Review

A dyadic partner-schema model of relationship distress and depression: Conceptual integration of interpersonal theory and cognitive-behavioral models

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A R T I C L E   I N F O

A B S T R A C T

Difficulties in romantic relationships are a prominent part of the disorder for many individuals with depression. Researchers have called for an integration of interpersonal and cognitive-behavioral theories to better understand the role of relational difficulties in depression. In this article, a novel theoretical framework (the dyadic partner-schema model) is presented. This model illustrates a potential pathway from underlying "partner-schema" structures to romantic relationship distress and depressive affect. This framework integrates cognitive-behavioral mechanisms in depression with research on dyadic processes in romantic partners. A brief clinical case example is presented to illustrate the utility of the dyadic partner-schema model in conceptualizing the treatment of depression. The implications of the model are discussed, and areas for future research are explored.

1. Introduction

Depression is associated with significant interpersonal difficulties, particularly within the context of romantic relationships (see Rehman, Gollan, & Mortimer, 2008, for a review). An emerging literature stemming from cognitive and interpersonal models of the disorder suggests that interpersonal difficulties are both contributors to, and consequences of, depression. That is, relationship distress has been shown to longitudinally predict later depressive symptoms, and vice versa (Beach & O'Leary, 1993; Du Rocher, Papp, & Cummings, 2011; Najman et al., 2014; Rehman, Ginting, Karimiha, & Goodnight, 2010; Sheets & Craighead, 2014; Whisman & Bruce, 1999). Given that relationship distress is also linked to poorer treatment response (Quilty, Mainland, McBride, & Bagby, 2013; Renner et al., 2012) and increased risk for relapse (Jacobson, Fruzzetti, Dobson, Whisman, & Hops, 1993; Whisman, 2001) in depression, a thorough understanding of the interplay between factors contributing to relationship distress and depressive symptoms is critical.

Researchers have called for the integration of cognitive-behavioral and interpersonal theories of depression to understand potential contributors to interpersonal dysfunction in the disorder (Dobson, Quigley, & Dozois, 2014; Rehman et al., 2008). Cognitive-behavioral theories of depression suggest that negatively biased representations of the self and others may contribute to both interpersonal difficulties and depressive symptoms (e.g., Dobson et al., 2014; Evraire & Dozois, 2014). These cognitive representations, referred to as *schemas*, are a central component in cognitive models of depression (e.g., Beck, Rush, Shaw, & Emery, 1979). Briefly, schemas can be defined as the cognitive structures that an individual develops based on past experiences that are subsequently used as a framework to guide the processing of incoming information. To date, most of the elaboration and research on schematic representations in depression have focused on *self*-schema structures, whereas the role of schema structures held for significant others has been largely neglected. The relatively poor understanding of schemas held for significant others is problematic because interpersonal

difficulties are the most powerful predictors of depression (e.g., Sheets & Craighead, 2014). As such, interpersonal theory (Coyne, 1976; Kiesler, 1996; Leary, 1957) offers valuable insight into the dyadic nature of depression, and how an individual's cognition, affect, and behavior may influence (and be influenced by) significant others.

As such, the purpose of this article is twofold: (1) to assert that *partner-schemas* play an important role in depression, and (2) to present a model delineating the pathway through which partner-schemas contribute to relationship distress and depression, integrating both cognitive and interpersonal theories. To provide context for the model, key concepts in cognitive and interpersonal theories are first reviewed. Following this, an overview of the current model and its proposed processes, axioms, and tenets are presented. A review of the relevant theoretical and empirical support for the model's hypothesized mechanisms is then provided. We conclude by discussing the clinical and theoretical implications of the dyadic partner-schema model.

2. Cognitive models of depression: The role of schemas and information processing

The schema concept has been referred to across a variety of disciplines. Although its definition varies somewhat across fields, schemas can be defined as "the basic structural components of cognitive organization through which humans come to identify, interpret, categorize, and evaluate their experiences" (Schmidt, Schmidt, & Young, 1999, p. 129). That is, schemas act as cognitive templates used to guide the processing of one's current experience. Schemas are thought to develop over time based on one's personal history of experiences, thereby reflecting a highly individualized lens through which an individual interprets and experiences his or her current surroundings (Beck et al., 1979). Theory and research in the field of social cognition has long suggested that individuals use schemas of self, others, and the relationships between them to navigate interpersonal interactions (Baldwin, 1992, 1995). These *relational schemas* are thought to allow individuals to predict which self-generated behaviors will elicit which types of responses from a partner (e.g., an individual's relational schema may include the script of "If I get angry, my partner will reject me"; Baldwin, 1995). As such, relational schemas include representations of both of one's self and of others. While these representations of self and other are closely interconnected, they are viewed as distinct from one another (Baldwin, 1992, 1995). *Partner-schemas* can therefore be defined 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).

Cognitive models of depression acknowledge the role of both *schema content* and *schema structure*. Schema content refers to the specific valence (positive or negative) and content of information held within a schema, such as the core belief of oneself as being unlovable. Schema structure (herein referred to interchangeably as *schema organization*) refers specifically to the way information (i.e., core beliefs, affect) is organized structurally within the schema. The importance of schema structure on cognition and affect is perhaps best understood in the context of spreading activation and semantic network models of cognition (e.g., Bower, 1981). These models assert that a given schema concept (e.g., the self-schema) is represented in memory by a cluster of interconnected characteristics and emotions (e.g., alone, ineffective, sad) associated with that concept. These descriptive characteristics, referred to as *nodes*, are connected to one another to form an associative network. When a given schema concept is triggered (e.g., by internal or external cues), a spreading occurs from one node to another via the associative connections between them. Thus, the content of an individual's conscious thoughts and affect are a result of the particular schema characteristics or nodes that are currently activated (Bower, 1981). For example, if a highly organized negative partner-schema structure is activated, the resultant thoughts about the partner that become available in an individual's moment-to-moment conscious experience are likely to be negative due to the underlying schematic nodes that are activated. The

more tightly interconnected (and therefore strongly associated in memory) the negative nodes are within the partner-schema, the more quickly negative information is activated and floods conscious awareness. Thus, the way in which positive and negative information about a partner is organized in underlying schema structures has important implications for cognitive and affective responses to a partner. Consequently, though schemas operate outside of conscious awareness, they have a profound influence on one's consciously experienced thoughts, emotions, and ultimately behaviors (Beck, 1967; Beck et al., 1979).

To illustrate one operationalization of schema structure in the literature, the Psychological Distance Scaling Task (PDST; Dozois & Dobson, 2001) is reviewed briefly. In the PDST, individuals place a series of positive and negative adjectives (e.g., kind, rejecting, friendly, cold) within a square grid on a computer monitor. In the middle of the grid is a horizontal line, anchored with the statements *Not at all like me* on the left side of the grid and *Very much like me* on the right. An intersecting vertical line is also shown in the middle of the grid with the anchors *Very positive* at the top of the grid and *Very negative* at the bottom. As such, the *x*-axis represents an adjective's degree of self-reference, and the *y*-axis reflects the adjective's valence. Adjectives are presented one at a time in the centre of the grid, and respondents are instructed to place the adjective in the position on the grid that best characterizes the degree of self-relevance and degree of valence of the word. In order to provide a metric for the degree of schema organization, the *x/y* coordinate point for each adjective is used to calculate the average interstimulus distances between adjectives (see Dozois & Dobson, 2001). The physical space or distance between adjectives on the grid is assumed to reflect the psychological space or distance (i.e., how closely the concepts are associated in memory) between concepts (nodes) within an individual's cognitive schema. Thus, greater distance among adjectives is believed to indicate less interconnectedness of information, whereas less distance is thought to reflect greater interconnectedness (Dozois, 2007).

Within the context of depression specifically, research shows that individuals with the disorder have highly negative cognitive representations of the self (Dozois & Beck, 2008). For instance, compared to healthy controls, individuals with depression tend to endorse pervasive negative beliefs regarding the self as unlovable, incompetent, inadequate, worthless, or defective (e.g., McBride, Farvolden, & Swallow, 2007). Not only do individuals with depression report more negative content within their schemas, but this negative content also tends to be *highly organized* and tightly interconnected. That is, their self-schema structures are characterized by more tightly interconnected negative information (and more loosely interconnected positive information) about the self than that observed in healthy controls (Dozois, 2007; Dozois & Dobson, 2001; Dozois, Eichstedt, Collins, Phoenix, & Harris, 2012). This is important, as the degree to which negative beliefs about self form a tightly interconnected schema structure may be a particularly robust and stable predictor of depressive symptoms, above and beyond the negative core belief content itself (Dozois, 2007). Thus, the term "highly organized negative schema structure" is used throughout this manuscript to refer to a schema for oneself or romantic partner that is not only characterized by negative content, but also represents a tightly interconnected network of negative information that is closely associated in memory.

3. Interpersonal theory: Key concepts and relevance to depression

Interpersonal theory offers an organizing framework for understanding the dyadic context of depression. A guiding assumption of interpersonal theory is that interpersonal situations are largely governed by the principle of *complementarity*. That is, Partner A's behaviors will elicit particular types of fairly predictable overt (i.e., behavioral) and covert (i.e., cognitive and affective responses, referred to as "impact messages", Kiesler, 1996) reactions from Partner B. An interpersonal situation may refer to a real interaction unfolding between two individuals, or a mental representation of the relationship between self and others.
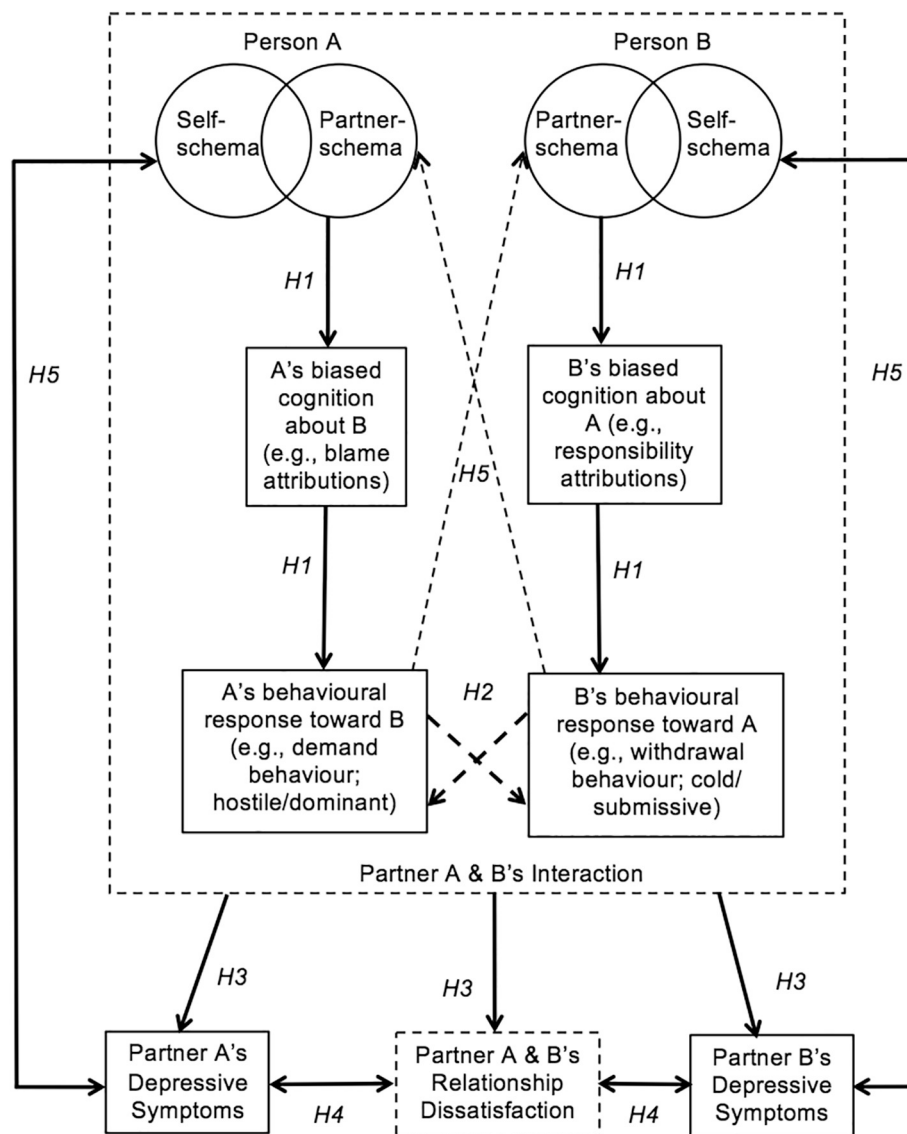
Fig. 1. A theoretical framework that depicts a cyclical pathway from partner-schema structures to depressive symptoms and relationship dissatisfaction. Dashed lines in the figure represent processes occurring at the dyadic level (e.g., variables affecting both individuals as a unit). Solid lines represent intraindividual processes occurring within one individual. The key assertions of this model can be summarized in 5 main processes: (1) partner-schemas are central contributors to in vivo cognitions and behaviors towards romantic partners; (2) depressive behaviors occur within a dyadic context; (3) dysfunctional dyadic interactions contribute to relationship distress and depression concurrently and longitudinally; (4) relationship distress and depression are mutually reinforcing; (5) the processes in this model reinforce underlying self- and partner-schema structures, thereby contributing to a cyclical process.

Central to interpersonal theory and the principle of complementarity are the overarching dimensions of *affiliation* and *dominance*. Interpersonal theory (Kiesler, 1983; Leary, 1957) posits that interpersonal motives, traits, and behaviors can be conceptualized along two dimensions: affiliation (communion, warmth, friendliness, love, desire to connect harmoniously with others) and dominance (agency, power, control, dominance, motivation to influence others). These two dimensions are orthogonal to one another and intersect to form an "interpersonal circumplex" (Kiesler, 1983). Interpersonal theory holds that the human condition is characterized by continual striving to satisfy one's needs for both affiliation and dominance. The two dimensions are observable at differing levels of analysis (i.e., they are reflected in an individual's trait-like tendencies for affiliation/dominance across situations, but can also be used to describe specific behaviors within an interpersonal situation). At a behavioral level, the principle of interpersonal complementarity suggests that behaviors along the affiliation dimension tend to pull correspondingly affiliative behavior (e.g., friendliness elicits friendliness; hostility elicits hostility), whereas behaviors along the dominance dimension tend to pull reciprocal or opposing behaviors (e.g., dominance elicits submission; submission elicits dominance) from others. Support for the complementarity hypothesis has been replicated in a variety of interpersonal contexts, including romantic partner interactions (e.g., Dermody, Thomas, Hopwood, Durbin, & Wright, 2017; Sadler, Ethier, Gunn, Duong, & Woody, 2009; Sadler, Ethier, & Woody, 2011).

Perhaps most relevant to the current integration with cognitive models is interpersonal theory's notion of the "parataxic distortion" (Sullivan, 1953). A parataxic distortion occurs when an individual's "mental representation of an interpersonal situation does not match an objective interpretation of the situation" (Hopwood, Wright, Ansell, & Pincus, 2013, pp. 278). Such distortions often revolve around themes of abandonment or criticism, and thereby may result in an individual's needs for affiliation and dominance being unmet. When an individual's psychological needs for affiliation or dominance are thwarted in an interpersonal situation, dysregulation occurs in any or all of the following three systems: (1) the self system (self-concept, thoughts about self and other; e.g., need to protect self from rejection), (2) the affective system (feelings about self and other; e.g., fear), and (3) field regulation (behaviors or action outputs into the "interpersonal field"; e.g., defensive reactions). In this way, parataxic distortions may lead to ruptures in complementarity along dimensions of affiliation and dominance, as the individual responds to his or her distorted *perception* of the interpersonal situation, rather the *actual* situation per se.

Interpersonal theory has been applied to the interactional patterns of individuals with depression. Drawing on Coyne's (1976) and Leary's (1957) interpersonal models of depression, Kiesler (1996) proposed the following depressive Maladaptive Transaction Cycle (MTC): Person A (the individual with depression) experiences an automatic covert experience of the self characterized by pessimism, self-effacement, and

melancholy, which produces an overt action of deference, submission, and unassuredness towards Person B (the interaction partner). This in turn, evokes a particular type of covert experience in Person B (concern, reassurance) and produces a complementary overt action response from person B (assuredness, dominance). This response from Person B intensifies Person A's covert experience of helplessness, guilt, and depression, which produces an overt response from Person A that is submissive, unassured, and inhibited. This subsequently evokes the intensified complementary covert experience in Person B (guilt, hostility, rejection), which produces the complementary overt reaction from Person B (dominant, competitive, and mistrusting). In particular, this overt reaction towards Person A is characterized by two discrepant messages: (1) an insincere verbal message of concern and support, accompanied by (2) a nonverbal message of hostility and rejection. Thus, the MTC illustrates the interdependency of both individuals' reactions, and the self-fulfilling prophecy that occurs for the individual with depression.

Clearly, several concepts from cognitive and interpersonal theories bear significant overlap with one another. Both models implicate the role of underlying representations of self and other, and outline the relevance of information processing biases (parataxic distortions and cognitive biases) in contributing to affective and behavioral responses to interaction partners. These areas of overlap offer clear points for integration.

4. The dyadic partner-schema model

The dyadic partner-schema model depicts the proposed pathways from partner-schema structures to depressive symptoms and relationship dissatisfaction in individuals with depression (see Fig. 1). Within the current model, Partner A refers to the individual with depression, and Partner B refers to the partner (with his or her own varying level of depression). The framework asserts that highly organized negative partner-schema structures give rise to biased cognitions (e.g., attributions) about one's romantic partner, which subsequently lead to maladaptive behavioral responses towards that partner. These processes set the stage for dysfunctional interpersonal processes by eliciting negative responses from romantic partners and perpetuating depressotypic patterns of dyadic interaction. It is important to note that both Partner A and B's simultaneously occurring cognitive processes (e.g. both individuals' partner schemas and attributions) contribute to maladaptive interpersonal patterns. These ongoing dysfunctional interactions then contribute to relationship dissatisfaction (of both partners) and to Partner A's depressed mood, which serve to reinforce one another over time. The current model asserts that dysfunctional interactions with partners, depressive symptoms, and relationship dissatisfaction further reinforce and consolidate highly organized, negative self- and partner-schema structures. As such, the dyadic partner-schema model illustrates a multidirectional and cyclically reinforcing pattern among its processes. The key assertions of this model can be summarized in five main hypothesized processes (denoted by "H#") elaborated below.

4.1. (H1) Partner-schemas are central contributors to in vivo cognitions and behaviors towards romantic partners

The current model proposes that individuals with depression possess highly organized negative partner-schema structures (see Dozois & Beck, 2008). These schemas are theorized to underlie and give rise to biased perceptions, interpretations, and moment-to-moment appraisals of a romantic partner (e.g., responsibility and blame attributions). These biased cognitions are thought to then lead to maladaptive behavioral responses (e.g., hostility, demands, avoidance) towards the romantic partner. While the notion of interrelatedness among schemas, cognitions and behaviors is not a novel one (e.g., Beck et al., 1979), the current model is unique in its proposition that other-directed cognition represents a unique and important pathway operating in parallel to processes of self-focused cognition in depression.

4.2. (H2) Depressive behaviors occur within a dyadic context

Partner A's behavior occurs within an interpersonal context, and thus has an important influence on, and is simultaneously influenced by, Partner B's responses. Partner A's negative behavior (e.g., hostility) is likely to elicit relatively predictable and complementary responses from Partner B (e.g., hostility). Moreover, Partner A's underlying schema structures and cognitive attributions are theorized to be continually active in influencing perceptions of Partner B throughout the interaction. In a parallel fashion, Partner B's own schemas and cognitive processes are simultaneously operating to influence relationship dynamics. As such, Partner B's own cognitive schemas and attributions are thought to moderate or interact with Partner A's responses to predict dysfunctional relationship dynamics. Each individual's own characteristics and intrapersonal processes act as filters through which the interpersonal situation is perceived and responded to.

4.3. (H3) Dysfunctional dyadic interactions contribute to relationship distress and depression concurrently and longitudinally

Research suggests that dyadic interactions between partners have important implications for both immediate and long-term changes in affect and relationship satisfaction. For example, studies suggest that negative behavioral exchanges between romantic partners are associated with immediate increases in negative affect (e.g., Papp, Kouros, & Cummings, 2009; Sadikaj, Moskowitz, & Zuroff, 2017a) and concurrently low levels of relationship satisfaction (e.g., Christensen & Shenk, 1991). In addition, dysfunctional relationship patterns are longitudinally predictive of both depressive symptoms (e.g., Jones, Beach, & Forehand, 2001; Whisman & Bruce, 1999) and relationship dissatisfaction (Schrodt, Witt, & Shimkowski, 2014; Smith, Ciarrochi, & Heaven, 2008). As such, interactions between partners contribute to both momentary shifts in negative affect and decreases in relationship satisfaction during the interaction, but also lead to the maintenance of depressed mood and relational distress over time.

4.4. (H4) Relationship distress and depression are mutually reinforcing

Longitudinal research examining the nature and direction of the association between depression and relational dysfunction suggests that this link is likely complex and bidirectional. That is, studies have found support for the presence of marital distress prior to depression, and vice versa (see Rehman et al., 2008; Whisman, 2017, for reviews). As such, the current model acknowledges that there is a complex and reciprocal link between depressive symptoms and relationship dysfunction regardless of whether relational distress precedes or follows the onset of depression.

4.5. (H5) The processes in this model reinforce underlying self- and partner-schema structures, thereby contributing to a cyclical process

The dyadic partner-schema model asserts that the influence of partner-schemas on relationship functioning reflects a cyclically reinforcing process wherein the schemas are continually consolidated over time as a result of negative interactions with partners. Research stemming from interactional theories (Coyne, 1976) and stress generation models (Hammen, 1991) of the disorder suggests that, over time, individuals with depression elicit rejecting responses from others (e.g., Joiner, Alfano, & Metalsky, 1992). Moreover, depression is associated with greater accuracy (and overestimation) in perceiving romantic partners' negative behaviors (e.g., Overall & Hammond, 2013). As such, these types of highly negative responses from partners are theorized to strengthen negative thinking and consolidate the organization of negative partner-schema structures (e.g., by reinforcing beliefs that the partner is rejecting). Moreover, such negative and rejecting responses from partners likely serve to strengthen Partner A's beliefs (e.g., confirming beliefs of the self as unlovable), similarly

consolidating highly organized negative self-schema structures. In this way, maladaptive interaction patterns between romantic partners contribute to the maintenance of depressed mood and relationship distress over time through the reinforcement of underlying negative schema structures.

5. Theoretical and empirical evidence for the proposed processes outlined in the dyadic partner-schema model

5.1. Partner-schema structures and depression

Given the role of relational difficulties in the disorder, the presence of a highly organized negative partner-schema in depression may be particularly important. However, despite a strong theoretical impetus for its empirical examination, the association between partner-schemas and depression has been largely overlooked. As such, Table 1 provides an overview of direct and indirect evidence selected from social, cognitive, clinical, interpersonal, and object relations/attachment literatures to support the assertion that there is a highly organized negative partner-schema in depression. Taken together, the theory and emerging evidence across several areas of the literature suggest that schemas for close others are highly similar to self-schemas, and that the highly negative self-schema observed in depression may be mirrored in schemas for significant others.

5.2. Partner-schema structures and relationship functioning

Research suggests that the way in which information about a romantic partner is cognitively organized has implications for the overall functioning and quality of a romantic relationship. For example, highly negative partner-schemas have been associated with reduced relationship

satisfaction in both dating couples (Chatav & Whisman, 2009) and married dyads (Whisman & Delinsky, 2002). Wilde and Dozois (2018) found that partner-schema structures characterized by highly organized negative information and loosely interconnected positive information about a partner were associated with lower levels of dyadic adjustment, satisfaction, and commitment. Partner-schema organization has also been associated with self-reported and observed relationship quality (Campbell, Butzer, & Wong, 2008; Reifman & Crohan, 1993; Showers & Kevlyn, 1999), self-reported likelihood of staying with one's partner (Reifman & Crohan, 1993), and attitudes of liking and loving towards a partner (Showers & Kevlyn, 1999). Additionally, partner-schema structures appear to predict relationship status (i.e., dissolution vs maintenance) at 1-year follow up (Murray & Holmes, 1999; Showers & Zeigler-Hill, 2004), suggesting that the organization of information about a romantic partner is linked to both relationship well-being and longevity over time. As such, the research suggests that partner-schema structures have important implications for various aspects of relationship quality. The current model offers a specific set of mechanisms through which this may occur.

5.3. Partner-schemas, attributions, and depression

The current model asserts that one potential mechanism through which partner-schema structures and relationship functioning are linked is through the effects of underlying schema structures on moment-to-moment cognitions an individual has about his or her partner (see Fig. 1). That is, in addition to more global relationship variables (such as relationship quality), partner-schemas likely influence specific, proximal risk factors for relationship distress and depressed mood. One risk factor that has been linked to both relationship distress and depressive symptoms is the tendency to make *distress-maintaining*

Table 1
Summary of selected theoretical and empirical evidence supporting the presence of a negative partner-schema in depression.

Literature	Theoretical/empirical model	Basic conceptualization	Empirical support for relevance of negative partner schema in depression
Social			
	Aron & Aron, 1986; Self-expansion model of motivation & cognition in close relationships	As psychological closeness increases, degree of overlap between cognitive representations of self/other increase because "self" expands to include "other" within it	Self and other become "cognitively confused/merged" & begin to share characteristics; therefore, negative self view may cause other view to become similarly negative
	Murray et al., 1996; Reality, ideals & projected self-evaluations	A's view of B = Reality of B + A's Illusion, Where A's illusion = self-projection + ideals	A projection of one's own self view is a significant component of other-representations; therefore, negative self may contribute to negative other
Cognitive			
	Brown, Young, & McConnell, 2009; Self- and other-complexity	As degree of closeness increases, complexity of cognitive structures of self and other become more similar	The organization of self- and partner-schemas are similar; negative self should be mirrored as negative other
	Kuiper & MacDonald, 1982; Self- and other-referent encoding	As degree of closeness increases, the encoding of information about self and other becomes more similar	The processing of information about self is similar to close other; negative information processing biases about self-relevant information should be seen in partner-relevant information
	Wilde & Dozois, 2018; Cognitive organization	The cognitive organization of positive and negative information is similar for self and romantic partners; depression is associated with highly organized negative partner-schemas	Highly organized negative self-schemas are associated with similarly negative partner-schemas; depression is associated with highly organized negative partner-schemas
Clinical			
	Beck et al., 1979; Cognitive theory of depression	"The cognitive triad" – depression is associated with highly negative beliefs about self, future, and the world around them	Negative views of the world include negative views of others; therefore, cognitive triad likely includes negative beliefs about partner
	Halvorsen et al., 2009; Young's early maladaptive schemas	Depression is associated with core beliefs surrounding themes of abandonment, emotional deprivation, and mistrust in others	Depression is associated with a number of relationally-focused core beliefs that may reflect underlying negative representations of close others
Interpersonal			
	Markey & Markey, 2007; Similarity of interpersonal dimensions in ideal partners	Individuals are attracted to others who are similar to the self on trait levels of dominance and affiliation	Individuals choose to enter relationships with similar others; thus, representation of self and other may be similar due to actual overlap in personality traits
Attachment & Object relations			
	Bowlby, 1973; Herbert et al., 2010	Depression is associated with dysfunctional internalized objects or working models	Maladaptive, deeply rooted mental representations of significant others are associated with depression; therefore partner-schemas are likely associated with depression

Note: A summary of selected direct and indirect evidence supporting the presence of a negative partner-schema structure in depression.

attributions about a romantic partner's negative behavior. Specifically, depression is associated with the tendency to make two types of attributions about the causes of romantic partners' negative behaviors: causal and responsibility attributions (Fincham & Bradbury, 1992). *Causal attributions* refer to the tendency to place the cause of negative behaviors *within* the partner, view the cause as *stable* and unchanging, and perceive it to have a *global* influence on many aspects of the relationship. *Responsibility attributions* refer to the tendency to believe that a partner deliberately *intended* to engage in the negative behavior, was *motivated* to do so, and deserved to be *blamed* for the behavior.

Depressive symptoms have been linked to both causal and responsibility attributions about a partner's negative behavior (Heene, Buysse, & Van Oost, 2005, 2007). Moreover, research suggests that these types of attributions are specific to depression (i.e., compared to healthy control couples or couples with anxiety disorders; Hickey et al., 2005). Surprisingly, the cognitive origins of distress-maintaining attributions in relationships are relatively under-examined in the literature (Fincham, 2003). Cognitive theories would suggest that schemas represent a powerful contributor to the tendency to make distress-maintaining attributions about relationship partners (e.g., Beck, 1988; Bower, 1981), and recent research supports this assertion. Specifically, highly negative partner-schema structures are associated with the tendency to make more distress-maintaining attributions about a partner's behavior (Chatav & Whisman, 2009; Showers & Kevlyn, 1999). Further, this association holds above and beyond the effects of self-schema structure (Wilde & Dozois, 2018). As such, emerging evidence from a small number of studies supports the notion that negative underlying partner-schema structures may represent a potential vulnerability for distressing relationship attributions. However, longitudinal research is needed to establish direction of effects and causality.

In addition to being associated with depressive symptoms, distress-maintaining relationship attributions (e.g., causal and responsibility attributions) have also been associated with relationship distress or discord (e.g., Ellison, Kouros, Papp, & Cummings, 2016). As such, studies have begun to examine the ways through which attributions, relationship distress, and depression are linked. Gordon, Friedman, Miller, and Gaertner (2005), for example, found that marital discord mediated the association between relationship attributions and depressive symptoms. They also reported that responsibility attributions moderated the link between discord and depression, such that discord and depression were more strongly linked for individuals who made blame-oriented attributions about their partner than those who did not. Further, research also suggests that relational attributions moderate the effects of conflict behaviors on depressive symptoms across time (Ellison et al., 2016). Thus, the current model acknowledges that the associations among attributions, depression, and relationship distress are dynamic and multidirectional.

5.4. Evidence for a unique pathway from partner-schemas to depression that is distinct from the effects of self-schemas

As previously noted, cognitive models of depression have focused primarily on the role of the *self*-schema, and similarly on the role of attributions individuals make about themselves and their own behaviors. As such, the effects of self-related cognition in depression have received more empirical examination than the role of other-focused cognition (Gadassi & Rafaeli, 2015; Mineka, Rafaeli, & Yovel, 2003). Although an individual's self-schemas and attributions likely do influence cognition in relational interactions (e.g., negative self-views have been linked to underestimations of relationship quality; Murray, Holmes, & Griffin, 1996; DeHart, Pelham, & Murray, 2004), emerging evidence suggests that self-schemas are not particularly strongly associated with aspects of relationship functioning (Wilde & Dozois, 2018). That is, the processing of partner-related information may represent its own pathway that uniquely contributes to depression through its effects on relationship processes.

In line with this hypothesis, evidence suggests that partner-schema structures are associated with relationship quality, adjustment, satisfaction, and commitment over and above the effects of self-schema structures (Showers & Kevlyn, 1999; Wilde & Dozois, 2018). Self-schema structures are not, however, associated with the aforementioned variables above and beyond partner-schema structures (Showers & Kevlyn, 1999; Wilde & Dozois, 2018). Similarly, in one study, negative partner-schema structures were associated with the tendency to make distress maintaining responsibility and causal attributions about a partner, whereas no association was found between self-schemas and relationship attributions (Wilde & Dozois, 2018). It is important to note that individuals with depression have a tendency to make highly negative attributions about events in general ("depressogenic" self-oriented attributions; e.g., Alloy et al., 2006; Klein, Fencil-Morse, & Seligman, 1976). However, research suggests that distressing relationship attributions made about a romantic partner are not simply a subset of the globally depressogenic attributional style often observed in individuals with depression (Schneider, Belus, Vorstenbosch, Monson, & Langhinrichsen-Rohling, 2013). Furthermore, Schneider et al. (2013) suggested that "distress-maintaining attributions [i.e., partner-oriented blame attributions] may be more important than depressogenic attributions [i.e., self-oriented attributions] for understanding the negative association between depressive symptoms and relationship functioning" (p. 5). Taken together, this research suggests that partner-related cognition (e.g., partner-schemas and relationship attributions) may have a more prominent role in relationship dysfunction in depression than does self-related cognition.

It is worth noting that the Relationship Attribution Measure (Fincham & Bradbury, 1992) used in the majority of the aforementioned studies asks participants to rate possible reasons for a partners' negative behaviors (e.g., being critical, inattentive) from a variety of response options, including whether this behavior was a result of something *within their partner* (e.g., my partner was critical of me because of something about him/her as a person) or something *within themselves* (e.g., my partner was critical of me because of something about me as a person). Given the latter option, one might plausibly expect that a negative underlying *self*-schema structure would be associated with the measure's outcome variable (relationship attributions). It is surprising, then, that no such association between self-schema structures and relationship attributions about a partner's behavior was found (Wilde & Dozois, 2018). These findings further support the notion that partner-schema structures may be stronger predictors of interpersonal difficulties in depression than the self-schema.

Although traditional research informed by cognitive models of depression has emphasized the role of self-schemas in predicting dysfunctional relationship cognitions, the dyadic partner-schema model suggests that a more fruitful line of investigation would be an examination of partner-schemas. As such, the current model asserts that, whereas self-schemas may lead to negative attributions about *oneself* that contribute directly to depressed mood, partner-schemas lead to distress-maintaining attributions about a *partner* that contribute to depressive symptoms through their effects on relationship functioning.

5.5. Partner-schemas, negative behavioral patterns, and depression

Cognitive-behavioral theories posit that underlying schema structures and their effects on consciously accessible cognitions (such as attributions) have important implications for an individual's behavior. Research suggests that maladaptive behavioral interaction patterns characterized by high negativity and limited positivity are implicated in both relationship distress and depression. For example, self-reported and observed interactions within dyads with one partner experiencing depression are characterized by a greater frequency of negative communication behaviors, and a reduced frequency of positive communication behaviors. Specifically, partners with depression are more likely to engage in negative behaviors such as blame, withdrawal,

verbal aggression, and hostility. They are also less likely to engage in positive behaviors such as self-disclosure, problem-solving, smiling, eye contact, pleasant facial expression, clarity of communication, and reciprocity (see Rehman et al., 2008, for review).

Not surprisingly, many of these behavioral patterns observed in dyads with a partner with depression are also associated with higher levels of relationship distress (e.g., Woodin, 2011). Although some suggest that these communication patterns are only linked to depression through their shared associations with relationship dysfunction, studies have shown that differences between depressed and non-depressed individuals generally remain significant when statistically adjusting for marital quality (Rehman et al., 2008; Whisman, 2015). In summary, individuals with depression engage in more negative behaviors, which, in turn, are associated with reduced relationship satisfaction.

5.6. Partner-schemas and negative behaviors: The mediating role of attributions

Notwithstanding theoretical and empirical evidence that suggests partner-schema structures likely play a role in negative behavioral patterns, only one study to date has examined the association between partner-schema organization and relationship behaviors. Campbell et al. (2008) found that the organization of knowledge about a partner predicted observable, objectively coded negative behaviors during conflict interactions towards that partner. Recall that schemas are theorized to operate unconsciously through their effects on conscious, momentary cognition (Beck, 1967; Beck et al., 1979). Therefore, cognitive theories would suggest that the link between partner-schema structure and behavior is likely mediated by more surface level, consciously available thoughts about one's partner, such as relationship attributions. In line with this suggestion, Bradbury and Fincham (1991) asserted that distress-maintaining attributions (e.g., responsibility and causal attributions) about a partner's negative behaviors are more likely to lead to negative behavioral responses towards that partner than would more neutral attributions. For example, if an individual perceives his or her partner's transgression as something the partner did intentionally, the target individual is more likely to respond to the partner in a negative manner (e.g., with hostility) than if the partner's behavior was perceived to be accidental (cf. Crick & Dodge, 1994).

Indeed, a number of studies suggest that relationship attributions are associated with interaction behaviors. For instance, research has shown that distress-maintaining relationship attributions (i.e., responsibility and causal attributions) about a partner are associated with increased instances of overt displays of anger from wives (Fincham & Bradbury, 1992), more avoidant and less positive behavior during problem-solving discussions (Bradbury & Fincham, 1991 studies 1 & 2), increased self-reported frequency of conflict (Davey, Fincham, Beach, & Brody, 2001; Marshall, Jones, & Feinberg, 2011), greater self-reported and objectively observed criticism of a partner (Peterson & Smith, 2011), more expressions of disgust, scorn, and contempt (Osterhout, Frame, & Johnson, 2011), and more maladaptive conflict management strategies (Davey et al., 2001). This association holds longitudinally (Durtschi, Fincham, Cui, Lorenz, & Conger, 2011), and appears to be unidirectional in that attributions predict later behavior, but not vice versa (Fletcher & Thomas, 2000).

Taken together, this research suggests that distress-maintaining attributions contribute to an individual's own negative behavioral responses towards a romantic partner. Given that partner-schemas are linked to attributions, and that attributions predict behaviors, the current model asserts that partner-schemas are linked to relationship behaviors *through* their effects on attributions.

5.7. Dyadic complementarity in depression

In their interactions with others, individuals with depression have been characterized as significantly less agentic and more interpersonally cold than individuals without the disorder (e.g. Locke et al., 2017). They have

been described as avoidant, inhibited, overly accommodating, and submissive (Cain et al., 2012; Dawood, Thomas, Wright, & Hopwood, 2013; Locke et al., 2017; Simon, Cain, Wallner Samstag, Meehan, & Muran, 2015). Studies suggest that, "on average," individuals with the disorder tend to fall somewhere within the cold and socially avoidant octant of the interpersonal circumplex (Cain et al., 2012; Whisman, 2017). The principle of complementarity suggests that the characteristically cold and submissive behaviors of individuals with depression should elicit cold and dominant responses from romantic partners (Kiesler, 1996).

It is important to note that, although the behaviors of individuals with depression *typically* fall in the cold and submissive quadrant of the interpersonal circumplex, there is undoubtedly variation in the types of behaviors observed in individuals with depression. That is, individuals with depression may also exhibit warm, submissive behaviors (e.g., reassurance seeking; Evraire & Dozois, 2014) or cold, dominant behaviors (e.g., demand behaviors; Rehman et al., 2010). For example, within romantic relationships, research suggests that women's depressive symptoms are positively associated with negative *demand* behaviors towards spouses (e.g., Knobloch-Fedders et al., 2014; Lizdek, Woody, Sadler, & Rehman, 2016; Rehman et al., 2010), which would be classified within the cold dominant quadrant of the circumplex.

Research suggests that the extreme interpersonal responses (e.g., low warmth) of individuals with depression may lead to a disruption in interpersonal dynamics and synchronization within interactions. For example, depression appears to be associated with difficulty matching an appropriate degree of affiliation or warmth to the emotion cues in an interaction (Rappaport, Moskowitz, & D'Antonio, 2017) and to the interaction partner's expressions of warmth (Johnson & Jacob, 2000). Moreover, the overly negative or maladaptive responses of individuals with depression (e.g., high levels of coldness/hostility, atypically high or low levels of dominance) tend to result in a polarization of responses in the interaction, such that interactions between partners become increasingly negative over time (see Lizdek et al., 2016). Research suggests that individuals also show a *bias of assumed similarity*, in that Partner A's perceptions of Partner B's negative affect and behavior are influenced by Partner A's own level of negative affect and behavior, and vice versa (Sadikaj, Moskowitz, & Zuroff, 2015; Sadikaj, Moskowitz, & Zuroff, 2017b). In line with interpersonal theory (e.g., Hopwood et al., 2013), the current model would suggest that underlying partner-schema structures and biased cognitions (parataxic disortions) may contribute to these impairments in interpersonal dynamics.

5.7.1. The role of covert processes occurring simultaneously in the partner

It is important to note that the behavioral responses elicited from Partner B are also influenced by his or her own intrapersonal processes (see Fig. 1). Recall that interpersonal theory asserts Person A should evoke particular kinds of cognitive and affective responses within Person B ("impact messages"). For example, Kiesler's (1996) MTC suggests that the submissive and unassured actions of individuals with depression are likely to elicit covert responses of concern, reassurance, guilt, hostility, and rejection in their interaction partners. However, findings from recent empirical work highlight the importance of Partner B's own internal processes and characteristics in producing particular types of covert and overt responses to Partner A. For example, Cain, Meehan, Roche, Clarkin, and De Panfilis (2018) examined how an individual difference variable (effortful control) moderated the effect of Partner A's affect and behavior on Partner B's response to him or her. The researchers found that Partner B's response to Partner A depended not only on Partner B's perception of Partner A's affect, but also on Partner B's own characteristics (in this case, effortful control). Thus, while Partner A's behavior may pull for specific responses from Partner B, this response is ultimately influenced by Partner B's own internal processes.

This idea is also consistent with other social-cognitive models of psychological processes in dyadic relationships that have emphasized the role of both intrapersonal and interpersonal factors. For example, the Perceived Partner Responsiveness (PPR) model (Reis & Clark, 2013;

Reis & Gable, 2015; Reis & Holmes, 2004) asserts that an individual's *perceptions* of how responsive (e.g., attentive, supportive) his or her partner is to expressed needs, wishes, concerns, and goals may be as important as his or her partner's *actual* responsiveness on a behavioral level. Perceived responsiveness refers to the degree to which one's partner makes him or her *feel* valued, cared for, and understood; it is a reflection of both actual partner behavior, as well as motivated re-interpretations (see Reis & Clark, 2013).

The PPR model suggests that each partner possesses his or her own interpretive filter through which the other partner's level of responsiveness is viewed (Reis & Clark, 2013; Reis & Gable, 2015; Reis & Holmes, 2004). This interpretive filter is described in the PPR model primarily as the individual's "needs, goals, and wishes" (p. 4), and guides one's perception of, and response to, the other partner (Reis & Clark, 2013). In this way, the current model is consistent with the PPR's assertions, but further expands upon the PPR model in its assertion that underlying schema structures and their resultant cognitive processes (e.g., distress-maintaining attributions) represent key elements of the "interpretive filter" through which each partner views the other's behavior.

As such, the dyadic partner-schema model asserts that Partner B's own partner-schema and cognitive processes simultaneously influence his or her cognitive, affective, and behavioral responses to Partner A. While behavioral complementarity in interactions is well established (e.g., Sadler et al., 2011), less is known about the interdependency of cognitive variables (e.g., schemas and attributions). This notwithstanding, the interaction between each dyad member's cognitive processes may have important implications for relationship dynamics. For example, Campbell et al. (2008) examined the interaction between romantic partners' schema structures for one another. Results suggested that when partners shared more similarly organized partner-schema structures for one another, greater marital quality and more positive conflict resolution strategies were observed. Researchers have also examined the interrelations between romantic partners' attributions for one another. Davey et al. (2001) found that spouses' ratings of causal attributions were correlated, such that spouses typically were similar in the degree to which they made causal attributions for each other's behavior. In addition, the authors also reported the presence of cross-spouse effects, wherein one partner's causal attributions were predictive of the other partner's reports of conflict. As such, the authors asserted that a dyadic model "better captures attributional processes in marriage than one that does not allow for such [dyadic] effects" (Davey et al., 2001, p. 731). Thus, the current model acknowledges that there is likely an interaction between partners' schemas and attributions; however, the precise nature of this interaction remains unclear.

5.8. Clinical applications of the dyadic partner-schema model: A case example

The dyadic partner-schema model provides a useful heuristic for conceptualizing relationship difficulties within depression. As relationship dysfunction is often a common presenting complaint in individuals with the disorder, the current model has the potential to provide value within a clinical context. Moreover, the dyadic partner-schema model may lend itself to integration with different therapeutic approaches and modalities (e.g., cognitive behavior therapy, transference focused therapy, couples therapy). To illustrate the clinical relevance of the model, a brief case example is provided below.

Taylor presented for individual psychotherapy for treatment of major depressive disorder. She is currently in a long term, committed relationship with her partner, Alex, with whom she resides. She reports persistent depressed mood, as well as significant relationship distress, frequently feeling "upset" by her partner. Functional analyses suggest that a likely contributor to her low mood is her frequent reported "conflicts" with Alex. According to the dyadic-partner schema model, Taylor may be conceptualized as having a highly negative self-schema (as is typical in the majority of individuals with depression, Dozois &

Dobson, 2001) as well as a similarly negative underlying partner-schema of Alex. For example, Taylor may have a highly organized schema of herself characterized by beliefs of being unlovable, incompetent, and ineffective. She may also have a highly organized schema for Alex as being cold, rejecting, and unresponsive to her needs.

When Taylor enters an interpersonal situation with Alex (this may be an actual or imagined situation), her schemas for both herself and Alex become activated. Any given action from Alex results in Taylor's partner-schema filtering incoming information about Alex in line with the underlying schema structure. As her negative partner-schema is tightly interconnected and highly organized, activation quickly spreads between nodes of Alex as being "cold" "rejecting" and "unresponsive". This subsequently colors the way she processes and interprets Alex's action. For example, she may disregard positive information and make distress-maintaining attributions (e.g., "Alex was late for dinner because he is selfish and does not care for me). This type of attribution may result in Taylor becoming angry and engaging in hostile, demand behaviors toward Alex (e.g., "Why are you late again? You are always late!"). This type of response would elicit complementary overt responses (e.g., activate Alex's partner schema of Taylor as being hostile and unreasonable; and subsequent attributions of her as uncaring) and pull for predictable covert behavioral responses from Alex (e.g., frustration, withdrawal). This reciprocal interactional process would continue, and the overly negative cognitions, affect, and behavior in the interaction would contribute further to Taylor's depressive symptoms (i.e., low mood, interpersonal avoidance) and negative self-schema (e.g., further reinforcing the belief that she is unlovable). It would also contribute to both Taylor and Alex's overall levels of dissatisfaction with the relationship, as well as reinforce their highly negative underlying schemas of one another.

In treatment, the clinician's overall goal may be to restructure Taylor's underlying self and partner-schemas. That is, the clinician may work to loosen connections between negative information, and strengthen cognitive associations between positive self and partner information (e.g., through behavioral experiments). Interventions may focus on challenging distress-maintaining attributions (e.g., dismantling causal and responsibility attributions), and altering maladaptive behavioral patterns. Specifically, maladaptive or extreme behavioral responses should be replaced with more adaptive responses; at a dyadic level, the goal would be to restore appropriate complementarity in the interactional field, and shift behavioral outputs from cold (submissive and/or dominant) to the warm dominant quadrant of the circumplex. This would also aid in eliciting warmer and objectively less negative responses from each partner. Thus, therapy would target both (1) Taylor's biased underlying schemas and information processing biases, and (2) actual, objectively negative responses from Alex that serve to reinforce Taylor's schemas. The restoration of interpersonal complementary can be achieved both outside (in Taylor's interactions with Alex) and inside the session, from a process perspective (in Taylor's interactions with the clinician). Given the dyadic context of the above processes (and the fact that Alex may have similar cognitive distortions and exhibit objectively negative behaviors), the partner may ideally be included in the therapeutic process at some point, if possible.

6. Model contributions and future directions

6.1. Towards a cognitive-interpersonal model of relationship dysfunction in depression

Over the previous decade, researchers have repeatedly called for conceptual integrations of cognitive, behavioral, and interpersonal factors in understanding both relationship distress (e.g., Osterhout et al., 2011) and depression (Dobson et al., 2014; Gaddassi & Raffaeli, 2015, Rehman et al., 2008). As noted by Dobson et al. (2014), cognitive-behavioral approaches to depression typically emphasize intrapersonal processes at the expense of understanding interpersonal processes that influence an individual's cognition, affect, and behavior.

In addition, as Rehman et al. (2008) stated:

> Interpersonal theories should integrate knowledge from other perspectives on depression. Depression is a complex disorder with multiple etiological pathways (Kendler et al., 1995). It is unlikely that interpersonal perspectives alone can sufficiently explain the heterogeneous presentation and course of depression. Towards this end, integrative frameworks that combine interpersonal and intrapersonal perspectives may have greater explanatory power than when either perspective is considered alone… the integration of interpersonal perspectives with cognitive, neurobiological, developmental, and life stress perspectives on depression offers promising avenues for future work in understanding the marital context of depression (pp. 191–192).

In line with the need for more integrative frameworks, the dyadic partner-schema model incorporates both intrapersonal and interpersonal processes occurring within the dyadic context of depression, and offers a broad conceptual integration of existing cognitive-behavioral and interpersonal theories. As such, while other studies or proposed models have begun to examine interactions between specific intrapersonal and interpersonal processes (e.g., Andrews, 1989; Evraire & Dozois, 2014; Rehman et al., 2010), a strength of the current model is its broad scope and ability to provide a flexible and parsimonious integration of a wide variety of constructs relevant to depression, as illustrated below.

The current framework is intentionally broad in its selection and description of variables (e.g., the model implicates "cognitions about a partner" and "maladaptive behavior patterns") in order to promote the integration of empirical findings from various areas in the literature. For example, while attributions about a romantic partner are outlined as a specific type of cognitive process implicated in the current framework, it is likely that other types of cognitive biases are implicated in this model. For example, partner-schema structures may give rise to other social-cognitive biases noted in depression, such as deficits in accurately identifying the emotions of others (e.g., Lee, Harkness, Sabbagh, & Jacobson, 2005). That is, highly organized negative partner-schemas may lead an individual with depression to interpret a romantic partner's affective expressions as more negative than they actually are (subsequently influencing behaviors and interaction patterns).

Similarly, specific types of behavioral interaction patterns that are pertinent to depression may be integrated into this model. For example, research suggests the *demand-withdraw* communication pattern (wherein one partner criticizes the other or demands for change, while the other partner withdraws or avoids discussion; see Eldridge & Baucom, 2012, for a review) is implicated in depression (e.g., Rehman et al., 2010). Demand-withdraw patterns of behavior can be conceptualized in terms of interpersonal circumplex dimensions (e.g., affiliation and dominance) and thereby fit within the framework of this model. While research examining the intrapersonal factors contributing to demand-withdraw patterns has largely eschewed cognitive factors (see Eldridge & Baucom, 2012, for review), the current model would suggest that underlying partner-schemas and resulting cognitive biases (e.g., relationship attributions or emotion recognition deficits) play an integral role in contributing to demand-withdraw interactions. Similarly, other specific behavioral processes in depression identified elsewhere in the literature (e.g., excessive reassurance seeking, negative feedback seeking, rejection from others; see Whisman, 2017, for review) may be integrated into this model in a similar manner. In this way, the use of broad principles from cognitive and interpersonal theories in the current framework is intended to foster the integration of findings stemming from other areas of research to unify the literature and create a more parsimonious understanding of relationship processes in depression.

6.2. An extension of existing theory

Highly sophisticated cognitive and interpersonal models of depression have contributed significantly to our understanding of this disorder. The current model represents an attempt at integrating several key concepts from existing models to provide a theoretical extension directed towards a particular depressive context: dysfunctional romantic relationships. Below is a brief review of how the current model expands upon existing theory.

With regard to cognitive theories of depression, the dyadic-partner schema model makes an important shift in emphasis from self-related processing to partner-related processing. We assert that the processing of partner-related information is an important pathway contributing to the maintenance of depressive symptoms in a manner unique from that of self-related processing. That is, emerging evidence suggests that partner-schema structures offer significant value in predicting specific relationship problems (e.g., maladaptive attributions about a partner) that depressive self-schemas appear to have surprisingly limited influence on. Partner-related processing is an area that has been relatively overlooked in the cognitive literature on depression; thus, the assertions of this model have significant heuristic value and offer important testable hypotheses for future research. This model also expands on existing cognitive models by more explicitly outlining the dyadic nature of depression and the parallel processes occurring in the romantic partner.

With regard to interpersonal theory, the current model provides a more nuanced explanation of specific cognitive processes involved in interpreting, perceiving, and responding to an interaction partner. It is important to note that interpersonal theories (and other related literatures; cf. Bowlby, 1973; Winnicott, 1986) have long implicated the roles of self and other schemas (e.g., Carson, 1982; Kiesler, 1996) in interpersonal processes. However, interpersonal theory primarily implicates the role of interpersonal *motives* and needs (e.g., to satisfy need for autonomy or felt security) in producing cognitive distortions. Thus, the current model adds incrementally by providing specific hypotheses about the underlying cognitive architecture (i.e., schema structure) and the role of specific cognitive variables (including intentions, perceived partner responsiveness, causal and responsibility attributions, etc.) in producing the parataxic distortions discussed in interpersonal theory. As Hopwood et al. (2013) state, parataxic distortions and the deeply rooted representations from which they stem offer clear targets for clinical intervention. Thus, a more thorough understanding of the structure of these representations, as well as the specific types of cognitive processing errors that result (e.g., attributions), present an important complement to interpersonal models.

In addition, the current model expands on interpersonal models specific to depression, such as Kiesler's (1996) MTC. The MTC model may be overly prescriptive in terms of the behaviors implicated in depression, as it suggests that individuals with depression primarily engage in cold, submissive, withdrawn behaviors. Although individuals with depression may often exhibit these behaviors "on average", there is undoubtedly heterogeneity in the types of behaviors and interpersonal reactions observed in individuals with depression. Thus, the current model provides somewhat more flexibility than the MTC in allowing for the varied reactions of individuals with depression (presumed to be dependent upon the schema structures and cognitive processes activated). Moreover, the MTC arguably outlines an interpersonal picture that may be more characteristic of interactions with acquaintances or relationships in the early stages (e.g., with the first stage for Partner B being to provide reassurance). Given that the interpersonal difficulties of individuals with depression tend to be amplified within close relationships (e.g. Segrin & Flora, 1998), the intimate relationship context may present a slightly different picture.

6.3. General directions for future research

As the links between several variables in the model have been established cross-sectionally, longitudinal research is needed to examine whether partner-schema structures influence later depressed mood through the cognitive, behavioral, and interpersonal mechanisms proposed in the dyadic partner-schema model. Broadly speaking, examinations of the pathway from partner-schemas to relationship distress and depressed

mood over various time periods (e.g., weeks, months, years) are needed to examine whether the proposed processes are supported prospectively. In addition to examinations of the current model's processes over longer temporal periods, empirical examinations of the model's predictions within immediate, dyadic exchanges are also needed. Important developments in relationship science have advanced the momentary assessment of dyadic behavioral patterns in interpersonal interactions in vivo (e.g., see Atkins & Baucom, 2016, for review). That is, a number of methods can be used to measure the moment-to-moment interdependence and bidirectional associations between both partners' behaviors and affect (see Dermody et al., 2017; Sadler et al., 2009; Sadler, Woody, McDonald, Lizdek, & Little, 2015, for examples). These "microanalytic" continuous assessments of the "give-and-take" exchanges between partners are critical to understand specifically how one partner's behavior is related to responses from the other partner over the course of the interaction.

Similarly, to assess the interaction between partners' momentary cognitive processes (e.g., moment-to-moment attributions) and fluctuations in depressed mood, procedures such as video-mediated recall paradigms (e.g., Halford & Sanders, 1990) could be used. These paradigms allow for the assessment of covert processes (such as mood or cognition about a partner) at any given moment during a dyadic interaction. As such, partners' moment-to-moment reports of their own attributions, partner-related cognitions, and emotions in the interaction could be measured to examine the interrelation among these variables. While researchers have already begun to examine the link between partner perceptions, affect, and relationship functioning in vivo (e.g., Sadikaj et al., 2015, 2017a, 2017b), similar research is needed to examine more specific cognitive variables in this way (i.e., schema organization, attributions). Moreover, the interactions among these "online" cognitive processes between partners could be examined. As such, momentary changes in both observable, overt behaviors, as well as internal, covert processes over the course of partner interactions would help to provide a highly nuanced and rich understanding of relational processes maintaining depression. These moment-to-moment exchanges between partners could illustrate not only how each individual's partner-schema predicts his or her cognitions and affect within an interaction, but also how the other partner's own simultaneously occurring processes moderate these effects.

More broadly, an additional area for future investigation of this model may be to examine the role of partner schemas in other emotions. For example, it is possible that the processes in this model could generalize to other areas of psychopathology (e.g., anxiety disorders). Although the current model has been presented with a focus on depression, we await further examination of its implications in other emotions.

6.4. Specific hypotheses predicted by the current model

It is important to note that certain processes in the current model are already well supported by the literature (e.g., that hostile responses from one partner elicit similarly hostile responses from the other; that the association between depressive symptoms and relationship distress is bidirectional, etc.). However, other elements of the model represent novel areas of research and thus require greater attention in future investigations. Some examples of specific research findings that would provide provisional support for the current model are outlined below.

First, and perhaps most central to this model, is the assertion that partner-schema structures are uniquely predictive of the interpersonal difficulties experienced by individuals with depression above and beyond the influence of self-schema structures (e.g., *H1* in Fig. 1). That is, the current model suggests that partner-schema structures would be predictive of partner-directed cognitions (e.g., responsibility and blame attributions) and interpersonal behaviors (e.g., hostility) while statistically controlling for the variance in these variables explained by self-schemas. Whereas self- and partner-schemas share significant overlap (e.g., Mashek, Aron, & Boncimino, 2003; Murray et al., 1996; Wilde & Dozois, 2018), the current model assumes that self- and partner-schemas are not entirely overlapping and thereby each contribute unique variance to relationship processes. If,

however, future research fails to find support for the ability of partner-schema structures to predict relationship processes above and beyond self-schema structures, this would suggest that depressive self-schemas play a more pervasive role even in relationship contexts. In this case, the current model would need to be revised to reflect and more heavily weight the robust role of the self-schema in interpersonal processes in depression. However, this is not expected, as an emerging body of literature supports the importance of partner-schemas in relationship functioning.

An additional hypothesis of the current framework that requires direct examination is the proposed path between partner-schemas to relationship and mood outcomes (i.e., *H5* in Fig. 1). Although several links within the model have already been illustrated in the literature, the overall integration and direction of each process in the model should be examined. For example, the associations between partner-schemas and attributions, attributions and behaviors, and behaviors and relationship distress have all received some support in the literature. However, the overall path from partner-schemas to depression and relationship distress *through* their effects on attributions and behaviors has yet to be empirically examined (either within momentary interactions, or across longer time periods). For instance, using the video-mediated recall paradigms as described above, the current model would predict the following sequence of events in moment-to-moment interactions between partners. First, highly organized negative partner-schemas are theorized to predict the tendency to make more negative in vivo cognitions about a partner (e.g., causal and responsibility attributions), which are expected to contribute to greater instances of negative (e.g., hostile) behavioral responses to (and similarly negative responses from) that partner. In turn, it is the negative interpersonal interactions between partners that are theorized to subsequently predict increases in negative affect and relationship distress. In this way, the effects of partner-schema structures on relationship distress and depressive symptoms are predicted to be occurring via their effects on online cognition and behavioral interactions within dyads. Results fitting this type of path model between these variables as outlined above would provide provisional support for the current model.

A final aspect of the model that warrants attention in future research surrounds the stability and change of schema structures over time (also *H5* in Fig. 1). There is a paucity of research examining how interpersonal interactions between romantic partners contribute to the organization of underlying schema structures over time. The current model would predict that highly negative interactions with a partner would reinforce (and therefore be predictive of) increasingly organized negative schema structures across time. Specifically, the dyadic partner-schema model suggests that interactions between partners should be longitudinally predictive of both self-schema structures and partner-schema structures. This is because any given event in the interaction (e.g., "my partner responded in a hostile manner") may be interpreted as providing information about both oneself (e.g., "I am not worthy of love") and the romantic partner (e.g., "my partner is rejecting"). Alternatively, one could argue that the egocentric information processing biases in individuals with depression may lead them to attribute negative relationship events more heavily to internal causes than to one's partner, suggesting that only self-schema structures may be reinforced over time. Should the evidence support this claim, such findings would necessitate a revision to this element of the proposed framework. However, the existing evidence (reviewed previously) lends credence to the assertions of the current model.

In this way, the current model represents a tentative conceptualization upon which to build as research illuminating the complex processes outlined in this framework becomes available. Should it become apparent that additional links in the model are warranted by the findings of forthcoming studies, appropriate alterations to the model would need to be made.

7. Conclusions and implications

The interpersonal difficulties experienced by individuals with depression are often associated with significant impairment and poorer

prognosis (e.g., Atkins, Dimidjian, Bedics, & Christensen, 2009; Whisman, 2001). The dyadic partner-schema model combines empirically supported assertions from cognitive-behavioral and interpersonal theories to provide an integrative understanding of the mechanisms contributing to relationship distress in the disorder. Not only is this model consistent with empirical findings documented in the literature, it incorporates these principles into an integrative framework from which to generate future research. The proposed model and its hypotheses may pose a number of important implications for both scientific theory and clinical practice. Theoretically speaking, this model may caution against focusing solely on the self-schema at the expense of examining partner-schemas when studying depressive interpersonal processes. From a clinical perspective, this model may illuminate the potential importance of therapeutically restructuring partner-schemas and restoring interpersonal complementarity in individuals with depression for whom relationship difficulties are central in their experience of the disorder. As such, this model has the potential to advance the scientific understanding of relationship processes in depression by illustrating an integrative approach to conceptualizing relationship dysfunction in the disorder.

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Contributors

Both authors designed the theoretical model and chose the scope of literature review. J. L. Wilde conducted literature searches and wrote the first draft of the manuscript. Both authors contributed to and have approved the final manuscript.

Conflict of interest

The authors declare that they have no conflicts of interest.

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