7-12-2023 2:00 PM

An Empirical Examination of the Dyadic Partner-Schema Model of Relationship Distress and Depression

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A thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree in Psychology

Abstract

Romantic relationship discord is prevalent in depression and has been repeatedly associated with poor prognosis for the disorder. Although a significant body of literature has examined the ways in which depressive self-schema structures (SSS) are implicated in depression, a paucity of research has investigated the role of partner-schema structures (PSS) in the disorder. The Dyadic Partner Schema Model (DPSM; Wilde & Dozois, 2019) was recently developed as a novel theoretical model of the mechanisms that maintain relationship distress in depression. This dissertation provided the first direct empirical examination of the DPSM by examining four main research questions: (1) how are SSS, PSS, and depression interrelated, (2) are PSS uniquely predictive of dysfunctional relationship dynamics above and beyond SSS and depression, (3) how stable is schema organization over time, and (4) how do SSS, PSS, depression, and dysfunctional relationship dynamics influence one another across time? In a sample of 370 community individuals recruited online via Amazon's Mechanical Turk (MTurk), schema structures (self and partner), relationship dysfunction (self-reported distress, attributions, and communication patterns), and depressive symptoms were assessed at baseline, 3 months, and 6 month follow up. Findings provided support for some, but not all, assumptions of the DPSM. In support of the model, cross-sectional analyses revealed that depressive symptoms were associated with a pervasively negative PSS, which were, in turn, associated with relationship distress, maladaptive relationship attributions, and dysfunctional communication behaviours. After controlling for depressive symptoms, PSS were uniquely associated with relationship distress and attributions, whereas both PSS and SSS were associated with dysfunctional communication behaviours. Consistent

with hypotheses, both PSS and SSS remained stable across 3- and 6-month follow-up periods. Unexpectedly, PSS were not predictive of (nor predicted by) changes in relationship and mood variables over time; however, changes in SSS were predicted by relationship variables over time. Some evidence emerged to suggest that SSS predict later changes in PSS; however, this finding should be interpreted cautiously as it was inconsistent across models. The implications of the findings for further development of the DPSM are discussed, and broader implications for the research literature and clinical applications to depression and relational discord addressed. Areas for future research are highlighted.

KEYWORDS: Depression, romantic relationships, relationship distress, partner-schema structures, self-schema structures, latent curve modeling, structured residuals

Summary for Lay Audience

Many individuals with depression experience problems in their romantic relationships. Moreover, these co-occurring relationship difficulties tend to worsen symptoms of depression. As such, it is especially important to understand factors that maintain relationship difficulties in depression. A recently proposed theory (the Dyadic Partner Schema Model; DPSM, Wilde & Dozois, 2019) suggests that depression is associated with highly negative mental representations of one's romantic partner, which subsequently contribute to unhelpful ways of thinking about and relating to those partners. This dissertation tested several hypotheses advanced by the DPSM in a sample of 370 individuals who completed a series of online measures at three time points (upon study entry, 3-months post entry, and 6-months post entry). The following outcomes were measured at each time point: mental representations of self and partner, ways of thinking, feeling, and relating to a romantic partner, and depressed mood. Data analyses revealed that depressive symptoms were associated with highly negative mental representations of a partner, and that these representations were associated with greater self-reports of relationship distress, unhelpful ways of thinking about a romantic partner, and dysfunctional communication behaviours between partners. Moreover, these negative representations were shown to persist across 3- and 6-month follow up periods, suggesting that they remain stable over time. Although mental representations of one's partner were expected to predict changes in thoughts, feelings, and behaviours towards a romantic partner over time – and vice versa – results did not support this hypothesis. Unexpectedly, however, changes in relationship variables over time were predictive of later changes in mental representations held for oneself. The results of the current study

offer novel findings to the scientific literature surrounding the mechanisms that link depression and relationship distress. In addition, the findings may help to inform clinicians treating individuals and couples who present with depression and relationship discord by highlighting the importance of targeting mental representations of partners in therapy. Finally, the results have important implications for society more broadly as they may help individuals to understand how thoughts, feelings, and behaviours towards a romantic partner may contribute to their own ongoing distress.

Acknowledgements

To the most wonderful supervisor, Dr. David Dozois. I can't thank you enough for your kindness, support, and mentorship throughout my graduate training. I am so very grateful for the opportunities you have given me and feel so fortunate to have had the privilege of working with you for so many years. It has truly been a pleasure. I will always cherish my time in the Breaking Sad Lab!

I would also like to express my appreciation for the support I received from my doctoral advisory committee members. Dr. Paul Tremblay, infinite thanks to you for your patience and guidance in helping me navigate new and complex statistical analyses. I could not have done it without your help! Many thanks also to Dr. Lorne Campbell for your expertise, assistance, and thoughtful feedback throughout this process. Finally, my sincerest gratitude to Dr. Rod Martin for his time and enthusiasm throughout the online programming of this study.

To my lab mates over the years – Jennifer, Lindsay, Dan, Katerina, Monica, Owen, Gaby, and Fei – thank you all for creating a fun and supportive group to embark on this journey with. Junie, you have truly been the best lab mate, friend, and support throughout the years. I am so fortunate to have had you there as my partner-in-crime every step of the way! Last but certainly not least, thank you to my friends and family. This one's for you, mom.

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An Empirical Examination of the Dyadic Partner-Schema Model of Relationship Distress and Depression

Relational stressors, such as interpersonal loss, rejection, and divorce, are among the strongest and most common predictors of the onset of a depressive episode (Sheets & Craighead, 2014). In fact, the association between romantic relationship distress and depression is so robust that relational discord is now considered a causal risk factor for the disorder (Whisman, 2021, Whisman & Gilmour, 2023). Unfortunately, romantic relationship distress frequently co-occurs with depression (Atkins et al., 2009; Goldfarb & Trudel, 2019) and has been shown to negatively impact prognosis and treatment outcomes (Addis & Jacobson 1996; Quilty et al., 2013; Renner et al., 2012; Whisman, 2001). Moreover, individuals with depression tend to relate to others in ways that create interpersonal distress and dysfunction, thereby eliciting further rejection and reduced social support (Hames et al., 2013; Hammen, 1991; Liu & Alloy, 2010; Rnic et al., in press; Starr et al., 2023). Given the problematic effects of relationship distress on depression - and vice versa - it is critical to understand factors that contribute to the deterioration of romantic relationships in the context of this debilitating disorder.

Interpersonal theories of depression have primarily focused on understanding the role of affect and behaviour in contributing to dysfunctional relationship dynamics that maintain or worsen depression (e.g., Beach et al., 1990; Beach et al., 2014; Coyne, 1976; Hammen, 1991; Joiner et al., 1999; Rnic et al., in press). Surprisingly, very little empirical focus has been given to understanding the role of cognition about a romantic partner in the disorder. Likewise, cognitive theories of depression have long implicated the role of self-related cognition in the disorder with little exploration of cognitive

processes and mental representations related to romantic partners. The paucity of research on cognition about close others in depression is noteworthy given the prevalence and consequences of interpersonal difficulties in this disorder. Considering this, researchers have called for an integration of cognitive and interpersonal theories of depression (e.g., Dobson et al., 2014; Halford, 2104; Gadassi & Rafaeli, 2015) to better understand relational difficulties in the disorder.

Considering this gap in the literature, this dissertation aimed to investigate the role of partner-focused cognition as a vulnerability to certain types of relational dysfunction that are often observed in depression. In particular, this dissertation used a recently proposed theoretical model, the Dyadic Partner-Schema Model of Relationship Distress and Depression (DPSM; Wilde & Dozois, 2019), to guide an investigation of the associations among low mood, relationship difficulties, and partner-directed cognition. The findings offer an original contribution to the literature by providing the first direct empirical examination of the DPSM and addressing gaps in our current understanding of the link between relationship distress and depression. In the sections that follow, a review of the DPSM and its assertions are provided, followed by an overview of the underlying theoretical foundations of the model. A more in-depth discussion of several core assumptions is then provided, along with a review of the existing theoretical and empirical support for each.

The dyadic partner schema model: A novel model of relationship distress and depression

The DPSM (Wilde & Dozois, 2019; Wilde et al., 2021) is a novel theoretical model that integrates cognitive, behavioural, and interpersonal mechanisms to better

understand depressotypic relationship dynamics. This framework emphasizes the role of *partner-schema structures* (PSS) in understanding relationship dysfunction in the disorder. PSS have been defined in the literature as "conceptualizations of one's romantic partner, derived from past experience, which organize and guide the processing of partner-related information" (Chatav & Whisman, 2009, p. 51). In essence, PSS are the mental representations that individuals hold of a romantic partner. These representations store partner-relevant information (e.g., views of their partner as reliable, caring, responsive; feelings of affection and love towards that partner, etc.) and, once activated, are used to guide the processing of incoming information about that partner.

The DPSM asserts that depression is associated with pervasively negative underlying PSS that contribute to the dysfunctional relational dynamics often observed in the disorder. Cognitive models of depression have long implicated the role of highly negative *self-schema structures* (SSS; or mental representations of self) in the disorder. The depressive self-schema typically includes a representation of self as pervasively negative, ineffective, and worthless (Beck, 2020; Dozois & Beck, 2008; 2023). Because research suggests that information about self and close others tends to be processed in a similar manner (Brown et al., 2009; Cheng et al., 2010; Kang et al., 2010; Kuiper & Rogers, 1979), the DPSM contends that partner-schemas are structured similarly to an individual's self-schema. As such, the model offers the novel assertion that individuals with depression hold similarly negative mental representations of romantic partners, and that these PSS are central contributors to dysfunctional ways of thinking about, and relating to, romantic partners. Although SSS and PSS are assumed to be robust and enduring mental representations that remain relatively stable across time, the DPSM also

proposes that they are further reinforced and consolidated by repeated experiences of dysfunctional relationship patterns. In this way, the model outlines a cyclically reinforcing dynamic in which PSS contribute to, and are reinforced by, dysfunctional thoughts about, and behaviours toward, romantic partners that maintain relational distress and depressed mood.

The main processes outlined in the DPSM are discussed in more detail in subsequent sections. As an overview for the reader, they are depicted visually in Figure 1 and can be summarized as follows: (H1) PSS contribute to dysfunctional cognitions and behaviours toward a romantic partner; (H2) depressotypic behaviors occur within a relational context; meaning that each partner's own cognitive and behavioural processes are influenced by those simultaneously occurring in the romantic partner; (H3) dysfunctional relationship dynamics influence mood and relationship quality both in the short term (i.e., during an interaction with a partner) and over longer periods of time; (H4) depression and relationship distress mutually reinforce one another; and, (H5) the dysfunctional mood and relationship processes outlined in this model further consolidate underlying schema structures.

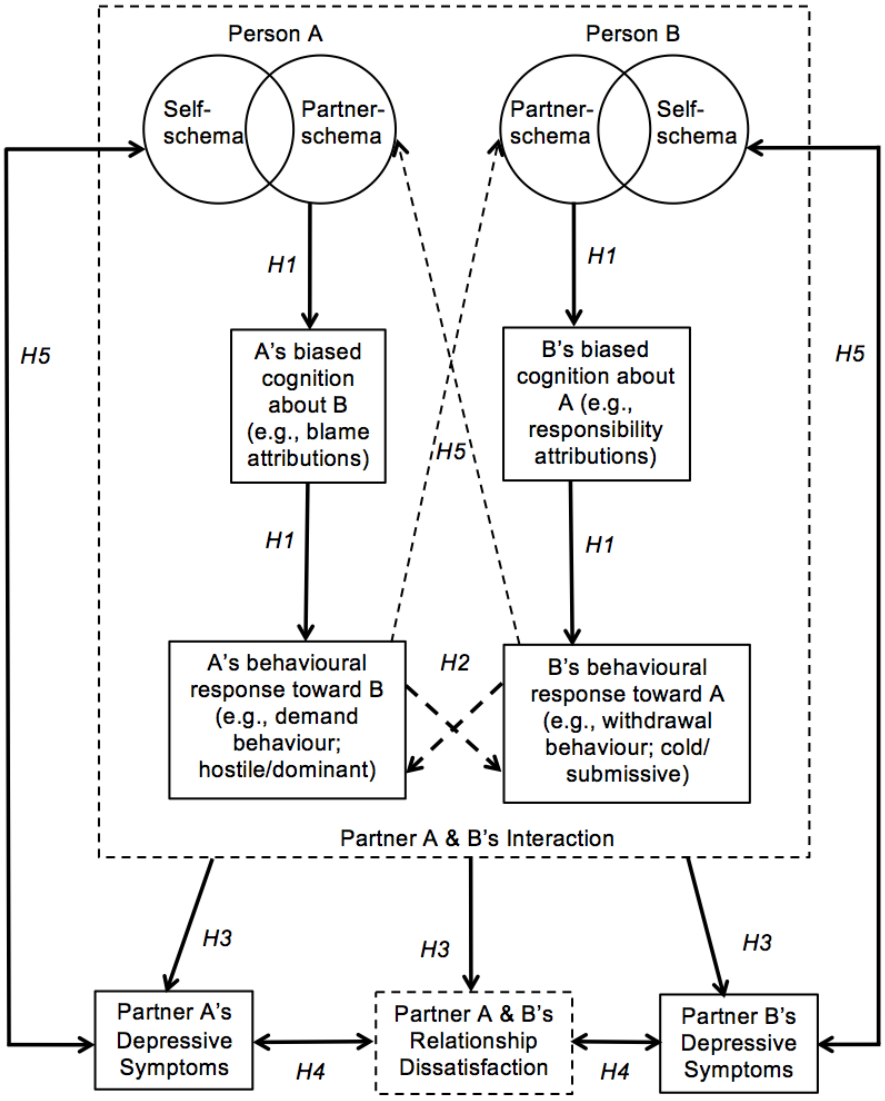


Figure 1. The Dyadic Partner Schema Model. A theoretical framework that depicts a cyclical pathway from partner-schema structures to depressive symptoms and relationship dissatisfaction. Dashed lines in the figure represent processes occurring at the dyadic level (e.g., variables affecting both individuals as a unit). Solid lines represent intraindividual processes occurring within one individual. From "A dyadic partner-schema model of relationship distress and depression: Conceptual integration of interpersonal theory and cognitive-behavioral models" by J. L. Wilde and D. J A. Dozois, 2019, *Clinical Psychology Review, 70,* p. 15, copyright 2019 by Elsevier.

The DPSM highlights the possibility that partner-related cognition is an understudied yet important cognitive risk factor for relational distress in depression. If research supports this notion, it may pose important implications for the current theoretical understanding of the association between relationship distress and depression, as well as clinical interventions aimed at treating co-occurring relational discord and depression. The model represents an important shift from traditional cognitive models of depression, which have heavily emphasized the role of self-related cognition in this disorder. Although the proposed processes of the DPSM are firmly rooted in well-established theoretical foundations, cross-sectional and longitudinal empirical tests of the associations among PSS, mood, relationship distress, and dysfunctional relationship dynamics are sparse.

Theoretical foundations of the DPSM

Cognitive Theory of Depression

The assertions of the DPSM are heavily rooted in cognitive theories of depression. Cognitive models of the disorder emphasize the role of maladaptive beliefs and negatively biased thought processes in depressive symptoms. Individuals with depression tend to perceive themselves, their future, and the world around them in a pervasively negative manner (Beck, 1967; Beck et al., 1979). That is, they possess views of the self as helpless, inadequate, and unlovable; the future as characterized by loss, failure, and hopelessness; and their personal world as overly critical, rejecting, and defeating. Beck (1987) referred to these negative beliefs about self, world, and future as the “negative cognitive triad.” Overall, the cognitive landscape of depression is one characterized by pervasive negativity.

The cognitive taxonomy. To better understand how cognitive biases operate in depression, cognition can be conceptualized at varying levels of accessibility, ranging from least to most consciously available (Beck & Haigh, 2014; Dozois & Beck, 2008; 2023; Dozois & Hayden, 2022; Dozois & Rnic, 2015; Ingram et al., 1998). At the least consciously accessible level are underlying *cognitive structures*, or deeply rooted mental representations that are created based on experience and stored in an individual's memory. For example, after a history of experiences successfully navigating various demands in school, work, and interpersonal relationships, an individual may come to develop an underlying mental representation of self as generally competent, capable, and resilient in the face of stress. This mental representation may reflect a highly organized cognitive representation or associative network of interconnected positive beliefs about self. These types of cognitive structures are viewed as largely inaccessible via conscious effort and instead act as templates that guide the processing of incoming information about an individual's ongoing experience. Essentially, they represent the lens through which an individual perceives the world. Of note, schemas are believed to remain dormant or latent until "activated" by internal or external cues; as such, it is only once a particular schema is activated that it exerts an influence on cognitive processing. These cognitive schema structures are of critical importance in the cognitive taxonomy because they are believed to dictate how cognition proceeds through subsequent levels in the taxonomy.

At the next level, somewhat more closely available to conscious awareness, are *cognitive processes*. These include elements such as memory retrieval, attention, and perception of environmental stimuli. Because they are guided by underlying schema

structures, cognitive processes tend to be biased in a manner that is consistent with schema-based expectations while "filtering out" schema-inconsistent information (Beck & Haigh, 2014; Dozois & Beck, 2008; 2023). For example, when the abovementioned individual encounters a challenging personal situation and is confronted with the need to cope, their underlying self-schema is activated and influences cognitive processing in a way that is consistent with its content. This individual may be more likely to recall memories of successful coping with difficult situations, and to pay attention to and perceive cues in the environment that facilitate coping, provide evidence of their own competency, and make them feel capable. They may also be less likely to recall past failures or pay attention to indications that their current coping efforts are ineffective because these cues are schema inconsistent.

Finally, at the most readily accessible level of cognition are the *cognitive products* that arise from the underlying cognitive structures and processes. These cognitive products manifest as the moment-to-moment contents of an individual's ongoing thoughts and stream of awareness (Beck & Haigh, 2014; Dozois & Beck, 2008; 2023). For example, the individual mentioned above is more likely to experience a stream of automatic thoughts that are consistent with their generally positive self-schema content (e.g., "Last time I experienced a similar challenge at work I was able to find a solution;" or "I know I can make it through this difficult situation because I am a pretty resilient person"). Clearly, although schema structures are largely inaccessible via conscious effort, they bear significant influence on the way an individual thinks about their ongoing experience with the environment.

The role of schema content and structure in cognition. It is important to note that schemas are defined in terms of both their *content* and *structure* (Dozois & Beck, 2008; 2023; Dozois & Rnic, 2015). Schema content refers to the specific information that is stored within a schema (e.g., the belief that oneself is loveable or unlovable). Schema structure refers to the way in which this content is organized in memory (e.g., as a highly consolidated cognitive network of interconnected information). Throughout this dissertation, the term schema structure is used to refer specifically to the degree of consolidation or interconnectedness among the content within the schema (Dozois & Beck, 2008).

Semantic network models (e.g., Bower, 1981) illustrate the importance of schema consolidation in cognition. According to these theories, schemas (such as self-schemas) are represented in memory as an interconnected network of concepts or associated characteristics (e.g., sad, rejected, failure), referred to as *nodes*. Nodes may contain information about a concept in various forms, such as mental images, associated affect, or semantic knowledge about that concept. Once a schema is triggered, this activation spreads through the network of interconnected nodes, making associated concepts more likely to come "online" and influence cognition. In this way, an individual's cognitive processes and products are directly influenced by the schema content or nodes that are activated at a given time (Clark et al., 1999; Ingram et al., 1988). Activation is believed to spread more efficiently through tightly consolidated networks of information, and less efficiently through less consolidated networks (e.g., Bower, 1981; Segal, 1988). This implies that the way in which schema nodes are associated with one another in the cognitive network dictates which nodes are most likely to become activated and thereby

exert their effects on cognitive processes and products. As a result, the architecture of an underlying schema structure and the degree to which its content is tightly or loosely consolidated (i.e., strongly or weakly associated) have significant implications for an individual's thoughts, feelings, and resultant behaviours (Beck, 1967; Beck et al., 1979).

Cognitive structures, processes, and products in depression. Individuals with depression tend to possess underlying SSS that are best described as highly consolidated networks of negative self-relevant information (Dozois, 2021; Dozois & Rnic, 2015). In depression, negative self-schemas are viewed as underlying cognitive vulnerabilities that remain stable and dormant over time until activated by relevant stressors (e.g., failure, loss, rejection; Beck at al., 1979). Once these latent depressive self-schemas are activated, they bias cognitive processing in a manner that is schema-consistent and thereby pervasively negative. Indeed, individuals with depression typically demonstrate greater attention and memory biases for negative self-relevant information compared to those without depression (e.g., cues of failure or rejection; Dalgleish & Watts, 1990). These information processing biases then contribute to a stream of automatic, overly negative thoughts about themselves and the world around them. For example, individuals with depression tend to make negatively biased interpretations or *attributions* about events around them (Gonzalo et al., 2012; Hu et al., 2015; Klein et al., 1976; Sweeney et al., 1986). This depressive *attributional style* is characterized by the tendency to attribute the causes of negative events to one's own internal, stable, and global qualities (e.g., "I caused this undesirable outcome because I am defective as a person"), while attributing positive events to specific and changing factors that are external to them (e.g., "this desirable outcome only happened because I was lucky, not because I deserved it"; Alloy

et al., 2006). As a result, individuals with depression may attribute failures to their own pervasive unworthiness and ineffectiveness, while attributing any success to chance or external circumstances. Perhaps unsurprisingly, this cascade of negatively biased cognition in depression only further contributes to depressed mood (Beck, 1967; Beck et al., 1979).

Schema structures are at the heart of cognitive theories of depression. Considering their profound impact on thinking, mood, and ultimately behaviour, it is striking that more empirical attention has not been directed to understanding the role of schema-structures held for close others in the disorder. Given the effects of underlying depressive self-schemas on information processing and cognitive products related to self, it is possible that pervasively negative schemas held for close others may operate in a parallel fashion to negatively bias cognition about significant others, including romantic partners.

Attachment Theory

Not unlike cognitive models, attachment theory (Bowlby, 1973) has long implicated the role of mental representations of self and close other in understanding relational processes and affect regulation. Although originally developed as a model of psychopathology in infants, attachment theory has become a leading framework for understanding the dynamics of adult romantic relationships (e.g., Hazan & Shaver, 1987; Mikulincer & Shaver, 2017; Pietromonaco & Beck, 2015). Bowlby (1979) asserted that individuals develop mental representations of self and close other (e.g., parent, caregiver, spouse), called *internal working models* (IWMs), based on their personal experience of reliably obtaining attuned and responsive support and comfort from attachment figures in times of distress. IWMs contain information about self (e.g., with respect to whether one

can effectively elicit care and is worthy of love and support) and other (e.g., whether others are warm, responsive, and caring or harsh, critical, and rejecting). These IWMs are believed to help dyad members "anticipate, interpret, and guide reciprocal interactions" (Bretherton & Munholland, 2016, p. 63). A history of interacting with unreliable, unresponsive, or poorly attuned attachment figures leads to the development of negative IWMs and *insecure attachment styles*. Attachment style is typically classified along two separate dimensions: anxiety (about rejection or abandonment) and avoidance (of emotional closeness or intimacy; Rowe et al., 2020). Individuals with low levels of attachment anxiety and avoidance are said to have a secure attachment style, whereas those with higher levels of anxiety and/or avoidance are described as insecurely attached (Rowe et al., 2020). Of note, individuals develop global, trait-like attachment styles as well as relationship-specific attachments to particular people (e.g., Dugan et al., 2022). As such, an individual may possess differing IWMs and degrees of attachment security across different relational contexts.

Researchers have noted the conceptual overlap between schemas and IWMs (e.g., Baldwin et al., 1993; Platts et al., 2002). Although some have used the terms interchangeably (see Platts et al., 2002) or have conceptualized schemas as the cognitive component of attachment IWMs (e.g., Baldwin et al., 1993), there are important distinctions between the way schemas and IWMs are typically defined (see Collins & Allard, 2001). A comparison of the two suggests that the IWMs arguably reflect more relationally-based scripts of others in response to self (and vice versa; Baldwin et al., 1993, Collins & Allard, 2001), whereas schemas refer to more distinct structures for self and other including content outside of relationship scripts (e.g., achievement domains). In

this way, self- and partner-schemas may be more distinct and separable from one another than the relationally-based IWMs of self and others. This distinction is important as it allows for more nuanced investigations of the relative contributions of self versus other representations to various mood and interpersonal outcomes. Furthermore, attachment theory has arguably placed greater emphasis on the content of IWMs and their observable effects on information processing, rather than their structure or organization, per se. Although attachment styles and IWMs have been measured in a variety of ways (e.g., self-report, interview measures, projective tests, behavioural measures, cognitive processing measures), less is known about their cognitive architecture specifically (Waters & Waters, 2006). In this way, the study of schema structure may provide a useful complement to the attachment literature. Research examining the associations between self-reported attachment and schema content demonstrates that the correlations between these constructs are typically in the moderate range (e.g., Evraire & Dozois, 2014; McLean et al., 2014), which supports the notion that these constructs are related, but not redundant. As such, the literatures on internal working models and schemas structures may be used to inform one another, but they are not entirely interchangeable.

Core assumptions of the DPSM: Existing theoretical and empirical support

Several assumptions of the DPSM stem from findings that are already well-established in the research literature (e.g., the robust bidirectional association between relationship distress and depressive symptoms) and are not discussed in further detail here (see Wilde & Dozois, 2019). Instead, the focus of the current paper is on the novel assertions of the DPSM that rest largely on indirect evidence or theoretical postulations. This dissertation seeks to highlight and address important gaps in the empirical literature

surrounding various processes outlined in the DPSM. Below is a review of several assumptions of the model that await further direct empirical examination, along with a brief discussion of the existing theoretical and empirical evidence for each.

Assumption 1: SSS and PSS are correlated but distinct cognitive constructs.

The DPSM assumes that self- and partner-schemas are similar in structure and share a significant degree of overlap in their cognitive architecture. This assumption is predicated on decades of research demonstrating that cognitive representations of self and significant others are inherently intertwined. For example, research has shown that, compared to non-close others, individuals process and store information about familiar and close others much like how they process and store information about self (e.g., Kang et al., 2010; Kuiper & Rogers, 1979; Mashek et al., 2003). That is, information about familiar others is encoded and recalled in a similar manner to information about self (Kuiper & Rogers, 1979); comparable neural mechanisms are involved in monitoring the actions of oneself and close others (Kang et al., 2010); and mental representations held for close others are similar to self in their degree of cognitive complexity (Brown et al., 2009).

Some researchers have suggested that cognition about self and close other is so interwoven that individuals may cognitively "confuse" the processing of information about self and other, to the point that they have difficulty distinguishing the two (Aron et al., 1992; Aron et al., 1991; Aron et al., 2004). For example, in a series of studies exploring the overlap between cognitive representations of self and close others, Mashek and colleagues (2003) had participants first rate a series of traits for self, close others (e.g., a partner or close friend), and familiar but less close others (e.g., a celebrity).

Participants were then presented with a surprise recognition task and asked to identify which person each trait was rated for. Results revealed that participants demonstrated significantly greater confusion (more source recognition errors) between traits rated for self and close other versus self and non-close other. That is, participants were more likely to mistake traits rated for self as having been rated for close other than for non-close others. Moreover, the authors controlled for participants' reported degrees of both familiarity and similarity with target others, suggesting that the observed "cognitive confusion" was a function of interpersonal closeness and not simply familiarity or similarity. As interpersonal closeness increases, the more self and other become merged into one overlapping cognitive category (see Aron & Tomlinson, 2019, for review).

Given the degree of overlap between self and other, the question of whether PSS can actually be distinguished from SSS is conceptually and empirically thought-provoking. A small number of empirical studies do suggest that self and partner representations are not *entirely* overlapping and that partners are able to maintain some degree of differentiation between self and other. In a sample of undergraduate students, for instance, Wilde and Dozois (2018) found moderate correlations (.4 - .5) between SSS and PSS organization. Similarly, two other studies examining the degree of cognitive complexity in mental representations of self and close others reported correlations ranging from r = .36 - .60 (Brown et al., 2009; Showers & Kevlyn, 1999). This implies that, although SSS and PSS are certainly related to one another, individuals do appear to demonstrate differences in the cognitive architecture of schemas held for self and a romantic partner. In line with the literature reviewed above, the DPSM asserts that SSS and PSS share a significant degree of cognitive overlap. However, the model proposes

that self and partner are not multicollinear and suggests most individuals maintain some degree of differentiation between self and other. As Wilde and Dozois (2018) is the only empirical study to examine the correlation between the degrees of self- and partner-schema consolidation, additional research is needed to determine whether the findings replicate across different samples.

The manner by which partner-representations become increasingly similar to self-representations has been investigated in the literature. Most studies suggest partner representations are largely shaped by self-representations (rather than vice versa), as individuals tend to project their own self-evaluations and ideals on to partners. For example, using a path analytic approach to estimate the direction of projected perceptions, Murray and colleagues (1996) concluded that "individuals' impressions of their partners were more a mirror of their self-images and ideals than a reflection of their partners' self-reported attributes" (p. 79). Not only does this projection of information about self onto partner occur at an explicit (more readily accessible to awareness) level of cognition, but it also occurs on implicit (less readily accessible to awareness) levels of cognitive processing (DeHart et al., 2011). In a longitudinal study following spouses over the first three years of marriage, McNulty and colleagues (2014) demonstrated that changes in implicitly measured self-evaluations were positively associated with changes in implicit partner-evaluations across time. As such, whereas the DPSM does not make assertions about the development of PSS or the manner through which they become similar to SSS, existing research suggests that they are likely a reflection of underlying SSS. In the case of an individual with depression, then, pervasively negative

depressotypic self-schemas content, processes, and structures may be projected onto romantic partners.

Assumption 2: Depression is associated with pervasively negative schema structures for both self and romantic partner.

The DPSM asserts that depressive symptoms are associated with a PSS similar to that of the self-schema in depression: a highly sophisticated network of tightly consolidated negative information and loosely dispersed positive information. This assertion stems from, and is indirectly supported by, three different lines of research that are outlined in brief below (the interested reader is directed to Wilde & Dozois, 2019, for a more detailed review). First, given that information about close others is cognitively represented in a manner similar to self (e.g., Aron et al., 1991; Brown et al., 2009; Mashek et al., 2003), it is reasonable to expect that pervasively negative self-schemas in depression will be mirrored in an individual's representation of a romantic partner. Second, related to Beck's notion of the negative cognitive triad, individuals with depression tend to have a globally negative view of the self, the future, and the world around them (Beck, 1967; Beck et al., 1979). Presumably, romantic partners are not impervious to the cognitive biases of individuals with the disorder and are therefore subject to the pervasively negative cognition that occurs in depression. Third, depression has consistently been associated with attachment insecurity (Bowlby, 1980; Ingram, 2003; Moran et al., 2008; Pine & Garber, 2023). This implies that individuals with the disorder may possess negative IWMs of self and close others, including romantic partners. Given the conceptual similarity between IWMs and schemas, it is possible that

depression is similarly associated with negative schema structures for an adult individual's most prominent attachment figure – their romantic partner.

Clearly, research from various bodies of literature provides a foundation of indirect support for the association between depression and PSS. Despite this, only one study to date has directly examined the association. In this study, Wilde and Dozois (2018) demonstrated that depressive symptoms were significantly associated with a PSS characterized by tightly connected negative information and loosely consolidated positive information. Although this preliminary support is promising, more research is needed to determine whether this association replicates, and to gain a better understanding of the potential direction of effects. Given that the proposed link between depression and PSS is a primary assumption of the DPSM, it is crucial to determine whether support for this association replicates beyond a single study. A better understanding of the mental representations held for close others in depression could improve the current theoretical understanding of the link between relationship distress and the disorder and inform potential prevention and intervention accordingly.

The unique contributions of self and partner-schemas

As outlined previously, there is strong evidence for the role of SSS as a cognitive vulnerability to depression (Dozois, 2021; Dozois & Beck, 2023; Dobson & Dozois, 2008; Dozois & Hayden, 2022). The DPSM asserts that, whereas SSS may be more robustly associated with depressive symptoms and most proximally predictive of depressed mood, PSS are uniquely predictive of various relationship difficulties that maintain depression. In other words, PSS may contribute to depressotypic relationship cognitions and relationship distress that exacerbate depressive symptoms. If this is indeed

the case, PSS and their effects on relationship functioning may represent an important indirect pathway to depression that has been largely overlooked due to the focus on self-focused cognition in the disorder.

Assumption 3: PSS are important contributors to dysfunctional relationship processes that are common in depression.

Much emphasis has been given to the role of self-schemas in producing depressotypic thoughts, affect, and behaviour. Unfortunately, far less is known about the consequences of mental representations for close others in the disorder. In general, the manner in which people think about their relationships is relatively under-investigated in the context of depression, which is problematic given the harmful effects of relationship dysfunction in the disorder. The DPSM makes the unique assertion that PSS are central predictors – above and beyond self-schemas – of dysfunctional relationship dynamics that are frequently experienced by individuals with depression. In particular, they are thought to contribute to poor relationship adjustment, unhelpful ways of thinking about a romantic partner, and dysfunctional interaction patterns. PSS are theorized to maintain depression *through* their effects on relationship dysfunction. In this way, PSS are hypothesized to represent an understudied but important element of the cognitive and interpersonal vulnerabilities to the disorder. The ways in which PSS are expected to contribute to various aspects of relationship functioning are elaborated upon below.

Schemas and relationship quality

Negative PSS are theorized to be important contributors to the relationship distress that commonly occurs in depression (Wilde & Dozois, 2019). The term relationship *distress* is used throughout to refer to couples experiencing lower levels of relationship

quality or *adjustment*. Relationship quality (used interchangeably with the term adjustment) is a multidimensional construct that includes elements of functioning at both an intrapersonal (e.g., an individual's own subjective experience of satisfaction with a relationship) and interpersonal (e.g., dyadic relationship processes such as interpersonal cohesion; e.g., Whisman & Gilmour, 2023) level.

The DPSM draws on spreading activation models of cognition to explain the proposed association between PSS and relationship distress. Recall that schemas represent cognitive networks of interconnected nodes that are activated and subsequently influence the contents of an individual's conscious experience. The DPSM asserts that, for individuals with PSS characterized by highly interconnected networks of negative information or loosely dispersed positive information, the activation of a partner-schema is likely to result in a rapid spreading of activation through nodes containing highly negatively partner-information. For example, an individual with depression may possess a PSS that contains beliefs about a partner as harsh, uncaring, or unresponsive, which are schematically associated with a felt sense of dissatisfaction with that partner. Initial activation of the partner-schema spreads through the cognitive network, thereby activating related constructs such as feelings of dissatisfaction, dislike, and other negative sentiments about the relationship. The effects of PSS on relationship distress may also occur through the schema's effects on dysfunctional ways of thinking about, and responding to, a romantic partner. That is, the activation of PSS may also lead to negatively biased cognitive processes and products related to a partner (e.g., conscious thoughts such as "my partner does not care about me") and conflictual ways of interacting that ultimately leave partners feeling mutually unsatisfied.

Existing research supports the notion that cognitive structures and processes occurring outside of conscious awareness are particularly fruitful predictors of relationship quality (Faure et al., 2020). For example, McNulty and colleagues (2013) demonstrated that implicit attitudes about a partner, but not explicit attitudes, predicted changes in marital satisfaction at 6-month follow ups over the course of four years. Similarly, negative implicit attitudes have been associated with more negative daily relationship evaluations in a diary study for partners in longer-term romantic relationships (Turner & McNulty, 2020). With respect to schema organization specifically, the way that positive and negative information about a romantic partner is cognitively organized has been associated with self-reported satisfaction (Chatav & Whisman, 2009; Whisman & Delinsky, 2002; Wilde & Dozois, 2018), quality (Showers & Kevlyn, 1999; Wilde & Dozois, 2018), likelihood of remaining with a current relationship partner (Reifman & Crohan, 1993) and felt affection towards a partner (Showers & Kevlyn, 1999). Most recently, Wilde and Dozois (2018) found that PSS characterized by highly consolidated networks of negative information and loosely organized positive information were associated with reduced relationship quality and satisfaction.

The DPSM proposes that PSS are unique predictors of relationship distress, above and beyond schema structures held for the self. Given that individuals with low self-esteem tend to disparage their relationships, underestimate relationship quality, and endorse less satisfaction in their relationships (e.g., DeHart et al., 2004; Murray et al., 1996; Tackett et al., 2013), it is possible that SSS predict some variance in relationship quality. Interestingly, although Wilde & Dozois (2018) found that SSS were significantly

(albeit weakly) correlated with dyadic adjustment and satisfaction, SSS did not significantly predict these outcomes above and beyond the effects of romantic partner-schemas. In other words, PSS were *uniquely* predictive of relationship satisfaction and quality over and above their shared associations with self-schemas, but not vice versa. These findings support the notion that PSS may represent a unique pathway to relationship distress in the disorder that cannot be accounted for by SSS. Given that only one study to date has examined the association between relationship distress and degree of PSS consolidation and done so while controlling for the effects of SSS, more research is needed to determine whether the specificity of this association replicates. Determining the generalizability of these findings to community (and eventually clinical) samples is warranted, given that the association has only been examined in an undergraduate sample.

Schemas and relationship cognitions (cognitive products)

PSS are theorized to be particularly potent predictors of more readily accessible cognitions about a romantic partner that maintain relationship distress in depression (Wilde & Dozois, 2019). One specific type of cognitive product that has received empirical attention for its association with depression is the tendency to engage in distress-maintaining relationship attributions. Not unlike the depressotypic attributional style described previously, individuals with depression tend to attribute the cause of a partner's negative behaviour as having a stable and global negative influence on many aspects of the relationship (referred to as *causal* attributions; Fincham & Bradbury, 1992). Depression is also associated with the tendency to attribute more negative intentions and motivations to a partner's behaviour, and to believe a partner should be

blamed for undesirable actions (referred to as *responsibility* attributions; Fincham & Bradbury, 1992). These types of attributions about a partner have been associated with both relationship distress (e.g., Ellison et al., 2016) and depressive symptoms (Heene et al., 2005; 2007). Notably, there is evidence to suggest that this type of attributional style may be unique to depression. For example, Hickey and colleagues (2005) reported that levels of causal and responsibility attributions were significantly higher in couples who had a partner with clinical depression than in healthy couples or dyads with a partner with an anxiety disorder.

Due to their effects on cognitive processes and products, negative PSS may contribute to the distress-maintaining relationship attributions that are observed in depression. In accordance with cognitive theory, the activation of pervasively negative underlying PSS may lead an individual to attend to, perceive, recall, and interpret incoming information in a way that is schema-consistent and effectively filter out schema-inconsistent information. For example, the activation of a highly organized negative PSS may lead an individual to subconsciously attend to rejection-related cues (such as a partner's closed off body language or angry facial expressions), recall previous instances of rejection, and over-perceive a partner's negative affect, which subsequently result in automatically available cognitions such as "they never listen to what I say; they don't care about me." In this way, PSS are believed to influence an individual's automatic thoughts (cognitive products) through their effects on various cognitive processes.

Despite the strong theoretical impetus for the role of PSS in distress-maintaining relationship attributions, only three studies to date have investigated the association

between schemas and attributions about a romantic partner. Results from these studies support the notion that negative PSS are associated with the tendency to engage in distress-maintaining attributions about a partner's negative behaviour (Chatav & Whisman, 2009; Showers & Kevlyn, 1999; Wilde & Dozois, 2018). Moreover, emerging evidence from one study also supports the DPSM's notion that PSS may be more useful predictors of relationship cognitions than SSS. This assertion represents an important distinction from traditional cognitive models of the disorder, which typically implicate the role of underlying self-schemas in contributing to negatively biased thinking styles in depression. For example, Wilde & Dozois (2018) demonstrated that SSS were not significantly associated with causal or responsibility attributions made about a partner's negative behaviour, and that PSS predicted these attributions while controlling for their shared variance with SSS. These findings suggest that partner-related cognition and PSS may be particularly important when understanding the interpersonal mechanisms implicated of depression. Indeed, researchers have suggested that these distress-maintaining relationship attributions are not simply a subset of the globally negative attributional style found in depression and may be more relevant than self-oriented attributions for understanding the association between depression and relationship distress (Schnaider et al., 2013). As only one study has examined the association between attributions and degree of schema *consolidation* in particular (Wilde & Dozois, 2018), further research is needed to determine whether the association between PSS and attributions replicates and demonstrates specificity over and above SSS.

Schemas and relationship behaviours

Individuals with depression tend to behave in ways that elicit negative responses from those around them (e.g., Coyne, 1976; Hammen, 1991; Rnic et al., in press; Santee et al., in press). A particularly deleterious interactional pattern that is frequently observed in couples with depression is referred to in the literature as the *demand-withdraw* cycle, wherein one partner demands, nags, or criticizes while the other withdraws or passively avoids (Christensen, 1987). This type of communication is strongly associated with depression (e.g., see Heene et al., 2007; Holley et al., 2018) and relationship distress (Heavey et al., 1995). Although the demand-withdraw phenomenon has been widely studied, much focus has been given to understanding the interpersonal, behavioural, and affective mechanisms of this pattern (Baucom et al., 2015). Surprisingly little attention has been dedicated to understanding the possible cognitive origins of this relational dynamic.

The DPSM suggests that dysfunctional interpersonal behaviours, such as the demand-withdraw pattern, are influenced by underlying schema structures. Social cognitive researchers have long suggested that individuals develop sophisticated relational representations containing "if-then" contingencies that essentially act as behavioural scripts for interpersonal interactions (e.g., "if I do X, then the other person will do Y"; e.g., Baldwin, 1992; 1995). Similarly, the attachment system is widely conceptualized as a *behavioural* response system (Bowlby, 1982; Main, 1990) – such that, in times of threat, internal working models of self and other are activated to guide behavioural responses to cope with threat and manage distress. In accordance with this, the DPSM suggests that PSS may influence an individual's behavioural responses towards a romantic partner, likely through their effects on conscious cognition. For

example, the model purports that the activation of a negative underlying PSS results in negatively biased cognitive products (e.g., attributions) about a partner, which subsequently lead to dysfunctional behaviour patterns towards them. Research supports the notion that attributions may influence behaviour; for example, distress-maintaining causal and responsibility attributions about a partner's behaviour have been associated with higher levels of expressed criticism towards that partner (Peterson & Smith, 2011).

Only one study to date has examined the association between PSS and relationship behaviours. Campbell and colleagues (2008) demonstrated that the way information about a romantic partner was cognitively organized predicted partners' use of positive and negative behavioural conflict resolution strategies during an in-lab discussion task. In this study, schema structure was operationalized in terms of the degree of *compartmentalization* versus *integration* between positive and negative information (Showers, 1992). Compartmentalized structures refer to those in which positive and negative knowledge about a partner form separate structures held for certain partner-aspects (e.g., "my partner is an excellent parent [pervasively positive partner-aspect] but is bad and irresponsible with managing our finances [pervasively negative partner-aspect]"). This can be contrasted against integrated structures, in which both positive and negative beliefs about a partner are held within the same cognitive structure for a given partner-aspect (e.g., "my partner has both strengths and weaknesses as a parent; they are good at providing warmth and support to our child and they struggle at times with setting limits"). The activation of a compartmentalized structure containing only negative information about a partner is thought to result in a flooding of activation of negative thoughts, beliefs, attitudes, and feelings towards a partner; whereas, the combination of

positive and negative information held within integrated structures offer a "buffer" against pervasively negative partner views by providing greater accessibility to positive beliefs about a partner's traits and characteristics (Showers & Kevlyn, 1999). Campbell and colleagues (2008) demonstrated that the presence of integrative versus compartmentalized PSS were predictive of objective behavioural indicators of relationship quality (e.g., positive conflict resolution strategies), as measured during couples' interactions in a videotaped conflict resolution task. In general, integrative structures were shown to be positively associated with relationship adjustment in longer-term couples. Interestingly, compartmentalized structures were associated with positive outcomes for women when the structures contained primarily positive information, and for males in newer relationships (regardless of the content within the structures). The authors suggested that "conflict may activate the positive and negative knowledge that people have of their spouses, and this activation, in combination with other factors (i.e., length of relationship, content of partner knowledge), may guide spouses' interpersonal behaviour in such contexts over the life of their relationship" (Campbell et al., p. 737).

As investigations of the association between schema structures and behaviour are limited, indirect evidence from studies examining schema content and attachment IWMs is relevant here. Experimental procedures designed to implicitly prime or activate underlying attachment representations have illustrated the effects of attachment IWMs on interpersonal behaviour (Clear & Zimmer-Gembeck, 2017; Hall et al., 2012; Pierce & Lydon, 1998; Rowe et al., 2020). A recent meta-analysis reported an effect size of d = .44 of implicit attachment security primes on various behavioural measures (including caregiving, interpersonal problem-solving, support seeking, antisocial behaviour; Gillath

et al., 2022), suggesting that mental representations of self and close others do impact behavioural responses. In the context of depression specifically, Evraire and colleagues (2014) found that, following an attachment threat prime, attachment insecurity was significantly predictive of two common dysfunctional interpersonal behaviours in depression: excessive reassurance seeing (ERS) and negative feedback seeking (NFS). Similarly, in a diary study, Evraire and Dozois (2014) demonstrated that core beliefs about fear of abandonment moderated the association between depression and ERS behaviour over a 6-week period, suggesting that schema content interacted with depressive symptoms to influence interpersonal behaviour. Taken together, these studies indicate that the activation of underlying attachment-based mental representations and related schema *content* has important implications for depressotypic interpersonal behaviour. However, more research is clearly needed to examine the effects of schema *structure* and consolidation on partners' behaviours in relationships.

Of note, the studies reviewed above from the attachment literature do not allow for the disentanglement of the relative effects of self and partner representations on behaviours. Given that attachment priming likely activates both IWMs of self and other (Gillath & Karantzas, 2019), this could suggest that both SSS and PSS are predictive of behavioural interactions. Further investigation is needed to examine the association between dysfunctional behaviours, such as the demand/withdraw pattern, and underlying schema structures. For example, if partner A holds a pervasively negative PSS, which contributes to frequent evaluations of partner B as withdrawn, emotionally absent, and avoidant, partner A may be more inclined to ramp up efforts to engage their partner and become increasingly demanding in attempts to get their needs met (regardless of whether

partner B is objectively withdrawn or avoidant). As the DPSM asserts that PSS may be important and unique predictors of dysfunctional relationship patterns, research allowing for the separation of these effects is important. No studies to date have examined the relative contributions of self- versus partner-schemas to dysfunctional relationship behaviours; as such, research is needed to shed light on these mechanisms. A comprehensive understanding of the cognitive underpinnings of behavioural patterns that erode relationship well-being, such as the demand-withdraw pattern, is germane for guiding the prevention and intervention of these dynamics.

Assumption 4: Schema structures remain *relatively* stable across time

By definition, schemas are "relatively enduring internal structures of stored generic or prototypical features of stimuli, ideas, or experience" (Clark et al., 1999, p.79). They are assumed to operate as stable, trait-like factors that are largely resistant to change. This is, in part, because they bias cognition such that incoming information "fits with" or confirms pre-existing knowledge structures and beliefs. In line with this, Seeds & Dozois (2010) examined the stability of SSS over a one-year period and reported moderate to high stability coefficients (ranging from .60-.73). Of note, these coefficients are slightly smaller in magnitude than documented test-retest correlations for personality traits that are widely accepted to be stable across time. For example, the meta-analytic test-retest correlation for neuroticism in adulthood is r = .83 (Fraley & Roberts, 2005), suggesting that schemas are indeed relatively stable, but to a lesser degree than basic inherited personality traits.

Due to their ongoing stability and resistance to change, schema structures may be particularly important cognitive vulnerabilities to consider. For example, research

suggests that although negative cognitive processes and products tend to ameliorate with improvement of depressed mood, cognitive structures appear to remain intact (e.g., Dozois & Dobson, 2001a). That is, without direct clinical intervention, the underlying SSS – or way that information about self is cognitively organized into an associative network – remains stable across time even when depressive symptoms remit and biased information processing and thinking styles dissipate (Dozois & Dobson, 2001a; Dozois, 2007). This is particularly problematic because it suggests depressive SSS remain dormant following remission of a depressive episode, thereby leaving an individual vulnerable to recurrence when confronted with relevant stressors that may re-activate underlying depressive SSS (Scher et al., 2005).

Given the proposed similarities between SSS and PSS, the DPSM asserts that PSS maintain a comparable degree of stability across time. There is currently a lack of research examining the stability of PSS longitudinally, yet the question of whether PSS represent stable and enduring cognitive vulnerabilities is important. Just as depressive SSS may leave an individual vulnerable to depression, it is possible that negative PSS confer vulnerability to relationship distress and discord over time. If highly organized negative PSS are unlikely to change on their own, they may continually serve to solidify and reinforce dynamics that erode relationship well-being, and ultimately serve to maintain depression over time. It is possible that, the more these stable schemas exert a negative influence on relationship dynamics, the more these dysfunctional patterns may become engrained, automatic, and difficult to change.

The small number of studies examining PSS have only reported cross-sectional assessments of schema structure. Considering this, the decades of research supporting the

stability of attachment styles across time (Booth-LaForce & Roisman, 2021) may be referenced as indirect support for the stability of significant-other representations. In a meta-analysis of 127 studies on attachment stability from infancy to adulthood, Pinquart and colleagues (2013) reported a moderate degree of stability overall (r = .39) but indicated that this degree of stability varied based on several factors (including length of assessment intervals; such that stability coefficients were lower over longer intervals of time). With respect to the stability of romantic attachment specifically, research supports the notion that attachment representations generally remain stable over time. For example, in two rigorous longitudinal studies, Fraley and colleagues (2011) assessed romantic attachment daily over a one-month period and weekly over a one-year period. Results suggested that attachment reflects a stable, trait-like factor that demonstrates a pattern of stability similar to that observed for basic personality traits (e.g., neuroticism and agreeableness). Of note, much of the research examining attachment stability over time has looked at global attachment style rather than the cognitive architecture of internal working models held for a specific individual. Given that the stability of schema structures is a core underlying assumption of the DPSM, longitudinal examinations of partner-specific PSS are germane.

Assumption 5: Underlying schema structures are reinforced by depressotypic mood and relationship processes over time.

Despite the *overall* stability of schema structures, they are not entirely resistant to change. This notion is supported by the fact that the stability coefficients reported previously suggest moderate to high degrees of stability rather than *very* strong or near perfect (e.g., Seeds & Dozois, 2010). Cognitive and attachment theorists have long

maintained that schematic mental representations are subject to revision in the face of incoming information about one's ongoing experiences with their environment (a process referred to as *accommodation*; Bowlby, 1980; Piaget, 1954). For example, depressive self-schemas have been shown to change significantly following cognitive behavioural therapy focused on restructuring core beliefs and thinking styles (Dozois et al., 2009; 2014; Quilty et al., 2014; Quigley et al., 2019). Major life events, such as relationship dissolution and the transition to parenthood, have also been shown to result in changes to underlying relational schemas and attachment styles (e.g., Brunson et al., 2019; Simpson et al., 2003). Similarly, small scale relational changes occurring on a day-to-day basis (such as increase or decrease in a partner's supportive behaviours) can lead to gradual shifts in attachment IMWs (Rholes et al., 2021).

In keeping with the cognitive and attachment literatures, the DPSM maintains that, whereas schemas remain relatively stable, they gradually become consolidated over time as a result of ongoing experiences with romantic partners. Existing negative schemas may be further reinforced by the relationship distress, low mood, distressing relationship attributions, and dysfunctional interaction patterns they are hypothesized to create (Wilde & Dozois, 2019; Wilde et al., 2021). To illustrate, repeated interactions with a partner that leave an individual feeling rejected, unloved, or unsupported are expected to gradually consolidate associative network connections between negative information within self and partner-schemas. It is possible that they may also result in weaker associative connections among positive schema content. To date, no research has directly examined how mood and relationship processes impact the structure and organization of schema content held for oneself and a close other. As such, an empirical

examination of the reciprocal influences between these variables over time is needed. If SSS and PSS do operate in a cyclically reinforcing manner, they may represent especially pernicious cognitive vulnerability factors. Researchers have theorized that individuals with a history of depression are at greater risk for depressive recurrence the more that negative SSS become consolidated (Scher et al. 2005). In a parallel fashion, it is possible that partners may become increasingly vulnerable to relationship dysfunction as negative PSS become more engrained. Therefore, understanding whether dysfunctional relationship dynamics contribute to the reinforcement of underlying schema structures held for self and close other is critical.

The current study: objectives and hypotheses

The overall aim of the current study was to offer a direct empirical examination of several assumptions and processes outlined in the DPSM (Wilde & Dozois, 2019; Wilde et al., 2021). The specific hypotheses that were tested are outlined below, in the context of four primary research objectives.

Objective 1: How are SSS, PSS, and depression interrelated?

The first objective was to examine whether the associations between SSS, PSS, and depressive symptoms reported by Wilde & Dozois (2018) would replicate in a community sample. In particular, the current study aimed to examine the significance and magnitude of the association between SSS and PSS to test the DPSM's assertion that they represent overlapping, yet distinct, cognitive constructs. In line with the previous findings and model tenets, the following hypothesis was tested:

H_1: PSS are similar to, but distinct from, SSS. Specifically, positive and negative PSS are expected to be significantly moderately correlated (r = .4-.7) with positive and negative SSS, respectively.

Despite strong theoretical support (see Wilde & Dozois, 2019, for review), only one study to date (Wilde & Dozois, 2018) has examined the association between PSS and depressive symptoms. As this assertion is central to the DPSM, the current study sought to determine whether the association reported by Wilde & Dozois (2018) replicated in a community sample and tested the following hypothesis:

H_2: Depressive symptoms are expected to be associated with a PSS characterized by tightly interconnected negative information and loosely dispersed positive information.

Objective 2: Are PSS uniquely predictive of relationship distress, relationship attributions, and dysfunctional relationship behaviour (over and above self-schemas and depressive symptoms)?

The second objective was to examine whether PSS uniquely predicted depressotypic relationship processes, above and beyond the effects of self-schemas and depressive symptoms. The DPSM asserts that although pervasively negative SSS confer vulnerability to low mood and depressogenic cognition related to the self, PSS are an understudied and important contributor to dysfunctional relationship dynamics in the disorder. If PSS represent a unique pathway to relational difficulties in the disorder, they should predict relationship dysfunction even after controlling for shared associations with SSS and low mood. Although a handful of studies have examined links between PSS and relationship outcomes, several limitations should be noted. First, many of these studies

have examined the role of partner-schema *content* or *cognitive processes* rather than the *structure* of PSS per se (e.g., Chatav & Whisman, 2009; McNulty et al., 2013; Whisman & Delinsky, 2002). Second, most studies have neglected to control for SSS, thereby precluding the ability to discern whether PSS uniquely predict variables of interest above and beyond their shared variance with SSS. This is problematic, given the degree of cognitive overlap between self and close other representations. Only one study to date has examined the unique effects of PSS on relationship distress and attributions (Wilde & Dozois, 2018); however, research is needed to examine whether these findings replicate in a community sample and extend to behavioural outcomes. To address these limitations of the existing research, the current study tested the following hypothesis:

H_3: PSS are uniquely associated with dysfunctional relationship processes that are common in depression. Specifically, PSS characterized by highly consolidated negative information or loosely dispersed positive information are expected to be associated with poorer relationship quality, distress-maintaining attributions about a partner, and greater dysfunctional interaction behaviours while controlling for SSS and symptoms of depression.

Objective 3: How stable is schema organization over time?

The third objective was to examine the degree of stability of SSS and PSS longitudinally. The DPSM assumes that self and partner-schemas represent relatively stable, enduring cognitive representations. Although existing studies have examined the temporal stability of self-schemas (e.g., Seeds & Dozois, 2010) and self-reported attachment orientations (e.g., Fraley et al., 2011), none have examined the stability of PSS. As such, the current study offered the first examination of PSS and its degree of

stability across 3 and 6 month follow up periods. This study also examined SSS stability and extended existing research (e.g., Seeds & Dozois, 2010) via the use of Latent Curve Modeling as a more statistically robust analysis of schema change trajectories over time. In accordance with the DPSM, the current study tested the following hypothesis:

H_4: SSS and PSS remain relatively stable across time. That is, stability coefficients are expected to be in the higher end of the moderate range (i.e., $r = .7$) and no significant changes in structure are expected to occur over the 3- and 6-month period.

Objective 4: Are schema structures predictive of, and reinforced by, dysfunctional mood and relationship dynamics across time? Do SSS and PSS influence one another over time?

The final objective was to examine the reciprocal dynamics between schema structures, mood, and relationship outcomes across time. The DPSM claims that although schema structures are important contributors to cognitive, affective, and interpersonal behaviour, they are also reinforced and consolidated by these processes over time (Wilde & Dozois, 2019; Wilde et al., 2021). In other words, the association between schema structures and mood/relationship outcomes is likely complex and bidirectional. No research to date has examined whether mood and relationship variables contribute to schema consolidation across time. Longitudinal research is necessary to examine whether these variables are associated across time, and if so, to elucidate the direction of effects. Thus, the current study offered an important and novel contribution to the literature, given that all but one of the past studies examining the association between PSS and relationship processes have been cross sectional (Campbell et al., 2008; Chatav & Whisman, 2009; Showers & Kevlyn, 1999; Whisman & Delinsky, 2002; Wilde &

Dozois, 2018) and thereby preclude any strong determinations about direction of effects. Showers and Zeigler-Hill (2004) reported that the way information about a partner is cognitively organized was associated with self-reported relationship quality and likelihood of relationship ending at one-year follow up; however, this study did not allow for an examination of possible bidirectional effects.

To provide the most sensitive and robust examination of the relationships among these variables across time, the current study employed state-of-the-art statistical analyses: Latent Curve Modeling with Structured Residuals (LCM-SR; Curran et al. 2014). It is important to note that schema structures are purported to be *moderately* stable across time, meaning that, although significant restructuring of SSS and PSS is not expected to be observed over time, there is still room for some variation. In other words, even though these structures represent trait-like cognitive representations, the extent to which they *do* change over time was expected to be predicted by changes in mood or relationship variables. The LCM-SR analyses used in this study allowed for the disentanglement of between and within person effects to answer the following question: are changes in an individual's schema structure at one time point predictive of changes in their self-reported mood and relationship dynamics at a later time point (and vice versa)? Stemming from this, the current study sought to test the following hypothesis:

H_5: Schema structures contribute to dysfunctional mood and relationship dynamics that subsequently serve to reinforce underlying SSS and PSS over time. In other words, bidirectional associations between schema structures and outcome variables of interest are predicted.

It is important to note that the DPSM asserts that SSS and PSS are differentially predictive of certain outcomes. Recall that SSS are theorized to be more strongly associated with depressed mood, whereas PSS are more strongly associated with depressotypic relationship processes. Based on the DPSM's assertions, when examining the relative effects of SSS and PSS, the following predictions were tested:

> ***H_{5a}:*** SSS are significantly bidirectionally associated with depressive symptoms across time. Specifically, highly consolidated negative and loosely dispersed positive information about self will be associated with greater depressive symptoms. In contrast, the association between PSS and depression is not expected to emerge as significant above and beyond the effects of SSS.

In line with findings from previous cross-sectional research (Wilde & Dozois, 2018) demonstrating the unique associations between PSS, relationship adjustment, and attributions:

> ***H_{5b}:*** PSS are bidirectionally associated with relationship distress (lower levels of adjustment), whereas SSS are not. Highly consolidated negative and loosely dispersed positive information about a partner will be associated with lower dyadic adjustment.
>
> ***H_{5c}:*** PSS are bidirectionally associated with relationship attributions about a romantic partner, whereas SSS are not. That is, highly consolidated negative and loosely dispersed positive information about a partner will be associated with greater dysfunctional relationship attributions.

Given the empirical support for the role of relational scripts about both self and other in guiding behaviour (e.g., Baldwin, 1992; Gillath et al., 2022):

> ***H_{5d}:*** Both SSS and PSS are bidirectionally associated with dysfunctional relationship behaviours. In particular, highly consolidated negative and loosely dispersed positive information about self and partner will be associated with greater dysfunctional relationship behaviours.

In addition, although not a direct assertion of the DPSM, the current analyses afford the opportunity to examine the cross-schema effects of SSS and PSS on one another over time. In line with past research indicating that PSS emerge largely as a projection of one's self-evaluations (Murray et al., 1996; McNulty et al., 2014) rather than vice versa, the current study tested the following final hypothesis:

> ***H_{5e}:*** Changes in SSS predict changes in PSS across time. Specifically, increased consolidation of SSS will be positively associated with increased consolidation of PSS.

For the interested reader, *a priori* hypothesized statistical models are presented in Appendix A.

Methods

Participants

Participants were recruited via Amazon's Mechanical Turk (MTurk) Cloud Research crowdsourcing platform. To complete the study Human Intelligence Task (HIT) participants were required to be registered "workers," at least 18 years of age or older, residents of Canada or the United States, and fluent in English. All participants were required to be in a romantic relationship of at least 3 months duration at the time of study

entry. To avoid recruiting inattentive or bot workers from MTurk, participants must have demonstrated a HIT approval rate above 90%, completed a reCAPTCHA image on the survey-hosting platform, and correctly responded to at least 4 out of 6 attention checks embedded in the survey. Based on these criteria, a sample of 370 participants was recruited at Time 1[1]. The average age of participants was 38.70 (*SD* = 10.49), and the average relationship length was 10.60 years (*SD* = 9.27). Most participants were married (54.3%) and the majority identified as heterosexual (89.7%). The ethnic makeup of the sample was predominantly Caucasian (75.9%). Of the sample, 50.8% identified as male; 15.1% reported having received therapy in their lifetime, and 14.6% reported having received medication for a mental health concern in their lifetime. Of the 370 participants who completed the study at Time 1, 212 completed the study at Time 2 and 152 completed Time 3 (see Appendix B for a detailed breakdown of inclusion and exclusion of participants based on attention check criteria). Demographic characteristics of participants included in the sample at each time point are presented in Table 1.

[1] A total number of 614 MTurk workers completed the HIT at Time 1; however, data from 244 participants was not used because it did not meet *a priori* attention check inclusion criteria.

Table 1

Sample Demographic Characteristics

	Time 1 N = 370	Time 2 N = 212	Time 3 N = 152
Age in years *M (SD, range)*	38.70 *(10.49, 22-69)*	40.01 *(10.84, 22-69)*	41.20 *(10.35, 23-69)*
Education in years *M (SD, range)*	15.30 *(1.88, 12-22)*	15.17 *(1.92, 12-22)*	15.14 *(2.01, 12-22)*
Relationship length in years *M (SD, range)*	10.60 *(9.27, 0.5-46.8)*	11.80 *(9.84, 0.5-46.75)*	12.43 *(9.89, 0.5-43.5)*
Gender Identity (%)			
Male	50.8	47.6	46.1
Female	48.4	51.4	52.6
Other/Prefer not to disclose	0.8	0.9	1.3
Ethnicity (%)			
Caucasian	75.9	75.5	74.3
Black	8.4	7.5	8.6
Hispanic & Latin American	2.7	2.4	2.6
Asian & South Asian	4.9	5.7	6.6
Multi-ethnic	6.8	8.5	7.9
Unknown	1.4	0.5	0
Past Psychotherapy (%)	15.1	16.5	19.1
Past Psychotropic Medication (%)	14.6	14.6	16.4
Sexual Orientation (%)			
Heterosexual	89.7	88.7	88.2
Homosexual	3.0	3.3	2.0
Bisexual	5.9	6.1	7.2
Queer	0.5	0.9	1.3
Other/Prefer not to disclose	0.6	0.5	0.7
Relationship Status (%)			
Casually dating	1.9	0.5	0
Open relationship	1.1	0.5	0
Exclusively dating	25.7	26.4	25.7
Engaged	5.4	4.2	4.6
Common-law	11.6	11.3	10.5
Married	54.3	57.1	59.2

Table 1 continued

Country of Residence (%)			
Canada	2.2	2.4	1.3
US	97.8	97.6	97.6

Materials

Demographics Questionnaire. A demographics questionnaire was administered at baseline to assess relevant demographic (e.g., age, gender, ethnicity, relationship status) and clinical variables (e.g., history of treatment for mental disorder).

Psychological Distance Scaling Task (PDST; Dozois, 2002, 2007; Dozois & Dobson, 2001a, 2001b). The PDST was used to assess the structure of self- and partner-schemas. Conceptually, this task measures the degree of interconnectedness or consolidation of the content within a schema structure. Participants completed two versions of the PDST: the original version was used to assess organization of self-schema structures (as originally outlined in Dozois & Dobson, 2001a, 2001b), and an adapted version was used to assess organization of partner-schema structures (as outlined in Wilde & Dozois, 2018). In this computer-based task, participants are presented with a 21.5cm by 23xm grid on their screen. In the centre of the grid are two intersecting perpendicular lines: one vertical and one horizontal. The vertical line is anchored with statements *Very positive* at the top of the grid and *Very negative* at the bottom of the grid. The horizontal line is anchored with the statements *Not at all like me* on the left side of the grid and *Very much like me* on the right side of the grid. (In the partner version of this task, anchors on the horizontal line instead read *Not at all like my partner* and *Very much like my partner.)* As such, the y-axis of the grid reflects the degree of valence, and the x-axis represents the degree of self-descriptiveness (or partner-descriptiveness).

Participants are instructed to use the axes in this grid to rate a series of adjectives. Adjectives are presented on the screen, one at a time, and participants are prompted to click their cursor at the position on the grid that best reflects both the valence and self-descriptiveness (or partner-descriptiveness) of the adjective. A new grid is presented with each adjective until all 60 stimulus words have been rated. As participants make their ratings, the computer records the grid coordinates for each adjective on the *x*- and *y*-axes (which are used for scoring, described below). Adjectives are presented in a randomized order; all participants rate the same set of 60 adjectives for both self and partner ratings (30 positive and 30 negative; see Appendix C for word list). Positive and negative word lists were selected from a list of previously used stimuli for this task and were matched on the average frequency of word use in the English language, word length, emotional intensity, and imaginability (Dozois 2007; Dozois & Frewen 2006). Participants first complete 4 practice trials to ensure their understanding of the procedure, followed by 120 experimental trials (60 trials for partner-ratings, and 60 trials for self-ratings).

To estimate the degree of schema consolidation for self and partner information, the *x*/*y* coordinate point for each adjective was used to calculate the average interstimulus distances (ISD) between adjectives. (Average ISD scores for each participant were calculated using the idiographic formula outlined in detail by Dozois & Dobson, 2001b and Seeds & Dozois, 2010.) Typically, the organization of positive and negative information is examined separately with the PDST; as such, four separate categories of ISD scores were calculated for each participant: self-positive, self-negative, partner-positive, and partner-negative. Greater distance among adjectives is believed to indicate less interconnectedness or consolidation of information within a schema, whereas less

distance is thought to reflect greater interconnectedness or consolidation of schema content (Dozois & Frewen, 2006). Previous research supports the psychometric properties of the PDST in both clinical and community samples, and demonstrates evidence of its sensitivity, specificity, and stability across time (e.g., Crits-Christoph et al., 2017; Diehl et al., 2017, Dozois, 2002, 2007, 2019; Dozois & Dobson, 2001b, Dozois & Frewen, 2006).

Beck Depression Inventory–II (BDI-II; Beck et al., 1996). The BDI-II was used to assess the severity of depressive symptomatology in the current sample. This measure asks participants to respond to 21 self-report items designed to tap into various symptoms of depression. Participants rate the degree to which each symptom has been present over the previous 2 weeks using a 4-point scale ranging from 0 (*symptom not present at all*) to 3 (*symptom is severely present*). A total score (ranging from 0 to 63) is calculated by summing all 21 items, where higher scores reflect greater depressive symptom severity. Research supports the strong psychometric properties of the BDI-II, including its test-retest reliability, internal consistency, and validity (see Dozois & Covin, 2004, for review). In the current sample, Cronbach's alpha was $\alpha = .95$ at Time 1, $\alpha = .96$ at Time 2, and $\alpha = .96$ at Time 3.

Revised-Dyadic Adjustment Scale (R-DAS; Busby et al., 1976). The R-DAS was used in the current study as a measure of global relationship quality. This measure consists of 14 self-report items prompting respondents to rate various aspects of relationship adjustment, such as: frequency of disagreements, demonstrations of affection, engagement in shared interests, and agreement on major decisions. Participants respond to all items using 6-point Likert-type rating scales (with the exception of one

item, which uses a 5-point scale) with anchors ranging from *All the time* or *Everyday* to *Never*). Scores are summed to calculate an overall dyadic adjustment score (after reverse scoring select items). Total scores on this scale range from 0–69, with higher scores reflecting greater relationship quality and lower scores on reflecting greater couple distress. The R-DAS has strong psychometric properties (e.g., Anderson et al., 2014; Busby et al., 1995) and can be reliably used in both married and non-married couples (Parker et al., 2013). Cronbach's alpha in this sample was $\alpha = .94$ at Time 1, $\alpha = .89$ at Time 2, and $\alpha = .89$ at Time 3.

Relationship Attribution Measure (RAM; Fincham & Bradbury, 1992). The RAM was used to measure participants' tendency to engage in distress-maintaining attributions about a romantic partners' behaviours. In this measure, participants are presented with four hypothetical negative partner behaviours (e.g., "Your partner criticizes something you say"). For each of the four behaviours, participants rate their agreement with 6 statements designed to tap into the degree to which they make *causal* and *responsibility* attributions for their partner's undesirable behaviour. The causal attributions subscale measures the degree to which the respondent views the cause of the behaviour as internal (due to something within the partner), stable, and global. The responsibility attributions subscale reflects the extent to which participants believe their partner engaged in the negative behaviour intentionally, and whether the partner deserves to be blamed for the behaviour. Items on each subscale are summed to create a total subscale score; higher scores on these subscales reflect a greater tendency to engage in distress-maintaining relationship attributions. Research supports the RAM's test-retest reliability, internal consistency, and validity (e.g., Fincham & Bradbury, 1992).

Cronbach's alpha in the current sample was α = .85 at Time 1, α = .89 at Time 2, and α = .89 at Time 3 for the causal attributions scale, and α = .92 at Time 1, α = .93 at Time 2, and α = .93 at Time 3 for the responsibility attributions scale.

Communication Pattern Questionnaire – Short Form (CPQ-SF; Christensen & Heavey, 1990). To assess dysfunctional relationship behaviours, the Demand/ Withdraw and Criticize/Defend subscales from the CPQ-SF were administered. The CPQ-SF is an abbreviated version of Christensen (1987)'s Communication Pattern Questionnaire and assesses couples' typical styles of communication when experiencing or discussing problems in the relationship. The CPQ-SF comprises 11 self-report items rated on a 9-point scale ranging from 1 *(very unlikely)* to 9 *(very likely)*. Scores on the Demand/Withdraw and Criticize/Defend subscales were calculated in line with recommendations outlined by Futris and colleagues (2010). The items in the *Demand/Withdraw* subscale assess the tendency for one partner to pressure, nag, or demand while the other withdraws, becomes silent, or refuses to discuss the matter further. The items in the *Criticize/Defend* subscale assess the tendency for one partner to criticize the other, while that partner defends him or herself. Items on each subscale are summed to create a total subscale score; higher scores on these subscales suggest a greater tendency to engage in dysfunctional communication behaviour patterns. Research supports the reliability, convergent validity, discriminant validity, and factor structure of the short-form version (Futris et al., 2010). In the current sample, Cronbach's alpha for the Demand/Withdraw scale for Time 1, Time 2, and Time 3 was .77, .75, and .75, respectively. Cronbach's alpha for the Criticize/Defend scale was .84, .84, and .86 at Times 1-3, respectively.

Procedure

A longitudinal prospective cohort design was used for this study. Data were collected at three time points, each three months apart (at baseline, three months, and six months). Eligible participants were invited via email to complete the Time 2 assessment 12 weeks following completion of the first assessment, and to complete the Time 3 assessment 12 weeks following completion of the second assessment. At the end of each session, participants were debriefed and provided with a list of self-help resources. A more comprehensive debriefing form was presented to participants at the end of the final assessment. All participants first completed the Demographics Questionnaire. The PDST (self and partner versions), BDI-II, R-DAS, RAM, and CPQ-SF were then presented in a randomized order to participants. All participants completed the same measures at each time point. The average completion time was 46 minutes (median = 42 minutes). Participants received $3.00 at Time 1, $3.50 at Time 2, and $6.00 at Time 3 in exchange for their participation in the study.

Results

Overview of Analyses

To begin, preliminary data screening, descriptive statistics, and “missingness” analyses were conducted using SPSS GLM Version 27.0 (IBM Corp., 2021). To test Hypotheses 1-4, bivariate Pearson correlations, hierarchical multiple regression analyses, and analysis of variances (ANOVAs) were conducted using SPSS GLM Version 27.0 (IBM Corp., 2021). To test Hypotheses 4-5, latent curve modeling (LCM) analyses were conducted in MPlus Version 7.0 (Muthén & Muthén, 1998-2011). The analytic strategy for the LCM analyses is outlined in more detail in subsequent sections.

Preliminary Analyses

Data screening. Data from all three timepoints were screened for inconsistencies in the data, missing values, extreme outliers, and nonnormal distribution shapes. Frequency distributions, and skewness and kurtosis values were inspected for study variables of interest at each of the three time points. Variables were assumed to be non-normal if they had skewness values exceeding +- 3 for skewness and +- 10 for kurtosis (Kline, 2011). Based on these criteria, all PDST scores were determined to be non-normal and were logarithmically transformed. (This is typical for PDST data.) All other variables of interest were assumed to be normal. The percentage of missing values at each time point was calculated and the data were examined for any patterns related to missing data. In accordance with the guidelines outlined by Tabachnick and Fidell (2013), because less than 5% of data points were missing and the distribution of missing data was random, mean imputation was used to estimate the missing data points within any given time point. It is important to note that because the PDST uses an idiographic formula to calculate the four interstimulus distance (ISD) scores for each participant, missing data points on this measure reflect a lack of endorsement of a given domain; therefore, listwise deletions were used to remove those participants from analyses as needed.

To streamline subsequent analyses, subscales from the RAM and CPQ-SF were averaged to create two new indices, reflecting overall *Dysfunctional Attributions* and *Dysfunctional Behaviours* composite scores, respectively (see Appendix D for brief rationale). Descriptive statistics for the main study variables are presented in Table 2. Correlations between all variables of interest at Time 1 are reported in Table 3.

Table 2

Descriptive Statistics for Variables of Interest at Time 1

Variable	*n*	*M (SD)*	Min	Max
BDI-II	370	8.01 (10.33)	0.00	55.00
R-DAS	370	50.21 (9.46)	12.00	69.00
PDST				
Positive Self ISD	368	.98 (.24)	-.11	1.83
Negative Self ISD	325	1.54 (.36)	.59	2.87
Positive Partner ISD	366	.94 (.24)	-.38	2.31
Negative Partner ISD	318	1.52 (.39)	.73	2.72
RAM				
Causal Attributions	368	13.99 (3.73)	4.00	24.00
Responsibility Attributions	366	12.62 (4.60)	4.00	24.00
Dysfunctional Attributions Composite	366	13.30 (3.95)	4.00	24.00
CPQ-SF				
Demand-Withdraw Scale	370	16.45 (8.67)	5.00	40.00
Criticize-Defend Scale	369	10.62 (6.12)	3.00	26.00
Dysfunctional Behaviours Composite	369	13.54 (6.87)	4.00	33.00

Note. BDI-II = Beck Depression Inventory – II, R-DAS = Revised Dyadic Adjustment Scale, PDST = Psychological Distance Scaling Task, ISD = Interstimulus Distance (as measured by the PDST), RAM = Relationship Attribution Measure, CPQ-SF = Communication Patterns Questionnaire – Short Form.

Table 3

Correlations Among the Variables of Interest at Time 1

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
1. BDI-II		-.48**	-.25**	.34**	-.21**	.29**	.32**	.29**	.32**	.37**	.28**	.35**
2. R-DAS			.20**	-.18**	.38**	-.44**	-.51**	-.47**	-.51**	-.54**	-.55**	-.58**
3. Negative Self ISD				.05	.27**	-.01	-.14*	-.13*	-.14**	-.28**	-.24**	-.29**
4. Positive Self ISD					-.01	.52**	.10	.05	.08	.03	.09	.06
5. Negative Partner ISD						-.16**	-.30**	-.26**	-.29**	-.38**	-.44**	-.44**
6. Positive Partner ISD							.33**	.30**	.33**	.25**	.28**	.28**
7. RAM-C								.79**	.94**	.42**	.49**	.49**
8. RAM-R									.96**	.43**	.51**	.50**
9. ATR										.45**	.53**	.52**
10. CPQ-DW											.72**	.95**
11. CPQ-CD												.90**
12. BEH												

Note. BDI-II = Beck Depression Inventory – II, R-DAS = Revised Dyadic Adjustment Scale, ISD = Interstimulus Distance (as measured by the PDST), RAM-C & RAM-R = Relationship Attributions Measure - Causal & Responsibility Subscales, respectively,

ATR = Dysfunctional Attributions Composite, CPQ-DW & CPQ-CD – Communication Patterns Questionnaire – Demand/Withdraw & Criticize/Defend Subscales, respectively, BEH = Dysfunctional Behaviours Composite. n = 370.

$^{*}p < .05$. $^{**}p < .01$

Attrition and Longitudinal "Missingness" Analyses. The attrition rate across time points was calculated and any patterns of longitudinal "missingness" were analyzed. A total of 370 participants completed Time 1, 212 completed Time 2 (158 individuals did not return, resulting in a 43% attrition rate from Time 1 to Time 2) and 152 completed time 3 (60 individuals did not return, resulting in a 28% attrition rate from Time 2 to Time 3). A missingness analysis was then conducted in the full sample of 370 participants to examine whether attrition across time could be explained by participant characteristics at Time 1. First, a binary "missingness" variable was computed for each of the outcome variables of interest at Time 3 (1 = "missing", 0 = "not missing"). Next, a series of multiple independent samples *t*-tests were conducted to test whether participant scores on variables of interest at Time 1 (e.g., severity of depression, relationship adjustment) predicted drop out. Multiple independent samples *t*-tests were run with the Time 3 missingness variable as the independent variable (e.g., Time 3 depression missingness) and the corresponding Time 1 variable (i.e., Time 1 depression score) as the dependent variable. A significant *t*-test result for any given variable suggests participants were more likely to have missing data at time 3 if they reported significantly higher or lower scores on that variable at study entry. Similarly, to test whether participant demographics reported at Time 1 (e.g., relationship status, gender) predicted drop out, a series of chi square tests were run with the binary missingness variables at Time 3 as the independent variables and Time 1 demographics variables as the dependent variables.

The *t*-test results indicated that three variables emerged as significant predictors of missingness/drop out. First, there was a small effect indicating that participants with more tightly interconnected positive partner schema structures (that is, lower ISDs for

positive partner content) at Time 1 (*M* = .917, *SD* = .245) were more likely to drop out of the study by Time 3 compared to participants with less tightly interconnected positive partner schema structures (that is, those with larger ISDs between positive partner content) at Time1 (*M* = .971, *SD* = .237), *t*(364) = -2.115, *p* = .035, Cohen's *d* = -.223. There was a small effect indicating that participants who were in relationships of a shorter duration at Time 1 (*M* = 9.38 years, *SD* = 8.68) were more likely to drop out of the study by Time 3 compared to participants in relationships of a longer duration at Time 1 (*M* = 12.196, *SD* = 9.78), *t(*368) = -2.927, *p* = .004, Cohen's *d* = -.307. There was also a small effect of age indicating that participants who were younger at Time 1 (*M* = 37.18 years, *SD* = 10.31) were more likely to drop out of the study by Time 3 compared to participants who were older at Time 1 (*M* = 40.67, *SD* = 10.431), *t(*368) = -3.213, *p* = .001, Cohen's *d* = -.337. None of the chi square tests emerged as significant at $p < .05$, suggesting that other demographic variables, such as gender identity, sexual orientation, and ethnicity, were not significant predictors of study drop out.[2]

These missingness analyses are necessary for the LCM approach detailed in subsequent sections. The use of Full Information Maximum Likelihood (FIML) in LCM assumes that data are missing at random (MAR) rather than missing not at random (MNAR). As such, significant predictors of missingness can be entered as covariates in the LCM models to account for systematic missingness.

Primary Analyses: Cross-Sectional Data

[2] Missingness analyses were also conducted with Time 2 missingness as an outcome variable to examine whether any participant characteristics at Time 1 were predictive of drop out at Time 2. Results of these analyses indicated that the same predictors of missingness emerged (positive partner ISD, relationship length, and age). No other predictors of missingness at Time 2 emerged.

Hypotheses 1 – 3 were examined cross sectionally using the sample of 370 participants. Pairwise deletions were used for the analyses reported below.

H_1: Partner-schema structures are similar to, but distinct from, self-schema structures. Bivariate correlations were computed to examine the magnitude and significance of the association between schema structure ISDs for self and partner. Results are presented above in Table 3. As predicted, partner schema structure ISDs were significantly associated with self ISDs, in the expected directions: negative self ISDs were significantly positively correlated with negative partner ISDs ($r = .27$, $p < .01$). Similarly, positive self ISDs were significantly positively associated with positive partner ISDs ($r = .52$, $p < .01$).

H_2: Depressive symptoms are associated with a partner-schema structure characterized by tightly interconnective negative information and loosely dispersed positive information. Bivariate correlations were used to examine the magnitude and significance of the association between schema structure ISDs on the PDST and depressive symptom scores on the BDI-II (see Table 3).

As predicted, partner schema structures were significantly associated with depressive symptoms, in the expected directions: greater depressive symptoms were significantly negatively correlated with negative partner ISDs ($r = -.21$, $p < .01$), and significantly positively correlated with positive partner ISDs ($r = .29$, $p < .01$). In other words, depressive symptoms were associated with more highly consolidated negative partner schema structures and loosely interconnected positive partner schema structures.

H_3: Partner-schema structures are uniquely associated with dysfunctional relationship process that are common in depression (above and beyond their shared associations with self-schemas).

Three separate hierarchical regression analyses were conducted to test whether partner schema structures uniquely predicted the three relationship outcome variables of interest: dyadic adjustment, distress-maintaining relationship attributions, and dysfunctional behaviours towards a partner. As depressive symptoms were significantly correlated with each outcome variable, BDI-II scores were entered as a covariate in the first step of each analysis. Positive and negative domains of self-schema structures were simultaneously entered in the second step of the regression. Finally, positive and negative domains of partner-schema structures were entered together in the third step. Results are presented in Table 4.

As hypothesized, partner-schema organization significantly added to the prediction of dyadic adjustment (R^2 change = .167, $\Delta F(2, 287) = 36.617$, $p < .001$), relationship attributions (R^2 change = .165, $\Delta F(2, 283) = 32.34$, $p < .001$), and dysfunctional behaviours (R^2 change = .138, $\Delta F(2, 286) = 27.40$, $p < .001$) after controlling for depression and self-schema organization. Of note, the organization of both negative and positive partner information was significantly associated with the three outcome variables, suggesting that partner-schema structures characterised by both highly organized negative information and loosely dispersed positive information are associated with poorer dyadic adjustment, distress-maintaining attributions, and dysfunctional relationship behaviours.

Table 4

Hierarchical Multiple Regression Predicting Relationship Outcomes from Schema Organization

Step and Variable Entered	*F*	*R*	Adj R^2	Δ*F*	*B*	*SE* of *B*	β	*t*
Dyadic Adjustment (*n* = 293)								
Step 1:	80.38^{***}	.47	.21	80.38^{***}				
BDI-II					-0.33	0.05	-.37	-6.95^{***}
Step 2:	27.49^{***}	.47	.21	$1.04^{n.s.}$				
Self ISD (-)					.73	1.39	0.26	$.52^{n.s.}$
Self ISD (+)					5.53	2.35	.13	2.36^{*}
Step 3:	36.62^{***}	.62	.38	39.36^{***}				
Partner ISD (-)					6.40	1.31	0.24	4.88^{***}
Partner ISD (+)					-14.81	2.30	-.35	-6.43^{***}
Dysfunctional Attributions (*n* = 289)								
Step 1:	36.93^{***}	.34	.11	36.93^{***}				
BDI-II					.09	0.02	.26	4.53^{***}
Step 2:	12.25^{***}	.34	.11	$.04^{n.s.}$				
Self ISD (-)					.51	.59	0.05	$.87^{n.s.}$
Self ISD (+)					-2.04	.99	-.13	-2.07^{*}
Step 3:	21.90^{***}	.53	.27	32.34^{***}				
Partner ISD (-)					-2.47	.56	-.24	-4.44^{***}
Partner ISD (+)					5.68	.97	.34	5.85^{***}
Dysfunctional Behaviour (*n* = 292)								
Step 1:	30.12^{***}	.31	.09	30.12^{***}				
BDI-II					.14	.37	.22	3.77^{***}
Step 2:	15.61^{***}	.37	.13	7.66^{***}				
Self ISD (-)					-2.36	1.06	-.12	-2.23^{*}
Self ISD (+)					-3.89	1.78	-.13	-2.19^{*}
Step 3:	22.04^{**}	.53	.27	27.40^{***}				
Partner ISD (-)					-6.25	1.00	-.34	-6.27^{***}
Partner ISD (+)					4.82	1.75	.16	2.77^{**}

Note. BDI-II = Beck Depression Inventory–II, ISD = Interstimulus Distance, as measured by the PDST. All values are rounded to two decimal digits.

$^{*}p < .05$. $^{**}p < .01$, $^{***}p < .001$.

Primary Analyses: Longitudinal Data

Hypotheses 4 and 5 were examined longitudinally using the sample of 370 participants.

H_4: Schema structures remain relatively stable across time. Three types of analyses were conducted to examine this hypothesis. First, bivariate correlations (using pairwise deletions) between Time 1 PDST scores and those at Time 2 and 3 were computed to examine the stability of schemas across 3- and 6-month time periods. Second, four separate one-way repeated measures ANOVAs were conducted to test whether average PDST scores (in each of the four domains) differed significantly across the three timepoints. In other words, the ANOVA was used to examine whether there was a significant effect of Time on PDST scores. Polynomial contrasts were also examined to test for linear or quadratic trends across time. Third, univariate LCM analyses were conducted to provide a more robust estimation of the stability of partner-schema structures across time. LCM allows for the use of maximum likelihood estimation (MLE) as a method of handling missing data. MLE uses all available data to obtain the best possible parameter estimates for missing data points at Times 2 and 3. In other words, it allows for data from all 370 participants collected at baseline to be used for the analyses, even when some participants had missing scores on the dependent variable of interest at later time points. This is much more robust than the ANOVA, which uses listwise deletions (leaving a much smaller sample of data for analysis).

Pearson correlations. Bivariate correlations between PDST scores at (a) Time 1 and Time 2 and (b) Time 1 and Time 3 were computed. The correlation coefficients are presented in Table 5. In line with hypotheses, Time 1 PDST scores correlate moderately

to strongly (coefficients range from .480 to .764) with PDST scores in the same domain measured three and six months later. All correlations were significant and positive, as expected.

Table 5

Stability Coefficients (Correlations) of PDST Scores Across 3- and 6-month Intervals

	Time 2	*Time 3*
Positive Self ISD Time 1	.67**	.76**
Negative Self ISD Time 1	.52**	.48**
Positive Partner ISD Time 1	.68**	.64**
Negative Partner ISD Time 1	.56**	.52**

Note. ISD = Interstimulus Distance scores, as measured by the PDST. $n = 152$

** $p < .01$

Examination of Mean PDST Scores and One-way Repeated Measures ANOVA. The average PDST scores and 95% CIs in each of the four schema domains across the three time points are presented in Table 6 and depicted visually in Figure 1.

Table 6

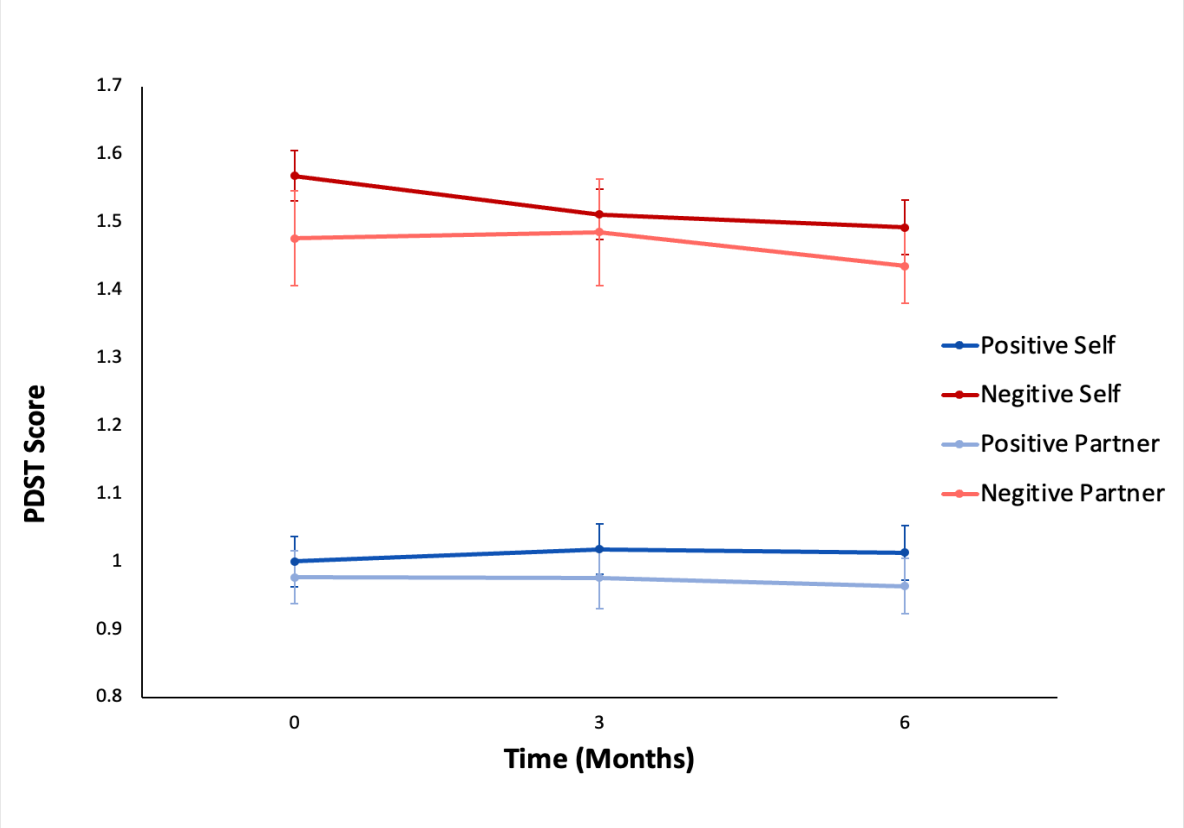
Mean PDST Scores Across Time Points

	n	***M***	***SD***	***CI[95%]***
Positive Self ISD				
Time 1:	151	1.00	.23	.96-1.04
Time 2:	151	1.02	.23	.98-1.06
Time 3:	151	1.01	.25	.97-1.05
Negative Self ISD				
Time 1:	110	1.57	.34	1.50-1.63
Time 2:	110	1.51	.34	1.45-1.58
Time 3:	110	1.49	.32	1.43-1.55
Positive Partner ISD				
Time 1:	151	0.98	.24	.94-1.01
Time 2:	151	0.98	.28	.93-1.02
Time 3:	151	0.96	.25	.92-1.01
Negative Partner ISD				
Time 1:	105	1.48	.36	1.41-1.55
Time 2:	105	1.49	.40	1.41-1.56
Time 3:	105	1.45	.38	1.38-1.53

Note. Scores reported above are ISD scores, as measured by the PDST.

Figure 2

Mean PDST Scores Across Time



Note. This figure depicts the mean ISD (interstimulus distance) scores for the four schema domains across all three time points, as obtained on the PDST.

To evaluate whether mean schema structure scores differed significantly across time, four separate one-way repeated measures ANOVAs were performed (one for each of the four PDST score categories) to test for a significant effect of time on structure. For each outcome variable, Mauchly tests were first performed to assess possible violations of the sphericity assumption. All tests were nonsignificant (p >.05), indicating no violations were present. Results of the one-way ANOVAs and polynomial contrasts testing for linear and quadratic effects are presented in Table 7. The overall F for differences in mean PDST scores across the three time points were not statistically significant at $p < .05$ for any of the four schema structure domains, suggesting there was no significant effect of time on schema structure organization. In other words, results suggested that schema structure did not change significantly over time. (Although the p value was close to the threshold for the negative self-schema domain at $p = .052$, it is important to note the increased risk of Type 1 error with the repeated ANOVAs for any values close to the significance threshold.) All polynomial contrasts were nonsignificant (p >.05), except for the linear effects test for negative self-schema structures, which unexpectedly emerged as significant ($F = 5.17$, $p = .025$).

Table 7

One-way ANOVAs Comparing Mean PDST Scores Across Time (Within Subjects Effects)

	n	*F*	*df*	*p*	η_{p^2}	Linear Effects		Quadratic Effects	
						F	*p*	*F*	*p*
1. Positive Self ISD	151	0.92	2, 200	.398	.006	0.90	.344	0.94	.333
2. Negative Self ISD	110	3.01	2, 218	.052	.027	5.17	.025*	0.48	.492
3. Positive Partner ISD	151	0.38	2, 300	.685	.003	0.58	.448	0.18	.677
4. Negative Partner ISD	105	0.47	2, 208	.625	.005	0.48	.478	0.46	.500

Note. ISD = Interstimulus Distance Scores, as measured by the PDST.

* $p < .05$.

Latent Curve Modeling. Four separate LCMs were run (one for each schema domain: positive self, negative self, positive partner, negative partner) to assess estimated scores on each outcome variable from baseline (Time 1) to 3 month follow up (Time 2) to 6 month follow up (Time 3). The three time point intervals were scaled according to the number of days in between each point the dependent variable was measured (i.e., Time 1 (baseline) = 0, Time 2 = (3 months later) = 90, Time 3 = (3 months after T2) = 180. As the missingness analyses revealed three significant predictors of missingness (Time 1 scores on age, positive partner schema structure, and relationship length), these variables were included as covariates in the LCMs.

In each model, two latent variables were specified: the intercept and linear (slope) components. Fixed effects (means) and random effects (variances) were estimated for both latent variables. In these models, the *intercept component* represents the baseline

score on the outcome variable of interest (schema structure) at Time 1. As such, the *mean of the intercept* reflects whether the baseline score at Time 1 is significantly different from zero, and the *variance of the intercept* reflects variability in these baseline scores across participants. The linear (slope) component, herein referred to as the *slope component,* reflects the degree to which a linear trend is observed across the three time points (with a positive or negative slope). Thus, the *mean of the slope* indicates whether the data fit a significant linear trend. In addition, the *variance of the slope* reflects variability in this linear slope trend across participants.

Fit indices for each of the four models are presented below in Table 8. Model fit was evaluated using the following guidelines for a good-fitting structural equation model (Hu & Bentler, 1999): Comparative Fit Index (CFI) values should be .95 or higher, root-mean square error of approximation (RMSEA) should be .06 or less, and standardized root-mean square residual (SRMR) values should be .08 or less. Based on these guidelines, the models fit the data reasonably well. Although the RMSEA and SRMR values for the model predicting Positive Self ISD are slightly higher than recommended, it is important to note that, in LCM, fit indices are impacted by the degree of overlap between the observed scores and the imposed linear trajectory. As such, model misfit is likely a reflection of individual scores deviating from the line of best fit and therefore does not warrant re-specification of the model.

Table 8

Model Fit Indices for the Latent Curve Model (LCM)

Dependent Variable	***n***	*X^2 (df)*	*P value*	*CFI*	*RMSEA [90% CI]*	*SRMR*
Positive Self ISD	368	25.03 (8)	.002	.958	0.076 [.044-.111]	.113
Negative Self ISD	325	5.40 (8)	.714	1.000	0.00 [0.00-0.047]	.034
Positive Partner ISD	366	6.62(6)	.357	.997	0.02 [0.000-.071]	.055
Negative Partner ISD	318	6.90 (8)	.547	1.000	0.00 [0.00-.058]	.025

Note. ISD = Interstimulus Distance Scores, as measured by the PDST.

The means and the variances of the intercept and slope components for each of the four models are presented in Table 9. Results were in line with hypotheses. For all four outcome variables, the means and variances of the intercept were statistically significant, whereas means and variances of the slope component were not. The significant means and variances of the intercept components suggest that the start point of the estimated line is significantly different from 0, and that this start point varies significantly across individual participants. In other words, results suggest that average schema structure scores at Time 1 differ significantly from 0, and there is significant variability in Time 1 schema structure scores across participants, as would be expected. For all four dependent variables, the means and variances of the slope components were not statistically significant, indicating no strong evidence of a linear increase or decrease in scores across time (and no strong individual differences in these slope trends across participants). In other words, results suggest that schema structures appear to remain relatively stable across time, and this appears to be the case for most individuals.

Table 9

LCM Results: Estimated Means and Variances

		Intercept Component			Slope Component			
	n	*M*	*p*	σ^2	*p*	*M*	*p*	σ^2	*p*
Positive Self ISD	368	0.58	.000	.03	.000	.003	.149	.00	.252
Negative Self ISD	325	1.53	.000	.07	.000	-.001	.807	.00	.510
Positive Partner ISD	366	0.87	.000	.04	.000	.000	.873	.00	.217
Negative Partner ISD	318	1.86	.000	.08	.000	-.002	.643	.00	.655

Note. ISD = Interstimulus Distance Scores, as measured by the PDST.

H_5: Schema structures contribute to dysfunctional mood and relationship dynamics that subsequently serve to reinforce underlying SSS and PSS over time.

To examine the reciprocal effects of schema structures, mood, and relationship processes on one another over time, LCM analyses with structured residuals (LCM-SR; as outlined by Curran et al. 2014) were conducted. The LCM-SR approach offers a state-of-the-art technique for modelling cross-lagged associations between multiple constructs over time. It addresses important limitations of other approaches that are more commonly used (such as traditional CLPMs; e.g., Curran et al., 2014; Hamaker et al., 2015) to examine panel data over time by allowing for an examination of both the between- and within-person components of change. By using the LCM-SR, a latent variable (with scores on variables of interest at three time points as indicators) is created to provide an average latent score across time. This latent score essentially represents each person's average "trait-like" score on the outcome variables of interest. Including this latent variable in the model with cross-lagged associations allows us to control for between-

individual differences to estimate within-person change effects more accurately across time.

LCM-SR: Overview of analytic strategy. In line with Curran et al's (2014) approach, univariate LCM analyses were first conducted for each of the four mood/relationship outcome variables to determine whether linear slope components should be included in the final LCM-SR model. Overall, they suggested no evidence of linear trends for depression, relationship adjustment, and dysfunctional behaviours, and evidence of a small linear trend for attributions. Because this effect was quite small, and a significant linear trend was not hypothesized for these outcome variables of interest, slope components were omitted from the final LCM-SR models and only latent intercepts were included for each variable. When the slope component is not included in the model, these latent intercepts represent individuals' mean scores on a given variable across three time points.

All models included stability coefficients (wherein a variable at one time is regressed onto itself at an earlier time point). Each LCM-SR also included cross-lagged coefficients between self-schema structure, partner-schema structure, and one of the four outcome variables of interest (depression, relationship adjustment, attributions, and behaviour). Two separate models (one with positive schemas and another with negative schemas) were run for each outcome variable of interest, resulting in a total of 8 models. Of note, LCM-SR tests these within-person associations on the *time-varying residuals* of observed variables (rather than the observed measurement scores themselves). Time-varying residuals essentially reflect the magnitude of any increase or decrease in an individual's score at a particular time point *relative to their own baseline* or average

"trait-like" score. Thus, the use of these residuals allows for a more nuanced examination of stability and change within individuals across time.

As recommended by Curran at al. (2014), tests of model fit difference were used to determine which coefficients should be constrained to equality and which should be left free to vary (see tests of model fit difference in nested models in Appendix E. All final models used Maximum Likelihood Robust (MLR) estimation to obtain best parameter estimates from all 370 participants who completed the study at Time 1. Because the longitudinal missingness analyses (as reported previously) revealed that age, relationship length, and positive partner schema structures were significantly associated with missingness, these were entered as covariates in the models, where appropriate. Age and relationship length were entered as exogenous, time invarying covariates in all eight models; a latent positive partner schema structure variable was entered as a covariate in the four models examining negative schema structures as variables of interest over time (this covariate was not entered in models where positive schemas were already included as variables of interest). As these covariates were entered simply to account for missingness (rather than for theoretical reasons) and no significant effects emerged, parameter estimates related to these variables are omitted from model figures to maintain visual and conceptual simplicity for the reader.

The LCM-SR results presented below are organized into four sections, one for each outcome variable: depression, dyadic adjustment, dysfunctional attributions, and dysfunctional behaviour. To examine whether schemas are related to the outcome variables of interest longitudinally, each section begins with a report of the basic correlation coefficients between the outcome variable and schema structures across time

(these correlation coefficients were calculated in MPlus using MLR). Following this, two LCM-SR models are presented in each section (the first model examining positive schema structures and the second examining negative schema structures). In these models, significant relations between latent intercept variables reflect *between-person* associations, whereas stability and cross-lagged coefficients between structured residual variances reflect *within-person* associations.

H5a: Depressive symptoms (Models 1A & 1B). As reported in Table 10, correlation coefficients suggest that depression is significantly correlated, in the expected directions, with positive and negative self and partner schemas structures across 3- and 6-month intervals. As hypothesized, higher depressive symptoms are longitudinally associated with more highly consolidated negative schemas and loosely dispersed positive schemas for both self and partner over time.

Table 10

Longitudinal Correlations Between Schema Structures and Depression

	T1 PosSelf ISD	***T1 PosPart ISD***	***T2 PosSelf ISD***	***T2 PosPart ISD***	***T3 PosSelf ISD***	***T3 PosPart ISD***
T1 Depression	.34	.29	.35	.27	.34	.34
T2 Depression	.34	.25	.41	.26	.36	.30
T3 Depression	.37	.27	.42	.28	.41	.33
	T1 NegSelf ISD	***T1 NegPart ISD***	***T2 NegSelf ISD***	***T2 NegPart ISD***	***T3 NegSelf ISD***	***T3 NegPart ISD***
T1 Depression	-.25	-.22	-.29	-.14	-.22	-.18
T2 Depression	-.21	-.18	-.29	-.15	-.30	-.18
T3 Depression	-.25	-.20	-.30	-.19	-.26	-.19

Note. PosSelf ISD = Positive Self Interstimulus Distance Scores; PosPart ISD = Positive Partner Interstimulus Distance Scores; NegSelf ISD = Negative Self Interstimulus Distance Scores; NegPart ISD = Negative Partner Interstimulus Distance Scores. n = 370. All correlations are significant at $p < .05$, unless otherwise specified with n.s.

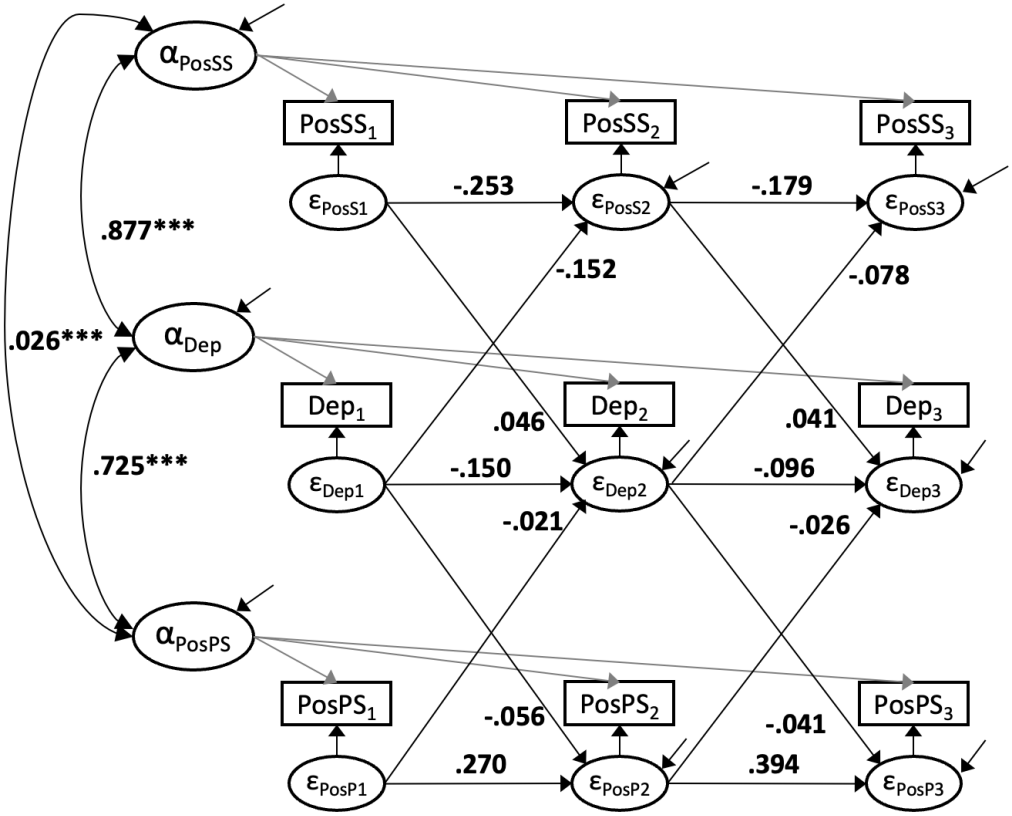
Figures 3 and 4 depict the LCM-SR models of between and within-person relations for positive and negative schema structures, respectively. Regarding between-person relations, results were generally consistent with hypotheses. The latent intercept of depression was significantly related to the latent intercepts of positive self and positive partner schemas suggesting that, after accounting for the covariates, participants who, on average, reported a higher level of depression tended to exhibit greater distance between positive information about both self and partner. Similarly, the latent intercept of depression was significantly associated with negative self and partner schemas,

suggesting that participants who endorsed higher depressive symptoms also demonstrated more consolidated negative schema structures of self and partner.

Contrary to hypotheses, none of the cross-lagged paths between depression and positive or negative schemas emerged as statistically significant. These findings suggest that, when an individual experiences an increase or decrease in depressive symptoms, this does not predict a change in schema structure 3 months later (and that changes in schema structures do not predict changes in depressive symptoms 3 months later).

Figure 3

Model 1a: Positive Schema Structures and Depression LCM-SR

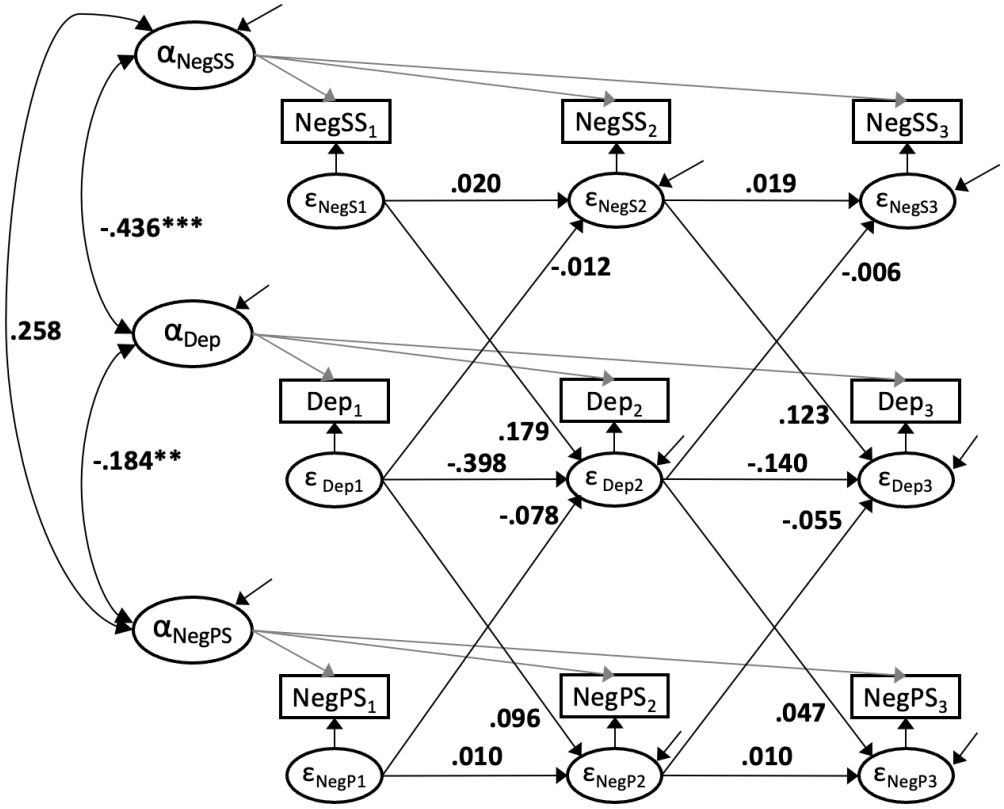


Note. PosSS = Positive Self Schema; PosPS = Positive Partner Schema; Dep = Depression. All coefficients presented are standardized estimates. n = 366.

*** $p < .001$.

Figure 4

Model 1b: Negative Schema Structures and Depression LCM-SR



Note. NegSS = Negative Self Schema; NegPS = Negative Partner Schema; Dep = Depression. All coefficients presented are standardized estimates. n = 318.

** $p < .01$, *** $p < .001$.

H5b: Dyadic adjustment (Models 2A & 2B). Correlation coefficients reported in Table 11 indicate that dyadic adjustment is significantly correlated, in the expected directions, with positive self and partner schemas structures across 3- and 6-month intervals. As hypothesized, greater dyadic adjustment is longitudinally associated with greater consolidation of (less distance between) positive schema content for both self and partner. Greater dyadic adjustment was also significantly associated with less

consolidation of (greater distance between) negative schema content for a romantic partner longitudinally; but most 3- and 6-month correlations with negative self-schema content were not significant.

Table 11

Longitudinal Correlations Between Schema Structures and Dyadic Adjustment

	T1 PosSelf ISD	***T1 PosPart ISD***	***T2 PosSelf ISD***	***T2 PosPart ISD***	***T3 PosSelf ISD***	***T3 PosPart ISD***
T1 Dyadic Adjustment	-.18	-.44	-.11	-.36	-.17	-.49
T2 Dyadic Adjustment	-.18	-.41	-.21	-.48	-.22	-.51
T3 Dyadic Adjustment	-.18	-.37	-.21	-.44	-.22	-.49
	T1 NegSelf ISD	***T1 NegPart ISD***	***T2 NegSelf ISD***	***T2 NegPart ISD***	***T3 NegSelf ISD***	***T3 NegPart ISD***
T1 Dyadic Adjustment	.20	.37	.10$^{n.s.}$	.29	.06$^{n.s.}$	.23
T2 Dyadic Adjustment	.16	.31	.12	.34	.00$^{n.s.}$	.33
T3 Dyadic Adjustment	.13	.28	.05$^{n.s.}$	.35	-.02$^{n.s.}$	.23

Note. PosSelf ISD = Positive Self Interstimulus Distance Scores; PosPart ISD = Positive Partner Interstimulus Distance Scores; NegSelf ISD = Negative Self Interstimulus Distance Scores; NegPart ISD = Negative Partner Interstimulus Distance Scores. n = 370. All correlations are significant at $p < .05$, unless otherwise specified with n.s.

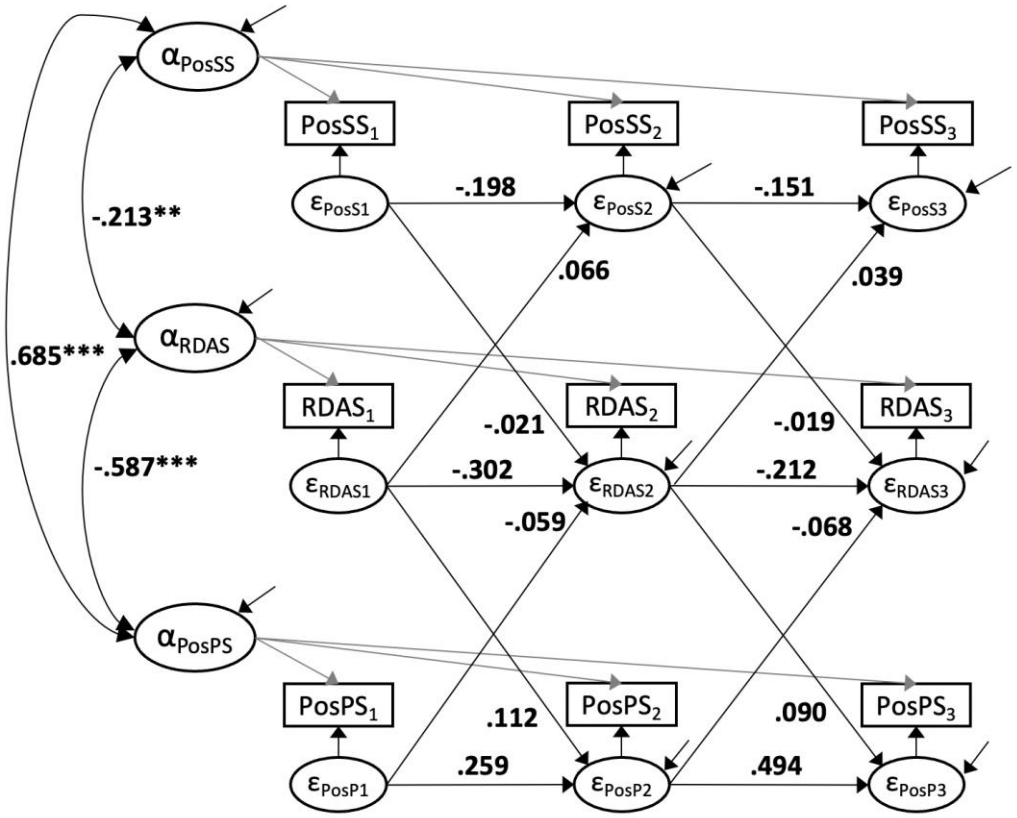
Figures 5 and 6 depict the LCM-SR models of between and within-person relations for positive and negative schema structures, respectively. Regarding between-person relations, results were generally consistent with hypotheses. The latent intercept of dyadic adjustment was significantly related to the latent intercepts of positive self,

positive partner (Figure 5), and negative partner schema structures (Figure 6). In other words, after accounting for the covariates, participants who, on average, reported a higher level of dyadic adjustment tended to exhibit less distance between positive schema content for both self and partner, and more distance between negative content about a partner. Of note, the intercept of dyadic adjustment was not significantly associated with intercept of negative self-schemas, suggesting no evidence of between-person relations among these two variables.

Contrary to hypotheses, none of the cross-lagged paths between dyadic adjustment and positive or negative schemas were statistically significant. This suggests that, when an individual experiences an increase or decrease in relationship adjustment, this does not predict a change in schema structure 3 months later (and that changes in schema structures do not predict changes in dyadic adjustment 3 months later).

Figure 5

Model 2a: Positive Schema Structures and Dyadic Adjustment LCM-SR

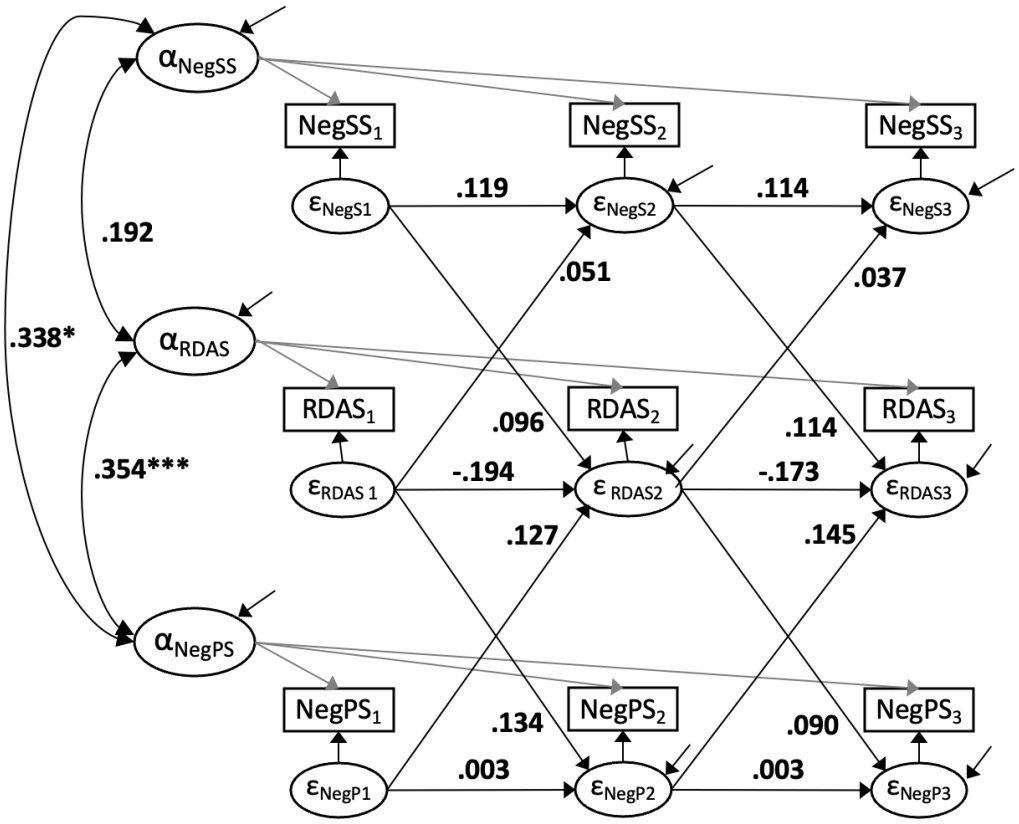


Note. PosSS = Positive Self Schema; PosPS = Positive Partner Schema; RDAS = Dyadic Adjustment. All coefficients presented are standardized estimates. n = 366.

** $p < .01$, *** $p < .001$.

Figure 6

Model 2b: Negative Schema Structures and Dyadic Adjustment LCM-SR



Note. NegSS = Negative Self Schema; NegPS = Negative Partner Schema; RDAS = Dyadic Adjustment. All coefficients presented are standardized estimates. n = 318.

* $p < .05$, *** $p < .001$.

H5c: Dysfunctional attributions (Models 3A & 3B). As reported in Table 12, correlation coefficients indicate that dysfunctional attributions are significantly correlated, in the expected directions, with positive and negative partner schemas structures across 3- and 6-month intervals. As expected, the tendency to make distress-maintaining attributions about a partner's behaviour is associated with more highly consolidated negative schema

structures and loosely dispersed positive schema structures held for that partner across time. The associations between attributions and self-schema structures are less consistent across time, however, with some associations emerging as small and significant in expected directions, but others emerging as near-zero and nonsignificant. In most cases, correlations between earlier self-schema structures and attributions and a later time were significant, whereas earlier attributions and later self-schema structures were not.

Table 12

Longitudinal Correlations Between Schema Structures and Dysfunctional Attributions

	T1 PosSelf ISD	***T1 PosPart ISD***	***T2 PosSelf ISD***	***T2 PosPart ISD***	***T3 PosSelf ISD***	***T3 PosPart ISD***
T1 Attributions	.08[n.s.]	.33	.02[n.s.]	.22	.16	.29
T2 Attributions	.16	.38	.21	.39	.24	.29
T3 Attributions	.12	.30	.15	.38	.10	.36
	T1 NegSelf ISD	***T1 NegPart ISD***	***T2 NegSelf ISD***	***T2 NegPart ISD***	***T3 NegSelf ISD***	***T3 NegPart ISD***
T1 Attributions	-.14	-.30	-.08[n.s.]	-.30	-.01[n.s.]	-.34
T2 Attributions	-.17	-.19	-.09[n.s.]	-.25	-.10	-.31
T3 Attributions	-.21	-.18	-.10	-.27	-.05[n.s.]	-.28

Note. PosSelf ISD = Positive Self Interstimulus Distance Scores; PosPart ISD = Positive Partner Interstimulus Distance Scores; NegSelf ISD = Negative Self Interstimulus Distance Scores; NegPart ISD = Negative Partner Interstimulus Distance Scores. n = 366. All correlations are significant at $p < .05$, unless otherwise specified with n.s.

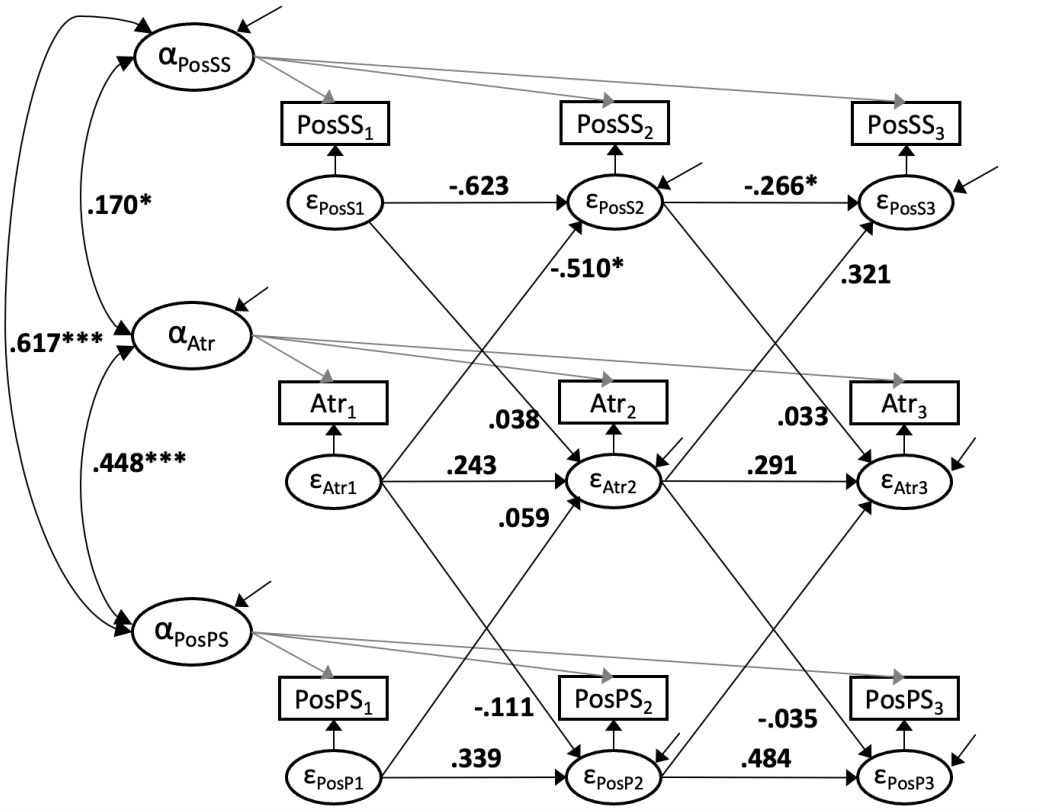
Figures 7 and 8 depict the LCM-SR models of between and within-person relations for positive and negative schema structures, respectively. Regarding between-person relations, results were generally consistent with hypotheses. The latent intercept of dysfunctional attributions was significantly related to the latent intercepts of positive self

and positive partner schemas, and negative partner schema structures suggesting that after accounting for the covariates, participants who, on average, reported a higher level of dysfunctional attributions tended to exhibit less consolidated positive schemas for both self and partner, and more consolidated negative partner schemas. Of note, the latent intercept of dysfunctional attributions was not significantly associated with the negative self-schema intercept, suggesting no evidence for between-person relations among these variables.

Only one cross-lagged path emerged as significant, contrary to hypotheses. Figure 7 depicts the significant association between dysfunctional attributions at Time 1 and positive self-schema structure at Time 2. As depicted in this figure, when an individual reported an increase in dysfunctional attributions at baseline (relative to their average tendency to engage in these types of attributions), they also showed a significant decrease in distance between positive self-schema content at three month follow up. In other words, individuals who engaged in an increased tendency to make distress maintaining attributions about their partner's behaviour experienced greater consolidation of positive information about self. No other cross-lagged paths emerged as significant in these models.

Figure 7

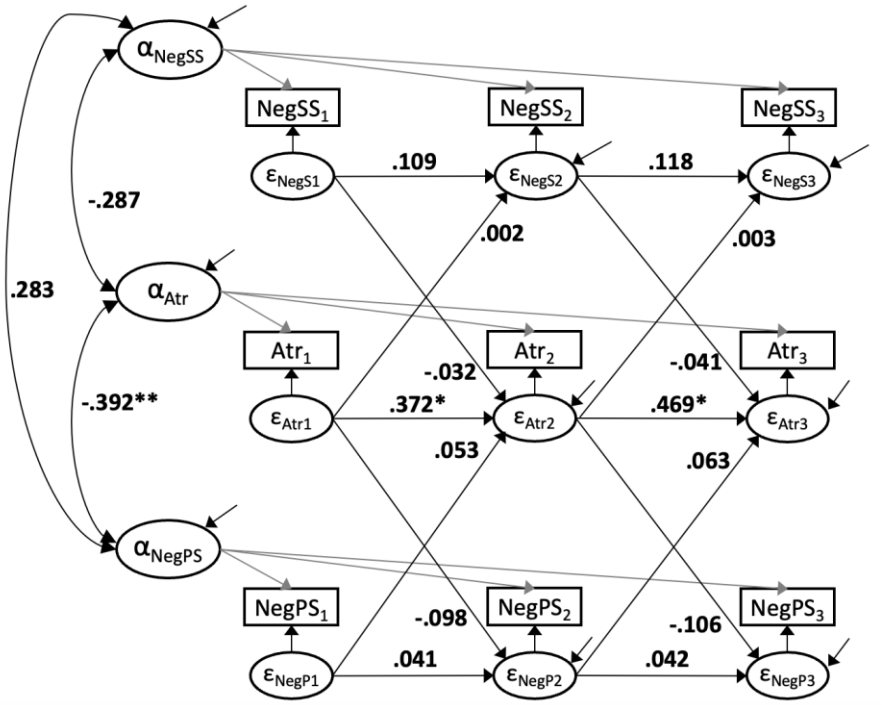
Model 3a: Positive Schema Structures and Dysfunctional Attributions LCM-SR



Note. PosSS = Positive Self Schema; PosPS = Positive Partner Schema; Atr = Dysfunctional Attributions. All coefficients presented are standardized estimates. n = 366. * $p < .05$, *** $p < .001$.

Figure 8

Model 3b: Negative Schema Structures and Dysfunctional Attributions LCM-SR



Note. NegSS = Negative Self Schema; NegPS = Negative Partner Schema; Atr = Dysfunctional Attributions. All coefficients presented are standardized estimates. n = 318. * $p < .05$, ** $p < .01$.

H5d: Dysfunctional behaviours (Models 4A & 4B). As reported in Table 13, correlation coefficients suggest that dysfunctional behaviour is significantly correlated, in the expected directions, with positive and negative self and partner schemas structures across 3- and 6-month intervals. All correlation coefficients were significant, except for the association between Time 1 behaviour and positive self-schemas at Times 1, 2, and 3. Taken together, these correlations suggest that dysfunctional behaviour is longitudinally associated with highly consolidated negative schemas and loosely dispersed positive

schemas for both self and partner (although this association may be less reliably consistent with positive self-schema structures).

Table 13

Longitudinal Correlations Between Schema Structures and Dysfunctional Behaviour

	T1 PosSelf ISD	***T1 PosPart ISD***	***T2 PosSelf ISD***	***T2 PosPart ISD***	***T3 PosSelf ISD***	***T3 PosPart ISD***
T1 Behaviour	.06[n.s.]	.28	-.01[n.s.]	.22	.10[n.s.]	.29
T2 Behaviour	.19	.33	.16	.34	.20	.29
T3 Behaviour	.17	.31	.16	.31	.19	.34
	T1 NegSelf ISD	***T1 NegPart ISD***	***T2 NegSelf ISD***	***T2 NegPart ISD***	***T3 NegSelf ISD***	***T3 NegPart ISD***
T1 Behaviour	-.30	-.45	-.14	-.32	-.19	-.39
T2 Behaviour	-.27	-.36	-.20	-.31	-.14	-.33
T3 Behaviour	-.33	-.33	-.15	-.33	-.18	-.30

Note. PosSelf ISD = Positive Self Interstimulus Distance Scores; PosPart ISD = Positive Partner Interstimulus Distance Scores; NegSelf ISD = Negative Self Interstimulus Distance Scores; NegPart ISD = Negative Partner Interstimulus Distance Scores. n = 369. All correlations are significant at $p < .05$, unless otherwise specified with n.s.

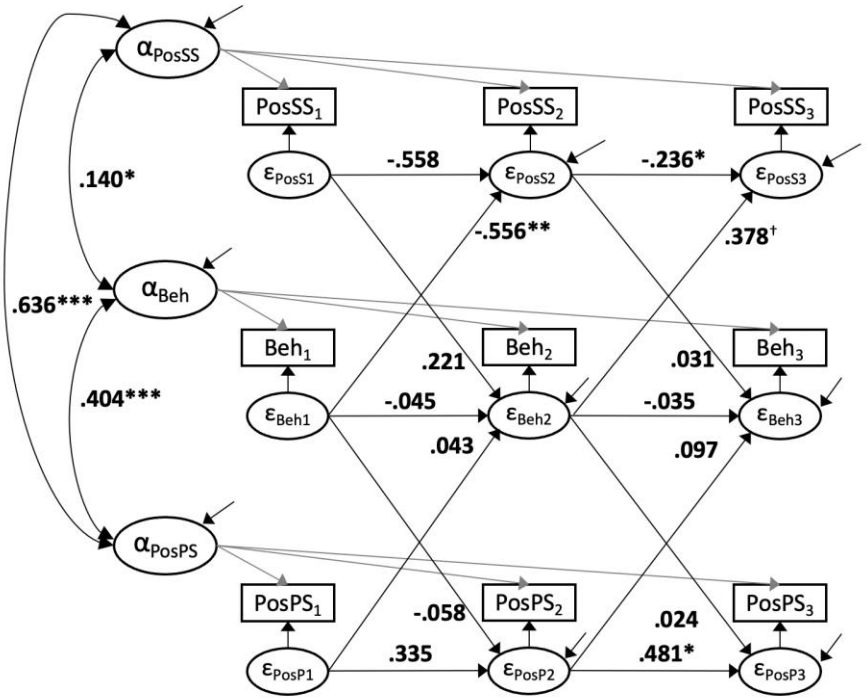
Figures 9 and 10 depict the LCM-SR models of between and within-person relations for positive and negative schema structures, respectively. Regarding between-person relations, results were generally consistent with hypotheses. The latent intercept of dysfunctional behaviours was significantly related to the latent intercepts of positive self and positive partner schemas suggesting that, after accounting for the covariates, participants who, on average, reported a higher level of dysfunctional behaviours tended to show less consolidated positive schemas for both self and partner. A similar significant

pattern of associations was found for the latent intercepts of negative schema structures, suggesting that individuals engaging in more dysfunctional behaviours tended to demonstrate more consolidated negative schema structures for both self and partner.

Only one cross-lagged path emerged as significant. Figure 9 depicts the significant association between dysfunctional behaviours at Time 1 and positive self-schema structure at Time 2. This result suggests that, when an individual reported an increase in dysfunctional behaviours (relative to their average tendency to engage in these types of behaviours) at baseline, they also reported a significant decrease in distance between positive self-schema content at three month follow up. In other words, individuals who experienced greater dysfunctional interactions with a romantic partner reported greater consolidation of positive information about self.

Figure 9

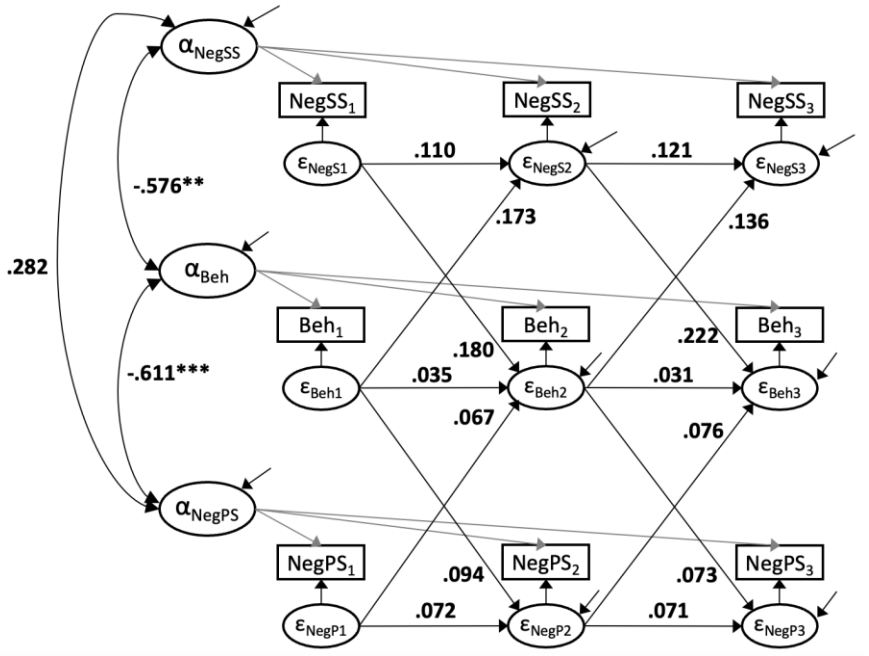
Model 4a: Positive Schema Structures and Dysfunctional Behaviours LCM-SR



Note. PosSS = Positive Self Schema; PosPS = Positive Partner Schema; Beh = Dysfunctional Behaviour. All coefficients presented are standardized estimates. *n* = 366. * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 10

Model 4b: Negative Schema Structures and Dysfunctional Behaviours LCM-SR



Note. NegSS = Negative Self Schema; NegPS = Negative Partner Schema; Beh = Dysfunctional Behaviour. All coefficients presented are standardized estimates. *n* = 318. ** $p < .01$, *** $p < .001$.

H5e: Cross-schema effects. All 8 LCM-SR models reported above also included parameter estimates of associations between self and partner schema structures. Of note, the latent intercepts of positive self and partner schemas were consistently significantly and positively associated (Models 1a, 2a, 3a, & 4a), suggesting that individuals who, on average, reported loosely consolidated positive self-schemas also reported more loosely consolidated positive partner schemas across time. With respect to negative schema

structures, latent intercepts were significantly positively related only in one LCM-SR model (Model 2b, in which dyadic adjustment is included as an outcome variable of interest).

Though not depicted in the figures above for simplicity, all LCM-SR models also tested cross-lagged associations between self- and partner-schemas at 3-month intervals. Only one cross-lagged path coefficient emerged as significant. In the model examining associations between positive schemas and dysfunctional behaviours (Model 4a), increases in the consolidation of positive self-schema organization at Time 2 were significantly associated with increases in consolidation of positive partner schema organization 3 months later at Time 3. In other words, individuals who experienced more consolidated positive self-schemas also tended to report greater consolidation of positive partner schemas 3 months later, suggesting that changes in self schemas may be predictive of changes in partner schema structure.

Discussion

The current study provided an empirical examination of several postulations set forth by a novel theoretical model: the DPSM. The DPSM theorizes that depression is associated with a highly negative PSS, similar to the negative self-schema often observed in depression. These pervasively negative PSS are viewed as stable cognitive contributors to the dysfunctional thoughts, feelings, and behaviours towards a romantic partner that are common in couples in which one or both partners are depressed. The DPSM posits that underlying schema structures are reinforced by the distress-maintaining relationship dynamics that they create. These assumptions were examined in the current study by testing five key hypotheses.

***H1*: PSS are similar to, but distinct from, SSS.**

The first hypothesized finding was that the schema structures individuals held for their romantic partners would be similar in cognitive organization to the schemas individuals held for themselves. It was expected that the degree of consolidation for both positive and negative information about a partner would be moderately correlated with the organization of positive and negative information about self, respectively. This hypothesis was predicated on a vast body of literature suggesting that the way individuals view themselves is highly interwoven with their views of others (e.g., Aron et al., 1991; 1992; Baldwin, 1992; 1995; Bowlby, 1973; 1980). Results were generally consistent with predictions, in that SSS and PSS were significantly positively correlated. The correlation between positive SSS and PSS was moderate (r = .52) and the association between negative SSS and PSS was small (r = .27).

Interestingly, the correlation coefficients between negative SSS and PSS are somewhat weaker in the current study (r = .27) than those reported previously (r = .52 in Wilde & Dozois, 2018). This is somewhat puzzling considering past research that suggests the degree of similarity between cognitive processes and structures increases with greater familiarity and closeness (e.g., Brown et al., 2009; Kuiper & Rogers, 1979). Because of this, one might expect correlations in the current sample of primarily married individuals to be stronger than those in Wilde & Dozois' (2018) undergraduate sample of individuals in shorter-term dating relationships. Although the reason for the weaker correlation in the current sample is unclear, there are several possible explanations to consider. One potential reason could pertain to the age differences across the two samples. For instance, the average age of participants in Wilde & Dozois' (2018)

undergraduate sample was 18 years, compared to an average age of 38 years in the current study. From a developmental perspective, the emerging adult population in the undergraduate sample may be more likely to integrate partner representations into their self-concept due to their salient developmental task of identity formation (see Erikson, 1963). Unlike an older sample of "established" adults in later stages of identity development, it is possible that a sample of emerging adults may be more likely to fuse self and partner representations. Consistent with this notion, researchers have long suggested that, in adolescents and young adults, romantic relationships play a particularly important role in identity formation, self-esteem, and self-worth (Ciarano et al., 2006; Knee et al., 2008; Luciano et al. 2017; Shulman & Connolly, 2013). Another possible explanation for the weaker correlation in the current sample may pertain to the developmental stage of the relationship, rather than the individuals within it. It could be that overlap between self and partner may be greatest during the earliest stages of relationships, when feelings of connection and intimacy build rapidly as other is included into self. It is possible that, as individuals remain in longer-term relationships with partners, there becomes greater cognitive differentiation between self and other.[3] More research is needed to examine how the degree of cognitive overlap between self and other differs between short-term and long-term couples as they progress through various stages of relationship development (Branand et al., 2019). Finally, it is possible that there are methodological explanations for the somewhat weaker associations in the current study (such as the difference between in person versus online administration). Each of the

[3] It is worth noting, however, that relationship length was not significantly correlated with schema organization in the current sample, suggesting that schema structure may not be linearly related to relationship length.

abovementioned explanations are speculative; as such, the degree of association between SSS and PSS needs to be further examined in other samples.

Although the correlation between negative SSS and PSS was somewhat smaller than hypothesized, the current data provide support for the DPSM's notion that SSS and PSS are related, yet distinguishable, cognitive constructs. This has important theoretical implications for the DPSM specifically and for the social cognition literature more broadly. With respect to the DPSM, the current findings support its assertion that schemas held for self and romantic partner are cognitively distinct and therefore may both be pertinent to the study of relational dysfunction in the context of depression. That is, partner schemas appear to represent their own cognitive entity that is worthy of study, despite having been largely neglected in the clinical literature. With respect to the social psychological literature, the finding that self and partner schemas are not redundant is a particularly intriguing one. Theorists have long posited that representations of oneself are inherently bound to one's perceptions of others (e.g., Cooley, 1902), and that self and close other may be challenging to tease apart from one another both cognitively and conceptually (e.g., Aron et al., 1992; Aron et al., 1991; Baldwin, 1992; 1995). The findings do suggest that, although the cognitive structure of representations held for self and romantic partner are certainly related and overlapping, they appear to be distinguishable from one another at the level of cognitive organization.

***H2*: Depressive symptoms are associated with a PSS characterized by tightly interconnected negative information and loosely dispersed positive information.**

The second hypothesized finding was that depressive symptoms would be associated with a PSS similar to the SSS typically observed in individuals with the

disorder: a highly organized network of negative content and loosely consolidated positive content (Dozois et al., 2012; Dozois & Dobson, 2001a, 2001b; Dozois & Frewen, 2006; Lumley et al., 2012). Consistent with this hypothesis, depressive symptoms were significantly associated with both greater consolidation of negative PSS and less consolidation of positive PSS. The current findings represent an important contribution to the literature as they offer the first replication of results from the only other study examining the link between PSS and depression (Wilde & Dozois, 2018). Of note, the correlations between PSS and depression are small, but similar in magnitude to those reported previously in a non-clinical, undergraduate sample (Wilde & Dozois, 2018).

Correlation coefficients would likely be larger in a sample of individuals with clinical depression, given that the associations between SSS and depression appear to be stronger in studies using clinical samples (e.g., r = .66 in Dozois & Dobson, 2001b) than in non-clinical samples (e.g., .25-.42 in the current study and Wilde & Dozois, 2018). Past research has examined the differences in SSS organization for positive and negative content across the spectrum of depressive severity in individuals with symptom levels ranging from nondysphoric, mildly dysphoric, to moderately-severely dysphoric. Findings suggest that the depressotypic dismantling of positive SSS begins to be observable in individuals with mild dysphoria and continues to further deteriorate as depressive symptoms worsen. Interestingly, however, individuals with mild dysphoria do not necessarily show significantly more consolidated negative SSS (compared to those without dysphoria). It appears that greater consolidation of negative SSS is most apparent in individuals with severe dysphoria (Dozois, 2002). In line with this pattern of findings,

Dozois (2002) concluded that "positive schemata and processing may be the first to deteriorate as one moves along the continuum toward depression…. [whereas] negative self-relevant information may not become well-connected until individuals are severely dysphoric or depressed" (pp. 425). As such, individuals with mild to moderate depression tend have greater inconsistency (compared to individuals with severe depression) in their self-schemas as they "lack [both] the consolidated positive self-schema of the [individual without depression], as well as the consolidated negative self-schema of the [individual with] severe [depression]" (Ross & Mueller, 1989, pp. 470). Given what is known about the developmental stages of depressive self-schemas, it is reasonable to expect that the association between schema structures and mood may be stronger in sample with depression (or at least samples with a more varied distribution of depressive symptoms than the current one) where there are more well consolidated negative SSS and loosely dispersed positive SSS. Of note, the average BDI-II score reported in the current sample at baseline assessment was in the minimal range (M = 8.01, SD = 10.33). For this reason, an important avenue for future research is to investigate the strength of these associations between PSS and depression in a clinical sample or with participants experiencing a greater range of depressive symptom severity. Taken together, these findings not only provide support for the DPSM's assertion that depression is associated with PSS organization, but also offer an intriguing contribution to contemporary cognitive models of depression more broadly. Evidence of an association between depressive symptoms and cognitive structures held for romantic partners suggests that it may be beneficial to expand the focus in cognitive theories of the disorder from self-relevant information to also include romantic partners and close others. Compared to self-focused cognition, far

less is known about how individuals with depression perceive, process, and store information about close others (Gadassi & Rafaeli, 2015, Mineka et al., 2003; Weightman et al., 2014). This represents a crucial direction for future study, given the prevalence of interpersonal dysfunction in the disorder (e.g., Hammen & Brennan, 2002; Zlotnick et al., 2000).

***H3*: PSS are uniquely associated with dysfunctional relationship processes common in depression.**

The third hypothesis was that PSS would predict dysfunctional relationship dynamics (i.e., poor relationship quality, distress-maintaining attributions, and dysfunctional interaction patterns) above and beyond SSS and symptoms of depression. The results of the current study supported this hypothesis. Consistent with the DPSM and spreading activation/neural network models of cognition (e.g., Bower, 1981; Ingram et al., 1998), the findings indicate that PSS are significantly predictive of individuals' self-reported relationship distress, tendency to engage in distress-maintaining attributions about a romantic partner, and dysfunctional communication behaviours. Specifically, the organization of both negative and positive information about a partner was significantly associated with these outcomes, suggesting that a highly organized negative PSS and a loosely consolidated positive PSS are both pertinent predictors of relationship functioning. This finding supports the notion that the more tightly interconnected negative schema content is, and loosely dispersed positive content is, the more readily available and/or accessible negative cognitive, affective, and behavioural responses to a partner may be (Scher et al., 2005; Segal, 1988). As a result, when a highly organized negative PSS is activated, activation spreads more efficiently through the network of

negative nodes and results in correspondingly negative cognitive processes and products. This process is likely further facilitated by an absence of a tightly consolidated network of positive information.

As only one previous study has examined the association between the degree of PSS consolidation, relationship adjustment, and attributions (Wilde & Dozois, 2018), the current results offer a necessary replication of those findings in a community sample. Additionally, the current study extends previous findings by offering the first examination of the association between PSS, as measured by the PDST, and relationship behaviour. Of note, the DPSM suggests that the association between PSS and behaviour may be mediated by more surface level cognitive processes and products, such as attributions. Now that the current study has provided evidence for an association between PSS and behaviour, an important next step for future research is to examine potential cognitive mediators of this association.

Of note, SSS did not significantly add to the prediction of relationship adjustment and attributions after controlling for depression. This finding is consistent with past research (Wilde & Dozois, 2018) and supports the assertion that PSS may represent a unique cognitive pathway to relationship distress and dysfunctional cognitive products that SSS does not account for. With respect to dysfunctional relationship behaviours, however, SSS did emerge as a significant predictor, which indicates that both PSS and SSS may play a role in predicting behaviour. This finding aligns with existing literature suggesting that attachment IWMs and relational schemas – which include representations of both self and other – are used to guide behavioural scripts in interpersonal interactions (e.g., Baldwin, 1992; 1995; Bowlby, 1982). Although it may be possible to make

attributions about a partner's behaviour without activating self-referent cognition (e.g., "my partner behaved in this manner because of the characteristics they possess, not because of anything about me or my qualities") it may be more challenging to do so when thinking about behavioural interactions that are inherently dyadic in nature. For instance, this study examined the demand-withdraw pattern of behaviour. By definition, the occurrence of this behavioural interaction requires two individuals to be present: the self and the interaction partner. Moreover, the basic assertions of interpersonal theory (e.g., Kiesler, 1983; 1996; Leary, 1957) suggest that one individual's behavioural output is largely dependent upon their interaction partner's behaviour, given that certain behaviours naturally "pull" for complimentary responses from others. As such, mental representations of both self and other may necessarily be activated in this regard. This is consistent with Baldwin's (1992; 1995) conceptualization of relational schemas, which suggests that behavioural scripts about how one individual responds can only be understood in the context of another individual's responses. In summary, the current findings are consistent with the assertion that PSS may represent a unique and integral contributor to relationship distress and interpersonal dysfunction that cannot be accounted for by SSS alone.

***H4*: SSS and PSS remain relatively stable across time.**

The fourth hypothesized finding was that schema structures would maintain moderate to high stability over 3- and 6-month follow up periods. Fundamentally, schema structures are believed to operate as stable cognitive networks that are generally resistant (although not impermeable) to change (Ingram et al., 1998). Overall, the data from the current study supported this hypothesis. Correlation coefficients indicated moderate to

high stability (~.5-.8), tests of mean PDST score differences across time were not significant, and LCM trajectories suggested no evidence of a linear increase or decrease in PDST scores over time. These indications of stability align with past research reporting moderate to high stability correlations for self-schema structures across one-year follow-up in a non-clinical sample (e.g., Seeds & Dozois, 2010), and as individuals with clinical depression improve from an acute episode (Dozois, 2007; Dozois & Dobson, 2001a).

An examination of the test-retest correlation coefficients suggests that, in this sample, negative schema structures (r = .48-.52) may be slightly less temporally stable than positive structures (r = .64-.76). Similarly, results from the ANOVA indicated that negative self ISD scores evidenced some indication of linear change across time; however, this was not replicated in the more statistically robust LCM analyses. This lower degree of negative schema stability may be due to the healthier nature of the current sample; it is likely that negative schema structures would demonstrate greater stability in clinical samples. As mentioned in previous sections, past research suggests that negatively biased cognitive products, processes, and structures are less consistently observed in individuals with mild dysphoria than they are in sample of individuals with moderate to severe depression (Dozois, 2002). In other words, depressive cognitive structures – particularly negative interpersonal ones – tend to be more stable in individuals who have experienced an episode of severe depression and thereby exhibit well-consolidated underlying negative schema structures. The same may be true in a sample of individuals who report clinically significant levels of relationship distress: it is possible that individuals who have experienced more severe and persistent relational dysfunction may have more robustly consolidated negative PSS than those who have not.

As such, future research would benefit from examining the stability of SSS and PSS in samples with clinically significant depression and relationship distress. If these cognitive structures do show even greater stability in clinical samples, it may become increasingly important to understand their implications for relapse, remission, and clinical intervention. (These implications are discussed in more detail in a subsequent section.)

Taken together, the current data support the notion that SSS and PSS represent relatively stable and enduring cognitive structures. This aligns with traditional cognitive theories of depression (e.g., Ingram et al., 1998) and bolsters the DPSM's assertion that PSS operate in a fashion similar to SSS. This is a particularly relevant finding, given the potential role of underlying schema structures in the recurrence of depression and relationship distress over time.

***H5*: Schema structures contribute to dysfunctional mood and relationship dynamics that subsequently serve to reinforce underlying SSS and PSS over time.**

The final hypothesis was that schema structures would be bidirectionally associated with mood and relationship outcomes. Results provided partial support for this hypothesis; however, not necessarily in the expected directions. Across all LCM-SR models tested, only two cross-lagged paths between schemas and outcome variables of interest emerged as significant. First (as seen in Model 3a), when an individual reported a higher level of dysfunctional relationship attributions at baseline, they were significantly more likely to endorse greater consolidation of positive SSS 3-months later. Second (as seen in Model 4a), when an individual reported a higher level of dysfunctional relationship behaviours at baseline, they were significantly more likely to endorse greater consolidation of positive SSS 3-months later. Both of these findings were unexpected.

They may suggest that, for participants in the current sample, attributing a partner's negative behaviour to something about the partner could offer a self-protective effect and consolidate one's own positive representation of self. It is well established in the psychological literature that healthy adults often engage in self-protective cognitive processes to maintain positive self-views in the face of potential threats to self-image (Sedikides, 2012). For example, when faced with negative feedback about oneself, an individual may buffer their self-view by attributing feedback to external factors (such as bad luck) rather than internal ones (Mezulis et al., 2004), or by derogating and devaluing the source of the negative feedback (e.g., "downgrading" their impressions of peers who evaluate them negatively; e.g., Rodman et al., 2017). It may be that dysfunctional relationship attributions allow an individual to shift blame and responsibility onto a partner and ultimately "save face" to protect self-regard. Not only do self-protection biases manifest cognitively, they also impact an individual's behaviour. For instance, individuals tend to engage in aggressive or retaliatory behaviour as a method of self-protection towards peers who offer negative feedback or social rejection (Achterberg et al., 2016; Rudolph et al., 2004). As such, within the context of romantic interactions, it is possible that when a healthy individual perceives a threat to their own self-regard, they may also engage in less adaptive communication behaviours towards a romantic partner for a similar purpose. In this way, the use of maladaptive communication strategies (e.g., criticizing or withdrawing from a partner) may represent a protective strategy that serves to bolster one's own self-concept. Although findings pertaining to the fifth and final hypotheses were not as predicted, they are consistent with the broader social psychological literature on self-protection biases in healthy individuals.

It is worth noting that these self-protective effects would likely *not* be observed in a clinically depressed sample. Research suggests that self-protection biases tend to break down in individuals with depression (Alloy et al., 2011). Consider the basic premise of Swann's (1981) self-verification theory, which suggests that, because individuals are so strongly motivated to maintain a sense of predictability and consistency in their self-views, they tend to seek out, attend to, and recall feedback from the environment that confirms their self-concept. In line with their negative self-schemas, individuals with depression have been shown to actively seek negative feedback about themselves from others (a widely studied phenomenon referred to as *negative feedback seeking*) that confirms their pervasively negative self-view (e.g., Evraire & Dozois, 2011; Starr et al., 2023; Swann et al., 1981; 1992; Wakeling et al., 2020). Thus, it would be unlikely that individuals with the disorder would engage in these types of self-protective strategies. As such, future research could test whether the cross-lagged associations between attributions, behaviours, and self-schema structures observed in this study replicate, and whether these associations differ in in the predicted directions in depressed versus non-depressed individuals. This line of research would represent an important extension of the current study and provide a more robust examination of the schema-consolidating processes outlined in the DPSM.

Contrary to hypotheses, changes in depressive symptoms and relationship distress were not predictive of later changes in SSS or PSS. This may suggest that specific cognitive and behavioural patterns (e.g., dysfunctional attributions, demand-withdraw patterns) occurring in relationships are more proximal contributors to schema consolidation than global variables (e.g., ongoing mood and perceived relationship

quality). Alternatively, it is possible that depression and relationship distress take longer to exert their effects on schema structure over time, and that the follow up time intervals in the current study were not lengthy enough to allow for such processes to occur. Changes in SSS organization following the treatment of depression have been observed after 16-week follow-up periods (Dozois et al., 2009; Crits-Christoph et al., 2017; Quilty et al., 2014); however, there is limited empirical evidence surrounding the naturalistic consolidation of schema structures as it occurs over time without targeted intervention. It is possible that longer time periods are needed to detect the effects of depression and relational distress on subtle changes in schema structure organization. The question of how shifts in symptomatology predict shifts in schema structure across time is a novel one; as such, a necessary and intriguing avenue for future investigation includes studies designed to examine the rate of schema accommodation over time, as well as whether there are potential moderating factors (for example, certain cognitive styles, personality factors, or relationship variables may promote more or less rapid schema consolidation over time).

Also contrary to hypotheses, changes in SSS and PSS did not predict later changes in any of the four mood or relationship outcome variables. There are a number of potential reasons why the hypothesized results did not emerge as significant. First, it is possible that the lack of significant cross-lagged associations between schemas and outcome variables of interest reflects the absence of any true effects of schema structures on mood and relationship variables over time. This seems unlikely, however, given the well-established theoretical support for the proposed hypotheses and significant longitudinal correlations between variables across timepoints. (For example, positive PSS

at baseline were significantly correlated with dyadic adjustment at 3 and 6 months later with coefficients ~.4). The lack of an association between SSS and later depression is particularly surprising given the strong empirical support for the role of SSS as a vulnerability factor for depression (Dozois & Beck, 2023). As such, other factors related to measurement and methodology may have contributed to the absence of significant associations.

First, many of the variables remained relatively stable across follow up assessments in the current sample. As a result, there may not have been sufficient variation in scores to be able to predict change in the first place. The LCM-SR analyses are fairly conservative because they include auto-regressive paths and essentially control for an individual's trait-like score over time. As a result, small effects can be quite difficult to detect in these analyses. Moreover, not only were they stable over time, but the range of scores was also not particularly large in the current sample (i.e., a fairly satisfied sample with low depression scores).

Second, it is possible that the hypothesized effects of schemas on mood and relationship variables were not observed in the current study because SSS and PSS were not activated (either by experimental manipulation or naturally as a result of participant life stressors or mood episodes; see Gillies & Dozois, 2021). Recall that cognitive models of depression posit that, once developed, negative SSS remain dormant until activated by a relevant stressor (such as an interpersonal loss, rejection, or failure; Dozois & Beck, 2008). It is possible that effects of PSS may be most strongly observed *once activated* by certain partner-relevant situations (e.g., partner conflict, betrayal, etc.) and/or affective states. No research has examined the role of PSS from a diathesis-stress perspective, so

less is known about what conditions are needed to observe the effects of negative PSS on relationship functioning. For instance, SSS and PSS may not become fully consolidated for some individuals until they have experienced an episode of depression or acute relationship distress. Similarly, underlying negative PSS may only become activated by relevant relationship stressors, such as partner transgressions or chronic relationship conflict. More research is needed to examine the conditions under which PSS are both developed and activated.

The current study also examined the presence of bidirectional associations between self and partner schemas across time. In accordance with past research demonstrating that individuals project their own self-views and attitudes onto romantic partners (McNulty et al., 2014; Murray et al, 1996), it was expected that changes in SSS at one point in time would predict corresponding changes in PSS at a later time. Results provided support for this hypothesis in only one of the four LCM-SR models (Model 4a), such that greater consolidation in positive SSS at one time point was associated with increased consolidation in positive PSS three months later. This finding may suggest that not only do individuals project their explicit self-evaluations, ideals, and attitudes onto partners, but changes in self-representations may also be reflected in partner-representations at a structural level. The current study is the first to show that changes in the cognitive organization of positive information about self may be predictive of later changes in PSS. This finding should be interpreted with caution, however, as this cross-lagged path emerged as significant in only one of four models. It is possible that there is a suppression effect occurring with the cross-lagged paths in the remaining models due to the large amount of variance in observed variable scores accounted for by the latent

intercept variable; however, additional studies are needed to examine this finding's replicability in different samples.

Limitations of the Current Study

The results of the current study should be interpreted in the context of its limitations. First, the data were collected from a sample of participants recruited via an online crowdsourcing platform. Researchers have outlined certain limitations related to the use of these platforms, largely pertaining to generalizability and integrity of the data (see Chandler & Shapiro, 2016, for review). With respect to data quality in particular, researchers have raised concerns about the validity of participant responses stemming from a variety of factors (e.g., inattentiveness, random responding, bots, etc.) In the current study, a significant portion of Time 1 respondents failed four or more attention checks and, as a result, data from these participants were excluded. This led to a large amount of excluded data and may raise concerns about the validity of crowdsourced data. However, a number of safeguards were used to preserve integrity of the data and ensure optimal quality wherever possible in the current study (e.g., use of reCAPTCHA to eliminate bots, screening workers based on their HIT approval ratio, use of particular types of attention checks, etc.) and bolster confidence in the quality of the data that were retained. Many researchers have advocated for the validity and usefulness of crowdsourcing data collection (e.g., Litman et al., 2017), and research supports the validity of MTurk data, especially when safeguards are used to mitigate the effects of potential threats to data integrity (Chandler & Shapiro, 2016). As such, while the limitations of online crowdsourcing data should be acknowledged, this method of data collection afforded important benefits to the current study. For example, it allowed for

the findings of past research in undergraduate samples to be replicated in a community sample of adults with more diverse individual and relationship demographics; it also allowed for continued data collection during the COVID-19 pandemic.

A second potential limitation surrounds the sole use of self-report questionnaire measures for several outcome variables of interest (including relationship adjustment, attributions, and behaviour) in the current study. Participants' self-reports of cognition and behaviour are subject to various biases (e.g., poor memory, mood-congruent information processing) and therefore may not be ideal estimates of an individual's naturalistic response tendencies in "real world" situations. Indeed, self-reported behavioural tendencies and objective observer reports of actual participant behaviour are not always strongly correlated with one another (e.g., Stewart & Harkness, 2016). As such, an important direction for future research is to examine whether the observed associations between schemas and outcome variables of interest replicate using *in vivo* methods of assessing cognitions and behaviours as they unfold from moment-to-moment. For example, daily diary or ecological momentary assessment methodology would be well-suited to assess the effects of schema structures on participants' moment to moment cognitions about a partner as they occur in daily life. In addition, objective coding of observable behaviours between partners as they unfold during laboratory-based dyadic interaction tasks would provide valuable insights into the interplay between schema structures and behavioural patterns in relationships. Given that these more rigorous methodologies are time consuming and costly, the self-report methods used in the current study are appropriate given that empirical examinations of the DPSM are in its early stages. As such, despite its limitations, the self-report data from the current study

provides a foundation for further investigations of associations among schemas, cognition, and behaviour, using more resource-intensive study designs.

A final limitation surrounds the fact that, despite the focus in this study on depression and relationship distress, a clinical sample was not used. The individuals in this study reported being relatively satisfied with their relationship and endorsed relatively low levels of depression, on average. (For example, the mean BDI and R-DAS scores in the current sample were 8.01 and 50.21, respectively. These scores can be compared to empirically-derived cutoff scores on these measures, wherein a BDI score of 12 or less is considered nondepressed [Dozois et al., 1998], and an RDAS score of 48 and above indicate the absence of relationship distress [Busby et al., 1995]). For numerous reasons outlined previously, it is possible that the associations between schemas and mood/relationship outcomes may be stronger in clinically depressed or romantically distressed samples. Consistent with this idea, previous research has shown stronger associations between SSS and depression in samples with a greater range of depressive symptom severity compared to the associations reported here (e.g., Dozois, 2002; Dozois & Dobson, 2001b). Thus, an important area for future study will be to examine elements of the DPSM in clinical samples, particularly including individuals who are experiencing co-occurring depression and significant relationship distress. Nevertheless, the current findings do suggest significant (albeit small) associations between schemas and mood/relationship processes in a community sample.

Implications and Conclusions

Notwithstanding its limitations, this study represents an important contribution to the research literature. It provides the first direct empirical examination of the DPSM

using a longitudinal cohort design in a sample of adult individuals from the community. Although a number of studies have sought to examine the effects of partner schemas on relationship outcomes, the majority of them have used measures of schema *content* and *information processing*, rather than *structure*, per se (Wilde & Dozois, 2018). The current study used the PDST to assess SSS and PSS, which is unique in its ability to capture the *organization* and degree of consolidation of information about a romantic partner. Given that schema consolidation represents a stable cognitive risk factor for depression (more so than schema content and information processing), this particular operationalization of PSS is important. Furthermore, the findings support the notion that PSS are distinct cognitive structures that are associated with depression and may be more potent predictors of romantic dysfunction than SSS. This implies that a shift in focus from self-relevant information processing to cognition about close others may be warranted to obtain a more well-rounded understanding of depression and relationship dysfunction. Indeed, researchers have invited the integration of cognitive and interpersonal models of depression (Dobson et al., 2014; Halford, 2014; Gaddassi & Raffaeli, 2015, Rehman et al., 2008) and relationship distress (Osterhout et al., 2011). Both theory and clinical practice would benefit from a more theoretically integrative perspective.

A particularly important contribution of this study is its demonstration of schema stability. Although a small number of studies have provided support for the stability of SSS over time (e.g., Dozois & Dobson, 2001a; Seeds & Dozois, 2010), the current study provides a novel contribution to the literature as it is the first longitudinal investigation of PSS stability, as measured by the PDST. These findings also offer the first examination of SSS stability using a latent growth modeling approach, which affords greater statistical

sensitivity in detecting changes in the trajectory of schema organization across time. The 3- and 6-month stability of SSS and PSS observed in the current study pose particularly important implications regarding the risk and recurrence of both depression and relationship distress. Unlike other cognitive "hallmarks" of depression (i.e., cognitive processes and products) that appear to be more transient and dissipate on their own as depressed mood resolves, growing evidence suggests that depressive schema structures persist and are unlikely to significantly improve or spontaneously resolve without clinical intervention (e.g., Dozois, 2007, Dozois & Dobson, 2001a). Given their stability, SSS and PSS may have the potential to leave individuals vulnerable to recurring or chronic low mood and relationship distress over time. In other words, without direct intervention, underlying schemas may remain dormant following episodes of depression (and/or relational distress) and subsequently become reactivated later in life. Moreover, research related to the kindling hypothesis of depression (see Post, 1992) suggests that, with each episode of depression an individual experiences, less "stress" is needed to activate the underlying diathesis and trigger a depressive episode (Monroe & Harkness, 2005). This suggests these underlying cognitive structures may be particularly important targets for intervention, not only to alleviate acute distress and symptom exacerbation, but also to prevent recurrence and relapse over time. It may be that the cognitive dismantling of depressive self-schemas is an important component of preventing depressive relapse, and that the restructuring of pervasively negative PSS could be instrumental in preventing relational discord over time.

The existence of highly organized schema structures for both self and partner, as evidenced in the current study, gives rise to a number of relevant clinical implications.

Schema structures may be prime targets for therapeutic intervention because of their stability and associations with the tendency to engage in dysfunctional relationship processes. Considering that past research has demonstrated depressive SSS change following clinical interventions for the disorder (Dozois et al., 2009; 2014; Quilty et al., 2014; Quigley et al., 2019), PSS may similarly be restructured through certain interventions. For example, like SSS, PSS may be restructured in individual therapy using cognitive-behavioural interventions designed to change maladaptive beliefs about one's partner and the romantic relationship. Furthermore, couple therapy aimed at reducing dysfunctional communication patterns (and potentially enhancing more cognitive appraisals of a partner; Halford 2014) could be effective in dismantling negative PSS and consolidating positive ones (Whisman & Gilmour, 2023).

In light of this possibility, clinicians treating individuals (and/or couples) presenting with relational discord and depression may benefit from assessing SSS and PSS at treatment baseline. Doing so could be useful in informing case conceptualization and determining whether schema structures are relevant targets for therapeutic intervention. For instance, if an individual presenting for treatment of co-occurring depression and relationship distress exhibits a highly consolidated negative PSS, the treatment provider may plan to deliver interventions that target underlying schema structures not only to help reduce acute distress, but also lower risk for relapse in the future. In line with the field's recent emphasis on evidence-based assessment and treatment efforts (Hunsley & Mash, 2007; 2020), schema structure could be assessed at baseline and over the course of treatment to assess the extent to which structures are being modified and that the intended effects of therapy on cognition are occurring, and

coinciding with improvement in symptoms. Additionally, recent advances in the clinical literature have also advocated for the importance of "personalized medicine" and selecting treatment approaches for each client based on individual difference variables that have been shown to predict differential treatment response (DeRubeis et al., 2014; van Bronswijk et al., 2021). It could be that underlying schema structures, as measured by the PDST, represent one such individual difference variable that may help to guide clinicians' chosen approach to treatment. (For instance, when treating depression, interpersonal therapy or couple therapy may be more appropriate for individuals presenting with negative PSS; whereas standard CBT or behavioural activation may be more relevant for those who do not.) If empirical evidence for the role of SSS and PSS in dysfunctional relationship dynamics continues to emerge, it may become increasingly relevant to consider these as constructs to be assessed, treated, and monitored in clinical contexts.

Another important contribution of this study is that it provides the first investigation of the reciprocal dynamics between schema structures and mood/relationship outcomes over time. Although results of these analyses were not necessarily consistent with hypotheses, they are nevertheless intriguing and highlight potential research questions for further study. From a theoretical perspective, the findings raise the question of whether schema structures need to be activated for their full effects on cognition, affect, and behaviour to be observed. The basic tenets of the DPSM may need to be further refined to specify the conditions under which PSS are likely to influence mood and relationship dynamics. If schemas only exert their effects when activated, it is possible that any causal effects of PSS may only be observed in the context

of shorter time frames, life stressors, acutely depressed mood, or immediately in response to interactions with romantic partners. Stemming from this, the current findings generate additional questions pertaining to the development of SSS and PSS as diatheses to depression and relationship distress. For example, future research could begin to delineate the undoubtedly complex pathways through which SSS and PSS develop over time, and whether these represent a cause, concomitant, or consequence of depression and relationship distress. Ultimately, longer term follow-ups are needed to fully understand the intricacies of how these problematic structures develop over time.

In conclusion, this study provides preliminary support for several assumptions of the DPSM and generates additional research avenues that may help to further refine the model and enhance its utility. With respect to the literature more broadly, the findings underscore the importance of broadening cognitive conceptualizations of depression to include the relevance of other-directed cognition. The role of partner-related cognitive structures has important implications not only for theory and research, but also clinical practice. With greater understanding of depressive vulnerability, efforts can be more effectively targeted at prevention and intervention of cognitive-interpersonal mechanisms of this far-reaching disorder.

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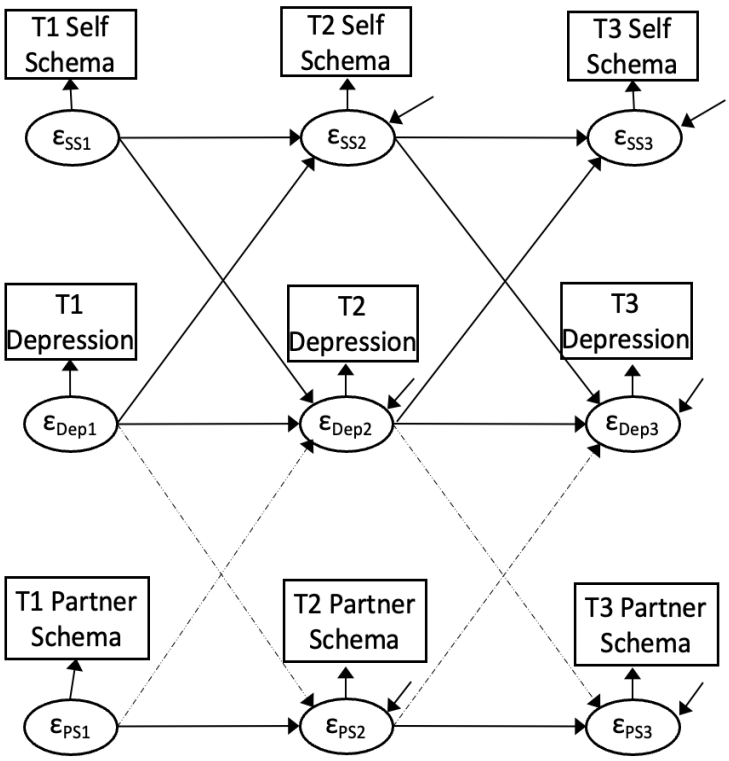
Appendix A

A Priori Hypothesized Statistical Models

The *a priori* hypothesized models for Hypothesis 5 (A-E) are presented below. For visual and conceptual simplicity, not all statistical parameters are depicted in the model figures. Only between-participants autoregressive paths and cross-lagged paths are represented, given that these are the main associations of interest.

Figure A1

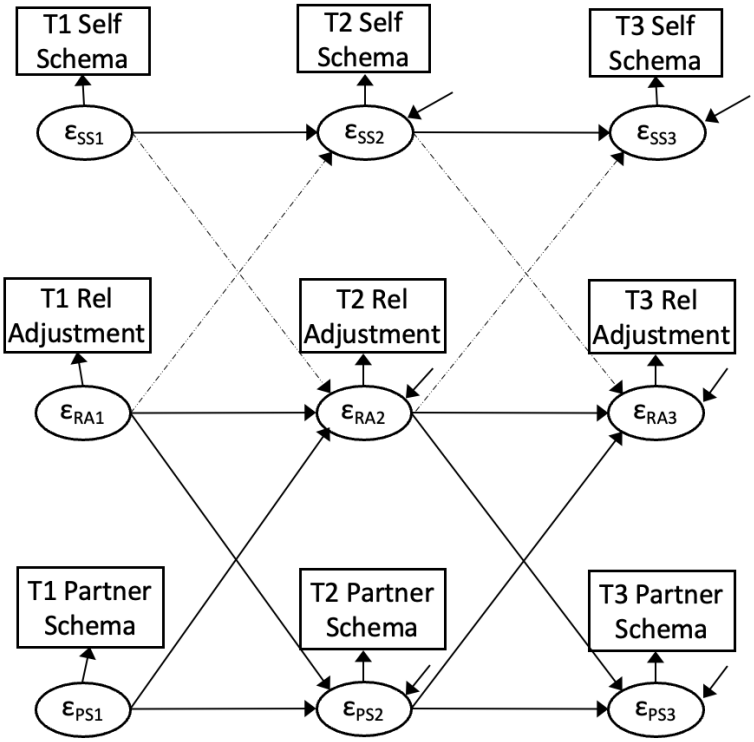
Hypothesis 5a: Schema Structures and Depression



Note. Solid lines depict paths that are hypothesized to be statistically significant. Dashed lines depict paths that are not hypothesized to emerge as significant.

Figure A2

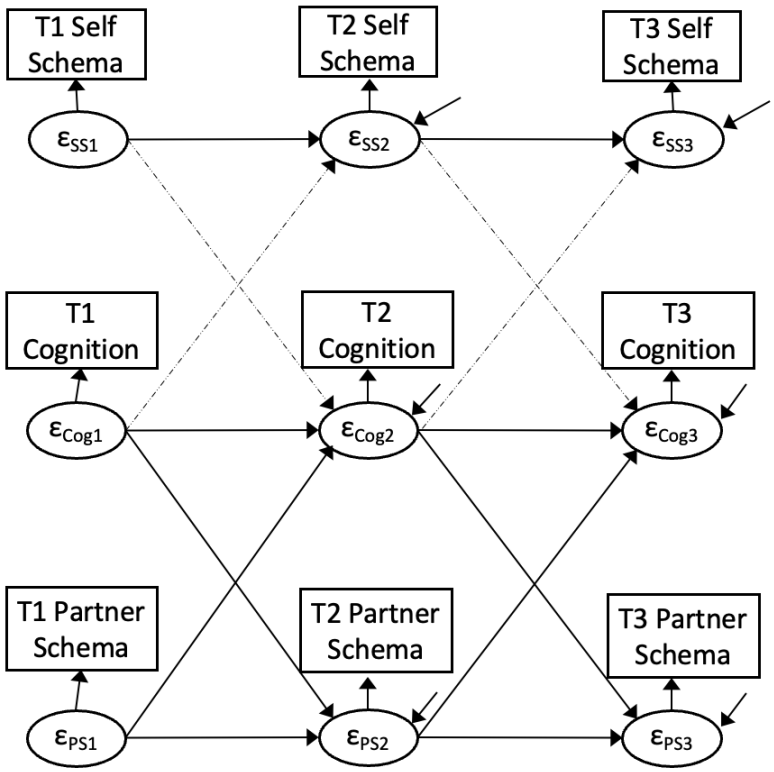
Hypothesis 5b: Schema Structures and Relationship Adjustment



Note. Solid lines depict paths that are hypothesized to be statistically significant. Dashed lines depict paths that are not hypothesized to emerge as significant.

Figure A3

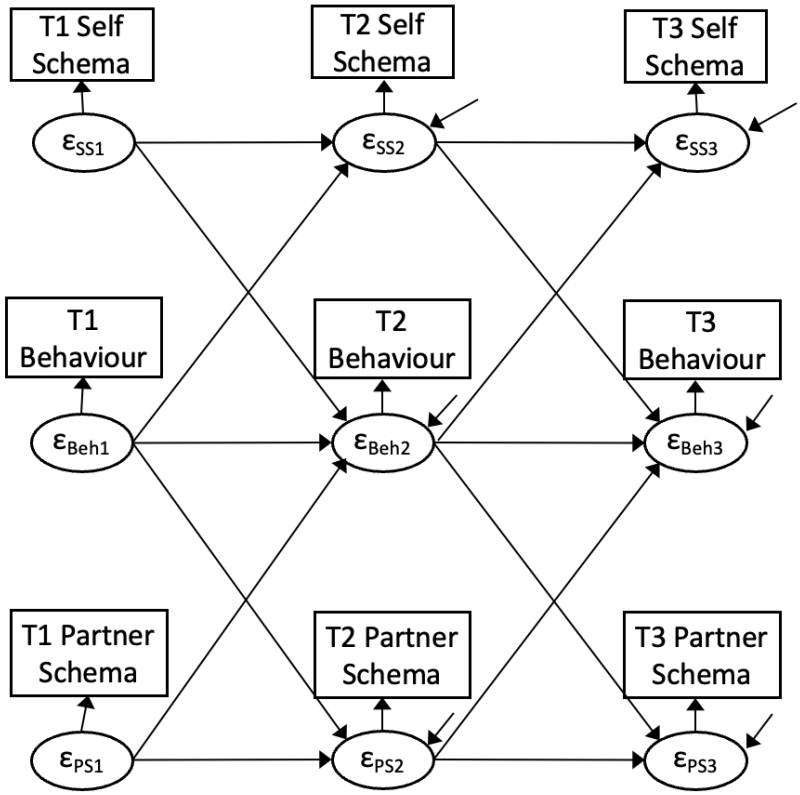
Hypothesis 5c: Schema Structures and Cognition



Note. Solid lines depict paths that are hypothesized to be statistically significant. Dashed lines depict paths that are not hypothesized to emerge as significant.

Figure A4

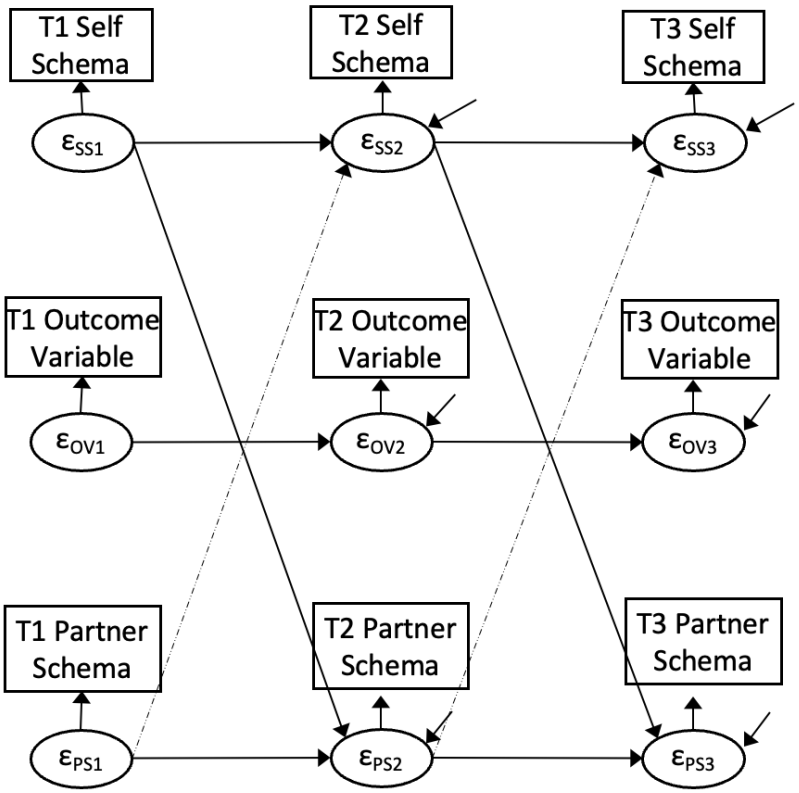
Hypothesis 5c: Schema Structures and Behaviour



Note. Solid lines depict paths that are hypothesized to be statistically significant.

Figure A5

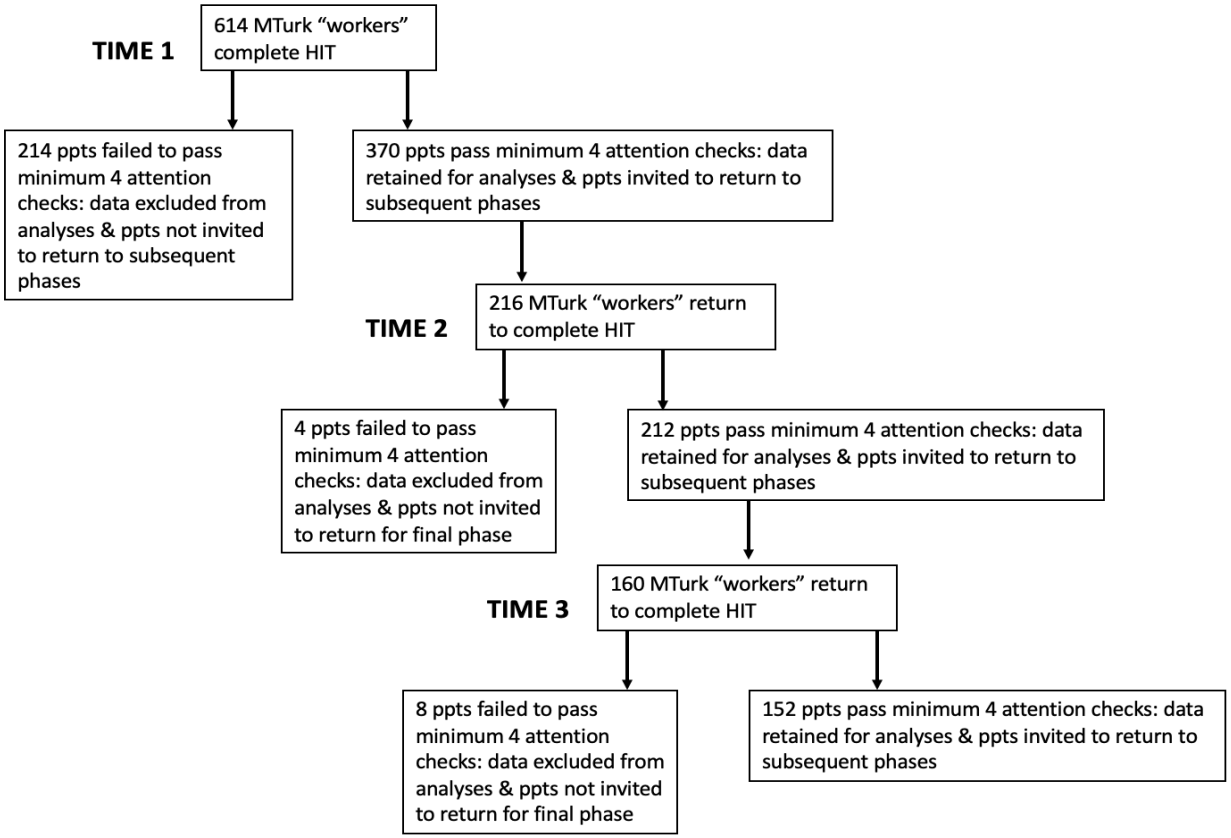
Hypothesis 5e: Self and Partner-Schemas



Note. Solid lines depict paths that are hypothesized to be statistically significant.

Appendix B

Inclusion/Exclusion Based on Attention Check Responses



Flow chart depicting the inclusion and exclusion of participants across time points, based on number of attention checks passed. *Note.*

MTurk = Mechanical Turk, HIT = Human Intelligence Task (via MTurk), ppts = participants

Appendix C

Psychological Distance Scaling Task (PDST) Word Lists

POSITIVE ADJECTIVES
(SAME LIST TO BE USED FOR SELF AND PARTNER RATINGS)

1. Admired
2. Approving
3. Comical
4. Communicative
5. Confiding
6. Connected
7. Delightful
8. Desirable
9. Encouraged
10. Energetic
11. Entertaining
12. Extroverted
13. Gentle
14. Gifted
15. Gracious
16. Hilarious
17. Humble
18. Joyful
19. Lively
20. Marvellous
21. Neighbourly
22. Nonjudgmental
23. Outgoing
24. Playful
25. Pleasurable
26. Selfless
27. Soft-hearted
28. Spontaneous
29. Valuable
30. Wonderful

NEGATIVE ADJECTIVES
(SAME LIST TO BE USED FOR SELF AND PARTNER RATINGS)

31. Aggressive
32. Alone
33. Annoying
34. Attention-seeker
35. Bossy
36. Combative
37. Controlling
38. Criticized
39. Demanding
40. Dependent
41. Forceful
42. Gossiper
43. Hot-tempered
44. Immature
45. Impatient
46. Insecure
47. Irritable
48. Judgmental
49. Lazy
50. Lonely
51. Lonesome
52. Needy
53. Overbearing
54. Pessimistic
55. Possessive
56. Pushy
57. Quarrelsome
58. Resentful
59. Showy
60. Unassertive

Appendix D

Rationale for Mean Composite Score Creation

Two composite scores were created as a measure of overall dysfunctional relationship cognitions and behaviours. The first composite, titled *Dysfunctional Attributions Composite*, was created by averaging participant scores on the RAM's causal and responsibility attribution subscales. The second composite, titled *Dysfunctional Behaviours Composite*, was created by averaging participant scores on the CPQ-SF's demand/withdraw and criticize/defend subscales.

The creation of these composites by simply calculating a mean score is appropriate for several reasons. Conceptually, there is no hypothesized difference in the pattern of results across different subscales (e.g., schemas are not expected to differentially predict demand/withdraw vs. criticize/defend patterns, or responsibility vs. causal attributions). As such, reducing these cognitive and behavioural variables from 4 separate subscales into 2 composites allows for fewer statistical models to be run and conserves degrees of freedom. Statistically, a mean composite score is preferable to other approaches in this case, such as creating a latent variable in SEM, given that it is typically preferable to have at least 3 or more observed indicator measurements when creating a latent variable (e.g., Kenny & Kashy, 2006). Moreover, the creation of these composites is supported by the high correlations between the subscales within each composite (approximately .7 - .8).

Appendix E

Tests of LCM-SR Model Fit

Table E1

Model 1A: Positive Self, Depression, Positive Partner

Description of Tested Model	$X^2(df)$, p	CFI	RMSEA (90% CI)	SRMR	Δ X^2 (df), p	Δ RMSEA	Δ CFI
1. Cross-lagged paths unconstrained, correlated residuals constrained, stability paths constrained to equality.	26.72(27), .479	1.000	.000 (.000 .040)	.029			
2. Test removal of correlated residuals constraints (M1 vs. M2). No significant difference; therefore, leave constraints in final model.	21.78(24), .592	1.000	.000 (.000 .038)	.024	4.94(3), *ns*	.000	.000
3. Test removal of stability path constraints (M1 vs. M3). No significant difference for schema structure (no model convergence with removal of BDI constraints); therefore, keep constraints in final model.	23.48(25), .549	1.000	.000 (.000 .039)	.027	3.23(2), *ns*	.000	.000

**table D1 continues on the next page*

Description of Tested Model	$X^2(df)$, p	CFI	RMSEA (90% CI)	SRMR	Δ X^2 (df), p	Δ RMSEA	Δ CFI
**Table D1 continued*							
4. Test whether 4 cross-lagged paths could be constrained (M1 vs. M4). No significant difference; therefore, keep constraints in final model.	33.88(33), .425	.999	.008 (.000 .039)	.035	7.16(6), *ns*	.008	.001
5. Final model. Cross-lagged paths constrained, correlated residuals constrained, stability paths constrained, use Maximum likelihood robust (MLR) instead of ML.	32.74(33), .480	1.000	.000 (.000 .038)	.035			

Table E2

Model 1B: Negative Self, Depression, Negative Partner

Description of Tested Model	$X^2(df)$, p	CFI	RMSEA (90% CI)	SRMR	Δ X^2 (df), p	Δ RMSEA	Δ CFI
1. Cross-lagged paths unconstrained, correlated residuals constrained, stability paths constrained to equality.	68.40(61), .0241	.994	.018 (.000 .038)	.050			
2. Test removal of correlated residuals constraints (M1 vs. M2.). Significant difference; therefore, do not leave constraints in final model.	57.90(58), .479	1.000	.000 (.000 .032)	.047	10.5(3), *.05*	.018	.006
3. Test removal of stability path constraints (M1 vs. M3). No significant difference for schema structure (and no model convergence with removal of BDI constraints); therefore, keep constraints in final model.	66.65(59), .231	.994	.019 (.000 .038)	.051	1.75(2), *ns*	.001	.006
4. Test whether 4 cross-lagged paths could be constrained (M1 vs. M4). No significant difference; therefore, keep constraints in final model.	80.94(67), .118	.990	.024 (.000 .041)	.052	12.54(6), *ns*	.006	.004
5. Final model. Cross-lagged paths constrained, correlated residuals constrained, stability paths constrained, use Maximum likelihood robust (MLR) instead of ML.	76.68(67), .196	.991	.020 (.000 .038)	.052			

Table E3

Model 2A: Positive Self, R-DAS, Positive Partner

Description of Tested Model	$X^2(df)$, p	CFI	RMSEA (90% CI)	SRMR	Δ X^2 (df), p	Δ RMSEA	Δ CFI
1. Cross-lagged paths unconstrained, correlated residuals constrained, stability paths constrained to equality.	26.17(27), .509	1.000	.000 (.000 .039)	.043			
2. Test removal of correlated residuals constraints (M1 vs. M2.). No significant difference; therefore, keep constraints in final model.	20.11(24), .691	1.000	.000 (.000 .034)	.032	6.06(3), *.ns*	.000	.000
3. Test removal of stability path constraints (M1 vs. M3). No significant difference for schema structure (and no model convergence with removal of BDI constraints); therefore, keep constraints in final model.	22.72(25), .594	1.000	.000 (.000 .037)	.042	3.45(2), *ns*	.000	.000
4. Test whether 4 cross-lagged paths could be constrained (M1 vs. M4). No significant difference; therefore, keep constraints in final model.	38.44(33), .237	.996	.021 (.000 .045)	.055	12.27(6), *ns*	.021	.004
5. Final model. Cross-lagged paths constrained, correlated residuals constrained, stability paths constrained, use Maximum likelihood robust (MLR) instead of ML.	34.55(33), .394	.998	.011 (.000 .040)	.055			

Table E4

Model 2B: Negative Self, R-DAS, Negative Partner

Description of Tested Model	$X^2(df)$, p	CFI	RMSEA (90% CI)	SRMR	Δ X^2 (df), p	Δ RMSEA	Δ CFI
1. Cross-lagged paths unconstrained, correlated residuals constrained, stability paths constrained to equality.	85.80(61), .020	.977	.033 (.014 .048)	.060			
2. Test removal of correlated residuals constraints (M1 vs. M2.). Significant difference; therefore, do not keep constraints in final model.	76.15(58), .055	.983	.029 (.000 .046)	.055	9.65(3), *.05*	.004	.006
3. Test removal of stability path constraints (M1 vs. M3). No significant difference; therefore, leave constraints in final model.	81.00(58), .025	.979	.033 (.012 .049)	.058	4.80(3), *ns*	.000	.002
4. Test whether 4 cross-lagged paths could be constrained (M1 vs. M4). No significant difference; therefore, keep constraints in final model.	98.32(67), .008	.971	.036 (.019 .050)	.064	12.52(6), *ns*	.003	.006
5. Final model. Cross-lagged paths constrained, correlated residuals unconstrained, stability paths constrained, use Maximum likelihood robust (MLR) instead of ML.	78.21(64), .109	.982	.024 (.000 .041)	.058			

Table E5

Model 3A: Positive Self, Dysfunctional Attributions, Positive Partner

Description of Tested Model	$X^2(df)$, p	CFI	RMSEA (90% CI)	SRMR	Δ X^2 (df), p	Δ RMSEA	Δ CFI
1. Cross-lagged paths unconstrained, correlated residuals constrained, stability paths constrained to equality.	22.04(27), .736	1.000	.000 (.000 .030)	.032			
2. Test removal of correlated residuals constraints (M1 vs. M2.). No significant difference; therefore, keep constraints in final model.	16.75(24), .859	1.000	.000 (.000 .023)	.023	5.29(3), *ns*	.000	.000
3. Test removal of stability path constraints (M1 vs. M3). No significant difference; therefore, leave constraints in final model.	16.99(24), .849	1.000	.000 (.000.024)	.027	5.05(3), *ns*	.000	.000
4. Test whether 4 cross-lagged paths could be constrained (M1 vs. M4). Significant difference; therefore, do not keep constraints in final model.	43.60(33), .103	.990	.029 (.000 .051)	.042	21.56(6), *.05*	.010	.029
5. Final model. Cross-lagged paths unconstrained, correlated residuals constrained, stability paths constrained, use Maximum likelihood robust (MLR) instead of ML.	21.16(27), .779	1.000	.000 (.000 .028)	.032			

Table E6

Model 3B: Negative Self, Dysfunctional Attributions, Negative Partner

Description of Tested Model	$X^2(df)$, p	CFI	RMSEA (90% CI)	SRMR	Δ X^2 (df), p	Δ RMSEA	Δ CFI
1. Cross-lagged paths unconstrained, correlated residuals constrained, stability paths constrained to equality.	88.98(61), .011	.968	.035 (.017 .050)	.056			
2. Test removal of correlated residuals constraints (M1 vs. M2.). No significant difference; therefore, keep constraints in final model.	82.78(58), .018	.972	.034 (.015 .050)	.047	6.20(3), *ns*	.001	.004
3. Test removal of stability path constraints (M1 vs. M3). No significant difference; therefore, leave constraints in final model.	87.10 (58), .008	.967	.037 (.019 .052)	.060	1.88(3), *ns*	.002	.001
4. Test whether 4 cross-lagged paths could be constrained (M1 vs. M4). No significant difference; therefore, keep constraints in final model.	97.90 (67), .008	.965	.035 (.018 .050)	.057	8.92(6), *ns*	.000	.003
5. Final model. Cross-lagged paths constrained, correlated residuals constrained, stability paths constrained, use Maximum likelihood robust (MLR) instead of ML.	86.52 (67), .055	.971	.028 (.000 .044)	.057			

Table E7

Model 4A: Positive Self, Dysfunctional Behaviour, Positive Partner

Description of Tested Model	$X^2(df)$, p	CFI	RMSEA (90% CI)	SRMR	Δ X^2 (df), p	Δ RMSEA	Δ CFI
1. Cross-lagged paths unconstrained, correlated residuals constrained, stability paths constrained to equality.	20.36(27), .815	1.000	.000 (.000 .026)	.037			
2. Test removal of correlated residuals constraints (M1 vs. M2.). No significant difference; therefore, leave constraints in final model.	18.91(24), .757	1.000	.000 (.000 .030)	.030	1.45(3), *ns*	.000	.000
3. Test removal of stability path constraints (M1 vs. M3). No significant difference; therefore, keep constraints in final model.	13.29(24), .961	1.000	.000 (.000 .000)	.024	7.07(3), *.ns*	.000	.000
4. Test whether 4 cross-lagged paths could be constrained (M1 vs. M4). Significant difference; therefore, do not keep constraints in final model.	34.11(33), .414	.999	.010 (.000 .040)	.044	13.75(6), *.05*	.010	.001
5. Final model. Cross-lagged paths unconstrained, correlated residuals constrained, stability paths constrained, use Maximum likelihood robust (MLR) instead of ML.	20.323(27), .817	1.000	.000 (.000 .026)	.037			

Table E8

Model 4B: Negative Self, Dysfunctional Behaviour, Negative Partner

Description of Tested Model	$X^2(df)$, p	CFI	RMSEA (90% CI)	SRMR	Δ X^2 (df), p	Δ RMSEA	Δ CFI
1. Cross-lagged paths unconstrained, correlated residuals constrained, stability paths constrained to equality.	64.77(61), .346	.996	.013 (.000 .035)	.052			
2. Test removal of correlated residuals constraints (M1 vs. M2.). No significant difference; therefore, keep constraints in final model.	57.34(58), .500	1.000	.000 (.000 .031)	.046	7.43(3), *ns*	.013	.004
3. Test removal of stability path constraints (M1 vs. M3). No significant difference; therefore, leave constraints in final model.	61.26(58), .360	.996	.012 (.000 .035)	.055	3.51(3), *ns*	.001	.000
4. Test whether 4 cross-lagged paths could be constrained (M1 vs. M4). No significant difference; therefore, keep constraints in final model.	76.09(67), .209	.990	.019 (.000 .037)	.060	11.32(6), *ns*	.006	.006
5. Final model. Cross-lagged paths constrained, correlated residuals constrained, stability paths constrained, use Maximum likelihood robust (MLR) instead of ML.	70.41(67), .364	.995	.012 (.000 .033)	.060			

Appendix F

Participant Letter of Information, Consent, and Debriefing Forms (Time 1 Sample)

Letter of Information and Consent – Phase I

Project Title: Relationships and Mood Study

Document Title: Letter for Participants in the MTurk Study

Principal Investigator: David Dozois, PhD, CPsych, [redacted]

Additional Research Staff: Jesse Lee Wilde, MSc [redacted]

1. **Introduction & Purpose of the Letter**

We are inviting you to participate in a study examining how romantic relationships and personal well being influence one another. The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

2. **Invitation to Participate**

We are inviting you to participate in a 3-part research study that will take place over the next 6 months. Phase I will begin today. After completing today's survey, we will contact you in 3 months to see whether you are interested in and eligible for Phase II. If you complete Phase II, we will contact you again 3 months later to see whether you are interested in and eligible for Phase III. Each phase will take approximately 60 minutes of your time (maximum three hours in total, over the course of 6 months).

If you participate in this study, you will be completing several questionnaires. You will be asked questions about yourself, your partner, and your current romantic relationship. You will also be asked about your thoughts, behaviours, and feelings in general and as they pertain to your relationship.

3. **Why is This Study Being Done?**

Stable and satisfying romantic relationships are extremely important to an individual's health and well being. The purpose of this study is to learn more about how people create

mental representations of oneself and one's romantic partner, and how these representations are related to relationship quality and personal well being. We hope to gain a greater understanding of how people think about their romantic partners, and how these thoughts, feelings, and behaviours towards a romantic partner influence mood.

4. How Long Will You be in This Study?

We would like you to be in our study for 6 months. We will contact you in 3 months and again in 6 months to see whether you remain eligible and would like to complete a questionnaire (approximately 60 minutes) at each of those time points.

5. What Are the Study Procedures?

If you agree to participate, you will be asked to complete a series of questionnaires on The University of Western Ontario's Server. The University of Western Ontario's Server is a secure online survey portal. You will be asked about your relationship, your mood, and some thoughts that you might have. It will take approximately 60 minutes to complete.

6. What are the Risk and Harms of Participating in This Study?

You may experience some mild discomfort when completing the questionnaires and/or tasks, but this should be transient. Further, throughout the duration of your participation in this study, you will have access to a PDF list of self-help resources that you can use if you are feeling distressed.

7. What are the Benefits of Participating in the Study?

This study gives you the opportunity to learn more about how psychological research is conducted. Additionally, the information gathered may provide benefits to society as a whole, including learning more about the ways in which mood and romantic relationships are linked. You may also gain greater insight into your own personal beliefs about yourself and your romantic relationship. You will receive information on mental health services, which might be helpful to you.

8. Can Participants Choose to Leave the Study?

If you decide to withdraw from the study, the information that was collected prior to you leaving the study will still be used, unless you indicate to us that you would not like for it to be used (i.e., by emailing us). No new information will be collected without your permission. You can choose to leave the study at any time. However, you will only receive compensation for each phase of the study you participate in. (That is, if you participate in phase 1 but choose not to return for phase 2, you will be compensated for phase 1 only.) If you begin phase 1 but withdraw from the study before completing the entire survey at phase 1, you will still receive compensation. **After today's online survey, you will be provided with a unique code. You need to enter this code at the end of the survey to receive credit by MTurk. Failure to enter this code at the end of the survey will be considered a formal**

withdrawal from the study. This means that you will not receive compensation, and that you will not be invited to participate in subsequent phases of the study. Additionally, you may choose to formally withdraw from the study at any time in between study phases by emailing us and requesting to withdraw. In doing so, you will be able to keep any monetary compensation you have already received for your participation up to that point in time; however, you will not be invited to participate in subsequent phases of the study.

9. How Will Participants' Information Be Kept Confidential?

When you consent to participate in this study, the computer will create an anonymous Participant ID code for you (in accordance with the researcher's guidelines). MTurk will also automatically provide your Worker ID Code to the researchers. While the researchers will be able to link your Participant ID code to your MTurk Worker ID Code, your MTurk Code will not be stored with your responses to the questions in this study. In addition, we will not have access to your name or contact information as it is associated with your MTurk Worker ID.

All data will be saved on the University of Western Ontario's Server and only Dr. David Dozois and his research team will have any access to that data. The University of Western Ontario's server is secure. We will store this data for seven years post publication and then delete it from the University of Western Ontario's server. While we do our best to protect your information there is no guarantee that we will be able to do so.

10. Are Participants Compensated to Be in This Study?

You will be compensated $3.00 if you participate in Phase I of this study and $3.50 if you participate in Phases II and III. If you participate in all three phases, you will receive a total of $10.00.

11. What Are the Rights of Participants?

Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. You do not waive any legal right by consenting to this study. If you choose not to answer some individual questions, you will still be compensated. If you choose not to participate or to leave the study before completion, however, you will not be compensated. **MTurk provides you with a code at the end of your questionnaire. You will need this code to be compensated.**

12. Who do Participants Contact for Questions?

If you have questions about this research study please contact David Dozois, PhD, CPsych --- [redacted] or Jesse Lee Wilde, MSc [redacted]

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics [redacted]

Consent

Project Title: Relationships and Mood Study

Document Title: Letter for Participants in the MTurk Study

Principal Investigator: David Dozois, PhD, CPsych, [redacted]

Additional Research Staff: Jesse Lee Wilde, MSc [redacted]

Do you confirm that you have read the Letter of Information and have had all questions answered to your satisfaction?
☐ YES ☐ NO

Do you confirm that you meet the eligibility requirements for this study? That is, you are at least 18 years of age, a resident of Canada or the U.S., and are currently in a romantic relationship of at least 6 months duration?
☐ YES ☐ NO

Do you agree to participate in this research?
☐ YES ☐ NO

Do you agree to be contacted for future phases of this study? That is, in 3 months and 6 months?
☐ YES ☐ NO

Click here [insert link to document] to download a .pdf copy of this document for your records.

DEBRIEFING FORM

Project Title: Relationships and Mood Study

Principal Investigator: Dr. David Dozois, [redacted]

Main Researcher: Jesse Lee Wilde, MSc, [redacted]

Thank you for your participation in this study! We hope that you will agree to participate in our future phases of this research. We will contact you in three months to see if you are still interested in participating.

Should you have any questions or concerns about this study, or would like additional information about how to access psychological support, please contact:

The Principal Investigators: Dr. David Dozois [redacted], email. [redacted] or Jesse Lee Wilde [redacted], email: [redacted]
If you have any questions about your rights as a research participant, you should contact the Director of the Office of Research Ethics at [redacted]

If you choose not to participate in future phases of this research, you may contact us if you would like to learn more about the purpose of this study, or if you would like a free copy of published material related to this research, should it become available.

Here are some references if you would like to read more on this topic:

Braithwaite, S., & Holt-Lunstad, J. (2017). Romantic relationships and mental health. *Current Opinion in Psychology*, *13*, 120-125.

Sharabi, L. L., Delaney, A. L., & Knobloch, L. K. (2016). In their own words: How clinical depression affects romantic relationships. *Journal of Social and Personal Relationships*, *33*(4), 421-448.

We want to remind you that the information you gave us today is completely confidential. All results will be published anonymously as a group.

Below are a variety of resources if you are interested in learning more about depression, relationship distress, how you can help yourself, or how you can arrange for professional help.

Self-Help References:
If you would like to look up some good self-help books on changing negative thinking or difficulties in romantic relationships, please see:

- Burns, D. D. (1980). *Feeling good.* New York: Penguin.
- Burns, D. D. (1989). *The feeling good handbook*. New York: Penguin.
- Greenberger, D., & Padesky, C. A. (2015). *Mind over mood: Change the way you feel by changing the way you think.* 2nd Edition. Guilford Press.
- Wright, J. H., & McCray, L. W. (2011). *Breaking free from depression: Pathways to wellness.* Guilford Press
- Beck, A. (1989). *Love is never enough: How couples can overcome misunderstandings, resolve conflicts, and solve relationship problems through cognitive therapy*. Harper Collins Publishers.
- Johnson, S. (2008). *Hold me tight: Seven conversations for a lifetime of love*. Hachette Book Group.

Available Services

There are several ways in which individuals can access psychological or psychiatric help within the United States or Canada. If you are feeling depressed or anxious, or feel that you could benefit from some assistance with relationship distress or other issues, the following information may be of use to you.

Immediate Help:

UNITED STATES:
If you are in crisis, and need immediate support or intervention, call, or go the website of the National Suicide Prevention Lifeline (http://suicidepreventionlifeline.org) (1-800-273-8255). **Trained crisis workers are available to talk 24 hours a day, 7 days a week**. If the situation is potentially life-threatening, call 911 or go to a hospital emergency room.

CANADA:
If you are in crisis, and need immediate support or intervention, call, or go the website of the Canada Suicide Prevention Service (https://www.crisisservicescanada.ca/en/) (1-833-456-4566). **Trained crisis workers are available to talk 24 hours a day, 7 days a week**. If the situation is potentially life-threatening, call 911 or go to a hospital emergency room.

Online Assistance (Virtual chat or text message)

IM Alive Crisis Chat (US and Canada): https://www.imalive.org

Crisis Text Line (US and Canada): Text HOME to 741741
See https://www.crisistextline.org for more information

Telephone Helplines – UNITED STATES

US Suicide Hotline	**1-800-784-2433**
NDMDA Depression Hotline – Support Group	800-826-3632
Suicide Prevention Services Crisis Hotline	800-784-2433
Suicide Prevention Services Depression Hotline	630-482-9696
Child Abuse Hotline – Support & Information	800-792-5200
Crisis Help Line – For Any Kind of Crisis 800-233-4357	
Domestic & Teen Dating Violence (English & Spanish)	800-992-2600
Parental Stress Hotline – Help for Parents	800-632-8188
Runaway Hotline (All Calls are Confidential)	800-231-6946
Sexual Assault Hotline (24/7, English & Spanish)	800-223-5001
Suicide & Depression Hotline – Covenant House	800-999-9999
National Child Abuse Hotline	800-422-4453
National Domestic Violence Hotline	800-799-SAFE
National Youth Crisis Hotline	800-448-4663

(taken from: http://psychcentral.com/lib/telephone-hotlines-and-help-lines/)

Telephone Helplines – CANADA

Crisis Services Canada	**1-833-456-4566**
First Nations and Inuit Hope for Wellness Helpline	855-242-3310
Canada Drug Rehab Addiction Services Directory	8770746-1963
Kids Help Phone	800-668-6868
Domestic Abuse Services	888-833-7733
Transgender Crisis Line	877-330-6366
Assaulted Women's Helpline	866-863-0511
Canadian Indian Residential Schools Crisis Line	866-925-4419
National Eating Disorder Information Centre	866-633-4220
Rape Crisis Centre	877-392-7583

General Information or Resources in Your Area:

UNITED STATES:
For general information on mental health and to locate treatment services in your area, call the Substance Abuse and Mental Health Services Administration (SAMHSA) Treatment Referral Helpline at 1-800-662-HELP (4357). SAMHSA also has a Behavioral Health Treatment Locator (https://findtreatment.samhsa.gov) on its website that can be searched by location.

Anxiety and Depression Association of America
https://www.adaa.org/

Depression and Bipolar Support Alliance
http://www.dbsalliance.org/site/PageServer?pagename=home

Mental Health America
http://www.mentalhealthamerica.net/finding-help

National Alliance on Mental Health
www.nami.org

American Psychological Association
http://www.apa.org/helpcenter/index.aspx

CANADA:
For general information on mental health and to locate treatment services in your area, visit the Canadian Mental Health Association (CMHA) website https://suicideprevention.ca/Need-Help. Mental Health Canada also offers a comprehensive list of service providers that can be searched by location http://www.mentalhealthcanada.com.

Anxiety Canada
https://www.anxietycanada.com

Mood Disorders Society of Canada
https://mdsc.ca

Centre for Addiction and Mental Health
https://www.camh.ca

Canadian Psychological Association
https://cpa.ca/public/

We hope that this information is helpful to those who need it.
If you are suffering from distress, we encourage you to seek help from an appropriately qualified individual or service centre. Please contact a Community Agency that can help you, or to speak with a physician who can refer you to the appropriate resource.

Appendix G

Demographics Questionnaire

Age: _____

Gender:
Male
Female
Transgender
Prefer not to disclose

I would describe myself as:
Heterosexual
Gay or lesbian
Bisexual
Queer
Uncertain or questioning
I choose not to answer
Other (please specify): _____

Ethnicity: (circle all those that apply)
Caucasian
Filipino
Chinese
Latin American
Korean
Black
Arab
Japanese
South Asian (e.g. East Indian, Sri Lankan, etc.)
Southeast Asian (e.g. Vietnamese, Cambodian etc.)
West Asian (e.g. Iranian, Afghan, etc.)
Aboriginal (that is, North American Indian, Métis or Inuit)
Other (please specify): _____
Don't Know

Please indicate the number of years of education you have completed to date (e.g. if you have completed grade 12 you would indicate '12 years', if you have completed one year of university/college you would indicate '13 years', if you have completed a 4 year university/college degree you would indicate '16 years'):_____

Have you ever received any therapy or counseling for an emotional or psychological problem? Yes/No
If yes, please describe: _____

Have you ever taken any medication for an emotional or psychological problem? Yes/No

What is your current relationship status?

a. Single
b. Casually dating
c. Open relationship
d. Exclusively dating
e. Engaged
f. Common-law
g. Married

How long have you been with your current partner? _____

Appendix H

Research Ethics Board Approval

Western Research

Date: 27 April 2021

To: Prof. David Dozois

Project ID: 115780

Study Title: An Examination of the Dyadic Partner-Schema Model: Partner-schemas, Interpersonal Functioning, and Depression

Application Type: NMREB Amendment Form

Review Type: Delegated

Full Board Reporting Date: 07/May/2021

Date Approval Issued: 27/Apr/2021 21:51

REB Approval Expiry Date: 30/Sep/2021

Dear Prof. David Dozois,

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the WREM application form for the amendment, as of the date noted above.

REB members involved in the research project do not participate in the review, discussion or decision.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

[redacted]

Curriculum Vita

Name: Jesse Lee Wilde

Education:

Doctor of Philosophy
University of Western Ontario
London, ON, Canada
2017-2022

Master of Science
University of Western Ontario
London, ON, Canada
2015-2017

Bachelor of Science (Hons.)
University of Toronto,
Toronto, ON, Canada
2010-2014

Honours & Awards:

Dr. Sam Paunonen Award in Psychology,
2021

CACBT Student Travel Award,
2021

SSHRC CGS Doctoral Scholarship,
2019-2022

CPA Student Travel Award – Clinical Section,
2018

Ontario Graduate Scholarship,
2018-2019, 2017-2018, 2016-2017

SSHRC CGS Master's Scholarship,
2015-2016

CPA Certificate of Academic Excellence – Honour's Thesis,
2014

Eric Jackman Scholarship for Psychology,
2013

Related Work Experience:	Resident in Clinical Psychology, London Health Sciences Centre, London, ON, Canada 2022-present
	Junior Clinical Associate, Old North Psychology London, ON, Canada 2020-present
	Teaching Assistant, University of Western Ontario 2016, 2017, 2018
	Clinical Research Assistant, Sunnybrook Health Sciences Centre Toronto, ON, Canada 2014-2015

Publications

Evraire, L., Dozois, D. J. A., & **Wilde, J. L.** (2022). The Contribution of Attachment Styles and Reassurance Seeking to Trust in Romantic Couples. *Europe's Journal of Psychology, 18*(1), 19-39. doi: 10.5964/ejop.3059

Wilde, J. L., Gillies, J. C. P., & Dozois, D. J. A. (2021). Cognitive and interpersonal contributors to relationship distress and depression: A review of the dyadic partner-schema model. In In V. R. Preedy, C. Martin, L. A. Hunter, V. Patel, & R. Rajendram (Eds.), *The neuroscience of depression: Cell biology, neurology, behaviour and diet* (pp. 373-380). Elsevier.

Dozois, D. J. A., **Wilde, J. L.,** & Dobson, K. S. (2020). Depressive Disorders. In M. M. Antony & D. H. Barlow (Eds.), *Handbook of assessment and treatment planning for psychological disorders* (3rd ed.). New York: Guilford Press.

Wilde, J. L., & Dozois, D. J. A. (2019). A Dyadic Partner-Schema Model of Relationship Distress and Depression: Conceptual Integration of Interpersonal Theory and Cognitive-Behavioral Models. *Clinical Psychology Review, 70*, 13-25. https://doi.org/10.1016/j.cpr.2019.03.003

Wilde, J. L., & Dozois, D. J. A. (2018). It's Not Me, It's You: Self- and Partner-Schemas, Depressive Symptoms, and Relationship Quality. *Journal of Social and Clinical Psychology, 37*(5), 356-380.

Dozois, D. J. A., **Wilde, J. L.,** & Frewen, P. A. (2018). Anxiety, Obsessive-Compulsive, and Trauma-Related Disorders. In D. J. A. Dozois (Ed.) *Abnormal psychology: Perspectives* (6th ed. pp. 95-126). Toronto, Ontario: Pearson.

Rector, N. A., **Wilde, J. L.,** & Richter, M. A. (2017). Obsessive Compulsive Disorder and Comorbidity: Rates, Models, and Treatment Approaches. In J. Abramowitz, D., McKay, & E., Storch (Eds. Pp. 695-725) *Handbook of Obsessive-Compulsive Disorder Across the Lifespan.* New York: Wiley.

Conference Presentations

Hicks, O., Murphy, G., Ying, F., **Wilde, J. L.,** & Dozois, D. J. A. (June, 2023). *The Association Between Partner Schemas, Depression, and Relationship Health Across Time.* Poster presented at the 2023 meeting of the Canadian Psychological Association, Sheraton Centre, Toronto, ON.

Sivakumar, P., Machado, D., **Wilde, J. L.**, & Dozois, D. J. A. (May, 2022). *The effects of self-, partner-, and "close-other" schema structures on dyadic relationship outcomes*. Poster presented at the annual meeting of the Canadian Association of Cognitive and Behavioural Therapies, Vancouver, British Columbia (virtual conference).

Wilde, J. L., Gillies, J. C. P., & Dozois, D. J. A. (May, 2021). *A Test of the Dyadic Partner-Schema Model of Relationship Distress and Depression.* Poster accepted to be presented at the 2020 meeting of the Canadian Association of Cognitive and Behavioural Therapies. Dalhousie University, Halifax, NS. Postponed due to COVID-19 and presented at virtual convention 2021.

Gillies, J. C. P., **Wilde, J. L.,** & Dozois, D. J. A. (May, 2021). *Relative Effectiveness of Three Commonly Used Sad Mood Induction Procedures: Replication and Extension.* Poster accepted to be presented at the 2020 meeting of the Canadian Association of Cognitive and Behavioural Therapies. Dalhousie University, Halifax, NS. Postponed due to COVID-19 and presented at virtual convention 2021.

Wilde, J. L. & Dozois, D. J. A. (June, 2018). *Self- and Partner-Schemata: Links with Depressive Symptoms, Relationship Dysfunction, and Distress-Maintaining Attributions.* Poster presented at the 2018 meeting of the International Congress of Applied Psychology, Palais de Congrès de Montréal, Montréal, QC.

Wilde, J. L. & Dozois, D. J. A. (November, 2017). *Cognitive Vulnerability to Relational Dysfunction in Depression: The Role of Cognitive Organization of Self- and Partner-Schemata.* Poster presented at the 2017 meeting of the Association of Behavioural and Cognitive Therapies, Hilton Conference Centre, San Diego, CA.

Wilde, J. L., Gillies, J. C. P, Szota, L. K., Dozois, D. J. A. & Martin, R. A. (June, 2017). *The role of emotional intelligence and self-criticism in depressive symptoms.* Poster presented at the 2017 meeting of the Canadian Psychological Association, Fairmont Royal York Conference Centre, Toronto, ON.

Gillies, J. C. P., Szota, L. K., **Wilde, J. L**., Dozois, D. J. A. & Martin, R. A. (June, 2017). *Examining the structure of the Young Schema Questionnaire – Short Form in a non-psychiatric undergraduate sample.* Poster presented at the 2017 meeting of the Canadian Psychological Association, Fairmont Royal York Conference Centre, Toronto, ON.

Szota, L. K., **Wilde, J. L**., Gillies, J. C. P, Dozois, D. J. A. & Hayden, E. P. (June, 2017). *Maternal transmission of cognitive vulnerability to depression.* Poster presented at the 2017 meeting of the Canadian Psychological Association, Fairmont Royal York Conference Centre, Toronto, ON.

Wilde, J. L., Rnic, K., Dozois, D. J. A., & Martin, R. A. (June, 2016). Early Maladaptive Schemas and Depression: The Mediating role of Interpersonal Competence. *In a Multi-Modal Examination of Interpersonal Factors in the Development and Maintenance of Depression.* Symposium presented at the 2016 meeting of the Canadian Psychological Association, Victoria, BC.

Wilde, J. L., Dozois, D. J. A. & Martin, R. A. (June, 2016). *Early Maladaptive Schemas and Depression: The Mediating Role of Perfectionism.* Poster presented at the 2016 meeting of the Canadian Psychological Association, Victoria Conference Centre, Victoria, BC.

Wilde, J. L., Maxwell, J.M., & MacDonald, G. (August, 2015). *Seeing what they want to see: Insecurely attached individuals differ in their perceptions of and romantic interest in babyfaced adults.* Poster presented at the 2015 Ontario Science Centre's SEXposium: The Science of Love and Lust Science Outreach Conference, Ontario Science Centre, Toronto, ON.

Wilde, J. L., Maxwell, J.M., & MacDonald, G. (April, 2015). *Seeing what they want to see: Insecurely attached individuals differ in their perceptions of and romantic interest in babyfaced adults.* Poster presented at the 2015 meeting of the University of Toronto Research Specialization in Psychology Poster Fair, University of Toronto, Toronto, ON.

Community Knowledge Translation Activities

Wilde, J.L. (February, 2022). *Romantic Relationships and Mood*. Community lecture presented at the virtual Finding Your Way: Psychology Lecture Series hosted by Advocacy through Action.

Wilde J. L. & Dozois, D. J. A. (February, 2021). *"Relationship Glasses" shape how we see the good, the bad and the ugly in our romantic partners.* The Conversation

Canada. https://theconversation.com/relationship-glasses-shape-how-we-see-the-good-the-bad-and-the-ugly-in-romantic-partners-153387

Gillies, J., & **Wilde, J.L.** (April, 2017). *An Introduction to Mindfulness: Tips and Tricks for Parents.* Invited lecture presented at Merrymount as a member of Advocacy through Action, London, ON.

Wilde, J. L. & Gillies, J. C. P. *Mindfulness Feature* – interviewed by Colin Gowdy for Fanshawe's radio station 106.9 FM The X. Aired Feb 14, 2017

Gillies, J., & **Wilde, J.L.** (February, 2017). *Mindfulness.* Community lecture presented at the London Public Library as a member of Advocacy through Action, London, ON.

Wilde, J. L., & Szota, L. (February, 2017). *Bipolar Disorder: Basics & Beyond.* Community lecture presented at the London Public Library as a member of Advocacy through Action, London, ON.

Szota, L., & **Wilde, J. L**. (February, 2016). *Dodging Depression: Early Detection and Prevention.* Community lecture presented at the London Public Library as a member of Advocacy through Action, London, ON.