HC participants, SAD participants would report significantly greater Felt Rejection and Anxiety About Acceptance. In contrast, HCs would report significantly greater Felt Acceptance.
3. The relationship between Felt Rejection and Withdrawal-focused risk regulation processes would be moderated by diagnostic Group, such that the relationship would be stronger for individuals with SAD than HCs.

[1] The terms, "Withdrawal-oriented" and "Approach-oriented" risk regulation processes were developed for the present study and reflect factors which emerged out of the exploratory factor analysis presented in Chapter III.

4. The relationship between Felt Rejection and Approach-focused risk regulation processes would be moderated by diagnostic Group, such that the relationship would be stronger for HCs than individuals with SAD.

Chapter II: Method

Participants

Participants were recruited from the community in the downtown Toronto area. Recruitment materials advertised research participation opportunities for individuals who either (a) experience social anxiety or (b) have no significant history of anxiety, depression, or other mental health issues. Participants were required to be between 18-65 years of age and to be involved in a current intimate relationship with a minimum 3-month duration (as in Afram and Kashdan, 2015). Interested participants contacted the laboratory by phone or e-mail and scheduled a time to complete a phone screen to determine study eligibility. Participants whose symptoms met criteria for a DSM-5 diagnosis of SAD were deemed eligible for the SAD group, and individuals who denied symptoms meeting criteria for a current or past psychological disorder were deemed eligible for the HC group. The final sample consisted of 21 participants in the SAD group and 25 participants in the HC group.

Materials

Diagnostic Assessment Research Tool (DART; McCabe et al., 2017). An abbreviated version of the DART was used to determine eligibility and diagnostic status. The DART is a new semistructured interview for assessing DSM-5 mental disorders. For the purposes of the present study, only the following modules of the DART were administered to participants: major depressive disorder (MDD), mania, the full anxiety disorders module, alcohol use disorder, substance use disorder, and the psychosis screener. The suicide risk assessment module was also

completed for individuals spontaneously reporting significant suicidal ideation. DART assessments were audio recorded (except for in rare cases where participants did not consent to audio recording).

Demographics Questionnaire. Participants completed a questionnaire to obtain standard demographic information (e.g., gender, age, race/ethnicity). The demographics questionnaire also assessed basic information about participants' intimate relationships (e.g., relationship duration).

Social Phobia Inventory (SPIN; Connor et al., 2000). The SPIN is a 17-item questionnaire that assesses fear, avoidance, and physiological symptoms associated with social anxiety. Participants indicate the extent to which each of 17 social anxiety-related problems have bothered them during the past week, based on a Likert scale ranging from Not at all (0) to Extremely (4). The SPIN has strong convergent and discriminant validity, good test-retest reliability, $r = .78$ $p < 0.0001$ to $r = .89$, $p < 0.0001$, high internal consistency for individuals with social phobia ($\alpha = .87$ - $.94$) and for controls ($\alpha = .82$-$.90$). Internal consistency for the present sample was also high, both for individuals with SAD ($\alpha = .92$) and HCs ($\alpha = .90$).

Couples Satisfaction Index (CSI; Funk & Rogge, 2007). The CSI is a 32-item scale that measures levels of satisfaction in intimate relationships. Participants answer scale items using 6- to 7-point Likert scales, with anchors varying based on the item. The CSI shows strong convergent validity with other measures of relationship satisfaction and high internal consistency ($\alpha = .98$; Funk & Rogge, 2007). In the present sample, internal consistency was high for both individuals with SAD ($\alpha = .96$) and HCs ($\alpha = .98$).

Miller Social Intimacy Scale (MSIS; Miller & Lefcourt, 1982). The MSIS is a 17-item measure of the level of intimacy currently experienced in the context of an interpersonal

relationship. Participants respond to items using a 10-point Likert scale with the anchors "Very Rarely" (1) to "Almost Always" (10) for items 1-6, and with the anchors "Not much" (1) to "A Great Deal" (10) for items 7-17. The MSIS has demonstrated high internal consistency ($\alpha = .86$) and test-retest reliability over a 2-month interval, $r = .96$, $p < .001$, and over a 1-month interval, $r = .84$, $p < .001$. The scale also demonstrates good convergent, discriminant, and construct validity. In the present sample, internal consistency was high for both individuals with SAD ($\alpha = .90$) and HCs ($\alpha = .86$).

Self-Disclosure Index (SDI; Miller, Berg, & Archer, 1983*)*. The SDI is a 10-item measure that assesses the extent to which participants have disclosed information about 10 personal topics to their partner over the course of the past year. The SDI has demonstrated good construct validity and high internal consistency ($\alpha = .87$-$.93$; Miller et al., 1983; Porter, Chambless, & Keefe, 2017). It has also demonstrated moderate agreement with the Jourard Self-Disclosure Questionnaire for willingness to disclose to a friend (Jourard, 1964), $r = .49$ for men and .65 for women (Miller et al., 1983). In the present sample, internal consistency was high for both individuals with SAD ($\alpha = .91$) and HCs ($\alpha = .84$).

Revised Adult Attachment Scale (RAAS, Collins & Read, 1990). The RAAS is an 18-item measure comprised of three subscales (close, depend, anxiety). The “Close” subscale measures one’s comfort with closeness and intimacy, the “Depend” subscale assesses one’s comfort depending on others, and the “Anxiety” subscale assesses the extent of one’s concern about being rejected and abandoned by others. Internal consistencies for each of the subscales were in the reasonable range ($\alpha = .69$ for the Close subscale, $\alpha = .75$ for the Depend subscale, and .72 for the Anxiety subscale), and test-retest reliability for each of the subscales were $r = .68$, .71, and .52, respectively. An alternative scoring procedure, which provides subscales of anxious

and avoidant attachment, has also been made available by the scale developers. In the present sample, internal consistency for the Close subscale was adequate for individuals with SAD (α = .77), but low for HCs (α = .60). For the Depend subscale, internal consistency was high for individuals with SAD (α = .91) and adequate for HCs (α = .79). Finally, for the Anxiety subscale, internal consistency was good for both individuals with SAD (α = .87) and HCs (α = .83).

Depression Anxiety Stress Scale-21 item version (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 assesses features of depression, anxiety, and stress. Participants use a 4-point Likert scale ranging from "Did not apply to me at all" (0) to "Applied to me very much, or most of the time" (3) to answer scale items. Items for each subscale are summed and doubled. The DASS-21 has high internal consistency for the Depression scale (α = .88), Anxiety Scale (α = .82), and Stress scale (α = .90; Henry & Crawford, 2005). It also shows strong concurrent validity (Antony, Bieling, Cox, Enns, & Swinson, 1998; Henry & Crawford, 2005). In the present sample, internal consistency for the Depression subscale was high for individuals with SAD (α = .92), but surprisingly low for HCs (α = .50).

Daily Diary

Participants completed online daily diaries each evening for 14 days (see Appendix A). Daily diaries were completed online using Qualtrics™ (cite) survey software. This diary is based largely on the daily experience record (DER) created by Murray et al. (2003). The DER includes a 103-item event inventory, in which participants check off events that occurred each day, as well as 54-item inventory in which they record the emotions they experienced each day. Relevant sections from the DER are incorporated into the daily diary used in the present study. These sections include:

Own Positive Behaviour (the frequency of the participant's positive behaviours toward their partner), Own Negative Behaviour (the frequency of the participant's negative behaviours toward their partner), Felt Acceptance (how accepted the participant felt by their partner each day (α = .94), Felt Rejection (how hurt or rejected the participant felt by their partner each day (α = .91), and Anxiety About Acceptance (the extent of participants' concerns about their partner's acceptance (α = .86). Sum scores are calculated for each category for each day that the diaries are completed.

Daily diaries also include the Risk Regulation Scale (RRS), developed for the purpose of the present study. The RRS requires participants to indicate the extent to which they engaged in various risk regulation processes in response to feelings of rejection by their partner using a 7-point Likert scale ranging from "strongly disagree" (0) to "strongly agree" (6).

Procedure

This study was approved by the Research Ethics Board at Ryerson University. Interested participants were contacted by the researcher by phone. At the beginning of the phone call, they were read a consent agreement which described the purpose of the assessment and provided general information about the study, including what participation would involve, confidentiality, and efforts taken to secure data. Participants were asked to provide verbal consent for the phone interview. Those who consented to the phone interview were then screened for eligibility by phone using the revised version of the DART. Participants whose symptoms met criteria for SAD, as well as participants who did not have a history of anxiety, depression, or any other mental health issues, were informed of their eligibility for the study. Eligible participants arranged a time for the in-lab portion of the study.

At the start of the in-lab session, participants completed a written consent agreement. This consent form again described the purpose of the study and provided information about confidentiality. Participants then completed the initial questionnaires outlined earlier. They were then provided with the opportunity to practice using the daily diary, and had the opportunity to ask the researcher any questions that arose. Participants were provided with instructions indicating that they would be e-mailed a link to complete the daily diary online each evening for the subsequent 14 days. Participants received the first link to the daily diary on the same evening as the in-lab portion of the study. The study coordinator monitored responses to ensure that participants were completing daily diaries. When two or more days were missed in a row, the participant was sent a reminder by e-mail.

Statistical Analyses

Preliminary analyses examined descriptive statistics and distributions for all study variables. *T*-tests and chi-squared tests were conducted to assess for group differences on demographic variables. *T*-tests were used to assess for group differences on measures of relationship satisfaction, self-disclosure, intimacy, and attachment (Hypothesis 1), as well as group differences in felt rejection, felt acceptance, and anxiety about acceptance over the 2-week period of the study (Hypothesis 2).

Hierarchical linear modeling (HLM) was used to assess Hypotheses 3 and 4. HLM is a regression-based data analytic strategy that accounts for hierarchical data structure. The data presented here involve repeated assessment of the same participants over a 2-week period. Accordingly, individual data points are not independent from one another, but rather are nested within individual participants. Accordingly, this dataset violates the ordinary least squares assumption of independence of observations. Research has shown that nonindependence can bias

parameter estimates by increasing Type I error rates (Bliese, 1998; McCoah & Adelson, 2010). The use of HLM in the present study accounts for the violation of this assumption, as HLM analyses take into account the clustered nature of the data, resulting in more accurate parameter estimates (McCoach & Adelson, 2010; Raudenbush & Bruk, 2002).

To conduct the HLM analyses, first, a time lagged Felt Rejection variable was computed, which provided the within-person mean-centered Felt Rejection score for each participant on the *previous* day. The decision to use a time-lagged variable was based on past research in this area. Murray et al. (2003) were curious as to whether, on days *following* threatening events by one's partner, were participants who felt less positively regarded by their partners were more likely to feel more rejected. Accordingly, these authors created a time-lagged variable for the *prior* day's threatening events, which was entered as the independent variable in the model, and felt rejection was entered as the dependent variable.

The analyses presented here are in line with this approach. Since the question of interest here was whether felt rejection predicted next-day use of risk regulation processes, a time-lagged variable for the *prior* day's felt rejection was computed. In Hypothesis 3, two separate 2-level models (one for each outcome variable) were run to examine within-client change in outcome (level 1) and between-group differences in outcome (level 2). The independent variable, Felt Rejection (time-lagged) and proposed moderator, Group (SAD versus HC), were entered as fixed effects in a random-intercepts model, as was as the interaction term (Felt Rejection x Group). The same process was repeated for Hypothesis 4, with the exception that the DVs entered in the models assessed approach-related risk regulation behaviours.

Finally, in addition to the primary analyses of the study described above, an exploratory factor analysis (EFA) was also completed to determine the underlying factors of the RRS, which

was developed for the present study and included as part of the daily diaries. Two RRS subscales, which were derived from the EFA results, are used as the dependent variables in the third and fourth hypotheses explored in this thesis.

Chapter III: Results

Data Preparation

Missing data. Of the initial in-lab questionnaires, four had missing data. Randomness of missing questionnaire data was assessed using Little's MCAR test, (Little, 1988) which was nonsignificant for three of these measures. For these questionnaires, missing item-level data were imputed using the expectation-maximization (EM) method, which improves power while providing unbiased parameter estimates (Enders, 2001; Scheffer, 2002). Data that were not missing completely at random were not imputed. The same procedure was used for missing data for daily diary items that involved Likert-type responses. Conversely, for daily diary items that involved checklists (e.g., "please indicate which of the following occurred today"), a score of "0" was imputed for missing data.

For multivariate analyses using daily diary data, an alternative procedure was followed for handling missing data. The multivariate analyses presented in this thesis assess the relationship between Felt Rejection and the use of risk regulation processes the following day. Accordingly, if participants missed one day of the diary, this would result in significant omission of data. To illustrate this problem, consider a participant that did not complete the diary on Day 3. It would be possible to include in the model the relationship between Day 1 rejection and Day 2 behaviours, but not between Day 2 rejection and Day 3 behaviours, nor between Day 3 rejection and Day 4 behaviours. Accordingly, for those participants who completed a minimum of 10 days (71%) of the daily diaries, mean imputation for each daily diary variable was used to

account for missing data for days on which they did not complete the diaries. However, for those participants who completed fewer than 10 days of daily dairies, missing data were not imputed.

The main criticism of mean imputation is that this procedure underestimates standard error, thereby reducing variability in the dataset and producing biased parameter estimates (Enders, 2010). However, this decision should be understood in the context of several considerations. First, given the small sample size of the present study, it was viewed as a priority to maximize the data points used for estimating model parameters, consequently increasing the likelihood that the model would converge successfully. Second, mean imputations were used for a very small proportion of data (2.21%). Third, the hypotheses did not predict a significant relationship between either the independent variables (e.g., Felt Rejection) or dependent variables (e.g., Own Negative Behaviour) and time. That is, it was not predicted that these variables would change systematically over the 2-week duration of the study (as would be predicted, for example, in a treatment study, wherein symptoms are predicted to improve systematically over time). Consequently, the consideration of *which* specific day was missing was not of particular concern to the present analyses. Given these considerations, mean imputation was considered the best course of action for accounting for the small amount of missing daily diary data.

Data outliers. For univariates analyses, outliers were defined as values exceeding three standard deviations above or below the mean on each measure or subscale (Howell, 1998). One participant was an outlier on the DASS-21 Depression subscale. This outlier was excluded from analyses using these measures.

For multivariate analyses that included Felt Rejection as the predictor variable, data were assessed for multivariate outliers within person by first plotting daily Felt Rejection by daily

scores on each of the DVs of interest, time lagged by one day. Outliers were determined based on visual inspection of their position on the scatterplots. Only extreme outliers (i.e., data points that departed substantially from the regression line) were removed. One outlier was removed on the Risk Regulation Withdrawal scale on Days 3 and 5. Another outlier was removed on the Risk Regulation Approach scale on Day 4.

Normality. Several variables were nonnormally distributed. Consequently, it was necessary to either transform the variables to improve normality or use nonparametric tests that are robust to violations of the assumption of normality. The latter option was viewed as favourable insofar as the former changes the metric of the scales, rendering scores uninterpretable. Consequently, analyses with nonnormally distributed variables were conducted or confirmed using the 95% bias-corrected (BCa) confidence-interval (CI) Bootstrapping procedure in SPSS (Efron & Tibshirani, 1993; Preacher & Hayes, 2004). Bootstrapping is an iterative process that involves repeated random sampling of the sample data. Rather than assuming a normal distribution, Bootstrapping provides an estimate of the sampling distribution and calculates parameters based on this estimate (Field, 2013). Consequently, it is robust to nonnormally distributed data (Shrout & Bolger, 2002).

Preliminary Analyses

Demographic characteristics of the sample are presented in Table 1, group differences on measures related to psychopathology are presented in Table 2, and bivariate correlations between study variables are presented in Table 3.

Independent samples *t*-tests and Chi-square tests were performed to evaluate potential group differences on demographic variables. Adjusted degrees of freedom are reported whenever Levene's test indicated unequal variances between groups. SAD and HC participants did not

differ on number of men and women, χ^2 (1) = 0.01, p = .965, age, t(43) = -0.31, p = .759, race/ethnicity, χ^2(5) = 7.39, p = .193, education level, t(43) = 0.19, p = .849, or family income, t(43) = -0.59, p = 557. In addition, there were no significant group differences on demographic variables related to participants' intimate relationships, including relationship duration, t(37) = -0.36, p = .724, cohabitation χ^2(1) = 0.52, p = .472, or average time spent with their partners per week t(35.92) = -1.50, p = .144.

Next, group differences were assessed on the measures related to psychopathology (Table 2). Unsurprisingly, the SAD group was higher than the HC group on depression, anxiety, and stress (measured using the DASS-21 subscales), and social anxiety (measured using the SPIN).

Table 1

Demographic Characteristics of the Sample Stratified by Group

	HC	**SAD**	
	(n = 24)	(n = 21)	χ^2 or t (p)
Gender n (%)			0.00 (.965)
Female	17 (70.8)	15 (71.4)	
Male	7 (29.2)	6 (28.6)	
Age *M (SD)*	27.88 (8.77)	28.67 (8.32)	-0.31 (.759)
Race/Ethnicity n (%)			7.39 (.193)
Aboriginal	0 (0%)	1 (4.8%)	
Black/Afro-Caribbean/African	0 (0%)	2 (9.5%)	
White/European	9 (37.5%)	9 (42.9%)	
Hispanic/Latin American	0 (0%)	0 (0%)	
Asian	14 (54.2%)	5 (23.8%)	
Biracial/Multiracial	1 (4.2%)	3 (14.3%)	
Other	1 (4.2%)	1 (4.8%)	
Sexual Orientation n (%)			4.04 (.133)
Heterosexual	21 (87.5%)	17 (81%)	
Gay/lesbian	2 (8.3%)	0 (0%)	
Bisexual	1 (4.2%)	4 (19%)	
Enrollment: Yes (%)	11 (45.8%)	9 (42.9%)	0.04 (.841)
Type of Program n (%)			
Full Time	8 (33.3%)	9 (42.9%)	
Part Time/Continuing	3 (12.5%)	0 (0%)	

Education Level *n* (%)			2.86 (.582)
Completed HS/Equivalency	0 (0%)	1 (4.8%)	
Some College or University	7 (29.2%)	6 (28.6%)	
Completed College or University	9 (37.5%)	8 (38.1%)	
Some Graduate/Professional School	4 (16.7%)	1 (4.8%)	
Completed Graduate/Professional School	4 (16.7%)	5 (23.8%)	
Employment Status *n* (%)			4.28 (.509)
Out of Work and Looking for Work	3 (12.5%)	1 (4.8%)	
Out of Work and Not Looking for Work	0 (0%)	2 (9.5%)	
Homemaker	1 (4.2%)	0 (0%)	
Student	7 (29.2%)	8 (38.1%)	
Working Part-Time	5 (20.8%)	4 (19.0%)	
Working Full-Time	8 (33.3%)	6 (28.6%)	

Note. HC = Healthy Control; SAD = Social Anxiety Disorder.

Table 2

Group Characteristics

	HC	**SAD**				**BCa 95% CI**	
	M (SD)	*M (SD)*	*t*(df)	*p*	*d*	Lower	Upper
DASS-21 D	1.83 (2.50)	9.60 (10.17)	-3.33 (20.91[a])	.003*	1.05	-12.61	-2.92
SPIN	13.08 (10.53)	46.29 (15.18)	-8.45 (42)	<.001*	2.54	-41.34	-25.40

Note. * = $p < .05$ criteria; [a] = Adjusted degrees of freedom are reported due to significant Levene's test. HC = Healthy Control; SAD = Social Anxiety Disorder. DASS-21 D = Depression Anxiety Stress Scale-21 – Depression; SPIN = Social Phobia Inventory.

Table 3

Bivariate Correlation Coefficients of Measures Included in the Study

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. SPIN	-													
2. DASS-21-D	.62**	-												
3. MSIS	-.09	-.36*	-											
4. CSI	-.07	-.23	.80**	-										
5. SDI	.00	-.15	.39*	.36*	-									
6. RAAS-C	-.63**	-.48**	.16	.09	.34*	-								
7. RAAS-D	-.54**	-.43**	.16	.17	.41**	.70**	-							
8. RAAS-A	.70**	.52**	-.20	-.25	-.15	-.73**	-.70**	-						
9. Felt Rej	.38*	.51**	-.35*	-.39*	-.18	.42**	.23	.42**	-					
10. Felt Acc	-.26	.84**	.72**	.60**	.50	-.35*	-.32*	-.35*	-.40**	-				
11. Anx Acc	.58**	.84**	-.47**	-.50**	-.26	.60*	.51**	.60**	.80**	-.59**	-			
12. RRS-W	.26	.37*	-.60**	-.54**	.05	.38*	.23	.38*	.65**	-.49**	.63**	-		
13. RRS-A	-.18	-.31	.34	.40*	.44*	-.15	-.18	-.15	-.22	.63**	-.28	-.17	-	
14. Neg B	.45**	.40**	-.26	-.12	-.01	-.22	-.27	.30	.49**	-.26	.47**	.46**	-.08	-
15. Pos B	-.01	-.34*	.43**	.38*	.55**	-.02	-.18	-.02	-.23	.62**	-.39*	-.31*	.75**	-.02

Note. * = $p < .05$; ** = $p < .01$. SPIN = Social Phobia Inventory; DASS-21-D = Depression Anxiety Stress Scale-21 Depression Subscale; MSIS = Miller Social Intimacy Scale; CSI = Couples Satisfaction Index; SDI = Self-Disclosure Index; RAAS-C = Revised Adult Attachment Scale – Close; RAAS-D = Revised Adult Attachment Scale – Depend; RAAS-A = Revised Adult Attachment Scale – Anxiety; Felt Rej = Felt Rejection; Felt Acc = Felt Acceptance; Anx Acc = Anxious Acceptance; RRS-W = Risk Regulation Scale – Withdraw; RRS-A = Risk Regulation Scale – Approach; Neg B = Own Negative Behaviour; Pos B = Own Positive Behaviou

Risk Regulation Scale Factor Analysis

A principal axis exploratory factor analysis (EFA) was conducted on the 17 items of the Risk Regulation Scale using varimax rotation (Table 4). RRS responses from a total of 513 daily diaries were included in the EFA. Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis (KMO = .88), which is well above the acceptable limit of .5. In addition, Bartlett's Test of Sphericity was significant ($p < .0001$), justifying the factoring of the measure (Field, 2013).

An initial EFA was run to obtain eigenvalues for each factor in the data. Four factors had eigenvalues above Kaiser's criterion of one (Field, 2013), which cumulatively explained 68.8% of the variance in the scale. Results indicated that two items loaded onto the fourth factor but did not differ conceptually from the second factor; consequently, these items were pruned. The EFA was then rerun, this time yielding three factors with eigenvalues greater than 1. These factors cumulatively explained 66.08% of the variance in the scale. The first factor ("Approach"; α = .89), included 8 items which measure *increased* dependency on one's partner. The second factor ("Withdrawal"; Cronbach's α = .89), included five items that assess *decreased* partner dependency. The third factor ("Aggress"; α = .82) was unexpected to emerge from the EFA. It included two items which measured the extent to which participants acted angrily toward their partners. Though these items were originally conceptualized as being similar to Withdrawal risk regulation processes, they had low factor loadings on the Withdrawal factor (< .40). Consequently, they were retained as an independent factor. Composite subscale scores were subsequently calculated for each factor.

Table 4

Item Loadings from Rotated Factor Matrix for Nondiscarded Items of the Risk Regulation Scale

Risk-Regulation Scale Item	Factor Loadings		
	F1 "Approach"	F2 "Withdraw"	F3 "Aggress"
Felt less willing to rely on my partner for support	-.08	**.81**	1.3
Decreased the amount of personal information I was willing to share with my partner	-.08	**.89**	.08
Thought less highly of my partner	-.08	**.79**	.30
Felt that my romantic relationship is my most important relationship	**.72**	-.06	-.01
Tried to physically connect with my partner	**.72**	.02	-.03
Acted kindly toward my partner	**.80**	-.11	-.18
Sought reassurance from my partner	**.60**	.04	-.05
Complimented my partner	**.78**	-.10	0.08
Felt less willing to disclose my emotions to my partner	-.09	**.66**	.15
Thought more highly of my partner	**.75**	-.14	-.14
Criticized my partner	-.08	.34	**.75**
Increased the amount of personal information I was willing to share with my partner	**.57**	-.08	.12
Acted in an angry manner toward my partner (e.g., yelling, criticizing)	-.04	.38	**.73**
Felt less willing to rely on my partner for support	-.11	**.66**	.41
Felt that my relationship is a very important source of connection	**.67**	-.15	-.01

Note. For each tem, respondents were asked, "Please indicate the extent to which you agree with the following statement. Today I…" Response options per item ranged from 1 ("Strongly Disagree") to 5 "Strongly Agree"). Factor loadings > .50 are in boldface.

Hypothesis 1. As compared to HC participants, SAD participants will report significantly lower relationship satisfaction, self-disclosure, and intimacy. Individuals with SAD will also score higher than HCs on the Anxiety subscale of the RAAS, but lower than HCs on the Close and Depend subscales of the RAAS.

Independent samples *t*-tests were performed to assess group differences on measures of relationship characteristics. There were no significant group differences in relationship satisfaction (CSI scores), $t(43) = 0.77$, $p = .466$, $d = 0.23$, or the extent of participants' self-disclosure to intimate partners (SDI scores), $t(43) = 0.67$, $p = .506$, $d = 0.20$. There was also no significant group difference in relationship intimacy (MSIS scores), $t(40) = 1.05$, $p = .300$, $d = 0.32$.

As expected, the SAD group ($M = 3.19$, $SD = 1.05$) scored significantly higher than the HC group ($M = 1.78$, $SD = 0.80$) on the RAAS anxiety subscale, $t(43) = -5.13$, $p < .001$, $d = -1.56$. In contrast, the SAD group ($M = 2.57$, SD = 0.76) scored lower than the HC group ($M = 3.65$, $SD = 0.91$) on the RAAS depend subscale, $t(43) = 4.23$, $p < .001$, $d = 1.29$. Individuals with SAD ($M = 3.19$, $SD = 0.94$) group also scored lower than HCs ($M = 4.17$, $SD = 0.56$) on the RAAS close subscale, $t(31.85) = 4.18$, $p < .001$, $d = 1.48$ (Figure 1).

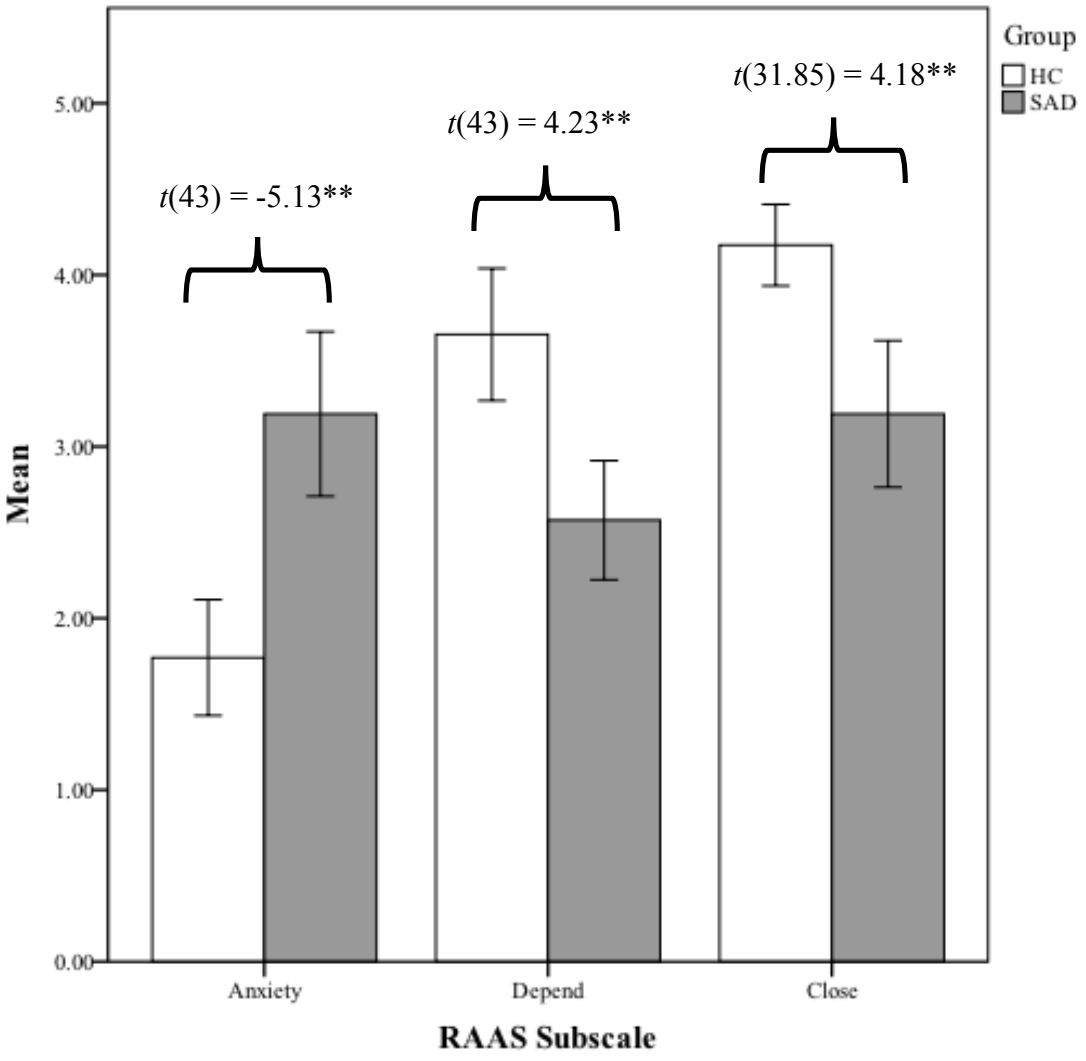


Figure 1. Mean scores on the Anxiety, Depend, and Close subscales of the *Revised Adult Attachment Scale* (RAAS) by group. HC = Healthy Control; SAD = Social Anxiety Disorder. Error bars represent 95% CI. ** $p < .001$.

Hypothesis 2. As compared to HC participants, SAD participants will report significantly greater Felt Rejection and Anxiety About Acceptance. In contrast, HCs will report significantly greater Felt Acceptance.

Independent samples *t*-tests were performed using 95% bias-corrected confidence-interval bootstrapping procedure in SPSS (Efron & Tibshirani, 1985; Preacher & Hayes, 2014). Adjusted degrees of freedom are reported whenever Levene's test indicated unequal variances. Results are presented in Table 5. As hypothesized, SAD participants (M = 12.26, SD = 6.53) reported significantly greater mean Felt Rejection as compared to HC participants (M = 8.06, SD = 3.05), $t(25.85) = -2.65$, $p = .014$, $d = -1.04$. Similarly, SAD participants (M = 12.66, SD = 5.48) reported significantly greater Anxiety About Acceptance than did HCs *(*M = 6.69, SD = 2.63), $t(26.19) = -4.46$, $p < .001$, $d = -1.74$. SAD participants (M = 33.51, SD = 9.25) reported marginally lower mean Felt Acceptance as compared to HC participants (M = 38.56, SD = 9.06), $t(42) = 1.82$, $p = .076$, $t(42) = 1.82$, $p = .076$, $d = 0.56$ (Figure 2).

Table 5

Group Differences on Daily Diary Measures

	M(SD)				**95% BCa CI**	
	HC	SAD	*t*(df)	*p*	Lower	Upper
Felt Rejection	8.06(3.05)	12.26(6.53)	-2.65(25.85)[a]	.014*	-7.46	-0.94
Felt Acceptance	38.56(9.06)	33.51(9.25)	1.82(42)	.076	-0.54	10.64
Anxiety About Acceptance	6.69(2.63)	12.66(5.48)	-4.46(26.19)[a]	<.001**	-8.72	-3.22

Note. * = p <.05 criteria; ** = $p < .001$ criteria. [a] = Adjusted degrees of freedom are reported due to significant Levene's test. HC = Healthy Control; SAD = Social Anxiety Disorder

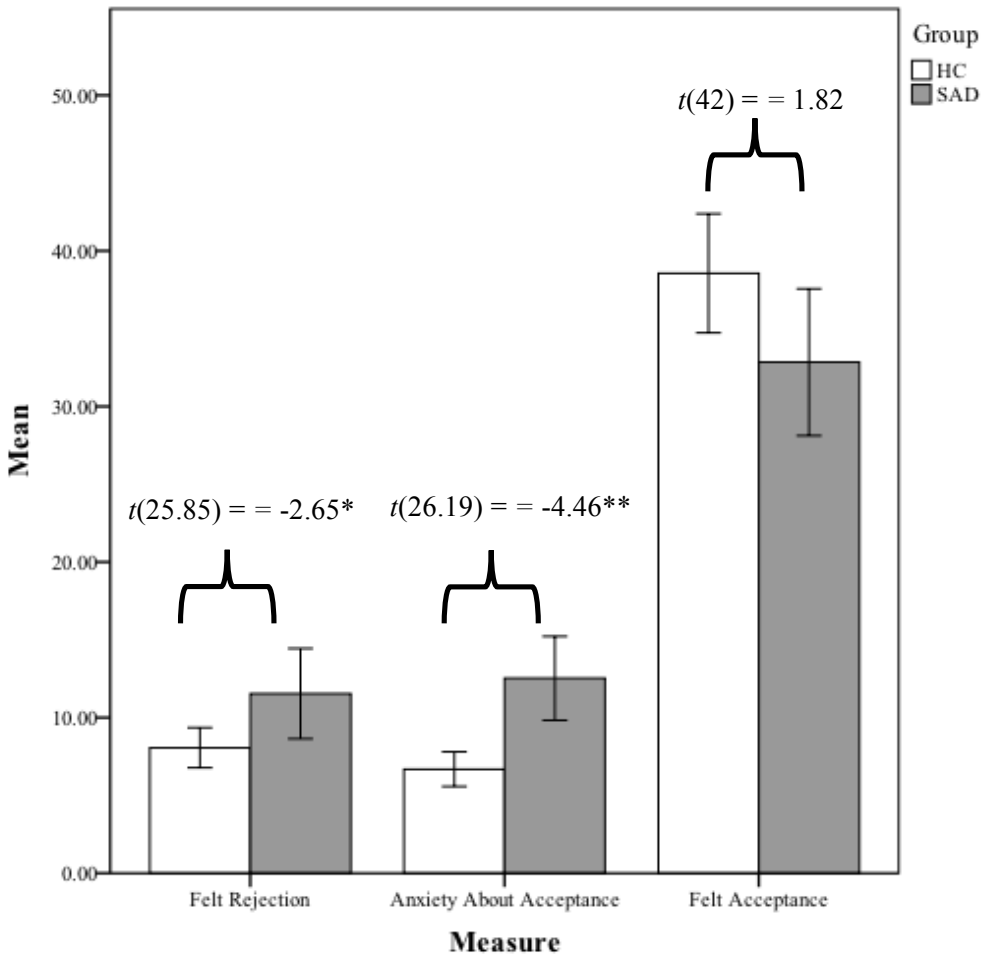


Figure 2. Mean scores on the daily diary measures that demonstrated significant group differences. Adjusted degrees of freedom are reported where Levene's test indicated unequal variances. HC = Healthy Control; SAD = Social Anxiety Disorder. Error bars represent 95% CI. * = $p < .05$; ** = $p < .001$.

Hypothesis 3. The relationship between Felt Rejection and Withdrawal-focused risk regulation processes will be moderated by Group, such that the relationship would be stronger for individuals with SAD than HCs.

Hierarchical linear modeling was used to account for the longitudinal nature of the data and resulting within-person correlations between time points (Pinheiro & Bates, 2000). In order to investigate the hypothesized interactive effect of Felt Rejection and Group on Withdrawal-

focused risk regulation processes, two models were assessed, one using RRS-Withdrawal as the outcome measure, and the other using Own Negative Behaviour as the outcome variable.

When RRS-Withdrawal was entered as the outcome variable, there was no significant main effect of Felt Rejection ($\hat{\gamma}$ = .09, *SE* = 0.61, *p* = .889) or Group ($\hat{\gamma}$ = 3.06, *SE* = 5.29, *p* = .564). Furthermore, there was no significant Felt Rejection x Group interaction on RRS-Withdrawal, ($\hat{\gamma}$ = -1.10, *SE* = 0.96, *p* = .255). When Own Negative Behaviour was entered as the outcome variable, bootstrapping was used to account for the nonnormal distributions of residuals. There was no significant main effect of Felt Rejection ($\hat{\gamma}$ = .01, *SE* = 0.01, *p* = .550, 95% BCa CI [-0.01, 0.02]). However, there was a significant main effect of Group ($\hat{\gamma}$ = 0.16, *SE* = 0.06, *p* = .010, 95% BCa CI [0.04, 0.28]). The main effect of group was further qualified by a significant Felt Rejection x Group interaction, ($\hat{\gamma}$ = 0.03, *SE* = 0.01, *p* = .010, 95% BCa CI [0.01, .06], pseudo r^2 = 0.12). Next, simple slopes analyses were conducted to explore the direction of the Felt Rejection x Group interaction. For individuals with SAD, Felt Rejection was positively associated with next-day Own Negative Behaviours (*p* < .001). In contrast, for HC participants, Felt Rejection was not significantly associated with next-day Own Negative Behaviours (*p* = .300; Figure 3).

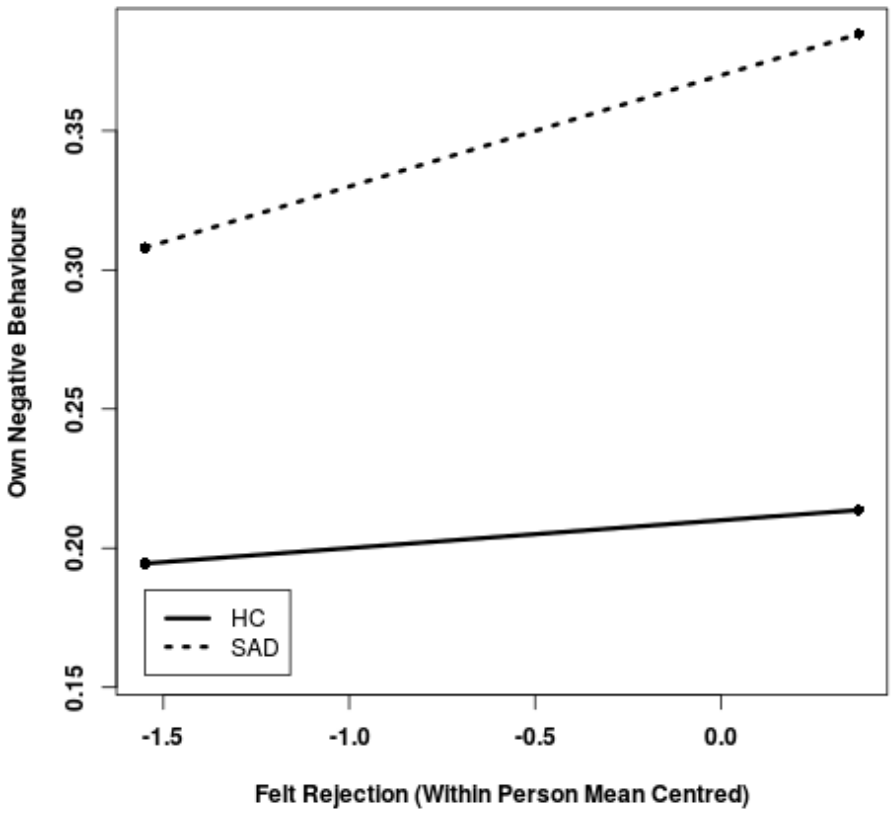


Figure 3. HC = Healthy Control; SAD = Social Anxiety Disorder. Simple slopes of Felt Rejection predicting next-day Own Negative Behaviours for HC and SAD groups. Felt Rejection is positively associated with next-day Own Negative Behaviours for SAD ($p < .001$), but not HC ($p = .300$), participants.

Hypothesis 4. The relationship between Felt Rejection and Approach-focused risk regulation processes will be moderated by Group, such that the relationship would be stronger for HCs than for individuals with SAD.

As in Hypothesis 3, HLM was used to investigate the hypothesized interactive effect of Felt Rejection and Group on Approach-focused risk regulation processes. Two models were assessed, the former using RRS-Approach as the outcome variable, and the latter using Own Positive Behaviour measure as the outcome variable.

With RRS-Approach entered as the outcome variable, there was no significant main effect of Felt Rejection ($\hat{\gamma}$ = -0.11, *SE* = 0.07, *p* = .128, 95% BCa CI [-0.25, 0.03]) or Group ($\hat{\gamma}$ = -1.04, *SE* = 2.29, *p* = .652, 95% BCa CI [-5.72, 3.63]). Further, the Felt Rejection x Group interaction was nonsignificant ($\hat{\gamma}$ = 0.09, *SE* = 0.09, *p* = .359, 95% BCa CI [-0.10, 0.27]). When Own Positive Behaviour was entered as the outcome variable, there was no significant main effect of Felt Rejection, ($\hat{\gamma}$ = 0.01, *SE* = 0.03, *p* = .731). However, there was a marginally significant main effect of group ($\hat{\gamma}$ = -0.26, *SE* = 0.14, *p* = .074). SAD participants (*M* = 1.87, *SD* = 1.68) used marginally fewer positive behaviours than did HC participants (*M* = 2.13, *SD* = 1.56) over the 2-week duration of the study, *MD* = 0.263, *SE* = 0.14, *p* = .068. Finally, the Felt Rejection x Group interaction term was nonsignificant ($\hat{\gamma}$ = 0.01, *SE* = 0.03, *p* = .839).

Chapter IV: Discussion

SAD is an impairing mental disorder with robust individual and societal consequences (Acarturk, Cuijpers, van Straten, & De Graaf, 2009; Hedman et al., 2011). Despite being an inherently interpersonal disorder, a surprisingly small body of research has investigated how SAD affects intimate relationship functioning. The present study was the first to assess the ways in which individuals with SAD respond to feelings of intimate-partner rejection, as compared to HC participants. The primary hypothesis of the present study, that individuals with SAD would be more likely to respond to feelings of rejection by withdrawing from their partners, was supported with one of two measures of withdrawal-focused risk regulation processes. In addition, results suggest that individuals with SAD experience heightened feelings of rejection and reduced feelings of acceptance as compared to HCs, and that individuals with SAD exhibit a pattern of attachment characterized by reduced comfort with intimacy and dependency on others (i.e., avoidant attachment), as well as increased concern about being rejected and abandoned by

others (i.e., anxious attachment). The broad pattern of results presented in this study suggests that among individuals with SAD, rejection concerns indeed extend to the context of intimate relationships and, moreover, that they are associated with a pattern of negative responses toward one's partner.

Risk Regulation

The risk regulation model (Murray et al., 2006) maintains that individuals modulate their level of dependency on their intimate partners based on the extent to which they feel accepted or rejected by them. According to this model, when feeling rejected, people are motivated to limit their dependency on their partners by reducing the extent to which they perceive the relationship as an important source of connection. In doing so, people may engage in varied "Withdrawal"-focused risk regulation processes, which may include devaluing one's partner, reducing self-disclosure, acting aggressively to create interpersonal distance, or prioritizing other relationships. Conversely, when feeling accepted by their partners, individuals may feel more willing to risk dependency on their partners, and may engage in "Approach"-focused risk regulation processes as a result.

Afram and Kashdan (2015) reported preliminary evidence suggesting that social anxiety is associated with heightened use of withdrawal-focused risk regulation processes. In the first study on the topic, they found that social anxiety was positively correlated with greater partner devaluation following a rejection induction. The present study extends these findings by assessing the extent to which individuals with SAD naturalistically utilize Withdrawal and Approach-focused risk regulation processes in response to feelings of rejection elicited by their intimate partners.

Withdrawal Behaviours

In the present study, withdrawal-focused risk regulation processes were assessed using two outcome measures: Own Negative Behaviours and RRS-Withdrawal. Among SAD, but not HC participants, feelings of rejection were associated with next-day use of withdrawal processes, as assessed by the Own Negative Behaviours subscale. In contrast, feelings of rejection did not predict the next-day use of withdrawal processes as assessed by RRS-Withdrawal among either HC or SAD participants.

The finding that the Felt Rejection x Group interaction predicted next-day withdrawal processes on the former scale, but not the latter, was surprising. These discrepant findings may be accounted for by differences in the way that each scale measures withdrawal processes. Whereas the Own Negative Behaviours scale assessed hostile behaviours directed at one's partner (e.g., criticizing, insulting, ignoring, acting inconsiderately, or yelling), RRS-Withdrawal assessed subtler behaviours, including the extent to which participants reduced their willingness to rely on their partner for support, disclosed personal information, or reduced their valuation of their partner. Thus, the discrepant findings may provide a more nuanced understanding of the specific nature of withdrawal processes that are typically used among individuals with SAD within the context of their intimate relationships.

The current findings suggest that SAD is associated with the use of critical or hostile withdrawal processes, but not with withdrawal processes that involve shifts in the extent to which individuals view their partners favourably or lean on them for support. There are several potential explanations for these findings. First, it has been proposed that individuals with higher levels of social anxiety experience a heightened shame response when rejected (Gilbert & Miles, 2000; Hofmann, Heinrichs, & Moscovitch, 2004). Further, research has shown that the experience of shame is in turn associated with increased anger and externalizing blame for

negative events (Hofmann et al., 2004; Tangney, Wagner, Fletcher, & Gramzow, 1992), which may explain increases in insulting, criticizing, or otherwise angry behaviour assessed by the Own Negative Behaviours scale. Along these lines, future research may benefit from investigating mediation models that assess the role of shame and anger in understanding the relationship between felt rejection and the use of withdrawal processes.

An alternative explanation for the discrepancy is related to the wording of the two measures. The Own Negative Behaviour scale asked participants whether they had used each of five discrete *behaviours* (e.g., yelling) over the course of the day. Completing this measure required simple yes/no responses that relied only on participants' recounting of the day's activities. In contrast, the RRS-Withdrawal scale required greater introspection, as several of the items required participants to reflect on thoughts and feelings that they experienced that day (e.g., "I felt that my relationship is not a very important source of connection"). Participants may not have a high level of insight into these subtle risk regulation processes.

Taken together, these findings suggest that when individuals with SAD feel rejected by their intimate partners, they may engage in withdrawal-focused risk regulation processes characterized by hostile or angry behaviours. In contrast, they may be less likely to engage in – or at least less likely to *recognize* that they are engaging in – subtler withdrawal processes such as reducing their willingness to rely on their partner for support.

Approach Behaviours

To assess the effect of Felt Rejection on approach-oriented risk regulation processes, two models were similarly run, one with Own Positive Behaviour as the outcome variable and the other with the RRS-Approach scale as the outcome. The marginal main effect of group suggested

that individuals with SAD scored marginally lower on the "Own Positive Behaviour" scale as compared to HCs.

Citing the positive psychology literature (e.g., Diener & Seligman, 2002; Myers & Diener, 1995), Kashdan (2007) argued that satisfying relationships are the key contributor to happiness and a sense of life satisfaction and perceived meaning. However, in their interactions, socially anxious individuals engage in effortful attempts to avoid rejection and suppress and conceal their anxiety (Kashdan & Steger, 2006; Turk, Heimberg, Luterek, Mennin, & Fresco, 2005; Mennin, McLaughlin, & Flanagan, 2009). Kashdan (2007) proposed that these efforts lead to distraction from the present moment, resulting in fewer opportunities to foster positive social experiences. The marginal group difference in positive behaviours could be interpreted within this context. It is possible that socially anxious participants' focus on avoiding rejection and concealing anxious expression during interactions with their partners results in reduced opportunity for prosocial, or positive, interactions with them. Furthermore, the finding that SAD participants experienced relatively lower Felt Acceptance over the course of the study can also be interpreted within this context. If individuals with SAD exert their effort toward avoiding rejection and concealing anxiety during interactions with their partners, they may miss out on their partners' attempts to communicate support, comfort, or acceptance.

Despite the finding that individuals with SAD reported marginally heightened use of approach-oriented risk regulation processes, the use of these processes was surprisingly unrelated to previous-day Felt Rejection. A large body of research exists demonstrating the diverse cognitive and behavioural consequences of thwarted social belongingness needs. In a review of the literature on the effects of social rejection, Williams (2007) concluded that people often respond to social rejection with initial sadness, aggression, or hostility (Leary, Twenge, &

Quinlivan, 2006; Twenge, Baumeister, Tice, & Stucke, 2001; Van Beest & Williams, 2006). Afterward, they may attempt to replenish belongingness needs through the use of varied prosocial behaviours. For example, studies have shown that social rejection is associated with improved memory for socially-relevant information (Gardner, Pickett, & Brewer, 2000), and that social exclusion is associated with increased levels of conformity – a presumed strategy used to encourage interpersonal acceptance and promote reaffiliation (Williams, Cheung, & Choi, 2000).

The finding that feelings of rejection were not associated with the use of following-day approach-oriented risk regulation processes is in contrast to body of research. These findings may best be understood in light of research suggesting social rejection often leads to increases in prosocial behaviour, targeted at new sources of potential connection, rather than the perpetrators of rejection (Maner, DeWall, Baumeister, & Schaller, 2007). In line with this view, the null association between Felt Rejection and the use of approach-oriented risk regulation processes may be a result of individuals moving to *alternative* sources of social connection as a means of social reaffiliation. Alternatively, Smart Richman and Leary (2009) have proposed that following the initial stage of hurt feelings and anger that follows an instance of rejection, construals of the rejecting event (e.g., the perceived chronicity of rejection) may influence the extent to which one engages in prosocial, antisocial, or avoidant behavioural responses. From this perspective, it is plausible that construals that were not assessed by the present study may serve as important moderators in determining the conditions under which individuals respond to intimate-partner rejection in a prosocial manner.

Rejection and Anxiety About Acceptance

In addition to looking at the relationship between Felt Rejection and the use of risk regulation processes, group differences were also assessed for mean responses to diary measures of Felt Rejection and Anxiety About Acceptance across the 2-week duration of the study.

Results indicated that as compared to HC participants, individuals with SAD on average reported significantly greater feelings of rejection, as well as anxiety about acceptance by their intimate partners. Individuals with SAD might report heightened feelings of rejection in their intimate relationships as a result of attention or interpretation bias. Though results have been mixed, a wide body of empirical evidence suggests that SAD is associated with attentional bias toward social threat cues (Amir, Freshman, & Foa, 2002; Maidenberg, Chen, Craske, Bohn & Bystrisky, 1996; Mattia, Heimberg, & Hope, 1993; Schmidt, Richey, Bucker, & Timpano, 2009). Social anxiety is also robustly associated with a tendency to make negative interpretations about ambiguous or neutral socially relevant information (Amir, Beard, & Bower, 2005; Beard & Amir, 2010; Huppert, Foa, Furr, Filip, & Matthews, 2003; Stopa & Clark, 2000). Further, whereas individuals lower in social anxiety have been shown to make positive interpretations of neutral social information, socially anxious individuals fail to display biased positive interpretations (Constans, Penn, Ihen, & Hope, 1999; Hirsch, Clark, & Mathews, 2006; Hirsch & Matthews, 2000; Moser, Hajack, Huppert, Foa, & Simons, 2008). Accordingly, individuals with SAD may also exhibit preferential attention to cues of rejection within their intimate relationships, or interpret ambiguous partner behaviour in an inappropriately negative manner.

It is also important to note, however, that although individuals with SAD experience greater experiences of rejection by their intimate relationship partners as compared to healthy controls, it is still possible that this rejection concern is slight compared to what is experienced with strangers or less familiar acquaintances. The present findings do not speak to the differential

severity of felt fear of rejection within intimate, as compared to more distal, relationships. They do, however, reveal that intimate relationships are also affected by rejection concerns.

Social Anxiety Disorder and Self-Reported Relationship Characteristics

In addition to the main analyses, this study also assessed the extent to which individuals with SAD differed from HCs on measures of relationship satisfaction, self-disclosure, intimacy, and attachment styles. Of these variables, group differences emerged only in attachment styles, with SAD participants scoring significantly higher on the RAAS Anxiety subscale, and significantly lower on the RAAS Depend and Close subscales.

The finding that groups did not differ on relationship satisfaction, self-disclosure, or intimacy was surprising in light of previous studies that have demonstrated significant negative associations between social anxiety and these variables (e.g., Eng et al., 2005; Wenzel, 2002). For example, both Schneier et al. (1994) and Wittchen and Beloch (1996) showed that as compared to nonanxious controls, individuals with SAD exhibited mildly greater impairment on relationship subscales of both clinician- and self-reported measures of disability (Schneier et al., 1994; Wittchen & Beloch, 1996). However, these studies reported analyses from broad surveys that included both individuals who were in intimate relationships, as well as those who were not. Accordingly, it may be that socially anxious individuals report relationship satisfaction largely because they are less likely to be involved in an intimate relationship (Alden & Taylor, 2004; Hart et al., 1999), rather than because they are dissatisfied with their intimate relationships once they have formed them. This hypothesis is further bolstered by the Heinrichs (2003) finding that socially anxious individuals who were in intimate relationships reported greater overall life satisfaction as compared to socially anxious individuals who were single.

However, two recent studies (Bar-Kalifa et al., 2015; Montesi et al., 2013) have supported a pattern of reduced relationship satisfaction specifically among socially anxious individuals who are in current intimate relationships. Montesi and colleagues (2013) found that high socially anxious undergraduate participants reported lower relationship satisfaction than their low socially anxious counterparts, when relationship satisfaction was assessed by the *Dyadic Adjustment Scale* (DAS; Spanier, 1987). However, though the DAS is the most widely cited measure of relationship adjustment, it has been criticized on the grounds of item heterogeneity. In particular, the DAS includes items that tap into the construct of partner communication, rather than measuring relationship satisfaction *per se* (Funk & Rogge, 2007). Bar-Kalifa et al. (2015) also found that over a 35-day dyadic diary study, socially anxious individuals felt that their partners were less responsive to their personal needs, which in turn contributed to reduced relationship satisfaction (as assessed by the 16-item version of the CSI). Given the novelty of these findings, further research is needed to determine the extent to which individuals with SAD indeed report reduced relationship satisfaction.

The null group differences on measures of intimacy and self-disclosure reported in the present study also contradict previous findings (Cuming & Rapee, 2010; Sparrevohn & Rapee, 2009). One notable difference is that these studies had utilized the Personal Assessment of Intimacy in Relationships scale (Schaefer & Olson, 1981) as a measure of relationship intimacy, whereas the present study used the MSIS. The PAIR assesses intimacy across five domains: emotional, social, sexual, intellectual, and recreational. Sparrevohn and Rapee (2009) found differences between individuals with SAD and community controls only on the social and intellectual subscales. In contrast, the MSIS takes a more global approach to measuring relationship satisfaction (i.e., questions include, “How often do you feel close to [your

partner]?"). It is possible that the broader MSIS measure was unable to capture those unique aspects of intimacy that seem to be impaired in SAD.

Similarly, a different measure of self-disclosure (the SDI) was used in the present study than the measured used by the other research groups (the self-disclosure subscale of the *Conflict Communication Scale* [CCS]*;* Goldstein, 1999). The SDI assesses participants' willingness to disclose various information to their partner. In contrast, the self-disclosure subscale of CCS measures self-disclosure only within the context of interpersonal conflict (e.g., "In a dispute, there are many things about myself that I won't discuss"). Accordingly, though past studies indicate that individuals with SAD reduce their willingness to self-disclose to their partners in the context of confrontation, the results presented in this study suggest that *general* willingness to self-disclose is not differentiated based on diagnostic status. These findings can be explained in the context of risk regulation theory. Interpersonal confrontation likely represents a context in which the risk of rejection is heightened. Accordingly, in this context, socially anxious individuals may be particularly motivated to act in ways that reduce the likelihood of rejection.

Finally, it is possible that the discrepant findings could be explained by differences in average relationship durations between the different studies. Whereas the average duration in the present sample was 4.14 years, the aforementioned studies did not report the mean relationship duration of individuals included in their samples. Relationship satisfaction, intimacy, and willingness to self-disclose may vary across the development of an intimate relationship – perhaps with greater variability in the nascent stages when the extent of a partner's commitment has not yet been demonstrated.

Strengths and Limitations

This study has a number of strengths. First, it was the first to assess the use of risk regulation processes in a clinical sample of individuals diagnosed with SAD. Second, by using daily diary methodology, the present study was able to assess the extent to which feelings of rejection and acceptance, as well as the use of risk regulation processes, arise naturalistically in the context of participants' daily life. This feature of the study was particularly important given the methodological and ethical complications associated with inducing intimate-partner rejection within an experimental paradigm. Third, whereas Afram and Kashdan (2015) assessed one risk regulation process (i.e., partner devaluation), the present study assessed a varied range of both approach-focused and withdrawal-focused processes.

Despite these strengths, the results of the present study should also be interpreted within the context of its limitations. The sample included only 45 participants, thereby limiting its power. In addition, several participants did not complete all 14 of the daily diaries. To maximize the number of data points used to estimate multilevel models, mean imputation was used to account for missing diaries for those participants who had completed at least 10 days. Though mean imputation was deemed the best option to maximize the likelihood that the models successfully converged, this strategy may have produced biased standard error estimates.

Another limitation of the present study is the lack of a clinical control group. In particular, given the substantial correlations between the DASS-21 depression subscale and several of the independent and dependent variables of interest (see Table 2), the study would have benefitted from the inclusion of four participant groups: individuals with SAD with no lifetime history of major depressive disorder (MDD), individuals with MDD who have no lifetime history of SAD, individuals with comorbid SAD and MDD, and healthy controls. This

four-group design would have allowed for the investigation of the extent to which risk regulation processes are unique to SAD versus depression.

The present study also relied on self-report measures of felt rejection, acceptance, and risk regulation processes. Self-report measures may introduce bias if participants are motivated to respond in a socially desirable manner, even when survey data are confidential (Van de Mortel, 2008). Further, unlike observational measures, self-report is limited by individuals' own introspective capacity. Finally, daily diaries involve repeated measurement and may consequently introduce testing effects as participants become increasingly familiar with the measures (Kazdin, 2016). Indeed, a small subset of participants in the present sample tended to endorse a very similar rate of Approach and Withdraw processes each day over the 2-week period, resulting in very low variability in their responses.

There are also several limitations of the Risk Regulation Scale. First, given that this scale was developed for the present study, its psychometric properties had not been previously evaluated. Second, the items included in the measure were developed based on a broad review of the literature on risk regulation; however, it is possible that some risk regulation processes may exist that are not captured by the scale. Third, the scale tapped into participants' behaviours, feelings, and cognitions. It is possible that whereas participants were able to retrospectively report on their overt risk regulation behaviours, it may have been more difficult for them to report on subtler risk regulation processes (e.g., reducing the extent to which one feels that their partner is an important source of connection). The limited variability in participants' responses to this supports this hypothesis. The scale may be improved by pruning certain items that demonstrated minimal variability, shifting the wording to assess only more overt behaviours, or

altering it so that participants respond to items based on how they are feeling or are acting *right now,* rather than relying on retrospective reports.

Additionally, at present, the audio recordings of the DART interviews have not yet been assessed for reliability. An important next step will be for a second researcher to review audio recordings of a subset (20%) of the DART interviews. This researcher will independently determine participants' probable diagnoses based on the recordings. Reliability will be assessed by calculating the intraclass correlation coefficient between the diagnostic codes assigned to participants by the author and by the second researcher.

Finally, despite the many advantages of naturalistic data collection, this study design makes it difficult to isolate variables and control for threats to internal validity. Various confounding variables may have impacted the ways that participants responded to the daily dairy measures, including life stressors that were extraneous to the intimate relationship and which were not measured in the present study.

Future Directions

Future research is needed to bolster and expand upon the findings presented in this thesis. First, given that the present study was the first to investigate the role of risk regulation processes in a clinical sample of individuals diagnosed with SAD, replication studies will be an important next step. Ideally, subsequent studies will make use of larger sample sizes and psychopathology control groups. Second, future research may benefit from investigating explanatory pathways that may account for the relationship between perceived rejection and the use of risk regulation withdrawal and approach processes. Based on the findings presented here, it would be particularly interesting to look at the potential role of anger or shame in mediating the relationship between felt rejection and the use of hostile or aggressive risk regulation processes.

A third avenue for future research is to collect daily diary data from both partners. Dyadic research could investigate the reciprocal relationships between each partner's emotions and behaviours. Moreover, the collection of dyadic data over a longer time course could help to elucidate how the use of risk regulation processes affects fluctuations in relationship satisfaction and intimacy over time. Finally, future research would benefit from investigating additional moderators of the relationship between social anxiety and the use of approach and withdrawal-focused risk regulation behaviours.

Conclusion

The findings presented here suggest that individuals with SAD experience heightened feelings of rejection in their intimate relationships, and that when they are feeling rejected, they may be more likely to engage in risk regulation withdrawal processes characterized by hostile behaviour. Further, the findings suggest that SAD is associated with marginally decreased feelings of acceptance and use of positive behaviours in intimate relationships. This thesis extends the extant literature on the effects of SAD for intimate relationship functioning and provides suggestions for future research groups to continue developing this line of empirical investigation.

Appendix A

Daily Diary

Please enter your ID number:

○ ID Number _____

Please enter today's date

Month:

▼ January ... December

Day

▼ 1 ... 31

Year

○ 2017

○ 2018

Please indicate the extent to which you felt each of the following **TODAY.**

	1 (not at all)	2	3	4 (moderately)	5	6	7 (especially)
I felt rejected or hurt by my partner	○	○	○	○	○	○	○
I felt that my partner doesn't understand me	○	○	○	○	○	○	○
I felt that my partner wasn't there for me	○	○	○	○	○	○	○
I felt that my partner was angry with me	○	○	○	○	○	○	○
I felt that my partner was irritated with me	○	○	○	○	○	○	○
I felt that my partner doesn't really care what I think	○	○	○	○	○	○	○

Please indicate the extent to which you felt each of the following **TODAY.**

	1 (not at all)	2	3	4 (moderately)	5	6	7 (especially)
I felt that my partner loves me	○	○	○	○	○	○	○
I felt that my partner accepts me as I am	○	○	○	○	○	○	○
I felt that my partner sees the best in me	○	○	○	○	○	○	○
I felt that my partner overlooks my faults	○	○	○	○	○	○	○
I felt comforted or reassured by my partner	○	○	○	○	○	○	○
I felt that my partner is proud of me	○	○	○	○	○	○	○
I felt like my partner finds me desirable	○	○	○	○	○	○	○

Please select each event that happened TODAY

- [ ] I criticized or complained about my partner
- [ ] I insulted my partner
- [ ] I ignored my partner
- [ ] I was inconsiderate or selfish
- [ ] I snapped or yelled at my partner

Please select each event that happened TODAY

- [ ] I made time to be with my partner
- [ ] I did something thoughtful for my partner
- [ ] I shared private thoughts with my partner
- [ ] I changed my behaviour for my partner
- [ ] I told my partner I loved him/her
- [ ] I forgave my partner

Please indicate the extent to which you agree with each of the following statements.

Today, I...

	1 (strongly disagree)	2	3 (neutral)	4	5 (strongly agree)
Felt less willing to rely on my partner for support	○	○	○	○	○
Decreased the amount of personal information I was willing to share with my partner	○	○	○	○	○
Thought less highly of my partner	○	○	○	○	○
Felt that my romantic relationship is my most important relationship	○	○	○	○	○
Tried to physically connect with my partner	○	○	○	○	○
Acted kindly toward my partner	○	○	○	○	○
Sought reassurance from my partner	○	○	○	○	○
Complimented my partner	○	○	○	○	○
Felt less willing to disclose my emotions to my partner	○	○	○	○	○
Thought more highly of my partner	○	○	○	○	○

Felt that my relationship is not a very important source of connection	○	○	○	○	○
Convinced myself that other relationships are more important to me.	○	○	○	○	○
Criticized my partner.	○	○	○	○	○
Increased the amount of personal information I was willing to share with my partner.	○	○	○	○	○
Acted in an angry manner toward my partner (e.g., yelling, criticizing)	○	○	○	○	○
Felt less willing to rely on my partner for support	○	○	○	○	○
Felt that my relationship is a very important source of connection	○	○	○	○	○

For each of the responses that answered "agree" or "strongly agree" in the question above, please indicate how you FEEL about having acted or felt this way? For all other responses, please select "N/A".

	1 (Terrible)	2	3 (Neutral)	4	5 (Excellent)	**N/A**
Felt less willing to rely on my partner for support	○	○	○	○	○	○
Decreased the amount of personal information I was willing to share with my partner	○	○	○	○	○	○
Thought less highly of my partner	○	○	○	○	○	○
Felt that my romantic relationship is my most important relationship	○	○	○	○	○	○
Tried to physically connect with my partner	○	○	○	○	○	○
Acted kindly toward my partner	○	○	○	○	○	○
Sought reassurance from my partner	○	○	○	○	○	○
Complimented my partner	○	○	○	○	○	○
Felt less willing to disclose my emotions to my partner	○	○	○	○	○	○
Thought more highly of my partner	○	○	○	○	○	○

Felt that my relationship is not a very important source of connection	○	○	○	○	○	○
Convinced myself that other relationships are more important to me.	○	○	○	○	○	○
Criticized my partner.	○	○	○	○	○	○
Increased the amount of personal information I was willing to share with my partner.	○	○	○	○	○	○
Acted in an angry manner toward my partner (e.g., yelling, criticizing)	○	○	○	○	○	○
Felt less willing to rely on my partner for support	○	○	○	○	○	○
Felt that my relationship is a very important source of connection	○	○	○	○	○	○

Please select each event that happened TODAY

- [ ] My partner was irritated or angry with me
- [ ] My partner criticized or complained about me
- [ ] My partner insulted me
- [ ] My partner ignored me
- [ ] My partner was inconsiderate or selfish
- [ ] My partner snapped or yelled at me
- [ ] My partner embarrassed or made of me in public

Please select each event that happened TODAY

- [ ] My partner told me he/she loves me
- [ ] My partner praised or complimented me
- [ ] My partner was physically affectionate toward me
- [ ] My partner did something thoughtful for me
- [ ] My partner really listened to what I was saying
- [ ] My partner made time to be with me
- [ ] My partner apologized to me
- [ ] My partner forgave me for something I did
- [ ] My partner helped me when I needed it
- [ ] My partner shared private thoughts with me

Please select each event that happened TODAY

- [ ] My partner and I had a minor disagreement
- [ ] My partner and I had a serious argument

How did you feel today? Please indicate the extent to which you experienced each of the following feelings **TODAY.**

	1 (not at all)	2	3	4 (moderately)	5	6	7 (especially)
Unsure of self	○	○	○	○	○	○	○
Anxious	○	○	○	○	○	○	○
Sad/depressed	○	○	○	○	○	○	○
Unlikeable	○	○	○	○	○	○	○
Lonely	○	○	○	○	○	○	○
I wanted to be left alone	○	○	○	○	○	○	○

Please indicate the extent to which you felt each of the following **TODAY.**

	1 (not at all)	2	3	4 (moderately)	5	6	7 (especially)
Worried about disappointing my partner	○	○	○	○	○	○	○
Unsure whether my partner is happy in our relationship	○	○	○	○	○	○	○
Partner is pulling away from me	○	○	○	○	○	○	○
Partner is bored with me	○	○	○	○	○	○	○
I care more about this relationship than my partner	○	○	○	○	○	○	○

Please indicate the extent to which you felt each of the following **TODAY.**

	1 (not at all)	2	3	4 (moderately)	5	6	7 (especially)
Irritated or annoyed with my partner	○	○	○	○	○	○	○
Angry with my partner	○	○	○	○	○	○	○

Please indicate the extent to which you felt each of the following **TODAY.**

	1 (not at all)	2	3	4 (moderately)	5	6	7 (especially)
My partner is selfish	○	○	○	○	○	○	○
My partner is too dependent on me	○	○	○	○	○	○	○
My partner is taking me for granted	○	○	○	○	○	○	○
My partner nags me too much	○	○	○	○	○	○	○

Please indicate the extent to which you felt each of the following **TODAY.**

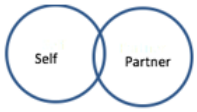
	1 (not at all)	2	3	4 (moderately)	5	6	7 (especially)
In love with my partner	○	○	○	○	○	○	○
Happy in my relationship	○	○	○	○	○	○	○

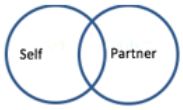
Overall, how would you describe your relationship today?

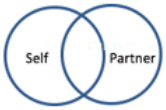
- ○ 1 (terrible)
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7 (terrific)

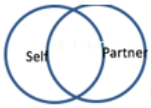
Please circle the picture which best describes how close or connected you feel to your partner today.

- ○ 

- ○ 

- ○ 

- ○ 

- ○ 

- ○ 

- ○ 

This question has to do with your attitudes about some of your partner's qualities. For each item below, you should rate your partner relative to other people their age by using the following scale:

1 - Bottom 5%
2 - Lower 10%
3 - Lower 20%
4 - Lower 30%
5 - Lower 50%
6 - Upper 50%
7 - Upper 30%
8 - Upper 20%
9 - Upper 10%
10 - Upper 5%

An example of the way the scale works is as follows: if one of the traits that follows were “height”, if your partner was just below average height you would mark “5’ for this question, whereas if your partner was taller than 80% (but not taller than 90%) of people their age, you would mark “8”, indicating that they are in the top 20% of this dimension. Note that you should rate your partner specifically against members of their same gender for items 4 and 5.

Intellectual ability	▼ 1 ... 10
Social skills/social competence	▼ 1 ... 10
Artistic and/or musical ability	▼ 1 ... 10
Athletic ability	▼ 1 ... 10
Physical attractiveness	▼ 1 ... 10

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