

The nature and function of intimacy in romantic sexual relationships

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## Abstract

The purpose of this program of research was to explore the nature and function of intimacy in romantic sexual relationships. More specifically, I was interested in how laypeople define and understand the concept of sexual intimacy as it relates to the broader concept of intimacy, and how intimacy in romantic relationships uniquely influences well-being over time. In regards to the former, six studies examined the nature of sexual intimacy and its relationship to intimacy; in regards to the latter, a large-scale longitudinal web survey examined the impact of intimacy on three domains of well-being over a period of eight months, controlling for other relevant constructs (i.e., attachment, relationship satisfaction, closeness, and sexual intimacy).

In studies 1 and 2, prototypes of intimacy and sexual intimacy were generated and although there was significant overlap between the two prototypes, each also included unique central attributes. Study 3 provided further evidence for the prototypical nature of both concepts by demonstrating that central features of both concepts were more salient in memory than peripheral features. Studies 4 and 5 showed that perceptions of intimacy and sexual intimacy in fictional romantic relationships are highly related, but that the two concepts could also be reliably differentiated. In Study 4, priming sexual intimacy increased activation of the concept of intimacy, but the reverse was not true; and in Study 5, the presence of intimacy (but not sexual intimacy) was associated with greater perceived relationship quality. Study 6 showed that intimacy and sexual intimacy were positively correlated in real romantic relationships; and that although prototypes of intimacy and sexual intimacy corresponded in meaningful ways to theoretical models of intimacy, the endorsement of central intimacy and sexual intimacy attributes in real romantic relationships was associated with relationship quality and sexual well-being,

respectively, above and beyond these theoretical models. Study 7, which expanded on Study 6 by examining the longitudinal relationship between intimacy and well-being, revealed that greater initial intimacy predicted less of a decline in relationship satisfaction, sexual satisfaction, and life satisfaction over a period of eight months. Moreover, intimacy remained a unique predictor of change in well-being even controlling for the effects of attachment, relationship satisfaction, closeness, and sexual intimacy.

Taken together, the present studies make a number of unique and novel contributions to prior work by employing multiple diverse samples and methods to examine the nature and function of intimacy in romantic sexual relationships. These studies have important implications for how we measure and understand intimacy in general, as well as intimacy during sexual activity, and for our ability to uniquely predict well-being longitudinally from global perceptions of relationship intimacy.

## Résumé

Le but du présent programme de recherche était d'examiner la nature et les fonctions de l'intimité dans les relations sexuelles romantiques. Plus précisément, je me suis intéressée à comprendre comment les gens ordinaires définissent et comprennent le concept de l'intimité sexuelle par rapport au concept général de l'intimité, et comment l'intimité à l'intérieur des relations romantiques influence strictement le bien-être à travers le temps. Pour comprendre le premier, six études ont examiné la nature de l'intimité sexuelle et ses liens avec l'intimité; pour comprendre le dernier, une étude longitudinale à grande échelle a examiné l'impact de l'intimité au niveau de trois domaines du bien-être à travers une période de huit mois, tout en contrôlant d'autres concepts pertinents (tels que la satisfaction reliée à la relation, l'attachement, la proximité, et l'intimité sexuelle).

Dans les études 1 et 2, des prototypes de l'intimité et de l'intimité sexuelle ont été générés, et bien qu'il se trouvait un chevauchement significatif entre ces deux prototypes, chacun d'eux possédait aussi des attributs centraux uniques. L'étude 3 a fourni davantage de preuves quant à la nature prototypique de ces deux concepts en démontrant que les attributs centraux des deux concepts étaient plus saillants en mémoire que les attributs périphériques. Les études 4 et 5 ont démontré que les perceptions d'intimité et d'intimité sexuelle à l'intérieur de relations romantiques fictives étaient fortement reliées, mais aussi que ces deux concepts pouvaient être fidèlement différenciés. Plus précisément, dans l'étude 4, l'amorçage de l'intimité sexuelle a fait augmenter l'activation du concept de l'intimité, mais non l'inverse; et dans l'étude 5, la présence de l'intimité (mais pas de l'intimité sexuelle) était associée avec une perception plus grande de la qualité de la relation. L'étude 6 a démontré que l'intimité et l'intimité sexuelle étaient positivement

corrélées à l'intérieur de véritables relations romantiques; et bien que les prototypes d'intimité et d'intimité sexuelle correspondaient de manière significative aux modèles théoriques de l'intimité, l'assentiment d'attributs de l'intimité centrale et de l'intimité sexuelle à l'intérieur de véritables relations romantiques n'était pas associé avec la qualité de la relation et du bien-être sexuel, respectivement, au delà de ces modèles théoriques. L'étude 7, qui était un prolongement de l'étude 6 par son évaluation de la relation longitudinale entre l'intimité et le bien-être, a révélé qu'une plus grande intimité initiale était un prédicteur d'un déclin moindre dans la satisfaction relationnelle, sexuelle et quotidienne sur une période de huit mois. De plus, l'intimité restait un prédicteur unique du changement dans le bien-être, même après avoir contrôlé pour les effets de la satisfaction relationnelle, de l'attachement, la proximité, et de l'intimité sexuelle.

Pris ensemble, les études présentées ici offrent un nombre de contributions uniques et nouvelles aux études préalables de par leur emploi d'échantillonnage et de méthodologies multiples et diversifiées afin d'examiner la nature et les fonctions de l'intimité dans les relations sexuelles romantiques. Ces études offrent des implications importantes en termes de la façon dont on mesure et comprend l'intimité en général, ainsi que l'intimité à l'intérieur d'activité sexuelle, et aussi en termes de notre capacité à prédire de manière unique et longitudinale le bien-être provenant de perceptions globales de l'intimité relationnelle.



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### Contribution of Authors

The present thesis comprises two manuscripts. The first six studies were written as an article co-authored by myself and Dr. John Lydon and submitted to the Journal of Personality and Social Psychology in 2009. The data for study 1 was collected at McGill University in 2006 by undergraduate student researchers as part of a class project under my supervision; these undergraduate students also assisted with data entry. For study 2, I oversaw the collection of data through the use of an on-line survey during 2006. Data collection for studies 3, 4, and 5 was conducted by three undergraduate honours students in 2006 and 2007 who worked with me and my thesis supervisor. The data for study 6 was collected online in 2007 by undergraduate McGill university student researchers as part of a class project under my supervision. The data for all six studies was analyzed and interpreted by myself and Dr. Lydon. I wrote and revised the manuscript with the help of Dr. Lydon. Dr. Lydon also helped in the formulation of research questions and design and in the development of study materials.

Study 7 was written as a manuscript co-authored by myself and Dr. John Lydon. Data collection was completed by me with the assistance of an undergraduate honours student. The data analysis and interpretation were done by me and Dr. John Lydon. I wrote and revised the manuscript with the help of Dr. Lydon. Dr. Lydon also assisted in the formulation of research questions and measures. The manuscript will be submitted to a journal in the field in 2009.

### Statement of Original Contribution

This research constitutes an original contribution in the exploration of sexual intimacy and intimacy in heterosexual romantic relationships. Studies 1 to 3 were the first to date to explore lay conceptions of both intimacy and sexual intimacy using prototype analysis. While there have been several studies on lay conceptions of intimacy, there has only been one brief report on lay conceptions of sexual intimacy. No research to date has fully explored the concept of sexual intimacy, nor has any research explored how the concepts of sexual intimacy and intimacy are related. In addition, in the majority of prototype studies on intimacy, participants described specific intimate experiences which were likely highly memorable, but perhaps not particularly representative of the way they experienced intimacy on a daily basis. Moreover, the intimate experiences participants described were usually with close same- or opposite-sex friends. This research is the first to look at lay conceptions of both intimacy and sexual intimacy in general, not in the context of a specific intimate interaction with a friend.

Studies 4 to 6 were original in that they were the first to explore the conceptual relationship between intimacy and sexual intimacy in romantic relationships. Study 4 represents the first attempt to experimentally prime intimacy and sexual intimacy to assess the implicit relationship between the two concepts. Studies 4 and 5 are the first to explore perceptions of how intimacy and sexual intimacy are related in romantic relationships and to determine their unique correlates. Study 6 is the first attempt to date to explore both intimacy and sexual intimacy in actual romantic relationships using both theory- and prototype-based assessments. In addition, no research to date has explored how sexual intimacy relates to relationship quality or sexual satisfaction.

Study 7 is the first to date to explore intimacy and well-being longitudinally using three separate domains of well-being (i.e., relationship, sexual, and personal well-being) and controlling for four highly related constructs (i.e., adult romantic attachment, relationship satisfaction, closeness, and sexual intimacy). While there have been numerous cross-sectional studies on intimacy and each of these three domains of well-being, no longitudinal research has been carried out which includes all three domains together. Moreover, no cross-sectional or longitudinal research on intimacy and well-being to date has specifically controlled for the effects of attachment style or relationship satisfaction.

Thus, the present research represents an original contribution to the literature in that, it is the first to use prototype analysis to explore the concept of sexual intimacy (studies 1 to 3), it is the first to explore both explicitly and implicitly how the concepts of intimacy and sexual intimacy are related (studies 1 to 6), and it is the first to longitudinally explore the unique relationship between intimacy and well-being in three domains (Study 7).

Finally, the present program of research also makes several methodological contributions. In Study 6, global assessments of intimacy and sexual intimacy in romantic relationships were developed based on the prototypes derived from studies 1 and 2; and in Study 7, global assessments of the two concepts were derived from theoretical descriptions of intimacy in general and during sexual activity with a partner. Furthermore, the results of Study 7 provide added validity for the results from the hypothetical scenarios in studies 4 and 5 providing confidence for researchers to further utilize the methodology of these two studies (i.e., manipulating levels of convey intimacy and sexual intimacy in romantic relationship vignettes).

## General Introduction

A recent search for the word *intimacy* on Google.com resulted in approximately 13 million hits; but what exactly is intimacy? Merriam-Webster Dictionary (2006) defines intimacy as “the state of being in a very personal or private relationship”; however the term intimacy has been used to describe everything from feelings to behaviours, from verbal communication processes to sexual activities, and from personality traits to types of long-term relationships (Reis & Shaver, 1988). In fact, sixty-one unique definitions of intimacy have been identified in the close relationships literature (Moss & Schwebel, 1993). Despite this variety, most definitions and conceptualizations of intimacy emphasize “a feeling of closeness and connectedness that develops through communication between partners” (Laurenceau, Feldman Barrett, & Rovine, 2005, p. 314); and it is closeness and connectedness with others that most people long for and seek throughout their lives. In fact, the desire for close relationships is one of the most fundamental human motivations, and research suggests that we actually need these close relationships to function normally (Baumeister & Leary, 1995). Not only are close relationships essential to our health and well-being (Cohen, 1988; Sarason, Sarason, & Gurung, 2001), but intimacy in romantic relationships is especially important, given that the closest and most significant personal relationship in one’s life is typically with a committed sexual partner (Popovic, 2005).

In my thesis I will examine two critical sets of issues to further our understanding of intimacy in romantic relationships. The first issue concerns the concept of *sexual intimacy*; I believe that intimacy during sexual experiences with one’s partner is an important yet overlooked aspect of successful and healthy romantic relationships. I will use prototype analysis to examine lay conceptions of sexual intimacy and the relationship

between sexual intimacy and the broader construct of intimacy. I propose that sexual intimacy and intimacy are related, but distinct concepts. The second issue concerns how intimacy and well-being are related. Although a link between intimacy and well-being has been well-established cross-sectionally (e.g., Prager & Burhmester, 1998; Fletcher, Simpson, & Thomas, 2000; Popovic, 2005), no research to date has examined how intimacy is related to multiple domains of well-being longitudinally. Furthermore, I will examine the unique influence of intimacy on well-being, controlling for various related concepts such as attachment style, relationship satisfaction, closeness, and sexual intimacy. I propose that intimacy is a unique predictor of change in relationship, sexual, and personal well-being over time.

This introduction is organized into four main sections. In the first section, I will review Reis and colleagues' (Reis & Shaver, 1988; Reis & Patrick, 1996) influential interpersonal process model of intimacy. In the second section, I will compare and contrast intimacy with three highly related, but nonetheless distinct concepts: adult romantic attachment style, relationship satisfaction, and sexuality. In the third section, I will further explore the relationship between intimacy and sexuality by looking at the concept of sexual intimacy. I will also introduce the first manuscript, "What is sexual intimacy? A prototype approach to understanding sexual intimacy through its relationship to intimacy." Finally, in the fourth section, I will review the literature on intimacy and well-being and introduce the second manuscript, "Intimacy and well-being in heterosexual romantic relationships: A longitudinal analysis."

## *Defining Intimacy*

### *The Interpersonal Process Model of Intimacy*

Although various definitions and conceptualizations of intimacy exist (see Moss & Schwebel, 1993; Laurenceau, Rivera, Schaffer, & Pietromonaco, 2004); perhaps the most well-known and validated model of intimacy is Reis and Shaver's (1988) interpersonal process model, later expanded by Reis and Patrick (1996). According to Reis and colleagues, an interaction is experienced as being intimate when (a) the expression or disclosure of important self-relevant information of one partner (the speaker) is met with responsiveness and positive regard from the other partner (the listener), and (b) the speaker *perceives* the listener as being responsive. To illustrate, suppose Sara and Mark are in a romantic relationship and Sara has just told Mark her innermost thoughts and feelings. If Mark is responsive to her disclosure and responds in a manner that allows her to feel understood, accepted, and cared for, Sara will experience intimacy. If Mark is not responsive, or if Sara does not *perceive* Mark's behaviour as responsive (even if he believes it to be), she may feel distant or neglected and be reluctant to share important information with him in the future, thus limiting their opportunities to experience intimacy. It is not necessary, however, for Mark to agree with Sara in order for her to feel validated: he only need acknowledge the legitimacy of her point of view (Gottman, 1979).

Reis, Clark, and Holmes (2004) recently defined *perceived partner responsiveness to the self* as "a process by which individuals come to believe that relationship partners both attend to and react supportively to central, core defining features of the self" (p. 203). Thus, successful partner responsiveness demonstrates to the speaker that the self he or she revealed is understood (i.e., accurately and appropriately perceived), accepted (i.e.,



valued and respected) and cared for (i.e., liked and worthy of affection). Furthermore, as the speaker and listener change roles in this dynamic, transactional process, each partner's innermost self comes to be known and validated, resulting in a mutual experience of intimacy.

Empirical support for the interpersonal process model of intimacy has emerged in recent years, primarily through the use of experience sampling (e.g., daily diary reports of romantic partners' interactions). For example, both self-disclosure and partner disclosure have been found to predict intimacy in social interactions of college students' (Laurenceau, Feldman Barrett, & Pietromonaco 1998), daily experiences of married couples (Laurenceau et al., 2005) and conversations about stressful cancer-related or relationship issues between breast cancer patients and their partners (Manne, Ostroff, Rini, Fox, Goldstein, & Grana, 2004). In addition, perceived partner responsiveness in a specific interaction or discussion has been found to partially mediate the effects of disclosure (both self and partner) on intimacy (Prager & Burhmester, 1998; Laurenceau et al., 1998; Laurenceau et al., 2005; Manne et al., 2004).

Furthermore, Lippert and Prager (2001) found strong support for the dyadic nature of Reis and Shaver's (1988) model. Interactions between romantic partners which were perceived as the most intimate were characterized by (a) both partners' disclosure of private information and of emotions and (b) both partners' expression of positive feelings about the other. However, emotional self-disclosure was a stronger predictor of intimacy than factual self-disclosure; similar results were found by Laurenceau and colleagues (1998, 2005). According to Clark, Fitness, and Brissette (2001), emotional self-disclosure is more likely to foster intimacy than factual self-disclosure because the former communicates important personal needs, which engender mutual responsiveness and

support. Clearly, interactions in which both partners actively participate (i.e., those with reciprocal disclosure and mutual caring) are perceived as the most intimate. However, intimate interactions are also characterized by overall interaction pleasantness and perceived partner understanding (Lippert & Prager, 2001). Although the former is likely a by-product of both partners expressing positive feelings for each other, the latter once again underscores the importance of perceived partner responsiveness for intimacy.

Recently, however, Mitchell and colleagues (2008) found striking gender differences in *how* self-disclosure and empathic responding (i.e., understanding, acceptance, caring) influenced feelings of intimacy in heterosexual couples' conversation about hurt feelings. For men, intimacy was predicted by their own level of self-disclosure and empathic responding (but not their partners'); while for women, intimacy was predicted by their partners' level of self-disclosure and empathic responding (but not their own). Although not addressed by the authors, gender socialization most likely explains these findings. For example, it is less acceptable and normative for men in North America to express or disclose their emotions than it is for women (Reis, 1998); in fact, these behaviours are often expected of women. Given the lesser frequency with which men enact these behaviours in daily life, men's self-disclosure and empathic responding in an interaction would likely be more salient, and therefore perhaps more important or influential for feelings of intimacy in both sexes, than women's disclosure or responsiveness.

#### *Interactional vs. Relational Intimacy*

It is important to point out that this model of intimacy is a *process* model – intimacy is experienced as a result of a specific sequence of behaviours in a given interpersonal interaction – and not a *relational* model. As Reis and Shaver (1988) state, an intimate relationship is more than just “an aggregate of intimate interactions between two people”

(p. 383). They describe an intimate relationship as one which engenders intimate interactions, through a backdrop of trust, reciprocity, commitment, and shared mutual knowledge. Thus, intimacy is experienced in a relationship when partners' interactions create opportunities for each to be responsive to the other's important goals, needs, dispositions, and values (Reis et al., 2004). In fact, Prager (1995; Lippert & Prager, 2001; Prager & Roberts, 2004) has suggested that research in this area needs to make a clearer distinction between interactional and relational intimacy; given that (a) the former can (and often does) exist without the latter (e.g., as in the strangers-on-a-plane phenomenon; Altman & Taylor, 1973) and (b) intimate interactions make up only a fraction of the interactions in an intimate relationship (Clark & Reis, 1988).

Few studies have explicitly measured both an individual's global evaluation of intimacy in their relationship and daily intimate experiences with their relationship partner. One notable exception is Laurenceau et al., (2005), who found that daily levels of intimacy in marital interactions (averaged from a 42-day period) were significantly correlated with overall levels of relationship intimacy. Because the primary goal of this study was to compare self-disclosure, partner disclosure, and perceived partner responsiveness as predictors of daily intimacy, the latter obviously could not be assessed through the extent of partners' disclosures to each other or perceptions of each other's responsiveness and was assessed using only a single face valid item (i.e., the amount of closeness participants had experienced across all interactions with their spouse that day). However, given that intimacy was predicted by perceived partner responsiveness, daily experiences of feeling understood, accepted, and cared for by one's partner are presumably also strongly correlated with global assessment of intimacy in the relationship.

Prager and Buhrmester (1998) also measured evaluations of both relational intimacy (i.e., depth of previous intimate self-disclosure to partner) and interactional intimacy (i.e., degree of self-disclosure, positive affect, and partner understanding in a specific interaction). Although they did not explicitly address the relationship between the two types of intimacy, they did find significant correlations between both types and overall fulfillment of communal needs (e.g., love, affection, and belonging). Interestingly, communal need fulfillment was also found to be correlated with non-verbal relational intimacy (i.e., frequency of sexual and affectionate contact).

### *Lay Conceptions of Intimacy*

Lay conceptions of intimacy typically focus on self-disclosure. That is, when people are asked to define intimacy or to describe an intimate experience, what comes most easily to mind is self-disclosure of personal or private information to another person. For example, when Waring, Tillman, Frelick, Russell, and Weisz (1980) asked participants “What is intimacy?”, self-disclosure (e.g., of thoughts, beliefs, attitudes, feelings) emerged as the most important aspect of intimacy, followed by the expression of affection, compatibility between partners, commitment to the relationship, and the ability to resolve conflicts.

Research on lay conceptions of intimacy in *friendships* also supports the primacy of self-disclosure. For example, Fehr (2004) asked participants to list the various types of interactions with a same-sex friend which would lead to intimacy. Interactions involving self-disclosure (e.g., “If I need to talk, my friend will listen”) were rated as being the most likely to create a sense of intimacy; those which demonstrated emotional support, acceptance, and trust were also highly central. Using a similar approach, Monsour (1992) found that self-disclosure was the most frequently mentioned meaning of intimacy for

both same- and cross-sex friendship, followed by emotional expressiveness, physical (non-sexual) contact, trust, and unconditional support. However, Helgeson et al. (1997) found that although self-disclosure was frequently mentioned in descriptions of intimate cross-sex interactions, it was typically within the context of appreciation and affection. In fact, feelings and expressions of love, caring, contentment, appreciation, and happiness were the most frequently mentioned characteristics of cross-sex intimate interactions by both males and females. This is consistent with Reis and colleagues (Reis & Shaver, 1988; Reis & Patrick, 1996), who contend that self-disclosure is only important insofar as it allows one's innermost self to be understood, validated and accepted. Subsequent research on lay understandings of intimacy in long-term relationships (i.e., those that had lasted for an average of 30 years) also supported the interpersonal process model of intimacy (Reis & Shaver, 1988); participants described experiencing intimacy when they were able to share their inner thoughts and feelings (i.e., self-disclosure) and have these thoughts and feelings accepted, if not understood, by their partner (i.e., perceived partner responsiveness; Mackey, O'Brien, & Mackey, 1997).

Although intimacy has often been equated with self-disclosure (e.g., Buhrmester & Furman, 1987), and support for the interpersonal process model of intimacy has largely been found in interactions involving verbal self-disclosure (e.g., Laurenceau et al., 2005, Mitchell et al., 2008), an intimate interaction may also involve nonverbal expressions of an individual's innermost self (e.g., a "knowing" look between partners; Reis & Shaver, 1998, Prager & Roberts, 2004). Research has shown that nonverbal behaviours play a vital role in both creating and sustaining intimacy in an interaction (cf. Anderson, Guerrero, & Jones, 2006); and according to Reis (1998), nonverbal cues are perhaps the most important cues for establishing and regulating intimacy. Therefore, Reis and Patrick

(1998) suggest the term *self-expression* (instead of self-disclosure), which can refer to any act – verbal or nonverbal, deliberate or unintended –which reveals one’s innermost self to another. Reis and Patrick do state, however, that in actual practice, intimacy is likely created and maintained primarily through verbal communication between partners given that self-disclosure provides an ideal forum for the provision of responsiveness.

### *Intimacy as a Distinct Relationship Process*

#### *Intimacy and Attachment*

There is a strong conceptual link between intimacy and adult romantic attachment given that responsiveness from a significant other features prominently in both (cf. Reis & Patrick, 1996; Cassidy, 2001; Reis, 2006). In fact, according to Reis (2006), the considerable overlap between the subprocesses involved in adult attachment and intimacy is because “the attachment relationship represents the prototype of intimacy” (p. 399). Adult attachment theory posits that our history of interpersonal experiences with significant others shapes our expectations, perceptions, and behaviours in new romantic relationships (Hazan & Shaver, 1987, 1994) and can lead to fears of abandonment and rejection (i.e., attachment anxiety) and/or fears of intimacy and dependence (i.e., attachment avoidance; Brennan, Clark, & Shaver, 1998). Individuals who experience their caregiver as consistently responsive to their needs have low levels of attachment anxiety and avoidance: they are *securely* attached. These individuals are confident that they are valued by others and are willing and able to seek support from others (Bartholomew & Horowitz, 1991). Those who do not receive sensitive or consistent caregiving often develop an *insecure* attachment style. Individuals high in attachment anxiety are preoccupied with relationships and have an exaggerated desire for closeness and

dependence, whereas those high in attachment avoidance are either dismissing or fearful of intimacy, and strongly value their independence (Bartholomew & Horowitz, 1991).

Although the anxiously attached strongly desire intimacy while the avoidantly attached are either dismissing or fearful of it, both experience difficulty in developing and maintaining it in their relationships (Collins & Feeney, 2004a). In order to be able to experience intimacy, individuals need to be willing and able to disclose their “true self” (i.e., one’s thoughts, feelings, wishes and fears) to their partner and to rely on their partner for comfort, support and care. However, they also need to be responsive to and accepting of their partner’s true self as well as be able to provide comfort, support and care for their partner. According to Bowlby (1979), the attachment system is essentially a “care-seeking system”: individuals need to be able to turn to appropriate others effectively in times of trouble. This involves sharing potentially sensitive feelings and expressing a need for care or comfort, both of which can be difficult for individuals with insecure attachment styles.

Individuals who are securely attached are comfortable with the skills and abilities mentioned above. They are comfortable with self-disclosure (both their own and others’; Mikulincer & Nachshon, 1991), and are willing to seek support from others in stressful situations. They are also responsive and sensitive to their partners’ needs and are effective caregivers (Collins & Feeney, 2000; Feeney, 1999). Not surprisingly then, securely attached individuals report greater intimacy both in daily social interactions (Tidwell, Reis, & Shaver, 1996) and in their current romantic relationships (Pielage, Luteijn, & Arrindell, 2005). Anxiously attached individuals are also high self-disclosers (Mikulincer & Nachson, 1991) and willing to seek support from others (Mikulincer & Florian, 1995). However, their self-disclosure is more self-focused than secures and is primarily directed

at meeting their own intimacy needs vs. their partner's needs (Collins & Feeney, 2004a). Avoidantly attached individuals, however, often appear indifferent to intimacy and are characteristically uncomfortable with emotional closeness and dependence on romantic partners (Feeney, 1999). They engage in low levels of self-disclosure and often respond negatively to others' disclosures (Mikulincer & Nachson, 1991). They also distance themselves from their partners during stressful situations, thus limiting their opportunities to receive support and experience intimacy (Collins & Feeney, 2000; Mikulincer & Florian, 1995).

Clearly, attachment style influences both the ability to create and experience opportunities for intimacy (Collins & Feeney, 2004a; 2004b; Reis, 2006). However, it is important to differentiate beliefs and expectations about intimacy, which are shaped by previous experiences with significant others, and actual experiences of intimacy with one's current romantic partner (Reis et al., 2004). Thus, whereas attachment reflects expectations and goals regarding trust and intimacy that we bring to our relationship, the actual experience of intimacy also includes how our partners behave, independent of our expectations. Our attachment style, however, does influence how we perceive our partners' behaviour. For example, attachment insecurity is negatively correlated with perceiving one's partner as being highly responsive (Collins & Feeney, 2000); whereas attachment security enhances perceptions of intimacy in interactions with close others (Grabill & Kerns, 2000; Collins & Feeney, 2004b). In addition, recent research by Lemay, Clark, and Feeney (2007) suggests that people project their own responsiveness onto perceptions of their partners' responsiveness. That is, individuals who were more caring and supportive of their spouses during an interaction were more likely to perceive their spouses as providing care and support in return.



### *Intimacy and Relationship Satisfaction*

Intimacy and relationship satisfaction are closely linked constructs (e.g., Greeff & Malherbe, 2001): if I feel understood, accepted, and cared for by my partner I am likely to also have positive feelings about my partner and my relationship in general. However, intimacy is more than just being happy in one's relationship; whereas relationship satisfaction reflects the overall positivity of feelings about one's partner (Fincham, 2009), intimacy involves not just our feelings about our partner but our perception of our partner's feelings about our core self (Reis et al., 2004). Research by Laurenceau and colleagues (2005) supports the idea that intimacy and satisfaction are related, but distinct concepts. Higher marital satisfaction was associated with higher average daily intimacy ratings; however, satisfaction did not attenuate the relationship between daily perceptions of partner responsiveness and intimacy. That is, daily experiences of feeling understood, accepted, and cared for by one's partner were directly linked to intimacy and not mediated by satisfaction.

Recently, Gable and colleagues (Gable, Reis, Impett, & Asher, 2004; Gable, Gonzaga, & Strachman, 2006) showed that responsiveness during positive emotional exchanges was related to relationship well-being. For example, perceptions of one's partner as typically responsive to positive self-disclosures was associated with (a) higher relationship quality and lower daily conflict over a period of 14 days in married couples (Gable et al., 2004, Study 3), (b) greater concurrent global relationship satisfaction in dating couples, and (c) less of a decline in global relationship satisfaction over a period of two months for men in dating relationships (but not women; Gable et al., 2006). In addition, intimacy expressed in a series of laboratory interactions was associated with

concurrent relationship satisfaction (although it did not predict change in relationship satisfaction over time; Gable et al., 2006).

According to Gable and colleagues (2004; 2006), relationship satisfaction and intimacy (i.e., perceived partner responsiveness) likely interact to create a positive upward spiral: individuals in satisfied relationships are responsive to each other, which leads to greater satisfaction, which subsequently leads to continued responsiveness. Consistent with this proposed reciprocal relationship, Lippert and Prager (2001) found that partners in satisfying relationships were more likely to evaluate their interactions with each other as more intimate and Hassebrauck and Fehr (2004) found that relationships characterized by interactions that led to perceptions of partner responsiveness (e.g., empathy, listening, taking time for each other) were judged as highly satisfying. In fact, Hassebrauck and Fehr found that intimacy was the most central dimension of lay conceptions of relationship quality.

### *Intimacy and Sex*

Intimacy and sex are closely related in romantic relationships. For example, seeking intimacy and emotional closeness are among the most common motivations for engaging in sexual activity (e.g., Hill & Preston, 1996; Davis, Shaver, & Vernon, 2004; Meston & Buss, 2007); both male and female college students in Carroll, Volk, and Hyde (1985) considered *feeling loved/needed* as the most important part of sexual behaviour, followed by *hugging/kissing* for females and *orgasm* for males (with *hugging/kissing* a close third); and sexual activity in a romantic relationship may serve to strengthen or maintain the bond between romantic partners (e.g., Bell, Daly, & Gonzalez, 1987; Birnbaum & Reis, 2006). According to Birnbaum and Gillath (2006), the latter may be especially true for individuals who view their sexuality positively: for them, engaging in sexual activity with

their partner may be a means of expressing affection, emotional intimacy and love. Furthermore, Mackey et al. (1997) found that physical affection, such as hugging and kissing, was important for nurturing feelings of psychological intimacy in long-term couples; and that whereas sexual activity (i.e., genital sex) declined over the years, physical affection was more stable and remained relatively constant.

### *Sexual Intimacy*

The concept of sexual intimacy has been largely neglected by social psychologists, which is surprising given the decades of research devoted to the study of intimacy (e.g., Acietelli & Duck, 1987; McAdams, 1989; Moss & Schwebel, 1993). Furthermore, there is no standard or widely-accepted definition of sexual intimacy, making it quite difficult to study and measure. Clinician and sex therapist Peggy Kleinplatz (1996) describes sexual intimacy as being founded on emotional intimacy and involving “an empathic knowledge of the beloved individual as a sexual being, where one’s deepest sexual dreams, wishes, and fantasies are explored”. However, this definition is largely based on her clinical experiences, which have emphasized the importance of intimacy for optimal sexuality between couples (e.g., Kleinplatz & Menard, 2007), and not derived from empirical research.

In fact, only two theories of intimacy have explicitly included a sexual component; however, both were proposed more than 25 years ago. First, Waring (1984) described the expression and fulfillment of sexual needs as a sexuality component of intimacy. Interestingly, sexual satisfaction was *not* considered particularly important by participants in Waring et al. (1980), which was the basis for Waring’s (1984) model of intimacy. Second, clinicians Schaefer and Olson (1981) proposed that relationship partners’ sharing of general affection, touch, physical closeness and/or sexual activity represented a sexual

*subtype* of intimacy. The four additional intimacy subtypes in Schaefer and Olson's *Personal Assessment of Intimacy in Relationships Scale* (PAIR) were social, intellectual, recreational, and emotional, the latter being the closest approximation to Reis and Shaver's (1988) model of intimacy.

It is important to note that the five PAIR subtypes were originally conceptualized as different domains in which feelings of closeness or sharing with another person could be experienced (Olson, 1975, 1977; as cited in Schaefer & Olson). According to Olson, an intimate *relationship* was characterized by shared intimate experiences in a number of domains. Both this original conceptualization of sexual intimacy (i.e., experiencing closeness and/or sharing in a sexual situation) and the specific definition of sexual intimacy given in Schaefer and Olson (1984) are consistent with previous research on the importance of closeness, affection, and sexual contact for intimacy (e.g., Helgeson et al., 1987; Marston et al., 1998). However, the six items which constitute the sexual intimacy subscale do not seem to reflect either of these definitions and instead reflect a variety of related constructs such as sexual satisfaction (i.e., "I am satisfied with our sex life"), sexual concerns or dysfunction (i.e., "My partner seems disinterested in sex"), desire for sexual variety (i.e., "I feel our sexual activity is just routine) and sexual communication (i.e., "I am unable to tell my partner when I want sexual intercourse"). The inclusion of sexual satisfaction seems especially problematic: just as relational intimacy is not equated or assessed with relationship satisfaction, so too, should sexual intimacy be distinct from sexual satisfaction. In fact, in their unsuccessful attempt to confirm the original five-factor structure of the PAIR, Moore, McCabe, and Stockdale (1998) found that sexual satisfaction did not load on the same factor as the other sexual intimacy items. We are certainly not implying, however, that research using the sexual intimacy subscale of the

PAIR should be summarily dismissed (e.g., Kingsbury & Minda, 1988; McCabe, 1999; Greeff & Malherbe 2001). Given the ambiguity of the nature of this scale, though, caution should be taken when interpreting such research.

The ambiguity about the PAIR sexual intimacy subscale is especially unfortunate given the scarcity of research on sexual intimacy. However, it is not the only problematic measure of sexual intimacy. Felmlee, Sprecher, and Bassin (1990), assessed sexual intimacy using two somewhat ambiguous questions. First, participants were asked “How sexually intimate are you with your partner?”, but no definition of sexual intimacy was given. Thus, participants may have simply answered the question in terms of how frequently they engaged in sexual activity with their partner, given the pervasive colloquial use of “being intimate” as meaning “having sex”. For the second question, participants were asked to rate the extent to which they had invested in “sex (meeting needs and preferences)”. Thus, although Felmlee et al. concluded that higher levels of sexual intimacy were related to more long-lasting relationships, it would perhaps be more accurate to refer to the former as a greater frequency and importance of sexual activity.

Despite the problems with their sexual intimacy measures, both Schaefer and Olson (1981) and Felmlee et al. (1990) clearly viewed sexual intimacy as more than just sexual contact or physical acts in a relationship. However, the term sexual intimacy is frequently (and almost exclusively) used interchangeably with sexual activity (e.g., Christopher & Cate, 1985; Underwood & Findlay, 2004; Wagner-Raphael, Seal, & Ehrhardt, 2001). For example, O’Sullivan and Byers (1996) describe sexual intercourse as “a high level of sexual intimacy”; while Motley and Reeder (1995) discuss unwanted (and often aggressive) sexual advances as attempts at “levels of sexual intimacy” that exceed the desired threshold of the other person. Sexual intimacy has also been described as

something that is pursued as an alternative to emotional intimacy (i.e., a relationship is pursued for *either* emotional or sexual intimacy; Clark, Shaver, & Abrahams, 1999).

However, goals which were considered sexual intimacy goals actually referred to desiring sexual activity (e.g., kissing, intercourse) or “following [one’s] hormones”.

Therefore, extant research on *sexual intimacy* is ambiguous and may be misleading as a result of either questionable assessment (e.g., Felmlee et al., 1990; Greeff & Malherbe 2001) or questionable operationalization (e.g., Motley & Reeder, 1995; O’Sullivan & Byers, 1996).

Surprisingly, the most relevant research does not even use the term sexual intimacy. Birnbaum and colleagues (e.g., Birnbaum & Laser-Brandt, 2002; Birnbaum & Reis, 2006) have explored various correlates of feelings of intimacy *in* sexual activity; which is perhaps the best conceptualization of sexual intimacy thus far. For example, Birnbaum and Laser-Brandt (2002) found that feelings of love *for* one’s partner during sexual activity (e.g., “I feel intimacy and closeness to my partner”) and feeling loved *by* one’s partner (e.g., “I feel that my partner accepts me”) were positively correlated with overall sexual satisfaction. Although some gender differences emerged for *relationship-centered* experiences of sexual intercourse (e.g., women felt more loved by their partners; men focused more on their partner’s state), both men and women reported equally high feelings of love, warmth, emotional closeness, intimacy, and oneness during sexual activity with their partner. In Birnbaum and Reis (2006), women rated the extent to which they perceived that during sexual activity their partner was being caring, considerate and affectionate, accepting and responsive to their needs. This “perceived partner responsiveness during sexual activity” was positively correlated with sexual satisfaction

and functioning, relationship satisfaction, both passionate and companionate love; as well as with global evaluations of emotional intimacy and perceived partner responsiveness.

Finally, only one study has looked at lay conceptions of sexual intimacy. Knox, Sturdivant, and Zusman (2001) used content analysis to explore male and female college students' definitions of the term sexual intimacy. They found that for males, sexual intimacy referred only to sexual activity, with a particular emphasis on sexual intercourse and oral sex. However, females' definitions included a condition of "mutual emotional involvement" (i.e., a romantic relationship) between sexual partners. Sexual intimacy for females, although it did involve intercourse and oral sex, also involved touching and foreplay as well as "being close to that special person in a sexual way" (p. 2). Thus, whether sexual intimacy is more than just intimacy in sex may be a function of gender. Unfortunately, Knox et al. do not describe *how* they conducted their content analysis nor do they provide any descriptive information about participants' definitions. For example, whether all female participants included a relational component in their definition of sexual intimacy or whether any males did so is unknown. However, this extremely brief report appears to be the only attempt thus far to understand what sexual intimacy means to laypeople.

Therefore, in the six studies included in the first manuscript, I explored lay conceptions of sexual intimacy in a much more detailed and thorough manner. In Study 1 features of the concepts sexual intimacy and intimacy were generated; and in Study 2 these features were rated for their centrality (i.e., how good an indicator of intimacy or sexual intimacy each feature was) to determine whether the concepts were prototypically organized (i.e., was there consensual agreement that some attributes were considered more central to the concepts than others?). In Study 3, memory for central vs. peripheral

features of both intimacy and sexual intimacy was examined to further assess whether the concepts were prototypically organized. In Study 4, the conceptual relationship between the two concepts was explored both implicitly (i.e., by priming one concept and testing the reaction time accessibility of the other concept) and explicitly (i.e., by having participants rate the intimacy and sexual intimacy of a fictional dating couple described as being high in one of the two concepts). Study 5 sought to extend Study 4 by violating expectations about the co-occurrence of intimacy and sexual intimacy in romantic relationships to examine the unique influence each concept had on other relationship judgments (e.g., perceived commitment). Finally, Study 6 used measures derived from studies 1 and 2 (i.e., checklists of the most central, unique attributes for intimacy and for sexual intimacy) to provide evidence for the associations between intimacy, sexual intimacy, and relationship well-being in ongoing relationships that was demonstrated only hypothetically in studies 4 and 5.

### *Intimacy and Well-Being*

Considerable research supports the importance of intimacy for relationship and sexual well-being. For example, intimacy is positively correlated with relationship satisfaction (e.g., Sprecher & Hendrick, 2004; Gable et al., 2004, 2006), commitment (e.g., Moss & Schwebel), passion (e.g., Fletcher et al., 2000), stability (e.g., Drigotas & Rusbult, 1992), love (e.g., Sternberg & Barnes, 1985), sexual satisfaction (e.g., Moret et al., 1998), and trust (e.g., Cassidy, 2001). Significant research also supports the importance of intimacy for mental and physical health. Lack of intimacy with friends and romantic partners has been associated with depression (Chelune & Waring, 1984), loneliness (Wheeler, Reis, & Nezlek, 1983), fewer health-enhancing behaviours, greater psychological distress (Harvey & Bray, 1991), greater mood disturbance following negative life events (Miller &



Lefcourt, 1983), increased risk of depression after a stressful life event (Brown & Harris, 1978), greater physical illness symptoms (e.g., Kiecolt-Glaser et al., 1993) and lower levels of subjective mental health (McAdams & Bryant, 1982). In fact, for most people, having a satisfying intimate relationship is their most important source of happiness (Russell & Wells, 1994).

However, these findings are not longitudinal; that is, although relations have been found between intimacy and various well-being domains it is unclear whether intimacy promotes well-being or vice versa. Only a handful of studies have examined relational intimacy and well-being longitudinally (e.g., Dandeneau & Johnson, 1994); however, most of these are described in unpublished doctoral dissertations. Therefore, Study 7 in the second manuscript sought to explore the unique relationship between intimacy and three domains of well-being – relationship, sexual, and personal – both cross-sectionally and longitudinally.

There are likely a number of pathways from intimacy to interpersonal and personal well-being. First, being truly responsive to one's partner during an interaction requires effort and can be quite challenging. Not only does the listener need to attend to and accurately understand the speaker's feelings and perspective (Davis, 1982), but she needs to use that information to validate and convey understanding of those feelings and perspectives in a skilful, caring, and appropriate manner (Reis & Patrick, 1996). Therefore, by engaging in responsive behaviours, the listener communicates to the speaker how important the speaker is to her, which presumably increases both personal and relationship well-being for the speaker. In addition, because we like those who like us (Curtis & Miller, 1986), our partner's responsiveness is likely to engender positive feelings toward him or her leading to greater relationship satisfaction.

Second, responsiveness begets responsiveness: feeling understood, accepted and cared for in one interaction may predispose partners to respond similarly in subsequent intimate interactions (Reis & Shaver, 1988). For example, in a study on support provision during married couples' conversations about an important stressor, those who received greater emotional support from their partners in a first interaction were more likely to provide greater emotional support in a subsequent interaction (Cutrona & Suhr, 1994). Thus, having a responsive partner leads one to be a responsive partner, which likely promotes both own and partner well-being, leading to greater relationship well-being.

Third, one of the supportive functions of everyday communication is to provide an outlet for everyday stressors to diffuse the negative emotional outcomes associated with the stressor (Barnes & Duck, 1994). Being able to openly share feelings of frustration, hurt, or disappointment with one's partner and to have those feelings validated would certainly help diffuse those emotions. In addition, because everyday hassles and stress may be better predictors of well-being than major life events (e.g., DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982), having a responsive partner (and thus a relationship characterized by intimacy) would likely promote well-being.

Finally, intimate partners have access to shared information and memories which allows for more accurate (mutual) understanding of each other's thoughts and feelings (Colvin, Vogt, & Ickes, 1997). Thus, intimate partners are not only more likely to accurately interpret and understand each other's disclosures (leading to greater intimacy during their interactions), but they are better able to provide the type of support desired by their partner in a specific interaction (Cutrona, Cohen, & Igram, 1990). In fact, recent research has shown that receiving emotional support from one's spouse following an

emotional self-disclosure (i.e., matching support) led to greater perceptions of partner responsiveness (Cutrona, Shaffer, Wesner, & Gardner, 2007).

### *Thesis Overview*

In sum, this thesis proposes to show (a) how laypeople understand the concept of sexual intimacy, (b) how intimacy and sexual intimacy are related in general and in both hypothetical and ongoing romantic relationships, and (c) how intimacy and well-being are related longitudinally, controlling for the influence of relationship satisfaction, attachment style, closeness, and sexual intimacy. More specifically, it attempts to elaborate on the nature and function of intimacy in romantic sexual relationships.

What is sexual intimacy? A prototype approach to understanding  
sexual intimacy through its relationship to intimacy.

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### Abstract

We explored the nature of sexual intimacy using lay conceptions (i.e., prototypes) of intimacy and sexual intimacy. In Study 1, participants listed the features of sexual intimacy and intimacy. In Study 2, centrality ratings of these features were obtained. Although the two prototypes were very similar, they each had unique central attributes. In Study 3, central features of both concepts were found to be more salient in memory than peripheral features. In Study 4, the conceptual relationship between the two concepts was assessed both explicitly and implicitly. The effects of priming on explicit judgments showed that the two concepts could be reliably differentiated; however results from implicit analyses suggest that sexual intimacy may be subordinate to intimacy. In Study 5, the explicit findings of Study 4 were both replicated and extended: results from this study suggest that the presence of intimacy (but not sexual intimacy) in a relationship is associated with greater perceived relationship quality. Finally, in Study 6, the endorsement of central intimacy and sexual intimacy attributes in real romantic relationships were associated with relationship quality and sexual well-being respectively, even controlling for the effects of theory-based intimacy and sexual intimacy scales. The nature and function of sexual intimacy is discussed, and it is concluded that sexual intimacy is best conceptualized as the unique product, not sum, of sexual activity and intimacy.

## General Introduction

In 1988, Ellen Berscheid wrote that when it came to the study of romantic love, sexual desire and “emotions of a sexual nature” had been largely neglected and she urged researchers not to ignore the prominent role that sex plays in romantic love. Over 20 years later, research on sex within the context of intimate relationships is still very limited. In a review of research on sexuality in relationships, Christopher and Sprecher (2000) conceded that theoretical advancements in sexuality research had been limited during the 1990s. Since 2000, only a handful of articles on sex in romantic relationships have been published in prominent social psychological journals (e.g., Impett, Peplau, & Gable, 2005; Birnbaum, Reis, Mikulincer, Gillath, & Orpaz, 2006). One particular area that has been sorely overlooked is that of intimacy within sexual experiences with a romantic partner.

Intimacy is associated with personal and relationship well-being and has been proposed as a fundamental human need (McAdams, 1989; Perlman & Fehr, 1987; Baumeister & Leary, 1995). Adult sexual relationships are a prominent context in which people experience intimacy; and yet, social psychologists have not undertaken an extensive, systematic analysis of lay conceptions of *sexual intimacy* – as distinct from intimacy more generally. Intimacy is one of the “complex phenomena with rich everyday associations” that can benefit from a systematic analysis of its structure and content (Fehr, 1988, p. 557). Given the recent advances in our understanding of intimacy (e.g., Reis, Clark, & Holmes, 2004; Prager & Roberts, 2004); it seems an appropriate time to undertake a more thorough investigation of the concept of sexual intimacy. The purpose of this research, therefore, was to explore lay conceptions of sexual intimacy via a comparison to lay conceptions of intimacy. How are the two concepts related? Are they

perceived as distinct or overlapping? Is sexual intimacy a subtype or component of intimacy, or a related, but separate construct?

Most research on intimacy in sexuality has been in the domains of clinical psychology (e.g., Armstrong, 2006) or sex therapy (e.g., Kleinplatz & Menard, 2007). Within social psychology, however, research has primarily focused more generally on the importance of sexuality for close relationships (cf. Christopher & Sprecher, 2000); with a strong emphasis on sexual satisfaction as a key component of a healthy relationship (e.g., Sprecher, 2002; Impett, Peplau, & Gable, 2005). We propose that an understanding of sexual intimacy needs to begin with a solid understanding of intimacy; after all, without intimacy, sexual intimacy would not exist (at least not linguistically). In fact, according to Armstrong (2006) “emotional intimacy is the ideal foundation for intimate sexuality” (p. 282). Thus, we will first briefly review scholarly and lay understandings of intimacy. Given the wealth of research on intimacy, we will focus primarily on lay conceptions of intimacy and how these correspond with prominent theoretical models (e.g., Reis & Shaver, 1988). We will then review literature about how sexual intimacy may be understood in relation to both intimacy and sexual activity. Finally, we will review the methodological approach we used (i.e., prototype analysis) and provide an overview of the six studies we conducted.

### *Intimacy*

#### *A Scholarly Approach*

Perhaps the most well-known and validated theoretical model of intimacy is Reis and Shaver’s (1988) interpersonal process model, later expanded by Reis and Patrick (1996). This model posits that intimacy will be experienced when the expression of important self-relevant information by one partner (i.e., the discloser) is met with responsiveness

and positive regard from the other partner (i.e., the listener). It is through the discloser's *perception* of the listener's responsiveness, that the former comes to feel understood, accepted (or validated), and cared for (Reis & Shaver, 1988). Through this dynamic transactional process, each partner's innermost self comes to be known and validated, resulting in a mutual experience of intimacy (Reis & Shaver; Reis & Patrick)

Empirical support for this model has emerged in recent years. For example, both self-disclosure and partner disclosure predicted intimacy in social interactions of college students (Laurenceau, Feldman Barrett, & Pietromonaco, 1998) and in daily experiences of married couples (Laurenceau, Feldman Barrett, & Rovine, 2005). In addition, Lippert and Prager (2001) found strong support for the model's dyadic nature; interactions between romantic partners which were characterized by *both* partners' disclosure of private information and of emotions and *both* partners' expression of positive feelings about the other were perceived as the most intimate.

Considerable research supports the importance of intimacy for both relationship and sexual well-being (e.g., Sprecher & Hendrick, 2004; Fletcher, Simpson & Thomas, 2000); as well for both mental and physical health (e.g., Chelune & Waring, 1984, Kiecolt-Glaser, Kennedy, Malkoff, Fisher, Speicher, & Glaser, 1993). For most people, having a satisfying intimate relationship is their most important source of happiness (Russell & Wells, 1994).

### *Lay Conceptions*

Perhaps the first lay conceptions study of intimacy was Waring, Tillman, Frelick, Russell, and Weisz (1980), in which couples were interviewed regarding their conceptions of intimacy. In these interviews, self-disclosure, affection, and sexuality were frequently expressed aspects of intimacy. Subsequent research on couples in long-term



relationships ( $M = 30$  years) supported the interpersonal model process model of intimacy (Reis & Shaver, 1988) as intimacy was described in terms of being able to share inner thoughts and feelings (i.e., self-disclosure) and have these thoughts and feelings accepted by one's partner (Mackey, O'Brien, & Mackey, 1997). Research on lay conceptions of intimacy in friendships also supports the primacy of self-disclosure, with emotional support, acceptance, and trust also figuring prominently (e.g., Fehr, 2004, Monsour, 1992).

Marston, Hect, Make, McDaniel, and Reeder (1998) identified six primary ways that lovers reported experiencing intimacy: (in order of decreasing importance) openness (i.e., self-disclosure and acceptance), sex, affection (e.g., hugging, kissing) supportiveness, togetherness (e.g., closeness), and quiet company (i.e., spending time together *without* talking). Thus, the actual ways that lovers define and communicate intimacy in their relationships seem to parallel both theoretical models (e.g., openness; Reis & Shaver, 1988) and general lay conceptions (e.g., affection; Mackey et al., 1997) of intimacy. Central to the present research, Marston and colleagues comment that romantic lovers clearly see sex as being an important part of intimacy. In fact, sex was viewed both as a meaning of intimacy in one's relationship and as a primary means of communicating intimacy to one's partner. Clearly sexual activity plays an important role in romantic couples' experiences of intimacy; what is not clear, however, is whether sexual intimacy is more than just the expression of intimacy in a sexual context.

### *Sexual Intimacy*

Sexuality and intimacy are inextricably linked in romantic relationships; after all, it is sexual desire and activity that typically separate intimate *romantic* relationships from equally intimate but *platonic* ones (e.g., close friends, siblings, parents and children). For

example, seeking intimacy and emotional closeness are among the most common motivations for engaging in sexual activity (e.g., Hill & Preston, 1996; Davis, Shaver, Vernon, 2004; Meston & Buss, 2007), and sexual activity in a romantic relationship may serve to strengthen or maintain the bond between romantic partners (e.g., Bell, Daly, & Gonzalez, 1987; Birnbaum & Reis, 2006). Research by Storm and Storm (1984) on college students' associations between the concepts intimacy, sex, and love, nicely illustrates that the intimate aspects of sex are most important, and that sex can enhance intimacy. First, sex was perceived as most desirable when it was within the context of a loving, intimate relationship; in the absence of love and intimacy, it was quite undesirable. Second, in a loving relationship, intimacy was perceived as greater when the couple also shared sex; when love was absent, however, sex was actually perceived as detracting from intimacy.

There is clearly a relationship between sex and intimacy; but what about *sexual intimacy*? Is it simply another term for sexual activity when it occurs in an intimate relationship? The term sexual intimacy is frequently (and almost exclusively) used interchangeably with sexual activity by researchers in this field (e.g., Christopher & Cate, 1985; Underwood & Findlay, 2004; Wagner-Raphael, Seal, & Ehrhardt, 2001). For example, O'Sullivan and Byers (1996) described sexual intercourse as “a high level of sexual intimacy”; while Motley and Reeder (1995) discussed unwanted (and often aggressive) sexual advances as attempts at “levels of sexual intimacy” that exceed the desired threshold of the other person.

Alternatively, sexual intimacy may be conceptualized as a subtype of intimacy – one aspect of a broader concept of intimacy. According to Reis and Shaver (1988), any situation, be it emotional or sexual, that leads to feeling understood, cared for, and

accepted by one's partner should result in the experience of intimacy. Perhaps sexual intimacy is just one of a number of different contexts in which intimacy can be experienced. Clinicians Schaefer and Olson (1981) proposed that relationship partners' sharing of general affection, touch, physical closeness, and/or sexual activity represented a sexual *subtype* of intimacy. The four additional intimacy subtypes in Schaefer and Olson's *Personal Assessment of Intimacy in Relationships Scale* (PAIR) were social, intellectual, recreational, and emotional; the latter being the closest approximation to Reis and Shaver's (1988) model of intimacy. However, subsequent factor analysis on the PAIR did not replicate a 5-factor solution nor did it obtain a unique sexual intimacy factor (Moore, McCabe, & Stockdale, 1998), suggesting that it may not be appropriate to conceptualize sexual intimacy as a subtype of intimacy.

If sexual intimacy is neither interchangeable with sexual activity nor a subtype of intimacy, perhaps it is a combination of the two. Could sexual intimacy mean experiencing both sexual contact and intimacy at the same time? Birnbaum and colleagues have found that experiencing love (Birnbaum & Laser-Brandt, 2002) and perceived partner responsiveness (Birnbaum & Reis, 2006) during sexual activity were associated with sexual satisfaction. Consistent with Storm and Storm's (1984) findings, this suggests that the experience of intimacy in a sexual context qualitatively alters the sexual experience – making it more satisfying. Although Birnbaum and colleagues do not use the term sexual intimacy, they are nonetheless studying a combination of sexual activity and intimacy.

However, experiencing intimacy in a sexual context may be a *unique* form of intimacy. According to Osherson and Smith (1981), when two concepts are combined, the resulting combination may be more than a simple addition of the features of each

constituent concept. Consider the conceptual combination of *pet fish*: while pets are typically cuddly, and fish typically live in the ocean, a pet fish is neither cuddly nor ocean-dwelling. Thus, simply combining the central features of pet (i.e., cuddly) and fish (i.e., ocean-dwelling) will not produce a pet fish, but rather a strange cuddly ocean-dwelling creature. In the same way, perhaps sexual intimacy is more than just the sum of its constituent concepts (i.e., sexual activity and intimacy) – perhaps it is something distinct. In fact, social concepts (e.g., Harvard-educated carpenter) are especially likely to have emergent properties – i.e., properties not previously associated with either constituent concept (Kunda, Miller, & Claire, 1990). We hypothesized that lay conceptions of sexual intimacy would overlap substantially with its constituent concepts but not be redundant with them.

Research on lay conceptions of sexual intimacy is almost nonexistent. One extremely brief report suggests that males may define sexual intimacy primarily in terms of sexual activity, whereas females include an emotional component (Knox, Sturdivant, & Zusman, 2001). However, the little detail on methods and results makes these findings difficult to evaluate.

### *A Prototype Approach*

Prototype analysis of a particular concept is used when one wishes to answer the question: “What is it?” Essentially, prototype analysis fleshes out both the content and structure of the concept under investigation (Fehr, 2005), by including feelings, cognitions, and behaviours associated with the concept (Helgeson, Shaver, & Dyer, 1987). Prototype theory was first adopted from cognitive psychology (Rosch, 1978) and applied to social psychology by Cantor and Mischel (1977, 1979). According to Rosch, many natural language concepts cannot be defined by a set of necessary and sufficient

criteria, but are instead internally structured into a prototype of the concept (i.e., clearest cases, best examples). “Fuzzy categories” have no simple classical definition: membership in a category is *not* an all-or-none phenomenon (i.e., where something either is or is not a feature of a particular concept); and all members in a category are *not* equally representative (i.e., some features are more central to a concept, others are more peripheral). For example, the concept *love* has no agreed-upon classical definition (Fehr, 1988). Although *caring*, *honesty*, and *trust* are clearly identified as features of love; there is less consensus on whether *security*, *excitement*, or *dependency* are also “legitimate” features.

Prototype analysis has been used successfully in the past to understand lay conceptions of a variety of important social psychological concepts, such as love (e.g., Fehr, 1988, 1994; Fehr & Broughton, 2001), commitment (Fehr, 1988, 1999), anger (Russell & Fehr, 1994), jealousy (Sharpsteen, 1993), forgiveness (Kearns & Fincham, 2004), respect (Frei & Shaver, 2002), and relationship quality (Hassebrauck, 1997; Hassebrauck & Fehr, 2002). Prototype analysis has also been used to explore the similarities and differences between related concepts, such as *love* and *commitment* (Fehr, 1988), and *liking*, *loving*, and being *in love* (Lamm & Weismann, 1997). In fact, we adhered closely to the procedures and methodology of Fehr (1988) given the similar nature of the comparisons (e.g., the lack of scholarly clarity on how the two concepts are related).

Research on definitions of intimacy suggests that it may be one such “fuzzy concept”. For example, *self-disclosure*, *emotional expressiveness*, *affection*, and *supportiveness* are frequently mentioned features of intimacy (Waring et al., 1980; Helgeson et al., 1987; Monsour, 1992; Marston et al., 1998); while features such as *practical help* (Fehr, 2004), *shared activities* (Monsour, 1992), and *being alone* (Helgeson et al., 1987) are less

frequently mentioned. If intimacy is indeed prototypically organized, we would expect to find some features rated as more central and other as more peripheral to the concept, and to find memory differences for central vs. peripheral features.

Prototype analysis is especially helpful in addressing our primary research questions regarding sexual intimacy – what is it and what is its relationship to intimacy? Given the findings that sexual activity is a component of intimacy (e.g., Marston et al.; Helgeson et al., 1987), along with Birnbaum and colleagues' (e.g., Birnbaum & Laser-Brandt, 2002; Birnbaum & Reis, 2006) research on intimacy during sexual activity, intimacy and sexual intimacy may best understood as fuzzy concepts, lacking a clear-cut boundary between them.

Prototype analysis is also theoretically useful in its own right. Prototypes – like schemas, scripts, and other cognitive structures – guide our information processing and influence what we pay attention to, what we subsequently recall, and how we interpret ambiguous information (Baldwin, 1995). Lay conceptions of sexual intimacy should therefore inform us about how individuals process information relating to intimacy in sexual experiences within their relationships. Thus, a clear indication of some central features of the prototype should activate other features creating expectations of their presence and possibly biasing perception and evaluations. For example, if Sarah believes that sexual intimacy is characterized by excitement and passion, she may fear losing that intimacy as her relationship progresses. This, in turn, may influence how she behaves toward her partner (e.g., constantly seeking reassurance that their love-making is exciting) and how she interprets events in their sex life (e.g., perceiving a decline in sexual frequency as a lack of intimacy).

### *Current Study*

In a series of six studies, we explored laypeople's prototypes of intimacy and sexual intimacy. In Study 1, participants listed features associated with each concept. In Study 2, these features were rated for how central (i.e., important) they were to each concept. If intimacy and sexual intimacy are prototypically organized, then we would expect some features to be rated as more central to each concept than others. In Study 3, we further explored the prototypical organization of each concept using a memory task. If some attributes truly are more central to each concept, then these should be more salient and thus more easily remembered than more peripheral attributes. In Studies 4 and 5, we explored the conceptual relationship between intimacy and sexual intimacy using vignettes of a fictional dating couple. In Study 4, we assessed this relationship both implicitly (i.e., by priming one concept and testing the accessibility of the other concept) and explicitly (i.e., by asking participants to rate the couple's intimacy when they were described as being high in sexual intimacy and vice versa). In Study 5, we made it explicitly clear that if one concept was present in the couple's relationship (e.g., intimacy) then the other (e.g., sexual intimacy) was not. By violating participants' expectations that intimacy and sexual intimacy should both be present in a relationship, we hoped to see the unique effects that each concept had on perceptions of the quality of the relationship (e.g., love, commitment, and satisfaction). In Study 6, participants in romantic relationships rated how well various attributes of intimacy and sexual intimacy characterized their current relationship. Participants also completed measures of intimacy and sexual intimacy derived from Reis and colleagues' model of intimacy (Reis & Shaver, 1988; Reis & Patrick, 1996), along with relationship and sexual well-being measures. Using both prototype- and theory-driven measures of intimacy and sexual intimacy in actual

romantic relationships, we explored whether sexual intimacy was a unique predictor of well-being.

### Study 1: Free Listing of Features of Intimacy and Sexual Intimacy

The purpose of this study was to obtain a list of features for the concepts of intimacy and sexual intimacy. We were primarily interested in comparing the features of intimacy and sexual intimacy as a first step in exploring the relationship between these two concepts.

#### *Method*

##### *Participants and Procedure*

Three hundred thirty-five participants were recruited by students at McGill University as part of a research component of a psychology class. The sample included 180 females and 155 males, aged 18-74 ( $Mdn = 22$ ); 59% were currently involved in a romantic relationship. Participants did not receive any compensation. We gave participants a package with the two attribute generation questionnaires (the order of which was counterbalanced), an attachment measure (the Experiences in Close Relationships Inventory; ECR; Brennan, Clark, & Shaver, 1998), a measure of erotophilia-erotophobia (the Sexual Opinion Survey – Short Form; SOS; Fisher, Byrne, White, & Kelley, 1988) and a demographics/relationship history questionnaire. Participants in all subsequent studies completed the ECR and the SOS, however these were considered beyond the scope of this paper. The attribute generation questionnaires (one for intimacy and one for sexual intimacy) had the following instructions (adapted from Fehr, 1988):

If you were asked to list the characteristics of the concept *extraversion* you might write: liveliness, vivaciousness, sociability and so on. The concept we're interested in is INTIMACY [SEXUAL INTIMACY]. Please list as many



characteristics of the concept INTIMACY [SEXUAL INTIMACY] as come to mind. Stop after a few minutes or 20 items (one item per line please). Remember that there are no right or wrong answers – just give us your opinion.

### *Judging Responses*

Participant's responses were screened by the first author and by several research assistants for features of intimacy and sexual intimacy. Direct references to these two categories were excluded, as were repetitions of the exact same word or phrase by a participant on the same list. Responses that contained more than one distinct feature were split (e.g., *feeling safe and happy*) and regarded as two separate linguistic units (e.g., *feeling safe* and *feeling happy*). The total number of linguistic units generated was 2922 for intimacy and 2994 for sexual intimacy. Participants generated an average of 8.72 features of intimacy and 8.94 features of sexual intimacy.

### *Creating Attribute Categories*

Linguistic units were grouped into the same attribute category if they were (1) different grammatical forms of the same word (e.g., *accepting* vs. *acceptance*), (2) modified by adjectives or terms meant to emphasize the feature (e.g., *very accepting*), or (3) judged to be identical in meaning (e.g., *accepting* vs. *non-judgmental*). The first author carried out the first two steps. The third step, combining synonyms, was done separately by the first author and a trained research assistant. Any disagreements on synonyms were referred to additional graduate students and the majority judgement was used. After finalizing the attribute category list, participants' individual lists were screened for redundancy, such that each attribute category was only mentioned once per list. (This methodology was taken directly from Fehr, 1988.)

## *Results*

### *Features of Intimacy and Sexual Intimacy*

The initial intimacy list contained 269 different attributes. Of these, 160 attributes were excluded because they were listed by only one ( $n = 101$ ), two ( $n = 36$ ), or three ( $n = 23$ ) people (i.e., less than 1% of the sample). The final list contained 109 features of intimacy. Table 1 includes the majority of the intimacy attributes, including all attributes that were mentioned by at least 6% of participants, along with the frequency with which they were mentioned. One feature was mentioned by 57% of participants (i.e., *self-disclosure*), four additional features were mentioned by at least 25% (i.e., *love*, *trust*, *closeness*, and *friendship*) and twenty were mentioned by at least 10%.

The initial sexual intimacy list consisted of 301 different attributes. Of these, 180 were excluded because they were listed by only one ( $n = 116$ ), two ( $n = 41$ ), or three ( $n = 23$ ) people (i.e., less than 1% of the sample). The final list contained 120 features of sexual intimacy. Table 2 includes the majority of the sexual intimacy attributes, again including all attributes that were mentioned by at least 6% of participants, along with the frequency with which they were mentioned. One feature was mentioned by 50% of participants (i.e., *love*), five additional features were mentioned by at least 25% (i.e., *having sex*, *passionate*, *satisfying*, *being affectionate*, *self-disclosure*) and fifteen were mentioned by at least 10%.

Intimacy and sexual intimacy shared 81 attributes. There were 28 unique intimacy attributes (e.g., *unconditional*, *authenticity*, *quality time*) and 39 unique sexual intimacy attributes (e.g., *orgasm*, *bodies*, *longing*). Of the unique features of intimacy, no feature was listed by more than 5% of respondents ( $M = 2.2\%$ ). Of the unique features of sexual intimacy, no feature was listed by more than 8% of participants ( $M = 2.3\%$ ).

### *Order of Listing Features*

When intimacy was defined first (i.e., before sexual intimacy) vs. second (i.e., after sexual intimacy), it was more likely to include “sex-related” attributes, such as *having sex* (26% vs. 6%), *passionate* (19% vs. 6%), *sexuality* (7% vs. 1%), *kissing* (11% vs. 5%), and *romance* (15% vs. 8%), all  $ps < .05$ . It was also more likely to include *being affectionate* (23% vs. 12%) and *love* (62% vs. 34%); and less likely to include *communication* (12% vs. 23%) and *responsiveness* (5% vs. 12%), all  $ps < .01$ . When sexual intimacy was defined first vs. second, it was more likely to include *being affectionate* (37% vs. 20%), *trust* (31% vs. 19%), and *closeness* (31% vs. 19%), all  $ps < .05$ .

### *Discussion*

There was no single feature listed by all participants for either intimacy or sexual intimacy, suggesting that both concepts are likely prototypically organized (i.e., not defined by a necessary and sufficient set of attributes, Rosch, 1973, 1975). In fact, even the most frequently generated attributes for each concept were only mentioned by approximately half of the participants (i.e., *self-disclosure* for intimacy; *love* for sexual intimacy). Interestingly, *love* was the second most frequently generated intimacy attribute, highlighting the overlap between the two concepts.

Given the large number of attributes in each list, for ease of description, we will discuss the main themes (i.e., clusters) that emerged for both the shared attributes and those unique to each concept, although our clusters are somewhat arbitrary.

### *Shared Attributes*

Roughly half of the attributes shared by the prototypes of intimacy and sexual intimacy were also attributes (or synonyms of attributes) of love (Fehr, 1988) and/or a

“good relationship” (Hassebrauck, 1997). Thirty-five of these attributes were included in Fehr’s (1988) prototype of love, including the 16 most central love attributes and attributes spanning all three dimensions of love (Aron & Westbay, 1996), although primarily ones from the intimacy dimension ( $n = 13$ ), more so than the passion ( $n = 9$ ) and commitment ( $n = 4$ ) dimensions. Another seven attributes not included in the prototype of love showed up in Hassebrauck’s (1997) prototype analysis of a “good relationship”, such as *tenderness* and *fun*. Of the remaining 39 shared attributes, three main clusters were identified. The first cluster of shared attributes included those that denote a relational context (e.g., *being a couple*, *exclusive*), while the second cluster included attributes related to romance (e.g., *sweet*, *softness*). The third cluster comprised attributes related to sexual activity (e.g., *having sex*, *kissing*) and sexual desire (e.g., *sexual arousal*, *sensations*).

#### *Unique Intimacy Attributes*

There were two main clusters of unique intimacy attributes. The first cluster included attributes which could be characterized as “day-to-day” aspects of intimacy, such as interacting with one’s partner (e.g., *involved*, *relating*), spending *quality time* together, and *having things in common*. According to Prager (2002) intimate interactions in a relationship need to be balanced with the need for autonomy; the second cluster of unique intimacy attributes seems to characterize this struggle for balance (e.g., *dependency*, *carefree*, *personal space*, *alone*).

#### *Unique Sexual Intimacy Attributes*

There were also two main clusters of unique sexual attributes. Attributes related to the actual experience of engaging in sexual activity comprised the first cluster. These attributes seemed to reflect more than just the occurrence of sexual activity (i.e., *having*

*sex* was a shared attribute): they seemed to reflect being “in the moment” of sexual activity (e.g., *orgasm*, *wild*, *animalistic*) with a particular focus on sensations (e.g., *bodies*, *sweat*, *tasting*, *smell*, *visual*). The second cluster included different “types” of sex (e.g., *safe sex*, *casual sex*, *kinky sex*, *masturbation*) along with descriptions of foreplay (e.g., *seduction*, *massaging*, *flirting*) and sexual contact (e.g., *fondling*, *petting*).

To explore the possible overlap between the constructs of sexual intimacy and sexual activity, we used the same procedure as in Study 1 to generate a prototype of the latter. A separate group of 110 participants (58% female; mean age: 29; 68% in a romantic relationship) listed up to 20 features of sexual activity. We found that while 36% of unique sexual intimacy attributes were also mentioned by at least 1% of participants for sexual activity (e.g., *orgasm*, *sexual contact*), the majority (64%) of unique sexual intimacy attributes were *not* attributes of sexual activity as well (e.g., *bodies*, *senses*, *tasting*). Mean centrality ratings of sexual intimacy attributes that were vs. were not also attributes of sexual activity did not differ at  $p < .05$ .

The results of Study 1 clearly show that intimacy and sexual intimacy are related: they share over two-thirds of their attributes. These shared attributes suggest that both intimacy and sexual intimacy are perceived as occurring in the context of a good, loving relationship. In addition, both were characterized by sexual and nonsexual expressions of affection, physical closeness, positive affect, open communication, and partner responsiveness. However, a number of unique attributes were mentioned for each concept, suggesting that intimacy and sexual intimacy are also differentiable. Unique intimacy attributes appeared to focus primarily on positive, day-to-day interactions with one’s partner, while unique sexual intimacy attributes seemed to emphasize the actual experience of sexual activity with one’s partner. That both concepts have unique

attributes argues against sexual intimacy as a subtype of intimacy. If sexual intimacy were a subtype of intimacy, then it would “inherit” all the properties of intimacy (i.e., anything true of intimacy would also have to be true of sexual intimacy and vice versa; Murphy, 2002). Thus, sexual intimacy cannot accurately be described as subordinate to intimacy or simply one type of intimacy in the same manner that *dog* is subordinate to *mammal* or *terriers* are simply one type of *dog*. Moreover, our follow-up analysis of sexual activity suggests that unique sexual intimacy features are not simply sexual activity features.

### Study 2: Centrality Ratings of the Features of Intimacy and Sexual Intimacy

The purpose of this study was to obtain centrality ratings for attributes of intimacy and sexual intimacy. Our interest in the centrality of the features of each concept was twofold. First, if a concept has a prototypical structure, certain features will generally be regarded as more central to the concept, whereas other features will typically be seen as less important (Rosch, 1973). Thus, we expected to find a range of centrality ratings for each concept, which would indicate that not all attributes were perceived as equally important (i.e., necessary or sufficient). Second, the relative centrality of shared vs. unique attributes for both concepts will further our understanding of the relationship between the two concepts.

### *Method*

#### *Participants and Procedure*

One hundred twenty-four participants from Montreal, including 63 females and 61 males, aged 18-49 (*Mdn* = 21), 56% currently involved in a romantic relationship, participated for a chance to win one of three Can\$25.00 gift certificates to Amazon.ca. Participants were given either the intimacy or sexual intimacy features (from Study 1) and the following instructions:

In a previous study, we asked people to tell us their views of intimacy [sexual intimacy]. Specifically, we asked them to “list as many characteristics of the concept intimacy [sexual intimacy] as come to mind”. Below are the responses of some of the people in our earlier study. Please read each of the features below and rate how central or important you think it is to the concept of intimacy [sexual intimacy]. Basically, we want to know how good an indicator of intimacy [sexual intimacy] each feature is. There are no clear right or wrong answers here; we are simply interested in your own thoughtful opinion.

Participants then rated each feature for how good an indicator it was of the concept on a scale of 1 (*not at all a good indicator of intimacy [sexual intimacy]*) to 8 (*a very good indicator of intimacy [sexual intimacy]*). Participants completed all questionnaires online.

### *Results*

The centrality ratings were high for both intimacy ( $M = 5.49$ ,  $SD = 0.94$ ; range: 2.40 to 7.26) and sexual intimacy ( $M = 5.29$ ,  $SD = 0.98$ ; range: 2.07 to 6.65) attributes. See Tables 1 and 2 for intimacy and sexual intimacy attributes in decreasing centrality (excluding peripheral attributes); see Table 3 for examples of the *most* central and *most* peripheral attributes of each concept.

### *Reliability of Centrality Ratings*

Reliabilities of the means were computed using Intraclass Correlation Coefficients (ICC; see Fehr, 1988), which reflect both the degree of correspondence and agreement among ratings, and are equivalent to the mean of all possible split-half correlations of the 124 participants with respect to the 109 (or 120) features. The ICC for intimacy was .97,  $p < .001$ , and for sexual intimacy it was .96,  $p < .001$ . Further analyses, based on the flipped data matrix and treating the features as cases and the subjects as items, show that

the internal consistency of the ratings was exceptionally high ( $\alpha = .96$  for both intimacy and sexual intimacy).

#### *Correlations Between Frequency and Centrality Ratings*

There was a significant correlation between the frequency with which a feature was generated and its mean centrality rating for both intimacy features,  $r(107) = .45, p < .001$ , and sexual intimacy features,  $r(119) = .39, p < .001$ . These moderate correlations are likely the result of several very infrequently mentioned attributes which were rated as extremely central. For example, fewer than 2% of participants spontaneously mentioned *eye contact* as a feature of either intimacy or sexual intimacy, yet it was considered highly central to both concepts, with mean ratings of 6.21 and 6.33 respectively.

#### *Central vs. Peripheral Features*

Features were considered central if they had a mean centrality rating of above 6.0 (on the 8-point scale) and peripheral if they had a mean centrality rating lower than 5.0. These cut-offs were used instead of a traditional median split; the large number of attributes in each list allowed us to select only those with the most extreme high and low centrality ratings.

*Central features.* Intimacy and sexual intimacy shared 19 central features (e.g., *trust*, *passionate*). There were 39 central intimacy features, including 6 unique to the concept (e.g., *quality time*, *interaction*) and 14 which were not central to sexual intimacy (e.g., *honesty*, *understanding*)<sup>1</sup>. There were 33 central sexual intimacy features, 8 of which were unique (e.g., *consensual*, *sexual contact*), and 6 of which were not central to intimacy (e.g., *attraction*, *desire*).

*Peripheral features.* Intimacy and sexual intimacy shared nine peripheral attributes (e.g., *guilt*, *darkness*). There were 29 peripheral intimacy features (e.g., *routine*,



*possession*), including 13 unique features (e.g., *loneliness*, *complicated*) and 7 features which were not also peripheral to sexual intimacy (e.g., *humour*, *spontaneous*). There were 31 peripheral sexual intimacy features (e.g., *guilt*, *darkness*), including 19 unique features (e.g., *scary*, *sinful*), and 7 features which were not also peripheral to intimacy (e.g., *unique*, *long-term*).

#### *Shared vs. Unique Attributes*

Because intimacy and sexual intimacy shared the majority of their attributes, and because roughly half of central attributes were shared while the majority of the peripheral attributes were unique, we wanted to explore whether shared attributes were seen as more important (i.e., central) than the unique attributes of each concept. For intimacy, shared attributes were rated as significantly more central than unique attributes (5.66 vs. 5.01),  $t(61) = 8.68$ ,  $p < .001$ . A similar pattern was found for sexual intimacy attributes with shared attributes rated as more central than unique attributes (5.58 vs. 4.86),  $t(61) = 9.24$ ,  $p < .001$ ; however, the means for the unique features were above the midpoint. Moreover, there were no differences between the mean centrality ratings of the unique intimacy attributes and the unique sexual intimacy attributes, nor between the ratings of the shared attributes for each concept, all  $F$ s  $< 1$ ,  $ps > .05$ .

#### *Gender Differences*

We also explored whether men and women differed in how they rated the centrality of intimacy and sexual intimacy features. Men had significantly higher overall centrality ratings for intimacy features than women (5.83 vs. 5.18),  $F(1,60) = 8.70$ ,  $p < .01$ ,  $\eta_p^2 = .13$ . However, this finding was driven by men's higher centrality ratings for *peripheral* features than women's (4.74 vs. 3.78);  $F(1,60) = 17.75$ ,  $p < .001$ ,  $\eta_p^2 = .23$ . No significant differences were found between men's and women's average ratings of central intimacy

features,  $F = 1.22$ . No gender differences emerged for average centrality ratings of all sexual intimacy features, only central features, or only peripheral features of sexual intimacy, all  $F$ s  $< 1.9$ ,  $p$ s  $> .10$ . Men's and women's centrality ratings of intimacy features were significantly correlated,  $r(107) = .87$ ,  $p < .001$ ; as were their ratings of sexual intimacy features,  $r(119) = .88$ ,  $p < .001$ .

### *Discussion*

#### *Central Intimacy Attributes*

For intimacy, the five most central attributes were *trust*, *respect*, *closeness*, *having a connection*, and *love*. *Closeness* and *having a connection* are frequently used to define intimacy by both laypersons and scholars alike. For example, feelings and expressions of closeness are central to definitions of intimacy in same-sex and opposite-sex friendships (Monsour, 1992; Helgeson et al., 1987); closeness was a key component of actual lovers' subjective experiences of intimacy (Marston et al., 1998); and 'feeling closely connected with another person' was included in Reis and Shaver's (1998) original definition of intimacy. Reis and Patrick (1996) have since stated that intimacy is likely a special type of closeness and that closeness represents, more generally, the experience of a connection between partners.

That *trust* was the most important attribute of intimacy is consistent with the interpersonal process model of intimacy. According to Reis and colleagues (Reis & Shaver; Reis & Patrick), trust is necessary to create conditions that are conducive to intimacy, given that revealing one's innermost self necessarily involves being vulnerable and can therefore be risky (Derlega, 1984). Interestingly, trust was not frequently mentioned in descriptions of intimate cross-sex experiences (Helgeson et al., 1987) or as a meaning for intimacy in cross-sex friendships (Monsour, 1992). The concept of trust is

also largely absent in scholarly work on intimacy (e.g., it was not identified as a theme in any of the 61 intimacy definitions reviewed by Moss & Schwebel, 1993). However, in Fehr (2004), interactions in same-sex friendships which involved trust (e.g., “*If I have a secret, I can trust my friend not to tell anyone else*”) were seen as very likely to engender intimacy. Furthermore, *trust* was the most frequently generated and most central feature of both love (Fehr, 1988) and relationship quality (Hassebrauck, 1997). Clearly, trust is not only an important precursor for intimacy (Reis & Shaver, 1998), but an important (and highly salient) feature of related constructs, such as love.

It is not surprising that *love* was one of the most central intimacy attributes, given its strong theoretical link to intimacy. For example, Sternberg (1986) proposed that intimacy was one of three components of love (along with passion and commitment). In their factor analysis of the attributes included in Fehr’s (1998) prototype of love, Aron and Westbay (1996) found support for an intimacy factor. Eleven of the central attributes in our study loaded highly ( $>.40$ ) on the intimacy factor in Aron and Westbay; however, our participants generated an additional 28 central attributes when considering the concept of intimacy rather than of love.

Research suggests that *respect* is central to lay conceptions of love (e.g., Fehr, 1988; Fehr & Russell; 1991) and commitment (e.g., Fehr, 1988; Hampel & Vangelisti, 2008); and in Aron and Westbay (1996), *respect* loaded on the intimacy factor of love. Central features of lay conceptions of respect also highlight its overlap with intimacy (e.g., accepting other, mutual care, honesty, understanding, open, and receptive; Frei & Shaver, 2002).

Interestingly, although *trust*, *closeness*, and *love* were mentioned by almost half of the participants in Study 1, the majority of central intimacy attributes were spontaneously

generated by fewer than 15%. This was especially evident for attributes associated with the interpersonal process model of intimacy (Reis & Shaver, 1988; Reis & Shaver, 1996). *Caring, understanding, and accepting* (i.e., perceived partner responsiveness) were considered highly central to the concept of intimacy, despite not being particularly prevalent in Study 1. *Self-disclosure*, however, despite being the single most frequently generated feature of intimacy in Study 1, was *not* a central attribute and in fact was ranked 50<sup>th</sup> most central out of all 109 intimacy attributes. Thus, while self-disclosure may largely dominate spontaneous, explicit lay conceptions of intimacy (e.g., Waring et al., 1980; Monsour, 1992; Helgeson et al., 1997), our results suggest that individuals easily recognize the importance of feeling understood, accepted, and cared for by one's partner.

#### *Central Sexual Intimacy Attributes*

For sexual intimacy, the top five most central attributes were *passionate, attraction, consensual, sexual contact, and closeness*. *Passionate* and *attraction* were the two most central sexual intimacy attributes; however, related concepts such as *desire, sexual arousal, and longing* were also highly central. In fact, many of the central sexual intimacy attributes are consistent with research on passionate love, which is characterized by powerful feelings of *passion, attraction, desire, longing, and sexual arousal* (e.g., Hatfield & Sprecher, 1986; Hatfield & Rapson, 1993, 1995, 2002). Consistent with the idea that sexual intimacy may be strongly connected to passionate love, *love* was the most frequently generated sexual intimacy attribute and was rated as highly central to the concept as well. The central attributes of sexual intimacy also paralleled lovers' subjective experiences of passion in Marston et al. (1998), which emphasized *sexual contact, closeness, desire, and being affectionate*. However, our results suggest that

sexual intimacy is more than just *passion*; in addition to *sexual desire*, *attraction*, and *arousal* (which characterize passion; Hatfield & Rapson, 1993), attributes such as *closeness*, *having a connection*, and *togetherness* (which characterize intimacy; e.g., Moss & Schwebel, 1993) were also highly central.

*Consensual* was rated as highly central to the concept of sexual intimacy although spontaneously generated by only 1% of participants in Study 1. Consensual sexual activity requires both partners' free and willing agreement (i.e., consent); clearly, sexual intimacy is incompatible with any type of nonconsensual sexual activity (e.g., rape, sexual assault, sexual harassment). Although the importance of mutual consent was not obvious from explicit, spontaneous lay conceptions of sexual intimacy; both men and women readily recognized it as central to the concept when directly asked about it.

Also highly central to sexual intimacy was *sexual contact*, which encompasses any behaviours that are sexual (e.g., petting, fondling, making out) but do not constitute *having sex* (i.e., vaginal, oral, or anal intercourse). This is consistent with college women's definition of sexual intimacy as involving a variety of sexual activities, such as touching and foreplay (Knox et al., 2001). However, despite the centrality of *sexual contact*, the actual act of sex (i.e., engaging in vaginal, oral, or anal intercourse) was not considered particularly central to sexual intimacy. Support for this assertion is twofold. First, *having sex* was just as central to intimacy as it was to sexual intimacy. Second, *having sex* was not actually a central attribute of sexual intimacy despite being the second most commonly mentioned attribute of the concept in Study 1; in fact, it was ranked 50<sup>th</sup> most central out of all 120 sexual intimacy attributes. These results strongly argue against using the term sexual intimacy interchangeably with sexual activity. Interestingly, the relationship between *having sex* and sexual intimacy seems to parallel that of *self-*

*disclosure* and intimacy; although both were among the top two most generated features for their respective concepts; neither emerged as being highly central.

These findings emphasize the importance of not solely relying on laypeople's spontaneously generated features of a concept (i.e., frequency), but also taking into account how central they perceive each of those features to be (i.e., centrality). Frequency may convey the likelihood that a feature is present in the concept, whereas centrality may convey whether that feature is a discriminant feature of the concept. For example, the high frequency of *self-disclosure* as a feature of intimacy in Study 1 suggests that when intimacy exists, self-disclosure is likely present. However, its low centrality rating in Study 2 suggests that the presence of self-disclosure does not necessarily imply that intimacy exists; it is *not* a discriminant feature of intimacy. Similarly, *having sex* is likely present when sexual intimacy exists, but it can also be present in the absence of sexual intimacy. Furthermore, when participants were generating the features of sexual intimacy they were likely relying on their salient personal experiences (Reis, 1998), which presumably involved having sex with a relationship partner. (Similarly, highly salient personal experiences of intimacy likely involved self-disclosure, leading to its high frequency.)

#### *Shared Central Attributes*

The shared attributes of intimacy and sexual intimacy were rated as more central to each concept than the unique attributes. Moreover, all of the shared central attributes of intimacy and sexual intimacy were considered equally important to both concepts; with the exceptions of *trust* and *respect*, which were more central to intimacy. Clearly, these results suggest that there is no lack of intimacy in sexual intimacy.

### *Gender Differences*

Although men were more likely to give higher centrality ratings to peripheral intimacy features, there were no gender differences in the average ratings of central intimacy or central sexual intimacy attributes. In addition, there was extremely high agreement between men and women in the relative centrality of intimacy and sexual intimacy features. This suggests a shared understanding of what constitutes the two concepts; although the actual experience of intimacy and sexual intimacy may still differ.

### *Study 3: Memory for the Features of Intimacy and Sexual Intimacy*

If intimacy and sexual intimacy are prototypically organized, then this should affect cognition, specifically memory for features of the two concepts. The purpose of Study 3, therefore, was to explore memory for the features of intimacy and sexual intimacy. When a prototype of a concept is activated, features that are more strongly associated with the concept (i.e., central features) should be more accessible in memory than features that are less important to the concept (i.e., peripheral features; Cantor and Mischel, 1979). This should lead to two types of memory effects – better recall and recognition for central attributes presented, and more false recall and false recognition for peripheral attributes. Therefore, we expected participants to more accurately recall and recognize central vs. peripheral features of intimacy and sexual intimacy. Research also finds more consistent evidence of false alarms than hits for central versus peripheral attributes. Cantor and Mischel (1977) showed that individuals are more likely to falsely assume that nonpresented but highly related (i.e., prototype-consistent) information had been presented earlier; this bias is not shown for nonpresented and unrelated (i.e., prototype-inconsistent) information. Once a prototype is activated, central features become more salient; differentiating central seen vs. unseen features is more challenging than for

peripheral features. Therefore, we expected participants to falsely recall and recognize more central than peripheral features.

### *Method*

#### *Participants and Procedure*

One hundred twenty-three students from McGill university in Montreal, including 62 females and 61 males, aged 17-46 ( $Mdn = 20$ ), 37% currently involved in a romantic relationship, participated for either a monetary reward, a free movie pass, or course credit. Participants viewed a series of Microsoft PowerPoint slides on individual computers which contained either intimacy ( $n = 62$ ) or sexual intimacy ( $n = 61$ ) features (i.e., acquisition phase). Participants were instructed to pay attention to the content of the slides as they would be asked about it later. Each slide was presented for 4s and included the term “intimacy” or “sexual intimacy” at the top and a feature of that concept below. The features were selected from those classified as either central or peripheral in Study 2; 20 central and 20 peripheral features were chosen for each concept. For each concept, the 40 features were divided into two groups of 10 central and 10 peripheral features. Half the participants (i.e., Group 1) saw one set of 20 features; while the other half (i.e., Group 2) saw the remaining 20 features. We created the groups to be equivalent in centrality, which meant we were less able to balance the mean frequencies of the attributes from Study 1. Table 3 shows the features seen by each group and the mean centrality and frequency ratings for each set of features (i.e., Group 1 vs. Group 2; central vs. peripheral) for intimacy and sexual intimacy, respectively.

After the acquisition phase, participants completed a distractor task which involved solving 22 word scrambles unrelated to either concept (e.g., golio = igloo; eblat = table). Participants were given 5 minutes to unscramble as many words as possible. They were



then given a blank sheet of paper and 4 minutes to recall as many features from the acquisition phase as they could. Finally, they were presented with all 40 features of either intimacy or sexual intimacy and asked to identify those they had seen previously. Thus, the acquisition items for Group 1 were the false recognition items for Group 2 and vice versa.

### *Results*

The data were analyzed in a series of 2 X 2 mixed ANOVAS with group (1 or 2) as the between-subjects variable and attribute (central or peripheral) as the within-subjects variable. All mean scores are out of 10.

#### *Analysis of Presented Features*

*Recognition.* The total numbers of central and peripheral features that participants reported they had seen during the acquisition phase were calculated. As we expected, for intimacy, there was a main effect for attribute,  $F(1,60) = 4.35, p < .05, \eta_p^2 = .07$ , with greater recognition for central than peripheral features (6.64 vs. 6.02). There was no main effect for group,  $F < 1$ , nor was there a significant Group X Attribute interaction,  $F = 1.0$ . For sexual intimacy, however, there was no main effect for attribute,  $F < 1$ ; mean recognition rates were very high for both central and peripheral features (8.44 vs. 8.57). There was, however, a main effect for group, such that more sexual intimacy features were recognized by Group 2 than by Group 1 (8.94 vs. 8.07),  $F(1,59) = 6.95, p < .05, \eta_p^2 = .11^2$ . There was no Group X Attribute interaction,  $F < 1$ .

*Recall.* Participants' responses for the free recall were coded by two judges. This process was very straightforward and there were no disagreements between judges as to whether a response corresponded with a feature that had been presented. The total numbers of correctly recalled central and peripheral features were calculated for each

participant. No main effects for attribute were found, all  $F$ s  $< 1$ ; recall rates did not differ for central vs. peripheral intimacy or sexual intimacy attributes. No Group X Attribute interactions were found, all  $F$ s  $< 1$ . However, significant group main effects were found for both intimacy and sexual intimacy. Participants in intimacy Group 1 recalled fewer attributes than those in Group 2 (2.98 vs. 4.05),  $F(1,60) = 11.04$ ,  $p < .01$ ,  $\eta_p^2 = .16$ ; similarly, sexual intimacy Group 1 had inferior recall to Group 2 (3.52 vs. 4.44),  $F(1,59) = 9.14$ ,  $p < .01$ ,  $\eta_p^2 = .13$ .

#### *Analysis of Non-Presented Features*

*False Recognition.* The total numbers of central and peripheral features that participants falsely believed they had seen during the acquisition phase were calculated. For intimacy, there was a main effect for attribute,  $F(1,60) = 30.10$ ,  $p < .001$ ,  $\eta_p^2 = .33$ , with greater false recognition of central than peripheral features (4.87 vs. 3.29). There was no main effect for group,  $F < 1$ , nor was there a significant Group X Attribute interaction,  $F < 1.0$ . For sexual intimacy, there was also a main effect for attribute, with greater false recognition of central than peripheral features (2.19 vs. 0.62),  $F(1,59) = 70.29$ ,  $p < .001$ ,  $\eta_p^2 = .54$ . Again, there was no main effect for group,  $F < 1$ , nor was there a significant Group X Attribute interaction,  $F < 1$ .

*False Recall.* Attributes that participants recalled seeing but which were not actually presented were also coded by two judges and again there were no disagreements as to whether a response corresponded with a feature of intimacy or sexual intimacy that had not been presented. Responses that were not attributes of intimacy or sexual intimacy (as determined in Study 1) were excluded from the analyses ( $n = 17$  for intimacy,  $n = 18$  for sexual intimacy), as were mentions of the category name. Given that non-presented

peripheral attributes were rarely, if ever, falsely recalled, we also looked at false recognition of moderate attributes – those with centrality ratings above 5 but below 6.

For intimacy, there was a main effect for attribute,  $F(2,59) = 22.95, p < .001, \eta_p^2 = .44$ . Post-hoc analyses showed that participants falsely recalled more central non-presented attributes (0.71) than either peripheral (0.00) or moderate non-presented attributes (0.19), all  $ps < .001$ . There were no other significant effects, all  $Fs < 1$ . For sexual intimacy, there was also a main effect for attribute,  $F(2,58) = 6.39, p < .01, \eta_p^2 = .18$ . Again, post-hoc analyses revealed greater false recall of central non-presented attributes (0.49) than either peripheral (0.07) or moderate non-presented attributes (0.16), all  $ps < .001$ . There were no other significant effects, all  $Fs < 1$ .

### *Discussion*

The results from this study were mixed. Although attribute centrality did not affect correct recall for attributes of either concept, there was greater correct recognition of central vs. peripheral intimacy features (but not sexual intimacy features). However, participants falsely recognized and falsely recalled more central than peripheral attributes for *both* concepts. These results may seem inconsistent, but previous research on memory for central vs. peripheral attributes of prototypical concepts (e.g., love and commitment, Fehr, 1988; relationship quality, Hassebrauck, 1997; forgiveness, Kearns & Fincham, 2004) has also been inconsistent. For example, while both Fehr and Hassebrauck found greater *false* recall and recognition of central vs. peripheral attributes, neither found greater *correct* recall or recognition. In fact, for both love (Fehr) and relationship quality (Hassebrauck) correct recall was greater for peripheral attributes. (Fehr explicitly stated that she did *not* expect differences for correct recognition). Only Kearns and Fincham found greater correct recognition for central vs. peripheral attributes (no differences

emerged for correct recall). However, for each concept, these (mixed) results supported a prototypical organization. It appears that there only need be greater false recognition of central attributes for a concept to be considered prototypically organized. Therefore, although we can probably conclude that both intimacy and sexual intimacy are prototypically organized; intimacy may have a *stronger* prototypical organization than sexual intimacy.

That peripheral sexual intimacy features were remembered as easily as central features may be due to arousal effects. Research has consistently shown that arousing words are remembered more easily than neutral words (cf. Hamann, 2001). For example, when it was presented, *kinky sex* was recognized by all but one participant and *masturbation* was recognized by all but two participants. Interestingly, neither attribute was falsely recognized by any participant; clearly, these are attributes that one would definitely remember seeing. These findings are consistent with Kensinger and Corkum (2003) who found that participants were much more likely to “vividly remember” previously presented taboo words (i.e., sexual body parts or swear words) compared to either neutral or negative words. In addition, correct recognition was greatest for taboo words. Given the explicit sexual nature of some of the peripheral sexual intimacy attributes, it is not surprising that they would be highly arousing and thus more easily remembered. Furthermore, exposure to these attributes in everyday life is presumably quite infrequent and their presence in our study would likely have been unexpected for participants, and therefore highly salient. In fact, there is some evidence that recognition rates are greater for low-frequency words compared to high-frequency words (e.g., Mandler, 1980).

#### Study 4: Conceptual Relationship Between Intimacy and Sexual Intimacy

The purpose of Study 4 was twofold. First, we wanted to explore whether intimacy and sexual intimacy are perceived as distinct or highly similar concepts. If the two concepts are seen as distinct, then ratings of each in a fictitious relationship should be significantly different if the relationship is described using central intimacy or central sexual intimacy attributes (i.e., the amount of intimacy perceived should differ for a relationship described as being highly intimate vs. highly sexually intimate). Second, we were interested in lay perceptions of the co-occurrence of intimacy and sexual intimacy both explicitly (i.e., in the context of a romantic relationship) and implicitly (i.e., in general, decontextualized). To explore explicit perceptions of the co-occurrence of the two concepts we compared the correlations between ratings of intimacy and sexual intimacy for an intimate vs. sexually intimate relationship. To explore implicit perceptions of co-occurrence we primed participants with one concept and then measured the accessibility of the other concept using a lexical decision-making task. We expected to find support for intimacy and sexual intimacy as distinct, but related constructs (i.e., correlated but not equivalent vignette ratings, and increased concept accessibility after priming the other concept).

#### *Method*

##### *Participants and Procedure*

One hundred ninety-six university students participated, including 100 females and 96 males, aged 17-60 (*Mdn* = 21); 51% were currently involved in a romantic relationship. All participants read and gave their impressions of two vignettes describing social relationships. The first vignette described coworkers, and was included to deflect attention away from the true nature of the study. The second vignette described a

heterosexual couple in a romantic relationship, using either unique central intimacy or unique sexual intimacy attributes (see Appendix A). Participants were divided into two groups: the Intimacy Vignette Group ( $n = 93$ ) read the intimacy vignette, while the Sexual Intimacy Vignette Group ( $n = 103$ ) read the sexual intimacy vignette. Within each group, there were three conditions based on the order in which participants read the vignettes and completed a lexical decision-making task (LDT). In the *prime* condition ( $n_{\text{intimacy}} = 27$ ,  $n_{\text{sexual intimacy}} = 31$ ) participants read the vignettes, completed the LDT, and then made judgements about the vignettes; in the *no prime* condition ( $n_{\text{intimacy}} = 26$ ,  $n_{\text{sexual intimacy}} = 32$ ) participants completed the LDT before reading the vignettes; and in the *control* condition ( $n_{\text{intimacy}} = 40$ ,  $n_{\text{sexual intimacy}} = 40$ ) participants read the vignettes and made judgements but did not complete the LDT. All participants in the *prime* and *no prime* conditions gave their impressions of the relationships described in the vignettes after completing the LDT. Participants in the *prime* and *no prime* conditions participated for a monetary reward, a free movie pass, or course credit; those in the briefer *control* condition were given a small snack.

#### *Lexical Decision-Making Task*

The LDT required participants to classify strings of letters presented on a computer screen as either words or non-words by pressing the appropriate key on a keyboard. Research has shown that the reaction times for words are faster when participants have been provided with a context (or prime) related to the target word (e.g., Meyer & Schvaneveldt, 1971). The LDT thus allows one to assess the relationship between cognitive representations of concepts, where response times can be seen as revealing implicit cognitive relationships that may be outside an individual's awareness (Baldwin, Fehr, Keedian, & Seidel, 1993). Participants who completed the LDT before reading the

vignettes provided a baseline measure for reaction time speeds (i.e., the accessibility of intimacy when *not* primed by sexual intimacy and vice versa).

Participants were presented with 60 strings of letters: 30 words and 30 non-words (e.g., spling, advike). The 30 words consisted of 10 neutral words (e.g., visible, thing), 10 positive words (e.g., glad, pleasant), and 10 target words, which were unique central attributes of either intimacy (e.g., *relating*, *authentic*) or sexual intimacy (e.g., *orgasm*, *bodies*). For both the *prime* and *no prime* conditions, participants who read the intimacy vignette classified sexual intimacy targets, while those who read the sexual intimacy vignette classified intimacy targets. The mean centrality ratings of the target words were 5.75 for intimacy and 5.94 for sexual intimacy. The mean response times for classifying letter strings in each of the four categories were calculated for each participant.

### *Relationship Vignettes*

There were two versions of the vignette describing the dating couple. One version (i.e., the Intimacy vignette) described the couple using 12 unique central attributes of intimacy, which had a mean centrality rating of 5.58 (e.g., *Eric and Anne-Marie can be truly authentic when they are with each other*). The other version (i.e., the Sexual Intimacy vignette) described the couple using 15 unique central attributes of sexual intimacy, which had a mean centrality of 5.50 (e.g., *Eric and Anne-Marie can be truly wild when they are with each other*). (See Appendix A for the vignettes.)

Participants were subsequently asked to rate Eric and Anne-Marie's relationship on a number of dimensions relating to intimacy, sexual intimacy, and general relationship quality. The attribute questions for intimacy included a face valid item (i.e., the degree of intimacy) as well as five items derived from Reis and Shaver's Intimacy Model (i.e., degree of understanding, acceptance, caring, trust, and self-disclosure). The attribute

questions for sexual intimacy were the three attributes that were rated as most central to the concept of sexual intimacy in Study 2 (i.e., degree of passion, attraction, and sexual contact) as well as a face valid item (i.e., degree of sexual intimacy). The attribute questions for relationship quality included several face valid items (i.e., degree of love, commitment, and satisfaction), a question about the likelihood that the couple would be together one year later, an item about how “healthy” the relationship was, and a measure of the couple’s perceived closeness (as assessed by the Inclusion of Other in the Self Scale; IOS; Aron, Aron, & Smollan, 1992).

### *Results*

Overall scores were calculated for intimacy, sexual intimacy, and relationship quality for the relationship described in the vignette. We obtained high internal consistencies for all three scales: intimacy ( $\alpha = .86$ ), sexual intimacy ( $\alpha = .86$ ), and relationship quality ( $\alpha = .88$ ). Item-total correlations ranged from .51 to .74 for intimacy, from .58 to .84 for sexual intimacy, and from .49 to .79 for relationship quality.

#### *Ratings of Intimacy vs. Sexual Intimacy*

Table 4 provides the mean ratings of intimacy, sexual intimacy, and relationship quality for both vignettes.

*Between vignettes.* A 2 (Vignette) x 3 (Condition) MANOVA was performed to compare intimacy and sexual intimacy ratings between the two vignettes. As expected, there were significant main effects for vignette for both ratings. Overall intimacy ratings were higher for the Intimacy vignette than the Sexual Intimacy vignette (6.21 vs. 5.61),  $F(1,188) = 24.53, p < .001, \eta_p^2 = .12$ ; and overall sexual intimacy ratings were higher for the Sexual Intimacy vignette than the Intimacy vignette (6.50 vs. 5.05),  $F(1, 188) = 141.93, p < .001, \eta_p^2 = .43$ . These results held within each condition (i.e., *prime, no*



*prime, control*), all  $F_s > 4.8$ , all  $p_s < .05$ . There was no multivariate effect for condition nor for the Vignette X Condition interaction, all  $F_s < 1.6$ , all  $p_s > .15$ .

As supplementary analyses, we ran separate One-Way ANOVAs for each vignette with planned contrasts to explore whether completing the LDT task influenced ratings of intimacy and sexual intimacy (i.e., was the LDT itself a prime?). Two contrast tests were carried out for each rating: the first test contrasted the *control* condition with the two LDT conditions (i.e., *prime, no prime*), and the second contrasted the two LDT conditions. In the Intimacy vignette, ratings of intimacy were higher in the LDT conditions than in the *control* condition,  $t(90) = 3.38$ ,  $p < .01$ , overall  $F(2, 90) = 6.52$ ,  $p < .01$ ,  $\eta_p^2 = .13$ ; no differences emerged between the two LDT conditions,  $F < 1$ . There were also no significant differences between conditions for sexual intimacy ratings in the Intimacy vignette,  $F < 1$ . In the Sexual Intimacy vignette, ratings of sexual intimacy were higher in the LDT conditions than in the *control* condition,  $t(100) = 2.60$ ,  $p < .05$ , overall  $F(2, 100) = 3.59$ ,  $p < .05$ ,  $\eta_p^2 = .07$ ; again, no differences emerged between the two LDT conditions,  $F < 1$ . There were no significant differences between conditions for intimacy ratings in the Sexual Intimacy vignette,  $F < 1$ .

*Within vignettes.* Paired t-tests were calculated to assess the ratings of overall intimacy compared to overall sexual intimacy within each vignette. In both vignettes, significant differences emerged between intimacy and sexual intimacy ratings. In the Intimacy vignette, intimacy ratings were higher than sexual intimacy ratings (6.14 vs. 5.05),  $t(92) = 11.12$ ,  $p < .001$ ; and in the Sexual Intimacy vignette, sexual intimacy ratings were higher than intimacy ratings (6.48 vs. 5.60),  $t(102) = -9.99$ ,  $p < .001$ . These results held within each condition, all  $t_s > \pm 4.5$ , all  $p_s < .001$ .

### *Co-Occurrence of Intimacy and Sexual Intimacy*

*Explicit Analysis.* Intimacy and sexual intimacy ratings were significantly correlated for both the intimacy vignette,  $r(91) = .44, p < .001$ , and the sexual intimacy vignette,  $r(101) = .44, p < .001$ .

*Implicit Analysis.* To calculate a more “pure” measure of response time to target words, the average response time for neutral words was regressed onto the average response time for target words, and the residuals were saved. Two One-Way ANOVAs were used to compare these target residuals between participants who completed the LDT before vs. after reading the vignettes (i.e., *prime* vs. *no prime*). There was no significant difference in LDT target residuals between the two conditions in the Intimacy Vignette Group,  $F < 1, p > .05$ . However, in the Sexual Intimacy Group, a significant difference was found: intimacy targets were identified as words faster in the *prime* condition than in the *no prime* condition ( $-.416$  vs.  $.253$ ; smaller residuals indicate faster response times),  $F(1,61) = 7.92, p < .01, \eta_p^2 = .11$ .

### *Relationship Quality*

Results from a 2 x 3 ANOVA revealed that relationship quality was perceived as higher in the Intimacy vignette than in the Sexual Intimacy vignette ( $5.92$  vs.  $4.86$ ),  $F(1, 188) = 56.57, p < .001, \eta_p^2 = .23$ ; this finding was not qualified by condition. The degree to which participants would like to have a relationship like that described in the vignettes was also assessed and a significant difference was found,  $F(1,188) = 7.14, p < .01, \eta_p^2 = .04$ . Participants rated the intimacy vignette as significantly more desirable than the sexual intimacy vignette ( $5.31$  vs.  $4.62$ ). However, further analyses revealed that this difference was only significant for female participants,  $F(1,98) = 11.92, p < .01, \eta_p^2 = .11$ . Females rated the relationship as more desirable when it was described as being high in

intimacy than sexual intimacy (5.50 vs. 4.73); there was no significant difference between males' desirability ratings,  $F = .23, p > .05$ .

### *Discussion*

The results of this study indicate that central, unique attributes of intimacy and sexual intimacy do successfully convey each concept – intimacy attributes were associated with greater overall perceptions of relationship intimacy and sexual intimacy attributes were associated with greater overall perceptions of sexual intimacy. In addition, these results suggest that intimacy and sexual intimacy are perceived as related concepts. Ratings of intimacy and sexual intimacy were significantly correlated in each vignette, indicating that the presence of one concept *implies* the presence of the other. That is, when intimacy was explicitly conveyed (with central intimacy attributes), participants assumed the presence of sexual intimacy as well; the reverse was also true. However, participants were able to differentiate between the two concepts. For example, ratings of the conveyed concept were significantly higher than those of the assumed concept, suggesting that participants did not perceive intimacy and sexual intimacy as equivalent (i.e., by giving them equally high ratings). In addition, relationship quality was perceived as higher when intimacy (compared to sexual intimacy) was explicitly conveyed. Clearly, participants associated the presence of intimacy and sexual intimacy with different levels of overall relationship love, satisfaction, and commitment. Finally, at least for women, a relationship that conveyed intimacy was perceived as more desirable than one which conveyed sexual intimacy, again highlighting that the two concepts are not equivalent.

Although intimacy and sexual intimacy were perceived as related, the nature of this relationship was complex. Intimacy and sexual intimacy were perceived as co-occurring when they were in context, but not when they were decontextualized. That is, participants

assumed that in the context of a romantic relationship, if one concept was present, the other would be as well. The findings from these explicit ratings likely represent two key lay assumptions about the nature of romantic relationships: (a) that sexual relationships are *usually* also intimate relationships, and (b) that intimate relationships are *often* also sexual relationships (Storm & Storm, 1984).

However, when participants were presented with attributes of intimacy and sexual intimacy outside the context of a romantic relationship (i.e., in the lexical decision-making task), and not explicitly asked to rate each concept, a different picture emerged. Priming the concept of sexual intimacy activated the concept of intimacy, but the reverse was not true; priming intimacy did not increase the accessibility of the concept sexual intimacy. These findings suggest that at an implicit level, the presence of sexual intimacy implies intimacy; but that the presence of intimacy does not imply sexual intimacy. This is consistent with the fact that intimate relationships are not *always* romantic ones (e.g., best friends, siblings); individuals can think of intimacy without automatically thinking of sexual intimacy. In addition, romantic relationships are not *always* sexual; therefore, even within the context of a romantic relationship it is possible to imagine intimacy without sexual intimacy.

Thinking of sexual intimacy, however, did trigger thoughts of intimacy even though the intimacy words in the LDT were not spontaneously listed as sexual intimacy by our Study 1 sample. This is consistent with recent research by Gillath, Mikulincer, Birnbaum, and Shaver (2007) which showed that subliminal exposure to sexual primes (e.g., the word “sex” or erotic pictures) increased the accessibility of intimacy-related thoughts. Furthermore, research by Storm and Storm (1984) has shown that in a loving relationship, intimacy is perceived as greater when the couple also shares sex. Although sexual activity

can (and does) exist outside of intimate relationships, when it is indicative of sexual intimacy (i.e., within the context of a loving relationship) it is strongly associated with intimacy. Perhaps this is why it is difficult to think of a relationship which is characterized by features of sexual intimacy such as *consensual*, *natural*, and *receptive* (in addition to words such as *orgasm*, *sexual*, and *bodies*), without automatically activating intimacy thoughts of *closeness* and *trust*.

The results of this study also indicated that completing the LDT amplified certain judgments made about Eric and Anne-Marie. For both vignettes, ratings of the conveyed concept (e.g., intimacy in the Intimacy vignette) were higher when participants had been exposed to target words for the assumed concept (e.g., sexual intimacy in the Intimacy vignette) prior to rating the couple than when they had not completed the LDT. This suggests that the judgments made about the conveyed concept were amplified by exposure to positive words for the overlapping (assumed) concept. Although the target words for the assumed concept were not directly related to the fictional couple, they seemed to embellish the impressions that participants were already forming about the conveyed concept in Eric and Anne-Marie's relationship. Interestingly, the target words did not activate their respective concepts (e.g., exposure to intimacy targets did not result in higher intimacy ratings); they only amplified subsequent judgments made about the concept that was explicitly conveyed in the vignette.

The interplay between conveyed and assumed concepts merits consideration when interpreting the findings related to relationship quality as well. Recall that relationship quality was perceived as higher in the intimacy vignette than in the sexual intimacy vignette. However, a relatively high level of sexual intimacy was also inferred in this vignette. Thus, it is unclear whether the high relationship quality ratings in the intimacy

vignette were primarily driven by the presence of intimacy or the inferred presence of both intimacy *and* sexual intimacy. If sexual intimacy had not been assumed in the intimacy vignette, would perceptions of Eric and Anne-Marie's relationship quality have been as high? We designed Study 5 to clarify these findings.

#### Study 5: Violating Expectations of Intimacy and Sexual Intimacy

The purpose of Study 5 was to more precisely explore the *unique* influences of intimacy and sexual intimacy on perceptions of relationship quality (e.g., commitment, satisfaction). We used the same experimental paradigm as in Study 4 with the addition of two vignettes where one concept (e.g., intimacy) was present in the relationship and the other (e.g., sexual intimacy) was explicitly lacking, rather than simply omitted from the vignette. By making it clear that a relationship lacks the other concept, people's expectations should be violated and a clearer understanding should emerge of the unique influence each concept may have on other relationship judgments (e.g., perceived commitment). In addition, we included a vignette where it was made explicitly clear that both concepts were present to assess whether this was seen as an "ideal" relationship. We also expanded our assessment of relationship quality to include indices of relationship commitment and identification. The LDT task from Study 4 was not included in Study 5.

#### *Method*

##### *Participants and Procedure*

One hundred forty-two university students, including 78 females and 64 males, aged 17-60 (*Mdn* = 21), 49% currently involved in a romantic relationship, participated for a monetary reward. As in Study 4, all participants read two vignettes – one describing coworkers and the other describing a dating relationship – and gave their impressions of the two relationships. Thirty-one participants read the Intimacy vignette from Study 4,

while 27 read an Intimacy Only vignette (i.e., that the couple was lacking sexual intimacy). Twenty-seven participants read the Sexual Intimacy vignette from Study 4, while 27 read a Sexual Intimacy Only vignette (i.e., that the couple was lacking intimacy). Thirty participants read a vignette which described the couple as high in both intimacy and sexual intimacy.

### *Relationship Vignettes*

There were five versions of the vignette describing the dating couple. The Intimacy and Sexual Intimacy vignettes were identical to those in Study 4. The violation vignettes (i.e., Intimacy Only and Sexual Intimacy Only) were created by adding a statement at the end of the vignette which reinforced the presence of the conveyed concept while making it clear that the assumed concept was absent in the relationship (i.e., violating the expectation that the two concepts co-occur). The Combined vignette was created by adding a statement to the Intimacy vignette which reinforced the presence of both concepts. The presence (or absence) of intimacy was denoted by adding the phrase “*Eric and Anne-Marie feel (or do not feel) deeply cared for by each other in their day-to-day lives*”; while the presence (or absence) of sexual intimacy was denoted by adding “*Eric and Anne-Marie share (or do not share) meaningful sexual experiences with each other*”. (See Appendix A for the exact phrases used to create the violation and Combined vignettes.)

Participants were again asked to rate Eric and Anne-Marie’s relationship on various dimensions. Commitment was assessed with a face valid item and three items drawn from previous measures (Rusbult, 1983; Lydon, Menzies-Toman, & Burton, 2008). Relationship identification was assessed with the IOS and three items from Cross, Bacon, and Morris’ (2000) RISC scale that Linardatos and Lydon (2005) have adapted to a

specific relationship (e.g., *To what extent do you think Eric feels Anne-Marie is an important part of who he is, and vice versa?*). Relationship satisfaction was assessed with two items from Study 4's relationship quality measure (i.e., degree of satisfaction, how healthy the relationship was).

### *Results*

Overall scores were calculated for intimacy, sexual intimacy, and relationship quality using the same ratings as in Study 4; and for commitment, relationship identification, and satisfaction. We obtained high internal consistency for all six scales: intimacy ( $\alpha = .91$ ), sexual intimacy ( $\alpha = .89$ ), relationship quality ( $\alpha = .88$ ), commitment ( $\alpha = .88$ ), relationship identification ( $\alpha = .85$ ), and satisfaction ( $\alpha = .79$ ).

### *Replication*

We replicated the findings of Study 4 for ratings of intimacy vs. sexual intimacy both between and within the Intimacy and Sexual Intimacy vignettes. Ratings of intimacy were greater in the Intimacy than the Sexual Intimacy vignette (6.20 vs. 5.49),  $F(1,56) = 7.55$ ,  $p < .01$ ,  $\eta_p^2 = .12$ ; and ratings of sexual intimacy were greater in the Sexual Intimacy than the Intimacy vignette (6.66 vs. 4.99),  $F(1,56) = 73.31$ ,  $p < .001$ ,  $\eta_p^2 = .57$ . Within the Intimacy vignette, ratings were higher for intimacy than for sexual intimacy,  $t(30) = 8.82$ ,  $p < .001$ ; and within the Sexual Intimacy vignette, ratings were higher for sexual intimacy than for intimacy,  $t(28) = -5.50$ ,  $p < .001$ . Intimacy and sexual intimacy ratings were correlated in both the Intimacy vignette,  $r(31) = .63$ ,  $p < .001$ , and Sexual Intimacy vignette,  $r(29) = .37$ ,  $p = .050$ . As in Study 4, these correlations were not significantly different from each other. Finally, we replicated the finding that relationship quality was perceived as higher in the Intimacy than Sexual Intimacy vignette (5.72 vs. 4.81),  $F(1,56) = 11.67$ ,  $p < .01$ ,  $\eta_p^2 = .17$ . (See Table 4).



### *Manipulation Check*

In order to be confident that our violation strategy was successful, we compared the intimacy and sexual intimacy ratings between the original and the violation vignettes in two One-Way ANOVAs. We found support for our violations of both intimacy and sexual intimacy. Ratings of intimacy were significantly lower in the Sexual Intimacy Only vignette than in the Intimacy vignette, (3.87 vs. 4.99),  $F(1,52) = 31.55$ ,  $p < .001$ ,  $\eta_p^2 = .38$ ; and ratings of sexual intimacy were significantly lower in the Intimacy Only vignette than in the Sexual Intimacy vignette, (3.41 vs. 4.99),  $F(1,58) = 27.29$ ,  $p < .001$ ,  $\eta_p^2 = .33$ . Interestingly, ratings of sexual intimacy were also lower in the Sexual Intimacy Only vignette than in the Sexual Intimacy vignette, (6.08 vs. 6.66),  $F(1,52) = 7.67$ ,  $p < .01$ ,  $\eta_p^2 = .13$ .

We found less support for the Combined vignette as a combination of the two concepts. Ratings of intimacy did not differ between the Combined and Intimacy vignettes,  $p = .74$ ; however, although sexual intimacy ratings in the Combined vignette were higher than in the Intimacy vignette (5.62 vs. 4.99),  $p < .05$ , they were still significantly lower than in the Sexual Intimacy vignette (6.56),  $p < .001$ , overall  $F(2,87) = 19.53$ ,  $p < .001$ ,  $\eta_p^2 = .31$ . Therefore, it appears that the Combined vignette did not fully represent a relationship high in both intimacy and sexual intimacy. Because the Combined vignette was created by adding one statement highlighting the presence of sexual intimacy to the Intimacy vignette, it is not surprising that it was rated more similarly to the Intimacy Vignette than to the Sexual Intimacy vignette. Thus, the Combined vignette was not included in any further analyses.

### *Violation Extension*

To determine the effect of violating participants' expectations for the presence of either intimacy or sexual intimacy on impressions of the relationship, we compared the original and violation vignettes on three dependent variables: commitment, relationship identification, and satisfaction (see Table 5). Two separate MANOVAs were carried out for each set of vignettes – Intimacy vs. Intimacy Only and Sexual Intimacy vs. Sexual Intimacy Only.

The overall comparison between the Intimacy and Intimacy Only vignettes was not significant, Multivariate  $\Lambda = .88$ ,  $F(3,54) = 2.54$ ,  $p = .06$ . However, inspection of the univariate tests revealed a significant difference between the two vignettes on ratings of satisfaction. Eric and Anne-Marie's relationship was perceived as less satisfying when sexual intimacy was lacking than when it simply was not mentioned (5.35 vs. 6.05),  $F(1,56) = 5.93$ ,  $p < .05$ ,  $\eta_p^2 = .10$ .

A different picture emerged for the comparison between the Sexual Intimacy and Sexual Intimacy Only vignettes, Multivariate  $\Lambda = .60$ ,  $F(3,54) = 11.10$ ,  $p < .001$ ,  $\eta_p^2 = .38$ . For all of the dependent variables, ratings were significantly lower when intimacy was lacking than when it simply was not mentioned. Eric and Anne-Marie were perceived as being more committed (4.13 vs. 3.15) and more identified with their relationship (4.26 vs. 3.21), and as having a more satisfying (6.00 vs. 4.24) relationship in the Sexual Intimacy vignette than in the Sexual Intimacy Only vignette, all  $F$ s  $> 10.28$ , all  $p$ s  $< .01$ .

In addition, participants were significantly more likely to want a relationship similar to Eric and Anne-Marie's when it was high in sexual intimacy (but there was no mention of intimacy), than when intimacy was explicitly lacking (4.67 vs. 3.18),  $F(1,52) = 8.28$ ,  $p < .01$ .

.01,  $\eta_p^2 = .14$ . No significant difference emerged for this question when comparing the Intimacy and the Intimacy Only vignettes,  $p = .12$ .

### *Discussion*

These results suggest that violating the expectation that a relationship high in intimacy should also be high in sexual intimacy did not significantly influence impressions of that relationship. A lack of sexual intimacy did not affect perceptions of how committed Eric and Anne-Marie were to each other or how much they identified with their relationship. Their lack of sexual intimacy only influenced perceptions of how satisfying their relationship was. However, violating the expectation for the presence of intimacy in a sexually intimate relationship significantly undermined impressions of the relationship. Across all three relationship quality indices, Eric and Anne-Marie were perceived as better off when the presence of intimacy could be assumed than when it was explicitly lacking.

These findings are reminiscent of those of Storm and Storm (1984) who found that college students perceived love and intimacy as being very closely related. When one concept (e.g., intimacy) was absent, the other concept (e.g., love) was neither likely nor desirable, regardless of the presence of sex. This is consistent with our findings that (a) the lowest ratings of all relationship quality indices (except satisfaction), were found in the Sexual Intimacy Only vignette, where intimacy was explicitly absent; and (b) the majority of relationship quality indices were not affected by the absence of sexual intimacy.

Given that research has consistently demonstrated the importance of intimacy for relationship well-being (e.g., Popovic, 2005) and its positive correlations with other relationship quality indices (e.g., commitment, satisfaction, passion, love, and trust,

Fletcher et al., 2001), it is not surprising that violating expectations of intimacy had such a detrimental effect on perceptions of Eric and Anne-Marie's relationship. However, given that research on sexual intimacy is almost nonexistent, we were unsure what the outcomes would be of violating expectations of sexual intimacy. It was not particularly surprising that sexual intimacy was perceived as needed for satisfaction, especially given that one of the two items we used to assess satisfaction may have had an underlying sexual connotation. That is, "how satisfying is the relationship?" may have been interpreted as "how *sexually* satisfying is the relationship", given that when the term satisfaction is used colloquially to describe a romantic relationship it sometimes implies *sexual* satisfaction (e.g., "Eric satisfies Anne-Marie" implies that Eric sexually pleases and fulfills Anne-Marie).

#### Study 6: Intimacy and Sexual Intimacy in Romantic Relationships

In Study 6, we investigated intimacy and sexual intimacy in actual romantic relationships using attributes taken from Studies 1 and 2 assessing unique attributes of both concepts. We had three main research questions in this study. Our first question addressed the conceptual link between intimacy and sexual intimacy in actual romantic relationships. Given the results from the hypothetical relationships of the previous two studies, we expected to find a positive correlation between reported levels of intimacy and sexual intimacy in participants' romantic relationships. Our second research question was how our prototype-based measures would compare to theory-based measures of intimacy and sexual intimacy derived from Reis and colleagues' model of intimacy (Reis & Shaver, 1988; Reis & Patrick, 1996). Our final question was how the endorsement of intimacy and sexual intimacy attributes in one's own relationship was related to well-being. As research has repeatedly demonstrated (e.g. Cassidy, 2001; Gottman, 1994;

Moret, Glaser, Page, & Barger, 1998), intimacy is associated with better relationship and sexual well-being. We expected to replicate these findings using our prototype-based intimacy measure; however, whether and how sexual intimacy would uniquely predict well-being was unknown.

### *Method*

#### *Participants and Procedure*

One hundred ninety-four self-reported heterosexuals were recruited by university students as part of a research component of a psychology class; participants did not receive any compensation. The sample included 103 females and 91 males, aged 18-62 ( $Mdn = 23$ ), all in an exclusive, sexual, romantic relationship (66% dating, 9% engaged, 25% married) ranging in length from 1 month to 36.5 years (median length: 2.5 years). Participants completed all questionnaires online, including a demographic and relationship history questionnaire (e.g., current relationship status and length, number of previous dating partners).

#### *Measures of Intimacy and Sexual Intimacy*

*Prototype-based.* Participants rated the extent to which several unique intimacy and sexual intimacy attributes characterized their current relationship, using a 7-point scale (e.g., 1 = *not at all* to 7 = *a lot*). Attributes were selected based on their centrality to each concept; however, several highly central attributes were excluded because of an ambiguous context (e.g., *senses*, *relating*); therefore, two of the six unique attributes included for each concept, although not peripheral, did not meet the stringent criteria for a central attribute. The six intimacy attributes included were: *interacting* and being *involved* with one's partner; having an *unconditional* and *authentic* relationship; having a sense of *completeness* in one's relationship; and *having things in common* with one's partner. For

sexual intimacy, the six attributes were: having *orgasms*; each partner being *receptive* to the other and *longing for* the other, having a *consensual* and *natural* relationship; and having *seduction* in one's relationship. (For both measures, each attribute in italics represents a separate item.) Participants were given a mean score for intimacy and sexual intimacy ratings of their relationship; higher scores represent a greater "match" between one's own relationship and the prototype in question. For example, a high score on the intimacy measure would indicate that a participant considered her relationship as strongly matching the intimacy prototype. Cronbach's  $\alpha$  was .76 for intimacy and .64 for sexual intimacy.

*Theory-based.* The theory-based questions we used to assess intimacy and sexual intimacy were derived from Reis and colleagues' (Reis & Shaver, 1988; Reis & Patrick, 1996) concept of *perceived partner responsiveness*. Participants were asked the extent to which they felt *understood*, *accepted*, and *cared for* by their current partner both in general in their relationship (i.e., intimacy) and during sexual activity with their partner (i.e., sexual intimacy). Cronbach's  $\alpha$  was .82 for intimacy and .79 for sexual intimacy.

#### *Measures of Well-Being*

Both well-being domains were assessed through reported satisfaction. For relationship well-being, Norton's (1983) 6-item Quality of Marriage Index, which assesses relationship quality and satisfaction, was modified to refer to romantic relationships in general (i.e., *marriage* was replaced with *relationship*, and *spouse* with *partner*). Participants indicated their agreement to statements such as, "We have a good relationship," on seven-point scales. Cronbach's  $\alpha$  was .94 for the present study. To assess sexual well-being, following Laumann et al. (2006), participants rated the extent to

which their sexual relationship was (a) emotionally satisfying and (b) physically satisfying.

### *Results*

Table 6 provides all intercorrelations between intimacy, sexual intimacy, and well-being measures.

#### *Conceptual Relationship Between Intimacy and Sexual Intimacy*

As expected, there was a significant positive correlation between the prototype-based measures of intimacy and sexual intimacy,  $r(194) = .59, p < .001$ . The more that participants considered their current relationship to match the prototype of intimacy, the more they also considered it to match the prototype of sexual intimacy. There was also a positive correlation between the theory-based measures of intimacy and sexual intimacy,  $r(194) = .47, p < .001$ ; indicating that participants who felt understood, accepted, and cared for by their partners in general, were also likely to feel that way during sexual activity.

#### *Theory- vs. Prototype-Based Measures*

High correlations were found between the prototype- and theory-based measures for intimacy,  $r(194) = .71, p < .001$ , as well as for sexual intimacy,  $r(194) = .64, p < .001$ . In addition, both sets of measures were significantly positively correlated with relationship quality and sexual satisfaction (see Table 7).

#### *Predicting Well-Being*

Two regression analyses were carried out to explore intimacy and sexual intimacy as unique predictors of relationship quality and sexual satisfaction. In both analyses, several relationship-related control measures were entered in the first step of the regression (i.e., participants' relationship status and length, and their total number of relationships, serious

relationships, and sexual partners). The theory-based intimacy and sexual intimacy measures were entered in the second step, followed by the prototype-based measures of intimacy and sexual intimacy in the third step.

Analyses revealed that the addition of the prototype-based variables significantly improved the regression model, above and beyond the controls and the theory-based measures of intimacy and sexual intimacy, for both relationship quality,  $\Delta R^2(2, 177) = .04, p < .01$ ; and sexual satisfaction,  $\Delta R^2(2, 177) = .10, p < .001$ . Looking at each prototype-based measure separately, only intimacy was a unique predictor of relationship quality when controlling for both theory based measures ( $\beta = .28, p < .01$ ); sexual intimacy was not ( $\beta = .00, p = .999$ ). The opposite pattern emerged for sexual satisfaction: only sexual intimacy was a unique predictor ( $\beta = .40, p < .001$ ); intimacy was not ( $\beta = .12, p = .141$ ).

### *Discussion*

The results of this study indicate that perceptions of intimacy and sexual intimacy are related in actual romantic relationships. Individuals who rated their current relationships as higher in intimacy also rated their relationships as higher in sexual intimacy; this was true regardless of whether prototype- or theory-based measures were used to assess the two concepts. These findings are consistent with the results of studies 4 and 5 in which ratings of intimacy and sexual intimacy were correlated for perceptions of a hypothetical relationship. Whether judging one's own relationship or someone else's, intimacy and sexual intimacy are clearly perceived as related and co-occurring constructs.

The prototype-based measures of intimacy and sexual intimacy in the current study were found to correspond well with the theoretically-driven models of each concept derived from Reis and colleagues' model of intimacy (Reis & Shaver, 1988; Reis &



Patrick, 1996). The correlations between the two types of measures provide validation for using unique, central attributes as a way to assess intimacy and sexual intimacy in individuals' relationships. Although all three attributes included in the theory-driven model (i.e., *understanding*, *accepting*, and *caring*) were highly central to both intimacy and sexual intimacy, using attributes that were unique to each concept accounted for additional variance in the well-being analyses.

Perceiving that one's relationship matched the prototype of intimacy was associated with significantly greater relationship quality, above and beyond feeling understood, accepted and cared for by one's partner. Similarly, perceiving that one's relationship matched the prototype for sexual intimacy was associated with greater sexual satisfaction, above and beyond feeling understood, accepted, and cared for during sexual activity with one's partner. These findings are consistent with previous research on prototype matching and relationship quality by Hassebrauck and colleagues (Hassebrauck & Aron, 2001; Hassebrauck & Fehr, 2002). Our findings highlight the usefulness of prototype-matching as an assessment tool. Prototypes are cognitive representations of a concept; individuals draw on these cognitive representations when they evaluate that concept in their own relationships (Hassebrauck & Fehr, 2002). Thus, knowing more about people's prototypes of intimacy and sexual intimacy allows for a greater understanding of how individuals evaluate these specific aspects of their own relationships.

### General Discussion

Data from these six studies point to four key findings about the nature of intimacy and sexual intimacy. First, intimacy and sexual intimacy are highly related but distinct constructs. Second, both concepts are prototypically organized. Third, prototypes of intimacy and sexual intimacy correspond in meaningful ways to theoretical models of

intimacy; but prototype matching may account for relationship outcomes above and beyond these theoretical models. Finally, sexual intimacy is best conceptualized as the unique product, not sum, of sexual activity and intimacy.

*What Is the Conceptual Relationship Between Intimacy and Sexual Intimacy?*

We found support for intimacy and sexual intimacy as highly related but distinct concepts. First, there was considerable overlap between the prototypes of intimacy and sexual intimacy. In Study 1 the majority of intimacy attributes were also sexual intimacy attributes, and vice versa; and in Study 2 almost half of the central features of each concept were shared attributes, such as *trust* and *passionate*. However, there were also a substantial number of highly central, unique attributes for both intimacy and sexual intimacy.

Second, intimacy and sexual intimacy were perceived as co-occurring in romantic relationships. In studies 4 and 5, when a fictional dating couple was described as being high in intimacy, it was assumed they were also high in sexual intimacy, and vice versa. Ratings of intimacy and sexual intimacy were also positively correlated in participants' own romantic relationships in Study 6, regardless of whether prototype- or theory-based measures were used to assess the two concepts. However, these correlations were not so high as to suggest redundancy in the two concepts. In addition, participants reliably differentiated between intimacy and sexual intimacy in studies 4 and 5: ratings of the conveyed concept were always higher than those of the assumed concept.

Third, we found unique priming effects for intimacy and sexual intimacy. Priming the concept of sexual intimacy increased activation of the concept of intimacy, which indicates the two concepts' relatedness; but the reverse was not true (i.e., priming

intimacy did not increase activation of sexual intimacy), which indicates their distinctness.

Finally, we found unique associations between intimacy and sexual intimacy with both perceived and actual relationship quality. In studies 4 and 5, the quality of a fictional dating relationship was perceived as greater when the couple was described as being high in intimacy vs. sexual intimacy. In Study 5, we violated participants' expectations that intimacy and sexual intimacy co-occur in romantic relationships and found that only a lack of intimacy significantly affected perceptions of relationship quality; relationship quality ratings were almost identical whether sexual intimacy could be assumed or whether it was explicitly lacking. We also found unique associations with actual relationship quality in Study 6: intimacy was a stronger predictor of relationship satisfaction than was sexual intimacy and sexual intimacy was a stronger predictor of sexual satisfaction than was intimacy. Thus, despite the strong conceptual overlap between intimacy and sexual intimacy, the two concepts are clearly differentiable and perceived as distinct. Intimacy and sexual intimacy are probably best described as having fuzzy boundaries between them (Rosch, 1978).

#### *Are Intimacy and Sexual Intimacy Prototype Constructs?*

We also found considerable support for intimacy and sexual intimacy as prototypically organized constructs. According to Rosch (1975), two criteria must be met to argue that a concept is prototypically organized. First, individuals must be able to identify the features of the specific concept and make meaningful judgments about the strength of a feature's association with that concept. Support for this criterion was found in studies 1 and 2, where we found a set of attributes that were consistently generated by a large number of people (Study 1) and consensus as to which attributes were most central to each concept

(Study 2). Rosch's second criterion was that centrality ratings of the features of a concept should affect cognition about that concept. The results of Study 3 provide support for this second assertion: centrality affected false recognition rates for attributes of intimacy and sexual intimacy, with central attributes being falsely recognized more than peripheral attributes. This finding is consistent with Cantor and Mischel (1979), who stated that when a prototype is activated, central features of that prototype will be more easily accessible in memory than less central features (i.e., peripheral features).

No set of necessary and sufficient criterial attributes emerged for either intimacy or sexual intimacy, further supporting our view that neither concept can or should be defined by a traditional, classical definition. Again, no single feature was listed by all participants for either intimacy or sexual intimacy, and it seems unlikely that a precise definition of either concept exists. Thus, the results of these three studies strongly suggest that both intimacy and sexual intimacy are prototypically organized concepts.

#### *How Do Prototypes of Intimacy and Sexual Intimacy Compare to Theories of Intimacy?*

We found that the prototypes of intimacy and sexual intimacy generated in studies 1 and 2 corresponded well with Reis and colleagues' model of intimacy (Reis & Shaver, 1988; Reis & Patrick, 1996). According to Reis and colleagues, understanding, acceptance, and caring are the three main components of intimacy in a relationship; and trust and self-disclosure are necessary to create the conditions that are conducive to intimacy. Without trust, there will be no self-disclosure of important personal information, and without self-disclosure there can be no experience of feeling understood, accepted, and cared for by one's partner. The results of Study 1 indicated that spontaneous, explicit lay conceptions of both intimacy and sexual intimacy focused more on the precursors of intimacy, rather than on those aspects which actually complete the

experience of intimacy. However, when asked to rate the centrality of various features of intimacy or sexual intimacy in Study 2, participants recognized the importance of feeling understood, accepted, and cared for by one's partner. In Study 6, for both intimacy and sexual intimacy, prototype-based measures (i.e., central, unique attributes of each concept) were positively correlated with theory-based measures (i.e., perceived partner responsiveness in general and during sexual activity). However, despite high correlations between the two types of measures, the prototype-based measures of intimacy and sexual intimacy accounted for unique variance in well-being, above and beyond that which was accounted for by the theory-based measures. This suggests that although there is considerable overlap between the intimacy and sexual intimacy prototypes and Reis and colleagues' model of intimacy, the degree to which one's relationship matches the prototype may provide important additional information about a relationship.

### *Limitations*

Two limitations of the current research should be noted. First, all six studies used samples that consisted primarily, but not exclusively, of heterosexual, undergraduate students in their early twenties. Perceptions regarding intimacy and sexual intimacy may differ based on a variety of factors (e.g., age, relationship status, sexual orientation, relationship history, sexual experience etc.); thus, generalizability of these results may be limited to similar populations.

Second, prototypes have been criticized for being overly descriptive and limited by the time and place in which they are generated (Kelley, 1983). In contrast to more universal, concise "expert" descriptions, prototypes may differ depending on the culture or nationality of those generating the prototypes (Fehr, 1988). Our prototypes of intimacy and sexual intimacy are thus limited to the Western, urban, contemporary context of these

studies. Nevertheless, these prototypes are highly informative for studying romantic relationships within these same specific cultural and temporal boundaries.

### *Future Directions*

We believe that our data, in addition to providing a comprehensive understanding of the concept of sexual intimacy and how it relates to the broader construct of intimacy, also points to important new directions for research. First, we have developed a measure of sexual intimacy based on central, unique sexual intimacy attributes, which corresponds well to other measures of intimacy and sexual well-being and could be an important tool for exploring a largely neglected facet of romantic relationships. Future research should validate this measure using a more diverse sample (e.g., varying ages, relationship statuses, cultural backgrounds) to obtain a more thorough and more complete understanding of how intimacy and sexual intimacy function in real relationships.

We would also like to further explore how intimacy and sexual intimacy are related to personal and interpersonal well-being over time; specifically, how do changes in intimacy and sexual intimacy influence personal well-being (e.g., self-esteem, anxiety, depression), relationship well-being (e.g., relationship satisfaction, commitment, conflict) and sexual well-being (e.g., sexual satisfaction, sexual functioning)? Research has consistently shown that intimacy is associated with all three types of well-being (e.g., Sprecher & Hendrick, 2004; Impett, Peplau, & Gable, 2005); however the role of sexual intimacy is much less clear. Given the results of Study 6, we believe that changes in sexual intimacy will likely influence overall sexual satisfaction and functioning, which in turn will affect personal (e.g., Laumann et al., 2006) and relationship well-being (e.g., Sprecher, 2002). One particularly interesting question for future research would be whether there are independent well-being effects of sexual intimacy above and beyond the effects of

intimacy. For example, does sexual intimacy uniquely contribute to a person's satisfaction with their relationship in general, above the effects of intimacy alone? Studying changes in sexual intimacy over time, and in a diverse sample, would certainly provide more insight into both the nature and function of the concept.

One final avenue for future research is that of individual differences. Previous relationship and sexual experiences, current relationship factors, as well as attachment style all likely influence perceptions and experiences of sexual intimacy. For example, securely attached individuals are more comfortable with intimacy and are more likely to enjoy physical contact that is both intimate and sexual. In contrast, insecure individuals are more likely to engage in risky sexual behaviour and are less discriminating about sexual partners (Collins & Feeney, 2004). Exploring sexual intimacy through an attachment lens could be extremely fruitful.

### *What Is the Nature of Sexual Intimacy?*

At the outset of this paper we asked a series of questions regarding the nature of sexual intimacy; we believe we can now answer those questions with some confidence, based on the results of the six studies that were presented. First, sexual intimacy is not interchangeable with sexual activity. In fact, *having sex* did not even qualify as a central sexual intimacy attribute (Study 2), despite the high frequency with which it was generated in Study 1. In addition, some of the most central attributes of sexual intimacy, such as *consensual*, *holding each other*, and *closeness*, are not necessarily uniquely related to sexual activity. Second, sexual intimacy is not simply a subtype of intimacy or another expression of intimacy. According to Murphy (2002), a subtype inherits all of the properties of its superordinate concept; thus, if sexual intimacy were a subtype of intimacy it could not have any features that were not also features of intimacy. The

presence of unique sexual intimacy attributes, as well as the fact that a number of these unique attributes were highly central to the concept, strongly argues against sexual intimacy as a subtype of intimacy. Third, sexual intimacy is not simply the “sum” of sexual activity and intimacy. Although many of the attributes in the prototype of sexual intimacy were also found in a prototype for sexual activity, some attributes of sexual intimacy were neither intimacy nor sexual activity attributes. (In fact, 21% of sexual intimacy attributes were unique to the concept.) Thus, there is likely something more to sexual intimacy than simply experiencing both sexual contact and intimacy at the same time.

We believe that sexual intimacy is more than the sum of its parts: when sexual activity and intimacy are combined, something new is created that is unique from either constituent concept (cf. Osheron & Smith, 1981). To be sure, intimacy is crucial to sexual intimacy and transforms sexual activities, making what Kleinplatz and Menard (2007) describe as “an exponential difference” for sexual encounters. And not surprisingly, sexual intimacy includes attributes one might associate with sexual activity such as *sexual arousal* and *orgasm*. However, sexual intimacy represents a synthesis of intimacy and sexual activity, resulting in a gestalt that includes unique central attributes such as *senses*, *receptive*, and *consensual*; attributes that underscore the synchrony and heightened sense of union that Kleiplatz and Menard found as characteristic of “great sex.” We would therefore like to propose the following definition of sexual intimacy, based on both the unique and shared central sexual intimacy attributes from our program of research: Sexual intimacy is characterized by a passionate and emotionally intimate connection with a loving partner, and involves being fully present in consensual, affectionate sexual contact.



People in intimate relationships may have sex, but they do not necessarily have this experience of sexual intimacy.

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## Appendix A: Relationship Vignettes

### *Intimacy Vignette*

Eric and Anne-Marie are in a dating relationship. They are both U2 students at McGill. Eric is studying political science and Anne-Marie is a history major. Eric and Anne-Marie really *like* each other; they are *serious* about their relationship and very *involved* in each other's lives. They share many *common interests* and enjoy spending *quality time* together. Eric and Anne-Marie can be truly authentic when they are with each other, and their relationship brings a sense of *peace*, *stability* and *completeness* to both of them. Eric and Anne-Marie value the *quiet interactions* that they have together. If asked to describe their relationship in one word they would say it is *unconditional*.

*Added for the Intimacy Only vignette.* Eric and Anne-Marie feel deeply cared for by each other in their day-to-day lives, but do not share meaningful sexual experiences with each other.

*Added for the Combined vignette.* Eric and Anne-Marie feel deeply cared for by each other in their day-to-day lives and also share meaningful sexual experiences with each other.

*(Mean centrality of target words included: 5.58)*

### *Sexual Intimacy Vignette*

Eric and Anne-Marie are in a dating relationship. They are both U2 students at McGill. Eric is studying political science and Anne-Marie is a history major. Eric and Anne-Marie *long* for each other and are very *receptive* to *creative sexual experiences*. They share many *fantasies* and enjoy *slowly massaging* each other's *bodies*. Eric and Anne-Marie can be truly *wild* when they are with each other; their relationship is *natural* and brings a sense of *well-being* to both of them. Eric and Anne-Marie value the *exchanges* (and

*orgasms*) that they have together. If asked to describe their relationship in one word they would say it is *consensual*.

*Added for the Sexual Intimacy Only vignette.* Eric and Anne-Marie share meaningful sexual experiences with each other, but do not feel deeply cared for by each other in their day-to-day lives.

*(Mean centrality of target words included: 5.50)*

## Appendix B: Impression Questionnaire

All responses were made on a 7-point scale (e.g., 1 = *not at all* to 7 = *very much*).

### *Intimacy score:*

How much intimacy is there in Eric and Anne-Marie's relationship?

How much do you think Eric and Anne-Marie:

...feel understood by each other?

...feel cared for each other?

...feel accepted by each other?

...disclose important personal information to each other?

...trust each other?

### *Sexual intimacy score:*

How much sexual intimacy is there in Eric and Anne-Marie's relationship?

How passionate is Eric and Anne-Marie's relationship?

How much attraction is there in Eric and Anne-Marie's relationship?

How much sexual contact is there in Eric and Anne-Marie's relationship?

### *Relationship quality score:*

How healthy is Eric and Anne-Marie's relationship?<sup>a</sup>

How satisfying is Eric and Anne-Marie's relationship?<sup>a</sup>

How much love is there in Eric and Anne-Marie's relationship?

How much commitment is there in Eric and Anne-Marie's relationship?<sup>b</sup>

How likely is it that Eric and Anne-Marie will still be together in 12 months?<sup>b</sup>

### *Commitment score:*

\*How much longer do you think Eric and Anne-Marie's relationship will persist?<sup>c</sup>

\*How much do you think Eric and Anne-Marie are attached to their relationship? (i.e., feel strongly linked to each other)?

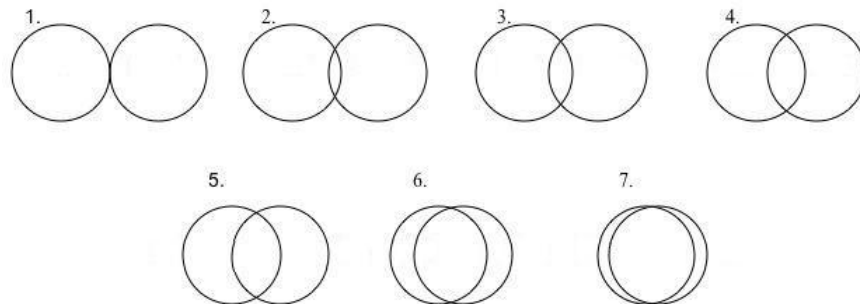
*Relationship identification score:*

\*To what extent do you think that their relationship is an important part of both Eric and Anne-Marie's self-image?

\*To what extent do you think Eric feels Anne-Marie is an important part of who he is, and vice versa?

\*To what extent do you think that when Eric thinks of himself, he also thinks of Anne-Marie, and vice versa?

From the seven diagrams below, pick which set of circles best represents Eric and Anne-Marie's relationship.



<sup>a</sup>This item was included in the satisfaction score for Study 5.

<sup>b</sup>This item was also included in the commitment score for Study 5.

<sup>c</sup>Rating scale for this question was 1 = *a week or so* to 7 = *decades*.

\*Items added for Study 5.

### Footnotes

1. In no case was a central feature of one concept rated as peripheral to the other concept.
2. Main effects for recall and recognition for both intimacy and sexual intimacy attributes could be due to differences in frequency of these attributes from Study 1.



Table 1

*Free Listing and Mean Centrality Ratings of 80 Intimacy Attributes*

Attribute	% of		Feature	% of	
	subjects	Rating		subjects	Rating
Trust	45.67	7.26	Warmth	7.76	5.90
Respect	10.45	6.79	Liking <sup>a</sup>	1.19	5.87
Closeness	44.78	6.77	Non-verbal	1.79	5.85
Having a connection	23.88	6.76	Confidence	6.57	5.82
Love	48.66	6.76	Freedom	2.99	5.81
Communication	17.31	6.74	Sexual arousal	1.79	5.77
Honesty	17.31	6.60	Special	3.88	5.77
Compatibility	4.48	6.55	Generosity	2.39	5.77
Happiness	11.34	6.55	Responsiveness	8.66	5.76
Important	3.88	6.48	Self-disclosure	56.72	5.75
Feelings	9.55	6.47	Desire	5.67	5.74
Holding each other	12.24	6.45	Sensations	1.19	5.74
Caring	22.99	6.45	Deep	3.58	5.72
Interaction <sup>a</sup>	1.19	6.44	Mental <sup>a</sup>	2.39	5.71
Attentiveness	2.39	6.37	Completeness <sup>a</sup>	1.79	5.67
Understanding	24.48	6.34	Physical	2.09	5.66
Involved <sup>a</sup>	2.99	6.33	Safety	7.16	5.66
Emotional	11.04	6.32	Exploration	1.19	5.65
Friendship	29.25	6.32	Intensity	1.19	5.63

Reciprocal	7.76	6.31	Having a partner	5.37	5.61
Satisfying	8.36	6.26	Attraction	3.28	5.58
Kissing	8.06	6.26	Romance	11.34	5.58
Quality time <sup>a</sup>	1.49	6.26	Personal	12.24	5.56
Comfort	23.28	6.23	Private	16.72	5.56
Accepting	5.97	6.23	Exclusive	3.88	5.45
Eye contact	1.79	6.21	Unique	2.39	5.44
Being affectionate	17.91	6.21	Home <sup>a</sup>	1.49	5.44
Kindness	8.96	6.20	Good <sup>a</sup>	1.19	5.41
Sexuality	3.88	6.19	Fun	5.37	5.34
Commitment	11.64	6.18	Nakedness	2.39	5.34
Relating <sup>a</sup>	2.39	6.16	Exciting	2.99	5.30
Tenderness	4.18	6.13	Curiosity	2.09	5.26
Unselfish	1.49	6.10	Having things in common <sup>a</sup>	4.48	5.24
Passionate	12.54	6.08	Family <sup>a</sup>	3.88	5.22
Togetherness	14.33	6.08	Softness	2.69	5.19
Unconditional <sup>a</sup>	1.19	6.02	Euphoria	1.19	5.18
Uninhibited	2.69	6.00	Long-term	1.79	5.16
Being a couple	18.21	6.00	Peaceful <sup>a</sup>	3.58	5.15
Authenticity <sup>a</sup>	3.58	6.00	Sweet	1.19	5.13
Having sex	16.12	5.95	Serious <sup>a</sup>	1.79	5.00

Note. Percentages based on 335 participants (Study 1). Peripheral attributes (i.e., mean rating < 5) excluded. All excluded attributes mentioned by  $\leq 5\%$  of participants, except *privacy* (11.73%). Centrality ratings made on an 8-point scale (Study 2).

<sup>a</sup>Attribute unique to intimacy.

Table 2

*Free Listing and Mean Centrality Ratings of 90 Sexual Intimacy Attributes*

Attribute	% of		Feature	% of	
	subjects	Rating		subjects	Rating
Passionate	35.22	6.65	Personal	4.48	5.75
Attraction	10.45	6.61	Spontaneous	3.28	5.74
Consensual <sup>a</sup>	1.19	6.49	Happiness	6.27	5.72
Sexual contact <sup>a</sup>	5.37	6.49	Natural <sup>a</sup>	1.49	5.65
Closeness	24.48	6.42	Having sex	37.91	5.60
Holding each other	11.94	6.42	Romance	12.54	5.60
Sexual arousal	9.85	6.37	Honesty	6.27	5.56
Desire	21.79	6.36	Unselfish	2.09	5.53
Satisfying	29.85	6.35	Seduction <sup>a</sup>	2.69	5.53
Eye contact	1.49	6.33	Safe sex <sup>a</sup>	2.09	5.51
Reciprocal	6.87	6.32	Deep	1.49	5.49
Contact <sup>a</sup>	2.09	6.30	Physical	6.57	5.49
Comfort	18.81	6.29	Massaging <sup>a</sup>	3.28	5.49
Kissing	17.31	6.28	Special	3.28	5.47
Sexuality	2.99	6.26	Generosity	3.88	5.47
Trust	24.48	6.23	Experimentation	6.27	5.47
Bodies <sup>a</sup>	4.78	6.23	Exchange <sup>a</sup>	1.19	5.46
Having a connection	18.81	6.21	Private	8.36	5.39
Senses <sup>a</sup>	1.79	6.21	Exploration	4.78	5.35

Togetherness	9.55	6.19	Wonderful <sup>a</sup>	2.39	5.35
Sensations	2.39	6.16	Important	1.79	5.33
Orgasm <sup>a</sup>	8.36	6.14	Kindness	4.78	5.32
Compatibility	2.99	6.13	Well-being <sup>a</sup>	1.19	5.32
Being affectionate	28.66	6.13	Having a partner	5.37	5.30
Responsiveness	2.69	6.13	Flirting <sup>a</sup>	1.79	5.27
Love	50.45	6.12	Safety	7.16	5.26
Receptive <sup>a</sup>	1.49	6.12	Exclusive	4.48	5.25
Accepting	4.48	6.07	Creativity <sup>a</sup>	2.39	5.25
Fun	14.93	6.05	Commitment	6.27	5.23
Respect	10.45	6.04	Freedom	4.48	5.23
Longing <sup>a</sup>	1.49	6.04	Beauty	2.39	5.23
Communication	6.87	6.02	Visual <sup>a</sup>	1.79	5.23
Tenderness	9.25	6.00	Being a couple	12.84	5.21
Feelings	7.76	5.98	Humour	2.09	5.21
Uninhibited	7.46	5.98	Tasting <sup>a</sup>	1.49	5.21
Intensity	6.87	5.98	Energetic	5.07	5.19
Confidence	2.69	5.93	Genitals	5.07	5.19
Emotional	9.85	5.91	Euphoria	4.48	5.18
Warmth	6.87	5.86	Softness	2.99	5.15
Exciting	17.01	5.86	Self-disclosure	26.57	5.09
Attentiveness	1.19	5.84	Non-verbal	1.19	5.04
Understanding	12.54	5.82	Curiosity	1.79	5.02

Nakedness	11.64	5.82	Bedroom	4.78	5.02
Caring	10.45	5.80	Friendship	3.88	5.00
Smell <sup>a</sup>	1.79	5.77			

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Note. Percentages based on 335 participants (Study 1). Peripheral attributes (i.e., mean rating < 5) excluded. All excluded attributes mentioned by  $\leq 5\%$  of participants, except *privacy* (6.87%) and *kinky sex* (5.97%). Centrality ratings made on an 8-point scale (Study 2).

<sup>a</sup>Attribute unique to sexual intimacy.

Table 3

*Memory for Central and Peripheral Attributes*

	Intimacy		Sexual intimacy	
	Central	Peripheral	Central	Peripheral
	Group 1 acquisition items, Group 2 false recognition items			
	Respect	Boldness	Attraction	Kinky sex
	Closeness	Developing	Sexual contact	Experience
	Having a connection	Surrendering	Closeness	Strength
	Honesty	Stability	Desire	Vulnerability
	Happiness	Loneliness	Eye contact	Risky
	Feelings	Energetic	Comfort	Possession
	Caring	Complicated	Sexuality	Darkness
	Attentiveness	Carefree	Having a connection	Inhibited
	Reciprocal	Darkness	Sensations	Sinful
	Quality time	Alone	Responsive	Scary
<i>M centrality</i>	6.53	4.02	6.33	3.66
<i>M frequency</i>	15.19	1.79	10.93	3.79
	Group 2 acquisition items, Group 1 false recognition items			
	Central	Peripheral	Central	Peripheral
	Trust	Genitals	Passionate	Needs
	Love	Spontaneous	Consensual	Animalistic
	Communication	Vulnerability	Holding each other	Sweat

	Compatibility	Beauty	Sexual arousal	Masturbation
	Holding each other	Selective	Satisfying	Casual sex
	Interaction	Dependency	Reciprocal	Procreation
	Understanding	Quiet	Kissing	Routine
	Involved	Routine	Trust	Abandonment
	Emotional	Possession	Togetherness	Pornography
	Friendship	Guilt	Orgasm	Guilt
<i>M centrality</i>	6.55	4.01	6.34	3.67
<i>M frequency</i>	19.73	2.42	15.46	3.19



Table 4

*Mean Overall Ratings for Vignettes in Study 4 vs. Study 5*

Rating	Vignette					
	Study 4		Study 5			
					Sexual	
	Sexual		Intimacy		Sexual	intimacy
	Intimacy	intimacy	Intimacy	only	intimacy	only
	( <i>n</i> = 93)	( <i>n</i> = 103)	( <i>n</i> = 31)	( <i>n</i> = 27)	( <i>n</i> = 27)	( <i>n</i> = 27)
	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>	<i>M</i>
	( <i>SD</i> )	( <i>SD</i> )	( <i>SD</i> )	( <i>SD</i> )	( <i>SD</i> )	( <i>SD</i> )
Intimacy	6.14 <sub>a</sub>	5.60 <sub>b</sub>	6.20 <sub>a</sub>	5.80 <sub>ab</sub>	5.49 <sub>b</sub>	3.87 <sub>c</sub>
	(.69)	(.96)	(.83)	(.89)	(1.14)	(.97)
Sexual intimacy	5.05 <sub>a</sub>	6.48 <sub>b</sub>	4.99 <sub>a</sub>	3.41 <sub>c</sub>	6.66 <sub>b</sub>	6.08 <sub>b</sub>
	(1.02)	(.62)	(.93)	(1.36)	(.42)	(.99)
Relationship	5.88 <sub>a</sub>	4.84 <sub>b</sub>	5.72 <sub>a</sub>	5.34 <sub>ab</sub>	4.81 <sub>b</sub>	3.43 <sub>c</sub>
quality	(.79)	(1.09)	(.92)	(.92)	(1.11)	(.89)

Note. Within in each Study, means in the same row which share a subscript are not significantly different ( $p < .05$ ). All within-vignette differences between intimacy and sexual intimacy ratings are significant at  $p < .05$ .

Table 5

*Mean Overall Ratings for Vignettes in Study 5*

Rating	Vignette			
	Intimacy	Intimacy only	Sexual intimacy	Sexual intimacy only
	( <i>n</i> = 31)	( <i>n</i> = 27)	( <i>n</i> = 27)	( <i>n</i> = 27)
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )
Commitment	5.43 <sub>a</sub> (1.14)	5.28 <sub>a</sub> (1.00)	4.13 <sub>b</sub> (1.19)	3.15 <sub>c</sub> (.92)
Relationship identification	5.17 <sub>a</sub> (1.02)	5.22 <sub>a</sub> (.95)	4.26 <sub>b</sub> (1.32)	3.21 <sub>c</sub> (1.08)
Satisfaction	6.05 <sub>a</sub> (.93)	5.35 <sub>b</sub> (1.24)	6.00 <sub>a</sub> (1.00)	4.24 <sub>b</sub> (1.24)

Note. Within in each row, means which share a subscript are not significantly different ( $p < .05$ ).

Table 6

*Intercorrelations Between Major Study Variables in Study 6*

Variable	1	2	3	4	5	6
1. Intimacy – Prototype	--					
2. Sexual intimacy – Prototype	.587*	--				
3. Intimacy – Theory	.714*	.541*	--			
4. Sexual intimacy – Theory	.451*	.639*	.468*	--		
5. Relationship quality	.660*	.432*	.686*	.375*	--	
6. Sexual satisfaction	.573*	.680*	.547*	.611*	.538*	--

\* $p < .001$

### Transition from Chapter 2 to Chapter 3

The results of the six studies presented in the preceding manuscript highlight a number of important findings about the nature of intimacy in romantic relationships. First, intimacy and sexual intimacy are highly related, but nonetheless distinct, concepts. For example, studies 1 and 2 showed that although there was significant overlap between the attributes used to describe the concepts of intimacy and sexual intimacy, there were a number of central attributes that were unique to each concept; and studies 4 and 5 showed that although intimacy and sexual intimacy were assumed to co-occur in romantic relationships, the two concepts could be reliably differentiated.

Second, whereas the presence of intimacy in a hypothetical romantic relationship was associated with greater perceived relationship quality, the presence of sexual intimacy was not. For example, Study 5 showed that violating expectations of intimacy (i.e., that a couple had sexual intimacy but not intimacy) resulted in significantly lower ratings on relationship quality measures than violating expectations of sexual intimacy (i.e., that a couple had intimacy but not sexual intimacy).

Finally, intimacy and sexual intimacy were correlated in ongoing romantic relationships, regardless of whether prototype- or theory-based assessments are used. That is, global perceptions of intimacy during sexual activity with one's partner were significantly correlated with global perceptions of intimacy in general in one's relationship. In addition, both prototype- and theory-based measures of intimacy and sexual intimacy were correlated with concurrent well-being (e.g., relationship quality, sexual satisfaction).

Taken together, these three key findings suggest that intimacy in *ongoing* romantic relationships is likely more strongly associated with interpersonal and personal well-being

than sexual intimacy, despite the strong connection between the two concepts. Thus, in Study 7, I sought to assess the unique influence of global perceptions of relationship intimacy on multiple domains of well-being (i.e., relationship, sexual, and personal) both cross-sectionally and longitudinally. I was primarily interested in whether the longitudinal relationship between intimacy and well-being would remain significant when controlling for adult romantic attachment style, given the strong theoretical link between the two concepts (cf. Reis & Patrick, 1996; Reis, 2006). Secondly, I was interested in whether intimacy would predict relationship survival, change in sexual satisfaction, or change in life satisfaction when controlling for other highly related constructs such as relationship satisfaction and closeness. And third, I wished to examine whether sexual intimacy mediated any of the effects intimacy had on well-being.

Therefore, in Study 7, I extended Study 6 by (a) using a larger, more diverse sample obtained through a large-scale web survey, (b) combining the prototype- and theory-based measures of intimacy into a single, more powerful global assessment, (c) assessing multiple domains of well-being using well-validated questionnaires, and (d) employing a longitudinal design to assess change in well-being over a period of eight months. For additional descriptive information about the Time 1 (T1) and Time 2 (T2) samples in Study 7 not presented in the manuscript, see Appendix C.

The measures reported in the following manuscript are only a subset of the measures completed by participants in Study 7. At T1, all participants completed a set of core measures including demographic questionnaires, measures of intimacy and sexual intimacy, and basic measures of well-being (e.g. relationship quality, sexual satisfaction, and life satisfaction); however, participants were also randomly assigned to complete a set of extended relationship, sexual, or personal well-being measures. At T2, all

participants completed the core measures again as well as a subset of the extended well-being measures previously completed at T1. Only those measures that all participants completed at both T1 and T2 were included in the following manuscript. For a full list of all of the core and extended well-being measures in Study 7, see Appendix A; and for a copy of the intimacy and sexual intimacy measures developed for Study 7, see Appendix B.

Although the main focus of the following manuscript is intimacy, I also performed additional analyses for the purposes of this dissertation using the data from Study 7 (see Appendix D). First, I was interested in whether intimacy could predict change in attachment over time (Research Question D1). For example, do higher initial global perceptions of intimacy in one's relationship promote attachment security (i.e., a decrease in attachment avoidance or anxiety)? Research suggests that being in a relationship with a secure partner may lead to decreases in attachment avoidance (Morgan & Shaver, 1999; Vicary & Shaver, 2007); therefore, might global perceptions of intimacy and partner responsiveness be one way of promoting attachment security in established relationships?

Second, I wanted to further investigate the relationship between intimacy and sexual intimacy in ongoing relationships. Therefore, I explored whether intimacy and sexual intimacy influenced each other reciprocally (Research Question D2). For example, does greater initial intimacy lead to an increase in sexual intimacy over time, and vice versa?

Third, to address the future research directions identified in the first manuscript, I examined the intercorrelations between changes in intimacy, sexual intimacy, attachment, and well-being over the course of the study. I was primarily interested in whether changes in sexual intimacy corresponded to changes in well-being, specifically sexual satisfaction (Research Question D3).

Finally, I was interested in examining whether the relationship between intimacy and well-being was reciprocal. In the following manuscript I hypothesized that intimacy facilitates increased well-being; however, might well-being also facilitate increased intimacy? (Research Question D4). For example, does being in a satisfying relationship lead to increased intimacy over time? As suggested by Gable and colleagues (2004, 2006) relationship satisfaction and intimacy likely influence each other in a bidirectional manner. Thus, other domains of well-being may also have similar reciprocal relationships with intimacy.

Both sets of results from Study 7 – i.e., those presented in the second manuscript as well as those presented in the supplementary analyses in Appendix D (i.e., Research Questions 1 through 4) – will be discussed together in the general discussion (i.e., Chapter 4).

Intimacy and well-being in heterosexual romantic relationships:  
A longitudinal analysis.

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### Abstract

This longitudinal study examined intimacy and changes in well-being in heterosexual romantic relationships over a period of eight months. An initial sample of 443 dating and married individuals completed measures of intimacy, attachment, closeness, and well-being in three domains (i.e., relationship, sexual, personal); eight months later follow-up measures were obtained from 212 individuals whose relationships were still intact and 43 individuals whose relationships had ended. Analyses revealed that greater intimacy at Time 1 predicted less of a decline in all three well-being domains suggesting that intimacy may have a protective effect that helps maintain well-being over time. Furthermore, intimacy predicted both concurrent and future well-being independent of relationship satisfaction, attachment style, closeness, and sexual intimacy. Implications for the importance of global perceptions of intimacy in romantic relationships for overall well-being are discussed.

Most people desire close relationships with others throughout their lives. Research suggests, however, that we actually *need* these close relationships to function normally (Baumeister & Leary, 1995). Not only are close relationships essential to our health and well-being (Cohen, 1988; Sarason, Sarason, & Gurung, 2001), but for most people, having a satisfying intimate relationship is their most important source of happiness (Russell & Wells, 1994). Is it sufficient to know simply whether a relationship is good or bad to predict well-being or is there more to be learned by examining the qualitative level of intimacy in close relationships?

Given the large body of cross-sectional research on intimacy and subjective well-being in romantic relationships (e.g., Prager & Burhmester, 1998; Fletcher, Simpson, & Thomas, 2000; Popovic, 2005), there is a surprising dearth of longitudinal research. Certainly, being in a satisfying relationship is important for well-being (Bersheid, 1999; Karney & Bradbury, 1995); intimacy, however, is more than just being happy in one's relationship. Whereas relationship satisfaction reflects the overall positivity of feelings about one's partner (Fincham, 2009), intimacy involves a depth of interactional experiences whereby one feels understood, accepted, and cared for by one's partner (Reis, Clark, & Holmes, 2004). The purpose of the current study, therefore, was to explore the relationship between intimacy and three domains of well-being (i.e., relationship, sexual, and personal well-being) over a period of eight months and to examine the unique contributions that intimacy makes to well-being.

#### *The Interpersonal Process Model of Intimacy*

Although various definitions and conceptualizations of intimacy exist (see Moss & Schwebel, 1993; Laurenceau, Rivera, Schaffer, & Pietromonaco, 2004); perhaps the most well-known and validated model of intimacy is Reis and Shaver's (1988) interpersonal

process model, later expanded by Reis and Patrick (1996). According to Reis and colleagues, intimacy is experienced when (a) the expression of important and revealing self-relevant information by one partner (the speaker) is met with responsive behaviours and disclosures from the other partner (the listener); and (b) the speaker perceives the listener's responses as being understanding, accepting and validating, and caring (i.e., perceived partner responsiveness). It is through the speaker's perception of the listener's responsiveness that the former comes to experience intimacy; and as the speaker and listener change roles in this dynamic, transactional process, each partner's innermost self comes to be known and validated, resulting in a mutual experience of intimacy.

Empirical support for the interpersonal process model of intimacy has begun to emerge in recent years, primarily through the use of experience sampling (e.g., daily diary reports). For example, both self- and partner disclosure predicted intimacy in social interactions of college students (Laurenceau, Feldman Barrett, & Pietromonaco, 1998), daily experiences of married couples (Laurenceau, Feldman Barrett, & Rovine, 2005), and stressful conversations between breast cancer patients and their partners (Manne, Ostroff, Rini, Fox, Goldstein, & Grana, 2004). In addition, perceived partner responsiveness partially mediated the effects of disclosure (both self and partner) on intimacy (Prager & Burhmester, 1998; Laurenceau et al., 1998; Laurenceau et al., 2005; Manne et al., 2004). Furthermore, Lippert and Prager (2001) found strong support for the dyadic nature of Reis and Shaver's (1988) model. Interactions between romantic partners which were perceived as the most intimate were characterized by both partners' disclosure of private information and of emotions and both partners' expression of positive feelings about the other.

Although daily expressions of intimacy are associated with overall levels of intimacy (Laurenceau et al., 2005) (a) the former can (and does) exist without the latter (e.g., as in the strangers-on-a-plane phenomenon; Altman & Taylor, 1973) and (b) intimate interactions make up only a fraction of the interactions in an intimate relationship (Clark & Reis, 1988). Moreover, a history of intimate interactions is likely to engender emergent properties of trust, reciprocity, commitment, and shared mutual knowledge (Reis & Shaver, 1988). For the purposes of studying ongoing intimate relationships longitudinally, we chose to assess intimacy at the level of the relationship.

### *Intimacy and Subjective Well-Being*

Research has consistently shown strong correlations between intimacy and measures of relationship well-being, such as commitment and trust (Fletcher et al., 2000), as well as with measures of sexual well-being, such as passion (Fletcher et al.) and sexual satisfaction (e.g., Henderson-King & Veroff, 1994; Moret, Glaser, Page, & Bargeron, 1998; Haning, O'Keefe, Randall, Kommor, Baker, & Wilson, 2007). For example, marital satisfaction was positively correlated with both overall intimacy in marriage (Greeff & Malherbe, 2001) and average daily ratings of intimacy in marital interactions (Laurenceau et al., 2005), and individuals with intimacy goals (i.e., those who value and want intimate relationships with others) were more likely to experience greater satisfaction in dating relationships (Sanderson & Cantor, 1997) and marriage (Sanderson & Cantor, 2001). In addition, Birnie and Lydon (2009; Study 6) recently found that intimacy was significantly positively correlated with both relationship satisfaction and sexual satisfaction, regardless of whether intimacy was assessed with global perceived partner responsiveness (i.e., feeling understood, accepted, and cared for by one's partner

in general in one's relationship) or with central attributes of the concept of intimacy (e.g., authenticity, having things in common, a sense of completeness).

Research has also shown a strong correlation between intimacy and personal well-being (e.g., depression, loneliness, satisfaction with life, Pielage, Luteijn, & Arrindell, 2005). For example, Reis and Franks (1994) found that higher global relationship intimacy was associated with a variety of physical and mental health outcomes, including lower anxiety, lower depression, greater subjective health, and greater energy in daily living; Kiecolt-Glaser et al. (1993) found that lower marital intimacy was associated with greater physical illness symptoms; and Prager and Buhrmester (1998) found that when individuals' intimacy needs are met they experience greater satisfaction with life. According to Reis and Shaver (1988), having one's core self understood and validated by one's partner (i.e., experiencing intimacy) promotes personal development by "lowering defenses and reducing self-doubts and self-reproach" (p. 385).

#### *Longitudinal Research on Intimacy*

The majority of longitudinal research on intimacy and well-being has focused on intimacy motivation, defined as the preference or readiness for warm, close, communicative experiences with others (McAdams, 1980, 1982). For example, McAdams and Vaillant (1982) found that high intimacy motivation at age 30 was associated with better psychosocial adjustment 17 years later; and Weinberger, Hofstein, and Whitbourne (2008) found that women, but not men, with low intimacy motivation in college had a higher risk of divorce 34 years later. Perhaps the only published study to explore change in intimacy and well-being over time is Dandeneau and Johnson (1994), who found that an increase in marital intimacy (as a result of participating in an intimacy-

enhancing marital intervention) was associated with an increase in marital satisfaction over a period of 10 weeks.

Recently, Gable and colleagues (Gable, Reis, Impett, & Asher, 2004; Gable, Gonzaga, & Strachman, 2006; Maisel, Gable, & Strachman, 2008) have explored perceived partner responsiveness during positive interactions. Gable and her colleagues (2006) showed that intimacy expressed in a series of laboratory interactions was associated with concurrent relationship satisfaction, but did not predict changes in relationship satisfaction eight weeks hence. However, global assessments of relational intimacy were associated with actual experiences of partner's responsiveness to personal positive events. This suggests that intimacy at the relational level may summarize a cumulative experience of perceived partner responsiveness that may predict changes in well-being over time.

There is somewhat more research on intimacy as a predictor of relationship stability. For example, Hendrick and colleagues (1981; Hendrick, Hendrick, & Adler, 1988) found that relationships characterized by higher levels of intimacy (i.e., greater self-disclosure to one's lover) are less likely to end in break-up than those with less intimacy; Tolstedt and Stokes (1983) found that emotional intimacy was related to lower divorce potential, even controlling for the effects of self-disclosure; and Sanderson and Cantor (1997) found that individuals with intimacy goals, as well as those whose partners had intimacy goals, were more likely to still be with their partner five months later. However, relationship satisfaction was not controlled for in any of the studies; therefore, whether intimacy predicts relationship stability above and beyond satisfaction is unknown.

#### *Intimacy as a Distinct Predictor of Well-Being*

Measures of relationship properties such as intimacy correlate highly with relationship satisfaction (e.g., Greeff & Malherbe, 2001), raising some concern about the predictive

utility of various hypothetical relationship properties. We believe that intimacy is a distinct property of relationships that is not sufficiently captured by simple measures of relationship valence. Whereas positive affect and satisfaction may be important in determining whether a dating relationship survives, intimacy may represent significant variation in a process that deepens stable relationships, predicting increases in relationship and personal well-being. That is, of those who make it, intimacy may have a multiplier effect on well-being as feeling understood, accepted, and cared for should facilitate further positive interactions, buffer short-term lapses or negativity, and provide a foundation for personal development and expansion. Moreover, understanding, accepting, and caring for one's partner also should promote relationship and personal well-being (Crocker, Olivier, & Nuer, 2009).

*Intimacy and Related Constructs.* There is a strong conceptual link between intimacy and adult romantic attachment given that responsiveness from a significant other features prominently in both (cf. Reis & Patrick, 1996; Cassidy, 2001). Adult attachment theory posits that our history of interpersonal experiences with significant others shapes our expectations, perceptions, and behaviours in new romantic relationships (Hazan & Shaver, 1987, 1994) and can lead to fears of abandonment and rejection (i.e., attachment anxiety) and/or fears of intimacy and dependence (i.e., attachment avoidance; Brennan, Clark, & Shaver, 1998). Although the anxiously attached strongly desire intimacy while the avoidantly attached are either dismissing or fearful of it, both experience difficulty in developing and maintaining it in their relationships (Collins & Feeney, 2004a). Not surprisingly then, securely attached individuals (i.e., those low in anxiety and avoidance) report greater intimacy both in daily social interactions (Tidwell, Reis, & Shaver, 1996) and in their current romantic relationships (Pielage et al., 2005). Furthermore, attachment

security enhances perceptions of intimacy in interactions with close others (Grabill & Kerns, 2000; Collins & Feeney, 2004b). However, according to Reis et al. (2004), it is important to differentiate beliefs that one's partner *ought* to be responsive to one's needs and the perception that one's partner actually *is* responsive to those needs. Thus, whereas attachment reflects expectations and goals regarding trust and intimacy that we bring to our relationship, the actual experience of intimacy also includes how our partners behave, independent of our expectations.

A second construct related to intimacy is closeness, which has been characterized in terms of interdependence (Kelley et al., 1983) and including the other in the self (Aron, Aron, & Smollan, 1992). According to Reis and colleagues (2004), closeness and intimacy are not equivalent: intimacy is a type of closeness that emphasizes validation and caring. In fact, Aron and colleagues (1992; Aron, Aron, & Norman, 2001) suggest differentiating between the affective, behavioural, and cognitive aspects of closeness, which are thought to primarily reflect intimacy ("feeling close"), interdependence ("behaving close"), and the inclusion of other in the self ("thinking close"), respectively. Furthermore, global perceptions of closeness in a relationship may arise from any or all of these processes (Aron et al., 1992). Intimate relationships are close but not all close relationships are intimate (Reis & Patrick, 1996); even close romantic couples may not be intimate with each other (Malone & Malone, 1987).

### *Current Study*

The process model of intimacy has been well-researched and validated (e.g., Lippert and Prager, 2001; Laurenceau et al., 2005); however, research on relational intimacy has been mostly cross-sectional. Thus, there is a clear need to assess how intimacy at the level of the relationship influences well-being over time. Therefore, the goal of the current



study was twofold: first, to replicate previous cross-sectional findings on intimacy and subjective well-being, and second, to examine intimacy as a predictor of subjective well-being using a longitudinal approach. Furthermore, we sought to show the distinct contribution of intimacy by controlling for relationship satisfaction, attachment, and closeness. Finally, whereas previous research on intimacy has typically focused on a single domain of well-being; in the current study we explored three domains simultaneously: relationship, sexual, and personal well-being.

Our first hypothesis was that intimacy in romantic relationships would be positively correlated with relationship, sexual, and personal well-being at Time 1. Previous research shows strong correlations between intimacy and relationship satisfaction (Greeff & Malherbe, 2001), sexual satisfaction (Haning et al., 2007), and life satisfaction (Pielage et al., 2005); we expected to replicate these findings.

Our second hypothesis was that intimacy at T1 would predict relationship survival at Time 2. Previous research has shown that relationships characterized by low levels of intimacy are more likely to dissolve than those higher in intimacy (e.g., Hendrick et al., 1988). However, given the consistent link between relationship stability and relationship satisfaction (e.g., Clements, Stanley, & Markman, 2004), we also tested whether intimacy could predict relationship survival when controlling for relationship satisfaction.

Our third and primary hypothesis was that intimacy at T1 would predict changes in relationship, sexual, and personal well-being over time. By engaging in responsive behaviours, the actor communicates to the partner how important the partner is to the actor, which presumably increases well-being for the partner. In addition, the reciprocity of liking principle should lead to increased relationship satisfaction (Curtis & Miller, 1986). Moreover, responsivity begets responsivity, further fuelling well-being. Intimacy

should also buffer the effects of stress and not just amplify the benefits of positive events. Correspondingly, intimate partners are more likely to have accurate mutual understandings of each other that should facilitate support provisions (Cutrona, Cohen, & Igram, 1990), which subsequently fosters intimacy (Cutrona, Shaffer, Wesner, & Gardner, 2007).

Although predicting change in well-being is difficult and rigorous in its own right, we went further and tested whether intimacy could predict changes in well-being even when controlling in turn for relationship satisfaction, attachment, and closeness.

Finally, we explored whether any effects of intimacy on changes in well-being were mediated, at least in part, by sexual intimacy. That is, in long-term stable relationships, does intimacy foster sexual intimacy that leads to greater well-being? Recent research by Birnie and Lydon (2009) has shown that perceived partner responsiveness during sexual activity with one's partner (i.e., sexual intimacy) is strongly connected to global perceptions of partner responsiveness in one's relationship (i.e., intimacy), and that both "types" of intimacy are highly correlated with relationship satisfaction and sexual satisfaction.

## Method

### *Participants*

#### *Initial Sample (T1)*

A total of 627 participants completed all aspects of the T1 assessment; including 38 couples. One member of each of the 38 couples was randomly removed, resulting in 589 participants at T1. For the current analyses, only those participants who were in an exclusive, sexual, heterosexual relationship (i.e., mixed-sex), that was not long-distance were included. This resulted in 443 participants (161 males, 282 females), aged 18-66

( $Mdn = 26$ ), all in a romantic relationship (56% dating, 10% engaged, 34% married) ranging in length from 1 month to 43.8 years ( $Mdn = 3.25$  years). Participants reported a median lifetime total of six sexual partners ( $SD = 7.82$ ), and seven relationship partners ( $SD = 8.56$ ), two of which they considered serious ( $SD = 1.45$ ). All participants judged to have given valid responses (e.g., a survey completion time of at least 15 minutes) received a \$7 gift certificate for Amazon.ca or Amazon.com.

#### *Follow-up Sample (T2)*

Of the 443 participants included in the T1 analyses, 320 also participated in T2 (72%). However, 65 participants were excluded because of missing or invalid data ( $n = 42$ ) or because their relationship had changed in such a way that they no longer fit the inclusion criteria ( $n = 23$ ). In addition, 43 participants were excluded from the longitudinal analyses because they were no longer in the same relationship as at T1. This resulted in a total of 212 participants (60 males, 152 females) who were in an exclusive, sexual, non long-distance relationship at both T1 and T2 (49% dating, 12% engaged, 40% married), ranging in length from 10 months to 36.75 years ( $Mdn = 4.96$  years). All participants who completed T2 received an \$8 gift certificate for Amazon.ca or Amazon.com. Those who participated in the follow-up did not differ significantly from those who did not on any of the major study variables at T1 (i.e., intimacy, sexual intimacy, relationship satisfaction, sexual satisfaction, and life satisfaction).

#### *Measures*

All of the measures below were included in both the T1 and T2 surveys. The full T1 ( $N = 589$ ) and T2 ( $N = 320$ ) samples were used to assess the psychometrics of scales about personal characteristics (e.g., attachment) but the reduced T1 ( $N = 443$ ) and T2 ( $N = 212$ ) samples were used for psychometrics of scales based on frequent interaction

opportunities (e.g., sexual intimacy). Participants also completed a relationship history questionnaire at T1 (e.g., number of previous relationships), and provided demographic information on their current relationship at both T1 and T2 (e.g., status, length, living arrangements).

### *Intimacy measures*

*Relationship intimacy.* We assessed intimacy with a 13-item measure derived from two sources. First, seven questions were derived from Reis and colleagues' (Reis & Shaver, 1988; Reis & Patrick, 1996) model of intimacy. Following Laurenceau et al. (1998) and Manne et al. (2004), these items asked participants to rate the extent to which they felt understood, accepted, and cared for by their current partner in general in their relationship (i.e., perceived partner responsiveness). In addition, participants were asked about the extent of both their own and their partner's self-disclosure of (a) private thoughts and (b) feelings. For the remaining six questions, participants rated the extent to which six unique, highly central intimacy attributes characterized their current relationship: *interacting* and being *involved* with one's partner; finding one's relationship *unconditional* and *authentic*; having a sense of *completeness* in one's relationship; and *having things in common* with one's partner (Birnie & Lydon, 2009). (Each attribute in italics represents a separate item on the measure.) Participants responded to all items on a 7-point Likert-type scale ranging from 1 (not at all) to 7 (a lot). The 13-item measure showed high internal consistency at both T1 ( $\alpha = .93$ ) and T2 ( $\alpha = .91$ ).

*Sexual intimacy.* We assessed feelings of intimacy during sexual activity with a 12-item measure derived from various sources. As with the intimacy scale, several items were based on Reis and colleagues' (Reis & Shaver, 1988; Reis & Patrick, 1996) concept of perceived partner responsiveness. Three items addressed perceived partner

responsiveness during sexual activity (e.g., “During sexual activity, how much do you feel your partner understands you?”); another three addressed perceived partner responsiveness while sharing private sexual thoughts (e.g., “When you share your private sexual thoughts with your partner, how much do you feel that your partner accepts you?”) using a 7-point scale (e.g., 1 = *not at all* to 7 = *a lot*). The remaining items assessed each partner’s understanding of and responsiveness to the other’s sexual needs and desires as well as the expression of affection during sexual activity (e.g., Birnbaum & Reis, 2006). Internal consistency for the final 12-item measure was high at both T1 ( $\alpha = .94$ ) and T2 ( $\alpha = .87$ ).

#### *Attachment*

Adult attachment was measured with the Experiences in Close Relationships Scale – Short Form (ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007). Participants indicate their agreement to six items assessing anxiety, such as “My desire to be very close sometimes scares people away”, and six items assessing avoidance, such as “I am nervous when partners get too close to me”, using a 7-point scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). This 12-item self-report measure was derived from Brennan et al.’s (1998) original 36-item Experiences in Close Relationships Scale (ECR). Wei et al. found very high correlations between scores on the short and original versions of both the Anxiety and Avoidance subscales (both  $r_s = .95$ ). In the current study, coefficient alpha was .75 at T1 and .70 at T2 for the Anxiety subscale, and .82 at T1 and .83 at T2 for the Avoidance subscale.

#### *Closeness*

Relationship closeness was assessed with the Inclusion of Other in the Self Scale (IOS; Aron, Aron, & Smollan, 1992). The IOS is hypothesized to tap people’s sense of

interconnectedness with their current partner and consists of seven Venn-like diagrams which depict different degrees of overlap between two circles, one labeled “self” and one labeled “other”. Participants pick the pair of circles that best represents their current relationship. Aron et al. report high levels of alternate form and test-retest reliability (.95 and .85, respectively).

### *Well-Being Measures*

*Relationship well-being.* The Quality of Marriage Index (QMI; Norton, 1983) was used to assess relationship well-being. We modified this 6-item measure of marital quality and satisfaction to refer to romantic relationships in general (i.e., the term *marriage* was replaced with *relationship*, and *spouse* with *partner*). Participants respond to five statements such as, “We have a good relationship,” on a 7-point scale ranging from 1 (*very strongly disagree*) to 7 (*very strongly agree*). The sixth question asks participants to indicate how happy they are in their relationship on a 10-point scale ranging from 1 (*very unhappy*) to 10 (*perfectly happy*), where the middle point (*happy*) represents “the degree of happiness which most people get from their relationship”. In the present study, coefficient alpha for the modified scale was .94 at both Times 1 and 2.

*Sexual well-being.* A modified version of the Global Measure of Sexual Satisfaction (GMSEX; Lawrance & Byers, 1998) was used to assess sexual well-being. This 5-item measure asks participants to describe their sexual relationship along five bipolar dimensions (*bad* vs. *good*, *unpleasant* vs. *pleasant*, *negative* vs. *positive*, *worthless* vs. *valuable*, and *unsatisfying* vs. *satisfying*), with each term at the opposite pole of a seven-point scale. Following Laumann et al. (2006), we modified the unsatisfying vs. satisfying item to distinguish between *emotional* and *physical* sexual satisfaction, resulting in a total

of six items. In the present study, coefficient alpha for the modified 6-item scale was .95 at T1 and .91 at T2.

*Personal well-being.* The Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) was used to assess personal well-being. This 5-item scale assesses participants' general satisfaction and contentment with their lives. Participants indicate their agreement to statements such as "If I could live my life over, I would change almost nothing", using a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). In the present study coefficient alpha was .88 at T1 and .91 at T2.

### *Procedure*

The survey was advertised as "The Vitality Study" in various public and online forums. Participants were primarily recruited through word of mouth and online posts to various websites (e.g., The Social Psychology Network experiments page), classified advertisement pages (e.g. [www.mcgill.ca/classifieds](http://www.mcgill.ca/classifieds), [kijiji.com](http://kijiji.com)), Psychology- related listservs (e.g. Society for Personality and Social Psychology listserv) and the social networking site Facebook.com. Posters were also placed around the McGill University campus and around Montreal (e.g., in a local Pilates studio). Interested individuals were directed to the study website ([www.thevitalitystudy.com](http://www.thevitalitystudy.com)) which contained a short description of the study, contact information for the researchers, and a link to one of three versions of the survey. After providing consent, all participants completed a battery of core questionnaires, consisting of demographics (e.g., age, ethnicity, sexual orientation, relationship and sexual history, current relationship status), measures of intimacy, basic well-being measures, and an attachment scale (Wei et al., 2007). Supplementary questions on one of three topics (personal, relational, or sexual) were randomly assigned to participants but were beyond the scope of this paper. At the end of the survey,

participants indicated whether they were interested in completing the follow-up 8 to 10 months later. All participants were debriefed, and if their responses were deemed valid, they were emailed compensation.

Participants who indicated at T1 that they were interested in completing the follow-up were emailed with a link to the follow-up, along with the participant identification number they had created at T1. All participants were asked to indicate if they were in the same relationship as they were in at T1, if they were in a new relationship, or if they were now single. Based on their responses, participants were directed to the appropriate follow-up survey. For the current study, we were primarily interested in those participants who were in the same relationship at T1 and T2. The follow-up included the same intimacy and well-being measures from T1; however, participants were instructed to focus on the past six months of their relationship instead of “in general”. All participants provided updated information on their relationship (e.g., status, living arrangements) as well as information about any major life events that had occurred since T1 (e.g., birth of a child, serious illness, relocation). Upon completion of the follow-up, all participants were debriefed and emailed compensation.

### *Results*

#### *Hypothesis 1: Intimacy Will Be Positively Correlated with Well-Being at T1*

Hypothesis 1 was fully supported; greater intimacy at T1 was associated with better relationship,  $r(435) = .77$ , sexual,  $r(435) = .54$ , and life satisfaction,  $r(435) = .41$ , all  $ps < .001$ . Table 1 shows the intercorrelations between all of the major study variables at T1 for the Initial sample.



*Hypothesis 2: Intimacy at T1 Will Predict Relationship Survival at T2*

The majority of T1 participants were still in the same relationship at T2 (86%); however, 46 participants had broken up with their T1 partner. Of those 46, none were engaged at T1, only one was married, and five of the exclusive daters were living together at T1. (An additional four were excluded because of missing or invalid data.) Therefore, for all break-up analyses we only included participants in exclusive dating relationships who were not living together at T1 ( $n = 91$ ; 60% in same relationship at T2).

A logistic regression was used to predict T2 relationship outcome (0 = *broke up*, 1 = *still together*) from T1 intimacy. Several background variables were entered in Step 1 (i.e., gender, age, total number of relationships, serious relationships, and sexual partners) and T1 intimacy was entered in Step 2. T1 intimacy accounted for significant variance beyond what was already accounted for by the background variables,  $\chi^2 = 5.92$ ,  $p < .05$  for this step; intimacy was a significant predictor of relationship outcome ( $OR = .64$ ,  $p = .05$ ). Hypothesis 2 was supported; for every one unit increase in intimacy, the odds of break up (vs. staying together) decreased by a factor of .64.

We also conducted an additional logistic regression analysis to determine whether the effects of intimacy held controlling for relationship satisfaction. For this analysis, T1 relationship satisfaction was included in Step 2 with T1 intimacy. Step 2 was significant  $\chi^2 = 10.20$ ,  $p < .01$  for this step; however only relationship satisfaction was a significant predictor of relationship outcome ( $OR = .71$ ,  $p = .05$ ).

*Hypothesis 3: Intimacy at T1 Will Predict Positive Change in Well-Being Over Time*

All of the major study variables at T1 and T2 were strongly positively correlated. The three well-being measures had T1 to T2 correlations ranging from .68 to .71; and intimacy at T1 correlated with intimacy at T2 ( $r = .74$ ). Paired t-tests were carried out to

examine the stability of these variables over time; results showed that scores on three of the eight measures were significantly lower at T2 than at T1 (i.e., sexual intimacy, relationship satisfaction, and sexual satisfaction; see Table 2) with marginal decreases on three others. Table 3 shows the intercorrelations between all major study variables at T1 and T2 for the Follow-up sample.

We conducted three longitudinal regressions predicting change in well-being from T1 intimacy. As in the cross-sectional analyses, background variables were entered in Step 1 for each regression. We entered T1 well-being in Step 2, followed by T1 intimacy in Step 3. The addition of intimacy accounted for significant variance above and beyond the background variables and T1 well-being in predicting change in well-being (see Table 4). Hypothesis 3 was fully supported: T1 intimacy uniquely predicted change in relationship ( $\beta = .24, p < .001$ ), sexual ( $\beta = .16, p < .01$ ), and life satisfaction ( $\beta = .17, p < .01$ ). (We also entered gender X intimacy in Step 4, but this interaction was not significant in any of the analyses.)

We also ran additional longitudinal regression analyses to determine whether the effects of intimacy held controlling in turn for relationship satisfaction, attachment, and closeness. First, we ran the longitudinal regressions predicting change in sexual and life satisfaction controlling for T1 relationship satisfaction in Step 3. Intimacy (in Step 4) was still a unique predictor of change in sexual satisfaction ( $\beta = .16, p < .05$ ) and was a marginally significant predictor of change in life satisfaction ( $\beta = .12, p = .07$ ). Second, we ran the longitudinal regressions controlling for attachment. Controlling for T1 attachment anxiety and T1 attachment avoidance in Step 3, intimacy (in Step 4) remained a significant predictor of change in relationship ( $\beta = .23, p < .01$ ), sexual ( $\beta = .17, p < .05$ ), and life satisfaction ( $\beta = .18, p < .01$ ). Third, we ran the longitudinal regressions

controlling for closeness. Controlling for T1 closeness in Step 3, intimacy (in Step 4) remained a significant predictor of change in relationship ( $\beta = .20, p < .01$ ), sexual ( $\beta = .17, p < .01$ ), and life satisfaction ( $\beta = .12, p < .05$ ).

Finally, we examined the possibility that sexual intimacy might account for and possibly mediate the links between intimacy and changes in well-being. Although sexual intimacy correlated with life satisfaction and relationship satisfaction at T1, it did not predict changes in either. Consistent with this, intimacy remained a significant predictor of changes in life satisfaction ( $\beta = .17, p < .01$ ) and relationship satisfaction, when controlling for sexual intimacy ( $\beta = .23, p < .01$ ). Finally, sexual intimacy did predict change in sexual satisfaction, however it became non significant when intimacy was entered into the regression analysis; intimacy was still a significant predictor of change in sexual satisfaction ( $\beta = .14, p < .05$ ).

### Discussion

We found support for all three of our main hypotheses. Greater initial relationship intimacy was positively associated with (a) initial well-being, (b) relationship survival, and (c) changes in well-being over eight months. First, we replicated previous cross-sectional findings on intimacy and well-being in three distinct domains: relationship, sexual, and personal (e.g., Greeff & Malherbe, 2001; Haning et al., 2007; Pielage et al., 2005). Participants who rated their romantic relationship as high in intimacy – i.e., those who perceived their partner as responsive, who engaged in reciprocal self-disclosure with their partner, and who perceived their relationship as matching the prototype of intimacy – reported having a more satisfying romantic relationship, a satisfying sex life, and a satisfying life in general. Moreover, these correlations remained significant when we controlled for attachment avoidance and anxiety. These results highlight the importance

of *actual* intimacy in one's relationship for well-being above and beyond beliefs about or expectations for intimacy.

Second, we found that intimacy predicted relationship survival: participants who reported greater initial intimacy in their dating relationship were more likely to still be together eight months later. However, the unique predictive effect of intimacy disappeared when we controlled for relationship satisfaction. This is consistent with research that has shown a link between relationship satisfaction and stability (e.g., Simpson, 1987; Kurdek, 1993; Karney & Bradbury, 1995; Clements et al., 2004). These findings suggest that intimacy, although strongly related to relationship satisfaction, is unlikely to occur and keep a relationship going in the absence of positive feelings toward one's partner.

Third, we found support for intimacy as a unique predictor of change in well-being over time: Greater initial intimacy predicted less of a decline in relationship, sexual, and life satisfaction over a period of eight months, even when controlling for several highly related constructs. Intimacy remained a significant predictor of change in well-being when controlling for attachment style, suggesting that global perceptions of relationship intimacy buffered against declines in three different domains of well-being over time, regardless of whether one desires more or less intimacy in general (i.e., attachment anxiety and avoidance, respectively).

We also found that intimacy still predicted change in sexual satisfaction and life satisfaction (although this effect was marginal) when controlling for relationship satisfaction, indicating that perceiving that your partner understands, accepts, and cares for you (i.e., your core self) may promote sexual and personal well-being in addition to how happy or satisfied you are in your relationship. Following Fincham and Beach

(2006), by controlling for relationship satisfaction we can conclude that intimacy is not simply a proxy for relationship satisfaction or positivity but it is a distinct and unique construct which fosters well-being over time. Whereas satisfaction may determine whether you stay in your relationship or not, intimacy may predict whether, and to what extent, you experience a decline in well-being over time. Finally, the effects of intimacy on all three well-being domains also remained significant when controlling for closeness, and were not mediated by sexual intimacy, providing further evidence for intimacy as a distinct and unique predictor of well-being over time.

Clearly, there is substantial overlap in the constructs of relationship satisfaction, closeness, and intimacy. For example, relationships low in satisfaction are also likely to be low in intimacy, and it is the lack of satisfaction that serves as the harbinger of subsequent relationship dissolution. However, relationships high in satisfaction can vary somewhat in intimacy. In this way, intimacy may tease apart qualitative differences among generally satisfied relationships by assessing critical properties of interpersonal success. Having a partner who understands your authentic inner self, truly accepts you for the person that you are, and devotedly cares about you is a relationship context that is likely to promote both your personal well being as well as the well being of the relationship. Furthermore, because intimacy is a mutual and reciprocal process, it also involves you coming to know your partner in an intimate way, and accepting and caring deeply for your partner, further enhancing your own well-being (Crocker et al., 2009).

### *Limitations and Strengths*

One possible limitation of the current research is our reliance on subjective, self-report measures of intimacy as opposed to “objective” measures (e.g., coding relationship interactions for responsive behaviours). As Reis and colleagues (2004) point out, there is

a debate as to whether it is actual “objective” partner responsiveness that is important for well-being or whether it is one’s perceptions of partner responsiveness that matter; however, ultimately, they conclude that both likely play a role. This idea is supported by recent research which shows that perceptions of partner responsiveness are correlated with objective partner responsiveness (Gable et al., 2006; Maisel et al., 2008). In both studies, judges’ coding of partner enacted responsive behaviours during a videotaped positive event disclosure predicted perceptions of partner responsiveness (i.e., feeling understood, accepted, and cared for) following the interaction. Thus, our participants’ global evaluations of intimacy were likely based, in part, on their actual experiences of intimacy and partner responsiveness in their relationships. .

In addition, there are concerns about Internet data collection such as possible fake responses and lack of control over the participants’ environment (Gosling, Vazire, Srivastava, & John, 2004). However, we took a number of steps to ensure the validity of our data such as including clear and specific instructions in the survey and excluding “suspicious” responses (e.g., multiple, sequential responses from the same IP address) and those with a survey completion time of less than 15 minutes (pilot testing yielded a mean completion time of 30 minutes). However, there are also significant benefits to online research including greater generalizability (e.g., a larger, more geographically and demographically diverse sample) and greater convenience for participants as the lengthy survey could be completed at their leisure. Furthermore, Internet data collection is especially useful for longitudinal studies; long-term follow up can be easily and conveniently administered resulting in greater participant retention (Murray & Fisher, 2002). Given that the benefits of online data collection outweigh the potential drawbacks (Gosling et al., 2004); we believe that an online study was the best way to obtain a large,

diverse sample of individuals in romantic relationships (i.e., not just college students in dating relationships, but older married individuals as well) that could be easily maintained over time.

Indeed, one of the strengths of this research is that our sample consisted primarily of individuals in established romantic relationships (only 12% had been dating six months or less). However, it is a greater challenge to obtain effects for change in established relationships than in newly formed relationships; thus the nature of our sample created a more conservative test for the effects of intimacy on well-being over time. Having a large sample, however, helped offset this so that we had the statistical power to detect small, but significant, effects.

#### *Future Research*

Laurenceau and colleagues (1998; 2005) have thoroughly examined intimacy at the level of interactions and daily experiences and in the current study we have looked at cumulative, global perceptions of intimacy at two time points across an eight-month period. Future research should combine these two methodologies – experience sampling and longitudinal analyses – to more closely study these variables of interest. For example, do global perceptions of intimacy and daily experiences reciprocally influence each other and jointly promote well-being over time?

It would also be interesting in future research to examine the interplay between intimacy and attachment over time to see how they may mutually influence each other. Adult attachment is thought to represent a mental model of the self in relation to others based on past interpersonal experiences with significant others (Hazan & Shaver, 1987, 1994); whereas intimacy is rooted in daily experiences with a specific interpersonal partner (Reis, 2006). Experiences of intimacy may influence mental models in a bottom-

up fashion. However, the reverse could also be true: mental models may influence perceptions and appraisals of potentially intimate experiences in a top-down schematic fashion (e.g., Collins & Feeney, 2004b; Grabill & Kerns, 2000). The latter may be more difficult to detect with established relationships such as we have studied here. One might expect to find evidence of this top-down process early in relationships, especially when the new relationship partner resembles previous attachment figures in certain ways (Chen, Boucher, & Tapias, 2006).

According to Reis (2006), feeling understood, accepted, and cared for by an attachment figure – such as a long-term romantic partner – is crucial to the development of attachment security. Although research suggests that intimate experiences between strangers can increase attachment security (Aron, Melinat, Aron, Vallone, & Bator, 1997), studying couples' daily experiences of intimacy would shed more light on the specific processes involved in the link between intimacy and attachment security in romantic relationships. For example, how do global or interaction-specific perceptions of partner responsiveness shape attachment-related expectations and beliefs?

### *Conclusions*

This research is a valuable addition to both the intimacy and well-being literatures as it is the first study to examine how intimacy influences three separate domains of well-being both cross-sectionally and longitudinally. We have shown that not only does intimacy predict current and future well-being, but it does so independent of relationship satisfaction, attachment style, closeness, and sexual intimacy. That relationship satisfaction, but not intimacy, predicted relationship survival further strengthens the finding that intimacy uniquely predicts change in well-being when controlling for relationship satisfaction. Although having one's core self understood, accepted, and cared



for by one's romantic partner is valuable in and of itself, it may also influence how fully that relationship impacts on relationship, sexual, and personal well-being.

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Table 1

*Intercorrelations Between All Major Study Variables at T1 (N = 443)*

Variable	1	2	3	4	5	6	7
1. Relationship intimacy	--						
2. Sexual intimacy	.63	--					
3. Attachment anxiety	-.29	-.23	--				
4. Attachment avoidance	-.60	-.40	.26	--			
5. Closeness	.56	.35	-.23	-.46	--		
6. Relationship satisfaction	.77	.55	-.30	-.55	.54	--	
7. Sexual satisfaction	.54	.75	-.18	-.35	.34	.55	--
8. Life satisfaction	.41	.33	-.26	-.38	.22	.42	.30

Note. All correlations significant at  $p < .001$ .

Table 2

*Paired T-Tests Comparing All Major Study Variables at T1 and T2 (N = 212)*

Variable	<i>T1</i>		<i>T2</i>		<i>r</i>	<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Relationship intimacy	5.98	0.74	5.91	0.78	.74***	1.95
Sexual intimacy	5.98	0.93	5.70	0.91	.76***	6.31***
Attachment anxiety	3.09	1.05	3.21	0.99	.60***	-1.92
Attachment avoidance	1.46	.82	1.54	0.95	.65***	-1.54
Closeness	5.15	1.30	5.05	1.30	.62***	1.26
Relationship satisfaction	0.26	0.80	0.16	0.83	.68***	2.67*
Sexual satisfaction	6.08	1.10	5.92	1.15	.71***	2.86**
Life satisfaction	5.46	1.07	5.39	1.21	.69***	1.93

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

Table 3

*Intercorrelations Between All Major Study Variables in Follow-Up Sample (N = 212)*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>T1</i>															
1. Relationship intimacy	--														
2. Sexual intimacy	.54	--													
3. Attachment anxiety	-.31	-.28	--												
4. Attachment avoidance	-.62	-.46	.23	--											
5. Closeness	.50	.32	-.16*	-.46	--										
6. Relationship satisfaction	.63	.45	-.26	-.50	.40	--									
7. Sexual satisfaction	.45	.72	-.20	-.40	.21	.49	--								
8. Life satisfaction	.37	.38	-.13 <sub>ns</sub>	-.42	.17*	.35	.34								
<i>T2</i>															
9. Relationship intimacy	.74	.43	-.21	-.48	.53	.53	.46	.34	--						
10. Sexual intimacy	.51	.76	-.25	-.43	.24	.39	.65	.42	.53	--					
11. Attachment anxiety	-.27	-.19	.60	.22	-.16*	-.23	-.10 <sub>ns</sub>	-.13 <sub>ns</sub>	-.29	-.21	--				
12. Attachment avoidance	-.51	-.35	.15*	.65	-.33	-.39	-.29	-.28	-.53	-.38	.19	--			

13. Closeness	.35	.31	-.03 <sub>ns</sub>	-.36	.61	.35	.37	.20	.50	.28	-.12 <sub>ns</sub>	-.30	--		
14. Relationship satisfaction	.57	.37	-.14*	-.43	.40	.68	.48	.40	.70	.42	-.21	-.44	.50	--	
15. Sexual satisfaction	.45	.60	-.18	-.35	.25	.41	.71	.37	.61	.76	-.23	-.38	.42	.55	--
16. Life satisfaction	.42	.34	-.16*	-.41	.28	.41	.30	.69	.49	.39	-.19	-.42	.27	.52	.42

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Note. All correlations are significant at  $p < .01$  unless otherwise indicated. \* $p < .05$ .

Table 4

*Regression of T2 Well-Being on T1 Intimacy (N = 212)*

All	$R^2$ change	$F$ change	Adjusted $R^2$	
			of full equation	$F$
<i>T2 Relationship satisfaction</i>				
Step 1: Background measures	.04	1.31	.01	1.31
		(7, 203)		(7, 203)
Step 2: T1 relationship satisfaction	.43***	163.89***	.45***	22.56***
		(1, 202)		(8, 202)
Step 3: T1 intimacy	.03***	13.53***	.48***	22.80***
		(1, 201)		(9, 201)
<i>T2 Sexual satisfaction</i>				
Step 1: Background measures	.04	1.13	.00	1.13
		(7, 203)		(7, 203)
Step 2: T1 sexual satisfaction	.48***	204.10***	.50***	27.49***
		(1, 202)		(8, 202)
Step 3: T1 intimacy	.02**	6.58**	.52***	26.30***
		(1, 201)		(9, 201)
<i>T2 Life satisfaction</i>				
Step 1: Background measures	.13***	4.22***	.10***	4.22***
		(7, 203)		(7, 203)
Step 2: T1 life satisfaction	.39***	162.89***	.50***	27.00***

		(1, 202)		(8, 202)
Step 3: T1 intimacy	.02**	7.90**	.52***	26.29***
		(1, 201)		(9, 201)

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\*\* $p < .01$ . \*\*\* $p < .001$ .



### General Discussion

The present thesis investigated the nature and function of intimacy in romantic sexual relationships. First, despite the recent emergence of social psychological research on sex in romantic relationships (e.g., Impett et al., 2005; Birnbaum et al., 2006), intimacy within sexual experiences with a romantic partner has been largely neglected. Therefore, my first objective was to explore how laypeople define and understand the concept of sexual intimacy, through its relationship to the broader construct of intimacy (studies 1 to 6). Second, despite the considerable body of cross-sectional research on intimacy and subjective well-being in romantic relationships (e.g., Prager & Burhmester, 1998; Fletcher et al., 2000; Popovic, 2005), there are surprisingly few studies that have explored these variables longitudinally. Moreover, extant longitudinal research has typically focused on only a single domain of well-being and has not controlled for other related constructs such as attachment or relationship satisfaction. Therefore, my second objective was to longitudinally examine the unique impact of intimacy on multiple domains of well-being (Study 7).

#### *Summary of Findings*

The purpose of Study 1 was to obtain a list of features for the concepts of intimacy and of sexual intimacy to compare lay understandings of the two concepts. The results of this study revealed that intimacy and sexual intimacy were perceived as highly similar concepts, given that they shared a majority of features, such as *trust*, *closeness*, and *love*. However, there were also a number of unique features that differentiated the two concepts. Whereas unique intimacy features typically reflected the “day-to-day” aspects of intimacy, such as spending *quality time* together and *having things in common*, unique sexual

intimacy attributes typically reflected being “in the moment” of sexual activity and the sensations that accompany this experience (e.g., *smell*, *sweat*, *tasting*).

The purpose of Study 2 was to obtain centrality ratings for the attributes of intimacy and sexual intimacy that were generated in Study 1. The data from Study 2 again highlighted the strong relationship between the two concepts: shared attributes were rated as more central than unique attributes for both intimacy and sexual intimacy. However, there were also a number of unique yet highly central attributes for each concept, such as consensual for sexual intimacy and *quality time* for intimacy, supporting the distinctness of the two concepts.

The results of these first two studies clearly show that, for laypeople, intimacy and sexual intimacy are perceived as highly similar, but nonetheless distinct, constructs. While both seem to have as a “core” a loving, high quality relationship (e.g., Fehr, 1988; Hassebrauck, 1997), intimacy seems to reflect the more practical, perhaps even mundane, aspects of a close relationship (e.g., *interacting*, *relating*, *being involved*), while sexual intimacy seems to reflect more the experience of sexual activity with one’s partner (e.g., *receptive*, *natural*, *orgasm*). These results of studies 1 and 2 also emphasize the importance of taking into account the centrality of spontaneously generated features of a concept. For example, neither *self-disclosure* nor *having sex* were central features of intimacy and sexual intimacy, respectively, despite being among the most frequently generated features for each. Thus, whereas frequency may convey the likelihood that a feature is present in the concept, centrality may convey whether that feature is a discriminant feature of the concept.

The purpose of Study 3 was to examine whether intimacy and sexual intimacy were prototypically organized by testing recall and recognition of central vs. peripheral features

of each concept. If a concept is prototypically organized, central features should be more salient and accessible in memory than peripheral features (Cantor and Mischel, 1979).

The results of Study 3 did demonstrate a prototypical organization for both concepts: there was greater false recognition and false recall of central vs. peripheral attributes.

Taken together, the results of studies 1, 2, and 3 revealed that both intimacy and sexual intimacy are prototypically organized constructs. That is, there is no single precise or “correct” definition for either concept; although there are certainly features of each that are considered more central, there are no sufficient or necessary criteria that define either concept (Rosch, 1978). That intimacy is a prototypically organized construct has important implications for its assessment in social psychological research. First, standard assessment tools may not truly capture what intimacy means to a particular participant in his or her romantic relationship. For example, assessing the extent or frequency of self-disclosure in a relationship may not be a good indicator of intimacy for participants who do not consider self-disclosure a central feature of intimacy. A low score on a particular intimacy measure may be misleading for those participants who define intimacy using a different, but nonetheless central, set of attributes. However, face valid assessments of intimacy (i.e., “How much intimacy is there in your relationship?”) are not without problems, given that there is no single, agreed-upon definition of the term. Thus, researchers need to be careful when assuming the presence of other attributes in a participant’s relationship (e.g., having things in common) simply because he or she indicated a high level of intimacy.

The purpose of Studies 4 and 5 was to further examine the conceptual relationship between intimacy and sexual intimacy, both explicitly and implicitly. I did this by using vignettes of a fictional dating couple who were described as either (a) high in one concept

with no mention of the other (Study 4) or (b) high in one concept and explicitly lacking in the other concept (Study 5). The results from these explicit ratings showed that when the couple was described as being high in one concept (e.g., intimacy), it was assumed that they were also high in the other concept (e.g., sexual intimacy). However, the two concepts were reliably differentiated both within and between vignettes; for example, ratings of the assumed concept were always lower than those of the conveyed concept. In addition, Study 5 showed that it was the presence of intimacy – whether conveyed or assumed – and not sexual intimacy, that was associated with greater perceived relationship quality. I also looked at the implicit relationship between intimacy and sexual intimacy in Study 4 by priming one concept (e.g., intimacy) and testing the reaction time accessibility of the other concept (e.g., sexual intimacy). The results of this implicit analysis again highlighted the distinctness of the two concepts: priming sexual intimacy increased accessibility of the concept of intimacy but not vice versa. Thus, at an implicit level the presence of sexual intimacy implies intimacy, but the presence of intimacy does not imply sexual intimacy. The latter is not surprising given that many intimate relationships are nonsexual (e.g., best friends, siblings); and the former is consistent with research by Gillath and colleagues (2007) showing that subliminal exposure to sexual primes leads to an increased accessibility of intimacy-related thoughts.

The purpose of Study 6 was (1) to provide evidence for the associations between intimacy, sexual intimacy, and relationship well-being demonstrated only hypothetically in studies 4 and 5; and (2) to examine how prototypes of intimacy and sexual intimacy correspond to Reis and colleagues' theoretical model of intimacy (Reis & Shaver, 1988; Reis & Patrick, 1996). I did this by using two measures for each concept: a prototype-based measure derived from the unique, central attributes of each concept (from studies 1

and 2), and a theory-based measure derived from Reis and colleagues' concept of perceived partner responsiveness.

The data from this study showed that intimacy and sexual intimacy are related in real romantic relationships: ratings of intimacy were positively correlated with ratings of sexual intimacy, regardless of whether assessments were made using prototype- or theory-based measures. Second, the data revealed that the prototype-based measures did correspond well with the theoretically-driven measures: correlations between the two assessments were quite high for both intimacy and sexual intimacy. In addition, the prototype-based measures for intimacy and sexual intimacy were uniquely associated with relationship and sexual well-being, respectively, when controlling for the theory-based scales. For example, perceiving that one's relationship matched the prototype of intimacy was associated with greater relationship quality, above and beyond global perceptions of partner responsiveness.

In sum, the results of the first six studies provide a solid theoretical understanding of the nature of sexual intimacy and its relation to the broader construct of intimacy. Although the term sexual intimacy is often used both colloquially and by researchers to mean sexual activity (e.g., O'Sullivan & Byers, 1996; Underwood & Findlay, 2004), these results strongly caution against using the two terms interchangeably for two main reasons. First, although *having sex* was the second most frequently generated feature of sexual intimacy in Study 1, it was not rated as particularly central to the concept in Study 2. Second, the majority of unique sexual intimacy features were not also features of sexual activity (e.g., *bodies*, *senses*, *tasting*); and some of the most central attributes were not necessarily "sexual" (e.g., *consensual*, *holding each other*, and *closeness*). These findings indicate that laypeople do consider sexual intimacy as something more than just

sexual activity with their romantic partner. Researchers should be aware that using the term sexual intimacy when they are actually interested in sexual activity may cause confusion and misleading results. For example, it is not advisable to ask participants to “rate the amount of sexual intimacy in your relationship” if the goal is to assess frequency of sexual intercourse; an individual could have very frequent intercourse but not experience much sexual intimacy or vice versa. Likewise, ratings of sexual frequency (or satisfaction) should not be labeled “sexual intimacy” in research reports as this term implies that a set of other central attributes were also assessed (e.g., passion, desire, arousal, closeness, and love)

The data from these studies also indicate that sexual intimacy is more than just the sum of intimacy and sexual activity; it is something new – the unique product of the two concepts. This “something new” is perhaps closest to Kleinplatz and Menard’s (2007) optimal sexuality. In fact, many of the central sexual intimacy attributes in Study 2 of the current thesis parallel Kleinplatz and Menard’s characteristics of “great sex”. For example, the most predominant characteristic of great sex they identified was being “fully present” and “totally absorbed in the moment”; Study 1 attributes such as *sensations*, *senses* and *bodies* reflect the “heightened bodily sensations” and “being in touch with sensory experience” that participants in Kleinplatz and Menard described. According to Prager and Roberts (2004), being fully focused upon oneself, one’s partner and the interaction (i.e., being in the moment) is integral to experiences of deep intimate connection; and is especially important during intimate sexual encounters. They suggest that being fully present in a sexual experience is reminiscent of the “sexual playfulness” that clinicians describe of couples who have great sex (e.g., Kaplan, 1974; Metz & Lutz, 1990). (Not surprisingly, *fun* was a central sexual intimacy attribute.)

Great sex in Kleinplatz and Menard was also characterized by open and honest *communication*, feelings of *trust, acceptance, and respect*; *having a connection* with one's partner; *mutuality* (e.g., *consensual, reciprocal*); being both sexually *receptive* and *giving*; and *responsiveness* to one's partner (Kleinplatz & Menard, 2007). (Italics in the preceding sentence denote sexual intimacy attributes from Study 1 in the first manuscript.) Finally, participants in Kleinplatz and Menard emphasized the importance of an enduring sense of intimacy in the relationship. In fact, according to Kleinplatz and Menard, intimacy is crucial for great sex and is the foundation for sexual intimacy. This sentiment is echoed by Armstrong (2006) who commented that "one type of sensational sex is intimacy-based sex, involving a meaningful connection that is fuelled by emotional intimacy and physical tenderness inside and outside the bedroom" (p. 294).

However, this type of sexual experience, whether "great sex" or "sexual intimacy", may not be achieved or even wanted by every couple. According to Kleinplatz and colleagues (2008), great sex does not simply "happen" but involves considerable time, energy, and devotion from both members of the couple. For example, couples may need to deliberately plan for and prioritize sexual activity. In addition to great sex requiring a significant investment of time and energy, individuals must also be willing and prepared to invest themselves emotionally. Although the latter may lead to unwelcome feelings of vulnerability or emotional nakedness; participants in Kleinplatz et al. "treasured" the opportunities for self-exploration and discovery that were afforded in truly intimate relationships with a trusted partner. Thus, whereas striving to make sex more pleasurable and satisfying is a common goal for most couples, seeking to be truly accepting of and responsive to one's partner's sexual needs and desires may be neither realistic nor desirable for many couples.

Whereas studies 1 through 6 focused primarily on sexual intimacy and how it related to intimacy in general, the main focus of Study 7 was relationship intimacy and how it related to subjective well-being (i.e., relationship, sexual, and life satisfaction). The primary goal of Study 7 was to examine the unique longitudinal relationship between intimacy and well-being. To assess intimacy in this study, I combined the prototype- and theory-based measures of intimacy developed in Study 6 into a single global measure of intimacy in romantic relationships. The data from this study showed that initial intimacy significantly buffered against declines in all three well-being domains even when controlling for attachment avoidance and anxiety. These findings highlight the importance of actual intimate experiences in one's relationship, over and above expectations and beliefs about intimacy, for promoting both interpersonal and personal well-being. Moreover, supplementary analyses (presented in Appendix D) showed that intimacy actually promoted attachment security: greater initial intimacy led to a decline in attachment avoidance (Research Question D1).

Taken together, these results suggest one mechanism by which an individual's attachment style may change throughout the course of his or her relationship. Despite pre-existing expectations and beliefs regarding intimacy and trust, insecure individuals can still experience intimacy as a result of their partners' responsive behaviours, which can lead to greater relationship satisfaction, which likely reinforces *new* expectations and beliefs. In fact, according to Reis (2006), although intimate interactions are strongly influenced by one's attachment style, "at a fundamental level intimacy is grounded in the reality of actual interactions" (p. 387). Thus, over time, actual experiences of feeling understood, accepted, and cared for by one's partner may result in greater comfort opening up to one's partner with less fear of negative repercussions leading to a decrease



in avoidance. Furthermore, as Reis and Patrick (1996) note, people only self-disclose in anticipation of being understood, validated, and cared for. Thus, these actual experiences of intimacy (which over time lead to global perceptions of relationship intimacy) may encourage greater self-disclosure from avoidant individuals; this, in turn, likely leads to more experiences of intimacy, creating a positive upward spiral reinforcing new (positive) beliefs about intimacy and dependency.

In addition, the results of Study 7 showed that intimacy remained a significant predictor of change in sexual satisfaction when controlling for relationship satisfaction. This is especially impressive given that only relationship satisfaction (and not relationship intimacy) uniquely predicted relationship survival over the eight month period. Perceiving one's relationship as positive and satisfying is clearly important for maintaining that relationship (cf. Clements et al., 2004); however, it appears that perceiving one's partner as generally responsive to oneself is crucial for maintaining a satisfying sex life.

Study 7 also showed that the effects of intimacy on well-being remained significant when controlling for perceived closeness. (Although only initial intimacy uniquely predicted change in life satisfaction, initial closeness was a marginally significant predictor.) These results indicate that although intimacy and closeness are highly related, both in the current study and in previous research (e.g., Aron et al., 1992), they are nonetheless distinct processes. According to Aron et al. (1992), whereas closeness (as measured by the IOS) primarily represents interconnectedness in one's relationship, global evaluations of relationship intimacy more likely reflect "feeling close" to one's partner (e.g., care, trust, affection). Moreover, the former often (but not always) arises

from perceiving one's self as including the resources, perspectives, and characteristics of one's current relationship partner (Aron, Mashek, & Aron, 2004).

In fact, perceived self-other inclusion and intimacy likely have a reciprocal relationship. As each partner learns more about the other's core self (i.e., intimacy), the extent to which he or she is able to include the other's perspective and characteristics in his or her self presumably increases as well (Aron et al., 2004). In addition, as perceived self-other overlap increases, individuals presumably have a greater understanding of their partner's needs and motives, leading to greater responsiveness and more effective social support during subsequent intimate interactions (Reis & Shaver, 1988). Thus, intimate experiences with one's partner likely foster greater cognitive closeness and interconnectedness, and vice versa.

Finally, the results of Study 7 (including additional supplementary analyses presented in Appendix D) provide further support for intimacy and sexual intimacy as related, but distinct, concepts. Intimacy and sexual intimacy were strongly correlated at both T1 and T2 (Study 7); however, whereas intimacy uniquely predicted change in sexual intimacy, the reverse was not true (i.e., sexual intimacy did not predict change in intimacy; Research Question D2). Moreover, although both intimacy and sexual intimacy were significantly correlated with concurrent and future well-being, only initial intimacy uniquely predicted change in well-being over time (i.e., sexual intimacy did not mediate any links between intimacy and well-being; Study 7).

In the conclusion to the first manuscript I suggested that the role of sexual intimacy in well-being be explored further and I hypothesized that changes in sexual intimacy would likely influence overall sexual satisfaction, which would in turn affect personal and relationship well-being. The supplementary results presented in Appendix D (i.e.,

Research Question D3) provide some support for this idea. First, individuals who experienced an increase in sexual intimacy over the duration of the study also experienced an increase in sexual satisfaction. Second, an increase in sexual satisfaction was associated with improved life satisfaction and relationship satisfaction; research by Sprecher (2002) has also shown that change in sexual satisfaction is associated with change in relationship satisfaction over time. Finally, although an increase in sexual intimacy was also associated with improved relationship satisfaction, it was not associated with improved life satisfaction.

Although these correlations demonstrate a link between sexual intimacy and sexual satisfaction, and between sexual satisfaction and overall well-being, the question of directionality remains. Subsequent regression analyses presented in Appendix D, however, clarify the nature of these connections. With regard to the link between sexual intimacy and sexual satisfaction, it appears that it is the latter that influences the former, and not the reverse. Greater initial sexual satisfaction uniquely predicted change in sexual intimacy (controlling for initial intimacy; Research Question D4), but sexual intimacy did not uniquely predict change in sexual satisfaction once initial intimacy was included in the analysis (Study 7). These results suggest that whereas positive evaluations of one's sex life are crucial to maintaining sexual intimacy, the latter may only be possible when sexual satisfaction is already quite high, limiting its predictive ability. That is, a globally satisfying sex life may be a prerequisite for feeling understood, accepted, and cared for by one's partner during sexual activity. With regard to the relationship between sexual satisfaction and overall well-being, sexual satisfaction uniquely predicted change in relationship, but not life, satisfaction (Research Question D4). Although changes in sexual satisfaction corresponded to changes in life satisfaction (Appendix D), this was

likely due to the influence that relationship intimacy has on both variables (relationship intimacy uniquely predicted change in both sexual and life satisfaction in Study 7).

In fact, there were several interesting findings with respect to relationship intimacy and sexual satisfaction in Study 7 and in the supplementary analyses presented in Appendix D. First, they appeared to have a reciprocal relationship; greater initial intimacy buffered against declines in sexual satisfaction (Study 7) over time and greater initial sexual satisfaction buffered against declines in intimacy over time (Research Question D4). According to one marriage therapist “the best way to ensure a strong emotional and spiritual bond with your spouse is to do the one thing that defines your relationship as different from all others: stay sexually connected” (Weiner Davis, 2003, p. 32). Our findings echo this statement; not only does having a satisfying sex life deepen intimacy between partners in a romantic relationship, but it may also buffer against declines in intimacy over time. Second, both intimacy and sexual satisfaction uniquely buffered against declines in relationship quality and sexual intimacy (Research Question D4). That is, when both initial intimacy and sexual satisfaction were entered into the same regression equation, both emerged as significant unique predictors of change in relationship quality and of change in sexual intimacy.

Taken together, these findings illustrate that just as relationship intimacy and relationship satisfaction are distinct processes, so too are sexual intimacy and sexual satisfaction distinct. Although changes in sexual intimacy corresponded to changes in sexual satisfaction, regression analyses indicate that it is the may be sexual satisfaction, not sexual intimacy, that, along with relationship intimacy, drives change in relationship well-being (Appendix D). Thus, whereas having a sex life that is satisfying, but not

necessarily intimate, may be sufficient to help maintain overall well-being, one's relationship may need to be both satisfying *and* intimate to promote well-being.

### *Strengths*

There are several strengths of the research presented in this thesis. First, the sample sizes in all seven studies were quite large; in total, 1557 individuals participated in the seven studies and there were at least 120 participants in each study. The impressive sample size of Study 1 should increase confidence in the validity and generalizability of the intimacy and sexual intimacy prototypes generated in that study. In addition, participants in studies 6 and 7 were recruited in a variety of ways (e.g., student researchers in Study 6, listservs in Study 7) to obtain large, somewhat diverse samples of individuals in ongoing romantic relationships. For example, participants in Study 7 were more likely to be married or have children than typical university undergraduate students who participate in social psychology studies.

In addition, there is considerable variety in the methodology of the seven studies in the present thesis. Studies 1 and 2 were purely descriptive, with participants simply listing features of intimacy and sexual intimacy in Study 1 and making centrality judgements about the features from Study 1 in Study 2. Studies 3, 4, and 5, however, were all experimental. Study 3 tested participants' memory for central vs. peripheral features of either intimacy or sexual intimacy using both recall and recognition tasks; Study 4 used a lexical decision-making task to assess the effects of priming intimacy on the cognitive accessibility sexual intimacy, and vice versa; and in both studies 4 and 5 participants made judgements about a fictional couple in a dating relationship that was manipulated to convey varying levels of intimacy and sexual intimacy. Finally, whereas study 6 was

cross-sectional and measured intimacy and sexual intimacy using multiple assessments; Study 7 was longitudinal and included assessments of multiple domains of well-being.

### *Limitations*

There are some limitations to the studies reported in this thesis. As I noted in the first manuscript, one of the main limitations was that the participants in studies 1 to 6 were primarily undergraduate students in their early twenties. However, the very large sample obtained in Study 7 was older and somewhat more diverse than those of studies 1 to 6. Given that the general conclusions of studies 6 and 7 were similar (i.e., that ratings of intimacy and sexual intimacy in ongoing romantic relationships were related but distinct), I believe that the findings from Study 6 regarding prototype-matching can be generalized to an older, non-student population.

The other main limitation that I mentioned in the first manuscript was that prototypes are often limited by the time and place in which they are generated (Kelley, 1983), whereas “expert” definitions are more generalizable. The positive correlations between prototype- and theory-based measures for intimacy and for sexual intimacy (Study 6) as well as the good internal reliability of the intimacy measure in Study 7 developed using both “expert” and prototype definitions should increase confidence in the generalizability of the prototypes of intimacy and sexual intimacy generated in studies 1 and 2.

Whether the findings from these studies can be generalized across racial or ethnic groups, however, is unclear. Although no data on race or ethnicity was collected in Study 1, given that participants in Study 6 (who were also recruited by McGill undergraduate students) were of a variety of ethnic groups it is likely that the Study 1 sample was also somewhat ethnically diverse. In addition, the percentage of participants who identified as “Asian” (e.g., Chinese, Filipino, South Asian etc.) in studies 6 (10%) and 7 (16%) was

very similar to the percentage of Asians in the 2006 Canadian census data (i.e., 11%; Statistics Canada, 2006). However, the participants in all seven studies were predominantly North American Caucasians, and it is certainly possible that the nature and function of intimacy in romantic relationships differs cross-culturally.

Recent research by Marshall (2008), however, provides cross-cultural validation of Reis and Shaver's (1988) model of intimacy, as both Chinese Canadians and European Canadians conceptualized intimacy as involving self-disclosure and partner responsiveness. Therefore, regardless of the ethnic diversity of studies 1 and 2, the prototypes of intimacy and sexual intimacy generated in these studies may be generalizable across both individualistic and collectivistic cultures. In addition, although previous research has suggested that relationship intimacy may be more closely linked to personal well-being in individualistic societies than in collectivistic societies (cf. Dion & Dion, 1993), Marshall (2008) found evidence for cross-cultural similarity in the role of intimacy in relationship satisfaction and termination. Therefore, the relationships between intimacy and well-being found in studies 6 and 7 may generalize not only to Westerners, but to Easterners as well. In fact, Marshall suggests that culture is confounded with gender-role ideology; and that it is those who ascribe to more traditional gender roles who experience lower intimacy in their relationships (as a result of lower self-disclosure), independent of their collectivism.

Another limitation is the data from several of the studies presented in this thesis was collected online, and there is an inherent lack of control in this method of data collection. However, as I mentioned in the discussion to Study 7, the benefits of online data collection outweigh the potential drawbacks. This is especially true for studies 6 and 7 given the sensitive nature of the questionnaires (i.e., those asking about the sexual aspects

of one's relationship). In addition, although the questionnaires for Study 6 were online, participants were recruited face-to-face by individuals who knew them (i.e., the student researchers). Furthermore, every effort was made to ensure that the data collected in studies 2, 6, and 7 was valid (e.g., excluding responses with a completion time more than two times the speed of the average response).

A final limitation is that participants in Study 7, on average, were much better educated and therefore of a higher socio-economic status (SES), than the average Canadian. Whereas the highest level of education for approximately 20% of the Canadian population in 2006 was high school, this was true for only 6% of those in Study 7. In addition, 55% of Study 7 participants had a university degree (vs. 19% of the Canadian population); and in fact, approximately one-quarter of Study 7 participants had a masters degree or higher. Therefore, the relationships between intimacy and well-being found in Study 7 may not be generalizable to those with a lower SES, whose financial struggles may have a greater impact on their subjective well-being (cf. Seeman et al., 2004). Future research should examine both intimacy and sexual intimacy in a more nationally representative sample.

### *Future Research*

Sex in ongoing relationships is inherently social, but at the same time, it is intensely private making it both fascinating and challenging to study. One interesting avenue for future research would be to examine how couples actually negotiate the development of sexual intimacy in their relationships. It is likely that a connection exists between how a sexual relationship develops and later sexual well-being; a mutual and well-informed decision to enter into a sexual relationship may lead to more intimate and satisfying sexual experiences than if the decision was made recklessly or under coercion. In



addition, research has shown that considering the quality of one's relationship as a factor in the decision to engage in first sexual intercourse with a new dating partner is related to the development of a more positive relationship (Cate, Long, Angera, & Draper, 1993). Therefore, entering into a sexual relationship with a new partner in a relationship already characterized by high levels of intimacy may lead to better relationship and sexual well-being than if the relationship was lower in intimacy (cf. Metts, 2004). Furthermore, given that sexual satisfaction is highly related to overall intimacy and relationship satisfaction (Study 7) as well as to love, and commitment (Sprecher, 2002), a better understanding of how sexual relationships evolve over time might provide insight into the development of globally satisfying and intimate relationships. However, carrying out a prospective study on sex in newly established relationships would be extremely challenging given that sexual activity between new romantic partners typically occurs very early in the relationship (sometimes even on the first date). A speed-dating paradigm (cf. Finkel & Eastwick, 2008) may be particularly useful to follow both members of a couple from their first date to when they perceived their relationship as "established" and beyond.

Future research should also explore how attachment anxiety and avoidance influence the development of satisfying and intimate sexual relationships. Although there is considerable research on attachment and sexuality (cf. Gillath & Schacner, 2006), much work remains on how the beliefs and expectations regarding intimacy of *both* members of a couple influence the development of sexual intimacy and sexual satisfaction. This may be especially relevant for couples in which one partner is highly avoidant, given that "attachment avoidance interferes with intimate, relaxed sexuality because sex inherently calls for physical closeness and psychological intimacy, a major source of discomfort for avoidant individuals" (Tracy, Shaver, Albino, & Cooper, 2003, p. 141).

### *Conclusion*

This research makes several novel contributions to the literature on intimacy. First, the research in this thesis is the first to date to systematically and experimentally explore the concept of *sexual* intimacy. This research not only shows that there is a consensus among laypeople about the nature of sexual intimacy, but it reveals that sexual intimacy is perceived as more than just sexual activity or even the sum of sexual activity and intimacy. The research presented in this thesis suggests that sexual intimacy is perhaps best illustrated by two lovers with a strong emotional connection, who are open and responsive to each other's sexual needs and desires, and for whom sexual activity is not only about passion and desire, but love and affection. It also suggests that sexual intimacy may be one outcome of having both a highly satisfying sex life and a highly intimate relationship with one's partner. Second, this research is the first to show that global perceptions of intimacy in ongoing romantic relationships can buffer against declines in interpersonal and personal well-being over time. Moreover, these overall perceptions of relationship intimacy not only influence well-being independent of attachment style, but actually promote attachment security. Thus, actual experiences of intimacy with a romantic partner (which are the building blocks of global perceptions of intimacy; Reis & Shaver, 1988), can have a profound effect on the way an individual perceives himself or herself in relation to significant others.

Finally, the present program of research also made several novel methodological contributions. First, the consistency between the hypothetical relationships and actual relationships examined provides validity for and confidence in the methodology of studies 4 and 5 (i.e., relationship vignettes) as a tool for future research. Second, a novel measure of global relationship intimacy was developed which incorporates both

theoretical and prototypical definitions of intimacy. Finally, prototype and theory-driven assessments of sexual intimacy were developed and validated which can be used in future research to study this important, but largely neglected, aspect of romantic relationships.

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## Appendix A: Complete List of Study 7 Measures

### Core Measures

1. Demographic Information and Religiosity<sup>a</sup>
2. Relationship and Sexual History<sup>a</sup>
3. Current Romantic Relationship Information (e.g., status, living arrangements)
4. Experiences in Close Relationships Scale – Short Form (ECR-S; Wei et al., 2007)
5. Life Satisfaction (Diener et al., 1985)
6. Subjective Health Rating (Idler & Benyamini, 1997)
7. Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983)
8. Inclusion of Other in the Self Scale (IOS; Aron, Aron, & Smollan, 1992)
9. Relationship Satisfaction (adapted from Norton, 1983)
10. Relationship Conflict (e.g., frequency, intensity) (from Danes, Leichtentritt, Metz, Huddleston-Casas, 2000)
11. Frequency of Intimate Behaviours (e.g., affectionate behaviour, quality time) (from Renaud, Byers, & Pan, 1997)
12. Global Measure of Sexual Satisfaction (GMSEX; from Lawrance & Byers, 1998)
13. Relationship Intimacy (from Laurenceau et al., 1998; Manne et al., 2004; Birnie & Lydon, 2009)
14. Sexual Intimacy Scale<sup>b</sup>

### Extended Well-Being Measures

#### *Relationship Well-Being*

1. Passionate Love Scale – Short Form (Hatfield & Sprecher, 1986)<sup>a</sup>
2. Primary Communication Inventory (PCI; Navran, 1967)<sup>a</sup>
3. Sexual and Emotional Infidelity (Glass & Wright, 1985; Blow & Hartnett, 2005)<sup>a</sup>

4. Growth vs. Destiny Relationship Beliefs (Knee, 1998)<sup>a</sup>
5. Relationship Commitment (Gagne & Lydon, 2003)
6. Dyadic Trust Scale (Larzelere & Huston, 1980)
7. Specific RISC (Linardatos & Lydon, 2005)
8. Relationship Motives Scale (Menzies-Toman & Lydon, 2008)
9. Relationship Strain (from Pearlin & Schooler, 1978)
10. Negative Interactions (from Stanley, Markman, & Whitton, 2002; Danes et al., 2000)

#### *Sexual Well-Being*

1. Sexual Self-Disclosure (from Herold & Way, 1998)<sup>ab</sup>
2. Sexual Health Communication (from Moore & Davidson, 2000; Herold & Way, 1998)<sup>ab</sup>
3. Birth Control Use and Protection from STIs<sup>ab</sup>
4. Growth vs. Destiny Sexual Beliefs (adapted from Knee, 1998)<sup>a</sup>
5. Sexual Opinion Survey – Short form (SOS; Fisher et al., 1988)<sup>a</sup>
6. Satisfaction with Body Image (from Avalos, Tylka, & Wood-Barcalow, 2005)<sup>a</sup>
7. Body Image Self-Consciousness Scale (Wiedermann, 2000)<sup>a</sup>
8. Frequency of Sexual Activities (adapted from Randall & Byers, 2003)
9. Lack of Sexual Intimacy Behaviours<sup>b</sup>
10. Sexual Motivation Scale (from Cooper, Shapiro, & Powers, 1998; Hill & Preston, 1996)
11. Sexual Functioning (from McNeil & Byers, 1997; Laumann et al., 1999)

#### *Personal Well-Being*

1. Life Events Questionnaire (from Brugha, Bebbington, Tennant, & Hurry, 1985)<sup>a</sup>

2. Rosenberg Self-esteem Scale – Short Form (SES; Rosenberg, 1965)<sup>a</sup>
3. Big Five Inventory (BFI-10; Rammstedt & John, 2007)<sup>a</sup>
4. Susceptibility to Embarrassment (from Kelly & Jones, 1997)<sup>a</sup>
5. Subjective Vitality (Ryan & Frederick, 1997)
6. Physical Symptoms (from Pennebaker, 1983)
7. Health behaviours (from Pennebaker, Colder, & Sharp, 1990)
8. CES-D (Radloff, 1977)
9. STAI-6 (Marteau & Bekker, 1992)
10. Relationship Commitment – Short Form (Gagne & Lydon, 2003)
11. Specific RISC – Short form (Linardatos & Lydon, 2005)

<sup>a</sup>Included at Time 1 assessment only.

<sup>b</sup>Measure developed for Study 7.

## Appendix B: Study 7 Intimacy Questionnaires

All responses were made on a 7-point scale (e.g., 1 = *not at all* to 7 = *a lot*).

### Relationship Intimacy

In general, in your relationship:

- ...how much do you disclose your **private thoughts** to your partner?
- ...to what degree do you feel **accepted** by your partner?
- ...how much does your partner disclose **his or her feelings** to you?
- ...to what degree do you feel **cared for** by your partner?
- ...how much does your partner disclose **his or her private thoughts** to you?
- ...how much do you disclose **your feelings** to your partner?
- ...to what degree do you feel **understood** by your partner?

In general, in your relationship:

- ...how much do you and your partner **interact** with each other?
- ...how **involved** are you and your partner with each other?
- ...to what extent would you describe your relationship as being **unconditional**?
- ...how **authentic** are you and your partner with each other?
- ...to what extent does your relationship involve a feeling of **completeness**?
- ...to what extent do you and your partner **have things in common**?

### Sexual Intimacy

When you share your private sexual thoughts with your partner, how much do you feel that your partner:

- ...**understands** you?
- ...**accepts** you?
- ...**cares for** you?



Please indicate your agreement to the following statements about sexual activity between you and your partner. *Note: Sexual activity can be intercourse, oral sex, foreplay, making out, mutual masturbation, etc.*

My partner **understands** what I need and want during sexual activity.

My partner is **responsive** to my sexual needs and desires.

My partner and I are **affectionate** to each other during sexual activity.

I **understand** what my partner needs and wants during sexual activity.

I am **responsive** to my partner's sexual needs and desires.

My partner and I have **no problem** talking about sexual things (e.g., our sex life, private sexual thoughts) when we are in a sexual situation.

During sexual activity with your partner, how much do you feel your partner:

...**understands** you?

...**accepts** you as you are?

...is **caring** and considerate of you?

## Appendix C: Additional Study 7 Descriptive Statistics

### Descriptive Statistics

Table C1 shows the means and standard deviations for the major study variables (i.e., intimacy, sexual intimacy, attachment anxiety, attachment avoidance, closeness, relationship satisfaction, sexual satisfaction, and life satisfaction) at Time 1 (Initial sample) and Time 2 (Follow-up sample). Participants were examined on the major study variables for gender and relationship status. T-tests were performed to compare males and females, and a One-Way ANOVA was performed to compare participants who were exclusively dating, engaged, and married.

#### *Gender*

Females reported greater attachment avoidance at T1 and greater attachment anxiety at T2 (both  $ps < .01$ ), greater life satisfaction at both T1 ( $p = .06$ ) and T2 ( $p < .05$ ), and greater sexual intimacy at T2 ( $p < .01$ ; see Table C2).

#### *Relationship status*

Participants who were exclusively dating reported lower levels of intimacy, closeness, relationship satisfaction, and life satisfaction at T1, greater attachment avoidance at T1, greater attachment anxiety at T2, and lower life satisfaction at T2 (all  $ps < .001$ ; see Table C3) than those who were married or engaged. Exclusive daters also reported greater attachment avoidance at T2 compared to married individuals ( $p < .01$ ). Engaged participants reported greater sexual intimacy and sexual satisfaction at T1 than those who were dating or married (both  $ps < .05$ ). Married participants reported less attachment anxiety at T1 than unmarried participants.

### Stability of Major Study Variables

Paired t-tests were carried out to examine the stability of the major study variables by gender and relationship status.

#### *Gender*

Only women showed a decline in relationship intimacy ( $p = .05$ ) and relationship satisfaction ( $p < .01$ ), a marginal decline in closeness ( $p = .06$ ); and an increase in attachment avoidance ( $p < .05$ ). Both genders experienced declines in sexual intimacy ( $ps < .001$ ) and sexual satisfaction ( $ps < .05$ ). Neither gender experienced a significant change in attachment anxiety or life satisfaction.

#### *Relationship status*

Only married participants experienced a decline in relationship intimacy ( $p < .05$ ), closeness ( $p < .01$ ), and relationship satisfaction ( $p < .001$ ). All groups experienced a decline in sexual intimacy (all  $ps < .01$ ); and both engaged ( $p = .07$ ) and married participants ( $p < .05$ ) showed a decline in sexual satisfaction and an increase in attachment avoidance (both  $ps < .05$ ). Only dating participants experienced a decline in life satisfaction ( $p < .05$ ). None of the groups experienced a significant change in attachment anxiety.

### T2 Relationship Outcome

Break-up analyses only included participants who were in exclusive dating relationships at T1 who were not living together; this resulted in 55 individuals whose relationships were still intact and 36 individuals whose relationships had ended. Of the 212 participants who were still in the same relationship at T2, 37 experienced an increase in the seriousness of their relationship (e.g., moving in together or becoming engaged between T1 and T2), 10 experienced a decrease, and the remaining 163 experienced no

change. Because there were so few participants who experienced a decrease in seriousness, all subsequent relationship seriousness analyses will only include the 200 who either increased or stayed the same.

Participants who had broken up by T2 reported lower levels of intimacy and relationship satisfaction, and marginally less closeness and attachment avoidance at T1 than those who were still together (see Table C4). No significant differences between the two groups emerged on T1 ratings of attachment anxiety, sexual intimacy, sexual satisfaction, or life satisfaction. We also looked at three additional T1 relationship variables: relationship length and relationship conflict (as assessed by frequency and intensity of conflict). The two groups did not differ on relationship length or conflict intensity at T1; however, those who had broken up by T2 reported more frequent conflict (see Table C4).

Participants who experienced an increase in relationship seriousness by T2 reported higher levels of sexual intimacy at T1 than those who stayed the same. No other significant differences emerged on the major study variables. However, those who experienced an increase had significantly shorter T1 relationships and experienced more conflict at T1 than those who stayed the same (see Table C5).

Table C1

*Means and Standard Deviations for Major Study Variables*

Variable	<i>T1</i>		<i>T2</i>	
	(n = 443)		(n = 212)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Relationship intimacy	5.80	0.91	5.91	0.78
Sexual intimacy	5.90	1.04	5.70	0.91
Attachment anxiety	3.20	1.12	3.21	.99
Attachment avoidance	1.68	1.01	1.54	.95
Closeness	5.00	1.38	5.05	1.30
Relationship satisfaction <sup>a</sup>	0.11	0.85	0.16	0.83
Sexual satisfaction	6.06	1.11	5.92	1.15
Life satisfaction	5.29	1.12	5.39	1.21

<sup>a</sup>Means and standard deviations for relationship satisfaction are standardized.

Table C2

*Means, Standard Deviations, and Group Differences for Sex on Major Study Variables*

Variable	<i>Males</i>		<i>Females</i>		<i>t</i>
	<i>(n<sub>TI</sub> =161; n<sub>T2</sub> = 60 )</i>		<i>(n<sub>TI</sub> = 282; n<sub>T2</sub> = 152)</i>		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
<i>Time 1</i>					
Relationship intimacy	5.72	0.91	5.85	0.91	-1.47
Sexual intimacy	5.81	1.07	5.95	1.02	-1.39
Attachment anxiety	3.26	1.15	3.17	1.10	.90
Attachment avoidance	1.87	1.04	1.57	.97	2.97**
Closeness	5.02	1.41	4.99	1.36	.19
Relationship satisfaction	0.06	0.77	0.14	0.90	-0.94
Sexual satisfaction	6.07	1.02	6.05	1.16	0.13
Life satisfaction	5.15	1.08	5.36	1.14	-1.90
<i>Time 2</i>					
Relationship intimacy	5.82	0.76	5.95	0.79	-1.08
Sexual intimacy	5.41	0.92	5.82	0.89	-2.98**
Attachment anxiety	3.46	1.05	3.12	0.95	2.34*
Attachment avoidance	1.67	0.90	1.49	0.97	.22
Closeness	5.15	1.44	5.01	1.23	.69
Relationship satisfaction	0.16	0.71	0.15	0.88	0.09
Sexual satisfaction	5.74	1.10	5.98	1.16	-1.41
Life satisfaction	5.09	1.29	5.51	1.16	-2.27*

\* $p < .05$ . \*\* $p < .01$ .

Table C3

*Means, Standard Deviations, and Group Differences for Relationship Status on Major Study Variables*

	<i>Exclusive Dating</i>		<i>Engaged</i>		<i>Married</i>			
	<i>(n<sub>TI</sub> = 249; n<sub>T2</sub> = 98)</i>		<i>(n<sub>TI</sub> = 43; n<sub>T2</sub> = 23)</i>		<i>(n<sub>TI</sub> = 150; n<sub>T2</sub> = 90)</i>			
Variable	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> <sup>a</sup>	<i>Post Hoc</i>
<i>Time 1</i>								
Relationship intimacy	5.64	0.89	6.21	0.66	5.95	0.96	10.80***	D < E, M
Sexual intimacy	5.87	0.97	6.34	1.05	5.83	1.13	4.31*	E > D, M
Attachment anxiety	3.44	1.05	3.20	1.13	2.79	1.11	17.26***	M < D, E
Attachment avoidance	1.92	1.01	1.40	1.21	1.36	0.83	17.66***	D > E, M
Closeness	4.72	1.33	5.72	1.10	5.28	1.39	14.92***	D < E, M
Relationship satisfaction	-0.09	0.84	0.47	0.84	0.33	0.81	16.29***	D < E, M
Sexual satisfaction	6.01	1.10	6.53	0.68	6.00	1.20	4.51*	E > D, M
Life satisfaction	5.07	1.14	5.46	1.09	5.60	1.02	11.81***	D < E, M
<i>Time 2</i>								
Relationship intimacy	5.80	0.77	6.10	0.68	5.99	0.81	2.09	

Sexual intimacy	5.66	0.93	5.91	0.86	5.70	0.91	0.72	
Attachment anxiety	3.52	0.95	3.05	0.93	2.91	0.93	10.30***	D > E, M
Attachment avoidance	1.72	1.03	1.58	0.79	1.33	0.87	4.06**	D > M
Closeness	4.99	1.31	5.57	.99	4.98	1.32	2.10	
Relationship satisfaction	0.06	0.81	0.16	0.93	0.26	0.83	1.34	
Sexual satisfaction	5.89	1.14	6.20	0.83	5.87	1.23	0.81	
Life satisfaction	4.99	1.31	5.70	0.96	5.74	1.02	10.74***	D < E, M

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<sup>a</sup>T1 df (2, 439); T2 df (2, 208).

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



Table C4

*Means, Standard Deviations, and Group Differences for T2 Relationship Outcome of Exclusive Daters Living Apart on T1 Relationship Variables*

	<i>Still Together</i>		<i>Broke Up</i>		
	<i>(n = 55 )</i>		<i>(n = 36)</i>		
Variable	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Relationship intimacy	5.84	0.73	5.40	0.96	2.51*
Sexual intimacy	5.98	0.85	5.65	1.17	1.54
Attachment anxiety	3.46	1.02	3.59	1.17	-0.55
Attachment avoidance	1.78	0.89	2.20	1.23	-1.78
Closeness <sup>b</sup>	4.71	1.34	4.14	1.53	1.87
Relationship satisfaction	0.12	0.89	-0.44	0.85	3.00**
Sexual satisfaction	6.10	1.04	5.71	1.48	1.47
Life satisfaction	5.17	1.12	4.84	1.20	1.34
Relationship length <sup>a</sup>	20.43	20.67	18.15	15.13	.57
Conflict frequency <sup>b</sup>	2.69	1.41	3.56	1.65	-2.67*
Conflict intensity <sup>b</sup>	3.16	1.70	3.44	1.81	-0.75

<sup>a</sup>Measured in months. <sup>b</sup>Responses given on a 7-point scale with higher numbers representing more of the construct.

\* $p < .05$ . \*\* $p < .01$ .

Table C5

*Means, Standard Deviations, and Group Differences for T2 Relationship Seriousness*

*Change on T1 Relationship Variables*

	<i>No change</i>		<i>Increase</i>		
	<i>(n = 163)</i>		<i>(n = 37)</i>		
Variable	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>
Relationship intimacy	5.95	0.76	6.07	0.69	-0.84
Sexual intimacy	5.88	0.95	6.29	0.76	-2.42**
Attachment anxiety	3.08	1.05	3.18	.93	-.54
Attachment avoidance	1.47	.82	1.46	.89	.04
Closeness <sup>b</sup>	5.10	1.33	5.35	1.21	-1.06
Relationship satisfaction	0.23	0.79	0.33	0.93	-0.69
Sexual satisfaction	6.00	1.17	6.36	0.87	-1.77
Life satisfaction	5.45	1.07	5.42	1.07	0.16
Relationship length <sup>a</sup>	70.76	70.26	31.04	24.55	5.82***
Conflict frequency <sup>b</sup>	3.06	1.47	2.54	1.30	1.98*
Conflict intensity <sup>b</sup>	3.50	1.62	3.11	1.78	1.29

<sup>a</sup>Measured in months. <sup>b</sup>Responses given on a 7-point scale with higher numbers representing more of the construct.

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

### Appendix D: Additional Study 7 Analyses

The background variables included in Step 1 for each of the longitudinal regression analyses below were the same as those in the Study 7 analyses (i.e., gender, age, relationship length and status, total number of relationships, serious relationships, and sexual partners)

*Research Question D1: Does intimacy at T1 predict change in attachment over time?*

I conducted two longitudinal regressions to predict change in (a) attachment anxiety and (b) attachment avoidance from T1 intimacy. T1 attachment (anxiety or avoidance) was entered in Step 2, and T1 intimacy was entered in Step 3. T1 intimacy did not predict change in attachment anxiety; however it did predict change in attachment avoidance. The addition of T1 intimacy significantly improved the model,  $F(1, 201)$  change = 6.64,  $r^2$  change = .02,  $p < .05$ ; T1 intimacy predicted a decrease in attachment avoidance ( $\beta = -.17$ ,  $p < .05$ ). That is, individuals in relationships characterized by higher initial levels of intimacy became less avoidant over eight months.

*Research Question D2: Do intimacy and sexual intimacy influence each other reciprocally over time?*

I conducted two longitudinal regressions to predict (a) change in intimacy from sexual intimacy, and (b) change in sexual intimacy from intimacy. Results showed that whereas intimacy uniquely predicted change in sexual intimacy ( $\beta = .15$ ,  $p < .01$ ), sexual intimacy did not predict change in intimacy.

*Research Question D3: How do changes in sexual intimacy correspond to changes in well-being over time?*

I examined the correlations between changes in intimacy, sexual intimacy, attachment, and well-being over the course of the study (see Table D1). Results showed that

individuals who experienced an increase in intimacy in their relationship from T1 to T2 also tended to experience an increase in well-being and a decrease in attachment anxiety and avoidance. Those who experienced an increase in sexual intimacy experienced increased relationship satisfaction and sexual satisfaction, but not life satisfaction. Finally, change in intimacy was positively correlated with change in sexual intimacy.

*Research Question D4: Does well-being at T1 predict change in intimacy over time?*

I also conducted three longitudinal regressions to predict change in intimacy from T1 well-being (i.e., relationship, sexual, and life satisfaction). I entered T1 intimacy in Step 2, and T1 well-being in Step 3. Neither the addition of T1 relationship satisfaction nor T1 life satisfaction significantly improved the model,  $ps > .09$ . However, the addition of T1 sexual satisfaction did improve the model,  $F(1, 201)$  change = 12.44,  $r^2$  change = .03,  $p < .01$ ; T1 sexual satisfaction predicted change in intimacy ( $\beta = .18$ ,  $p < .01$ ).

Given the above findings, I conducted three additional longitudinal regressions to predict change in relationship and life satisfaction, as well as in sexual intimacy from both T1 sexual satisfaction and T1 intimacy. First, T1 relationship satisfaction was entered in Step 2, followed by both T1 predictor variables in Step 3. Results showed that both T1 intimacy ( $\beta = .20$ ,  $p < .01$ ) and T1 sexual satisfaction ( $\beta = .18$ ,  $p < .01$ ) uniquely predicted change in relationship satisfaction. Second, T1 life satisfaction was entered in Step 2, followed by both T1 predictor variables in Step 3. Results showed that only T1 intimacy ( $\beta = .16$ ,  $p < .01$ ) uniquely predicted change in life satisfaction, not T1 sexual satisfaction. Finally, T1 sexual intimacy was entered in Step 2, followed by both T1 predictor variables in Step 3. Results showed that both T1 intimacy ( $\beta = .14$ ,  $p < .05$ ) and T1 sexual satisfaction ( $\beta = .23$ ,  $p < .001$ ) uniquely predicted change in sexual intimacy.

Table D1

*Intercorrelations Between T1 to T2 Change in Major Study Variables (N = 212)*

T1-T2 Change Variable	1	2	3	4	5	6	7
1. Relationship intimacy	--						
2. Sexual intimacy	.26**	--					
3. Attachment anxiety	-.20**	-.08	--				
4. Attachment avoidance	-.25**	-.11	.07	--			
5. Closeness	.18**	.09	-.11	-.08	--		
6. Relationship satisfaction	.42**	.18**	-.15*	-.17*	.20**	--	
7. Sexual satisfaction	.28**	.43**	-.22**	-.25**	.16*	.24**	--
8. Life satisfaction	.18*	.04	-.04	-.24**	-.06	.13	.16*

\* $p < .05$ . \*\* $p < .01$ .