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Couples social support quality in the context of dyadic emotional experiences

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Couples social support quality in the context of dyadic emotional experiences

by

Frederick D. Clavel

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY

Major: Psychology

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The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this dissertation. The Graduate College will ensure this dissertation is globally accessible and will not permit alterations after a degree is conferred.

Iowa State University

Ames, Iowa

2017

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ABSTRACT

People in relationships frequently rely on their romantic partners for support through life's everyday stresses and strains. While the past several decades of research have clarified many of the ways in which support transactions can be both beneficial and harmful to recipients, we lack a comparably clear understanding of the factors that enable or hinder effective support provision in everyday life. The current project addressed this gap by explicating the role of daily emotions and emotion-related processes in the facilitation of social support between romantic partners. Specifically, the study aimed to determine whether 1) partners' similar daily negative emotional experiences yield better or worse daily support quality, and 2) whether a person's ability to accurately perceive the day to day negative emotion states of her or his partner can enhance the quality of daily enacted support. Using a 14-day daily diary design with 60 romantic couples, I found that each romantic partner's daily negative emotional experiences differentially predicted how much support they provided to each other, as well as the visibility of that support and the matching of that support to their partner's needs. Daily negative emotional experiences also predicted partners being dissatisfied with the support they received. However, when partners felt similarly negative and when they accurately perceived each other's negative emotions, the negative effects of mood on support quality were mitigated. The results suggest that the joint experiences of emotions matter in determining the extent to which social support quality is undermined by day to day negative emotionality.

CHAPTER 1

INTRODUCTION

There is arguably no greater resource we rely upon for support when weathering the stresses and strains of everyday life than those who are closest to us. In romantic relationships, partners frequently serve as sources of care, comfort, protection, and assistance for one another, particularly during tough times. While this resource is invaluable, it is not perfect. For various reasons, partners fall short in their efforts to provide support to each other. People's well intentioned support efforts sometimes backfire, causing increases in a support recipient's distress rather than alleviating it (Bolger & Amarel, 2007; Bolger, Zuckerman, & Kessler, 2000; Gleason, Iida, & Shrout, 2008). At other times, people may fail to notice their partners' experiences of stress and miss an opportunity to respond supportively. It is also common for people to simply provide well-meaning but ineffective support that fails to alleviate a partner's distress. People who find themselves in stressful situations look to their romantic partners for social support, and those partners in turn face the challenging task of attempting to support a partner when she or he is experiencing distress.

Researchers have worked extensively for the past 40 years to better understand the intricacies of social support in romantic relationships. A number of prominent theories of social support have emerged over the years, providing us with many ideas about the structure and functions of social support, as well as the multiple challenges involved in support transactions in relationships. Below, I review several key areas of the support literature, including what social support is, what its primary functions are, the forms in which it presents itself in relationships, the ways in which it succeeds and fails, and the effects that social support has on individual well-being in general, and relationships more specifically.

My overarching goal in the current research was to understand the factors that enable and hinder effective support provision in relationships. Several of these factors are unknown at present. I argue that the emotional experiences of the people who provide support represent one key factor that influences the effectiveness of social support in relationships, specifically when those emotional experiences are linked explicitly to the emotional experiences of their partners. Following my review of the support literature, I review the literature on the emotional experiences of romantic partners, and examine how emotions considered at the level of the dyad can influence social support dynamics in relationships.

1.1 What Is Social Support And What Functions Does It Serve?

Social support can be broadly defined in two ways: enacted/received support, and perceived support. Enacted or received social support is specific to actual behavior. It can be defined as any behavior or action that an individual engages in, with the intent of helping another person, or alleviating another person's experience of distress (House, 1981; Rook, 1984). Perceived social support by contrast does not refer to specific behaviors *per se*, but to the availability of support and the presence of supportive individuals in one's life more generally. It can be defined as an individual's belief that she or he can obtain social support from other figures in her or his social network, if such support is needed, desired, and/or sought from those figures. Both received and perceived social support commonly function as buffers against the detrimental effects of stressful experiences on physical and mental health (Brown, Bhrolchain & Harris, 1978; Pasch & Bradbury, 1998; Pearlin, Lieberman, Menaghan, & Mullan, 1981).

It is largely known that perceived support is beneficial for its recipients, and is generally regarded as a key component in predicting adjustment to stressful life events (Brown, Bhrolchain

& Harris, 1978; Dunkel-Schetter & Bennett, 1990; Wethington & Kessler, 1986). However, it is in the domain of received or enacted support that findings have been mixed over the past few decades. Across a diverse and growing body of literature, research has shown that enacted social support sometimes helps recipients cope with their stressful experiences, while at other times receiving enacted support yields no discernible benefit or even predicts detrimental outcomes such as increased recipient distress (Bolger & Amarel, 2007; Bolger, Zuckerman, & Kessler, 2000; Girme, Overall, & Simpson, 2013; Gleason, Iida, & Shrout, 2008; Kirsch & Lehman, 2014). This inconsistency of findings is perhaps to be expected, given the variety of thoughts, emotions, and behaviors involved in support transactions, and the myriad ways in which support can be delivered. Providing effective support can be particularly challenging in romantic relationships, given that social support behavior is crucial for key relationship outcomes while simultaneously being susceptible to misguidance and backfire despite a partner's best intentions (Shrout et al., 2010). In the present research, I focused specifically on enacted social support.

1.1.1 Social support: Variations in form and content.

Enacted social support can take on a variety of forms. Depending on the nature of the stressor, and the needs of the recipient, a number of support behaviors may be enacted by a support provider. The most common taxonomies of social support include at least four types: emotional support, instrumental or practical support, esteem support, and informational support (e.g., Cutrona, 1990; Cutrona & Russell, 1990). Emotional support includes behaviors that convey to a recipient that they are loved, cared for, and valued by the support provider. In romantic relationships, this often includes words or displays of affection (e.g., saying "I love you" to a partner, engaging in various forms of physical intimacy such as hand-holding, hugging, or

kissing). Instrumental or practical support includes behaviors that are most commonly construed in layperson's terms as helping behaviors. These can include any number of task-specific behaviors involving assistance (e.g., helping someone move furniture, giving your partner a ride to work), as well as a variety of resource sharing behaviors (e.g., lending cash to a partner, or bringing a partner lunch when he/she is having an especially busy day). Esteem support includes behaviors that convey to the recipient that her or his abilities are valued and that the recipient is perceived to be competent and capable (e.g., saying "You can do it!" to a partner, or willingly embracing a partner's leadership during a task or activity). Informational support includes behaviors that involve providing information or advice to a recipient, in a way that is intended to help the recipient better manage a stressful experience. Common information support behaviors include providing knowledge or expertise, or offering advice to someone when needed or solicited. In the current study, I assessed the quality and content of daily support transactions in romantic couples, by specifically assessing the provision and receipt of each of the four most common taxonomic support types (esteem, emotional, informational, and practical support).

1.1.2 Complications in enacted support

Despite general consensus on the most common types of enacted social support, research has shown that support provision in the above areas is not often as clear-cut as taxonomic approaches would suggest. There are a number of potential reasons for complications in the differentiation of support types. Phenomenologically, many instances of enacted support – regardless of the actual type of support – may come across as instances of emotional support for a recipient. Often, when a partner provides support that is not explicitly emotional in nature, recipients nonetheless have room to interpret such actions as indications that the support provider loves and cares for them.

This process of misinterpretation (or perhaps multiple interpretation) may be partially responsible for the frequently observed mixed effects of support on well-being. While such (mis)interpretations are valid in many respects (e.g. a partner who offers informational support probably conveys caring via the mere act of providing assistance), it is a potential problem for researchers because it can obscure the measurement of support types, making the aforementioned mixed effects harder to observe and interpret.

Perhaps more problematic than the issue of the typological distinction is the fact that providing enacted support – again, regardless of the specific type – is not guaranteed to alleviate the recipient’s stressful experience, and in some cases may even exacerbate the experience. There are a number of reasons that specific support behaviors may be effective toward alleviating a recipient’s distress or not. I review some of the better-understood reasons below. However, there remain gaps in the literature on enacted support and its effectiveness (or lack thereof). In particular, while we know a fair amount about the particular aspects of support behaviors that sometimes render them ineffective, we still know little about why some people are more able than others to provide effective support to a partner, and what role transient psychological factors (e.g., emotional experiences) play in enabling or hindering partners from supporting each other effectively in daily life. My goal in the current project was to address this gap in the literature by examining how daily emotion processes occurring within a couple influence whether or not partners will succeed at delivering effective support to each other.

1.1.3 Enacted social support: Distinguishing the harmful from the helpful.

Romantic relationships are enormously complex. Support transactions are intricate dyadic processes, involving multiple parts in sequence, each of which uniquely affects and is affected by

a variety of factors both internal and external to the individual partners and the relationship itself. A large body of research on social support has emerged over the past several decades, describing some of the ways in which enacted support behavior can be maximally effective. One early theory describing how supportive behavior is rendered effective vs. ineffective was optimal matching theory (Cutrona & Russell 1990). The principle of optimal matching suggests that supportive acts are most effective when they are well matched to the needs of the recipient following stressful life events. For example, when a person is facing a stressor that primarily evokes a need for esteem support (e.g., a graduate student facing his dissertation defense), a romantic partner should provide support that is encouraging and conveys confidence in the recipient's abilities. Such support would be best matched to the needs of the recipient. By contrast, a partner's responding in a way that fulfills a different support need (e.g., instrumental support provided by offering to help edit portions of the student's presentation) will not be the most effective means of alleviating the recipient's distress. The match (or mismatch) between recipient needs and provider behavior is in part determined by the nature of the stressor that gives rise to the need for support. Stressors that have some degree of controllability may be more effectively managed when a partner provides support that is more instrumental or task-focused, such as providing tangible assistance or advice. By contrast, stressors that are less controllable may be better managed when a partner engages in more caring, emotion-focused support, such as expressing care, concern, and building esteem (Cutrona & Suhr, 1992). Matching has been shown to be an important determinant of support effectiveness, with poor evaluations of support quality arising when a provider's actions are not well matched to the recipient's needs (Cutrona, Cohen, & Igram, 1990). One major outcome in the present study is the extent to which partners

who provide support engage in daily supportive behavior that is well matched or mismatched with the needs of their recipient partners.

Daily diary research has illustrated ways in which well-intentioned day to day support behavior can fail to benefit the recipient – or even backfire, leading to more distress. A landmark diary study by Bolger, Zuckerman, and Kessler (2000) demonstrated that one of the key features of support that determines its ability to be helpful *versus* harmful is its visibility. Specifically, Bolger and colleagues examined daily reports of the occurrence of support provision and receipt in romantic couples in which one partner was facing a major life stressor (law school students facing the New York State Bar Examination). Supportive behaviors tended to be most beneficial when they were “invisible” – wherein one partner reported providing support while the other partner reported that no support was received. On average, participants tended to experience the greatest day-to-day decreases in distress on days that followed instances of invisible support. By contrast, following days during which a partner reported having given support, while the other partner reported receiving support, the support recipient actually tended to report greater distress. More recent research on support visibility effects such as these has provided some important clarifications of the invisible support phenomenon. In one diary study, Shrout and colleagues (Gleason, Iida, Shrout, & Bolger, 2008; Shrout et al., 2010) found that while highly visible support behaviors in couples tended to predict next-day increases in distress, they also predicted increases in commitment and relationship satisfaction.

Support visibility effects have also been demonstrated in dyads comprised of strangers under experimental conditions, by varying whether subjects who engaged in a very challenging task in a lab setting receive support that is highly explicit (i.e., visible) versus receiving support that comes in the form of actions that do not directly highlight a person’s struggles (Bolger &

Amarel, 2007). This was achieved when confederate peers working on the same task asked for assistance from an experimenter in the presence of a target participant. This helpful action by the confederate was considered invisible support because (a) it was not focused on the struggles of the recipient (i.e., the participant), (b) it yielded helpful information for the recipient in the absence of any obvious costs, and (c) given its focus on someone other than the recipient, such an event may not have even been interpreted by the recipient as an instance of getting support from someone.

Support visibility is one major focus of the currently proposed research. When a support act is highly visible, it carries a number of potential risks. There are a number of pathways by which support visibility determines the effectiveness of a supportive act. When people are made explicitly aware of the fact that they are being supported by their partner, they may be acutely reminded of their stressors, which can lead to short-term increases in negative affect (Bolger & Amarel, 2007; Shrout, Herman, & Bolger, 2006). A keen awareness of the fact that one is receiving support may also engender a sense of inefficacy, reminding a recipient that he/she is not quite able to cope with a stressor without another person's help (Kirsch & Lehman, 2014). Highly visible support also carries the risk of making recipients feel indebted to their partners, as if a form of assistance or a favor is owed in return for a partner's support. Research has shown that feelings of indebtedness are potentially harmful in romantic relationships, as they place an emphasis on maladaptive exchange norms (i.e., "keeping score" on each partner's positive contributions to the relationship and striving to maintain an even balance between partner contributions) rather than on relationship-strengthening communal norms (i.e., partners are motivated to make positive contributions to the relationship for the sake of the partner's well-being, rather than to keep "the score" even; Algoe, Gable, & Maisel, 2010; Clark & Mills, 1979).

Another potential pathway for the harmful effects of high-visibility support is matching. Specifically, when supportive acts are noticeable, the extent to which they match or mismatch a recipient partner's needs is that much more noticeable as well. If Sarah is experiencing a need for emotional comfort after trying to manage a complex issue at work all day, and her partner Marie offers Sarah advice and information instead, Sarah is likely to notice the mismatch between her own needs and Marie's supportive action. In this instance of mismatched support transaction, there is a risk that perceptions of responsiveness will be affected negatively (i.e., feeling understood, validated and cared for; Reis, Clark, & Holmes, 2004). Specifically, Sarah might feel as though Marie hasn't tried to understand her perspective, that Marie has invalidated her concerns somewhat by overlooking Sarah's emotional needs in favor of offering unsolicited information, and that Marie perhaps doesn't care enough to try to give Sarah the support she actually wants.

Despite the well-documented ways in which support can backfire, enacted social support in relationships is not "all harm." Rather, enacted social support in relationships is best characterized as a mixed blessing. Social support – including highly visible support – also carries potential benefits. While visible support can at times be harmful to the individual, at other times it can be beneficial to the individual and to the relationship as a whole. When people in relationships deliver well-intentioned, high-visibility support to each other (particularly if it is well-matched support), it can send a strong message that they genuinely care for each other and have some degree of investment in each other's well-being – even if that support fails to alleviate a partner's distress. Indeed, daily diary research shows that high-visibility support does promote day-to-day feelings of commitment and relationship satisfaction after it is received (Shrout, et al., 2010). Similarly, research has shown that when partners provide visible emotional support, the

visibility costs may be reduced due to the explicit message of care and concern that emotional support conveys (Girme, Overall, & Simpson, 2013). Moreover, in couples where one or both partners routinely engage in supportive behavior – whether matched or mismatched – the perception of support availability is likely to be high, despite any short-term harm that may arise from the visibility or mismatch of any specific supportive act. Over time, perceiving that a partner is a reliable source of social support is a predictor of both individual and relationship well-being (Berkman, 1984; Cohen, 1988; Cohen & Wills, 1985; Cutrona, 1996; Cutrona, Russell, & Gardner, 2005; Uchino, 2006).

1.2 What Makes People Succeed At Providing Social Support To Their Partners?

The past few decades of research have taught us a great deal about the nuance and delicacy of social support dynamics within romantic couples. The ways in which social support can be made most effective for its intended purpose have been a chief concern in the field of relationships, as well as the related academic areas of stress and coping, communications, and health psychology. Despite the large and perpetually expanding body of literature in this area, there is still very little focus in this field on the factors that actually predict whether a person will be able to successfully provide effective social support in the first place.

The present research has a different focus relative to most research that features social support as a centerpiece. Specifically, I explored the occurrence and effectiveness of support behavior primarily as an outcome, rather than as a predictor. From the relatively few other studies that have examined social support as an outcome rather than a predictor, a number of key findings have emerged. Research on attachment styles has shown that there is some degree of individual difference in the provision of enacted support, whereby individuals who rate high on secure

attachment tend to be better at picking up on their partners' distress cues and responding with effective support behavior that is comforting and cooperative (Collins & Feeney, 2010; Feeney & Collins, 2001). More recent lab-based research has shown how attachment insecurity can undermine support provision. Specifically, those who score high in avoidant attachment tend to distance themselves from partners in need of support, and often provide less emotional support and experience anger and tension when a partner experiences distress. By contrast, those scoring high in attachment anxiety not only tend to provide counterproductive support that is overinvolved and controlling, but they have also been shown to become distressed themselves when in the presence of a distressed partner in need of support (Collins, Ford, Guichard, Kane, & Feeney, 2010).

Other research has shed light on the relationship, situational, and contextual factors that can affect support in couples. The most common, and perhaps obvious, of relationship factors that affects support provision in couples is relationship quality. Several studies have suggested that partners who are dissatisfied by their relationships are more likely to engage in negative appraisals of their partners more generally, less motivated to be responsive to their partners' needs, and may be more likely to provide low-quality social support when they do behave responsively (Bradbury & Fincham, 1990). Situational effects have been shown to shape crucial aspects of support quality in some studies as well. Laboratory research has shown that assigning stress-inducing tasks to partners can undermine the effectiveness of couples' subsequent communication behavior in the short term (Bodenmann & Shantinath, 2004). More recent daily diary research has shown that on days during which partners endure high levels of stress, they are more likely to engage in counterproductive, negative behaviors (e.g., showing anger or impatience, being critical, blaming the partner) and to make more negative attributions about the

relationship more generally Each of the situational effects above undermines a vital component of the enacted support transaction (adequate communication, positive attributions, & positive behaviors; Buck & Neff, 2012).

Research has also shown that one of the best predictors of effective social support provision is a provider's recognition of support needs in her or his partner (Collins & Feeney, 2010). While the links between recognition and important individual differences like attachment style have been delineated elsewhere, relatively little is known about the dyad-level experiences that inform such recognition between partners. In the present study, I considered the joint daily emotional experiences of both members of the couple as a potentially influential factor informing how partners recognize each other's support needs. In particular, there are two specific aspects of these emotional experiences that may play a role in shaping support transactions. First, the similarity (or dissimilarity) of partners' emotional experiences from day to day may predict multiple characteristics of the support provided between partners in the short term. Second, people's accuracy in perceiving their partners' emotion states (i.e., empathic accuracy) from day to day may predict the kind and quality of daily support they provide.

1.2.1 Emotional similarity in close relationships

It is widely known that individual emotional experiences can affect behavior across multiple domains (Fischer & Manstead, 2008). While there is evidence that intimate partners, and even non-intimate college roommates who experience more similar emotions tend to experience more cohesive relationships (Anderson, Keltner, & John, 2003), there are two aspects of this feature of relationships that need to be further explicated.

First, we know little about what causes romantic partners to have similar emotional experiences. Only a few factors have been empirically linked to the development of emotional similarity in relationships. Some research has shown that time spent together predicts the development of similar emotional experiences in couples (Anderson, Keltner & John, 2003). However, the mere passage of time in a relationship is strongly correlated with other relationship processes that may facilitate emotional similarity. Sharing time and experiences with a partner is a form of investment in a relationship, and relationship investments increase commitment to that relationship (Rusbult, 1983). Similarly, the passage of time affords partners more opportunities for engaging in emotional sharing and self-disclosure. Both behaviors have been shown to occur most commonly in people's closest intimate relationships, and both behaviors are forms of relationship investments that serve to enhance closeness and allow partners to learn and integrate each other's emotional perspectives (Fischer & Manstead, 2008; Reis & Shaver, 1988; Rusbult, 1983). Other research has shown that engaging in cooperative behavior (e.g., mutual task solving) predicts a tendency to experience similar emotion states in couples (Randall, Post, Butler, & Reed, 2013). In addition to the above, there may be other individual, situational, and contextual factors that predict the tendency for partners to experience similar emotions over time and to maintain more cohesive relationships as a result (e.g., similar attachment styles, similar appraisals of events, normative processes that influence partners' emotional reactions to events similarly).

The second gap in our understanding of how emotional similarity promotes relationship cohesion is that the specific mechanisms through which this process occurs in relationships are only partially known. This gap is especially relevant to the focus of the current research. A small number of studies, reviewed in greater detail below, have shown that certain prosocial behaviors,

including support provision, are more likely to occur when partners experience similar emotions. However, none have explicitly utilized emotional similarity as a factor in explaining when and why social support is most effective in relationships. I argue that the joint emotional experiences of partners in romantic relationships are a key determinant of the course and quality of prosocial or relationship-maintenance behaviors such as enacted social support.

1.2.2 Emotions, empathy, and their roles in supportive behavior in romantic couples.

Romantic couples are known to have similar emotional experiences, both short-term and over time. In the short term, partners have been shown to affect each other's emotional states during lab-based conflict interactions and in everyday settings; a process often referred to as emotion contagion (Hatfield, Cacioppo, & Rapson, 1994). Moreover, the behavior patterns observed during lab-based conflict interactions have been shown in various studies to feature patterns of recurrent behavior that predict relationship outcomes (e.g., marital dissatisfaction and dissolution) up to 4 years after the initial interaction takes place (Gottman & Levenson, 1992). In the long term, studies have shown that couples can grow to have more similar emotional experiences the longer they remain together, and that this long-term tendency toward emotional similarity is generally beneficial for the relationship (Anderson, Keltner, & John, 2003).

Recent research has shown that couples having similar emotional experiences during interactions both predicts and is predicted by engagement in helpful and cooperative behavior (Randall, Post, Butler, & Reed, 2013; Stouten, Ceulemans, Timmerman, & Van Hiel, 2011). The potential for partners' similar emotional experiences to affect behavior in this way may be particularly important during experiences of support provision and receipt. In situations of stress, people's emotional experiences can shape the ways in which they express (or fail to express) their support needs (Barbee, Rowatt, & Cunningham, 1998). The expression of support needs, as

well as its affective underpinnings, can influence the emotional experience of the partner who is called on to provide support. In situations where one partner calls upon the other to provide social support (or the supporting partner simply notices the need for support provision), the supporting partner may experience emotion contagion. When this contagion results in a vicarious experience of negative mood that mimics the experience of the partner in need, the partner called upon to provide social support finds herself or himself in a state of empathic distress.

There is evidence that empathic distress has the potential to facilitate prosocial behavior, motivating people to help those whose distress-related needs they recognize and, to some extent, feel (Hatfield, Cacioppo, & Rapson, 1994; Hoffman, 2008). For example, lab research has shown that inducing empathy for stigmatized individuals (e.g., people suffering drug addiction) is linked with greater helping behavior on behalf of the stigmatized group (e.g., putting aside money toward efforts to help drug addicts; Batson, Chang, Orr, & Rowland, 2002). It has also been shown that experiencing empathic distress is especially predictive of intent to help when the target is someone with whom the support provider closely identifies, such as an in-group member (Stürmer, Snyder, Knopp, & Siem, 2006).

However, there is also evidence across multiple contexts and multiple points in the lifespan that some experiences of empathic distress may be strong enough to undermine the prosocial motives that empathy generally promotes – a phenomenon referred to as empathic overarousal. In such cases, the vicarious experience of another's distress may become aversive enough for the person to shift her or his attention toward regulating her or his own empathic distress (e.g., Strayer, 1993). Empathic overarousal may be particularly likely when the empathic witness feels unable to alleviate the victim's distress. For example, research with nursing trainees – by definition a support-providing occupation – has shown that trainees who experience empathic

overarousal tend to avoid contact with terminally ill patients, unless they feel capable of improving the patients' quality of life (Williams, 1989).

In the context of romantic relationships, it has been shown that the experience of empathic distress can facilitate maladaptive support behavior at times. Research on the links between attachment styles and support behavior for example, has shown that people who score high on measures of anxious attachment have a tendency to experience heightened anxiety in light of their partners' expressions of distress and support need, and that this facilitates the enactment of overinvolved, controlling support behavior (Collins & Feeney, 2010; Collins, Ford, Guichard, Kane, & Feeney, 2010). This is important for two reasons specific to the current research. First, it demonstrates that empathic distress can occur to a large enough degree in day-to-day support transactions that it undermines enacted support effectiveness. Second, it establishes that one common result of this undermining effect is over-involvement and excessive control – both of which are manifestations of high-visibility enacted support, and are unlikely to be well-matched to a recipient's needs. Indeed, recipients of over-involved or controlling support typically report dissatisfaction with receiving it, and ironically may experience greater distress regarding the stressor that necessitated social support in the first place (Collins & Feeney, 2010). To this extent, it is likely that experiences of empathic distress may facilitate increased enacted support behavior, but that this support may be potentially harmful, high-visibility support that is poorly matched to a recipient's needs.

As a whole, these studies suggest that the vicarious experience of another person's distress may have the potential to undermine the effectiveness of enacted supportive behavior. This potential is elevated when the stressor the recipient faces is uncontrollable, the empathic distress experience is strong, and/or there are individual factors that predispose a support provider toward

heightened anxiety in light of a partner's need for support. Romantic relationships are a context within which strong and routine empathic experiences are not only likely, but ripe for empirical study. In romantic relationships, when one partner calls upon the other for support, the experience of empathic distress has the potential to alter the support behaviors enacted by the provider, as well as the effectiveness of those support behaviors for the recipient.

Another important feature of empathy that may determine support effectiveness is empathic accuracy. Empathic accuracy can be defined as the extent to which people are accurately able to infer the internal thoughts and feelings of others (Ickes, 1993). Unfortunately, empathic accuracy has been relatively understudied in the context of stressful experiences in romantic relationships, and predictive links from empathic accuracy to the effectiveness of enacted social support are particularly lacking. In one study involving mixed-sex dyads, it was shown that empathic accuracy was positively correlated with the amount of time members of the dyad spend talking to and looking at one another (Ickes, Stinson, Bissonette, & Garcia, 1990). To date, one lab study has directly linked empathic accuracy with the occurrence (but not the quality) of support behavior, showing that higher empathic accuracy predicted greater provision of social support in lab settings, as rated by coders (Verhofstadt, Buysse, Ickes, Davis, & Devoldre, 2008). One key goal in the current research was to examine the effect of empathic accuracy on enacted support quality in the everyday lives of romantic couples. Empathic accuracy may be an important component of effective enacted social support, as it better positions a support provider to understand the specifics of a partner's stressful experience and to appropriately tailor her or his support behavior to the needs and preferences of that partner. To this extent, experiences of empathic accuracy may facilitate increased enacted support behavior, and that support may be more likely to be skillful, low-visibility support that is well-matched to a partner's needs.

CHAPTER 2.

THE PRESENT STUDY

The present study builds upon existing research on emotional experiences and support quality in several ways. First, it is still not clear whether the increases in the provision of social support predicted by emotional similarity and empathic accuracy actually result in correspondent increases in the *effectiveness* of provided support. As the research on empathic distress suggests, under some conditions (e.g., high anxious attachment or neuroticism of the provider), emotional similarity can yield empathic distress that leads to controlling, over-involved support that may actually do more harm than good for the recipient. I examined how emotional similarity and empathic accuracy predict the quality of social support by examining multiple aspects of enacted support behavior. Second, I examined the extent to which these associations exist in the everyday lives of couples rather than in the context of the lab experiment. In daily life, an experimenter's instructions to engage in a support transaction are not available to help steer partners in their provision of support. Instead, partners are faced with the challenge of using their own and their partners' emotional experiences *in vivo* to inform their daily support provision behavior. We do not know whether emotional experiences promote or hinder the quality of enacted social support in the everyday lives of romantic partners. Third, rather than using coder ratings of partners' behavior, I assessed empathic accuracy in couples by directly utilizing people's ratings of their romantic partners' emotion states alongside their partners' own self-reports of their emotion states. This represents a concrete measure of empathic accuracy, based on the correspondence between what partner A feels and what partner B *thinks* partner A feels.

The study was specifically designed to increase our understanding of how the daily patterns of emotion that emerge in dyads might influence day-to-day social support behavior. This

understanding is important, given recent research suggesting not only the importance of social support for relationship well-being, but also the potential for unskillful, highly “visible” day-to-day support behaviors to actually do emotional harm to support recipients (e.g., Bolger & Amarel, 2007; Bolger, Zuckerman, & Kessler, 2000; Shrout, Herman, & Bolger, 2006). My goal in the current research was to examine the dyadic emotional experiences of emotional similarity and empathic accuracy at the daily level, and to uncover how these phenomena each influence the quality of day-to-day support transactions in couples. Specifically, I examined how daily dyadic emotional experiences influence: 1) the amount of enacted support that people provide daily, 2) the visibility of daily support provision, 3) the degree of matching in daily support provision to a recipient partner’s daily support needs, and 4) the degree of satisfaction that recipients experience with daily social support.

This study was designed to address the following specific goals:

1. Determine whether daily dyadic emotional experiences (emotional similarity and empathic accuracy) influence the following four key components of couples’ daily support transactions:
 - a. The daily provision of social support.
 - b. The daily visibility of social support provided.
 - c. The daily match or mismatch of enacted support with recipient support needs.
 - d. The recipient’s daily satisfaction with the social support they receive.

The core processes that I examined in the current study are summarized in Figure 1 (appended). The focus in this study was on negative emotions specifically, which are known to influence people’s behavior toward their romantic partners (Bodenmann & Shantinath, 2004; Fischer & Manstead, 2008). In particular, the models estimated the effects of each partner’s

negative emotional experiences on support dynamics simultaneously, while also accounting for the way in which the correspondence between these emotional experiences uniquely influences social support outcomes each day. I tested the following hypotheses:

1. Daily emotional similarity of partners (i.e., both partners simultaneously experiencing negative moods) will be associated with more daily support provision. However, this support will be more visible and will be poorly matched to the recipient partner's needs. Recipients will report less satisfaction with the daily support received when both partners similarly experience high negative moods.
2. Daily experiences of empathic accuracy (i.e., accurately inferring a recipient partner's negative mood) will be associated with more daily support provision. This support will be less visible, and will be well matched to the recipient partner's needs. Recipients will report more satisfaction with daily support they receive when their partners are accurately assessing their emotions (i.e., the provider is empathically accurate).

2.1 Methods

2.1.1 Target population and power analysis

My target population was young adult couples who are dating or cohabiting. While analysis procedures do exist for estimating the power of a diary design, they are not sufficiently developed at present to estimate the power of a three-level design including linkage parameters as predictors. Therefore, sample size planning for the study involved a comprehensive review of

studies featuring similar methodology and hypotheses. I collected information from multiple daily diary studies of support processes in couples, over time periods ranging from one week to 28 days. The most similar combination of study design and research questions found in the literature featured a sample of 80 individuals (40 couples) (Randall, Post, Reed, & Butler, 2013). I used this value as the initial planning value for my sample size. I also anticipated a potential retention rate of 80 percent. Based on these two figures, I set my recruitment target at 150% of the initial planning value for my sample size of 80 individuals (40 couples). This resulted in a target sample size of 120 individuals (60 couples).

2.1.2 Study sample and recruitment procedures

Sixty couples were recruited from the Iowa State University student population for the study. Individuals were recruited via flyers posted on campus bulletin boards and in local community sites (e.g., cafes, public flyer boards), as well as via a campus-wide recruitment email inviting participants to enroll. The study was advertised as a two-week study of day-to-day behaviors and emotions that people experience in romantic relationships, designed to help understand the sorts of personal daily experiences that help romantic partners interact in ways that enhance the health of their relationships. Interested individuals were instructed that they would only be eligible to participate if their partner also consented to participate with them. To be eligible to participate in the study, individuals had to meet the following criteria:

- Participants had to be at least 18 years of age.
- Participants had to be currently living in the United States.
- Participants had to be involved in a current, ongoing romantic relationship for a minimum of 3 months.

- Participants had to have a romantic partner who was also willing to participate and who met the criteria above.
- At least one member of each couple had to be a current ISU student (undergraduate or graduate).

Each individual was offered one of two methods of compensation for participating in the study. Students in Psychology classes were offered a maximum of 5 research credits for their participation, with the option to choose cash payment instead of research credits if desired. Participants outside of psychology classes were offered cash payment, at a maximum of \$18 USD for their participation in the study. The study was approved by the Institutional Review Board at Iowa State University (see Appendix C for the approval form).

2.1.3 Study structure and implementation

All study surveys and forms were administered online, via *Qualtrics*. Interested participants were directed to the website for the study, where they could find more information on the study goals and eligibility criteria, as well as a link to the consent and signup forms. Individuals provided informed consent online, and filled out a signup survey immediately thereafter. This survey asked for basic personal information about the participant as well as their romantic partner, and asked for their preferences regarding compensation for participating. Upon completion of the signup survey, an email was automatically sent to the individual's romantic partner, inviting the partner to participate with the person who initially named them in the signup survey. Only after a romantic partner provided informed consent to participate and filled out their own signup survey were the partners considered officially enrolled. Once officially enrolled, each couple was randomly assigned a Couple ID number, with each partner having a

corresponding personal ID number. Couple ID numbers were randomly generated within the range of 001 to 999. Personal ID numbers ranged from 2001 - 2999 for the partners who initially signed up, and from 5001 - 5999 for people who were named as romantic partners by those who initially signed up. The last three digits of the personal ID comprised the Couple ID, and were identical for both partners within a couple (e.g., two partners having personal ID numbers 2302 and 5302, respectively).

The study consisted of two phases. Part one of the study involved completing a single, online background survey and part two consisted of a two-week, online, daily diary. During background survey, members of each couple filled out online background surveys including items on demographic information (age, gender, ethnicity, sexual preference, religion, year in school, and major), relationship information (duration, cohabitation status, relationship status, and relationship quality), personality (trait negativity, in particular), attachment style, perceived social support, and trait empathy. During the daily diary part of the study, members of each couple filled out short, ten-minute online surveys (primarily containing checklist items) once per day for 14 days. Each evening, partners reported on their daily experiences of stress, daily sleep quality, daily support transactions with a partner (including support received, sought, provided, and support requested by their partners), their own daily emotion, their perceptions of their partner's daily emotion, and daily satisfaction with the support they received. Daily diary measures primarily featured dichotomous checklist items, as a means of efficiently assessing the presence or absence of specific events or behaviors on each day and decreasing survey burden.

2.1.4 Measures

The primary models analyzed in the current study included a concise set of variables related to the core emotional and support processes occurring in the daily lives of the couples. A set of

supplemental extended models were also analyzed *post hoc*. These models included a larger set of potentially important covariates. Measures used in the primary models are listed first below, with measures that were added to the extended models listed thereafter.

2.1.4.1 Primary Model Measures

2.1.4.1.1 Primary Predictor: Daily negative emotional experiences. Daily negative emotion was assessed using a modified, shortened 7-item daily version of the negative affect subscale from the *Positive and Negative Affect Scale* (PANAS; Watson, Clark, & Tellegen, 1998). Participants filled out a short self-referent PANAS each day, as well as a second short PANAS regarding how they believed their partner felt each day. Items on both versions of the PANAS were identical. For each of the 7 items, participants indicated their agreement with how much the emotion applied to themselves and their partner over the past 24 hours. Items assessed negative emotion states that are low in hedonic tone (i.e., moods that are unpleasant or have negative valence), and moderately high in activation (i.e., moods that are moderate to high in arousal). Emotions included feeling distressed, upset, scared, irritable, nervous, jittery, and afraid. Items were scored on a 1 to 5 Likert-type scale, with higher scores indicating higher levels of the emotion experienced each day. Composite scores were computed using the average of all responses. The scores showed good internal consistency, both for self-referent ($\alpha = .83$) and partner-referent items ($\alpha = .84$).

2.1.4.1.2 Primary Outcome 1: Daily social support with partner. Daily support was assessed using a 16-item yes/no checklist of support transactions between partners developed for the current study. Participants were asked to indicate the occurrence of four types of support (emotional, practical, informational, and esteem support) within each of four forms of support transactions: support they received from a partner, support they sought from a partner, support

they provided to a partner, and support sought by a partner. Examples of items for the above four forms of support transactions included: “*Did you (receive/seek out) any of the following kinds of support from your partner today? (Please check all that apply),*” “*Did you provide any of the following kinds of support to your partner today? (Please check all that apply),*” and “*Did your partner seek out any of the following kinds of support from your partner today? (Please check all that apply).*” Greater numbers of items checked “yes” yielded higher scores for each of the four forms of support transactions (receipt, seeking, provision, and partner-seeking).

2.1.4.1.3 Primary Outcome 2: Daily satisfaction with support received from partner.

Satisfaction with support received from a romantic partner each day was assessed using a 3-item Likert-type questionnaire developed for the current study. Items included: “*Today I felt loved by my partner,*” “*Today I felt supported by my partner,*” and “*Overall, I felt like the type of support my partner gave me today was a good match for the type of support I wanted at the time.*” Items were rated on a 1 to 5 Likert-type scale, with higher scores indicating greater daily satisfaction with support received. Total scores were computed using the sum of scores for the three items, resulting in a total support satisfaction score ranging from 3 (least satisfied) to 15 (most satisfied). The item scores had high reliability in the current study ($\alpha = .89$).

2.1.4.2 Extended Model Covariates

The following measures were added as covariates in the supplemental extended models. These models are described after the summary of the main results below.

2.1.4.2.1 *Demographics.* Participants were asked to provide information about their age, gender, ethnicity, year in school, sexual preferences, religiosity, and academic majors. While I collected data on all of the above demographic characteristics, only age and gender were used as covariates in the extended models.

2.1.4.2.2 *Relationship characteristics.* Participants filled out general questions about their relationships, including current relationship status, relationship duration (in months), how they met their partner, how long they have known their partner (in months and years), and whether they lived with their current partner. While I collected data on all of the above aspects of participants' relationships, only relationship duration was included as a covariate in the extended models.

2.1.4.2.3 *Relationship quality.* Relationship quality was measured using a short 8-item version of the Perceived Relationship Quality Components (PRQC) inventory by Fletcher, Simpson, & Thomas (2000a; 2000b). Sample items include “*how satisfied are you with your relationship?*” and “*how much do you cherish your partner?*” Items are scored on a 1 to 7 Likert type scale, with higher scores indicating greater satisfaction. All 8 items were added to create a composite sum score ranging from 8 to 56. The scores were internally consistent in the present sample ($\alpha = .76$).

2.1.4.2.4 *Personality – Negative Emotionality.* Negative emotionality was measured using the negative emotionality subscale of the BFI-2 (Soto & John, 2016; 2017). The measure consists of 60 Likert-type items scored on a 1 to 5 scale, measuring each the five common factors of personality. Higher scores indicate greater agreement with each item. Each of the factors is comprised of 12 items. In the present study, only scores on the trait negative emotionality factor were included in the models. Sample items include “*I am someone who worries a lot,*” “*I am someone who is temperamental, gets emotional easily,*” and “*I am someone who tends to feel depressed, blue.*” Scores from the negative emotionality factor showed high reliability ($\alpha = .90$). Negative emotionality scores from both partners in the couple were included simultaneously as covariates in the extended models.

2.1.4.2.5 *Attachment style.* Attachment styles were assessed using the Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991). The RQ is a well-validated, measure that has been cited across over 6,000 published studies in the relationships research domain. The RQ includes two items: one item assessing the attachment style that most closely matches the participant's typical way of behaving in relationships, and a second item asking participants to rate the fit of each attachment style to their own perceived style. The RQ assesses avoidance and anxiety dimensions orthogonally, where respondents may score high or low on one dimension or the other, or both, or neither. Each combination of scores indicates stronger standing for a particular attachment style. To determine individuals' standing on the underlying attachment dimensions of avoidance and anxiety, total scores were computed using responses from the two items of the RQ. Consistent with the four-type model of adult attachment, scores on items assessing preoccupied and fearful-avoidant attachment were used to compute summary scores for the underlying "anxiety" dimension of attachment (indicating high versus low value for oneself in relationships). Scores on items assessing fearful-avoidant and dismissive-avoidant styles were used to compute summary scores for the underlying "avoidance" dimension of attachment (indicating high versus low value for others in relationships). The attachment style of the support provider was included as a covariate in the extended models.

2.1.4.2.6 *Perceived social support from partner.* Perceived support from a partner was assessed using a 10-item version of the Social Provisions Scale (SPS) adapted for romantic partners (Cutrona & Russell, 1987). The measure includes two items (one positively worded, one negatively worded) for each of five subscales that reflect different types of support provision (i.e., reassurance of worth, guidance, reliable alliance, social integration, and attachment). Examples include, "You can depend on your partner to help you if you really need it," and "You

feel you could not turn to your partner in times of stress,” (reverse scored). Responses range from 1 to 4, with higher scores indicating greater perceived partner supportiveness. Scores were aggregated to create a sum composite score ranging from 10 to 40. The scores were internally consistent in the present sample ($\alpha = .72$). The perceived support scores reported by both partners in the couple were included as covariates in the extended models.

2.1.4.2.7 Trait empathy. Participants’ trait empathy was assessed using a 14-item version of the Interpersonal Reactivity Index (IRI; Davis, 1983). The IRI captures typical responses to interpersonal situations, and includes items such as *“Before criticizing somebody, I try to imagine how I would feel if I were in their place,”* and *“When I see someone being treated unfairly, I sometimes don’t feel very much pity for them* (reverse scored).” Items are scored on a 1-5 Likert-type scale, with higher scores indicating greater trait empathy. Composite scores were computed using the average of all scale items. The scores showed adequate internal consistency ($\alpha = .77$). The trait empathy score of the support provider was included as a covariate in the extended models.

2.1.4.2.8 Daily Stress. Daily stress was measured using a 14-item yes/no checklist of daily hassles developed for the study. Items include *“locked out of home or office,”* and *“felt physically ill today.”* Higher total numbers of items endorsed indicates greater daily stress. The daily stress load of the provider was included as a covariate in the extended models, however scores on this measure did not show adequate reliability in the current sample ($\alpha = .54$).

2.1.4.2.9 Daily Sleep Quality. Daily sleep quality was assessed using a single Likert-type item (*“During the PAST 24 HOURS, how would you rate your sleep quality overall?”*) rated on a 1 to 7 scale, with higher scores indicating greater sleep quality. The sleep quality of the support provider was included as a covariate in the extended models.

2.1.4.2.10 *Daily Support Received from Partner.* Daily support that the provider received from his/her partner was included in the extended models to control for the effect of reciprocity on support provision. Support receipt was assessed using the support receipt item from the previously described set of checklist items assessing daily support behavior (i.e., *Did you receive any of the following kinds of support from your partner today? (Please check all that apply)*”). Scores on this item ranged from 0 (none of the four types of support received) to 4 (all four types received).

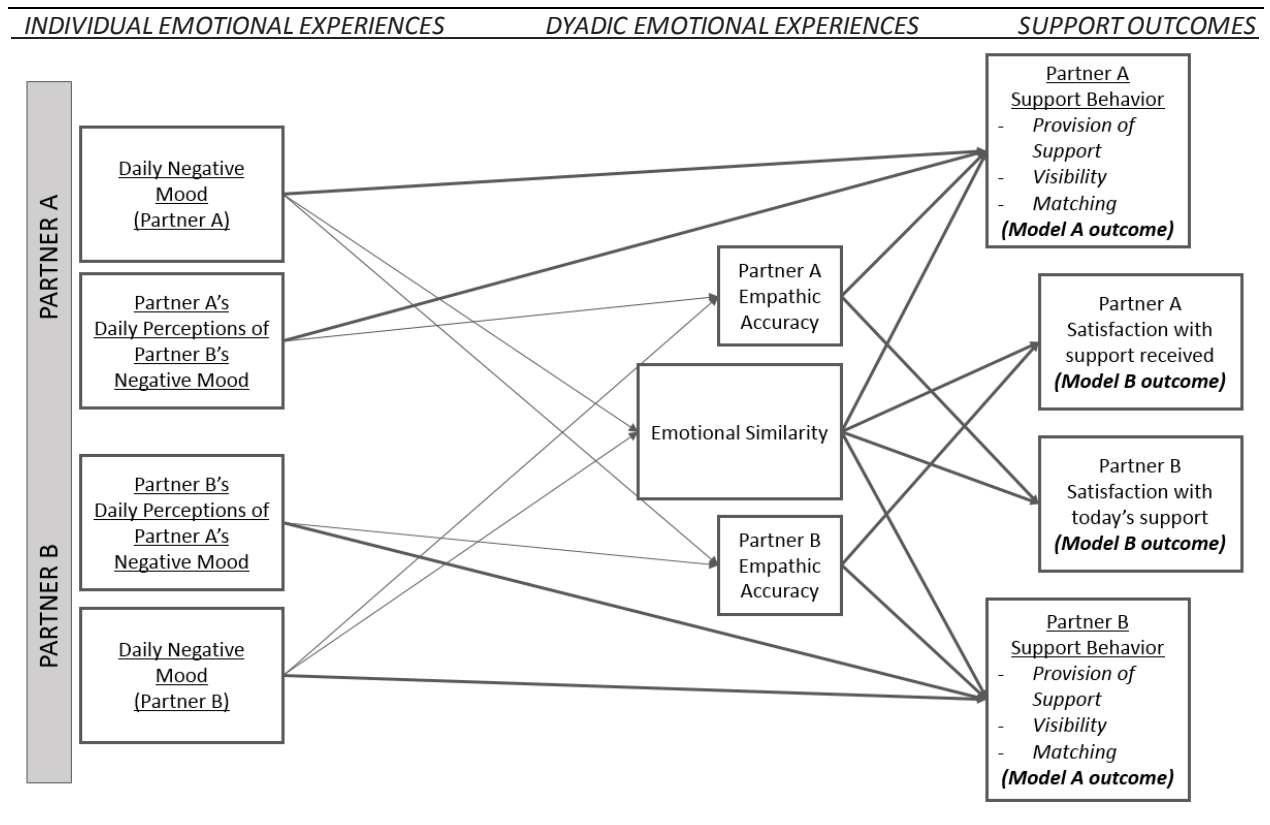


Figure 1. Conceptual model of daily individual emotional experiences and dyadic emotional experiences (emotional similarity and empathic accuracy) predicting aspects of enacted support behavior (Model set A) and support effectiveness (Model B).

NOTE: this is not a structural equation model used in analysis in the current study, but rather a conceptual process model. Dyadic emotion processes are composed of aspects of individual emotional experiences. Emotional similarity and empathic accuracy each buffer the effects of their component individual emotional experiences on support outcomes (paths not shown for ease of presentation).

CHAPTER 3

DATA ANALYSIS

All model variables were centered prior to analysis of the primary models, according to their level of analysis. All within-person variables were person-mean centered, while all between-person variables were grand-mean centered.

3.1 Parameter Specification For Dyadic Emotion Components

Indices of emotional similarity were computed based on the daily correspondence between each partner's reports of their own negative emotions via the daily PANAS. This correspondence parameter was used as an independent variable in the model analyses. Indices of empathic accuracy were computed based on the daily correspondence between a person's reports of their partner's negative mood and that partner's actual reported negative mood. For example, a day for which partner A is considered empathically accurate would include partner A reporting a belief that partner B's negative mood is elevated, and partner B reporting that her or his own negative mood is indeed elevated (i.e., partners A and B both agree about how partner B felt that day). This correspondence parameter was used as an independent variable in the model analyses.

3.1.1 Diagnostic test of dyadic emotion parameters.

A decision needed to be made between calculating simple difference scores between the two mood variables (A's mood and B's mood [emotional similarity]; A's perception of B's mood and B's actual mood [empathic accuracy]) versus testing for significant interactions between the mood variables. Diagnosing the proper method of specifying these two dyadic emotion parameters involved two exploratory procedures. The first procedure involved the use of comparative polynomial regression to test whether the use of difference scores to model the

correspondence between daily emotion variables was appropriate (i.e., using difference scores did not result in a poor fit relative to a model without difference scores). The second procedure involved the use of interaction terms to estimate the moderating effect of the two forms of dyadic emotional correspondence (emotional similarity and empathic accuracy) on the effects of each partner's negative mood variables on all support outcomes.

3.1.1.1 Procedure 1: Polynomial regression.

Because both emotional similarity and empathic accuracy are operationalized by the correspondence between two partners' responses, the models include congruence variables (i.e., variables that represent the relative degree of difference between two identical component measures). While a traditional approach to creating congruence variables with partnered data is to compute absolute difference scores, recent research has shown that this approach contains potential statistical hazards, including inflation of both Type I and Type II error rates, and lower reliability for difference scores than for either of their component measures (Edwards, 2002; Phillips, 2013). To determine whether the effects of dyadic emotion processes can be appropriately modeled via the use of absolute difference scores, I utilized a comparative polynomial regression procedure outlined by Phillips (2013). This procedure involved two steps. The first step required contrasting the variance explained by a difference-score model with the variance explained by a model containing correspondent tests of the separate and simultaneous effects of the components of those difference scores. This contrast represents a test of the appropriateness of using difference scores. The second step involved testing higher order polynomial effects of the individual components, to determine whether the correspondence between the two components is best modeled as a three-dimensional response surface with curvilinear axes.

Two versions of each of the four main models were tested in order to conduct the model fit contrasts involved in the first step. For each model, the initial version, termed a *constrained model*, estimated the effect of difference scores (e.g., $B_1(X_{1A} - X_{1B})$), conceptually consistent with Figure 1, while the alternative version of each model featured separate linear and quadratic effects estimated for each of the two partners' component measures independently (termed an *unconstrained model*). The constrained model specified that correspondence between the two component scores is best modeled as an absolute value difference score, where zero represents no difference. The unconstrained model specified that the correspondence between the two component scores is best modeled as a three dimensional response surface, with independent curvature along the axes of both component scores (i.e., both scores include higher-order polynomial effects).

The unconstrained model represents a form of response surface methodology, and allows for a test of the extent to which the results represent a true congruence effect (see Edwards, 2002; Edwards & Cable, 2009). Estimating the unconstrained model in the case of an absolute value difference score first required the computation of a pseudo-random dichotomous term (called W) that has three specifications:

1. It is set to zero when partner A's emotion variable value is lower than partner B's,
2. It is set to 1 when partner B's emotion variable value is lower than partner A's
3. It randomly varies when the mood scores are equal, and is set to a value of either 0 or 1 depending on which partner is higher.

Whether partner A's score or partner B's score is higher may be of significance in determining the effects of congruence, however absolute value difference scores do not reflect this directionality. This W term allows for the modeling of effects when one component score or

the other is higher, and is necessary for retaining the directionality characteristic of difference scores that is lost when using absolute difference scores. The unconstrained model included the multiplicative effect of this term alongside each emotion component separately (i.e., the regression equation included the following predictor terms: X_A , X_B , W , X_A*W , X_B*W). The difference in *R-square* (R^2) values between the unconstrained and constrained versions of the model allowed for an empirical test of the extent to which the difference score approach represents (or deviates from) my *a priori* conceptualization of partners' dyadic emotional similarity and empathic accuracy experiences. This difference in R^2 follows an *F* distribution. Each difference was tested based on recommendations from Edwards (2002), using the following formula:

$$F = \frac{(R_U^2 - R_C^2)/(df_C - df_U)}{(1 - R_U^2)/df_U}$$

where *df* denotes the degrees of freedom for a given model, R^2 denotes the coefficient of determination for a given model at the daily level (within-person), and the subscripts *U* and *C* denote values specific to the unconstrained and constrained equations described above, respectively. Where the unconstrained model explains more variance than the constrained model, the difference score approach is rejected. If on the other hand, the constrained model explains more variance than the unconstrained model, the magnitude of the difference in R^2 values is tested for significance. If it is found to be significant, the difference score approach is not rejected.

The results of these comparative analyses are summarized in Table A1 of the Appendix. Across every comparison except one (models of support visibility), the constrained version of the model explained less variance than the unconstrained version of the model. In the one set of

contrasts where the constrained model explained more variance than the unconstrained model, the difference in R^2 values was not significant. Based on this, I rejected the constrained models (i.e., I determined that using the difference scores to represent emotional similarity and empathic accuracy is not appropriate), and proceeded by estimating my models using the component mood measures independently. The higher-order polynomial regression tests showed that in each case, the curvilinear effects of the component mood measures did not predict any meaningful additional variance beyond using the linear terms for the component mood measures (i.e., quadratic negative mood terms were nonsignificant and adding them to the models did not yield meaningful increases in R^2 values).

3.1.1.2 Procedure 2: Congruence-as-interaction approach.

Because the results of the polynomial regression procedure consistently suggested that it is essential to estimate the separate and simultaneous effects of the component mood variables of each dyadic emotion process, I used a second approach to estimate the effects of these dyadic emotion processes on support outcomes. Specifically, I examined whether the congruence of partners' daily negative moods (i.e., emotional similarity) and the congruence of people's beliefs about their partner's negative moods with their partners' actual negative moods (i.e., empathic accuracy) had buffering effects on the potentially undermining effects of elevated negative mood on daily support dynamics. To do this, I ran my models as multilevel linear models, including in each model a term consisting of the interaction between the two key emotion component variables. Because these component terms are mean-centered, a score of 1 indicates that the person's negative mood variable value was 1 point above average for a particular day. Therefore the linear effect of the interaction term between the two component terms represents the buffering (or exacerbating) effect of both partners negative mood scores being 1 point above

average simultaneously on a given day (or mathematically, the interaction effect represents the degree of linear change in the potentially undermining simple effects of each partner's negative mood on support dynamics when both partners are in agreement regarding their experiences of their own and each other's moods each day).

3.2 Computation of Key Outcome Variables

3.2.1 Support Visibility

Support visibility is indicated by the correspondence between partners' reports of support provided and received across the dimensions of support assessed. Invisible support events include instances where partner A reports having provided one or more types of support, while partner B reports that they did not receive these types of support from partner A that day. These correspondence parameters are used as same-day dependent variables in the multilevel models, predicted by the corresponding day's emotional linkage and empathic accuracy. Note that these parameters are not computed as difference scores, and therefore do not require the steps delineated above. Rather, they are indicators of daily categorical co-occurrence of *yes* or *no* responses from partners regarding the occurrence of support events (provision and receipt).

3.2.2 Support Matching

Support matching is indicated by the correspondence between each individual's reports of support types they sought and the support types they received from a partner. This computation procedure is identical to that used for computing support visibility parameters, whereby the scores are indicators of the daily categorical co-occurrence of *yes* or *no* responses from partners regarding the occurrence of support events (types of support they sought and received).

3.3 Model Setup and Diagnostics

Raw data were housed and managed in *SPSS* version 23, collected via *Qualtrics*. All descriptive statistics, reliability analyses, summary scales, and dyadic emotion parameters were computed using *SPSS*. Analysis of multilevel data were conducted using the MIXED procedure *SAS* version 9.4. This analysis utilized a two-level covariance structure specification, common to dyadic diary data. Level 1 residuals had autocorrelated structure (type=AR1), which estimated the residual correlation between reports obtained on adjacent diary days. Residual covariances at level 2 were specified as unstructured (type=UN), which allows the free estimation of residual correlations between reports obtained from the individuals who are linked as romantic partners.

3.3.1 Setup of Data Analyses

Analyzing the core aspects of my substantive models using the *SAS MIXED* procedure involved two key outcome types. First, I examined the effects of daily dyadic emotional experiences on the occurrence of daily support events (Model set A). These events included the daily provision of enacted support behaviors, as well as the visibility of provided support and whether the support matched the needs of the recipient. Second, I examined the effects of daily dyadic emotional experiences on partners' satisfaction with the support they received each day (Model B). For each model outcome, the two dyadic emotion processes were tested separately, constituting a total of eight models (4 support outcomes x 2 dyadic emotion processes). Dyadic emotion processes were tested separately because there is known substantial collinearity between the two, given that both processes are partially computed based on the daily negative mood of the partner who receives support. In total, four model outcomes were tested, including:

- *Model A1*: Predicting daily support provision.

- *Model A2*: Predicting daily visibility of partner's enacted support.
- *Model A3*: Predicting daily match of support to recipient's needs.
- *Model B*: Predicting partners' satisfaction with daily support received

Conceptual representations of these models are depicted in Figure 1.

CHAPTER 4

RESULTS

4.1 Sample Descriptive Statistics

Full results of the sample descriptive analyses are given in Table 1. The sample consisted of 62 people who identified as female, 57 who identified as male, and one person who preferred not to report their gender. The median age of participants was 21 years of age (range 18 – 33 years of age). The majority of the participants identified as White/European American (94 people; 78.3% of the sample), while 13 identified as Asian/Asian American, one identified as Black/African American, one identified as Native American or Alaskan Native, 3 identified as Hispanic or Latino, and 8 identified as multiracial. The majority of participants identified as straight/heterosexual (103 people; 85.8% of the sample), while 2 identified as gay, 10 identified as bisexual, one identified as curious, and 4 identified under a unique sexual orientation of their choosing. Most of the participants were US citizens (106 people; 88.3% of the sample). Twenty-two of the participants (18.3%) were undergraduate students in their first year, while 13 (10.8%) were in their second year, 27 (22.5%) were in their third year, 34 (28.3%) were in their fourth year, two (1.7%) were in their fifth year or more of undergraduate study, 13 (10.8%) were graduate or professional students, and 9 (7.5%) indicated not being enrolled in school currently. The majority of participants indicated that they were dating their partner exclusively (103 people; 85.8% of the sample), while 3 participants (2.5%) indicated that they were dating their partner casually, 6 participants (5.0%) indicated that they were engaged to their partners, and 8 participants (6.7%) indicated that they were married to their partners. There was a large range of relationship durations in the sample (3 months to 86 months), with the average relationship duration being 23 months (median duration = 17 months), and the standard deviation being 19.86

months. Thirty-eight participants (31.7%) indicated that they were cohabiting, while 82 indicated that they did not live together.

4.2 Background Descriptive Statistics

Descriptive statistics for background measures (including those added to the extended models) are given in Table 2. By virtue of the study design, there were no missing data for the background survey. On average, participants were extremely satisfied in their relationships, resulting in significant negative skew in this variable ($M = 51$, $SD = 4.43$; on a scale ranging from 8 to 56). The minimum relationship satisfaction score was 33 in this sample. The distribution of adult attachment styles was more uniform than is typically found in the general population. In the general population, roughly 2/3 of individuals tend to be rated as secure, with those falling in the remaining insecure types (fearful-avoidant, fearful-preoccupied, and dismissive-avoidant) being evenly distributed among the remaining 1/3 (Hazan & Shaver, 1987). In the present sample, 48 participants (40%) were identified as secure, 31 (25.80%) were identified as fearful-avoidant, 23 (19.20%) were identified as fearful-preoccupied, and 12 (10%) were identified as dismissive-avoidant (6 participants did not respond). On average, participants perceived their partners as good sources of support ($M = 35.13$, $SD = 3.72$; on a scale ranging from 10 to 40). Participants tended to be moderately high in trait empathy ($M = 3.91$, $SD = .57$), and moderate in trait negativity ($M = 2.85$, $SD = .61$).

4.3 Daily Diary Descriptive Statistics

Descriptive statistics for daily diary variables (including variables added to the extended models) are summarized in Table 3. Missing diary data were not problematic in the current analyses, with retention rates being consistent with the 80% retention rate projected at the start of

the research project. Of the total 1,680 diary days (120 participants x 14 separate days of diary data) 1,338 contained usable data (79.6%), with 342 days containing missing data (20.4%). On average, participants got adequate sleep each day ($M = 2.92$, $SD = .79$; on a 1 to 4 scale).

Participants experienced few daily stressors on average ($M = 1.97$ events, $SD = 1.72$).

Participants' average daily negative mood scores were moderately low ($M = 1.77$, $SD = .73$).

Similarly, participants typically rated their partners' daily negative mood as moderately low ($M = 1.67$, $SD = .69$). Across the days, these ratings of partner mood tended to slightly underestimate a partner's actual daily negative mood, with the average raw score difference between support provider's ratings of their partner's negative mood and their partner's actual negative mood being equal to $-.10$ ($SD = .77$).

Across all of the 1,680 diary days on which data were collected, support was sought by a respondent during 1,038 (61.8%) days, support was received by a respondent on 1,159 (70.0%) days, respondents were asked by their partners to provide support on 1,044 (62.1%) days, and respondents provided support to their partners on 1,171 (69.7%) days. The index of total support provided was computed based on the number of types of support a respondent provided each day, across four types of support (emotional, practical, information, and esteem support). This yielded a total score ranging from 0 to 4, with higher scores indicating more types of support provided each day. The average total number of types of support events provided each day was 1.92 ($SD = 1.20$). The index of invisible support was computed based on the total number of support provision events per day that went unnoticed by the recipient partner (i.e., partner did not report receiving the same kinds of support that the focal respondent said they provided), yielding a total score ranging from 0 to 4, with higher scores indicating more invisible support. The average number of daily invisible support events was 2.00 ($SD = 1.45$). The index of support

matching was computed based on the total number of types of support that the focal respondent reported both seeking and receiving per day (i.e., the support they got from a partner was consistent with the support they wanted/needed). This index also yielded a total score ranging from 0 to 4, where higher scores indicate receiving more matched support each day. The average number of matched daily support transactions was 1.32 ($SD = 1.12$). On average, participants were very satisfied with the support they received each day ($M = 13.03$, $SD = 2.55$; on a 3 to 15 scale).

4.4 Bivariate Correlations

Bivariate correlations among the model variables are given in Table 4. Because nearly all correlations were significant, only correlations of note or those central to the primary models are highlighted here. At the daily level (within-person), one's own negative mood was positively correlated with perceptions of a partner's negative mood as well as a partner's actual negative mood (though weakly in the latter case). One's own negative mood was negatively correlated with providing support, invisible support, and negatively correlated with a partner's satisfaction with the support one provides. One's own negative mood was marginally positively correlated with providing more matched support. Perceptions of one's partner's daily negative mood were positively correlated with the partner's actual negative mood, while being positively correlated with providing support, but negatively correlated with providing matched support. Perceptions of a partner's negative mood were also negatively correlated with one's own satisfaction with support received from that partner. Lastly, a partner's actual negative mood was negatively correlated with providing matched support to that partner, and negatively correlated with that partner's satisfaction with support they received.

4.5 Primary Multilevel Models

For each support outcome, two separate models were estimated. The first examined the effects of emotional similarity while the second examined the effects of empathic accuracy. Each of the models is labeled with the subscripts *ES* and *EA* for emotional similarity and empathic accuracy, respectively. Models of the effects of emotional similarity included each partner's component daily negative mood scores, as well as the interaction term for both components. Models of the effects of empathic accuracy included the focal partner's (i.e., the support provider's) rating of the recipient partner's negative mood, and the recipient partner's actual self-reported negative mood, as well as the interaction term for both components. There was variability in actual negative mood as well as perceptions of partners' negative mood both between and within persons (and between dyads). Figure 2 depicts a panel plot of the time course of daily negative mood across the diary phase for 20 randomly selected couples. Figure 3 is a panel plot of the same 20 couples, with added lines depicting each person's rating of their partner's daily negative mood.

All of the models were adjusted for the effect of weekend observations (where weekend was coded "1" if the observation occurred on a Saturday or Sunday, and "0" if it occurred on a weekday). In addition, all models included time (i.e., diary day) as a variable in the analysis, centered at day 7 of the 14-day diary. This is a common control technique in daily diary designs, allowing one to adjust for the effects of any unobserved potentially confounding variables that share a direct relationship with the passage of time and may influence ongoing relationship processes or survey responses (e.g., fatigue, maturation, or boredom; Bolger & Laurenceau, 2013).

4.5.1 Model A1: Daily Support Provision

Results of Models A1_{ES} and A1_{EA} are given in Table 5. The null model showed that there was significant variability in daily support provision. In model A1_{ES} (emotional similarity as a key predictor), the support provider's negative mood predicted providing less daily support, while the recipient partner's negative mood predicted providing more support. The interaction between the two partners' daily moods was not significantly predictive of daily support provision. There was also a negative effect of weekend, such that people tended to provide less support on weekends. In model A1_{EA} (empathic accuracy as a key predictor), the provider's perception of the recipient's daily negative mood marginally predicted providing more daily support to that partner. The recipient partner's actual daily negative mood did not predict providing that partner with daily support. The interaction between the two emotion components was not a significant predictor of daily support provision.

4.5.2 Model A2: Daily Invisible Support

Results of Models A2_{ES} and A2_{EA} are given in Table 6. The null model suggested significant variability in invisible support at the daily level. In model A2_{ES}, the support provider's daily negative mood predicted providing less invisible support, while the recipient partner's daily negative mood predicted providing more invisible support. Additionally, there was a tendency for people to provide less invisible support during weekends. The interaction between the two partners' daily negative mood component variables was not significant. In model A2_{EA}, the provider's perceptions of the recipient's mood did not predict daily invisible support. However, the recipient partner's actual negative mood predicted a tendency to provide more invisible support. Similar to model A2_{ES}, in model A2_{EA} weekend was a significant negative predictor of

daily invisible support. The interaction between a provider's perceptions of a partner's daily mood and that partner's actual daily mood was not a significant predictor of invisible support.

4.5.3 Model A3: Daily Matching of Support

Results of Models A3_{ES} and A3_{EA} are given in Table 7. The null model for daily matching of support showed that there was significant within-person variability across the diary days. In model A3_{ES}, the provider's own daily negative mood did not predict the provision of matched support. However, the recipient partner's negative mood was marginally predictive of the provision of more matched support. There was also a positive effect of time, such that people tended to provide more matched support as the diary days passed. Additionally, a negative effect of weekend emerged, such that providers tended to provide less matched support on weekends relative to weekdays. The interaction between partners' negative moods was not a significant predictor of the provision of matched support. In model A3_{EA}, neither the provider's rating of the recipient's daily negative mood nor the recipient's actual daily negative mood predicted the provision of matched support. However, the interaction between these two components of empathic accuracy was a marginally significant predictor of the provision of more daily matched support ($p = .09$). Again, a significant positive effect of time emerged, such that people provided more matched support as diary days passed. A significant negative effect of weekend was found, such that people tended to provide less matched support on weekends, relative to weekdays.

4.5.4 Model B: Daily Satisfaction with Support Received

Results of Models B_{ES} and B_{EA} are given in Table 8. The null model for daily support satisfaction showed significant daily variability. In model B_{ES}, both partners' daily negative mood scores individually predicted less satisfaction with daily support received. Additionally,

the interaction term between the two was marginally significant and positive ($p = .06$), tentatively suggesting a buffering effect of emotional similarity, whereby when both partners' negative moods are simultaneously above average, the deleterious effect of each individual's negative mood on the support recipient's satisfaction is mitigated. In model B_{EA}, the provider's perceptions of a partner's daily negative mood did not predict the recipient partner's satisfaction with support received each day. However, the actual negative mood of the partner did predict less satisfaction with the support received from that provider. Additionally, the interaction between these two components of empathic accuracy was significant and positive. This suggests a buffering effect of empathic accuracy, whereby on days when the provider judged the recipient's negative mood to be above average and the recipient in fact reported having above average negative mood (i.e., the provider was empathically accurate), the deleterious effect of the recipient's negative mood on satisfaction with the support they received was dampened. I conducted a *post hoc* test of the simple slopes of recipient negative mood on their support with satisfaction, across varying levels of provider empathic accuracy. The results of this test are summarized in Table 9. The test suggested that the negative effect of the recipient's mood became statistically nonsignificant once the provider rated the partner as being at least one standard deviation above their average level of daily negative mood. A Johnson-Neyman regions-of-significance panel plot showing the change in the simple effect across levels of provider empathic accuracy is shown in Figure 4.

4.6 Extended Models

Extended versions of the eight multilevel models above were also tested, accounting for 14 additional covariates that may have influenced one or more of the processes examined in the primary models. Correlations between the between-person covariates are available in Appendix

table B1. The results of these models are available in the Appendix in tables B2 through B9. These models were adjusted for support provider's age, gender, daily stressful experiences, daily sleep quality, daily support received, trait empathy, general relationship satisfaction, attachment anxiety, and attachment avoidance, as well as reports from both partners regarding their perceived social support available from each other, their trait negative emotionality, and the duration of the relationship.

In summary, among the added covariates in the extended models, age, gender, daily support received, daily sleep quality, perceived partner support ratings from both members of a couple, and attachment avoidance all emerged as significant or marginally significant predictors in at least 5 of the 8 models. Age was a positive predictor of support behavior, but did not predict recipient satisfaction with support. Gender (which was coded such that 0=male, and 1= female) consistently negatively predicted support behavior, but not recipient satisfaction with support. Daily support received consistently positively predicted support behavior and positively predicted recipient satisfaction with support, suggesting a support reciprocity effect. Daily sleep quality consistently positively predicted support behavior and recipient satisfaction with support. A support provider's perception of the recipient partner's support positively predicted the provider's support behavior. The recipient's perception of the provider's support positively predicted the provider's support behavior and recipient satisfaction with support. Lastly, attachment avoidance positively predicted support behavior.

Above and beyond the effects of all covariates included, the effects of the key emotion components across all models remained consistent with those described above in the primary model analyses.

4.6.1 Tests Of Gender Differences

Because the extended models showed that there was a consistent, unexpected effect of gender, whereby women provided less support, provided more visible support, provided less matched support, and were less satisfied with the support they received, I ran a series of additional *post hoc* models to examine the extent to which gender differences existed in the overall model. In order to simplify this analysis, the data were collapsed across the week and the models were estimated as couples nonexchangeable *Actor Partner Interdependence Models* (APIM; Kashy & Kenny, 2000; Kenny, 1996, Olsen & Kenny, 2006). All APIMs were estimated using restructured data with only the 55 couples wherein each partner identified as either male or female, rather than indicating the same sex (5 same-sex couples were omitted because gender was a non-distinguishing variable in those cases, and non-distinguishing variables cannot be modeled using nonexchangeable APIM analysis). All supplemental APIM analyses were conducted using Mplus version 7 (Muthen & Muthen, 1998-2013). This additionally afforded a simultaneous test of all of the components of both emotional similarity and empathic accuracy, by specifying a mediation effect, whereby both partners' average daily negative moods predicted the providers' average perceptions of their partner's average daily negative mood. All variables were in turn used to predict each of the four primary support outcomes. Details of these extended *post hoc* analyses are omitted for ease of presentation, but available by request. In summary, the models suggested that on average, none of the effects significantly differed by gender, after conducting multiple Wald tests of the differences between men's and women's Beta weights in each model. Altogether, these models suggest that while there may be mean gender differences in the support outcomes, the key emotion processes that were tested as predictors of these support outcomes do not appear to function differently between men and women.

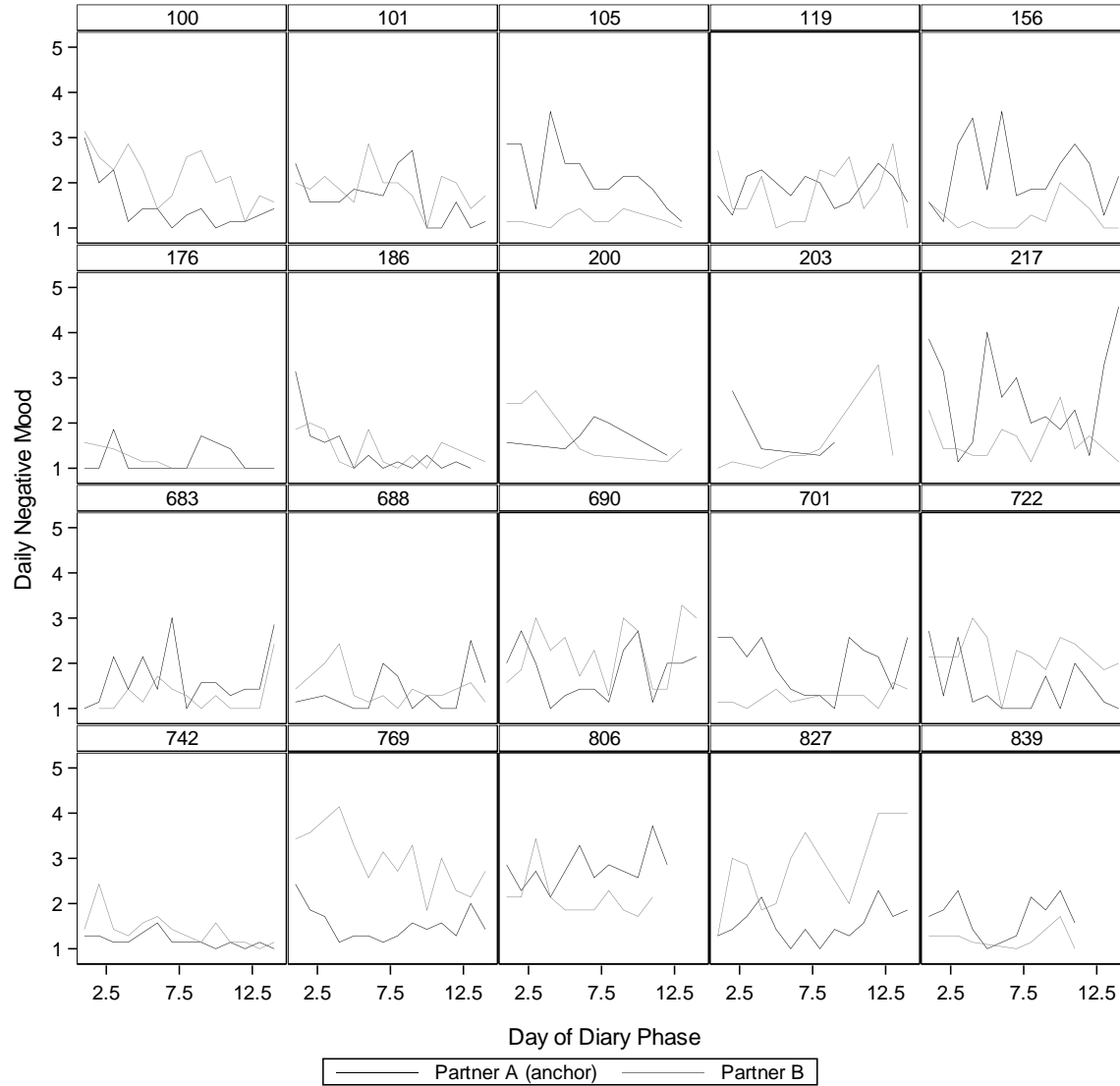


Figure 2. Panel plot of the time course of daily negative mood across the diary phase for 20 randomly selected couples (note, ID numbers have been altered for confidentiality)

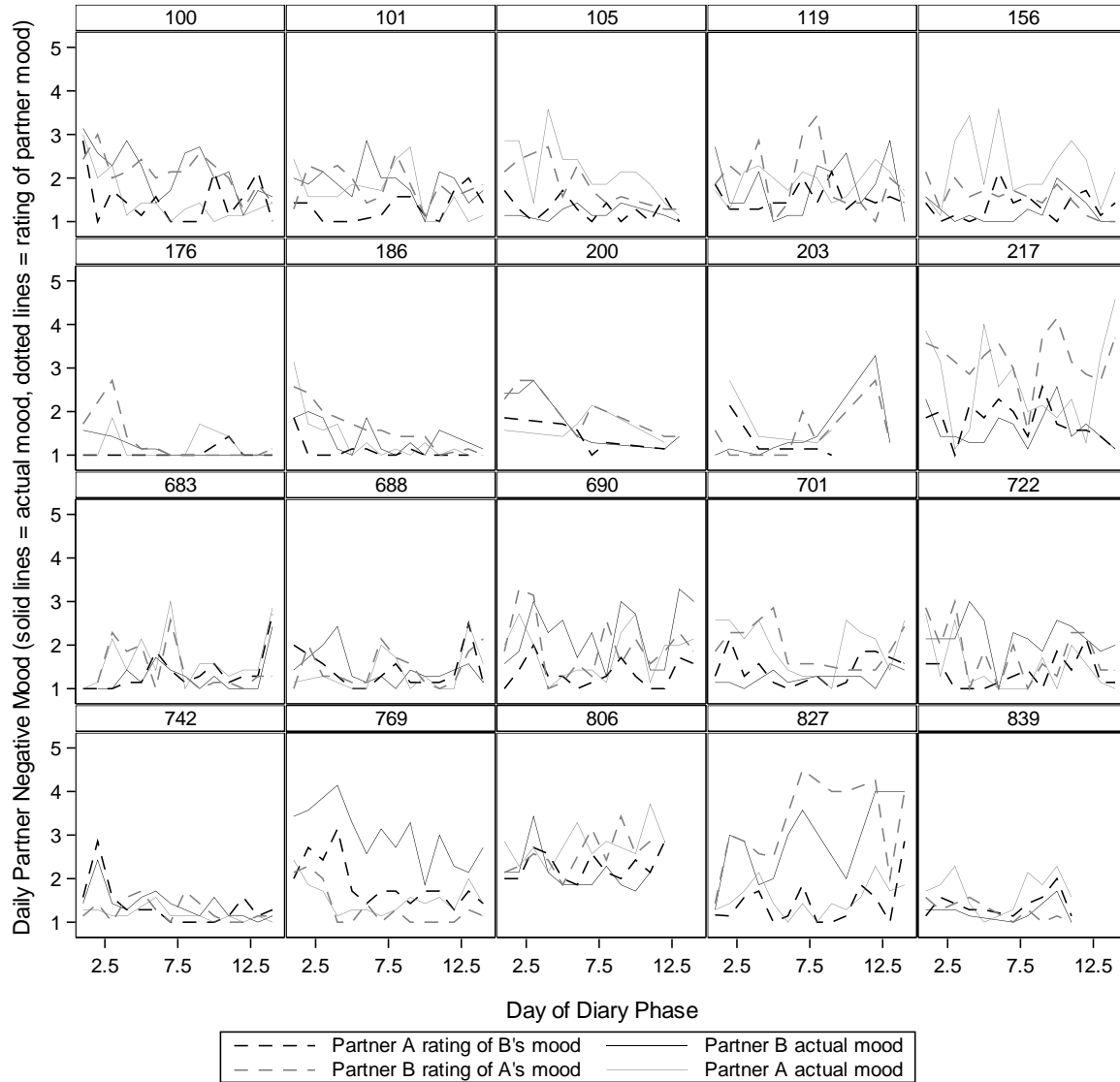


Figure 3. Panel plot of the time course of daily negative mood across the diary phase for 20 randomly selected couples, with partner's perceptions of each other's daily negative moods included for contrast (note, ID numbers have been altered for confidentiality).

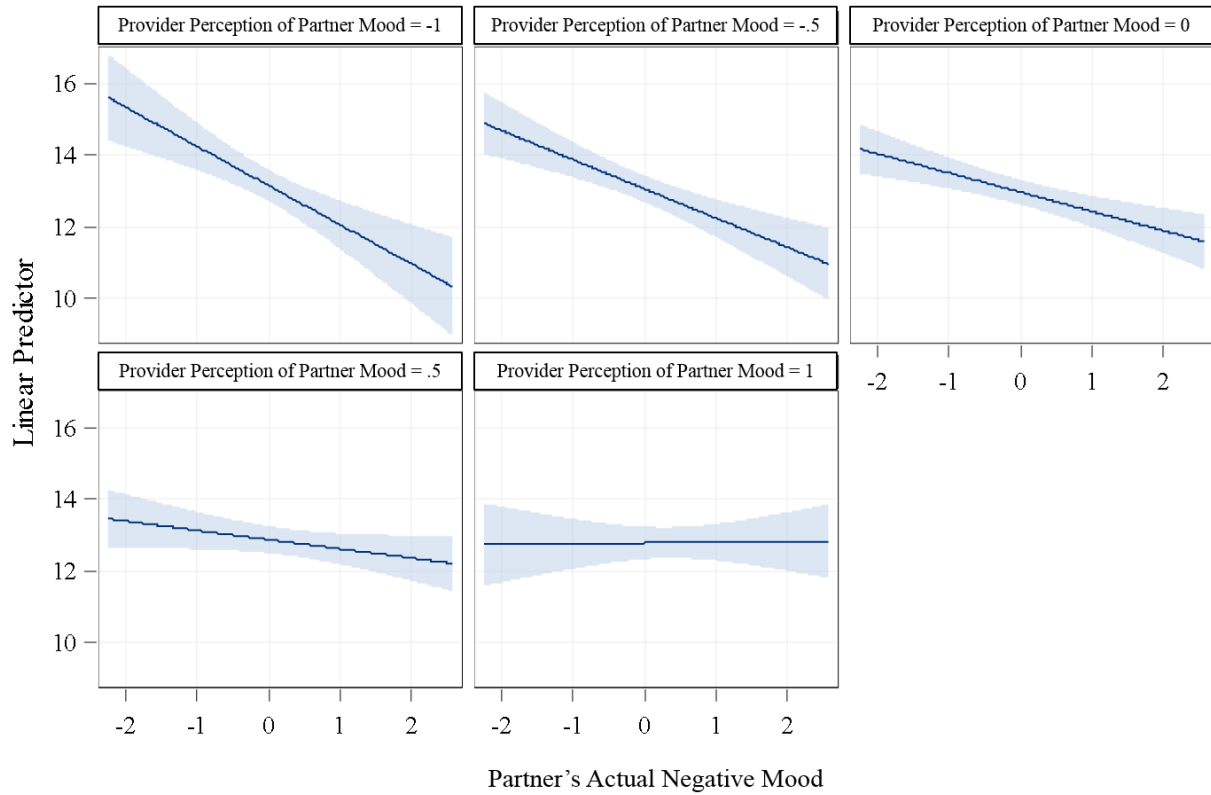


Figure 4. Johnson-Neyman style panel plot of effect of empathic accuracy on the deteriorating effect of daily negative mood on daily support satisfaction (with 95% confidence limits around predicted values of support satisfaction). As accuracy is approached the slope of negative mood flattens (predicted values of support satisfaction are relatively unchanged as a function of negative mood).

Table 1. Sample descriptive statistics (N =120). (continued on next page)

<i>Variable Name</i>	<i>Scale/Range</i>	<i>Frequency</i>	<i>Percent</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>
<i>Age</i>	18 - 33	-	-	21.25	21	2.71
<i>Gender</i>						
<i>Male</i>	-	57	47.5	-	-	-
<i>Female</i>	-	62	51.7	-	-	-
<i>Prefer not to say</i>	-	1	.8	-	-	-
<i>Ethnicity</i>						
<i>American Indian or Alaska Native</i>	-	1	.8	-	-	-
<i>Asian or Asian American</i>	-	13	10.8	-	-	-
<i>Black/African American</i>	-	1	.8	-	-	-
<i>White/European American</i>	-	94	78.3	-	-	-
<i>Hispanic or Latino</i>	-	3	2.5	-	-	-
<i>Southern & Western Asian or Middle Eastern</i>	-	0	0	-	-	-
<i>Bi-racial or mixed racial Background</i>	-	8	6.7	-	-	-
<i>Sexual Orientation</i>						
<i>Straight</i>	-	103	85.8	-	-	-
<i>Lesbian</i>	-	0	0	-	-	-
<i>Gay</i>	-	2	1.7	-	-	-
<i>Bisexual</i>	-	10	8.3	-	-	-
<i>Curious</i>	-	1	.8	-	-	-
<i>Prefer not to say</i>	-	0	0	-	-	-
<i>Other</i>	-	4	3.3	-	-	-
<i>Variable Name</i>	<i>Scale/Range</i>	<i>Frequency</i>	<i>Percent</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>
<i>US Citizenship</i>						
<i>Yes</i>	-	106	88.3	-	-	-
<i>No</i>	-	14	11.7	-	-	-
<i>Religious Affiliation</i>						
<i>Catholic</i>	-	23	19.2	-	-	-
<i>Protestant</i>	-	42	35.0	-	-	-
<i>Jewish</i>	-	0	0	-	-	-
<i>Muslim</i>	-	2	1.7	-	-	-
<i>Buddhist</i>	-	3	2.5	-	-	-
<i>Hindu</i>	-	4	3.3	-	-	-
<i>No religious affiliation</i>	-	38	31.7	-	-	-
<i>Prefer not to answer</i>	-	4	3.3	-	-	-
<i>Other</i>	-	4	3.3	-	-	-

Table 1 continued.

<i>Variable Name</i>	<i>Scale/Range</i>	<i>Frequency</i>	<i>Percent</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>
<i>How often do you participate in religious services?</i>	1-4	-	-	2.08	2.00	.91
<i>Never</i>		30	25.0			
<i>Sometimes</i>		63	52.5			
<i>Frequently</i>		12	10.0			
<i>Always</i>		14	11.7			
<i>No response</i>		1	0.8			
<i>Importance of religious beliefs</i>	1-4	-	-	2.53	2.50	1.19
<i>Year in School</i>						
<i>Freshman</i>	-	22	18.3	-	-	-
<i>Sophomore</i>	-	13	10.8	-	-	-
<i>Junior</i>	-	27	22.5	-	-	-
<i>Senior</i>	-	34	28.3	-	-	-
<i>5th year undergrad</i>	-	2	1.7	-	-	-
<i>Graduate or professional student</i>	-	13	10.8	-	-	-
<i>Other</i>	-	9	7.5	-	-	-
<i>Variable Name</i>	<i>Scale/Range</i>	<i>Frequency</i>	<i>Percent</i>	<i>Mean</i>	<i>Median</i>	<i>SD</i>
<i>Relationship Demographics</i>						
<i>Relationship status</i>						
<i>Single</i>	-	0	0	-	-	-
<i>Dating casually</i>	-	3	2.5	-	-	-
<i>Dating exclusively</i>	-	103	85.8	-	-	-
<i>Engaged</i>	-	6	5.0	-	-	-
<i>Married</i>	-	8	6.7	-	-	-
<i>Duration (months)</i>	3 - 86	-	-	23.0	17.0	19.86
<i>Cohabiting</i>						
<i>Yes</i>	-	38	31.7	-	-	-
<i>No</i>	-	82	68.3	-	-	-

Table 2. Background Survey Descriptive Statistics (N = 120).

<i>Variable Name</i>	<i>Scale/Range</i>	<i>Frequency</i>	<i>%</i>	<i>Mean</i>	<i>SD</i>	<i>α</i>
<i>Relationship Satisfaction</i>	8 – 56 (33 minimum)	-	-	51.00	4.43	.76
<i>Personality Traits</i>						
<i>Negative Emotionality</i>	1 - 5	-	-	2.85	.85	.90
<i>Attachment style*</i> (categorical)						
<i>Secure</i>	-	48	40.00	-	-	-
<i>Fearful-Avoidant</i>	-	31	25.80	-	-	-
<i>Fearful-Preoccupied</i>	-	23	19.20	-	-	-
<i>Dismissive-Avoidant</i>	-	12	10.00	-	-	-
<i>No response</i>	-	6	5.00	-	-	-
<i>Perceived partner support</i>	10 – 40	-	-	35.13	3.72	.72
<i>Trait Empathy (total)</i>	1 – 5	-	-	3.91	.57	.77

* Scales with two items or less were not analyzed for internal consistency.

Table 3. Daily Diary Descriptive Statistics (N = 1,680 days).

<i>Daily Variable Name</i>	<i>Scale/Range</i>	<i>Frequency</i>	<i>%</i>	<i>Mean</i>	<i>SD</i>	<i>α</i>
<i>Total Social Support Events</i>						
<i>Support sought *</i>	0 – 1	1,038/1,680	61.8	-	-	-
<i>Support received *</i>	0 – 1	1,159/1,680	-	-	-	-
<i>Support sought by partner*</i>	0 – 1	1,044/1,680	-	-	-	-
<i>Support provided *</i>	0 – 1	1,171/1,680	-	-	-	-
<i>Daily Social Support Behavior</i>						
<i>Daily support provided</i>	0 - 4	-	-	1.92	1.20	
<i>Daily invisible support</i>	0 - 4	-	-	2.00	1.45	
<i>Daily matched support</i>	0 - 4	-	-	1.32	1.12	
<i>Daily Emotions</i>						
<i>Negative Mood</i>	1 – 5	-	-	1.77	.73	.83
<i>Perceived Partner Negative Mood</i>	1 – 5	-	-	1.67	.69	.84
<i>Daily Satisfaction with Support</i>	3 – 15	-	-	13.03	2.55	.89
<i>VARIABLES IN EXTENDED MODELS</i>						
<i>Daily Sleep Quality **</i>	1 – 4	-	-	2.92	.79	-
<i>Daily Stress</i>						
<i>Daily Hassles & Work Troubles</i>	0 – 9	-	-	1.44	1.35	-
<i>Daily Health Troubles</i>	0 – 2	-	-	.29	.49	-
<i>Daily Social Troubles</i>	0 – 3	-	-	.25	.51	-
<i>Total Daily Stress Score</i>	0 – 14	-	-	1.97	1.72	.54

* Options are not mutually exclusive (i.e., participants may indicate multiple types of support events on the same day).

** Scales with two items or less were not analyzed for internal consistency.

Table 4. Bivariate Correlations (Level 1 within-person daily variables).

<i>Variable</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
<i>1. Daily Negative Mood (focal respondent)</i>	-									
<i>2. Daily Negative Mood (perception of partner)</i>	.37***	-								
<i>3. Daily Negative Mood (partner's report)</i>	.09**	.39***	-							
<i>4. Daily Support Provided</i>	-.08**	.09**	.02	-						
<i>5. Daily Support Matching</i>	.05†	-.06*	-.10***	.51***	-					
<i>6. Daily Invisible Support</i>	-.09**	.01	.05†	.55***	.34***	-				
<i>7. Daily Partner Satisfaction with Support</i>	-.16***	-.15***	-.25***	.23***	.14***	.34***	-			
<i>8. Daily Stress</i>	.37***	.21***	.04	.11***	.15***	.01	-.06*	-		
<i>9. Daily Sleep Quality</i>	-.21***	-.21***	-.08**	.06*	.05*	.06*	.14***	-.11***	-	
<i>10. Weekend (1=Weekend, 0 = Weekday)</i>	-.04	-.02	-.07*	-.05†	-.02	-.09***	.00	-.14***	.10***	-
<i>11. Time (Diary Day)</i>	-.11***	-.10***	-.11***	-.02	-.08**	-.28***	.05†	-.17***	.04	.16***

* $p < .05$, ** $p < .01$, *** $p < .001$, † $p < .10$

Table 5. Models A1_{ES} and A1_{EA}: Daily support provision predicted by emotional similarity (top half) and empathic accuracy (bottom half) (N = 60 couples).

<i>Predictors Model A1_{ES}</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>	
					<i>LL</i>	<i>UL</i>
<i>Intercept</i>	1.96	.09	22.13	<.0001	1.79	2.14
<i>Time</i>	-.04	.06	-.68	.49	-.16	.07
<i>Weekend (I=YES)</i>	-.14	.07	-2.04	<.05	-.27	-.01
<i>Daily Negative Mood (provider)</i>	-.18	.05	-3.29	<.01	-.28	-.07
<i>Daily Negative Mood (partner)</i>	.14	.05	2.66	<.01	.04	.25
<i>Emotional Similarity (Interaction Term)</i>	.14	.10	1.40	.16	-.06	.34

<i>Predictors Model A1_{EA}</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>	
					<i>LL</i>	<i>UL</i>
<i>Intercept</i>	1.96	.09	22.37	<.0001	1.78	2.13
<i>Time</i>	-.01	.06	-.08	.93	-.12	.11
<i>Weekend (I=YES)</i>	-.09	.07	-1.42	.16	-.23	.04
<i>Daily Negative Mood (provider's perception of partner)</i>	.11	.06	1.89	.05	-.004	.23
<i>Daily Negative Mood (partner)</i>	.09	.06	1.50	.13	-.03	.20
<i>Empathic Accuracy (Interaction Term)</i>	.12	.08	1.39	.17	-.05	.28

Null Model Results:

$\chi^2 = 474.20, p < .001$; Within-dyad variance = .21 ($p < .001$); Within-person variance = .32 ($p < .001$);

ICC for partners within dyad = .13

ICC for days within person = .20

Autocorrelated residuals for adjacent diary days = .22

Table 6. Models A2_{ES} and A2_{EA}: Daily invisible support predicted by emotional similarity (top half) and empathic accuracy (bottom half) (N = 60 couples).

<i>Predictors Model A2_{ES}</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>	
					<i>LL</i>	<i>UL</i>
<i>Intercept</i>	2.63	.10	26.09	< .0001	2.43	2.82
<i>Time</i>	-.06	.05	-1.15	.25	-.17	.04
<i>Weekend (I=YES)</i>	-.18	.06	-2.83	.01	-.30	-.05
<i>Daily Negative Mood (provider)</i>	-.14	.05	-2.74	.01	-.24	-.04
<i>Daily Negative Mood (partner)</i>	.15	.05	3.00	< .01	.05	.25
<i>Emotional Similarity (Interaction Term)</i>	.11	.09	1.16	.25	-.08	.30

<i>Predictors Model A2_{EA}</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>	
					<i>LL</i>	<i>UL</i>
<i>Intercept</i>	2.63	.10	27.08	< .0001	2.44	2.83
<i>Time</i>	-.04	.05	-.71	.48	-.14	.07
<i>Weekend (I=YES)</i>	-.15	.06	-2.44	.01	-.28	-.03
<i>Daily Negative Mood (provider's perception of partner)</i>	.04	.06	.74	.46	-.07	.15
<i>Daily Negative Mood (partner)</i>	.15	.05	2.78	.01	.04	.26
<i>Empathic Accuracy (Interaction Term)</i>	-.03	.08	-.36	.72	-.18	.12

Null Model Results:

$\chi^2 = 700.62, p < .001$; *Within-dyad variance* = .71 ($p < .001$); *Within-person variance* = .07 ($p < .05$);

ICC for partners within dyad = .30

ICC for days within person = .03

Autocorrelated residuals for adjacent diary days = .10

Table 7. Models A3_{ES} and A3_{EA}: Daily matching of support predicted by emotional similarity (top half) and empathic accuracy (bottom half) (N = 60 couples).

<i>Predictors Model A3_{ES}</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>	
					<i>LL</i>	<i>UL</i>
<i>Intercept</i>	1.35	.08	17.3	< .0001	1.19	1.51
<i>Time</i>	.23	.05	4.52	< .0001	.13	.33
<i>Weekend (1=YES)</i>	-.13	.06	-2.05	.04	-.25	-.01
<i>Daily Negative Mood (provider)</i>	-.02	.05	-.46	.65	-.12	.07
<i>Daily Negative Mood (partner)</i>	.10	.05	1.92	.06	.00	.19
<i>Emotional Similarity (Interaction Term)</i>	.14	.09	1.46	.14	-.05	.32

<i>Predictors Model A3_{EA}</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>	
					<i>LL</i>	<i>UL</i>
<i>Intercept</i>	1.35	.08	17.25	< .0001	1.19	1.50
<i>Time</i>	.25	.05	4.80	< .0001	.15	.35
<i>Weekend (1=YES)</i>	-.12	.06	-2.03	.04	-.24	.00
<i>Daily Negative Mood (provider's perception of partner)</i>	.05	.06	.83	.41	-.06	.16
<i>Daily Negative Mood (partner)</i>	.06	.05	1.17	.24	-.04	.17
<i>Empathic Accuracy (Interaction Term)</i>	.13	.08	1.70	.09	-.02	.28

Null Model Results:

$\chi^2 = 440.90, p < .001$; Within-dyad variance = .13 ($p < .05$); Within-person variance = .31 ($p < .001$);

ICC for partners within dyad = .09

ICC for days within person = .22

Autocorrelated residuals for adjacent diary days = .13

Table 8. Models B_{ES} and B_{EA}: Daily recipient partner satisfaction with received support predicted by emotional similarity (top half) and empathic accuracy (bottom half) (N = 60 couples).

<i>Predictors Model B_{ES}</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>	
					<i>LL</i>	<i>UL</i>
<i>Intercept</i>	13.06	.18	71.24	< .0001	12.69	13.43
<i>Time</i>	.10	.12	.81	.42	-.14	.34
<i>Weekend (I=YES)</i>	-.15	.16	-.99	.32	-.46	.15
<i>Daily Negative Mood (provider)</i>	-.34	.13	-2.70	.01	-.59	-.09
<i>Daily Negative Mood (partner)</i>	-.49	.13	-3.88	< .001	-.74	-.24
<i>Emotional Similarity (Interaction Term)</i>	.46	.24	1.92	.06	-.01	.93

<i>Predictors Model B_{EA}</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>	
					<i>LL</i>	<i>UL</i>
<i>Intercept</i>	13.04	.18	71.05	< .0001	12.67	13.40
<i>Time</i>	.14	.12	1.14	.26	-.10	.38
<i>Weekend (I=YES)</i>	-.15	.15	-.95	.34	-.45	.16
<i>Daily Negative Mood (provider's perception of partner)</i>	-.19	.14	-1.31	.19	-.46	.09
<i>Daily Negative Mood (partner)</i>	-.54	.13	-3.99	< .0001	-.80	-.27
<i>Empathic Accuracy (Interaction Term)</i>	.56	.19	2.89	< .01	.18	.94

Null Model Results:

$\chi^2 = 270.90, p < .001$; Within-dyad variance = 1.29 ($p < .001$); Within-person variance = .56 ($p < .01$);

ICC for partners within dyad = .19

ICC for days within person = .08

Autocorrelated residuals for adjacent diary days = .02

Table 9. Tests of simple slopes of partner daily negative mood on partner's satisfaction with received support at varying levels of provider rating of partner's negative mood.

<i>Level of Provider rating of partner's mood</i>	<i>B (for Recipient Partner Mood)</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>95% CI for B</i>	
					<i>LL</i>	<i>UL</i>
<i>Provider rating of partner's mood = -1 (-2SD)</i>	-1.09	.25	-4.26	< .0001	-1.60	-.59
<i>Provider rating of partner's mood = -.5 (-1SD)</i>	-.81	.18	-4.51	< .0001	-1.17	-.46
<i>Provider rating of partner's mood = 0 (average)</i>	-.54	.13	-3.99	< .01	-.80	-.27
<i>Provider rating of partner's mood = .5 (+1SD)</i>	-.26	.15	-1.73	.09	-.55	.03
<i>Provider rating of partner's mood = +1 (+2SD)</i>	.02	.21	.10	.92	-.40	.44

NOTE: Empathic accuracy is maximized when provider rating equal to 1.

CHAPTER 5

DISCUSSION

The current project was designed to examine whether the joint emotional experiences of romantic partners were important factors that influence day to day social support dynamics in couples. Specifically, my overarching aims were to determine the extent to which the emotional states of both the support provider and the support recipient shape the provision of daily support, and the quality of that support as indexed by its visibility, how well matched it is to the needs of the recipient, and whether that recipient feels satisfied with the support they are receiving daily. I proposed that an important part of examining partners' daily emotional experiences involves considering them in the context of a dyadic emotion system, wherein the relative similarity or dissimilarity of these emotional experiences can play a unique role in determining the quality of support that people provide to their partners. Across four multilevel models examining two broad types of indicators of social support (i.e., actual daily support behavior and the daily perceptions of the support recipient), I found evidence that both partners' daily emotional experiences uniquely and simultaneously predicted both the provider's enacted support behavior and the phenomenological experiences of the support recipient. Additionally, there was evidence that the joint emotional experiences of both partners – indicated by emotional similarity and empathic accuracy – can buffer the deleterious effects of negative mood on the experiences of the support recipient.

5.1 The Role Of Emotional Similarity

The first key question in the current project was whether and how partners' negative emotions – and particularly the similarity between the two romantic partners' negative emotions – can

influence social support quality, both in terms of the support behaviors they engage in, and the experiences of the partner receiving the support. My results suggest that the daily negative emotional experiences of both the support provider and the support recipient uniquely contribute to the quality of social support provided each day, though not in ways that are uniformly negative. Specifically, I found evidence that when a support provider's daily negative mood is elevated he or she may be less likely to provide support each day, and if they do provide support, it is more likely to be high visibility support, which is known to carry risks of backfire (Bolger, Zuckerman & Kessler, 2000; Bolger & Amarel, 2007). Additionally, if a support provider's daily negative mood is elevated the recipient partner may be dissatisfied with the support they receive from that partner. The recipient partner's daily negative mood also affects the provision and quality of social support that provider makes available each day. Specifically, when a recipient partner's daily negative mood is elevated, support providers may be more likely to provide support but recipients are generally less satisfied with the support they receive. However, when their partners do provide support it is more likely to be invisible and matched to the recipient partner's needs when the recipient's daily negative mood is high.

The similarity between partners' daily negative emotions may also play a specific role in their daily support experiences. Specifically, while daily emotional similarity did not influence enacted support behaviors, it did appear to influence the phenomenological experiences of the support recipient partners, such that daily emotional similarity marginally buffered the deleterious effects of each partner's negative mood on the recipient's satisfaction with support.

5.2 The Role Of Empathic Accuracy

The second key question in this project was whether and how a support provider's beliefs about a partner's daily emotional experiences – and particularly whether those beliefs were

consistent with the partner's actual emotional experiences – might influence social support dynamics at the daily level. My results suggest that these two joint emotional experiences can affect both specific support behaviors and the phenomenological experiences of the support recipient. Specifically, when providers believe that their partner's negative mood is elevated, they may be more likely to provide support, but not necessarily likely to deliver that support in an invisible or well-matched fashion. This is consistent with the previously proposed effects of empathic distress, whereby a provider's experience of a partner's distress motivates the provider to act supportively, but may not necessarily aid in providing that support in a skillful or well-matched fashion. Moreover, the results suggest that the reality of a partner's emotional experiences is a more powerful predictor of the quality of support than a provider's perceptions of a partner's emotional experiences. Specifically, when a partner's daily negative mood is actually elevated (controlling for whether or not the provider perceives this to be the case), the support that a partner provides is more likely to be invisible. Additionally, the recipient's daily negative mood being elevated predicts dissatisfaction with the support they receive. However, when a provider's beliefs about the partner's daily negative mood are consistent with that partner's actual mood (i.e., the provider is empathically accurate), a buffering effect emerged. Specifically, when both the provider and the recipient rated the recipient's daily negative mood as similarly elevated, the deleterious effects of the recipient's negative mood on his or her satisfaction with daily received support were reduced to near-zero.

5.3 Dyadic emotional experiences and daily social support: Alternative Processes

The present study suggests that while emotional similarity and empathic accuracy do influence the experience of a support recipient in a relationship, they do not appear to influence the actual support behaviors that a provider enacts from day to day. Across all of the models, the

joint emotional experience of both partners considered in tandem was a stronger factor in predicting support recipients' satisfaction with the support they get, rather than directly predicting the actual support behaviors enacted by the support provider. This warrants further consideration, given that daily enacted support behaviors should ostensibly lead to a recipient feeling satisfied (or not) with that support.

5.3.1 Disconnect Between Support Behaviors And Recipient Satisfaction?

It is possible that the reason for these findings is that the support behaviors and characteristics of support that were examined in the present analyses are unrelated to how recipients ultimately experience social support. However, the data are inconsistent with this notion. Specifically, recipient's daily satisfaction with social support was significantly positively correlated with all three behavioral indicators of support quality. This suggests that those who are more satisfied with the daily social support they receive from a romantic partner actually do tend to receive more enacted support, and that enacted support is more likely to be well-matched and invisible.

5.3.2 Misperception On The Part Of The Recipient?

It is possible that people in relationships have difficulty accurately identifying the support they are receiving each day, or may misinterpret generally positive partner behavior as support. Support recipients may mistakenly encode prosocial behaviors from a partner as instances of receiving social support, even if those behaviors are not explicitly intended as enacted support (e.g., a partner who agrees to play a board game together may be misconstrued as offering emotional support). To the extent that experiences of emotional similarity and empathic accuracy are promotive of prosocial behaviors that may not be explicitly intended as support (e.g., cooperation; Randall, Post, Butler, & Reed, 2013), these dyadic emotional experiences may

make partners feel more satisfied with the support they believe they are receiving. Future research should examine a wider array of daily prosocial behaviors in relationships, in order to identify precisely what behaviors (aside from enacted support) are predicted by partners' joint daily emotional experiences.

5.3.3 Other Processes That Link Dyadic Emotions To Support Quality?

It is possible that there are daily psychological processes (i.e., non-behavioral processes) beyond those observed in this study that are affected by dyadic emotional experiences, and that these daily processes in turn influence a recipient's satisfaction with support quality. For example, having a partner who feels the way one does and having a partner who accurately notices how one feels may both contribute to the belief that one's partner is more understanding and responsive. Perceiving a partner as highly responsive may in turn predict greater satisfaction with the support that partner provides each day (Reis, Clark, & Shaver, 2004). Future research should examine this process in the context of a mediation model, to determine the precise psychological mechanisms that lead from dyadic emotional experiences to support satisfaction.

5.4 Limitations and Strengths

The present study had a number of limitations. First, the sample consisted predominately of college students, the majority of whom identified as White/European American. Research has shown that this kind of sampling is strongly overrepresented in psychological literature, and that college age samples from Western populations may differ meaningful from other populations (Henrich, Heine, & Norenzayan, 2010). Still, within this population, the present sample included a diversity of relationship durations and statuses, with some couples being relatively young and dating casually, while others were several years into cohabitation and/or marriages. Second,

daily partner satisfaction with support showed a high level of negative skew. Figure B1 in the appendix shows the distribution of this variable. To assess any potential effect of the skewness present, I attempted to test multiple specifications of Models B_{ES} and B_{EA}, each time assuming a different underlying distribution of the daily partner support satisfaction variable. In the alternate cases where the underlying data were assumed to follow non-normal distributions, the GLIMMIX procedure was utilized in SAS 9.4. However, all analyses that assumed non-normality failed to converge. Only when a normal distribution was specified in GLIMMIX was convergence achieved. Additionally, the GLIMMIX procedure did not allow for the specification of multiple residual variance structures across levels; an essential step in the analysis of intensive longitudinal dyadic data. Based on these limitations, all multilevel models were run using the MIXED procedure as outlined above. Third, the sample had very high levels of overall relationship satisfaction and relatively low levels of daily stress. While these two variables did not alter the overall pattern of results across all eight models (see Appendix tables B2 through B9, which include both variables as covariates), it is worth noting this unusual characteristic of the sample. Replicating the study with a sample of couples with more variability in relationship satisfaction and daily stress would shed light on whether the processes examined are subject to additional influence based on relationship quality and higher day-to-day stress loads.

The study also had a number of strengths. The complex intensive longitudinal design of the study afforded numerous advantages. Diary studies are known to confer significant benefits for maximizing the power of all statistical procedures used, by virtue of multiple repeated observations. The diary design used in this study also afforded the ability to examine emotion and support processes *in vivo*, in ways that most study designs fail to capture (indeed, no studies included in the review of the literature featured a daily examination of links between emotions

and social support). Additionally, the use of a dyadic design with fully symmetrical measures from both partners in each couple (i.e., using the same assessments for both partners across all time points) allowed for a simultaneous examination of how partners' experiences and behaviors are mutually linked over time. The dyadic approach of the present study explicitly conceptualized support processes as interdependent rather than unidirectional, by assessing daily emotions and multiple facets of daily social support provision and receipt for both members of each couple simultaneously. In so doing, I explicitly acknowledged that support recipients are not passive spectators in daily social support transactions, but rather that they play an active role in determining whether and how their partners enact – or fail to enact – the social support that they need each day.

The study also makes a significant methodological contribution to the relationships research literature. The combination of fully-symmetrical couples' measures with diary data is relatively uncommon even among fairly advanced relationships research methods, and it is especially uncommon for such designs to include measures of emotional and perceptual congruence between partners. This study examined partners' emotional experiences individually, while simultaneously considering the joint effects of those emotional experiences on a variety of support outcomes. Additionally, the inclusion of daily empathic accuracy as a key predictor addressed a persistent gap in the literature on romantic relationships and social support, wherein person-perception variables are not often studied. Lastly, this study assessed the quality of social support in couples using two different broad metrics (enacted, specific support behaviors *vs.* a recipient's perceptions about the support quality), and assessed two important characteristics of support behavior explicitly (i.e., support visibility and support matching). This provides a comprehensive examination of the ways in which couples' social support is affected by both

partners' everyday emotional experiences, and in particular fills a gap in the social support literature by focusing specifically on the factors that predict how social support is provided in relationships, and whether the quality of support is facilitated or hindered by ongoing daily emotion processes.

5.5 Conclusion

The present study sought to determine the extent to which the joint emotional experiences of two romantic partners influenced the quality of social support they provided in a relationship. In their everyday lives, people in relationships are guided in their supportive behavior by their emotional experiences, and by the perceived emotional experiences of their partners. This study demonstrates that there may be genuine practical value in having emotional experiences that are similar to a partner's, and in being able to accurately infer the emotion states of a partner when providing social support. Whether in terms of both partners feeling similarly, or in terms of each partner accurately understanding how the other feels, these kinds of correspondent emotional experiences may serve to protect partners against the deleterious effects of negative mood on their social support experiences. Over time, partners may be best informed in their attempts to support one another by considering, regularly and in earnest, their own and their partners' emotional experiences. Given how crucial a resource for the health and longevity of a relationship social support can be, understanding the everyday factors that enable partners to preserve the quality of that resource is a valuable part of helping people maintain their relationships.

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APPENDIX A

COMPARATIVE POLYNOMIAL REGRESSION SUMMARY

Table A1. Summary of Polynomial Regression Comparisons.

OUTCOME	Emotional Similarity (Level 1 R²)			Empathic Accuracy (Level 1 R²)			Reject Diff Score Model?
	<i>Model U</i>	<i>Model C</i>	<i>F</i>	<i>Model U</i>	<i>Model C</i>	<i>F</i>	
<i>Support Provided (MODEL A1)</i>	0.21	0.17	5.77 ^{ns}	0.19	0.16	5.57 ^{ns}	YES
<i>Support Visibility (MODEL A2)</i>	0.79	0.77	18.76 ^{ns}	0.02	0.06	-16.12 ^{ns}	YES
<i>Support Matching (MODEL A3)</i>	0.05	0.003	1.06 ^{ns}	0.003	0.03	-7.05 ^{ns}	YES
<i>Support recipient satisfaction (MODEL B)</i>	0.06	0.04	5.33 ^{ns}	0.14	0.13	2.16 ^{ns}	YES

APPENDIX B

EXTENDED MODEL RESULTS

Table B1. Correlations between Level-2 (Between-Person) Extended Model Background Variables (N=120).

<i>Variable</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
1. Age	-									
2. Gender (1=Female)	-.22 ***	-								
3. Relationship Satisfaction	-.10 ***	-.04 †	-							
4. Trait Empathy	-.08 **	.14 ***	.34 ***	-						
5. Perceived Partner Support (focal respondent)	-.05 *	.18 ***	.36 ***	.37 ***	-					
6. Perceived Partner Support (partner rating)	-.08 **	-.18 ***	.14 ***	.22 ***	.17 ***	-				
7. Attachment Anxiety	-.13 ***	.08 **	-.09 ***	-.06 **	-.08 **	.07 **	-			
8. Attachment Avoidance	-.02	.19 ***	-.34 ***	-.11 ***	-.11 ***	-.13 ***	.21 ***	-		
9. Negative Emotionality (focal respondent)	-.03	.40 ***	-.07 **	-.06 **	.02	.02	.26 ***	.00	-	
10. Negative Emotionality (partner)	.16 ***	-.40 ***	.00	-.14 ***	.02	.02	-.17 ***	-.13 ***	-.24 ***	-
11. Relationship Duration (months)	.31 ***	-.02	.02	-.14 ***	-.01	-.02	-.03	.06 **	-.04	-.04

* $p < .05$, ** $p < .01$, *** $p < .001$, † $p < .10$

Table B2. Extended Model A1_{ES} – Support Provided to a Partner Daily (using Emotional Similarity Index)

<i>Predictor</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LL</i>	<i>UL</i>
<i>Intercept</i>	1.9013	0.1174	16.20	<.0001	1.6655	2.1371
<i>Diary Day (time)</i>	-0.04781	0.05887	-0.81	0.4169	-0.1633	0.06772
<i>Weekend (Yes/No)</i>	-0.03274	0.06803	-0.48	0.6305	-0.1662	0.1008
<i>Daily Negative Mood (self)</i>	-0.1234	0.05411	-2.28	0.0228	-0.2296	-0.01723
<i>Daily Negative Mood (partner's rating of himself/herself)</i>	0.1346	0.05683	2.37	0.0180	0.02308	0.2461
<i>(X1)(X2) INTERACTION TERM</i>						
<i>Daily Stressful Experiences</i>	0.06205	0.1027	0.60	0.5457	-0.1394	0.2635
<i>Daily Support Received from Partner</i>	0.02969	0.02407	1.23	0.2176	-0.01754	0.07692
<i>Daily Sleep Quality</i>	0.4881	0.09379	5.20	<.0001	0.3041	0.6722
<i>Age</i>	0.01359	0.04416	0.31	0.7584	-0.07307	0.1002
<i>Gender</i>	-0.00759	0.03342	-0.23	0.8203	-0.07318	0.05799
<i>Relationship Satisfaction</i>	0.04471	0.1494	0.30	0.7648	-0.2485	0.3379
<i>Trait Empathy</i>	-0.02597	0.01952	-1.33	0.1836	-0.06427	0.01233
<i>Perceived Partner Support (rating of partner)</i>	-0.04354	0.1414	-0.31	0.7582	-0.3210	0.2340
<i>Perceived Partner Support (partner's rating of focal respondent)</i>	0.08499	0.02265	3.75	0.0002	0.04054	0.1294
<i>Attachment Style – Anxiety Dimension</i>	0.03242	0.02022	1.60	0.1092	-0.00726	0.07211
<i>Attachment Style – Avoidance Dimension</i>	-0.00544	0.01469	-0.37	0.7115	-0.03426	0.02339
<i>Trait Neuroticism/Negative Emotionality (self)</i>	0.000255	0.01424	0.02	0.9857	-0.02770	0.02821
<i>Trait Neuroticism/Negative Emotionality (partner's rating of himself/herself)</i>	0.06262	0.1004	0.62	0.5329	-0.1344	0.2596
<i>Relationship Duration (months)</i>	0.02727	0.09965	0.27	0.7844	-0.1683	0.2228
	-0.00570	0.004680	-1.22	0.2237	-0.01488	0.003486

LL and *UL* columns represent lower and upper limits of 95% confidence interval around *B*, respectively.

Table B3. Extended Model A1_{EA} – Support Provided to a Partner Daily (using Empathic Accuracy Index)

<i>Predictor</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>P</i>	<i>LL</i>	<i>UL</i>
<i>Intercept</i>	2.7195	0.1046	25.99	<.0001	2.5094	2.9297
<i>Diary Day (time)</i>	-0.02392	0.05278	-0.45	0.6505	-0.1275	0.07965
<i>Weekend (Yes/No)</i>	-0.1142	0.06310	-1.81	0.0707	-0.2380	0.009654
<i>Daily Negative Mood (rating of partner)</i>	0.1337	0.05872	2.28	0.0230	0.01845	0.2489
<i>Daily Negative Mood (partner's rating of himself/herself)</i>	0.1724	0.05379	3.21	0.0014	0.06685	0.2780
<i>(X1₂)(X2) INTERACTION TERM</i>	-0.03040	0.07608	-0.40	0.6896	-0.1797	0.1189
<i>Daily Stressful Experiences</i>	-0.00018	0.02213	-0.01	0.9935	-0.04360	0.04324
<i>Daily Support Received from Partner</i>	0.5160	0.08946	5.77	<.0001	0.3404	0.6915
<i>Daily Sleep Quality</i>	0.06896	0.04127	1.67	0.0951	-0.01203	0.1499
<i>Age</i>	0.05462	0.02919	1.87	0.0616	-0.00265	0.1119
<i>Gender</i>	-0.2099	0.08437	-2.49	0.0130	-0.3755	-0.04439
<i>Relationship Satisfaction</i>	0.01539	0.01312	1.17	0.2409	-0.01035	0.04113
<i>Trait Empathy</i>	0.003122	0.09035	0.03	0.9724	-0.1742	0.1804
<i>Perceived Partner Support (rating of partner)</i>	0.03607	0.01898	1.90	0.0577	-0.00117	0.07331
<i>Perceived Partner Support (partner's rating of focal respondent)</i>	0.04439	0.01792	2.48	0.0134	0.009229	0.07955
<i>Attachment Style – Anxiety Dimension</i>	-0.00304	0.008828	-0.34	0.7308	-0.02036	0.01429
<i>Attachment Style – Avoidance Dimension</i>	0.02040	0.008223	2.48	0.0133	0.004264	0.03654
<i>Trait Neuroticism/Negative Emotionality (self)</i>	0.01433	0.09340	0.15	0.8781	-0.1690	0.1976
<i>Trait Neuroticism/Negative Emotionality (partner's rating of himself/herself)</i>	0.01631	0.09390	0.17	0.8621	-0.1680	0.2006
<i>Relationship Duration (months)</i>	-0.00935	0.004967	-1.88	0.0602	-0.01909	0.000401

LL and *UL* columns represent lower and upper limits of 95% confidence interval around *B*, respectively.

Table B4. Model A2_{ES} – Invisibility of Support Provided to a Partner Daily (using Emotional Similarity Index)

<i>Predictor</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LL</i>	<i>UL</i>
<i>Intercept</i>	2.7107	0.1053	25.74	<.0001	2.4992	2.9223
<i>Diary Day (time)</i>	-0.04115	0.05319	-0.77	0.4394	-0.1455	0.06324
<i>Weekend (Yes/No)</i>	-0.1293	0.06347	-2.04	0.0419	-0.2538	-0.00474
<i>Daily Negative Mood (self)</i>	-0.1312	0.05323	-2.47	0.0139	-0.2357	-0.02678
<i>Daily Negative Mood (partner's rating of himself/herself)</i>	0.1978	0.05056	3.91	<.0001	0.09855	0.2970
<i>(X1₁)(X2) INTERACTION TERM</i>	0.02319	0.09714	0.24	0.8113	-0.1674	0.2138
<i>Daily Stressful Experiences</i>	0.02584	0.02257	1.15	0.2525	-0.01844	0.07012
<i>Daily Support Received from Partner</i>	0.4872	0.08854	5.50	<.0001	0.3134	0.6609
<i>Daily Sleep Quality</i>	0.04664	0.04137	1.13	0.2598	-0.03453	0.1278
<i>Age</i>	0.05589	0.02926	1.91	0.0564	-0.00153	0.1133
<i>Gender</i>	-0.2068	0.08400	-2.46	0.0140	-0.3716	-0.04194
<i>Relationship Satisfaction</i>	0.01371	0.01307	1.05	0.2944	-0.01193	0.03936
<i>Trait Empathy</i>	0.01914	0.08991	0.21	0.8315	-0.1573	0.1956
<i>Perceived Partner Support (rating of partner)</i>	0.03499	0.01909	1.83	0.0670	-0.00246	0.07245
<i>Perceived Partner Support (partner's rating of focal respondent)</i>	0.04285	0.01806	2.37	0.0179	0.007405	0.07829
<i>Attachment Style – Anxiety Dimension</i>	-0.00227	0.008796	-0.26	0.7963	-0.01953	0.01499
<i>Attachment Style – Avoidance Dimension</i>	0.01961	0.008173	2.40	0.0166	0.003569	0.03564
<i>Trait Neuroticism/Negative Emotionality (self)</i>	0.01013	0.09420	0.11	0.9144	-0.1747	0.1950
<i>Trait Neuroticism/Negative Emotionality (partner's rating of himself/herself)</i>	0.01023	0.09458	0.11	0.9139	-0.1754	0.1958
<i>Relationship Duration (months)</i>	-0.00974	0.005016	-1.94	0.0524	-0.01958	0.000102

LL and *UL* columns represent lower and upper limits of 95% confidence interval around *B*, respectively.

Table B5. Model A2_{EA} – Invisibility of Support Provided to a Partner Daily (using Empathic Accuracy Index)

<i>Predictor</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LL</i>	<i>UL</i>
<i>Intercept</i>	2.7195	0.1046	25.99	<.0001	2.5094	2.9297
<i>Diary Day (time)</i>	-0.02392	0.05278	-0.45	0.6505	-0.1275	0.07965
<i>Weekend (Yes/No)</i>	-0.1142	0.06310	-1.81	0.0707	-0.2380	0.009654
<i>Daily Negative Mood (rating of partner)</i>	0.1337	0.05872	2.28	0.0230	0.01845	0.2489
<i>Daily Negative Mood (partner's rating of himself/herself)</i>	0.1724	0.05379	3.21	0.0014	0.06685	0.2780
<i>(X1₂)(X2) INTERACTION TERM</i>	-0.03040	0.07608	-0.40	0.6896	-0.1797	0.1189
<i>Daily Stressful Experiences</i>	-0.00018	0.02213	-0.01	0.9935	-0.04360	0.04324
<i>Daily Support Received from Partner</i>	0.5160	0.08946	5.77	<.0001	0.3404	0.6915
<i>Daily Sleep Quality</i>	0.06896	0.04127	1.67	0.0951	-0.01203	0.1499
<i>Age</i>	0.05462	0.02919	1.87	0.0616	-0.00265	0.1119
<i>Gender</i>	-0.2099	0.08437	-2.49	0.0130	-0.3755	-0.04439
<i>Relationship Satisfaction</i>	0.01539	0.01312	1.17	0.2409	-0.01035	0.04113
<i>Trait Empathy</i>	0.003122	0.09035	0.03	0.9724	-0.1742	0.1804
<i>Perceived Partner Support (rating of partner)</i>	0.03607	0.01898	1.90	0.0577	-0.00117	0.07331
<i>Perceived Partner Support (partner's rating of focal respondent)</i>	0.04439	0.01792	2.48	0.0134	0.009229	0.07955
<i>Attachment Style – Anxiety Dimension</i>	-0.00304	0.008828	-0.34	0.7308	-0.02036	0.01429
<i>Attachment Style – Avoidance Dimension</i>	0.02040	0.008223	2.48	0.0133	0.004264	0.03654
<i>Trait Neuroticism/Negative Emotionality (self)</i>	0.01433	0.09340	0.15	0.8781	-0.1690	0.1976
<i>Trait Neuroticism/Negative Emotionality (partner's rating of himself/herself)</i>	0.01631	0.09390	0.17	0.8621	-0.1680	0.2006
<i>Relationship Duration (months)</i>	-0.00935	0.004967	-1.88	0.0602	-0.01909	0.000401

LL and *UL* columns represent lower and upper limits of 95% confidence interval around *B*, respectively.

Table B6. Model A3_{ES} – Match of Support Sought by & Provided to a Partner Daily (emotional similarity index)

<i>Predictor</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LL</i>	<i>UL</i>
<i>Intercept</i>	1.5332	0.1046	14.66	<.0001	1.3232	1.7433
<i>Diary Day (time)</i>	0.2441	0.05261	4.64	<.0001	0.1409	0.3474
<i>Weekend (Yes/No)</i>	-0.1258	0.06347	-1.98	0.0478	-0.2503	-0.00125
<i>Daily Negative Mood (self)</i>	0.002105	0.05334	0.04	0.9685	-0.1026	0.1068
<i>Daily Negative Mood (partner's rating of himself/herself)</i>	0.1091	0.05067	2.15	0.0315	0.009694	0.2086
<i>(X1₁)(X2) INTERACTION TERM</i>	0.08619	0.09703	0.89	0.3746	-0.1042	0.2766
<i>Daily Stressful Experiences</i>	0.02768	0.02260	1.22	0.2210	-0.01668	0.07204
<i>Daily Support Received from Partner</i>	0.1348	0.08877	1.52	0.1293	-0.03944	0.3090
<i>Daily Sleep Quality</i>	0.07655	0.04144	1.85	0.0650	-0.00478	0.1579
<i>Age</i>	0.05532	0.02952	1.87	0.0612	-0.00261	0.1133
<i>Gender</i>	-0.3637	0.1352	-2.69	0.0073	-0.6290	-0.09841
<i>Relationship Satisfaction</i>	0.01048	0.01745	0.60	0.5484	-0.02377	0.04472
<i>Trait Empathy</i>	-0.05392	0.1269	-0.42	0.6711	-0.3030	0.1952
<i>Perceived Partner Support (rating of partner)</i>	0.03654	0.02020	1.81	0.0707	-0.00309	0.07618
<i>Perceived Partner Support (partner's rating of focal respondent)</i>	0.05440	0.01801	3.02	0.0026	0.01906	0.08974
<i>Attachment Style – Anxiety Dimension</i>	-0.02233	0.01322	-1.69	0.0915	-0.04827	0.003610
<i>Attachment Style – Avoidance Dimension</i>	0.03341	0.01284	2.60	0.0094	0.008209	0.05861
<i>Trait Neuroticism/Negative Emotionality (self)</i>	-0.07921	0.08908	-0.89	0.3741	-0.2540	0.09559
<i>Trait Neuroticism/Negative Emotionality (partner's rating of himself/herself)</i>	-0.01845	0.08841	-0.21	0.8348	-0.1919	0.1551
<i>Relationship Duration (months)</i>	-0.00546	0.004107	-1.33	0.1841	-0.01352	0.002601

LL and *UL* columns represent lower and upper limits of 95% confidence interval around *B*, respectively.

Table B7. Model A3_{EA} – Match of Support Sought by & Provided to a Partner Daily (empathic accuracy index)

<i>Predictor</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LL</i>	<i>UL</i>
<i>Intercept</i>	1.5309	0.1044	14.66	<.0001	1.3212	1.7406
<i>Diary Day (time)</i>	0.2517	0.05230	4.81	<.0001	0.1491	0.3543
<i>Weekend (Yes/No)</i>	-0.1189	0.06298	-1.89	0.0594	-0.2425	0.004706
<i>Daily Negative Mood (rating of partner)</i>	0.09746	0.05872	1.66	0.0973	-0.01778	0.2127
<i>Daily Negative Mood (partner's rating of himself/herself)</i>	0.06157	0.05386	1.14	0.2533	-0.04413	0.1673
<i>(X1₂)(X2) INTERACTION TERM</i>	0.1223	0.07690	1.59	0.1122	-0.02865	0.2732
<i>Daily Stressful Experiences</i>	0.02149	0.02211	0.97	0.3313	-0.02190	0.06489
<i>Daily Support Received from Partner</i>	0.1658	0.08941	1.85	0.0640	-0.00968	0.3412
<i>Daily Sleep Quality</i>	0.08795	0.04126	2.13	0.0333	0.006995	0.1689
<i>Age</i>	0.05611	0.02943	1.91	0.0569	-0.00165	0.1139
<i>Gender</i>	-0.3693	0.1350	-2.74	0.0063	-0.6342	-0.1044
<i>Relationship Satisfaction</i>	0.01089	0.01741	0.63	0.5318	-0.02328	0.04506
<i>Trait Empathy</i>	-0.06829	0.1267	-0.54	0.5901	-0.3170	0.1804
<i>Perceived Partner Support (rating of partner)</i>	0.03830	0.02015	1.90	0.0577	-0.00125	0.07785
<i>Perceived Partner Support (partner's rating of focal respondent)</i>	0.05517	0.01795	3.07	0.0022	0.01994	0.09040
<i>Attachment Style – Anxiety Dimension</i>	-0.02226	0.01319	-1.69	0.0917	-0.04814	0.003619
<i>Attachment Style – Avoidance Dimension</i>	0.03418	0.01283	2.66	0.0079	0.009000	0.05935
<i>Trait Neuroticism/Negative Emotionality (self)</i>	-0.07908	0.08880	-0.89	0.3734	-0.2533	0.09517
<i>Trait Neuroticism/Negative Emotionality (partner's rating of himself/herself)</i>	-0.02284	0.08826	-0.26	0.7958	-0.1960	0.1504
<i>Relationship Duration (months)</i>	-0.00541	0.004091	-1.32	0.1865	-0.01343	0.002619

LL and *UL* columns represent lower and upper limits of 95% confidence interval around *B*, respectively.

Table B8. Model B_{ES} – Partner's satisfaction with daily Social Support from Respondent (emotional similarity).

<i>Predictor</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LL</i>	<i>UL</i>
<i>Intercept</i>	13.2240	0.1987	66.56	<.0001	12.8250	13.6230
<i>Diary Day (time)</i>	0.1591	0.1235	1.29	0.1980	-0.08329	0.4015
<i>Weekend (Yes/No)</i>	-0.1208	0.1571	-0.77	0.4423	-0.4292	0.1876
<i>Daily Negative Mood (self)</i>	-0.2630	0.1333	-1.97	0.0488	-0.5246	-0.00133
<i>Daily Negative Mood (partner's rating of himself/herself)</i>	-0.3813	0.1265	-3.01	0.0026	-0.6296	-0.1330
<i>(X1₁)(X2) INTERACTION TERM</i>	0.2339	0.2439	0.96	0.3378	-0.2448	0.7126
<i>Daily Stressful Experiences</i>	-0.07662	0.05656	-1.35	0.1759	-0.1876	0.03438
<i>Daily Support Received from Partner</i>	1.2135	0.2247	5.40	<.0001	0.7725	1.6545
<i>Daily Sleep Quality</i>	0.2235	0.1037	2.15	0.0315	0.01992	0.4270
<i>Age</i>	0.03053	0.05364	0.57	0.5694	-0.07474	0.1358
<i>Gender</i>	-0.2943	0.2703	-1.09	0.2764	-0.8247	0.2361
<i>Relationship Satisfaction</i>	0.06499	0.03331	1.95	0.0513	-0.00038	0.1304
<i>Trait Empathy</i>	0.1655	0.2466	0.67	0.5023	-0.3184	0.6494
<i>Perceived Partner Support (rating of partner)</i>	0.05632	0.03828	1.47	0.1415	-0.01880	0.1314
<i>Perceived Partner Support (partner's rating of focal respondent)</i>	0.1883	0.03400	5.54	<.0001	0.1216	0.2550
<i>Attachment Style – Anxiety Dimension</i>	-0.01302	0.02581	-0.50	0.6140	-0.06368	0.03763
<i>Attachment Style – Avoidance Dimension</i>	0.005469	0.02537	0.22	0.8294	-0.04431	0.05525
<i>Trait Neuroticism/Negative Emotionality (self)</i>	-0.07590	0.1660	-0.46	0.6476	-0.4017	0.2499
<i>Trait Neuroticism/Negative Emotionality (partner's rating of himself/herself)</i>	-0.2249	0.1647	-1.37	0.1725	-0.5481	0.09834
<i>Relationship Duration (months)</i>	-0.00063	0.007269	-0.09	0.9312	-0.01489	0.01364

LL and *UL* columns represent lower and upper limits of 95% confidence interval around *B*, respectively.

Table B9. Model B_{EA} – Partner’s satisfaction with daily Social Support from Respondent (empathic accuracy).

<i>Predictor</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LL</i>	<i>UL</i>
<i>Intercept</i>	13.2047	0.2016	65.51	<.0001	12.7999	13.6096
<i>Diary Day (time)</i>	0.1752	0.1230	1.42	0.1549	-0.06628	0.4166
<i>Weekend (Yes/No)</i>	-0.1232	0.1556	-0.79	0.4286	-0.4286	0.1821
<i>Daily Negative Mood (rating of partner)</i>	-0.01838	0.1468	-0.13	0.9004	-0.3065	0.2697
<i>Daily Negative Mood (partner’s rating of himself/herself)</i>	-0.4894	0.1345	-3.64	0.0003	-0.7532	-0.2255
<i>(X1₂)(X2) INTERACTION TERM **</i>	0.5727	0.1910	3.00	0.0028	0.1979	0.9475
<i>Daily Stressful Experiences</i>	-0.1014	0.05507	-1.84	0.0659	-0.2094	0.006680
<i>Daily Support Received from Partner</i>	1.2170	0.2253	5.40	<.0001	0.7748	1.6592
<i>Daily Sleep Quality</i>	0.2683	0.1029	2.61	0.0093	0.06630	0.4703
<i>Age</i>	0.03729	0.05397	0.69	0.4897	-0.06861	0.1432
<i>Gender</i>	-0.3265	0.2771	-1.18	0.2390	-0.8701	0.2172
<i>Relationship Satisfaction</i>	0.06907	0.03376	2.05	0.0411	0.002812	0.1353
<i>Trait Empathy</i>	0.1082	0.2505	0.43	0.6658	-0.3833	0.5998
<i>Perceived Partner Support (rating of partner)</i>	0.06145	0.03888	1.58	0.1143	-0.01484	0.1377
<i>Perceived Partner Support (partner’s rating of focal respondent)</i>	0.1892	0.03449	5.48	<.0001	0.1215	0.2569
<i>Attachment Style – Anxiety Dimension</i>	-0.01363	0.02627	-0.52	0.6039	-0.06519	0.03792
<i>Attachment Style – Avoidance Dimension</i>	0.009032	0.02592	0.35	0.7276	-0.04184	0.05990
<i>Trait Neuroticism/Negative Emotionality (self)</i>	-0.07704	0.1679	-0.46	0.6465	-0.4066	0.2525
<i>Trait Neuroticism/Negative Emotionality (partner’s rating of himself/herself)</i>	-0.2479	0.1669	-1.49	0.1378	-0.5753	0.07964
<i>Relationship Duration (months)</i>	-0.00051	0.007284	-0.07	0.9444	-0.01480	0.01379

LL and *UL* columns represent lower and upper limits of 95% confidence interval around *B*, respectively.

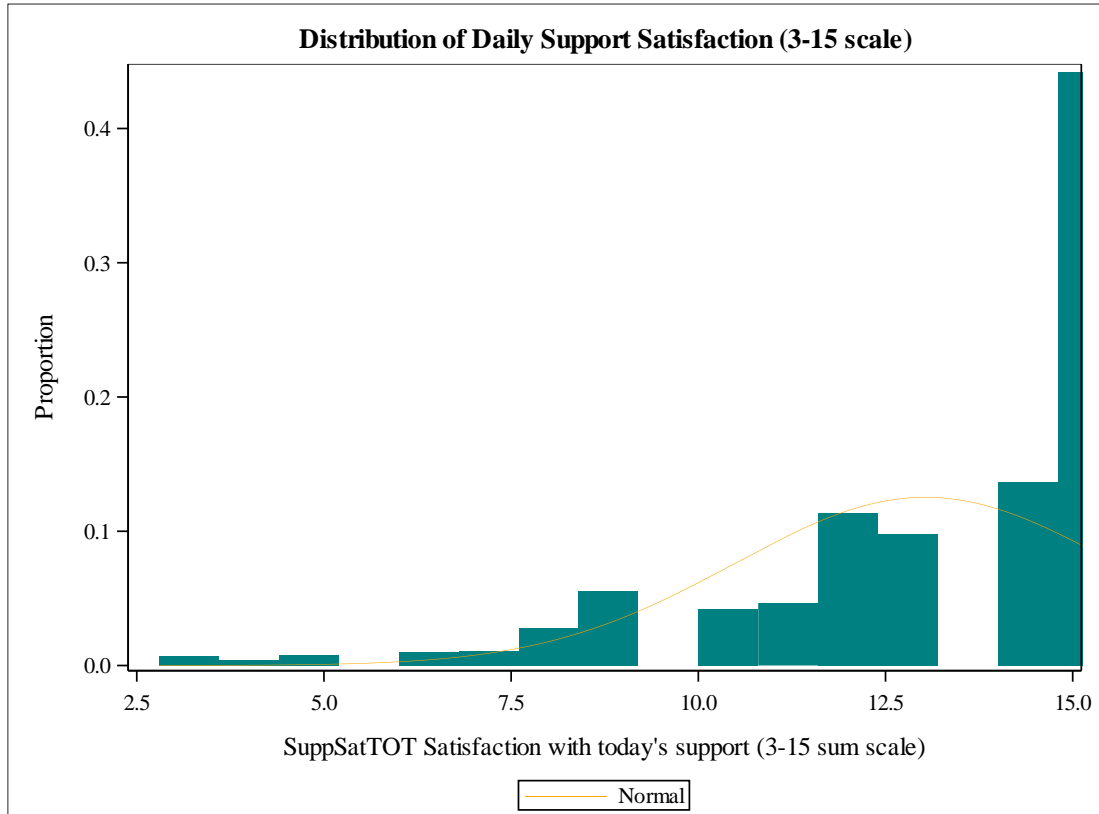


Figure B1. Distribution of daily satisfaction with social support received (N = 1,680 days).

APPENDIX C

INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL FORM

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
2420 Lincoln Way, Suite 202
Ames, Iowa 50014
515 294-4566

Date: 11/30/2016

To: Frederick D Clavel
W112 Lagomarcino

CC: Dr. Carolyn Cutrona
W112 Lagomarcino

From: Office for Responsible Research

Title: The role of dyadic emotion systems in social support dynamics in romantic couples.

IRB ID: 16-497

Approval Date: 11/29/2016

Date for Continuing Review: 11/28/2018

Submission Type: New

Review Type: Expedited

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University according to the dates shown above. Please refer to the IRB ID number shown above in all correspondence regarding this study.

To ensure compliance with federal regulations (45 CFR 46 & 21 CFR 56), please be sure to:

- **Use only the approved study materials** in your research, including the recruitment materials and informed consent documents that have the IRB approval stamp.
- **Retain signed informed consent documents for 3 years after the close of the study**, when documented consent is required.
- **Obtain IRB approval prior to implementing any changes** to the study by submitting a Modification Form for Non-Exempt Research or Amendment for Personnel Changes form, as necessary.
- **Immediately inform the IRB of (1) all serious and/or unexpected adverse experiences** involving risks to subjects or others; and (2) any other unanticipated problems involving risks to subjects or others.
- **Stop all research activity if IRB approval lapses**, unless continuation is necessary to prevent harm to research participants. Research activity can resume once IRB approval is reestablished.
- **Complete a new continuing review form** at least three to four weeks prior to the date for continuing review as noted above to provide sufficient time for the IRB to review and approve continuation of the study. We will send a courtesy reminder as this date approaches.

Please be aware that IRB approval means that you have met the requirements of federal regulations and ISU policies governing human subjects research. **Approval from other entities may also be needed.** For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **IRB approval in no way implies or guarantees that permission from these other entities will be granted.**

Upon completion of the project, please submit a Project Closure Form to the Office for Responsible Research, 202 Kingland, to officially close the project.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.