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Global and Specific Relational Models in the Experience of Social Interactions and Significant Life Events

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October 1998

A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfilment of the requirements of
the degree of Doctor of Philosophy (Ph.D.)

Preface

In the field of close relationships, the past decade has been marked by a proliferation of research on adult attachment. This research activity was spawned by the work of Hazan and Shaver (1987) and Main, Kaplan and Cassidy (1985), who transposed onto adult samples the attachment categories developed by Bowlby and Ainsworth to explain individual differences in children's relationship to their primary caretaker. Since then, theorizing and research on adults' working models of attachment has rapidly grown into a well established literature, spanning Clinical, Cognitive, Developmental, Evolutionary, Personality and Social Psychology. The present dissertation further contributes to the knowledge and understanding of adults' close relationships by providing evidence of global and specific attachment models, as part of a network of interconnected, but distinct models. Another objective was to delineate the relative contributions of global, generalized attachment models and relationship-specific models to the experience of significant life events and daily interactions.

The *first chapter* begins with a brief overview of the two broad traditions in adult attachment research and assessment methods. This is followed by a discussion of how, to date, most adult attachment research appears to suggest that this is solely an individual difference variable, although reports of relationship differences suggest that individuals have multiple attachment models. These multiple models of self and other within the relational context are then integrated with Collins and Read (1994) and Crittenden's (1990) social-cognitive theories of a hierarchical network of models or a meta-structure. Finally, the objectives of the present dissertation are given along with an overview of the research program.

In the *second chapter*, using two samples of young adults, I examine the degree of association between global models of self and other and multiple relationship-specific models. The results of these two studies support the notion that people possess multiple relationship-specific models, which are highly

variable but also share a common factor. This underlying factor is significantly associated with global models of self and other.

In the *third chapter*, I examine the stability of global and relationship-specific models of self and other, assessed at two time points in a sample of 293 young adults. Furthermore, the evidence supporting meaningful changes in global and specific relational models over time, as top-down and bottom-up effects, is considered. Top-down effects imply that global models of self and other produce changes in relationship-specific models. Bottom-up effects refer to the specific models of self and other, collectively, inducing change in global models of self and other over time.

Subsequent chapters report research which assessed the relative contributions of global and specific models of self and others to the experience of significant life events and daily social interactions within existing relationships. In the *fourth chapter*, the hypothesis that parents and peers relationships assume different roles with respect to fulfilling young adults' relational needs is discussed. These hypothesized differences in the roles of parental and peer relationships are tested within a longitudinal study which tests the relative contributions of global and relationship-specific models of self and others in young adults' experience of their first semester of university and a relationship breakup.

Although adult attachment models are premised to reflect interpersonal experience, research has only recently begun to examine individual differences in the experience of social interactions as a function of global or specific attachment models. The *fifth chapter* presents the results of a study which tested the main effects and statistical interactions of global and relationship-specific models of self and other in explaining the experience of social interactions within relationships. Finally, the *sixth and final chapter* of this dissertation consists of a summary and conclusions drawn from the present research.

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Abstract

The objectives of this research program were to provide evidence of the distinction between global and specific relational models and to assess their relative contributions in the experience of significant life events and daily social interactions. Relationship-specific models were operationalized in two ways: in terms of significant role relationships and in terms of salience (i.e., frequency of interactions). The association between global relational models and specific models, selected on the basis of the other's role (Study 1) or salience (Study 2), was examined. Results indicate that these constructs were correlated, but not redundant.

Moderate stability of global and specific models was found over 4 months. Analyses examining the extent to which change in this network of models operated through top-down or bottom-up processes suggested that change occurred mainly as a bottom-up process. Models of self and other for established relationships were generalized to the global models, but the global models did not contribute much to shaping changes in specific models.

Adjustment to two different life events was examined to distinguish between the contributions of global and distinct relationship-specific models in the experience of events eliciting different relational needs. Adjustment to university, anticipated to induce secure base needs, was in part explained by the global model of self and also by the model of other for father. In contrast, adjustment to a romantic breakup, expected to arouse safe haven needs, was associated with the model of self with a close friend, but not parental or global models.

Finally, global and specific models of self and other contributed to explaining the experience of daily interactions within relationships. Relationship-specific models of other were most strongly associated with the quality and intimacy of interactions. The global model of other made modest, but significant

additional contributions to explain these ratings. The global model of self moderated the association between specific models of self and ratings of interactions to explain a significant, yet small proportion of the variance. In sum, this research demonstrated that attachment or relational models can be considered both global and specific representational structures, reflecting relational as well as individual differences.

Résumé

Les objectifs de ce programme de recherche étaient de démontrer la distinction entre les modèles relationnels globaux et spécifiques, ainsi que d'évaluer leurs contributions respectives à l'expérience d'événements significatifs et d'interactions quotidiennes. Les modèles spécifiques furent échantillonnés selon le rôle de l'autre personne (ex., mère, Étude 1) et selon la saillance de la relation (c.-à-d., la fréquence des interactions, Étude 2). Les modèles relationnels globaux et spécifiques étaient corrélés mais non redondants.

Les modèles globaux et spécificques étaient modérément stables sur une période de 4 mois. Les analyses portant sur le changement de "haut-en-bas" et de "bas-en-haut" dans ce réseau de modèles suggèrent principalement un processus de changement de bas-en-haut. Les modèles de soi et d'autrui dans les relations établies se généralisaient aux modèles globaux. Toutefois, ces derniers n'ont pas beaucoup contribué au développement des modèles spécifiques déjà établis.

L'adaptation à deux événements significatifs fut examinée afin de distinguer la contribution des modèles relationnels globaux et spécifiques à différentes relations à l'expérience d'événements suscitant des besoins relationnels différents. L'adaptation à l'université, qui devait évoquer le besoin d'une base sécurisante, fut en partie expliquée par le modèle de soi global ainsi que le modèle d'autrui pour son père. Par contre, l'adapation à une rupture amoureuse, qui devait susciter le besoin d'un havre réconfortant, fut associée au modèle de soi avec son plus proche ami et non aux modèles globaux, ni aux modèles spécifiques en relation avec ses parents.

Enfin, les modèles globaux et spécifiques de soi et d'autrui ont contribué à expliquer l'expérience d'interactions quotidiennes à l'intérieur de relations spécifiques. Les modèles spécifiques d'autrui étaient fortement associés à la perception de qualité et d'intimité des interactions. De plus, le modèle global d'autrui contribue, modestement mais significativement, à expliquer la perception des interactions. Le modèle global de soi agissait comme modérateur de

l'association entre les modèles spécifiques de soi et la perception des interactions, expliquant significativement une faible proportion mais de la variance. En conclusion, cette recherche a démontré que les modèles relationnels (ou d'attachement) peuvent être considérés comme des structures cognitives globales et spécifiques, représentant des différences tant relationnelles qu'individuelles.

Acknowledgments

First and foremost I wish to thank my advisor, John Lydon, for his guidance, his insightful and constructive suggestions, and his unfailing words of wisdom, kindness and encouragement throughout the years. He has been a true mentor and role model.

I also wish to recognize the contribution of my most significant other, Janick Beauregard. His loving support, understanding and undying faith helped me persist in the face of the many challenges of graduate school.

The research reported in this dissertation was developed and conducted in collaboration with Faby Gagné, Alexandra Gousse, Richard LeGrand, Joy Schinazi and Lorne Sugar. Without their hard work and dedication, this research would not have been possible.

Furthermore, I am grateful to the following research assistants and volunteers who helped with the mailing of questionnaires, the telephone interviews and reminder calls, as well as the overwhelming amount data entry and verification which were required by the longitudinal study of the transition from CEGEP to university: Salimah Alibhai, David Barner, Julie Cloutier, Virginia Fenwick, Raquel Ferns, Grainne Fitzsimmons, Teressa Grosko, Sarah Kim, Mandee Labelle, Annik Léveillé, Karen Levy, Tara Pellegrino, Jewel Perlin, Elysia Pitt, Melanie Podsiadlo, Leyla Shahabi, Manjit-Kaur (Sonia) Singh, Deborah Vogt and Seungmi Yang.

This longitudinal study was also conducted with the help of administrators, teachers and other staff members at the Collège Bois-de-Boulogne, the Collège Lione-Groulx and Vanier College, as well as the registrars' offices at the following universities: Concordia University, École des Hautes Études Commerciales, École Polytechnique de Montréal, McGill University, Université de Montréal, Université de Sherbrooke, Université du Québec à Hull, Université du Québec à Montréal, Université du Québec à Trois-Rivières, Université Laval and University of Ottawa.

The present research was supported by a doctoral fellowship from the Social Sciences and Humanities Research Council of Canada (SSHRC) and by research grants provided by the Faculty of Graduate Studies of McGill University, and the Fonds pour la formation de chercheurs et l'aide à la recherche (Fonds FCAR) and SSHRC.

Finally, I wish to thank Richard Koestner for his recommendations regarding the use of daily interaction records and, last but not least, Mark Baldwin, Debbie Moskowitz and Stéphane Perreault for their helpful comments on earlier drafts of this dissertation.

Chapter 1

Introduction

The quality of close relationships is a topic which elicits the interest of most lay people and also of many social scientists. Close relationships and their potentially uplifting, motivating, inhibiting and destructive effects on the individual have been the topic of countless novels, plays, talk-shows and self-help books. Research in clinical, developmental, personality and social psychology has consistently demonstrated the positive effects of close relationships on psychological and physical well-being throughout the life-span (e.g., Baumrind, 1967; Burman & Margolin, 1992; Cohen & Wills, 1985; Harlow & Zimmerman, 1959). It is not surprising then to find that psychological research and theory has examined how lay people's theories of close relationships (i.e., their cognitive representations of relationships) are associated with their social experience and well-being.

Attachment theory, first proposed by Bowlby (1969, 1973, 1980) to explain the parent-child bond in infancy, is a broad-based theory which suggests that over repeated interactions with a close other people form predictable cognitive models of the relationship. In Bowlby's terms, they develop *internal working models* of their attachment relationship. Two models are formed for the relationship: a model of self and a model of other. Individual differences observed in infants' behaviors with their primary caregiver (Ainsworth, Blehar, Waters & Wall, 1978), adults' representations of their childhood relationships with their parents (Main, Kaplan & Cassidy, 1985) and adults' representations of their romantic relationship (Collins & Read, 1990; Hazan & Shaver, 1987) have been attributed to underlying differences in the models of self and other. Adult attachment models, which are the focus of the present dissertation, are assumed to be extensions of childhood attachment models, whereby childhood models of self and other are expected to contribute to shaping adult models (Collins & Read,

1994; Bartholomew & Horowitz, 1991; Bartholomew & Shaver, 1998).

The quality of adult attachment relationships has been assessed through a wide variety of methods. In an overview of these methods, Bartholomew and Shaver (1998) describe the distinctions between two broad traditions of adult attachment research. The first research tradition stems mainly from research conducted by child and clinical psychologists (e.g., Ainsworth, Bretherton, Cassidy, Crittenden and Main) and has focused on adults' retrospective reports of their childhood relationships with their parents, using mainly interviews and behavioral observations to assess attachment models. In contrast, the second tradition was spawned by the work of Hazan and Shaver (1987) and developed by personality and social psychologists (e.g. Brennan, Collins, Mikulincer, Read and Simpson). This research tradition has focused essentially on romantic relationships and has assessed adult attachment mainly with self-report questionnaires.

Drawing on these two research traditions, Bartholomew (1990) proposed a two-dimensional, four category model of adult attachment which consisted of the logical combinations of positive and negative models of self and others (which she also referred to as the dependence and avoidance dimensions). Before she proposed this four category model, attachment models, in both research traditions, had been generally described as three distinct relational styles: secure, anxious/ambivalent and avoidant. The secure attachment style referred to adults who had close, trusting relationships in which they felt they could depend on others for comfort and yet retained a certain autonomy within their close relationships. The anxious/ambivalent (or preoccupied) style referred to adults who ardently desire closeness and intimacy in their relationships, but fear that others will reject them. These adults were said to be highly dependent on their close relationships but also to not feel worthy of others' love and care, thus leading them to be generally preoccupied by their relationships. Finally, the

avoidant style referred to individuals who remained distant and uninvested in their close relationships. They were said to be avoidant of intimacy and of depending on others.

Bartholomew's (1990) typology consisted of two categories which had until now been widely validated in attachment research, the secure and preoccupied (or anxious/ambivalent) styles, and two novel categories which she extracted from Main et al. (1985) and Hazan and Shaver's (1987) avoidant categories: the dismissing and fearful styles. As Bartholomew (1990) explained, the positive model of self refers to having a sense of being worthy of others' love, support and attention, whereas the negative model of self corresponds to feeling unworthy of such caring responses. The positive model of others refers to seeing others as trustworthy, dependable and generally accepting. In contrast, the negative model of others is associated with expecting others to be unreliable, rejecting, and generally unsupportive. The *secure* style is characterized by positive models of self and other, whereby the person is generally comfortable with closeness and intimacy, feels worthy and lovable and expects that people will be generally accepting and responsive to his or her needs. The *preoccupied* style is one in which individuals have a positive model of others, but a negative model of themselves. A person assessed as having a preoccupied style evaluates others positively but feels unworthy of their love and acceptance. Individuals with a *dismissing* style are said to have positive views of themselves, but not of others. They maintain a sense of invulnerability by avoiding closeness in relationships, protecting themselves from the anticipated disappointment which would be expected to ensue from seeking intimacy or comfort from others. Finally, individuals with a *fearful* attachment style have similarly negative models of others but also negative models of themselves. They avoid closeness and intimacy out of a fear of rejection.

Bartholomew and Horowitz (1991) validated this four category model

using two distinct methods of assessing these adult attachment styles. The first method is a 60 minute semi-structured attachment interview in which participants extensively describe their close relationships. Interviews are recorded and rated by trained coders with a highly structured coding procedure which is used to determine participants' attachment style. The second method is a four-item self-report measure, in which four paragraphs representing each of the four attachment styles are given to participants. They are asked to rate the extent to which they resembles each of the four styles and to select the style which best describes them.

These interview and self-report measures then provide continuous and categorical ratings of attachment. They can likewise be used to assess the valence and intensity of the underlying models of self and others (Griffin & Bartholomew, 1994). Griffin and Bartholomew (1994) reported that the scores for models of self and other obtained with Bartholomew & Horowitz's (1991) self-report and interview measures were predictably correlated with other widely used continuous attachment measures (i.e., Collins & Read, 1990; Hazan & Shaver, 1987; Simpson, Rholes and Nelligan, 1992), as well as indicators of the self concept (i.e., self-esteem and self-acceptance) and interpersonal orientation (i.e., sociability and interpersonal warmth).

In addition to the evidence provided by attachment theorists and researchers, Bowlby's (1969) internal working models were further supported by Baldwin's (1992) social cognitive theory of *relational schemas*, which resulted from the application of social cognitive schema theories of person-perception and self-perception to interpersonal relationships. Baldwin (1992) defines relational schemas as "cognitive structures representing regularities in patterns of interpersonal relatedness ... [which] include images of self and other, along with a script for an expected pattern of interaction derived via generalizations from repeated similar interpersonal experiences" (p. 461). In proposing this social-cognitive theory of relationship models, Baldwin furthermore suggested that

multiple schemas of self and other must be constructed to account for a person's varying experiences in their many roles and relationships. Thus, his work extended the cognitive structures underlying Bowlby's working models to non-attachment relationships (i.e., to relationships with close others who are not key attachment figures). It also highlights the likelihood of variable models of self and others within individuals, in accordance with their changing experiences within different relationships.

Multiple Models of Self and Others

So far, with the exception of the discussion of Baldwin's (1992) relational schemas, the discussion of attachment theory and measures may have implied that an individual has a single set of internal working models or a unique attachment style. It is unlikely that attachment theorists and researchers set out to explicitly restrict the concepts of working models of self and other to the relationship with the primary attachment figure (either the mother, father or romantic partner). However, as they generally consider only one relationship, their results and conclusions may misleadingly be read as implying that attachment is solely a trait-like individual difference variable. For instance, in reporting research which focuses on adult's romantic attachment, groups of participants distinguished on the basis of their romantic attachment style are referred to as "secure individuals" or simply "secures", rather than more precisely identified as "participants who were secure within their relationship with their romantic partner" (e.g., Levy, Blatt & Shaver, 1998; Lopez, Gover, Leskela, Sauer, Schirmer & Wyssmann, 1997). Additionally, researchers who utilize self-report measures occasionally do not mention in their report of the research what relationship(s) participants were asked to think about when completing the measure: all close relationships, their romantic relationship or their relationships with one or both parents (e.g. Brennan & Shaver, 1995).

The categorization of attachment models into distinct styles may have also

led researchers to treat attachment as primarily an individual difference variable. As research participants were divided into groups, based on this general style, they were successfully distinguished on a wide variety of individual, interpersonal and health characteristics. Baldwin, Fehr, Keedian, Seidel & Thompson (1993) report differences in interpersonal expectations of trust, closeness and dependency, all of which were more readily accessible in memory as a function of attachment styles. Attachment styles (or continuous ratings of the styles) have also successfully explained individual differences in personality traits (Shaver & Brennan, 1992), in health behaviors (Brennan & Shaver, 1995), coping responses to stress (Mikulincer & Florian, 1995) and various indicators of psychological and physical well-being (Feeney & Ryan, 1994; Mickelson, Kessler & Shaver, 1997; Mikulincer, Florian & Weller, 1993). This body of research on the broad-based differences associated with individuals' attachment styles (assessed in relation to parents, romantic partner or more generally close relationships) has resulted in a large emphasis being placed on attachment as a individual difference variable.

Only a handful of studies actually tested the idea that adults' attachment models may vary from one relationship to another (Bartholomew & Horowitz, 1991; Baldwin, Keelan, Fehr, Enns & Koh-Rangarajoo, 1996; Brock, Sarason, Sanghvi & Gurung, 1998; Trinke & Bartholomew, 1997). Nonetheless, in all cases where attachment models in multiple relationships were compared only modest correlations were found. Thus, although there was some overlap in models for different relationships, there were also substantial differences between attachment models for relationships with mother father, romantic partners and peers. The association between these specific attachment models and global attachment models has not been examined (with the exception of Blain, Thompson & Whiffen, 1993).

As they mature from childhood into adulthood, adults generally acquire new close relationships which can be marked by different interpersonal histories.

They are likely to retain their relationships with their parents, develop relationships with changing romantic partners, have one or many close friendships, as well as relationships with classmates, roommates, workmates and others. Thus the unique attachment model or style developed in infancy is unlikely to adequately capture adults' or even older children and adolescent's social reality (Armsden & Greenberg, 1987; Lynch & Cicchetti, 1991). Thus, it would be highly adaptive for individuals to have multiple attachment models which incorporate pertinent qualifying information for each relationship and thus more accurately represent their various close relationships.

Whereas the existence of multiple attachment or relational models within individuals may have been implicitly assumed, theoretical frameworks of the "meta-structure" which organizes these relationship-specific model were only recently clearly articulated (Collins and Read, 1994; Crittenden, 1990). Collins and Read (1994) speak of a hierarchical network of models. Crittenden (1990) refers to a meta-structure incorporating a generalized model, which accounts for consistent patterns across relationships, and relationship-specific submodels, which address the unique attributes of specific relationships. Both frameworks propose that, as children mature, they are likely to develop a more abstract or generalized representational model of close relationships on the basis of their attachment models with parents. They may initially apply this global model in their perceptions, expectations and behaviors within novel relationships. Yet, with the accumulation of discrepant and idiosyncratic information for multiple specific relationships not addressed by the global model, relationship-specific models must be formed to accurately account for the broad range of interpersonal experiences and knowledge within relationships (Collins and Read, 1994; Crittenden, 1990). Thus, both frameworks propose that people possess distinct global and relationship-specific models of their close relationships.

In accordance with these theoretical frameworks, global models of self and other may serve to provide a sense of coherence across relationships, particularly with respect to the model of self. Furthermore, it would be highly adaptive to complement these global models with specific models of self and other which consider the distinctive features of specific relationships, rather than exhibiting the same behaviors and having the same expectations in all relationships. This hierarchical structure may be an optimal one that does not characterize all individuals, specifically not mealtreated children from low socioeconomic families (Crittenden, 1990), but it would be expected to reflect the normative cognitive structure of attachment models in a sample of young adults attending university (i.e., the samples considered in the present research).

In sum, Collins and Read (1994) and Crittenden (1990) propose that a generalized or global attachment model and relationship-specific models are integrated into a network of interconnected models. Greater model specificity is acquired at the expense of generalizability: from the more abstract and widely generalizable global model, to more specific models differentiating between relationships with parent and peers which do not uniquely capturing any one relationship, and finally, into highly specific models for the relationships with the particular others in the person's social network (Collins and Read, 1994; Crittenden, 1990). It would therefore be simplistic and inaccurate to think of attachment models as solely an individual difference variable, although the casual reader of research focusing on individual differences explained by global, romantic or parental attachment models might form this conclusion.

In their detailed review of theory and research on internal working models of attachment, Shaver, Collins and Clark (1996) note that researchers have often drawn indiscriminating broad conclusions about the correlates or effects of attachment models, with little regard to the particular attachment measures they used to tap either global or specific models. They state that "attachment

researchers need to be more precise in specifying which aspects of the attachment representational network are under study at a particular time. Just as it is incorrect to speak of a single model of self or others, it may be incorrect to speak of a person's single attachment style" (p.45). Shaver et al.'s (1996) criticism follows from the absence of explicit recognition or acknowledgment in research on representational models of close relationships that people possess multiple, dynamic working models for their close relationships. Only a few studies have considered attachment models as varying from one relationship to another (Armsden & Greenberg, 1987; Bartholomew & Horowitz, 1991; Lynch & Cicchetti, 1991). They report modest correlations between various specific attachment models, which suggests that these specific models are distinct. These correlations between specific models have been proposed as evidence of a global or generalized attachment model. However, to my knowledge only one study to date clearly set out to predict specific attachment models for young adults' relationships with parents and friends as a function of a measure of the global attachment style, and it obtained mixed results (Blain et al., 1993).

Global and Specific Constructs

Although the idea of global and specific constructs has received little attention in the attachment field, it has been considered in theory and research pertaining to the perceived availability of social support and the self-concept. Pierce, Sarason and Sarason (1991) have demonstrated that expectations about the availability of social support can be assessed as both a personality characteristic (i.e., a global construct) and a feature specific to relationships and unique from the global construct. They report that a global measure of perceived available support could explain between 6% and 19% of the variance in expectations of support for any one specific relationship. Similar correlations were reported by Brock, Sarason, Sarason & Pierce (1996), suggesting that global and specific expectations of support are distinct constructs. Pierce, Sarason and Sarason (1991)

and, more recently, Davis, Morris and Kraus (1998) reported that global and specific measures of support expectations uniquely contributed to explaining students' reports of loneliness and negative affect.

However, on the basis of their findings, Davis et al. (1998) note that the effects of global support expectations may more adequately explain global indicators of well-being, whereas, the effects of specific support expectations may be most prominent when the outcome is specific to a domain or relationship. This last point is consistent with the results of Pierce, Sarason and Sarason's (1992) experimental study in which participants were facing a stressful situations were asked to rate the supportiveness of notes from their mother, received before and after the stressful task. They found that expectations of support from mother, assessed prior to the experimental manipulation, explained 17% to 20% of the variance in the rated supportiveness of the mother's note, whereas global expectations of support did not significantly predict these ratings.

Similar distinctions have been drawn between global and specific constructs in research on the self-concept. Marsh and Yeung (1998) reviewed the self-concept literature in which the multidimensional nature of the self-concept, that is within specific domains, has been well-established. They further describe the various conceptualizations that have been proposed for the global self-concept. They differentiate two well-developed theoretical frameworks. In a hierarchical view of the self-concept, the global self-concept consists of a higher-order factor representing the common factor underlying domain-specific measures of the self-concept. This hierarchical view of the self-concept resembles the structure proposed by Collins and Read (1994) for global and specific attachment models.

In contrast to this hierarchical model, Marsh and Yeung (1998) describe self-concept research which has relied on a unidimensional measure to assess the global self-concept. The underlying assumption of this self-report measure is that

respondents are themselves able to appropriately combine their self-perceptions within specific domains to provide a global report of their self-concept. However, the authors point out that responses on such a measure may be based on proximal factors such as mood, immediate experience or the specific domain considered in the study.

This second conceptualization of the global self-concept resembles the conceptualization of global attachment which is implied by social and personality psychologists as they rely on self-report measures to assess individuals' global attachment model (or style). The hierarchical conceptualization of the self-concept is more similar to the conceptualization of the global attachment model alluded to by Armsden and Greenberg (1987), Bartholomew and Horowitz (1991) and others in their reports of the modest correlations between more specific attachment models for parents and peers.

Objectives of the Present Research Program

The present research sought to provide support for the hypothesized distinction between global and specific relational models and to demonstrate how these multiple models can be used to extend our understanding of the experience of significant life events and daily social interactions.

Objective 1. A few studies have examined the correlations between young adults' relationship-specific attachment models (Armsden & Greenberg, 1987; Bartholomew & Horowitz, 1991; Baldwin et al., 1996; Brock et al., 1998; Trinke & Bartholomew, 1997). One study attempted to explain individual differences in specific attachment models (for mother, father and friends) as a function of the global attachment style (Blain et al., 1993). Yet, no research to date has attempted to assess the correlation between global and relationship-specific models, that is the extent to which an explicit measurement of global attachment and the global attachment factor derived from relationship-specific models overlap. The *first objective* of the present research was to consider the degree of overlap between a

person's global models of self and other and his or her multiple relationship-specific models of self and other, as well as to assess the extent to which specific models are distinct from each other.

Objective 2. Research has demonstrated that attachment models (global or specific) are relatively stable over time (Kirkpatrick & Hazan, 1994; Klohnen & John, 1998; Scharfe & Bartholomew, 1994). Nonetheless, they are to some degree unstable or changing over time (Baldwin & Fehr, 1995). Collins and Read (1994) suggested that such changes over time may result from influences of global models on relationship-specific ones and/or from the integration of novel relational experiences in specific models which, in turn, may impact on global models. The *second objective* of the present research was to, once more, demonstrate the general stability of global and specific models of self and others over time and also to assess the extent to which changes operated through top-down (i.e., global to specific) and/or bottom-up (i.e., specific to global) processes.

Objective 3. Past research has demonstrated that attachment models are associated with adjustment to a variety of significant life events (e.g., Cozzarelli, Sumer & Major, 1998; Larose & Boivin, 1998; Mikulincer et al, 1993; Mikulincer & Florian, 1998). Furthermore, developmental perspectives of attachment have proposed (Hazan & Shaver, 1994) and supported (Trinke & Bartholomew, 1997) that the reliance on parents for the fulfillment of attachment needs is progressively transferred to peers and romantic partners. Thus, as young adults experience different significant life events, which evoke different attachment needs, their adjustment to the event may be most influenced by the models of self and other for a specific relationship (with a parent or peer), as it may be more relevant or important in the adjustment process. That is, the fulfillment of attachment needs or absence thereof within a specific relationship may be most beneficial or detrimental depending on the event. To my knowledge, no research has yet considered the concurrent contributions of global and relationship-specific models

of self and other, nor the variable contributions of relationship-specific models in the adjustment to significant life events which evoke different relational needs. This was the *third objective* pursued with the present research.

Objective 4. In addition, attachment models have been associated with individual differences in the experience of more common, daily, social interactions (Feeney, Noller & Patty, 1993; Pietromonaco & Barrett, 1997; Tidwell, Reis & Shaver, 1997). The aforementioned research focused on the predictive role of a single attachment model (global or romantic), whereas Lin (1992) demonstrated associations between relationship-specific assessments (of trust and intimacy, not specifically attachment models) with the experience of daily interactions within relationships. The *fourth and final objective* of the current research was to examine the role of global and relationship-specific models of self and other as concurrent predictors of the experience of daily interactions.

Overview of the Present Research Program

In order attain these four objectives, two studies were carried out. Study 1 consisted of an 11 month longitudinal study that was conducted with a sample of 406 young adults who were all, at the beginning of the study, completing the final semester of a general CEGEP degree (i.e., a two year post-secondary, pre-university program in Quebec) and expecting to begin university the following academic year. Over the course of the study, participants submitted their applications to university, obtained their university acceptances and undertook their first term of university. As they completed questionnaires at each of five periods over the 11 month period, participants completed measures assessing global and specific models of self and other for each of four possible relationships (with their mother, father, closest friend and, if applicable, their romantic partner). At these various time points, they also provided information on their romantic relationship status and completed a set of measures assessing psychological and

physical well-being. The goals of this first study were: to assess the level of correspondence between global and relationship-specific models (*objective 1*), to examine the degree of stability of these models over time and assess possible top-down or bottom-up effects of temporal changes (*objective 2*), and finally to test the relative contribution of both global and specific models of self and other in the adjustment to two significant life events: the adjustment to the first semester of university and the adjustment to a romantic breakup (*objective 3*).

Study 2 utilized a very different methodology to address two of the objectives of this research program. A sample of 72 university students completed a measure of their global models of self and other. They recorded their social interactions over seven days, using modified Rochester Interaction Records (Reis & Wheeler, 1991). At the end of the week, they completed measures of relationship-specific models of self and other for each of the five people whose names appeared the most frequently in their interaction records, that is, the most salient relationships that week. With this study it was then possible to assess the degree of correspondence between global models of self and other and a sample of specific models of self and other for the most salient relationships (*objective 1*). These data also allowed me to test the relative contribution of both global and specific relational models to the experience of daily social interactions within relationships (*objective 4*).

Chapter 2

Global and Specific Relational Models, Distinct but Correlated Constructs

As introduced in the previous chapter, theoretical work by Baldwin (1992), Collins and Read (1994) and Crittenden (1990) suggests that people possess different specific models of self and others which guide their perceptions and behaviors in accordance with the relational context, integrate idiosyncratic knowledge and memories and generate specific interpersonal expectations within existing relationships. The existence of distinct relationship-specific models has been supported by research conducted with children (e.g. Lynch & Cicchetti, 1991) and young adults (Armsden & Greenberg, 1987; Baldwin et al. 1996; Bartholomew & Horowitz, 1991; Brock et al. 1998; Trinke & Bartholomew, 1997).

Bartholomew and Horowitz (1991) reported significant correlations between judges' ratings of attachment to family members and attachment to peers, based on separate sections of attachment interviews which focused on these different sets of relationships. Nonetheless, on average, only about 19% of the variance in these two measures overlapped. Using a self-report inventory assessing the degree of felt security within relationships with parents and peers, Armsden and Greenberg (1987, Study 2) reported a correlation of $r = .36$, $p < .001$, between parent and peer attachment scores (i.e., about 13% of shared variance). Brock et al. (1998) reported similarly modest correlations between the perceived acceptance by friends and parents. Further support for the distinctiveness of relationship-specific models was provided by Trinke and Bartholomew (1997). They reported that their participants rated themselves as being significantly less securely attached to their father in comparison to their mother, romantic partner and best friend, but more securely attached to their partner than to their mother. Similarly, when Baldwin et al. (1996, Study 1) asked

participants in their study to define each of their ten closest relationships using Hazan and Shaver's (1987) three attachment styles, they found that 88% of participants reported more than one style and nearly half of them (47%) used the three models to describe their ten closest relationships. Thus, relationship-specific models were highly variable within individuals' closest relationships.

Overall, these studies indicated that attachment models for parents, friends and various close others were clearly distinguished. Most of the variance in these specific models was unique and unrelated to other specific model. Nonetheless, as Crittenden suggested (1990), internal representational models must also provide a sense of consistency of self and of general coherence of the world. Crittenden (1990) and Collins and Read (1994) further theorized that more abstract, generalized and global attachment representations are formed on the basis of multiple relationship-specific models, but as a distinct cognitive structure of their own. Accordingly, Bartholomew and Horowitz (1991) and Armsden and Greenberg (1987) concluded that the correlations found between attachment models for parents and peers reflected a global underlying attachment model. However, the convergence of specific models was not compared to an explicit measure of the global attachment model (i.e., self-report measure).

This was done in only one study which was conducted by Blain et al. (1993). They assessed young adults' global attachment style with the Bartholomew and Horowitz (1991) four category measure and assessed the quality of their attachment to their mother, father and friends with a continuous measure (Armsden & Greenberg, 1987). The global attachment style was used as a predictor of relationship-specific attachment. In their analyses, Blain et al. (1993) focused on the differences in relationship-specific attachment, for each of the three relationships, between groups of individuals distinguished on the basis of their global attachment style. They found that attachment to friends significantly differed as a function of the global attachment style, with the most secure

attachment to friends being reported by globally secure individuals. They however did not find similar differences in the attachment to mother and father as a function of the global attachment style. The authors thus concluded that a more secure global attachment style was only necessary for a better quality of attachment to friends. The authors of this study unfortunately did not consider the extent to which the global attachment style was predictive of a person's tendency to report a better quality of attachment throughout their network of close relationships (i.e., a consistent effect on all specific models).

A more appropriate test of the association between measures of global and specific models would first delineate the common variance shared among relationship-specific models of self and other, to determine the common factor underlying these specific models throughout the network of relationships. Then, it would be possible to determine the extent to which this common factor, underlying all relationship-specific models, and a measure of the global model are truly redundant. This strategy would determine the extent to which a global attachment model exists as a representational model distinct, but not entirely independent from the network of specific models.

Current Objectives [1]

The main objective pursued in the present chapter is to test the hypothesis that people develop specific models of self and other within their close relationships which are distinct from their global models of self and other and vice versa. That is, people were expected to report relationship-specific models of self and other which differed from their reports of global models, such that the specific models for any one relationship would not essentially be the equivalent of young adults' global models of self and other.

Global and relationship-specific models of self and other were nevertheless not expected to be completely divorced or unrelated. These global and specific models should be correlated within an individual as it is presumed

that individual differences in individuals' networks of relational models are captured by measures of global models of self and other. These global models are hypothesized to have shaped the development of new relationship-specific models and, reciprocally, to adjust over time to the person's specific relational models which evolve according to changes in social experiences (Baldwin, 1992; Collins & Read, 1994). Therefore, as people have more positive global relational models, they should also have generally more positive relationship-specific models in contrast to others who have more negative global relational models.

Method

Participants

Study 1. The initial sample of this study consisted of 406 students (257 women and 149 men) in their final semester of a general CEGEP program. Participants' mean age at the start of the study was 18.6 years, median = 18, SD = .9, range = 17 to 26. They were recruited from three different CEGEPs, one English (n = 127) and two French (n = 279) institutions. Participants were provided with a questionnaire in the teaching language of their school[2]. They were each paid 5$ upon return of this initial questionnaire which provided the necessary data for the present analyses. They also received a lottery ticket for a drawing of seven 50$ prizes.

Study 2. Seventy-five university students were recruited to take part in this study. The data relevant to the present analyses were obtained in two distinct testing sessions, one week apart. Two participants did not return for the second testing session as they both left town for a family emergency during the testing week (in one case there was a death in the family, in the other, a parent was hospitalized due to illness). The data for one of the 73 participants who returned for the second testing session was excluded from analyses as the records and self-reports were deemed to be unreliable due to the participant's general behavior and attitude toward the study. Therefore, a total of 72 participants (42 women and 30

men) remained in the sample, mean age = 19.9, median = 19, *SD* = 2.0, range = 17 to 30. All participants completed the measures in English. They received either course credit and $10 or simply a $15 payment for taking part in the study.

Procedure

Study 1. Participants were recruited, through class announcements, to take part in a longitudinal study of the transition from CEGEP to university. Questionnaires were distributed in class, completed at home and returned to the experimenter, at school, within the following week. These questionnaires contained an extensive set of measures which were part of a larger longitudinal study of the transition from CEGEP to university.

Study 2. Participants were recruited to take part in a study of relationships and daily interactions. They were tested in small groups of up to five people. Data were collected in two laboratory sessions, separated by seven days during which participants kept records of their daily interactions. Relationship questionnaires were completed during the two testing sessions which were run by one of three trained experimenters.

Measures

Global Models of Self and Other. Global models of self and other were assessed with Bartholomew and Horowitz's (1991) four paragraph attachment measure (see Appendix A). Each paragraph corresponds to a description of one of four attachment models: secure, dismissive, preoccupied and fearful. Using a five point scale, participants rate the degree to which they resemble each of the four descriptions. Griffin and Bartholomew (1994) devised a coding procedure, using the ratings of the four paragraphs, that yields scores for both models of self and other. The model of self score is obtained by subtracting ratings of the paragraphs reflecting a negative view of self (i.e., preoccupied and fearful) from ratings of the paragraphs reflecting a positive view of self (i.e., secure and dismissive). The model of other score is obtained by subtracting ratings of the paragraphs reflecting

a negative view of other (i.e., dismissive and fearful) from ratings of the paragraphs reflecting a positive view of other (i.e., secure and preoccupied). Griffin and Bartholomew (1994) report that the model of self score is clearly associated with existing self-concept measures (e.g., self-esteem; Rosenberg, 1965), and also that the model of other score is related to interpersonal orientation (i.e., sociability; Cheek & Buss, 1981). These scores, which are meant to assess two orthogonal dimensions of attachment, should not be significantly correlated. In a series of four studies, Griffin and Bartholomew (1994) report correlations ranging from $r = .03$ to .20. Consistent with their findings, the present samples yielded correlations of $r = .09$ in Study 1 and $r = .11$ in Study 2, $ps > .05$.

Relationship-specific Models of Self and Other. The four Bartholomew and Horowitz (1991) paragraphs were reworded to pertain to specific relationships (See Appendix B). These were presented to participants after they had completed the measure of the global models. This prevented responses to the relationship-specific measure from contextualizing these studies within specific relationships and thus biasing reports on the global measure. In Study 1, participants completed up to four different relationship-specific measures. Paragraphs were reworded to refer to the relationship with their mother, their father, their closest friend and finally with their current romantic partner, if they had one. Due to the death or absence of contact with the parent, scores for relationship-specific models were unavailable for 3 mothers, and 12 fathers. Additionally, only 184 participants were currently involved in a romantic relationship. Due to the absence of a romantic partner and either one of their parents, only 178 participants completed this measure for all four relationships. Ratings for 3 relationships were available for 219 additional participants: 213 rated relationships with both parents and the closest friend, and 6 rated relationships with their mother, closest friend and romantic partner. Finally, the remaining 9 participants provided ratings for only 2 relationships: 6 rated relationships with their mother and closest friend, and 3

rated relationships with their father and closest friend. Thus, at least three of the four possible relationships were rated by 397 of the 406 participants (97.8% of the sample).

In Study 2, no specific relationship (e.g., mother) was mentioned in the paragraphs. Participants were asked to complete the relationship-specific measures for each of five different people by filling in the blanks with the appropriate names. These were the names of the five people with whom they had interacted with the most frequently over the course of the testing week. The names were selected by the experimenter on the basis of the frequency with which they appeared in the interaction records returned by participants. Participants identified the relationship they had with each of these five people (hereafter referred to as partners) using the following categories: parent, romantic partner, sibling or extended family member, teacher or boss, peer (including close friend, roommate, classmate or social acquaintance) or finally other relationship. In each case, most participants identified the partner as a peer, with peer relationships comprising at least 67% of the relationships with any given one of the five partners. A romantic partner was included in the five partners for 28 of the 72 participants. At least one parent was included by 28 participants, whereas only 10 participants interacted frequently enough with their parents for both of them to be included among the five partners. A sibling or member of the extended family was included in the five partners for 17 of the 72 participants. A boss or teacher was included for only 2 participants. Thus, taken together, peers and a romantic partner account for at least 4 of the 5 partners in 71% of the cases (see Table 1 for more detailed frequencies).

Results

The Distinction Between Global and Relationship-specific Models

To determine if, on average, ratings of global models of self and other differed from those of relationship-specific models, a series of repeated measures ANOVAs were conducted with both available sets of data. Global and

relationship-specific scores for either model of self or model of other were entered as repeated measures in the analyses. The omnibus *F*-test was supplemented by planned contrasts which compared the global score to each of the specific scores (i.e., simple contrasts). In Study 1, these comparisons assessed if participants' ratings of their global models were significantly different from models of self and other within their closest, most influential relationships: with their mother, their father, their closest friend and their romantic partner. In Study 2, these comparisons assessed if participants' global models were significantly different from their models for the five people who were most salient in their social environment over the course of the week. These tests allowed me to determine if people reports' of global models of self and others were, on average, similar to their reports of relational models within the selected specific relationships. In contrast, significant *F*-tests would indicate that different patterns emerged in reports of relational models within these two samples, such that the range of ratings of global models could be distinguished from that of specific models.

Study 1. Table 2 presents the mean scores for global and relationship-specific models for Study 1. Because only 46% of the participants who provided ratings of their relationships with mother, father and friend also had a romantic partner, thus radically reducing the available sample when romantic partner was considered, two repeated measures analyses were conducted for each relational model measure. The first analysis was conducted without the measure for the romantic partner and the second analysis included it. The results of contrasts obtained from the first analysis, which included the largest available sample, are reported for the first three relationships (i.e., mother, father and friend). Only the contrast for romantic partner is reported from the second repeated-measures ANOVA.

Significant *F* scores were obtained in all of these analyses for both model of self and model of other, $Fs = 18.64$ to 62.22, $ps < .001$ (see Table 2). The

planned contrasts yielded significant differences between the global model of self and all four relationship-specific models: mother, $F(1, 390) = 82.49$, father, $F(1, 390) = 25.90$, friend, $F(1, 390) = 152.88$, and romantic partner, $F(1, 177) = 35.85$, all $ps < .001$. In all four cases, the global model of self was less positive than the relationship-specific model of self on this scale ranging from -8 to +8. Planned contrasts also yielded significant differences between the global model of other and three relationship-specific models: mother, $F(1, 390) = 16.63$, friend, $F(1, 390) = 136.73$, and romantic partner, $F(1, 177) = 87.54$, all $ps < .001$. The global model of other was less positive than the specific models of other for all three of these relationships. The contrast comparing the global model of other to the specific model of other with father did not attain significance, $F(1, 390) = 3.22$, *ns*. These results suggest that not only are people's global models distinguishable from their relationship-specific models, as suggested by the numerous significant contrasts, but also that their specific models within their closest, most influential relationships are generally reported to be more positive than what might be expected on the basis of their global models.

Study 2. Mean scores for global and relationship-specific models for Study 2 are presented in Table 3. Significant F-tests were obtained for both models of self and models of other, $F(4.45, 316) = 17.26$ for models of self and , $F(5, 355) = 10.62$ for model of other, $ps < .001$ (see Table 3). The planned contrasts yielded significant differences between the global model of self and all relationship-specific models, from the most to the least frequent of the five partners: partner 1, $F(1, 71) = 93.49$, partner 2, $F(1, 71) = 42.36$, partner 3, $F(1, 71) = 26.15$, partner 4, $F(1, 71) = 30.88$, and partner 5, $F(1, 71) = 29.46$, all $ps < .001$. In all five cases, the global model of self was significantly less positive than relationship-specific models of self. Planned contrasts also yielded significant differences between the global model of other and two relationship-specific models: partner 1, $F(1, 71) = 14.78$, $p < .001$, and partner 5, $F(1, 71) = 9.13$, $p < .01$. The global model of other

was less positive than the specific model of other with the most frequent partner, but more positive than the specific model of other for the least frequent of the five partners considered. The contrast comparing the global model of other to the specific models of other with partner 2, 3, and 4 did not attain significance, $Fs(1, 71) = .26$, 2.78, and 2.16 respectively, all *ns*. Interestingly, the mean of the five relationship-specific models of other is .57, a value which closely resembles the global model of other, .78.

Again, these results are indicative of people's distinctions of relationship-specific models of self and other from global models. The global model of other was significantly less positive than the model of other for the most frequent interaction partner, significantly more positive than the model of other for the least frequent interaction partner, but not significantly different from the specific models of other for any of the three other interaction partners. A general decrease in model of other from the most to the least frequent partner was noted, the mean of the five closely resembling the mean score for the global model of other. This is in contrast to the consistent pattern in Study 1, where participants reported more positive specific relational models of self and other within each of their closest relationships (i.e., with parents, closest friend and romantic partner) than for their global models, with the exception of the specific model of other for father.

The Association Between Global and Relationship-specific Models

Subsequent analyses were done to examine the degree of association between measures of global and relationship-specific models. First, the correlations between global and each of the specific measures were examined. Second, a hierarchical linear modeling (Bryk & Raudenbush, 1992) procedure was used to more accurately assess the proportion of variance shared by the global and the network of specific relational models (i.e., considering all specific measures simultaneously).

Correlations for Studies 1 and 2. The correlation of global and specific models of self and other in Study 1 are presented in Table 4. The coefficients were calculated using the largest available samples, such that most correlations were calculated with samples ranging from $n = 394$ to $n = 406$. However, correlations implicating the romantic partner relied on, at most, an $n = 184$, but this decreased to $n = 178$ when paired with father. Correlations of the global model of self and relationship-specific models ranged from $r = .21$ to .30, mean $r = .24$, all $ps <$ .001. Intercorrelations of relationship-specific models of self range from $r = .11$ to .43, mean $r = .21$, five of the six coefficients attained $p < .05$. Correlations of the global model of other and relationship-specific models ranged from $r = .16$ to .33, mean $r = .24$, all $ps < .01$. Intercorrelations of relationship-specific models of other ranged from $r = .02$ to .39, mean $r = .18$, four of the six coefficients attained $p < .05$. These coefficients suggest that global models are modestly, yet significantly, correlated with the corresponding relationship-specific models.

The correlation of global and specific relational models in Study 2 are presented in Table 5. Correlations of the global model of self and relationship-specific models ranged from $r = .14$ to .44, mean $r = .29$, four of the five $ps < .05$. Intercorrelations of relationship-specific models of self ranged from $r = .03$ to .44, mean $r = .19$, only two of the ten coefficients attained $p < .05$. Global and relationship-specific models of other correlations ranged from $r = .05$ to .33, mean $r = .19$, with only one of the five coefficients attaining $p < .05$. Intercorrelations of relationship-specific models of other ranged from $r = .11$ to .46, mean $r = .23$, two of the ten coefficients attained $p < .05$. As in Study 1, these coefficients suggest only modest correlations between global and relationship-specific models. Whereas the mean correlation coefficients are similar to those obtained in Study 1, the substantially smaller sample size increased the value which was necessary in order to attain the significance level of $p < .05$.

Taken together, the correlation coefficients obtained in both studies

suggest that the degree of overlap between global and relationship-specific measures of self and others is highly reliable. However, the magnitude of the overlap is quite low, as suggested by the proportion of variance shared by global and specific models of self, on average 6% in Study 1 and 8% in Study 2, and by global and specific models of other, on average 6% in Study 1 and 4% in Study 2 (based on the mean correlation coefficients). Yet, these correlations do not indicate the magnitude of the overlap between global and the common factor underlying specific measures. The correlations do not take into account that global models of self and other vary only between individuals, whereas the variance in relationship-specific models is in part between-individuals but also within-individuals, from one relationship to another. It would therefore be important to examine the proportion of the variance in a person's relationship-specific models of self and other, common to all relationships, which is shared by global models of self and other, that is, the proportion of shared variance between-individuals (i.e., at the person-level). This was examined with HLM analyses.

Hierarchical Linear Modeling (HLM). The hierarchical linear modeling procedure described by Bryk and Raudenbush (1992) was used to more accurately assess the proportion of variance shared by the global and specific relational models. Analyses were conducted with the HLM software, version 4.01 for Windows. In Studies 1 & 2, two levels of data were obtained. Global relational models were between-individual variables, whereas relationship-specific models were assessed within-individuals, but were between-relationship variables. Thus, because multiple relationships were considered for each participant, this produced multilevel data whereby only one set of global scores was assessed per participant at the "person-level" (or the upper-level or Level 2; Bryk & Raudenbush, 1992; Kenny, Kashy & Bolger, 1997) and multiple sets of relationship-specific scores were assessed for each participant at the "relationship-level" (or the lower-level or Level 1). To examine the correspondence between these two levels, considering

the correlations between global and each of the various relationship-specific scores concurrently, the optimal analytical strategy is hierarchical linear modeling (HLM).

For the present analyses, HLM can be thought of as quite similar to regression analyses. A continuous variable was used to explain another continuous variable. A coefficient for the "predictor" variable was estimated, indicating the degree of association between the two variables. The level of significance of the coefficient was determined with a *t*-test.

However, the goal here was to examine the degree of association between global and specific relational models of self and other. Global models were assessed once for each participant, whereas the relationship-specific models were assessed for up to 5 different relationships for each participant. In attempting to determine the degree of association between global relational models and the specific relational models for any one of the specific relationships sampled within individuals, traditional regression analyses posed one important problem. Specifically, linear regression analyses could not take into account that the relationship-specific measures were repeated within individuals, whereas global measures were not. Thus, such regression analyses could not take into account the unique nature of the variance in the present relationship-level variables, which is that relationship-specific models of self and others could vary both between- and within-individuals. For example, a person's models of self may differ from one relationship to the next, yet they may be consistently more positive or more negative than another person's various relationship-specific models of self. In linear regression analyses, the relationship-level variance would not be acknowledged if analyses were conducted at the person-level, whereby relationship-specific measures could have to be an aggregated score for each participant. If we wished to know the degree of the association between a person's global relational models and the common factor underlying his or her multiple relationship-specific models (i.e., what is constant throughout a person's specific

models), linear regressions would produce a biased estimate as it would not consider the variance in specific models from one relationship to another, whereas in theory and in practice, these models vary between relationships, within individuals. This strategy would therefore underestimate the magnitude of this association between global relational models and the common factor throughout specific relational models as the variance in the latter would not be duly acknowledged. This problem was remedied by the use of HLM analyses in which a relationship-level variable (i.e., specific models of self or other) was entered as the criterion and the corresponding person-level variable (i.e., global models of self or other) was entered as a predictor.

HLM analyses were conducted in two steps. However, before testing any HLM models, both global and relationship-specific measures were transformed into standardized Z scores, with $M = 0$, $SD = 1$. For the global measure, this was done at the person-level and for the relationship-specific measures it was done at the relationship-level, that is both variables were grand mean centered in Bryk & Raudenbush's (1992) terms. The purpose of the first step of analyses was to determine what proportion of the relationship-specific measure was between individuals and what proportion was within individuals, but between relationships. This was accomplished by testing a first model which Bryk and Raudenbush (1992) call the random ANOVA model, in which only an intercept is included in the model. This extremely parsimonious benchmark model does not actually explain any of the variance in the relationship-specific measure, it simply serves to partition the total amount of variance in the outcome variable (i.e., a value of 1.00 for the Z scores used here) into between-individual variance (i.e., person-level variance) and within-individual variance (i.e., relationship-level variance).

In the second step of analyses, the appropriate global measure was entered as a "predictor" of the selected relationship-specific measure. The HLM equations

take on the following form:

$$[\text{Specific model of self}] = \gamma_0 + \gamma_1[\text{Global model of self}] + U + R$$
$$[\text{Specific model of other}] = \gamma_0 + \gamma_1[\text{Global model of other}] + U + R$$

Where γ_0 is the intercept or constant , γ_1 is the coefficient indicating the degree of association between global and specific models, U is the unexplained person-level variance and R is the unexplained relationship-level variance. Because both global and specific measures were standardized Z scores, the γ_1 coefficient associated with the global model is similar to a standardized β coefficient in regression analyses.

To assess the proportion of the person-level variance which the relationship-specific measure shared with the global measure, the residual unexplained variance at the person-level once the global measure was included (U_1) was compared to the amount of person-level variance obtained from the benchmark model (U_0) with the following formula:

$$(U_0 - U_1) / U_0.$$

An estimate of the total amount of variance in the relationship-specific measure which is shared with the global measure was obtained by multiplying the proportion of variance accounted for in the second step of analyses by the proportion of the total variance in the relationship-specific measure which was determined to be at the person-level. For example, if the HLM analyses indicated that the global measure accounted for 25% of the person-level variance in the specific measure and that 20% of the total variance in the specific measure was at the person-level, it would then follow that 5% of the total variance in the specific measure was shared with the global measure (i.e., .25 X .20 = .05). This would imply that the global measure could be used to explain 25% of the variance which

is common among a person's multiple relationship-specific models (i.e., the portion of relationship-specific measure which is constant within a person's multiple relationships, but variable from one person to the next). Yet this would also indicate that the global measure could only account for 5% of the variance in the specific measure for any one relationship.

Although the design of HLM models would seem to imply a causal association, whereby global models would be said to predict specific ones, such conclusions are neither warranted nor hypothesized in the present study . Therefore, the only conclusions drawn from the result of HLM analyses with the present samples pertained to the magnitude of proportion of variance shared by global and relationship-specific measures, at the person-level and in total. The interested reader is referred to Bryk and Raudenbush (1992) and Kenny, Kashy and Bolger (1997) for a more detailed presentation of the statistical theory underlying HLM analyses. However, a general overview of the basic principles and characteristics of HLM analyses is given in Appendix C.

HLM analyses: Study 1. The HLM analyses for Study 1 were conducted with the sample of 397 participants who rated at least 3 of the four possible relationships, mean number of relationships = 3.45. The benchmark models, which included only an intercept, indicated that 23% of the variance in the relationship-specific model of self was at the person-level (i.e., between individuals), whereas the remaining 77% of the variance was at the relationship-level (i.e., between relationships, independent of individual differences). For relationship-specific model of other, 12% of the variance was the person-level and 88% was at the relationship-level. Thus, the specific models of self and other were highly variable within individuals.

The results of HLM analyses for Study 1, in which global models were entered as predictors of relationship-specific models, are presented in the top half of Table 6. The global model of self was significantly associated with

relationship-specific models of self, as indicated by the significant γ coefficient = .23, $p < .001$. The inclusion of the global model of self in this model accounted for 22% of the person-level variance and a total of 5% of total variance in specific models of self. The global model of other was also significantly associated with relationship-specific models of other, $\gamma = .22$, $p < .001$. The global model of other accounted for 37% of the person-level variance and a total of 5% of total variance in specific models of other.

These results suggest of modest association between global and relationship-specific models of self and other. They indicated that most of the variance in relationship-specific models of self and other (i.e., 77% to 88%) may be due to relational differences, that is, most of the variance in relationship-specific ratings is within individuals. Nonetheless, some of the variance in relationship-specific ratings (i.e., 12% to 23%) was between individuals. The total proportion of the variance shared by global and specific models of self and other obtained from these analyses were, as would be expected, similar to the proportions determined above with the mean correlations. However, the result of HLM analyses indicate that the proportion of shared variance markedly increased when only the person-level variance (i.e., variance between individuals) was considered for relationship-specific models.

HLM analyses: Study 2. HLM analyses were also conducted with this second sample of 72 participants. Each person provided global relational model ratings and relationship-specific ratings for each of the five partners with whom they interacted with the most frequently over the course of a week. The benchmark models yielded proportions of person-level and relationship-level variance similar to those obtained for Study 1. For relationship-specific models of self, 19% of the variance was at the person-level and 81% was at the relationship-level. Comparably, when the relationship-specific model of other was examined, 19% of the variance was at the person-level and 81% was at the relationship-level.

Thus, once again, most of the variance in relationship-specific models of self and other was found to be within-individuals, between their relationships, rather than between individuals.

The results for Study 2 HLM analyses, in which global models were used to explain relationship-specific models, are presented at the bottom of Table 6. The global model of self was once again significantly associated with relationship-specific models of self, $\gamma = .27, p < .001$. The global model of self accounted for 36% of the person-level variance and a total of 7% of total variance in the specific models of self. Furthermore, the global model of other was also significantly associated with the relationship-specific model of other, $\gamma = .18, p < .01$, with the global model of self accounting for 15% of the person-level variance and a total of 3% of total variance in the specific model of other.

These results are comparable to those obtained in Study 1. They further support the idea that global and relationship-specific models of self and other are modestly yet significantly correlated constructs. Once more, the total proportion of shared variance suggested by HLM analyses and estimated above with the mean correlations are essentially the same. As in Study 1, these present results indicated that most of the variance in relationship-specific models of self and other (i.e., 81%) is likely to results from relational differences. When this was acknowledged and only person-level variance was examined, the proportion of shared variance between these constructs was substantially greater than what would have been concluded on the basis of the average correlations reported above.

Discussion

Evidence Supporting the Distinctiveness of these Constructs

The results of these two studies support the notion that global and specific relational models are distinct, but correlated constructs. From the first sets of analyses it was apparent that the global model of self did not refer particularly to

the relationship with mother or father or closest friend or romantic partner, nor to the relationship with any one of the five most frequent interaction partners. In all instances, the relationship-specific model of self was more positive than the global model of self. Thus, as a group, the participants sampled held a relatively neutral model of themselves, but more positive views of themselves within their closest relationships and with the people with whom they interact the most often.

Although the present studies can offer no explanation for the systematically more positive ratings of models of self within specific relationships, in contrast to the global model of self, multiple hypotheses can be generated as potential explanations for this difference. Firstly, these differences could simply reflect a response bias which naturally occurs when global and specific contexts are compared. Secondly, self-presentation and impression management concerns (Fiske & Taylor, 1991) could be greater when assessing the model of self within specific relationships rather than globally. Thirdly, and more interestingly, these differences in scores may actually reflect differences in the processing of self-knowledge. When assessing their global model of self in the relational context, people may draw on the broader, not necessarily relational, self-knowledge which is available to them in their general self-concept or self-schema (Markus, 1977). That is, reports assessing the global model of self may not be exclusively based on relational knowledge structures. In contrast, when assessing their model of self within a specific relationship, people may be more likely to focus on the knowledge pertaining to their experiences with the specific other. Fourthly, it may be that people hold more idealized views of themselves and of the general quality of their relationships (e.g., Murray & Holmes, 1997) within the context of specific relationships, feeling that they are better within their closest, most influential relationships and within their most salient relationships than they are within relationships in general. Nonetheless these few hypotheses are merely conjectural explanations for this consistent finding, that is suggestions

of possible directions for future research.

When the global and specific models of others were considered, repeated-measures ANOVAs also provided interesting comparisons. On average, participants had more positive models of their mother, their closest friend, their romantic partner and the person with whom they interact with the most frequently than they had of others globally. Yet, on average, their global model of others was not significantly different from their models of their father and the second to fourth person with whom they most often interacted. Finally, as the frequency of interactions with people who were generally defined as peers decreased, the specific model of other decreased as well, such that the model of other for the fifth most frequent interaction partner was on average more negative than the global model of other.

These results suggest that the global model of other is not simply an aggregation of specific models of other for the four most central relationships, whereas it may be derived from the relationships with the specific others with whom a person interacts with most frequently. When evaluating their general model of other, people may (consciously or unconsciously) be drawing on their most salient others. The frequency and recency of these interactions may render these relationship-specific models of other more accessible, thus influencing their global model of other. This is consistent with the idea that the most frequently activated relational models are the most accessible ones (Baldwin et al., 1996; Pierce & Lydon, in press).

Further support of the distinction between these two constructs and of the validity of considering relationship-specific models as distinct constructs, independently developed for each close relationship, was provided by HLM analyses. The benchmark models served to partition the variance in relationship-specific measures into person-level and relationship-level variance. These models indicated that most of the variance in relationship-specific measures, from 77% to

88%, represented differences in models of self and other within individuals, but between their relationships. Thus only a fraction of the variance in relationship-specific measures, from 12% to 23% was variance between individuals (i.e., stable within individuals, from one relationship to another), whereas each person's specific relational models were highly variable and differentiated from one relationship to another.

Evidence Supporting the Correlation of these Constructs

In addition to supporting a distinction between global and specific relational models, the present results also suggest that these constructs are correlated. Correlations and HLM analyses demonstrated that 3% to 8% of the total variance in relationship-specific models of self and others was shared by global relational models. While these percentages attained significance they seem to suggest only a small overlap between global and specific measures. However, when only the person-level variance in relationship-specific models (i.e., individual differences) were considered, the overlap was found to be much greater. The proportion of person-level variance shared by global and specific models of self was 22% in Study 1 and 36% in Study 2, whereas the proportions for models of other were 37% and 15% in studies 1 and 2 respectively. Thus, modest, yet significant associations were found between global relational models and specific models sampled on the basis of the nature of the relationship in Study 1 and the frequency of interactions in Study 2.

The results of the analyses appear to suggest that the proportion of variance in specific models shared with global models differed in the two samples. Global models of self appeared more closely related to specific models of self within the five most salient relationships (i.e., total = 7%, person-level = 36%) than to specific models of self within relationships with parents, close friend and romantic partner (i.e., total = 5%, person-level = 22%). In contrast, global models of other seemed more closely related to specific models of other within

relationships with parents, close friend and romantic partner (i.e., total = 5%, person-level = 37%) than to specific models of other within the five most salient relationships (i.e., total = 3%, person-level = 15%)[3].

Nevertheless, it would be hasty and unjustified to conclude that the differences are meaningful as the estimated proportions were based on samples from two distinct studies. The two studies were conducted with samples which greatly vary in size (n = 397 versus n = 72). The γ coefficients were similar in both studies: γ = .23 in Study 1 and .27 in Study 2 for models of self, γ = .22 in Study 1 and .18 in Study 2 for models of other. Finally, these differences in the shared person-level variance did not translate into remarkable differences with respect to the total proportion of shared variance (2% in both cases).

Collectively, these results suggest that a person's report of global models may be useful in determining their general tendency to have more positive or negative relationship-specific models relative to other individuals, yet there is substantial variance in specific relational models, both between individuals and within individuals but between their relationships, which remains unexplained by this person-level variable. For instance, individual difference measures such as self-esteem, extraversion or neuroticism, which have been associated with adult attachment (Shaver & Brennan, 1992; Mickelson et al., 1997), may additionally explain the consistency in a person's relationship-specific models. Future research could also attempt to explain the large proportion of the variance in specific measures that is between relationships. The relationship-level variance may be explained by unique relationship histories, for instance experiences of support or disappointment within the relationship, or particular characteristics of the significant others, such as the global model of self, global model of other, self-esteem, extraversion and neuroticism of participants' mothers, fathers, closest friends and romantic partners. These unique characteristics of the significant others and relational experiences may have resulted in distinctions between

models of self and/or other from one relationship to another.

In sum, these results are consistent with Collins and Read (1994) and Crittenden's (1990) proposal that people develop multiple specific relational models and also form global models of self and other, independently of any one specific model. These results also indicate that the measure of the global models of self and other are significantly associated with an underlying common factor in a person's network of specific relationships. This suggests that explicit measures of global relational models are only modestly related to the implicit generalized relational models assessed by the common, person-level variance in relationship-specific measures. The measure of the global model and the shared variance among specific models are correlated, but not entirely redundant.

Limitations of the Present Findings

In their theoretical overview of internal working models. Collins and Read (1994, p.61) proposed "that working models include four inter-related components: (1) memories of attachment related experiences, (2) beliefs, attitudes, about the self and others in relation to attachment, (3) attachment-related goals and needs, and (4) strategies and plans associated with achieving attachment goals". As Shaver et al. (1996) remark, these components of internal working models may be in part conscious and easily identified with self-report measures. This is most likely to be the case for attachment related beliefs and attitudes.

However, Shaver et al. (1996) also suggest that components of internal working models may also be unconscious and thus difficult to verbalize. Therefore, the self-report measures utilized in the present research are likely to be more indicative of people's conscious associations and distinctions between global and relationship-specific models, than of the consistencies and discrepancies between unconscious components of global and specific models of self and others. Future research should therefore consider and assess both the conscious and unconscious aspects of these multiple relational models to provide

a more complete test of the hierarchical nature of these representational models. The use of attachment interviews, although quite time consuming, would provide more integral assessments of the components of relational models. Social-cognitive experimental procedures, such as lexical decision tasks (Baldwin et al., 1993; Baldwin & Sinclair, 1996; Mikulincer, 1998), might also be used to tap the unconscious aspects of global and specific relational models.

Another weakness of the present analyses is that association between global and specific relational models is portrayed as a static one. Collins and Read (1994) and Crittenden (1990) suggested that global and specific models mutually influence each other over time. Global models are believed to shape the construction of specific models, whereas adjustments in specific models, resulting from the integration of new relational experiences, are expected induce some degree of change in the global relational model. Although the structure of HLM analyses reported in this chapter might appear to suggest a causal influence of global relational models on specific ones, the correlational nature of these one-time assessments does not warrant such conclusions. As global and specific relational models were assessed only once, the present data could not be used to determine the extent to which global and specific models shaped each other over time, nor could they be used to assess the degree of stability of these global and specific relational models over time. Multiple assessments of both levels of the relational models are required to test the direction in which global and specific relational models influence each other. The objective of the following chapter was to consider the more dynamic nature of the association between global and specific relational models by testing their hypothesized reciprocal influences over time.

Footnotes

1. As the basic structure of Bowlby's (1973) internal working models of attachment is extended to representational models for an increasingly large number of an individuals' interpersonal relationships, it would be inaccurate to indiscriminately refer to the models for each of these relationships as attachment models. Trinke and Bartholomew (1997) report that the young adults in their study identified, on average ten different close relationships.

Nevertheless, only about five of these close relationships were determined by judges to fulfill the necessary requirements to be considered attachment bonds. That is, on average, only five of the ten close others were identified by participants as people they would want to (or could actually) go to for help, would like to (or could actually) count on to be there for them, and whose death would have a great effect on them. Thus when referring to specific models of self and other, within relationships which have not been clearly identified as attachment bonds, the term "relational models" rather than "attachment models" more accurately reflects the broader nature of the close relationships considered.

The current research is presented with the goal of extending and complementing existing theory and research in the field of attachment. However, the distinction in terminology indicates the broader range of relationships considered here. It also serves to recognize that these relationships are not equivalent to the relationship with the central attachment figure (i.e., generally a romantic partner for young adults who are romantically involved, or otherwise a parent; Trinke & Bartholomew, 1997).

2. All questionnaires to be used with a French speaking sample were independently translated from English to French by two Psychology graduate

student whose native language is French. These two translators met to compare and combine their versions of the measures. Finally, the translations were revised by a third person with a B.A. in French studies whose first language is also French.

3. This apparent difference in results for the specific models of other within the most salient relationships versus relationships sampled on the basis of the others' role (e.g., mother) would seem to contradict the conclusions drawn from the repeated measures ANOVAs. However, these two analytical approaches were used to answer different questions. The repeated measures analyses focused on *mean* ratings of relational models in the sample. This indicated that the mean global model of other was similar to the mean specific model of other ratings for the five most salient relationships, but not specific relationships with mother, father, friend and romantic partner. In contrast, HLM analyses focused on the *between-individual variance* in specific ratings in association with the variance in global ratings, with all ratings having been standardized to have a mean of zero, that is, focusing on the departures from the sample means controlling for the differences in means ratings of global and specific models. These analyses suggest that an individual's global model of other rating, relative to the sample mean of global models of other, may be more strongly associated with his or her specific model of other ratings for important significant others (according to their role), relative to the sample mean of specific measures, than with ratings for the most salient others.

Chapter 3

Stability and Change in Global and Specific Relational Models

As global and specific models of self and other are gradually developed over one's lifetime, integrating one's numerous relational experiences, they might be expected to be quite stable over time, as no one element of novel information would necessarily undermine or substantially alter them. In addition, the basic functions of these representational models (i.e., shape social perception and experience) have self-fulfilling effects which render these cognitive structures resistant to change (Collins & Read, 1994). It is therefore not surprising that assessments of adult attachment have been reported to be moderately stable over periods as short as a few months (Collins & Read, 1990; Scharfe & Batholomew, 1994) and as long as 4 years (Kirkpatrick & Hazan, 1994), and possibly even up to 25 years (Klohnen & John, 1998).

However, the quality of a person's close relationships may itself change over time, as his or her social environment is dynamic, as disconfirming social experiences may be persistently encountered or be highly salient and significant. Relational models should also change to provide more accurate representations of the new social reality (Collins & Read, 1994). Therefore, some degree of meaningful change in global and relational models would be expected over time.

Furthermore, Crittenden's (1990) meta-structure and Collins and Read's (1994) hierarchical network of models are also premised to be somewhat dynamic in nature, whereby global and specific representational models are expected to reciprocally influence each other. Global models of self and other are expected to shape the development of relationship-specific models, providing the individual with a sense of coherence throughout his or her various relational experiences. However, the ongoing nature of close relationship continuously provides opportunities for novel relational experiences within established and developing

relationships. As relationship-specific models of self and other adjust to integrate these novel experiences, the common factor underlying multiple specific models will be altered. This should ultimately generate change in the self-reported global models of self and other.

Current Objectives

One of the objectives of the present research was to assess and compare the stability of both global and relationship-specific models over time. Another goal was to examine the extent to which global models shaped changes in specific models (top-down effects) and also the extent to which specific models altered global ones over time (bottom-up effects). The selected relationship-specific models were within existing, well-established relationships and the top-down effects of global relational models have mainly been proposed to influence the development of new relationship-specific models (Collins & Read, 1994), therefore top-down effects were expected to be weak. However, as the global models are defined to be generalizations from specific models, this process should be manifested in bottom-up effects.

Method

Participants

The sample was composed of 293 students who took part in the longitudinal study of the transition from CEGEP to university (Study 1). The data reported in this chapter was collected at the first and third point of assessment in this longitudinal study, as measures of relational models were not included in the second package of questionnaires. For the present analyses, only participants for whom relation-specific models data were available for each of three relationships (i.e., mother, father and closest friend) were retained. Due to the death or absence of contact with one of their parents, 15 respondents were excluded from the Time 1 sample, reducing it from 406 to 391 cases. Upon return of the second questionnaire, 10 participants were not eligible to pursue the study as they had not

applied to attend university the following year. Two other participants were excluded because they reported that someone close to them (i.e., mother or friend) had died since the last assessment. Of the remaining Time 1 sample of participants deemed eligible to pursue the study (n = 379), 90% completed and returned the Time 2 questionnaire (n = 341). Of these Time 2 respondents, 86% later returned the subsequent Time 3 questionnaire (n = 296). Data for the relational models measures were incomplete in three of these questionnaires, thus a sample of 293 participants was available for the present analyses.

The resulting sample was comparable to the original sample. It was composed of 99 men and 194 women, that is 34% of the present sample were men compared to 37% at Time 1. Eighty-nine participants completed the questionnaire in English and 204 in French, that is 31% of the present sample responded in English compared to 30% at Time 1. The mean age at Time 1 was 18.6 years, in the present sample mean age = 18.5, median = 18, SD = .8, ranging from 17 to 22 years.

One hundred and thirty five of these 293 participants were in a romantic relationship at Time 1. Only 116 reported being in the same relationship at Time 2 questionnaire and 98 of them remained in that relationship at Time 3. Therefore, analyses including the romantic partner only included these 98 cases, as the rest of the participants sampled were either not romantically involved at Time 1 or no longer in the same romantic relationship at Time 3.

Procedure and Measures

As described in the preceding chapter, the first questionnaire was distributed to students in class, completed at home and returned to the experimenter at their school the following week. This testing period began the last week of January 1996 and continued until mid-February, before the provincial deadline for university applications: March 1st. The second questionnaire was mailed to participants' home address in mid-March of that same year, as

participants awaited the university admission decision(s). Participants returned the completed questionnaire in a sealed envelope either by mail or to a designated staff member at their school. The third questionnaire was mailed to participants' home at the beginning of June, once students had completed their Winter semester and were expected to have received the final responses to their university applications. The time elapsed between the completion of the first and third questionnaires ranged from 3.28 to 6.43 months, $M = 3.77$ months, $SD = .34$ months. Ninety-eight percent of participants in the present sample returned the third questionnaire within 4.5 months of having completed the first one, that is, by the end of June.

The measures of global and relationship-specific models of self and others which were included in the Time 1 questionnaire package were also administered in the Time 3 package (see Appendices A and B for the items and chapter 2 for a description of the measures). These measures were however not included in the Time 2 questionnaire.

Results

Stability: T-tests and Correlations

To test the extent to which the scores for models of self and other were similar from one point of assessment to the next, paired sample *t*-tests were conducted (Huberty & Morris, 1989). Global relational models and specific models with mother, father, close friend and romantic partners were compared. The means, standard deviations and *t*-tests comparing T1 and T3 scores for models of self and others are presented in Table 7. Nine of the ten *t*-tests failed to attain the significance level of $p < .05$, ts < 1.88, indicating that not much change in relational model scores occurred in this sample during those few months. The test comparing assessment of global model of self was however significant, $t(292) = 3.61$, $p < .001$. This suggests that from the Winter term to the Summer, participants' global model of self modestly, but significantly increased, from an

average of 1.25 to 1.79, on a scale with possible ranges of -8 to +8.

Test-retest correlations were also calculated. The correlation of T1 and T3 relational measures is presented in Table 8. Test-retest reliability correlations are along the diagonal in the upper-left and lower-right quadrant of the table. The correlation of measures of models of self over the two assessments are presented in the upper-left quadrant of the table, whereas correlations of T1 and T3 models of others are in the lower-right quadrant. Finally, the remaining quadrants contain the correlations of models of self with models of other over the two assessments. All test-retest correlations were reliable at $p < .001$, with values ranging from r =.33, for the models of self within the romantic relationship to $r = .69$ for the model of other for mother, mean test-retest $r = .56$, median $r = .54$. The coefficients suggest that, over a period of 3 to 4.5 months, a person's global and relationship-specific models of self and others were moderately, but not highly stable. Furthermore, the range of the reliability correlations for relationship-specific models of self (i.e., .33 to .67) and other (i.e., ,53 to .69) were comparable to those obtained for the global model of self (.50) and other (.54). Scharfe and Bartholomew (1994) reported similar test-retest correlation values with this self-report measure (mean $r = .51$). However, they also reported higher test-retest reliability for these constructs (i.e., in the order of .72 to .85) when they took into account the error in measurement in coders' ratings of two attachment interviews, 8 months apart. Thus, the modest test-retest reliability found here may result from measurement error of the self-report scale itself rather than instability of the constructs.

Most all of the correlations in the upper-left and lower-right quadrant of Table 8 attained a significance of $p < .05$. Thus global and specific relational models were generally significantly correlated when assessed at different points in time. Finally, the small values in the remaining two quadrants indicate that models of self and other were generally independent from T1 to T3.

Stability and Change: Structural Equation Modeling

To further examine the stability and change in measures of global and relationship-specific models of self and others over these few months, a series of structural equation models (SEM) were tested for both models of self and models of other independently, using maximum likelihood estimation. The software used to conduct SEM analyses was EQS for windows, version 5.1 (Bentler, 1989). Only 33% of the present sample (n = 98) were in the same romantic relationship at both times. In SEM analyses, the selected sample must have available data for all of the variables entered in the analysis. Thus, including the romantic partner in analyses would reduce the sample from 293 cases to only 98 (i.e., a loss of 67 % of the sample). This radically reduced sample size would be insufficient to test the desired SEMs. Structural equation modeling is a large sample procedure which, when applied to small samples, yields unstable and unreliable results. For these reasons, the romantic relationship was excluded from the relationships chosen to assess the common factor underlying a person's various relationship-specific models of self and others. Nonetheless, the specific models for no one relationship were critical to estimate the shared variance (i.e., latent factor) among all specific relational models. Thus, the use of the remaining specific relational models for mother, father and close friend was deemed sufficient to estimate the common factor underlying a person's network of specific models (i.e., what is stable across a person's multiple specific models).

The decision to consider self and other separately was made on the basis of the available sample size. The most detailed SEM, including measures of global and three relationship-specific models of either self or other, contained 19 parameters to be estimated. If models of self and other were tested in the same SEM, 54 parameters would need to be estimated (including the possible correlation between models of self and other at the same point in time and over time). It is generally recommended that, unless the size of the effect is expected to

be large, the sample size to parameter estimated ratio be at least 10 : 1 (Tabachnick & Fidell, 1996). However, larger samples yield more reliable estimates (Bollen, 1989). With this sample of 293 cases, there should be no more than 29 parameters estimated.[1]

Measurement SEMs. Before estimating the magnitude of top-down and bottom up effects, it was necessary to establish that the proposed factor structure adequately fit the data (i.e., that the proposed latent factors underlying specific measures at each time point adequately captured the variance in the sample). This was done by testing *measurement SEMs* (Bollen, 1989; Byrne, 1994). For each of the two time points, the three relationship-specific scores were entered as indicators of a latent factor labeled specific models of self or other (in addition to the description of the measurement SEM, it is highly recommended that the reader refer to Figure 1 as a guide). This extracted the common factor underlying the specific measure for each of the three close relationships. The errors associated with each relationship measure represented the variance unique to each relationship-specific model, not shared with specific models for the remaining two relationships. As relationship-specific models of self and other were expected to remain relatively stable over time, the variances unique to each measure (i.e., the errors in assessing the latent factors in SEMs) were expected to be correlated from T1 to T3. Three correlations were therefore included to account for the temporal stability of these specific relational models (represented as correlations of the error terms). Only one measure of global model of self or other was available at each time point. These measures were entered as observed variables without measurement error. Measurement SEMs estimated the correlation between the measures of global models of self or other and the latent factors representing the variance in specific models of self or other shared by the three close relationships.

The same measurement SEM was fitted to the data for both models of self and models of other. The coefficient estimates for both models of self and other

are presented in Figure 1. Results for models of other are indicated in parentheses. The null SEMs, in which no associations are postulated between the different variables (not represented), have large, highly significant χ^2 values: models of self χ^2 (28) = 716.67 and models of other χ^2 (28) = 834.68 , *p*s < .001. The χ^2 values of the measurement SEMs tested here were, in contrast, substantially smaller at χ^2 (13) = 42.73 and 59.90, respectively, *p*s < .001. These values indicate that, although these proposed measurement SEMs remained significantly different from the saturated SEMs, in which all variance is accounted for (not represented), they were substantial improvements over the null SEMs, in which none of the variance is accounted for.

Various overall fit indices can be used to assess the goodness of fit of SEMs. These indices generally vary between 0 and 1, where 1 indicates a perfect fit and .90 is the agreed upon cutoff value of adequate fit (Byrne, 1994). The reliability of certain fit indices is affected by sample size (Hu & Benter, 1995). Because the present sample is considered to be a relatively small sample by SEM standards, some fit indices are considered more reliable than others. Hu and Bentler (1995) report that, when anlyses are based on a small sample, the Comparative Fit Index (CFI) and the Goodness of Fit Index (GFI) are two of the most reliable fit indices[2]. For the present measurement SEMs, these two indices indicate that they adequately fitted the data: models of self CFI = .96 and GFI = .97, models of other CFI = .94 and GFI = .95.

For both models of self and other, all three relationship-specific measures significantly contributed to relationship-specific latent factors with loadings ranging from .36 to .73, all loading positively and attaining a significance of $p <$ .001. The error terms associated with the specific measures for each relationship were, as anticipated, significantly correlated from T1 to T3. In the measurement SEM for the relational models of self, these correlations suggested that the variances unique to the specific models of self with mother, father and closest

friend were moderately stable from T1 to T3 with *r*s = .60, .46 and .47 respectively, *p*s < .001. For the relational models of other, correlations suggested that the variances unique to the specific models of other for mother, father and closest friend were moderately stable over time with *r*s = .60, .65, and .58 respectively, *p*s < .001. As only one measure of the specific models of self and other was obtained for each of the three relationships at each time point, the measurement error associated with relationship-specific models of self and other could not be accounted for. Thus, the present values most likely underestimate the true stability of the unique variance for each relationship-specific model (Sharfe & Bartholomew, 1994).

Taken together, the χ^2 statistics, the fit indices and the factor loadings all indicate that the measurement SEMs fitted to the data for models of self and other adequately account for the variance in the present sample. Because all of the parameters estimated in the measurement SEMs were also included in the subsequent SEMs fitted to the data to test top-down and bottom-up effects, these statistics remained the same throughout all of the SEMs tested.

The measurement SEMs also yielded estimates of the correlations between the global and the factors underlying specific relational models (see Figure 1). As would be expected, the correlation between T1 and T3 global models of self, *r* = .50, and between T1 and T3 global models of other, *r* = .54, were identical to those reported in Table 8, *p*s < .001. The correlation between the latent factors, representing the common factor underlying the specific models of self or other for the three relationships, were somewhat greater than what might have been expected on the basis of the test-retest correlations reported in Table 8. In the measurement SEMs, the correlations between the latent factors underlying the specific measures at each time point indicate that these factors were quite stable over time: *r* = .74 for model of self and *r* = .81 for model of other, *p*s < .001. Finally, the correlation of T1 global measures and T3 specific factors, as well as

the correlation of T1 specific factors and T3 global measures were also highly significant: *r*s = .29 and .45 for models of self, and *r*s = .36 and .44 for models of other respectively, *p*s < .001.

In sum, these measurement SEMs adequately captured the variance in the data. They yielded highly significant correlations between global and specific relational models both within and across time points. However, the measurement SEMs only estimated the correlations between the constructs of interest. To test the magnitude of possible top-down and bottom-up effects, two additional SEMs were fitted to the data.

Top-down and Bottom-up SEMs. In Top-down and Bottom-up SEMs, the correlations between the constructs were substituted with the hypothesized causal paths representing direct effects of one construct on another. In the Top-down SEM, the associations between global and specific measures were primarily modeled as top-down effects (see Figure 2). That is, the paths were defined to test the hypothesis that the observed correlations were mainly due to the effect of global models on the factor underlying the specific ones. In the Bottom-up SEM, the associations between global and specific constructs were primarily modeled as bottom-up effects (see Figure 3). That is, the paths were defined to test the hypothesis that the correlations mainly represented effects of the common factor underlying the specific models of self and other on the global models.

In both of these SEMs, direct effects were entered linking the T1 global measure to its T3 counterpart as well as from the T1 to the T3 latent factors for the relationship-specific model. These effects represented the extent to which the second assessment of a construct was explained by the previous assessment of the same construct. The correlations between global and specific measures across assessments were replaced by direct effects from the T1 global measure to the T3 specific factor and from the T1 specific factor to the T3 global measure. The first path tested a direct top-down effect over time, whereas the latter tested a direct

bottom-up effect over time. Finally, the Top-down and Bottom-up SEMs differed with respect to the direction of the effects between global and specific relational models *within each time point*. In the Top-down SEM, these paths were modeled as direct effects of the global model on the relationship-specific factor (i.e., as top-down effects; see Figure 2). In the Bottom-up SEM, these paths were modeled as effects of the relationship-specific factor on the global model (i.e., as bottom-up effects; see Figure 3).

Calculation of Overall Top-down and Bottom-up Effects. Using a procedure described by Bollen (1989), the overall effects of top-down and bottom-up processes over time were calculated and compared for each of these two SEMs. The *overall top-down effect* of T1 global relational models on T3 specific relational models was determined by adding the estimated indirect effects, through T1 specific and T3 global models, to the effect obtained for the direct path. That is, a total effect was estimated by cumulating the direct and indirect paths through which T1 global relational models influenced T3 specific relational models. The *overall bottom-up effect* of T1 specific relational models on T3 global models was determined with the same procedure. The estimated indirect effects, through T1 global and T3 specific models, were added to the effect of the direct path to produce an estimate of the total bottom-up effect. The resulting calculations, based on the results obtained from both the Top-down and Bottom-up SEMs, indicate the possible range of both top-down and bottom-up effects in this sample.

Models of Self: Top-down and Bottom-up SEMs

The results of Top-down and Bottom-up SEMs for models of self are presented in Figures 2 and 3 (values which are *not* in parentheses). In both SEMs, the coefficients for the paths from T1 global and specific models of self to the corresponding T3 measures (i.e., test-retest coefficients) were highly reliable, $ps < .001$, as would be expected on the basis of previous results indicating the stability of these constructs. The direct top-down effects within a given time point were

only tested in the Top-down SEM (i.e., paths from global to specific at each time point). These values were highly significant, with βs = .32 and .31 for T1 and T3 respectively, *p*s < .001 (see Figure 2). In the Bottom-up SEM, the direction of these two paths was reversed, with βs = .32 and .45 for T1 and T3 respectively, *p*s < .001 (see Figure 3). The coefficients of the path between T1 variables are identical, regardless of its direction, whereas a distinction is noted in the values of the opposite direction paths at T3. The differences of the T3 paths results from the fact that different variables are used to account for T3 variables in the two SEMs. In the Top-down SEM, the path from T3 global to T3 specific is used, along with paths from T1 global and T1 specific, to account for T3 specific models of self. However, in the Bottom-up SEM, the path from T3 specific to T3 global (i.e., reversed direction) is used, along with paths from T1 global and T1 specific, to account for T3 global model of self. No conclusion can be drawn regarding the direction of these two paths and the effects they represent as the constructs were assessed within each time points. Yet, it is clear from both SEMs that the global model of self and the factor underlying the multiple specific models of self are significantly related at both time points.

Top-down Effects. The direct top-down effect, from the T1 global model of self to the T3 specific models of self, did not attain significance ($p > .05$) in either the Top-down or the Bottom-up SEMs, with βs = -.06 and .07 respectively, *ns*. This suggests that, once the stability of each measure and the effects between global and specific within each time point were accounted for, no significant direct top-down effects between T1 global and T3 specific models of self remained. In the Top-down SEM, this non significant path does not imply the absence of top-down effects, but rather indicates that any top-down effects were accounted for by indirect paths, through T1 specific and T3 global models of self. However, in the Bottom-up SEM, where no indirect path tested the top-down effect, the β = .07 implies that even when no other top-down effects are modeled,

there still is no effect from T1 global to T3 specific models of self.

The overall top-down effect for each SEM was calculated by summing direct and indirect effects (Bollen, 1989). Indirect effects are the product of the weights of the indirect paths. For example, in the Top-down SEM, the indirect effect of T1 global on T3 specific models of self through the T3 global model of self is: .40 [T1 Global to T3 Global] X .31 [T3 Global to T3 Specific] = .12. The calculation of the total top-down effect for the two SEMs is given at the top of Table 9. Using this procedure, the total top-down effect in the Top-down SEM is .26, whereas it is only .07 in the Bottom-up SEM. We may conclude from this that the top-down effect of global model of self on specific models of self was at most a small effect, but also potentially a null effect.

Bottom-up Effects. The direct bottom-up effect, from T1 specific to T3 global model of self differed across the two SEMs. In the Top-down SEM, this path was highly significant, $\beta = .32$, $p < .001$. However, in the Bottom-up SEM, this direct path was null, $\beta = .00$, *ns*. In the Top-down SEM, where no indirect path tested bottom-up effects, the significant direct bottom-up effect implies that there was a significant effect of T1 specific on T3 global models of self in this sample. In the Bottom-up SEM, the null coefficient for the direct bottom-up effect indicates that once indirect effects were accounted for there was no residual direct bottom-up effect.

Once again overall effects were calculated for each SEM. The results are presented at the top of Table 9. The overall bottom-up effect in the Top-down SEM is .32, whereas it is estimated at .44 in the Bottom-up SEM. From these results, we may conclude that the bottom-up effect of factor underlying specific models of self on the global model of self was a medium sized effect. Taken together, these results suggest that over time the global model of self is more likely to be derived from specific models of self with mother, father and closest friend than the reverse. One might wonder if these results are not due to a greater

stability of the factor underlying the specific models of self. Although the comparable test-retest correlations of global and specific models do not suggest a greater stability of relationship-specific models of self, when specific models are taken together, as indicators of a latent factor representing the common variance in models of self within close relationships, this latent factor does appear more stable than the global model of self. Nonetheless, this conclusion is not duly warranted as the error in measuring the construct of global model of self was not accounted for in the present SEMs, whereas it was excluded along with the unique variance of each relationship-specific model of self in the assessment of the factor underlying the specific models of self.

Models of Other: Top-down and Bottom-up SEMs

The analysis of the top-down and bottom-up effects for models of other was conducted in the same manner as described above for models of self. The results of Top-down and Bottom-up SEMs for models of other are presented in parentheses in Figures 2 and. In both SEMs, the coefficients for the paths from T1 global and specific models of other to the corresponding T3 measures were highly reliable, $ps < .001$, once more indicating the stability of these constructs.

The direct top-down effects within each time point, tested only in the Top-down SEM, were significant, $\beta = .38, p < .001$ at T1 and $\beta = .19, p < .01$ at T3. These two paths, which were in the reverse direction in the Bottom-up SEM, were also significant, $\beta = .38, p < .001$ at T1 and $\beta = .35, p < .01$ at T3. As the constructs linked by these paths were assessed within a single time point, no conclusion can be drawn regarding the direction of these effects. However, both SEMs suggest that global and specific models of others were significantly related at both time points.

Top-down Effects. The direct top-down effect, from the T1 global model of other to the T3 factor underlying the specific models of other, was quite weak in both the Top-down and the Bottom-up SEMs, $\beta s = -.01$ and .07 respectively,

ns. Thus, once the stability of each measure and the within-time-point associations between global and specific models of other were accounted for, no significant direct top-down effects remained between T1 global and T3 specific models of other. In the Top-down SEM, this suggests that top-down effects were accounted for by indirect paths, through T1 specific and T3 global models of other. In the Bottom-up SEM, the estimated $\beta = .07$ represents the total top-down effect, thus implying that there was no significant top-down effects from T1 global to T3 specific models of other, at all.

The overall top-down effects are calculated at the bottom of Table 9. In the Top-down SEM, the total effect is .35, whereas it is only .07 in the Bottom-up SEM. The present SEMs therefore suggest that the top-down effect of the global model of other on the factor underlying relationship-specific models of other was potentially a null effect, yet possibly as much as a medium sized effect. However, if there is a top-down effect, it is completely mediated by indirect paths. Moreover, most of these indirect effects are through the T1 relationship-specific factor.

Bottom-up Effects. As was found for models of self, the direct bottom-up effect from T1 specific to T3 global models of other differed across the two SEMs. This path was significant in the Top-down SEM, $\beta = .28$, $p < .01$, but null in the Bottom-up SEM, $\beta = .00$, *ns*. The significant direct bottom-up effect in the Top-down SEM implies that there were significant effects of T1 specific on T3 global models of other. The null coefficient for the direct bottom-up effect in the Bottom-up SEM indicates that there were no residual direct bottom-up effects to be accounted for once indirect effects were entered.

Finally, overall bottom-up effects were calculated for each SEM (see Table 9). The overall bottom-up effect was .28 in the Top-down SEM, yet it was estimated at .43 in the Bottom-up SEM. We may therefore conclude that the bottom-up effect of the common factor underlying relationship-specific models of

other on the global model of other was a small to medium sized effect. In sum, the results of these two SEMs suggest the same conclusions as those drawn for the model of self. The global model of other is likely to evolve due at least to some extent to the collective influence of specific models of other within relationships with mother, father and closest friend. In contrast, the evidence is weaker to suggest that global models influence changes in the factor underlying the specific models of other within relationships with mother, father and closest friend.

Discussion

The objectives of the present analyses were to assess the stability of global and relationship-specific models of self and others over time, as well as to examine the magnitude of top-down and bottom-up effects through which global and specific relational models may shape each other over time. The present results suggest that the mean scores reported for the global and relationship-specific models of self and others are relatively stable over a 3 to 5 month period. The non-significant results for most all of the *t*-tests indicates that there was no overall, consistent change in participants' reports from T1 to T3. The only significant difference noted was an increase in the global model of self. Collins and Read (1994) have suggested that significant changes in working models of self and others may occur when a person experiences a powerful disconfirming event which is either long in duration or highly emotionally significant.

All 293 students in the present sample completed their CEGEP degree between the T1 and T3 assessments, save one. Furthermore, 91% of the present sample was accepted to university during this period and thus anticipated attending university in the Fall. In sum, the Time 3 sample consisted mainly of students who recently completed their CEGEP degree and were expecting to begin university in the Fall. One might conclude that graduating from CEGEP and being accepted to university, although not primarily an interpersonal event, may have been a positive experience for these young adults which enhanced their views of

themselves globally. This increase in their general self-views may have had a diffuse effect on their relational models, increasing their global model of self as assessed with the present measure of global relational models. This post-hoc explanation is offered in light of the significant increase noted for the present sample, yet nothing in the present data, except for academic changes, is available to explore what may be the source of this bolstering effect. The above explanation could therefore not be tested further and must remains speculative.

The test-retest correlations which ranged from .33 to .69, with a mean of .56, are comparable to the values obtained by Scharfe and Batholomew (1994) for these self-report measures (mean r = .51). They also resemble values reported by Collins and Read (1990) using their multi-item scale (mean r = .64). When multiple measures are used to assess a given construct this allows the use of SEM analyses to control for the unreliability of the measurement tool itself. This technique would therefore provide a more accurate assessment of the stability of these constructs, controlling for the error in its measurement. Scharfe and Bartholomew (1994) report much higher stability of these constructs using SEM analysis to control for error in measurement (i.e., β values then ranged from .72 to .85). Their findings suggest that the apparent low stability of the present relational model constructs might be higher than what test-retest correlations imply. However, the use of SEM analyses to control for errors in measurement requires multiple measures of each construct, at each time point. In the present study, the global and relationship-specific models were each assessed with only one measure, precluding the use of SEM to assess the stability of these distinct measures as latent constructs. Nonetheless, the latent factor representing the common variance in relationship-specific models, which excluded both measurement error and variance which was unique to relationship-specific models, did yield test-retest β values of .74 for model of self and .81 for model of other in the measurement SEM. These values are similar to those reported by

Scharfe and Bartholomew (1994).

Specific models of self and other were assessed for three relationships assumed to be central in participants' social network (i.e., relationships with mother, father and closest friend), therefore these measures could be used in SEMs to construct a latent factor representing the common variance in a person's relationship-specific models of self and others. This allowed me to use SEM analyses to assess the direction in which self-reported global relational models and the factor underlying specific models within focal close relationships influenced each other over time. Thus, SEM was especially useful in determining the magnitude of top-down and bottom-up effects from T1 to T3. Results of the separate analyses of models of self and others yielded similar results. As expected, when assessing the magnitude of top-down and bottom-up effects between global relational models and specific models for well-established relationships (as opposed to models for new relationship; Collins & Read, 1994), generally greater support was found for the bottom-up process. The top-down process, in which global models shape specific ones, cannot be excluded on the basis of these results. Nonetheless such effects were smaller in magnitude than bottom-up effects. Over time, self-reports or explicit global models of self and other were clearly influenced by the factor underlying specific models of self and other within established relationships with mother, father and closest friend (i.e., implicit generalizations). This is supported by the finding that a bottom-up effect was necessary to adequately explain the data. When both direct and indirect bottom-up effects were tested, results supported mainly indirect effects. The effects of the factors underlying specific measures at T1 on global measures at T3 were mediated by T1 global measures and, more importantly, by the T3 latent factors underlying specific measures. These findings imply that relationship-specific models of self and other, with mother, father and closest friend, influence global models at any given point in time. Furthermore, we can infer from the results of

the SEM analyses that the stability of the factor underlying these specific models within close relationships contributed to the stability of global models over time.

In contrast, top-down effects were not required to explain the variance in the present sample, as indicated by the non-significant top-down effects, $\beta s = .07$, obtained in the Bottom-up SEM. This implies that global relational models do not greatly influence existing relationship-specific models. Nonetheless, top-down effects in which novel experiences are processed in accordance with and assimilated into existing models have been well documented in the field of social cognition (e.g., Brewer, 1988; Higgins, King & Mavin, 1982; see Gollwitzer & Moskowitz, 1996; Higgins, 1996 for reviews of relevant examples). The present results suggest that biasing effects of global models on relationship-specific ones are weak to null once the specific relationship is well established, presumably restricting this process to the period during which models are being developed for a novel relationship. The interesting question which then arises is when and how does the data from social interactions begin to overtake the global model in the development of relationship-specific models? Also, at what point in the development of relationship-specific models do these specific constructs begin to influence the global models which had until then shaped them?

An unavoidable limitation of the present research is that the repeated presentation of global, but more importantly relationship-specific measures may have contextualized the study. That is, participants may perceive the study as pertaining to their relationships with their mother, father, close friend and romantic partner. Thus, when participants completed the self-report measure at Time 3, on average four months after the initial questionnaire, their responses may be influenced by the belief that the study focused on these four specific relationships. Although a second questionnaire package, which did not include these measures, was completed before relational models were assessed for the second time at T3, having previously presented the relationship-specific measures

may have biased responses to the global measure and thus may have inflated the bottom-up effects reported here. Unfortunately, this alternate explanation cannot be excluded on the basis of the present results. Nonetheless, the number of months between assessments and the intervening questionnaire package may have minimized these possible effects.

The previous and present chapter yield results which were supportive of global and relationship-specific models as distinct, yet correlated constructs. They demonstrate that no specific relationship is uniquely captured by global relational models and that global models of self and other are more likely to integrate information from multiple relationship-specific models. However, the usefulness and interest of this information is restricted to the theoretical domain until their respective consequences on individuals' well-being are considered. Previous research has examined how a person's global attachment model or the quality of their attachment bond within a certain specific relationship influences the experience of significant life events (e.g., Cozzarelli et al., 1998; Mikulincer & Florian, 1995) and daily interactions (e.g. Lin, 1992; Tidwell et al., 1996). Yet no research to date has considered the relative, cumulative or even interacting effects of both global and specific relational models. In the following chapters, I will examine the role of global and specific relational models in young adults experiences of two significant life events and in their experience of daily interactions.

Footnotes

1. Had the romantic partner been added to the list of predictors, the basic measurement SEM would contain 22 parameters to be estimated, requiring at the very least a sample of 220 cases, that is more than twice the number of available cases.

2. The interested reader is referred to Bollen (1989), Byrne (1994), Hoyle (1995) or Hu & Bentler (1995) for the precise meaning and methods of calculating of the various fit indices reported.

Chapter 4

Global and Specific Relational Models and the Experience of Significant Life Events

Global attachment models have been reliably associated with individual differences in psychological well-being and symptom reporting. In contrast to the secure attachment style, insecure attachment styles and greater insecurity on continuous attachment scales, assessed globally, have been found to be correlated with greater state anxiety, more negative and less positive affect, heightened reports of depression and somatic symptoms (Feeney & Ryan, 1994; Hazan & Shaver, 1990; Priel & Shamai, 1995; Simpson, 1990) and an increased incidence of psychiatric disorders (Mickelson et al., 1997). Furthermore, young adults' ratings of the security of relationship-specific attachment to both parents and peers have been independently correlated with negative affects such as depression, anxiety and resentment and also with life satisfaction (Armsden & Greenberg, 1987).

In addition to these general individual differences in well-being, insecure attachment styles have been associated with poorer responses to a variety of stressful situations. Individuals who reported a global insecure attachment style reported greater negative affect and somatization than those with a secure global attachment style when living in a dangerous area during the Gulf War (Mikulincer et al., 1993). In response to chronic back pain, men who endorsed a global insecure attachment style experienced greater psychological distress than men who were globally secure (Mikulincer & Florian, 1998). Global insecure attachment has also been related to a more threatening and less challenging appraisal of combat training, as well as poorer coping strategies, in contrast to the secure attachment style (Mikulincer & Florian, 1995). In a laboratory setting, women with a globally insecure attachment style experienced heightened psychophysiological arousal, as a result of the presence of their romantic partner,

as they awaited to experience an anxiety proving task (Carpenter & Kirkpatrick, 1996). Cozzarelli et al. (1998) reported that securely attached women (i.e., global attachment) experienced less post-abortion distress and more positive well-being. These findings were largely explained by women's global model of self.

Academic Experiences

In contrast to these findings for adjustment to highly stressful events (e.g., war or abortion) which considered only global attachment models, research on academic experiences has tended to focus on the quality of relationship-specific attachment, particularly attachment to parents. Cutrona, Cole, Colangelo, Assouline & Russell (1994) reported that greater perceived parental support, most importantly reassurance of worth and the similarity in interests and concerns, was associated with a higher university grade point average when controlling for academic ability (assessed by the American College Testing program, ACT). This association was not found for perceived support from friends and a romantic partner. Cutrona et al. (1994, study 2) reported that the effects of parental support on university grades was mediated by global models of attachment, namely Collins and Read's (1990) measure of anxiety in close relationships. College seniors were also found to have greater maturity in their career planning as a function of the quality of their attachment to their parents.

When examining the end of high-school and the transition to college, Larose and Boivin (1997) reported that students' experience of loneliness and anxiety at the end of high-school was associated with the quality of the attachment to both their mother and father. In a subsequent report examining these students' transition to college (i.e., CEGEP), the quality of attachment to both their parents explained students heightened feelings of loneliness, but not anxiety (Larose & Boivin, 1998). Interestingly, in this study, the association between parental attachment and loneliness was moderated by separation from parents (i.e., moving away to attend college). The quality of the attachment to mother was significantly

related to the loneliness experienced by those who moved away from home. However, for those who stayed at home, loneliness in college was associated with the quality of the attachment to father.

The effects reported throughout these studies examining the quality of parental attachment and well-being or achievement in university were generally small, accounting for 1% to at most 10% of the variance in the outcome measures. Furthermore, with few exceptions (e.g. Cutrona et al., 1994) only specific attachment to parents has been examined, neglecting the possible contributions of global attachment models to student's well-being and achievement. Finally, these findings do not suggest which aspect of internal working models were associated with these outcomes. For example, in Larose and Boivin's (1998) study, did a more positive model of self in relation to either parent underlie the association between parental attachments and loneliness or was this mainly due to having a more positive model of mother or father?

Romantic Relationship and Breakup

The quality of attachment has also been associated with differences in romantic experiences in samples of both young and older adults. Past research has found that individuals with a secure global attachment style or more secure ratings of attachment were more satisfied with their romantic relationship, saw themselves as more committed, trusting, interdependent and intimate in their relationship in contrast to insecurely attached individuals (Brennan & Shaver, 1995; Kirkpatrick & Davis, 1994; Shaver & Brennan, 1992; Simpson, 1990). Their ratings of relationship satisfaction, commitment and trust were also more stable over time compared to insecurely attached individuals (Keelan, Dion & Dion, 1994). Furthermore, several studies have reported that individuals with a secure global attachment style were more likely to be involved in a romantic relationship, less likely to experience one or many breakups and had been in their current relationship for a longer time than individuals with an insecure global

attachment style (Feeney & Noller, 1992; Hazan & Shaver, 1987; Kirkpatrick & Davis, 1994; Kirkpatrick & Hazan, 1994 Shaver & Brennan, 1992). Finally, recent research has demonstrated that globally securely attached individuals experience less distress subsequent to divorce than insecurely attached individuals (Birnbaum, Orr, Mikulincer & Florian, 1997), but that avoidant men experience less distress than others in response to the breakup of a dating relationship (Simpson, 1990). A study conducted with young adults whose marriages had recently ended suggested that a greater quality of close relationships was associated with less stress subsequent to divorce (Sansom & Farnill, 1997).

All in all, the research on the experience of romantic relationship indicates that individuals with a secure global attachment style are more likely to be in a romantic relationship, to remain in their relationship longer and have better romantic relationships than globally insecurely attached individuals. This research yielded somewhat contradictory findings with respect to the association between global attachment models and distress after the breakup of a dating relationship or a marriage. However, the adjustment to a relationship breakup may be associated with specific attachment models for close relationships other than the romantic relationship. Little research has been conducted to examine the importance of global or specific attachment models in the experience of a relationship breakup. To my knowledge, no research has examined the contributions of global and specific models concurrently. Furthermore, research conducted to date on the experience of breakup has not ascertained which dimension of relational models, the view of self or the view of other, is most strongly associated with adjustment to a breakup.

Specific Relationships and Attachment Functions

Hazan and her colleagues (Hazan & Shaver, 1994; Hazan & Zeifman, 1994) have suggested that the features or functions of adult attachment relationships are the same as those of the parent-child relationship. That is,

although their behaviors differ, adults seek the fulfilment of the same basic needs within their attachment relationships as children seek from their caretakers: the maintenance of proximity, a safe haven and a secure base. The *maintenance of proximity* refers to the desire to be near and to resist separation from a close other (i.e., an attachment figure). When comfort, reassurance and support are needed, the child or adult are expected to turn to an attachment figure to fulfill their need for a *safe haven*. Finally, the third function of attachment relationships are to provide a *secure base* from which to explore the environment, that is to provide the child or adult with a sense of security which allows them to venture outside the relationship and their more familiar milieus to face the challenge of mastering a new environment, knowing that the close other is accessible if needed.

Furthermore, Hazan and her colleagues have proposed that these functions which are fulfilled by parents in childhood, are progressively transferred to peers and ultimately to the romantic partner as the child, then adolescent, matures into adulthood. They suggest that the transfer of these three attachment features is done successively, beginning with proximity maintenance which is transferred to peers in early childhood. Then, in adolescence, there is increased reliance on peers over parents for comfort and reassurance with the transfer of the safe haven function. Finally, the transfer of the secure base function to peers or a romantic partner is done last, in adulthood, once the peer or romantic relationship is established as stable, committed and sufficiently long-lasting to fulfill this function.

Young adults should be in the midst of transferring these functions from parents to peers, with peers or romantic partners being relied upon for comfort and reassurance (i.e., safe haven), but parents remaining the secure base. Evidence supporting this proposed transfer of attachment functions and the different roles of served by parents and peers or romantic partners in young adults has been provided by research conducted by Fraley and Davis (1997) and also Trinke and

Bartholomew (1997). As young adults experience significant life events which evoke different relational needs, we would therefore expect to distinguish the contributions of relationship-specific models for parents and peers to their adjustment. That is, young adults' adjustment to significant events which evoke the need for a secure base may be more strongly associated with their attachment models for their close peers, but not their parents, whereas the reverse would be expected for events which evoke the need for a secure base.

Current Objectives

The objective of the present chapter is to examine the relative contribution of global and relationship-specific models of self and other in young adults' experience of two common life events: the transition to university and the breakup of a romantic relationship. The extent to which global models of self and other account for participants' well-being during their first term of university or after a breakup will first be considered. Second, the additional contributions of specific models of self and other with mother, father, closest friend and romantic partner (when appropriate) to participant's well-being will be examined.

These two life events differ in a notable way with respect to the relationship needs they evoke. The first event, the transition to university, is an event which is generally positively anticipated and provides students with new opportunities and challenges. Within the context of attachment theory, this can be thought of as an experience in which students draw on their secure base to explore and adapt to a novel environment (Hazan & Shaver, 1994). Thus, on the premise that at this age the secure base function has not yet been transferred to peers (Fraley & Davis, 1997; Trinke & Bartholomew, 1997), we might expect the specific relational models for parents, but not for a close friend nor a romantic partner, to be determinant in the experience of this transition.

In contrast, the breakup of a romantic relationship is in many cases experienced as a loss in response to which a person turns to others for comfort and reassurance. That is, when adjusting to this particular event, a safe haven from which to draw solace should be at the forefront of one's relational needs. By late adolescence and young adulthood, the safe haven function of close relationships has generally been transferred from parents to peers, whereby young adults most often turn to their friends or romantic partner for comfort and reassurance (Fraley & Davis, 1997; Trinke & Bartholomew, 1997). Therefore, the quality of relationship-specific models with their closest friend, but not with their parents, should contribute to young adults' adjustment to a romantic breakup.

Method

Participants

Adjustment to University. Participants all took part in the 11 month longitudinal study of the transition to university (Study 1). The periods of interest for the analyses pertaining to the adjustment to university were the Summer (Time 3) and Fall (Time 4 and 5) assessments. The sample is constituted of participants who completed these questionnaires and were attending university in the Fall. Of the original 406 participants, 11 indicated at Time 2 that they did not apply to university and were therefore ineligible to pursue the study. As mentioned previously, one participant's mother died and a close friend of another participant committed suicide. These participants were also excluded from the eligible sample. Of the remaining 393 eligible participants who had completed Time 1, 353 completed and returned the second questionnaire (90%). Three hundred and four (86% of 353) later returned the Time 3 questionnaire in the Summer. When contacted in the Fall for the Time 4 interview, 28 were not attending university for diverse reasons. Of the remaining 276 eligible participants, 255 completed the telephone interview (92%). Ten moved and were unreachable. Eight were never reached at the telephone number they provided and only 3 people refused to do the

telephone interview (1% of the 276). The final Time 5 questionnaire was mailed to the 255 people who completed the telephone interview and the 11 people who either were not reached by telephone or declined the interview. Two hundred and two of them (76%) returned the Time 5 questionnaire.

In all, 263 participants completed the Time 3 questionnaire and the Time 4 and/or Time 5 questionnaires, (i.e., Summer and Fall questionnaires). The gender distribution of this sample was similar to that at Time 1 reported in chapter 2: 171 women and 92 men (35% versus 37% men at Time 1). As was the case at Time 1, 70% of the sample completed questionnaires in French (n=184) and 30% completed them in English (n=79) At Time 3, participants' mean age was 19.3 years, median = 19, SD = .7, ranging from 17 to 22 years.

Although 119 of the 263 participants were in romantic relationships at Time 3, only 88 remained in that relationship at Times 4 and 5. Most of the sample (201 of 263 = 76%) still lived with their parents during their first term of university. Fourteen students (5%) had already moved out of their parent's home while they were still in CEGEP. The remaining 48 participants (18% of the sample) moved out of their parents' home to attend university, mean distance = 112.1 km, ranging from 8 to 300 km, median = 110.0, SD = 81.3. Thus, the vast majority of the students in the sample were either living at home or within a relatively short distance of their parents' home (i.e., within a 1 hour car drive).

Adjustment to a Relationship Breakup. The sample for analyses of the adjustment to a relationship breakup comprises 342 participants who completed at least two consecutive questionnaires in the longitudinal study of the transition to university (Study 1). Participants who were selected from the larger available sample, regardless of their pursuit or not of a university degree, were required to fit the criteria for one of the following three groups: The "breakup" group consisted of 48 participants who experienced a breakup of their romantic relationship between two time points in the study and were not in a new

relationship at the assessment point immediately following the breakup of their romantic relationship. The "couple" group consisted of 126 participants who were in the same romantic relationship over at least two consecutive assessments during the study. The "single" group consisted of 168 participants who were not involved in a romantic relationship over at least two consecutive time points. The remaining 64 participants of the total sample of 406 were excluded from analyses for the following reasons. Fifty-two completed only the Time 1 questionnaire. Two experienced the death of a close other before Time 2. The relationship status of 8 participants was unclear. It could not conclusively be determined if these participants were in the same relationship over the course of the study or if they changed partners. Finally, 2 participants experiences multiple breakups and new relationships over the course of the study and were excluded for this reason.

In many instances, more than one pair of time points was available for participants in the couple and single groups. The time points for these two groups were sampled in accordance with the distribution of the breakup sample over the duration of the study. Consequently, the relationship status groups were balanced across the different possible pairs of assessments. Within each group, Time 1 and Time 2 questionnaires (Winter and Spring) were sampled for 25% of participants (i.e., 12 breakup, 32 couple and 42 single), Time 2 and Time 3 questionnaires (Spring and Summer) were sampled for 31% of participants (i.e., 15 breakup, 39 couple and 53 single) and finally, Time 3 and Times 4 and/or 5 questionnaires (Summer and Fall) were sampled for 43% of participants (i.e., 21 breakup, 55 couple and 73 single).

The resulting sample was quite similar in composition to the full Time 1 sample. It was composed of 126 men and 216 women, that is 37% of the present sample were men and 63 % were women, (i.e., a gender distribution identical to the Time 1 sample). One hundred participants completed the questionnaire in English and 242 in French, that is 29% of the present sample responded in English

compared to 30% for the Time 1 sample. Upon completion of the first questionnaire considered for the present analyses (i.e., Time 2 or Time 3 for 75% of the sample), the mean age was 19.2 years, median = 19, *SD* = .7, ranging from 17 to 22 years.

Procedure

Participants were recruited in class to take part in a longitudinal study of the transition to university. The study took place over a period of 11 months in 1997. The Time 1 questionnaires were distributed to participants in class and returned to one of three experimenters within the following week. This first assessment period began during the last week of January and ended in mid February, two weeks before the university application deadline of March 1st. The Time 2 questionnaire was mailed to participants' home during the first week of March as they were expected to be waiting for responses to their university applications. This second questionnaire was completed and returned either to a staff member at their CEGEP or by mail within the months of March and April. The Time 3 questionnaire, again mailed to participants' home, was sent out at the end of May. This third questionnaire was returned primarily within the months of June and July, that is during participants' Summer vacation, before they began university. In November, as the mid-term exams for the Fall semester were expected to be well underway, participants were contacted for a 20 minute telephone interview (Time 4). This telephone interview was followed by a final Time 5 questionnaire, designed to complement the interview. It was mailed out at the end of November[1] and returned by participants during the month of December. Participants received 5$ payments after completing the Time 1, 2, and 3 questionnaires. Participants also received a payment of 10$ when they were mailed the Time 5 questionnaire, to thank them for their participation in the study.

For analyses of the adjustment to university, data from the Summer and Fall assessments (i.e., the Time 3, Time 4 and Time 5 questionnaires) were used.

For this sample of participants, the Fall interview was conducted on average 5.5 months after the Summer questionnaire, *SD* = .3, range = 3.5 to 6.2 months with 98% of participants having been contacted within 4.5 to 6 months after Time 3. The subsequent Fall questionnaire (Time 5) was returned by participants on average 3.6 weeks after their interview, range = 1.1 to 9.0 weeks, *SD* = 1.0. Ninety-five percent of participants returned this last questionnaire within 2 to 5 weeks of their interview.

The sample for the analyses of the adjustment to a relationship breakup was, as described above, composed of pairs of consecutive questionnaires (or interview) taken from the different assessments in this longitudinal study. The mean amount of time elapsed between the two assessment times considered was 3.5 months, ranging from 1.0 to 6.6 months, *SD* = 1.8.

Measures

At each time point the questionnaire package contained various measures assessing participants' global and specific relational models, their well-being and their coping strategies. The package also included questions pertaining to participants' university applications and the decision process. Finally, participants' attitudes toward university and their romantic relationship were also assessed. These measures were generally repeated from one time period to the next, with the exception of the Time 4 and 5 questionnaires which were designed to complement each other. For the present analyses only the scales pertaining to their close relationships and well-being were considered.

Global and Specific Relational Models. The Bartholomew and Horowitz (1991) four item measure of global and specific models of self and others were assessed at Time 1 and Time 3 in the sample (see chapter 2 for a detailed description and Appendices A and B for the items). The Time 3 scores were used for analyses pertaining to the adjustment to university (i.e., the assessment during the Summer preceding the beginning of university from which the baseline well-

being measures were drawn). When adjustment to a relationship breakup was examined, the scores for the relational models were from either Time 1 or Time 3 questionnaires, whichever was the most recent assessment (i.e., the concurrent assessment or the one immediately preceding the time point from which the baseline well-being data were taken). The time 1 assessment was used when the well-being data were sampled from Time 1 and Time 2 or from Time 2 and Time 3, whereas the Time 3 assessment was used when the relevant well-being data were sampled from Time 3 on.

Well-being. Three different measures of well-being were used to assess adjustment to each of the two significant life events: general affect, perceived stress and somatic symptoms. Measures of general affect and perceived stress were obtained at Times 1, 2, 3 and 4, whereas the somatic symptom measure was administered at Times 1, 2, 3 and 5. ***General affect*** was assessed with a subset of 16 items from the Affect Balance Scale (Derogatis, 1975). In response to each item, using a 5-point scale ranging from never to always, participants indicated "the extent to which they felt that way during the past week including today". Two subscores were calculated with this scale, one for positive affect and one for negative affect. Each subscore was obtained by averaging responses to the corresponding 8 items (see Appendix D for the items). Over the course of the study, Cronbach alphas ranged from $\alpha = .87$ to .89 for the positive affect subscale and $\alpha = .78$ to .84 for the negative affect subscale. The overall general affect score was obtained by subtracting the mean of negative items from the mean of positive ones. A positive general affect score indicates greater positive than negative affect, whereas a negative scores means the opposite. ***Perceived stress*** was measured with the 4 item short form of the Perceived Stress Scale (Cohen, Kamark & Mermelstein, 1983; see Appendix E for the items). Using a 5-point scale ranging from never to very often, participants rated each item in terms of "how often they felt that way during the past week". Responses to the second and

third item were reversed. The overall perceived stress score was the mean of responses to the 4 items. Higher values indicate greater perceived stress. Over the course of the study, Cronbach alphas for this measure ranged from $\alpha = .80$ to .84. Finally, ***somatic symptoms*** were assessed with a subset of 26 items taken from the 54 item Pennebaker Inventory for Limbic Languidness (Pennebaker, 1982; see Appendix F for the items). On the basis of zero frequencies with an undergraduate sample (see Lydon, Pierce & O'Regan, 1997), 28 items were dropped from the original inventory. Participants rated "how frequently during the past week they experienced each symptom" using a 5-point scale ranging from not at all to a great deal. A total score was obtained by summing responses to the 26 items. Higher scores indicate a greater amount and severity of symptoms. The Cronbach alphas for this index ranged from $\alpha = .82$ to .85 over the different time points in the study.

Academic Performance. As part of the longitudinal study of the transition to university, the permission to obtain a copy of their final CEGEP grades was requested from all participants at Time 1. The final Time 5 questionnaire was accompanied with a similar request for permission to obtain their grades for the first term of university. Both CEGEP and Fall university grades were obtained for 166 of the 263 participants in the sample for analyses pertaining to the adjustment to university. Grades were missing in part or in total for the remaining 97 participants for the following reasons. Although they had previously permitted the release of their CEGEP grades, the form authorizing the release of their university grade was not completed by 85 participants. There were no significant differences in the CEGEP grades of these 85 participants and those of the 166 students for whom university grades were available, $t(249) = .56$, *ns*. Twenty-four did not include the with their completed Time 5 questionnaire and 61 did not return the Time 5 questionnaire or the completed release form. In the case of 8 participants, either the university or the CEGEP did not provide the grades although completed

release forms were submitted. One participant authorized the release of his university grades, but not his CEGEP grades. Finally, 3 people did not authorize the release of either their university of CEGEP grades.

Results

Outcome Variables

Analytical Strategy. Attachment models have been associated with well-being, independent of stressful or significant life events (Feeney & Ryan, 1994; Hazan & Shaver, 1990; Priel & Shamai, 1995; Simpson, 1990). As the goal in this chapter was to explain adjustment to significant life events, it was important to control for baseline measures of well-being. This was done by removing the variance in well-being measures, assessed either in the first term of university of after a relationship breakup, which could be accounted for by an earlier assessment of the same measure. For the two samples, independent sets of regression analyses were carried out. The prior assessment of the measure (essentially a baseline measure) was entered as the predictor of the latter assessment of well-being (i.e., either the Fall term at university or subsequent to a breakup). The standardized residual variance, unexplained by the baseline measure, was saved as a variable. The residual scores for general affect, perceived stress and somatic symptoms were used as measures of adjustment in all subsequent analyses, that is as indicators of greater or poorer well-being relative to baseline.

Descriptive Information. Baseline measures of well-being were all highly correlated with measures obtained either during the first term of university or at the second assessment for the relationship breakup sample. In the "adjustment to university" sample, Summer and Fall correlations were $r = .64$ for general affect, $r = .53$ for perceived stress, $r = .62$ for somatic symptoms, $ps < .001$. The adjusted R^2 values obtained from the regression analyses indicate that the baseline measures explained 41% of the variance in general affect, 28% of the variance in

perceived stress and 38% of the variance in somatic symptoms during the first semester of university. Similar results were obtained with the "relationship breakup" sample, where the correlations between the two assessments were r = .60 for general affect, r = .47 for perceived stress, r = .63 for somatic symptoms, $ps < .001$. The regression analyses yielded adjusted R^2 which indicate that baseline measures explained 36% of the variance in general affect, 22% of the variance in perceived stress and 39% of the variance in somatic symptoms following a breakup or when remaining single or in a romantic relationship. The standardized residuals for each of these regressions were saved and used as the criterion variables in subsequent analyses. Thus, the outcome variables were the relative increase or decrease in well-being compared to a baseline assessment, represented by these respective residual scores.

Adjustment to University

Analytical Strategy. A total of 12 regression analyses were conducted to assess the relative contributions of global and specific relational models to adjustment to university. Four separate regressions were carried out for each of the three well-being measures, one for each specific relationship (i.e., with mother, father, close friend and romantic partner, when available). The global models of self and other were entered in the first step of each regression analysis. In the second step, specific models of self and other for a given relationship were entered. The first step of these regression analyses yielded the significance for the main effects of global models of self and other. The second step indicated the significance of main effects of specific models for each relationship. The second step also tested if the effects of the global models prevailed over and above the effects of relationship-specific models. Thus, these analyses tested the hypothesized independent and complementary effects of global and relationship-specific model. They also tested the alternate hypothesis that global and specific models similarly explain adjustment to university, as redundant predictors of

participants' well-being. Regression analyses were conducted with samples slightly smaller than $n = 263$ because of missing data for well-being measures at either time point or due to the absence of one of the four possible close others, except when the romantic partner was considered ($n \leq 79$).

To test whether academic performance in university contributed to the well-being in the Fall term and also to test for possible interactions between academic performance and relational models, the above regressions were repeated using the subsample of 166 participants for whom both CEGEP and university grades were available. The residual score of university GPA, removing variance accounted for by CEGEP grade average, was included in the first step of regression analyses. The second step remained the same. A third step was included in which the cross-products of the residual university GPA score and each of the global and specific models of self and other were entered (i.e., testing the four possible interactions).

General Affect. Results of the regression analyses in which general affect was the criterion are presented in Table 10. As indicated by the low coefficients in Table 10, global models of self and others, entered in the first step of all regression analyses, did not significantly explain general affect. When specific models for the four relationships were entered, independently, in the second step of regression analysis, one single significant effect was found. The specific model of other with father significantly explained general affect, $\beta = .17$, $r = .15$, $sr = .16$, $p = .01$. None of the other possible predictors significantly accounted for general affect. These results indicate that only the specific model of other for father was significantly associated with changes in students' general affect during their first semester of university, such that having a more negative view of one's father significantly predicted experiencing poorer affect. This effect was not accounted for by global models of other. This is nonetheless a quite modest finding as this predictor increased the adjusted R^2 by .02.

Perceived Stress. Regressions in which the perceived stress score was entered as the criterion produced similar results (see Table 11 for regression coefficients). When global relational models were first entered in regression analyses, the global model of self significantly accounted for perceived stress, β = -.13, r = -.13 , sr = -.13, $p < .05$, whereas the global model of other did not. When relationship-specific models were entered in the second step, the specific model of other for father was once again a significant predictor of well-being, β = -.23, r = -.21, sr = -.22, $p = .001$. Furthermore, the main effect of the global model of self remained significant, β = -.15 , sr = -.14, $p < .05$, when the specific models for the relationship with father were included. None of the other relationship-specific models significantly added to the variance in perceived stress explained by the global model of self. Yet, an interesting result was found with respect to the specific model of self in the romantic relationship.

The zero-order correlation between this relational model and perceived stress, r = -.21, attained the $p < .05$ significance level. Nonetheless, this potentially significant effect did not attain significance after global models had been considered, whereas the effect of the global model of self remained significant after the models for romantic relationship were entered, β = -.28, r = -.28 , sr = -.25, $p < .05$ (compared to β = -.30, r = -.28 , sr = -.30, $p < .01$ for global model of self in step 1 with the restricted sample $n = 79$). These two measures, model of self globally and within a romantic relationship, were modestly correlated, $r = .38$, $p < .001$. Thus, the effect of the model of self within the romantic relationship on perceived stress was accounted for by the effects of the global model of self, decreasing the specific models' effect below significance $p < .05$.

The results of these regression analyses indicate that having both a more positive global model of self and a less negative model of one's father serve to minimize one's perception of stress during the first semester of university. Together, these significant effects explained 5% of the variance in the perceived

stress which was unaccounted for by the baseline measure. Although the model of self within the romantic relationship was significantly correlated with perceived stress, the inclusion of this relationship-specific model did not complement the effects of the global model of self. The latter more adequately explained perceived stress.

Somatic Symptoms. Results of the regression analyses in which the variance in somatic symptoms during the first semester in university, controlling for a baseline measure of symptoms, are presented in Table 12. Neither global or any of the relationship-specific models of self or other significantly predicted this outcome measure.

Academic Performance. The final CEGEP and Fall university grades were obtained for 166 of the 263 students who took part in the study and began university that Fall. This subsample did not significantly differ from the 97 excluded cases on global and relationship-specific models of self and other nor on the well-being outcome variables, all *t*s < 1.0, *ns*. Students' CEGEP and Fall university grades were highly correlated, $r = .61, p < .001$. The CEGEP grades explained 37% of the variance in university grades, based on the value of the adjusted R^2. The residual unexplained variance was used as a indicator of academic performance in university, relative to CEGEP [2]. This variable, along with the cross-products assessing the interaction between academic performance and the effect of global and specific relational models of self and other, were included in the regression analyses conducted to examine if the effect of relational models on well-being during the first semester of university differed as a function of students' academic performance. In all regressions, students' academic performance in university relative to CEGEP did not significantly explain any of the well-being outcomes (i.e., no significant main effects were found). For each of the three outcome variables, no significant interactions between academic performance and either global or relationship-specific models of self or other were

found. Therefore, the effects of global model of self and model of other with father described above were independent of students actual academic performance in university.

Adjustment to a Relationship Breakup

Analytical Strategy. A set of 9 regression analyses were conducted in order to assess the contributions of global and specific relational models to adjustment to a relationship breakup. Three regression analyses were executed for each of three outcome variables, considering the specific relationships with mother, father and closest friend only. The relationship with the romantic partner was not considered because the breakup of this relationship was the source of the significant event. In contrast to the previous analyses which examined the adjustment to university, only a portion of the sample actually experience a breakup (i.e., the breakup group, $n = 48$). The two other groups (i.e., participants who remained in a couple, $n = 126$, or single, $n = 168$) were included as comparison groups. Because only a portion of the sample experienced a breakup and nearly half were assessed over the time periods during which participants adjusted to university, significant main effects of global or relationship-specific models were of no particular interest here and were expected to reiterate the findings of the previous set of analyses. The interactions between relational models and relationship status were the effects of interest in this set of analyses. Significant interactions indicate that the effect of relational models on well-being differed between those who broke up and those who remained in their relationship or remained single.

Each regression analysis was conducted in the following manner. Relationship status was identified by two variables according the unweighted effects coding procedure described by Aiken and West (1991). The first variable served to contrast the break up group with the couple group, whereas the second variable contrasted the break up and single groups. On the first variable,

individuals who experienced a breakup were assigned a value of -1, those who remained in a couple were assigned a 1 and the single participants received a 0. On the second variable, individuals who experienced a breakup were again assigned a value of -1, those who remained single were assigned a 1 and those who maintained their relationship received a 0. In the first step of regression analyses, these two effect coding variables as well as the global models of self and other were entered. In the second step, the variables for interactions between relationship status and global relational models were entered. These were the four cross-products of each of the two contrast variables by measures of global models of self and other. In the third step, one set of variables assessing relationship-specific models of self and other were entered. In the fourth and final step, the variables for interactions between relationship status and specific models for one of the three relationships were entered. These were the four cross-products of the two contrast variables by relationship-specific models of self and other. The first set of interaction terms, entered in step 2, assessed the extent to which global relational models have a different effect on adjustment in the breakup group compared to the couple and the single groups. The second set of interaction terms, entered in step 4, examined the differing effects of specific relational models on adjustment in the breakup group compared to the other two groups. When significant interactions between relationship status and global models were found in the second step, the fourth step served to test whether specific relational models had either a complementary or a redundant effect.

Group Comparisons. The well-being scores of the three relationship groups were compared with one-way analysis of variance. No significant differences in general affect, $F(2, 331) < 1.0$, *ns*, or in perceived stress, $F(2, 337) < 1.0$, *ns*, were found between the groups. The difference in somatic symptoms between groups approached significance, $F(2, 333) = 2.32$, $p < .10$. The breakup group appeared to report somewhat more symptoms after a breakup, $M = .14$,

SD = 1.21 controlling for baseline, than the single group, M = -.12, SD = .96, with the couple group falling between them, M = .11, SD = .96.

General Affect. Results from the steps of the regression analysis which tested the interactions of relationship status with global (step 2) and specific (step 4) models of self and other are reported in Tables 13. The main effects of global and relationship-specific models were not examined as they were generally expected to reiterate the findings for adjustment to university.

As indicated by the low coefficients reported in Table 13, no significant interactions between relationship status and either global models or specific models for any of the three relationships considered. Therefore, global and relationship-specific models of self and other did not differentially explain general affect after a relationship breakup compared to when participants remained in a relationship or single.

Perceived Stress. Once more, low coefficients were found when testing the interactions between relationship status and relational models in predicting perceived stress (see Table 14). None of the interactions attained the $p < .05$ significance level. From these results it can be concluded that global and specific relational models are not more predictive of participants' perceived stress after a relationship breakup than when they remained in a romantic relationship or remained single.

Somatic Symptoms. In contrast to the previous results, significant interactions in predicting somatic symptoms were found between relationship status and the model of self with one's closest friend. Both contrasts, comparing the breakup to the couple and single groups, interacted with the model of self with friend, βs = .27 and .31, $ps < .05$. These interaction effects account for an additional 3% of the variance in symptom reports, $F_{change}(4, 320) = 2.39$, $p = .05$. Neither global models nor specific models with either parent had any specific effect on report of somatic symptoms after a breakup. (See Table 15 for coefficients.)

In accordance with the procedure described by Aiken and West (1991) for probing significant interactions in regression analyses, the simple regression equations were generated for each of the three relationship status groups. These equations were then plotted using the sample means for the relational model variables that did not significantly interact with relationship status (i.e., global models of self and other and specific model of other with friend). For the model of other with friend, which interacted with relationship status, the sample mean as well as values one standard deviation above and below this mean were used to plot the interaction. These simple regression equations and the plot of the interaction are presented in Figure 4.

The different effects of model of self with friend between the groups are quite salient. As indicated by its coefficient in the simple regression equations, β_3, the slope of the effect of model of self with friend within the breakup group is negative, $\beta_3 = -.40$. This slope is significantly different from a null slope, $t(320) = 3.70$, $p < .001$. However, the slopes for the two other relationship status groups, $\beta_3 = -.06$ and $-.04$ for the couple and single groups respectively, do not significantly differ from the null slope, $ts(320) < 1.0$, *ns*. These results imply that the more young adults have a negative view of themselves within their relationship with their closest friend, the more likely they are to report increases somatic symptoms as a result of a breakup of a romantic relationship in contrast to those who have a more positive view of self with their closest friend. When they are either in a romantic relationship or single, young adults' model of self with friends is unrelated to their reports of somatic symptoms. Finally, these results cannot be explained by differences in the specific model of self by relationship status as the mean and the variance of model of self with friend does not significantly differ across groups: breakup group $M = 3.12$, $SD = 1.50$; couple group $M = 3.18$, $SD = 1.97$; single group $M = 2.72$, $SD = 2.00$; overall $F(2, 332) = 2.26$, *ns*, and Levene test of homogeneity of variance $(2, 332) = 2.04$, *ns*.

Discussion

Overall, the results appear weak and inconsistent. However, the differential pattern of results, parent for adjustment to university and friend for relationship breakup, is consistent with my hypotheses with respect to the different attachment needs fulfilled by parents and peers. These effects could not be explained by a general association between attachment models and well-being, irrespective of life events (Feeney & Ryan, 1994; Hazan & Shaver, 1990; Priel & Shamai, 1995; Simpson, 1990), as the variance in the well-being measures which could be accounted for by a baseline measure was removed (i.e., used residualized outcome measures). The results for the effect of relational models specific to father were found for two of the three well-being measures, general affect and perceived stress. These results for father were consistent with those reported by Larose and Boivin (1998) for young adults adjusting to their first semester of CEGEP and still living at home with their parents. Although results for the effect of relational models specific to friend were only obtained on one of the three well-being measures, this effect was highly significant as evidenced by the -.40 slope representing the degree of association between the specific model of self with friend and the increased report of symptoms after a relationship breakup. All in all, the results obtained remain quite modest, accounting for at most 5% of the variance in the outcome variables. Nevertheless, they suggest the value of distinguishing between global and specific constructs in research on models of close relationships and also between specific models for different relationships.

In explaining students' adjustment to university, a more positive global model of self predicted less perceived stress during the first term of university, controlling for baseline perceptions of stress obtained during the Summer. This main effect for the global model of self appeared to subsume the potential effect of the model of self within a romantic relationship, the global measure more adequately accounting for the variance in perceived stress.

In addition, the model of other for father additionally explained perceived stress, whereby a more positive view of father predicted less perceived stress during the Fall semester, again controlling for baseline. The model of other for father was also significantly associated with general affect. Having a more positive view of father was associated with generally more positive affect during the first semester in university, controlling for the baseline measure of general affect obtained during the summer. In sum, both global models of self and specific model of father were predictive of student's well-being during their first semester in university, whereas specific models for mother, but more importantly peers, were generally not predictive of well-being when effects of global models were accounted for. The significant role played by the relationship with father, but not peers, is consistent with the predictions based on the secure base function served by parents in young adults. Thus, students who were generally confident in themselves and viewed their father as accepting and responsive to their needs were found to better adjust to the first semester of university. These effects were independent of students' actual performance in university.

With respect to the second life event considered, the breakup of a romantic relationship, the results support the hypothesized importance of the quality of the relationship with the closest friend, but not parents, in a situation evoking safe haven needs. As indicated by the significant interaction of relationship status and model of self with a close friend, the extent to which young adults have a positive model of themselves within their relationship with a close friend predicted lower reports of somatic symptoms after the breakup of a romantic relationship, controlling for a baseline report a few months prior to the post-breakup assessment. No such effects were found for young adults who maintained their romantic relationship or who remained single over the same period.

The present research further supports the consideration of both global and specific relational models in understanding adjustment to significant life events. More importantly, it suggests that a measure of global attachment models does not accurately capture the extent to which the specific close relationships with parents or peers adequately fulfill young adults' relational needs.

Footnotes

1. The Time 5 questionnaire was to be mailed within the week following the Time 4 interview. However, this was delayed several weeks due to a prolonged postal strike which began shortly after the Time 4 interviews were initiated.

2. This measure of academic performance was not significantly correlated with any of the measures of global and specific models of self and others, absolute values of the *r*s < .11, *ns*.

Chapter 5

Global and Specific Relational Models and the Experience of Daily Interactions

At the foundation of adult attachment theory is the premise that people's interpersonal experiences vary in accordance with their attachment models. However, direct evidence of these differences in interpersonal experiences has only recently been provided with more reliable methodologies than retrospective reports, such as observational and event-contingent sampling methods. Research with observational methods has yielded interesting findings with respect to the differences in behaviors associated with attachment models. Attachment models (either global or romantic) have been associated with differences in the behavior toward a romantic partner when attempting to resolve a problem or disagreement in their relationship (Kobak & Hazan, 1991; Simpson, Rholes & Phillips, 1996). Global attachment models also predict women's support seeking behavior and their male partners' emotional support and reassurance behaviors as women awaited to engage in anxiety provoking activity (Simpson et al., 1992). Mikulincer & Nachshon (1991) found that global attachment style was associated with differences in participants' self-disclosure to a stranger.

In order to assess social interactions in more naturalistic settings and with a larger number of interaction partners, recent research has utilized an event-contingent sampling method to obtain on-line assessments of the experience of daily interactions. This methodology requires that participants keep a diary of their social interactions using structured interaction records (i.e., the Rochester Interaction Record; Reis & Wheeler, 1991). The main advantage of this type of event-contingent sampling it that it provides assessments of participants' experience as their social interactions occur (Wheeler & Reis, 1991). This minimizes the possibility of biases which arise when past events are recalled from memory (Pietromonaco & Barrett, 1998). Biased reports are further reduced by

the fact that several days' worth of interactions are recorded independently, in contrast to retrospective reports which require that participants themselves aggregate their experiences.

Although this method does not provide an objective measure of social interactions, it does provide a more reliable and less biased assessment of participants' subjective experience of their daily interactions than would be obtained through a single retrospective self-report questionnaire. In order to ensure the reliability of the interaction records, great care must be taken in explaining the response items to participants. They must clearly understand what is required of them as they record their social interactions. Another requirement to ensure the reliability of the records is that participants understand the importance of completing the records as soon after the interaction as possible and for each and every social interaction lasting 10 minutes or longer over the course of the testing period. (See Reis & Wheeler, 1991 and Wheeler & Reis, 1991 for a detailed discussion of the issues pertaining to this type of event-contingent recordings).

Attachment models (global or romantic) have been associated with individual differences in the experience of daily interactions and also in attachment-relevant interactions such as opposite-sex interactions (Feeney et al., 1993; Tidwell et al., 1996) and high conflict interactions (Pietromonaco & Barrett, 1998). However, little work has been done to date to examine the association between relationship-specific models and daily interactions with specific others, with the exception of a dissertation by Lin (1992) which focused exclusively on the association between relationship-specific ratings of intimacy and trust and the subjective experience of the other's responsiveness and self-disclosure in daily interactions with the specific other.

Feeney et al. (1993) and Tidwell et al. (1996) examined the individual differences in opposite-sex interactions (i.e., not within specific relationships) which were associated with global attachment styles. Pietromonaco and Barrett

(1998) examined the individual differences in the experience of daily interactions, more particularly high conflict interactions, as a function of the romantic attachment style (not necessarily assessed for a current romantic relationship). These studies essentially used the attachment measure as a stable personality-like trait, not assessing relationship-specific models, whereas Lin (1992) focused on relationship-specific models (intimacy and trust within the relationship), excluding the effects of individual differences in global relational models. To my knowledge, no research to date has considered both global and specific relational models to explain the experience of daily interactions within relationships. Thus the extent to which global and specific models concurrently explain the experience of daily interactions remains to be tested. This was the main objective of the present research.

Furthermore, with the exception of Lin (1992), the research on daily interactions described above examined differences between individuals on the basis of attachment categories. As Pietromonaco and Barrett (1998) point out, the categorical assessment does not clearly delineate which dimensions of relational models (self or other) contribute to the experience of interactions. The present research used continuous measures of models of self and others in order to assess which of these two contributes most significantly to the interactional experience, at both the person- and relationship-level.

Method

Participants

Seventy-five undergraduate students were recruited to take part in a 9 day study of relationships and daily interactions. This study (Study 2) was briefly described in Chapter 2.Data were collected in two laboratory sessions, separated by a seven day period during which participants kept a diary of their social interactions. As indicated in chapter 2, the data of 2 participants was excluded because two of them left town during the testing week due to family emergencies

and a third participant did not properly complete the diary records and self-report questionnaires. Therefore, 72 participants remained in the sample.

Due to the low number of interaction records completed for the five most frequent interaction partners, this sample was further restricted to $n = 65$. The 7 participants which were excluded did not meet the criteria of recording at least three interactions over the week with a minimum of three of the five different partners considered. Analyses with such low frequencies of social interactions (< 3) or with so few relationships (< 3) would have been highly unreliable. The final sample of 65 participants was constituted of 40 women and 25 men, mean age = 19.8, median = 19, $SD = 1.9$, range = 17 to 30. All participants completed the measures in English. They received either course credit and 10$ or simply a 15$ payment for taking part in the study.

Procedure

Participants first attended a laboratory session in groups of up to 5 people. The sessions were run by one of three experimenters (one male and two females). During this first session, they completed the global measure of relational models, along with a few other measures which are not directly relevant to the present analyses. Upon completing the questionnaire packet, participants received seven pocket-sized booklets containing blank interaction records, one booklet for each day of the week. They were also provided with a packet containing written instructions on how to record their interactions. The experimenter verbally reinforced these instructions, going over the information packet in detail and explaining that their accurate recoding of interactions was essential to the success of the study. Participants were asked to record all of their interactions lasting 10 minutes or longer, during the following seven days. They were asked to complete the interaction record as soon as possible after the interaction and not to complete them from memory at the end of a day. At the end of the first session, before participants left, the experimenter pointed out the telephone number printed in

each of the seven booklets and encouraged them to call during the week if they had any problems or questions regarding the study. Only a few participants called for information and the experimenter promptly returned all calls. In addition, all participants received a telephone call from the experimenter within the following two days. This was to ensure that participants were remembering to record their interactions and to answer any questions they might have.

Nine days after the first session, participants returned to the laboratory, again in groups of up to 5 people. This second testing session was generally led by the same person they met the previous week. The experimenter collected participants' booklets and briefly explained the various tasks involved in the second testing session. Participants were informed that they would receive three small packets of questionnaires to be completed, the latter was to be personalized by the experimenter as they worked on their first two packets. These two packets were composed of retrospective questionnaires assessing various aspects of participants' week and hypothetical scenarios describing possible social interactions. They did not contain measures relevant to the present analyses and essentially served to occupy participants while the personalized packets were being prepared. Using a tally sheet, the experimenter listed each name which appeared in a participant's booklets of interaction records and recorded the total number of times each person was mentioned in the interaction records. Five copies of the relationship-specific questionnaire were personalized for each participant using the names of the five people mentioned the most frequently in the week's interaction records. When more than 3 participants attended a given session, two experimenters were present to count the frequencies of relationship-specific interactions and prepare these packets. Once participants had completed the preceding packets of questionnaires, they answered the relationship-specific questionnaires. Finally, a brief discussion of the study was led by the experimenter before participants left.

Measures

Global and Specific Relational Models. The Bartholomew and Horowitz (1991) 4 item measure was used to assess global models of self and other. The modified version assessing relationship-specific models of self and other was completed for the relationships with each of the five people participants interacted with most frequently over the week. (See Appendices A & B for the items and Chapter 2 for a more complete description of the measure.)

Interaction Records. Each of the seven booklets given to participants contained 13 structured interaction records as well as three daily measures which were not considered in the present analyses. The interaction records were slightly modified versions of the Rochester Interaction Record (RIR; Reis & Wheeler, 1991). A blank interaction record is presented in Appendix G. Participants were instructed to complete an interaction record for each social interaction lasting 10 minutes or longer. The left side of the record contained mainly information describing the interaction: when it occurred, how long it lasted, how many people were involved, a list of their names and gender, the nature of the interaction and the participant's goal in the interaction. The latter two categorical descriptions were exploratory and will not be addressed further. The right side of the record comprised eight items assessing participants' experience of the interaction: who initiated the interaction, who was most influential, the degree of intimacy and satisfaction, how helpful the other person was, how helpful they were to the other, the extent to which they felt understood and their mood after the interaction ended. These items were rated on 7-point scales, with the possibility of choosing "not applicable" for the questions pertaining to help and support.

Three variables were drawn from participants' interaction records to assess their overall experience of daily interactions within specific relationships. The length of interactions was employed as a descriptive variable. An index of the overall quality of the interaction was constructed with three of the eight items

rated on the 7-point scale: satisfaction, understanding and mood. The three items were strongly correlated with each other, mean within-subject *rs* = .56, .74. and .60 for satisfaction with understanding, satisfaction with mood and understanding with mood respectively, *ps* < .01, mean *df* = 25.5. On the basis of the interaction records retained for analysis, the reliability of this index was acceptable at $\alpha = .87$ (calculated with $n = 1790$). Intimacy was retained as a distinct indicator of participants' experience of the interaction. It was moderately correlated with the quality index and each of the three items included in the quality index, mean within-subject *rs* = .44, .36, .35 and .46 for quality, understanding, mood and satisfaction, with only the two largest *rs* attaining $p < .05$, mean *df* = 25.5.

Results

Descriptive Information on the Interaction Records

Participants were asked to record all their social interactions during the week. The present analyses focus only on the interactions with each of the five most frequent interaction partners. If participants listed more than one person, the record was retained for analyses only if the specific partner of interest was listed first. This was assumed to reflect the greater importance of the specific other in those interactions in contrast to instances in which the person of interest was mentioned after 1 or 2 others. For the 65 participants retained in the sample, each of the 5 specific others' names were mentioned on average 8.33 times throughout their interaction records, ranging from 1 to 34 times, median = 7, *SD* = 5.51. However, each specific other was the first person listed in an average of 5.77 records, ranging from 0 to 28 records, median = 4, *SD* = 4.63.

Because the set minimum of 3 interactions was not always available for all five relationships, the number of relationships sampled for a given participant varied from 3 to 5, *M* = 3.95 relationships, *SD* = .74. When restricting the interaction records to the 257 partners who were listed first on at least 3 records during the week, the mean number of interactions was 6.98, ranging from 3 to 28,

median = 5, *SD* = 4.46. In 95% of these relationships, from 3 to 15 interactions were retained, with only a few relationships yielding more than 15 interaction records. Sixty-seven percent of these interaction partners were of the same gender as the participant. Eighty-two percent of the partners were peers, with most identified as either a close friend, a roommate, a classmate or a social acquaintance, *n* = 186 or 72%, and another 10%, *n* = 26, identified as a romantic partner. Only 9%, that is 22 of the 257 relationships sampled, were with a parent and another 5% were with a sibling or member of the extended family. Finally less than 1% of the partners, only 2 in all, were identified as a teacher or boss. The remaining 3% of the 257 relationships, *n* = 8, were listed as not fitting any of the above categories.

A total of 1795 social interactions with these specific partners were sampled from participants' interaction records for the week. These interactions most often occurred only with the specified partner, with 65% of records indicating that participants interacted with only 1 person, *M* = 1.68, ranging from 1 to 10 people in the interaction, *SD* = 1.21. The length of these interactions was on average 56.50 minutes, ranging from 10 to 640 minutes (i.e., 10.67 hours), *SD* = 65.71. Ninety-five percent of the interactions recorded lasted 3 hours or less. Furthermore, half of the interactions lasted 30 minutes or less. The rated quality of these interactions ranged from 1.33 to 7.00 on the 7-point scale, *M* = 5.31, median = 5.33, *SD* = 1.13. Intimacy ratings were quite variable over these numerous interactions with a mean rating of 4.45 (i.e., near the mid-point of the scale), median = 4.50, range = 1 to 7, *SD* = 1.59.

Analytical Strategy

From 3 to 28 interaction records were sampled within each of 3 to 5 different relationships identified by the 65 participants. The present study thus generated three distinct levels of data: social interactions within relationships within individuals. Although these three distinct levels can, in theory, be

distinguished and entered independently in 3-level HLM analyses, the present sample could only be tested with 2-level analyses. In order to conduct 3-level analyses, there needs to be sufficient variance at the lowest level within each of the upper-level units of analysis, that is there must be sufficient variance in the ratings of social interactions within specific relationships. In the present sample, there was not a sufficient amount of variance in the interaction records within each relationship. In several relationships, the variance across the corresponding interaction records was null, indicating that all interactions with a given partner were rated as identical throughout the week. Null within-relationship variances were obtained on all three measures. In 7 of these 257 relationships there was no variance in the length of interactions (e.g., a participant might have interacted 6 times with a specific partner that week, each interaction lasting 20 minutes). Null variance was also found for quality ratings within 8 relationships and for intimacy ratings within 10 relationships. Had these relationships been excluded, the sample of 65 participants would have been reduced by 4 participants in order to maintain the minimum number of 3 interactions for each of 3 relationships per participant. As there was generally a small amount of variance in interaction ratings within relationships and to avoid having to restrict the sample any further, the multiple observations at the interaction-level were aggregated within relationships to produce relationship-level scores. The aggregated social interaction measures and the relationship-specific models of self and other constituted the within relationship variables (i.e., relationship-level variables), whereas global models of self and other composed the between individual variables (i.e., person-level variables). Before proceeding with analyses, all measures were transformed into standardized Z scores at their respective levels to obtain means of zero and standard deviations of one for all person-level and relationship-level observations. In Bryk & Raudenbush's (1992) terms, all measures were centered around the grand mean.

In accordance with Bryk and Raudenbush's (1992) recommendations, HLMs were developed in a "step-up" manner using the HLM software, version 4.01 for Windows. The extent to which global and relationship-specific models of self and other accounted for the variance in each of the four interaction measures was tested with three nested hierarchical linear models. In the first HLM, the main effects of relationship-specific models were tested. The second model incorporated the main effects of global relational models. Finally the third HLM tested the possible interaction of global and specific relational models.

As all measures were standardized Z scores, the γ coefficient associated with a relational model measure used to explain social interaction ratings is essentially equivalent to standardized β coefficients in regression analyses, ranging between -1 and +1. The contributions of each set of variables entered in the model in explaining social interactions was assessed with the amount of variance it explained at the person-level, the relationship-level and overall. The proportion of variance explained was determined by comparing the amount of unexplained variance once global and/or specific relational models were included in the equation to the total amount of variance for the outcome variable when no predictors or entered into the equation. That is, improvements were determined on the basis of the random ANOVA or benchmark model (see chapter 2 for details), which yields the total amount of variance between individuals, within individuals but between their relationships and overall (i.e., the sum of the variance within and between individuals). Because global models of self and other only varied between individuals and remained constant within participants' relationships, these variables could only account for person-level variance. In contrast, relationship-specific models of self and other varied both between-individuals (i.e., at the person-level) and between-relationships but within-individuals (i.e., at the relationship-level) due to their grand mean centering. Thus, the specific relational models could be used to account for both person-level and relationship-

level variance in the ratings of social interactions.

The contributions of models of self and other to the experience of daily interactions were examined in separate HLM analyses. The small number of relationships sampled restricted analyses to only one relationship-level predictor, that is only one of the two relationship-specific measures could be considered at a time. One solution might have been to require each participant to complete relationship-specific measures for a greater number of relationships. However, it is unlikely that a sufficient number of interaction records would have been available for this number of relationships to produce reliable indicators of daily interactions. Furthermore, it is unlikely that the average number of relationships sampled for each participants would have attained 10 of 15 relationships to ensure a minimum of reliability for the estimated coefficients for two relationship-level predictors. The simpler solution was then to examine the effects of models of self and other with distinct sets of analyses. As these two measures are hypothesized to be orthogonal and thus are reported as not significantly correlated (Bartholomew & Horowitz, 1991; Scharfe & Bartholomew, 1994), this solution does not entail substantial problems in interpreting the effects of these unrelated models on outcome variables.

As demonstrated in chapter 2, global and specific models were however not independent of each other. Although they were at different levels of analysis, the variance in relationship-specific measures which is shared by global measures could have entailed problems of multicollinearity and most certainly would have split the variance accounted by both levels of measures between the two predictors. To circumvent these potential problems, the relationship-specific scores used in the HLM analyses were residualized scores resulting from the removal of variance in relationship-specific models which could be accounted for by global models. These residual scores were highly correlated with the original measures of specific models of self, $r = .95$, and other, $r = .98$, $df = 63$, $ps < .001$.

This partitioning of the variance somewhat favored global relational models and produced more conservative tests of the effects of relationship-specific models.

Correlation of Interaction Ratings and Relational Models

Preliminary correlations were conducted at the person-level and at the relationship-level. They are presented in Table 16. In the top portion of the table, the correlation of global relational models and social interaction ratings, aggregated across relationships, are reported. Only two of the six coefficients attained a significance of $p < .05$: the correlation of global model of other with ratings of quality, $r = .39$, $p < .001$, and intimacy, $r = .35$, $p < .01$, of social interactions. The mean, range and standard deviation of the correlations of specific relational models and social interaction ratings within participants (i.e., within each person-level unit) are also presented. These correlations were computed for up to 64 samples (i.e., participants) of 3 to 5 relationship. This produced highly variable coefficients which only rarely attained $p < .05$, as this required coefficients ranging in absolute value from $r \geq .878$ for samples of 5 relationships to $r \geq .997$ for samples of 3 relationships (Rosenthal & Rosnow, 1991). The within-individual correlations could not be calculated for one or two people due to an absence of variance in their relationship-specific models. The mean correlations suggested that specific models of other may be positively associated with the quality, mean $r = .18$, the intimacy, mean $r = .44$, and the length, mean $r = .22$, of interactions. Although these correlations imply that both global and specific relational measures were associated with the experience of social interactions, they are imprecise estimations of the potential main effects of relationship-specific models. Furthermore, the statistical interaction of global and specific measures in explaining the ratings of social interactions could only have inappropriately been considered by aggregating the relationship-specific measures obtained for each participant. These weaknesses were nonetheless overcome with the use of HLM analyses which were expected to provided truer estimates of the

association between relational models, at both global and specific levels, and the experience of daily social interactions within the selected relationships (Bryk & Raudenbush, 1992).

Quality of Social Interactions

The correlations reported above suggested that both global and specific models of other should explain a significant proportion of the variance in ratings of the quality of social interactions. The results of the HLM analyses in which global and specific relational models were entered as predictors of quality ratings are presented in Table 17. The top portion of the table presents results of analyses testing the effects of models of self. The bottom portion of the table presents results for the effects of models of other.

The random ANOVA model (Bryk & Raudenbush, 1992), in which only an intercept was entered, served to partition the total amount of variance in ratings of quality between the person-level and the relationship-level. That is, this first analysis distinguished what proportion of the total variance in ratings of quality was between individuals and what proportion of the variance was within individuals, but between relationships. This benchmark model, against which all analyses examining the association between relational models and the quality of social interactions were compared, indicated that 46% of the variance in quality was at the person-level and the remaining 54% was within individuals, at the relationship-level. Thus, there was nearly as much variation in the quality of social interactions between individuals as there was between relationships within individuals.

Models of Self. The main effect of the relationship-specific model of self approached significance with a γ coefficient = .11, $p < .10$, accounting for 10% of the variance within individuals from one relationship to the next (i.e., relationship-level variance) and 4% of the variance between individuals (i.e., person-level variance). Because relationship-level variance represented 54% of

the total variance in quality and the remaining 46% was person-level variance, the total variance in quality accounted for by the relationship-specific model of self was calculated as follows: [.10 X .54] + [.04 X .46] = .07. That is, the specific model of self accounted for a total of 7% of the variance in ratings of quality. Including the main effect of the global model of self and the global-specific interaction did not increase the proportion of variance accounted for in quality ratings, as the total amount of variance explained in ratings of quality remained relatively consistent when these predictors were included. Nonetheless, the global-specific interaction did attain a significance of $p < .01$, suggesting that the association between specific models of self and ratings of quality differed as a function of a person's global model of self. The negative global-specific interaction coefficient, $\gamma = -.17$, implies that the association between specific model of self and ratings of quality was stronger for a person with a negative global model of self, decreasing with increases in the global model of self. In other words, for participants with a negative global model of self, the relationship-specific model of self was more strongly associated with the quality of their interactions than it was for those with a positive global model of self. Nonetheless, this effect was modest as it accounted for 12% of the relationship-level variance, representing 6% of the total variance in ratings of quality.

Models of Other. The effects of models of other in explaining the quality of social interactions, presented in Table 17 under models 4 to 6, were more straightforward. There were independent main effects of global and specific models of other, both positively associated with the quality of social interactions, γs = .27 and .19 respectively when both were entered in model 5, ps < .01. The global-specific interaction, tested in model 6, was non-significant. The specific model of other, when entered alone in model 4, accounted for 16% of the relationship-level variance and 8% of the person-level variance in quality. The total variance in ratings of quality accounted for by the specific model of other

was 12% (i.e., [.16 X .54] + [.08 X .46] = .12). The global model of other, entered in model 5, contributed to explaining another 13% of the person-level variance, increasing the total amount of variance explained by 6% (i.e., [.13 X .46] = .06), for a total of 18%. Thus, the quality of social interactions was greater within relationships in which individuals had more a positive model of the specific other. Furthermore, the more positive participants' global model of other, the greater the quality of their social interactions in general.

Intimacy of Social Interactions

Correlations of relational models and ratings of intimacy resembled those obtained with the measure of quality of social interactions. Essentially, these correlations implied both global and specific models of other, but not models of self, were associated with intimacy. HLM analyses were expected to provide more reliable estimates of these associations as the variances in intimacy between- and within-individuals are accounted for. The first HLM analysis, which tested the benchmark model, signaled that only 39% of the variance in intimacy ratings were at the person-level, whereas the larger portion of the variance, 61%, was at the relationship-level.

Models of Self. Results of the HLM analyses pertaining to intimacy ratings are presented in Table 18. The correlations reported above did not accurately portray the association between models of self and intimacy. The main effect of the relationship-specific model of self suggested a significant, positive association with ratings of intimacy, $\gamma = .17, p < .01$. This relationship-specific variable accounted for 10% of relationship-level variance and 3% of person-level variance, explaining 7% of the overall variance in ratings of intimacy (i.e., [.10 X .61] + [.03 X .39] = .07). The main effect of the global model of self, entered in model 2, was not significant. However, a significant global-specific interaction was found with the third model, $\gamma = -.13, p < .05$. Including the main effects of the global model and the interaction term did not increase the proportion of variance

accounted for in intimacy ratings, as the total amount of variance explained remained relatively consistent in all three HLM models. The global-specific interaction was indicative of differences in the association between specific models of self and intimacy as a function of the global model of self. As was the case for analyses pertaining to ratings of quality, the negative global-specific interaction denoted that the level of intimacy of social interactions was more strongly associated with the specific model of self within a relationship for individuals with negative global models of self than for those with more positive ones. Thus, the association between relationship-specific models of self and the intimacy of social interactions was positive and significant overall, but it was most pronounced when the person had a negative global model of self and weaker for those who held generally positive global models of self. In other words, for individuals with a negative global model of self, the variation in relationship-specific models of self was a stronger predictor of intimate interactions than for those with a positive global model of self. This effect was however a modest one as it accounted for 9% of the relationship-level variance, representing only 6% of the total variance in ratings of intimacy.

Models of Other. The results of HLM analyses examining the association between models of other and intimacy are also presented in Table 18. They closely resemble the results obtained for the quality ratings. Both global and specific models of other were significantly associated with ratings of intimacy in social interactions, $\gamma = .22, p < .05$ for the global and $\gamma = .38, p < .001$ for the specific model of other, when both were included in model 5. The global-specific interaction was not significant. The specific model of other, entered alone in model 4, explained 31% of the relationship-level variance and 12% of the person-level variance, accounting for a total of 23% of the variance in intimacy (i.e., [.31 X .61] + [.12 X .39] = .23). Adding the global model of other in model 5 increased the total amount of variance explained to 27%, increasing the explained

variance at the person-level by 9% (i.e., adding [.09 X .39] = 4% to the total explained variance). Thus, the more positive the relationship-specific model of other, the more intimate the social interactions within the relationship. In addition, individuals with a more positive global model of other experienced generally more intimate interactions than individuals with a more negative global model of other.

Length of Social Interactions

Because the length of social interactions was highly skewed, this variable was transformed (i.e., the distribution was normalized) before any analyses were performed. The average within-subject correlation of relationship-specific model of other and the length of social interaction, with a value of .22, was the correlations with the highest of all between relational models and length (see Table 16). This would therefore suggest specific model of others as the relationship variable most likely to explain a significant proportion of the variance in the length of social interactions in HLM analyses. The benchmark, random ANOVA model indicated that most of the variance in the length of social interactions, more precisely 88%, was at the relationship-level and only 12% was at the person-level. This implies that individuals are not very consistent in the length of their social interactions from one relationship to another, that is the duration of social interactions is highly variable between relationships within individuals.

The results of HLM analyses were generally consistent with the correlations (see Table 19). Although the effect of specific model of self approached significance, $\gamma = .13, p < .10$ in model 1, neither specific nor global models of self, nor their statistical interaction explained a significant proportion of the total variance in length. In the second set of analyses, which examined the association between length and the models of other, only the specific model of other was significantly associated with length, $\gamma = .19, p < .01$ in model 4. It

accounted for 6% of the person-level variance and 4% of the relationship-level variance, explaining a total of 5% of the variance in the length of the interactions. In addition to explaining only a small proportion of the total variance in length, this analysis (model 4) took 1920 iterations to converge. This slowness to converge was paired with an extremely low reliability associated with the coefficient of the relationship-specific model of other, $\lambda = .02$. Reliability indices (λ) vary between 0 and 1, with higher values indicating greater reliability. They are calculated globally for person-level and relationship-level coefficients. Bryk and Raudenbush (1992) mention that when reliability values are below .05 this is likely to indicate that the variance in the variable to be explained by the analysis (i.e., here the length of social interactions) is close to zero and this is usually associated with an inordinately large number of iterations before convergence is reached. Such problems were not encountered in previous analyses as ratings of quality and intimacy had a sufficient amount of variance. Here, the slowness to converge and the low reliability of the estimates undermine the validity of conclusions regarding the modest contribution of specific models of other to explain the length of interactions.

Discussion

The present chapter examined the association between global and specific models of self and other and the experience of social interactions. Two analytical strategies were used. First, correlations of relational models and social interaction ratings were calculated. These were done by correlating global measures with interaction ratings aggregated within individuals and also by averaging the within-subject correlations of relationship-specific measures and social interaction ratings obtained for each participant. Second, HLM analyses were conducted in which the variance in the social interaction ratings was partitioned into person-level and relationship-level variance. Relational measures at each level of analysis were then entered into "step-up" models to test both main effects and interaction

effects. The specific relational measure was entered in the first model. The global relational measure was added in a second model. Finally, the statistical interaction between the global and specific relational measures was added in a third model. The specific relational measures were residualized scores, that is the variance accounted for in the specific measure by the corresponding global model had been removed beforehand. Therefore, none of the variance explained by specific measures in the present analyses would have been accounted for by the global measures if it had been entered first.

An advantage of the HLM analytical strategy over the correlations was to acknowledge and account for both between- and within-individual variance in social interaction ratings. This also allowed me to test the effects of both global and specific relational models within a single model. Finally, interactions between global and specific measures could be tested.

Although the simple correlations did suggest effects that were later confirmed in HLM analyses, correlations overestimated the strength of some of the associations between social interaction ratings and models of other and underestimated those with models of self. The results of HLM analyses are however truer estimates of these associations as they take into account both the variance between individuals and within individuals, between their different relationships.

Overall, positive associations were found between global and specific models of others and both the quality and the intimacy of social interactions. The effects of specific models of self on these same outcome variables were moderated by the global model of self. For individuals with a negative global model of self, social interactions within relationships for which they had a positive specific model of self were somewhat better in quality and more intimate that interactions within relationships for which they had a negative specific model of self. The association between specific model of self and the quality and

intimacy of interactions was less pronounced for individuals with a positive global model of self. Further analyses suggested a modest association between the length of social interactions and relationship-specific models of other, accounting for only 5% of the variance in the length of interactions. The validity of this last finding was however highly questionable as very large numbers of iterations were required for analyses to converge and there was insufficient variance in length to produce reliable estimates.

Nonetheless, global and specific models of self and others were clearly associated with participants' on-line ratings of the quality and intimacy of their interactions. Past theory and research has generally reported models of self and other as orthogonal (e.g., Bartholomew & Horowitz, 1991). Similarly, global models of self and other (r = .11, *ns*) and specific models of self and other (mean r = .02, *ns*) were not significantly correlated in the present study (see Table 5). Therefore the effects of models of self and other would be expected to be additive and non-overlapping. Thus, global and specific models of self and others, together, could account for as much as 24% of the variance in the quality and 33% of the variance in the intimacy of social interactions. These combined estimates may nonetheless be slightly inflated as model of self and other were examined independently due the small number of relationships sampled within individuals. The extent to which the associations between the experience of social interactions and both models of self and other are truly complementary remains an issue to be addressed in future research.

An interesting finding was generated by the benchmark, random ANOVA models. The variance in ratings of quality and intimacy of social interactions was almost equally partitioned into variance between individuals and within-individual variance between a person's different relationships. The partitioning of variance did however indicate a slightly larger proportion of the variance being found within-individuals rather than between them. Thus, although there are individual

differences in the overall experience of social interactions, the quality and intimacy of a person's interactions is not very consistent from one relationship to another. These variations between- and within-individuals were explained in part by global and specific relational models, yet a substantial proportion of variances in these experiences remained unexplained.

Of all the relational models measured, the specific model of other explained the largest proportion of the variance of both quality (12%) and intimacy (23%) ratings. Global models of others added somewhat to these findings, increasing the variance explained by 6% for quality and 4% for intimacy. Nonetheless, greater variance in the quality and intimacy of social interactions, mainly at the relationship-level but also at the person-level, was accounted for by the specific model of other. These results suggest that although a person's global model of others is informative, relationship-specific models of others are more likely to explain their experiences of social interaction within their relationship. Furthermore, the comparably small findings for the effects of specific models of self, in combination with the global model of self, were found to essentially explain relationship-level variance. Taken together, these results suggests that the variability between people's experiences of social interactions is partly explained by their global model of others, but the equally if not more considerable variance in a person's experience of social interactions from one relationship to another is most adequately explained by the model of other for the specific interaction partner. The relationship-level variance in the experience of social interactions was also modestly explained by models of self. The association between specific model of self and both the intimacy and quality of social interactions was most pronounced for those with a negative global model of self and those with a positive global model of self. For those with a positive global model of self, the specific model of self does not explain the quality and intimacy of their social interactions. However, for those with a negative global model of self, having a

positive relationship-specific model of self (i.e., a specific model of self which is discrepant with the person's global model of self) was associated with experiencing more intimate and better quality interactions than when the specific model of self was negative.

In conclusion, the present research has further served to demonstrate the pertinence of considering global and relationship-specific models of self and other as distinct constructs. These constructs were useful in explaining the quality and intimacy of young adults' social interactions within existing relationships, mainly with their peers. By considering these two levels of relational models rather than relying on only global or specific relational models, we could more adequately account for the variability in the social interactions experienced by different individuals and also the variability in an individual's social interactions as they occur in the context of different relationships.

Chapter 6

Summary and Conclusion

The goals of the present research program were to provide evidence of the distinction between global and specific relational models and to assess the relative contributions of these global and specific models in the experience of significant life events and daily social interactions. With the use of Hierarchical Linear Modeling (HLM), the degree of association between global and specific models of self and other were examined (Chapter 2). The results of analyses conducted with two samples yielded similar results, although the specific relationships considered in these two samples were selected on the basis of the other's role (Study 1) or salience (Study 2). These findings suggest that there is a significant association between global relational models and the common factor shared by the multiple specific relational models (ranging from 15% to 37%). Earlier research may have implied that the global model was equivalent to this common factor among specific models (Armsden & Greenberg, 1987; Bartholomew & Horowitz, 1991). However, the present findings indicate that what is assessed by a self-report measure of global attachment (or relational) models is not redundant with what is assessed by self-reports of relationship-specific models for any one relationship, nor with the latent factor underlying this network of specific models. Based on Marsh and Yeung's (1998) review of the different conceptualizations of the global self-concept, we could conclude that the global self-report measure assesses the explicit, accessible and conscious generalized attitudes and beliefs about close relationships. The within-individual variance which was shared by the various relationship-specific measures (chapter 2) and the latent factor extracted from these specific measures (chapter 3) refer to a hierarchical conceptualization of global attachment models (Collins & Read, 1990), that is to a more implicit, abstract generalized attachment model. Although this is a hypothesis to be addressed in future research, we could postulate that the common variance or

factor underlying specific models may be more closely tied to assessments provided by attachment interviews. Unlike the global self-report measure, but similar to the attachment interviews, the latent factor approach to assessing generalized attachment models is grounded in specific experiences within close relationships and thus may be less likely to be influenced by contextual factors such as mood or the topic of the study in which individuals are participating (e.g., romantic relationships). The global measure was always presented before the specific ones in the present research, to minimize the potential biasing effects of completing the specific measures. According to Marsh and Yeung (1998), such global self-report measures are, in general, less stable and less reliable due to their vulnerability to contextual influences.

This distinction between explicit and more implicit global attachment models has certain implications for attachment research which has demonstrated individual differences associated with mainly self-report measures of global attachment. Because of the modest association reported here between these explicit and implicit measures of global attachment models, we would expect to find similar individual differences in well-being and social experience to be associated with an implicit measure of global attachment. However, the magnitude of these effects may vary from those obtained with self-report measures, as these assessment methods provided distinct evaluations of global models. The implicit measure of global models may be a more accurate and more stable assessment of individual differences in attachment, less likely to be influenced by contextual factors than the global self-report measure. Nonetheless, these are issues to be examined in future research.

The findings of the present research do suggest a broader application of representational models for self and other within relationships, not restricting them to attachment relationships (Baldwin, 1992). This is principally demonstrated by the HLM analyses of global and specific relational models in

Study 2, where mainly peer relationships were sampled over the course of the week (chapter 2). These analyses indicated that specific models of self and other were highly variable in different peer relationships. This suggests that it is inaccurate to consider relationships with peers as uniquely defined by a single representational model, as previous work has done (e.g., Armsden and Greenberg, 1987).

The present research also reported moderate stability for the global and relationship-specific measures of relational models over a 4 month period. A portion of this instability was construed to represent meaningful change, above and beyond simple random error in measurement (Chapter 3). Using a Structural Equation Modeling (SEM) technique, I examined the extent to which change in global and specific models operated through top-down or bottom-up processes. Results suggest that change in these relational models occurred mainly as a bottom-up process. The factor underlying the network of specific relational models had a small to medium sized effect on self-reports of global relational models over time, whereas top-down effects of global on specific models were small to null. These results suggest that the models for established relationships were generalized and, over time, altered the self-reported global models. However, these explicit global models did not contribute much to shaping the factor underlying these established relationship-specific models over time. Collins and Read (1994) proposed that global attachment models contribute to shaping the development of more specific models, mainly for new relationships. This was not examined here. Nonetheless the present research raises interesting questions for future research on this topic. Would the development of new specific relational models be more strongly influenced by explicit or by more implicit global attachment models? Or, as other research might suggest (Andersen & Cole, 1990), would intermediate models or even highly specific models for existing relationships have competing or complementary effects to those of the global or

generalized models?

Having examined the association between global and specific models, I then examined the relative contribution of global and specific models to the experience of significant life events and daily social interactions. Two significant life events, which were expected to evoke different relational needs, were considered (Chapter 4). The adjustment to university was anticipated to induce the need for a secure base and thus to be more strongly associated with the specific models for parents, but not a peer or a romantic partner. Results indicated that a more negative global model of self was associated with a greater experience of stress during the first semester of university, controlling for baseline stress in the summer. In addition, a more negative model of father was associated with both elevated stress and poorer affect as students adjusted to their first semester in university.

In contrast, the adjustment to a romantic breakup was expected to arouse needs of comfort, reassurance and support (i.e., safe haven), which, in this sample of young adults, should have been transferred to peers (Hazan & Shaver , 1994; Hazan & Zeifman, 1994). Thus, the adjustment to a romantic breakup was expected to be most strongly associated with the specific models for closest friend. Heightened post-breakup reports of somatic symptoms were associated with a more negative model of self with the close friend, but not with parental models. The results of this study served to demonstrate that different relationship-specific models (i.e., for a parent or peer) may be associated with the adjustment to a significant life events, depending on the relational needs evoked by the event (i.e., secure base or safe haven).

Finally, in Chapter 5, global and specific models of self and other all contributed to explaining the experience of daily interactions within relationships, assessed with a diary of structure interaction records (i.e., an event-contingent sampling method). Models of other were most strongly associated with both the

quality and intimacy of interactions with specific models explaining the largest proportion of the variance. Global models of other made modest, but significant additional contributions to explain ratings of quality and intimacy. Furthermore, global and specific models of self interacted to explain variance in ratings between relationships within individuals. Individuals with a negative global model of self experienced greater intimacy and better quality interactions within relationships for which they had positive specific models of self than within relationships to which a negative specific models of self was ascribed. The quality and intimacy of social interactions was not as strongly associated with specific models of self for individuals with a positive global model of self. Nonetheless, these significant interactions only had small effects, explaining only 6% of the variance in ratings of social interactions. In contrast, global and specific models of other had notably larger effects, accounting for 18% of the variance in quality ratings and 27% of the variance in intimacy ratings.

Limitations of this Research and Conclusion

The use of self-report measures limits the generalization of the results obtained to the components of internal working models which could be consciously accessed by respondents. Thus, the present research has essentially addressed participants' attitudes and beliefs regarding their close relationships. A more complete assessment of relational models would have also assessed autobiographical memories, relational goals and motives, as well as behavioral strategies to attain those goals (Collins & Read, 1994). This could be done in future research by assessing attachment or relational models through interviews or with social-cognitive methodologies (e.g., lexical decision tasks and priming). However, as Armsden and Greenberg (1987) have stated, in contrast to observational methods of assessment, self-report measures tap the "affectively toned cognitive expectancies that are part of the 'internal working model' the individual has" of their close others (p.431).

Furthermore, by sampling young adults of 18 to 20 years of age, this limited the types of relationships that could be considered to mainly parental, romantic and peer relationships. Older adults's network of relational models should also include specific models for their relationships with work colleagues (i.e., boss, colleagues, subordinates), with their children, their in-laws and later on their grand-children. As a person matures, through middle and late adulthood, their network of models should gradually expand to incorporate new relationships. Also, models for existing relationships should evolve to take into account the changing nature of relationships with aging parents, friends and children.

Finally, the distinction between self-reported global models and relationship-specific ones may be characteristic of young middle-class university students who were unlikely to have experienced severe maltreatment from their parents. As Crittenden (1990) suggested, these distinctions demonstrated in the present research may not accurately reflect the structure of all individuals' representational models. She proposed that individuals with impoverished economic and family backgrounds may develop a more rigid and inadequate structure of relational models. They could inappropriately apply one single model throughout all of their relationships, behaving in a highly consistent and rigid manner in all interactions with others and ignoring the distinguishing features of different relationships. In contrast, they could develop only highly compartmentalized specific models for their relationship without deriving a generalized sense of themselves and others in relational contexts. In such cases, individuals would lack a sense of coherence, whereby they would accommodate to each specific new context but would be unable to derive a clear sense of stability for themselves or their social world.

Nonetheless, the findings from this program of research support the notion that people develop multiple attachment or relational models (Collins & Read, 1994; Crittenden, 1990). There is a common factor underlying these specific

models and it is modestly, but significantly related to self-reported global relational models. Attachment research to date, particularly in Social Psychology, has almost exclusively focused on the individual differences associated with the global attachment model, assessed as styles or along a continuum. The present research demonstrates that attachment or relational models can and should also be examined as both global and specific representational structures which reflect relational as well as individual differences. This distinction may be most beneficial to researchers who wish to explain social experiences and well-being within specific domains or relationships.

References

Aiken, L.S., & West, S.G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.

Ainsworth, M.S., Blehar, M.C., Waters, E., & Wall, S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Lawrence Erlbaum.

Andersen, S.M., & Cole, S.W. (1990). "Do I know you?": The role of significant others in general social perception. *Journal of Personality & Social Psychology, 59*(3), 384-399.

Armsden, G.C., & Greenberg, M.T. (1987). The Inventory of Parent and Peer Attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth & Adolescence, 16*(5), 427-454.

Baldwin, M.W. (1992). Relational schemas and the processing of social information. *Psychological Bulletin, 112*(3), 461-484.

Baldwin, M.W., Fehr, B., Keedian, E., Seidel, M., & Thompson, D.W. (1993). An exploration of the relational schemata underlying attachment styles: Self-report and lexical decision approaches. *Personality & Social Psychology Bulletin, 19*(6), 746-754.

Baldwin, M.W., & Fehr, B. (1995). On the instability of attachment style ratings. *Personal Relationships, 2*(3), 247-261.

Baldwin, M.W., Keelan, J.P.R., Fehr, B., Enns, V., & Koh-Ragarajoo, E. (1996). Social-cognitive conceptualization of attachment working models: Availability and accessibility effects. *Journal of Personality & Social Psychology, 71*(1), 94-109.

Baldwin, M.W., & Sinclair, L. (1996). Self-esteem and "if . . .then" contingencies of interpersonal acceptance. *Journal of Personality & Social Psychology, 71*(6), 1130-1141.

Bartholomew, K. (1990). Avoidance of intimacy: An attachment perspective. *Journal of Social & Personal Relationships, 7*(2), 147-178.

Bartholomew, K., & Horowitz, L.M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality & Social Psychology, 61*(2), 226-244.

Bartholomew, K., & Shaver, P.R. (1998). Methods of assessing adult attachment: Do they converge? In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships*. (pp. 25-45). New York: Guilford Press.

Baumrind, B. (1967). Child care practices anteceding three patterns of preschool behavior. *Genetic Psychology Monographs, 75*(1), 43-88.

Birnbaum, G.E., Orr, I., Mikulincer, M., & Florian, V. (1997). When marriage breaks up: Does attachment style contribute to coping and mental health? *Journal of Social & Personal Relationships, 14*(5), 643-654.

Blain, M.D., Thompson, J.M., & Whiffen, V.E. (1993). Attachment and perceived social support in late adolescence: The interaction between working models of self and others. *Journal of Adolescent Research, 8*(2), 226-241.

Bollen, K.A. (1989). *Structural equations with latent variables*. New york: John Wiley & Sons.

Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. Reading, MA: Addison-Wesley.

Bowlby, J. (1973). *Attachment and loss: Vol. 2. Separation: Anxiety and anger*. New York: Basic Books.

Bowlby, J. (1980). *Attachment and loss: Vol. 3: Loss: Sadness and depression*. New York: Basic Books.

Brennan, K.A., & Shaver, P.R. (1995). Dimensions of adult attachment, affect regulation, and romantic relationship functioning. *Personality & Social Psychology Bulletin, 21*(3), 267-283.

Brewer, M.B. (1988). A dual process model of impression formations. In T. Srull & R. Wyer (Eds.), *Advances in social cognition* (Vol. 1, pp. 177-183). Hillsdale, NJ: Erlbaum.

Brock, D.M., Sarason, I.G., Sanghvi, H., & Gurung, R.A.R. (1998). The Perceived Acceptance Scale: Development and validation. *Journal of Social & Personal Relationships, 15*(1), 5-21.

Brock, D.M., Sarason, I.G., Sarason, B.R., & Pierce, G.R. (1996). Simultaneous assessment of perceived global and relationship-specific support. *Journal of Social & Personal Relationships, 13*(1), 143-152.

Bryk, A.S., & Raudenbush, S.W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Newbury Park, CA: Sage publications.

Burman, B., & Margolin, G. (1992). Analysis of the association between marital relationships and health problems: An interactional perspective. *Psychological Bulletin, 112*(1), 39-63.

Byrne, B.M. (1994). *Structural equation modeling with EQS and EQS/Windows: Basic concepts, applications, and programming* . Thousand Oaks, CA: Sage publications.

Carpenter, E.M., & Kirkpatrick, L.A. (1996). Attachment style and presence of a romantic partner as moderators of psychophysiological responses to a stressful laboratory situation. *Personal Relationships, 3*(4), 351-367.

Cheek, J.M., & Buss, A.H. (1981). Shyness and sociability. *Journal of Personality & Social Psychology, 41*, 331-339.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health & Social Behavior, 24*(4), 385-396.

Cohen, S., & Wills, T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310-357.

Collins, N.L., & Read, S.J. (1990). Adult attachment, working models, and relationship quality in dating couples. *Journal of Personality & Social Psychology, 58*(4), 644-663.

Collins, N.L., & Read, S.J. (1994). Cognitive representations of attachment: The structure and function of working models. In K. Bartholomew &

D. Perlman (Eds.), *Advances in personal relationships* (Vol.5, pp.53-90). London: Jessica Kingsley.

Cozzarelli, C., Sumer, N., & Major, B. (1998). Mental models of attachment and coping with abortion. *Journal of Personality & Social Psychology, 74*(2), 453-467.

Crittenden, P.M. (1990). Internal representational models of attachment relationships. *Infant Mental Health Journal, 11*(3), 259-277.

Cutrona, C.E., Cole, V., Colangelo, N., Assouline, S.G., & Russell, D.W. (1994). Perceived parental social support and academic achievement: An attachment theory perspective. *Journal of Personality & Social Psychology, 66*(2), 369-378.

Davis, M.H., Morris, M.M., & Kraus, L.A. (1998). Relationship-specific and global perceptions of social support: Associations with well-being and attachment. *Journal of Personality & Social Psychology, 74*(2), 468-481.

Derogatis, R.L. (1975). *Affect balance scale*. Baltimore: Clinical Psychometrics Research.

Feeney, J.A., & Noller, P. (1992). Attachment style and romantic love: Relationship dissolution. *Australian Journal of Psychology, 44*(2), 69-74.

Feeney, J.A., Noller, P., & Patty, J. (1993). Adolescents' interactions with the opposite sex: Influence of attachment style and gender. *Journal of Adolescence, 16*(2), 169-186.

Feeney, J.A., & Ryan, S.M. (1994). Attachment style and affect regulation: Relationships with health behavior and family experiences of illness in a student sample. *Health Psychology, 13*(4), 334-345.

Fiske, S.T., & Taylor, S. E. (1991). *Social cognition* (2nd ed.). New York McGraw-Hill.

Fraley, R.C., & Davis, K.E. (1997). Attachment formation and transfer in young adults' close friendships and romantic relationships. *Personal*

Relationships, 4(2), 131-144.

Gollwitzer, P. M., & Moskowitz, G. B. (1996). Goal effects on action and cognition. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 361-399). New York: Guilford Press.

Griffin, D.W., & Bartholomew, K. (1994). Models of the self and other: Fundamental dimensions underlying measures of adult attachment. *Journal of Personality & Social Psychology, 67*(3), 430-445.

Harlow, H.F., & Zimmerman, R.R. (1959). Affectional responses in the infant monkey. *Science, 130*, 421-431.

Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality & Social Psychology, 52*(3), 511-524.

Hazan, C., & Shaver, P.R. (1990). Love and work: An attachment-theoretical perspective. *Journal of Personality & Social Psychology, 59*(2), 270-280.

Hazan, C., & Shaver, P.R. (1994). Attachment as an organizational framework for research on close relationships. *Psychological Inquiry, 5*(1), 1-22.

Hazan, C., & Zeifman, D. (1994). Sex and the psychological tether. In K. Bartholomew & D. Perlman (Eds.), *Advances in personal relationships* (Vol.5, pp.151-180). London: Jessica Kingsley.

Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133-168). New York: Guilford Press.

Higgins, E.T., King, G.A., & Mavin, G.H. (1982). Individual construct accessibility and subjective impressions and recall. *Journal of Personality & Social Psychology, 43*, 35-47.

Hoyle, R.H. (Ed.). (1995). *Structural equation modeling: Concepts, issues and applications*. Thousand Oaks, CA: Sage Publications.

Hu, L.T., & Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle

Ed.). *Structural equation modeling: Concepts, issues and applications* (pp. 76-99). Thousand Oaks, CA: Sage Publications.

Huberty, C.J., & Morris, J.D. (1989). Multivariate analysis versus multiple univariate analyses. *Psychological Bulletin, 105*(2), 302-308.

Keelan, J.P., Dion, K.L., & Dion, K.K. (1994). Attachment style and heterosexual relationships among young adults: A short-term panel study. *Journal of Social & Personal Relationships, 11*(2), 201-214.

Kenny, D.A., Kashy, D.A., & Bolger, N.(1997). *Analysis strategies for multilevel data: An overview and evaluation of approaches*. Unpublished manuscript.

Kirkpatrick, L.A., & Davis, K.E. (1994). Attachment style, gender, and relationship stability: A longitudinal analysis. *Journal of Personality & Social Psychology, 66*(3), 502-512.

Kirkpatrick, L.A., & Hazan, C. (1994). Attachment styles and close relationships: A four-year prospective study. *Personal Relationships, 1*(2), 123-142.

Klohnen, E.C., & John, O.P. (1998). Working models of attachment: A theory-based prototype approach. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships.* (pp. 115-140). New York: Guilford Press.

Kobak, R.R., & Hazan, C. (1991). Attachment in marriage: Effects of security and accuracy of working models. *Journal of Personality & Social Psychology, 60*(6), 861-869.

Larose, S., & Boivin, M. (1997). Structural relations among attachment working models of parents, general and specific support expectations, and personal adjustment in late adolescence. *Journal of Social & Personal Relationships, 14*(5), 579-601.

Larose, S., & Boivin, M. (1998). Attachment to parents, social support expectations, and socioemotional adjustment during the high school-college

transition. *Journal of Research on Adolescence, 8*(1), 1-27.

Levy, K.N., Blatt, S.J., & Shaver, P.R. (1998). Attachment styles and parental representations. *Journal of Personality & Social Psychology, 74*(2), 407-419.

Lin, Y. (1992). *The construction of the sense of intimacy from everyday social interaction.* Unpublished doctoral dissertation, University of Rochester.

Lopez, F.G., Gover, M.R., Leskela, J., Sauer, E.M., Schirmer, L., & Wyssmann, J. (1997). Attachment styles, shame, guilt, and collaborative problem-solving orientations. *Personal Relationships, 4*(2), 187-199.

Lydon, J., Pierce, T., & O'Regan, S. (1997). Coping with moral commitment to long-distance dating relationships. *Journal of Personality & Social Psychology, 73*(1), 104-113.

Lynch, M., & Cicchetti, D. (1991). Patterns of relatedness in maltreated and nonmaltreated children: Connections among multiple representational models. *Development & Psychopathology, 3*(2), 207-226.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monographs of the Society for Research in Child Development, 50*(1-2), 66-104.

Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality & Social Psychology, 35*, 63-78.

Marsh, H.M., & Yeung, A.S. (1998). Top-down, bottom-up, and horizontal models: the direction of causality in multidimensional, hierarchical self-concept models. *Journal of Personality & Social Psychology, 75*(2), 509-527.

Mickelson, K.D., Kessler, R.C., & Shaver, P.R. (1997). Adult attachment in a nationally representative sample. *Journal of Personality & Social Psychology, 73*(5), 1092-1106.

Mikulincer, M., & Nachshon, O. (1991). Attachment styles and patterns of self-disclosure. *Journal of Personality & Social Psychology, 61*(2), 321-331.

Mikulincer, M., Florian, V., & Weller, A. (1993). Attachment styles, coping strategies, and posttraumatic psychological distress: The impact of the Gulf War in Israel. *Journal of Personality & Social Psychology, 64*(5), 817-826.

Mikulincer, M., & Florian, V. (1995). Appraisal of and coping with a real-life stressful situation: The contribution of attachment styles. *Personality & Social Psychology Bulletin, 21*(4), 406-414.

Mikulincer, M., & Florian, V. (1998). The relationship between adult attachment styles and emotional and cognitive reactions to stressful events. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships.* (pp. 143-165). New York: Guilford Press.

Mikulincer, M. (1998). Adult attachment style and individual differences in functional versus dysfunctional experiences of anger. *Journal of Personality & Social Psychology, 74*(2), 513-524.

Murray, S., & Holmes, J.G. (1997). A leap of faith? Positive illusions in romantic relationships. *Personality & Social Psychology Bulletin, 23*(6), 586-604.

Pennebaker, J.W. (1982). *The psychology of physical symptoms.* New York: Springer-Verlag.

Pierce, G.R., Sarason, I.G., & Sarason, B.R. (1991). General and relationship-based perceptions of social support: Are two constructs better than one? *Journal of Personality & Social Psychology, 61*(6), 1028-1039.

Pierce, G.R., Sarason, B.R., & Sarason, I.G. (1992). General and specific support expectations and stress as predictors of perceived supportiveness: An experimental study. *Journal of Personality & Social Psychology, 63*(2), 297-307.

Pierce, T., & Lydon, J. (in press). Priming relational schemas: Effects of contextually activated and chronically accessible interpersonal expectations on responses to a stressful event. *Journal of Personality & Social Psychology.*

Pietromonaco, P.R., & Barrett, L.F. (1997). Working models of attachment and daily social interactions. *Journal of Personality & Social*

Psychology, 73(6), 1409-1423.

Priel, B., & Shamai, D. (1995). Attachment style and perceived social support: Effects on affect regulation. *Personality & Individual Differences, 19*(2), 235-241.

Reis, H.T., & Wheeler, L. (1991). Studying social interactions with the Rochester Interaction Records. In M. P. Zanna (Ed.), *Advances in experimental social psychology*. (pp. 269-318). San Diego: Academic Press.

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Rosenthal, R., & Rosnow, R.L. (1991). *Essentials of behavioral research: Methods and data analysis*. New York: McGraw-Hill.

Sansom, D., & Farnill, D. (1997). Stress following marriage breakdown: Does social support play a role? *Journal of Divorce & Remarriage, 26*(3-4), 39-49.

Scharfe, E., & Bartholomew, K. (1994). Reliability and stability of adult attachment patterns. *Personal Relationships, 1*, 23-43.

Shaver, P.R., & Brennan, K.A. (1992). Attachment styles and the "Big Five" personality traits: Their connections with each other and with romantic relationship outcomes. *Personality & Social Psychology Bulletin, 18*(5), 536-545.

Shaver, P.R., Collins, N., & Clark, C.L. (1996). Attachment styles and internal working models of self and relationship partners. In G. J. O. Fletcher & J. Fitness (Eds.), *Knowledge structures in close relationships: A social psychological approach*. (pp. 25-61). Mahwah, NJ: Lawrence Erlbaum.

Simpson, J.A. (1990). Influence of attachment styles on romantic relationships. *Journal of Personality & Social Psychology, 59*(5), 971-980.

Simpson, J.A., Rholes, W.S., & Nelligan, J.S. (1992). Support seeking and support giving within couples in an anxiety-provoking situation: The role of attachment styles. *Journal of Personality & Social Psychology, 62*(3), 434-446.

Simpson, J.A., Rholes, W.S., & Phillips, D. (1996). Conflict in close

relationships: An attachment perspective. *Journal of Personality & Social Psychology, 71*(5), 899-914.

Tabachnick, B.G., & Fidell, L.S. (1996). *Using multivariate statistics.* (3rd ed.). New York: Harper Collins.

Tidwell, M., Reis, H.T., & Shaver, P.R. (1996). Attachment, attractiveness, and social interaction: A diary study. *Journal of Personality & Social Psychology, 71*(4), 729-745.

Trinke, S.J., & Bartholomew, K. (1997). Hierarchies of attachment relationships in young adulthood. *Journal of Social & Personal Relationships, 14*(5), 603-625.

Wheeler, L., & Reis, H.T. (1991). Self-recording of everyday life events: Origins, types, and uses. *Journal of Personality, 59*(3), 339-354.

Appendices

Appendix A

Measure of Global Models of Self and Other

Please read attentively each of the four paragraphs printed below. For each paragraph, rate the degree to which *you* resemble the description given on this scale:

1	2	3	4	5
Not at all	**A little**	**Moderately**	**Quite a bit**	**Completely**

____A. It is easy for me to become emotionally close to others. I am comfortable depending on others and having others depend on me. I don't worry about being alone or having others not accept me. [*secure*]

____B. I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me. [*dismissing*]

____C. I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them. [*preoccupied*]

____D. I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others. [*fearful*]

Now, if you had to *pick just one*, which of the four preceding paragraphs do you think resembles *you* the most?

A B C D

Calculation of Scores:

Global Model of Self = Secure + Dismissing - Preoccupied - Fearful

Global Model of Other = Secure + Preoccupied - Dismissing - Fearful

Appendix B

Measure of Specific Models of Self and Other

Please read attentively each of the four paragraphs printed below. For each paragraph, rate the degree to which *you feel that way in your relationship* with ____ on this scale:

1	2	3	4	5
Not at all	**A little**	**Moderately**	**Quite a bit**	**Completely**

____A. It is easy for me to be emotionally close to ____. I am comfortable depending on ____ and having ____ depend on me. I don't worry about ____ ending our relationship or not accepting me. [*secure*]

____B. I am comfortable that my relationships with ____ is not emotionally close. It is very important to me to feel independent from ____, and I prefer not to depend on ____ or have ____ depend on me. [*dismissing*]

____C. I want to be completely emotionally intimate with ____, but I often find that ____ is reluctant to get as close as I would like. I am uncomfortable that my relationship with ____ is not emotionally close, but I sometimes worry that ____ doesn't value me as much as I value him/her. [*preoccupied*]

____D. I would find it uncomfortable to be emotionally close to ____. I want my relationship with ____ to be emotionally close, but I find it difficult to trust ____ completely, or to depend on him/her. I worry that I will be hurt if I allow myself to become too close to ____. [*fearful*]

Now, if you had to *pick just one*, which of the four preceding paragraphs do you think most resembles *your feelings about your relationship* with ____, would it be:

A B C D

Calculation of Scores:

Specific Model of Self = Secure + Dismissing - Preoccupied - Fearful

Specific Model of Other = Secure + Preoccupied - Dismissing - Fearful

Appendix C

Overview of Hierarchical Linear Modeling

Many of the characteristics of HLM are also proper to linear regression models. For instance, the outcome variable is continuous, whereas predictors can be either continuous or discrete, provided appropriate coding of the latter. The linear models specified in HLM analyses take the same form as those used in regression analyses: $Y = \beta_0 + \beta_1 X + R$. Where Y, the outcome variable, is a "lower-level" observation, which in the present analyses would be a relationship-specific variable for which multiple observations were assessed within-subject (e.g. taken from chapter 5, the general rating of the quality of interactions with each of a series of specific close others). X, also a "lower-level" variable repeatedly measured within-subject, but between relationships (e.g., relationship-specific model of self), is the variable entered as a predictor of Y. β_0 is the intercept, a constant value of Y when X is equal to zero (i.e., intercept at the origin). β_1 is the coefficient of X which indicates the rate at which Y increases or decreases as a function of X. This is the slope or linear association of X and Y. Finally, R represents the residual error when X and the intercept, β_0, are used to predict Y. In both regression and HLM analyses, t-tests values are obtained to denote the degree of significance of each coefficient and thus indicating if the selected variables are significant predictors of Y.

HLM analyses use exactly this same type of model, where Y and X are both lower-level variables which are here identified as relationship-level measures. However, in a two-level HLM, variables from both levels of data can be used to explain the selected outcome variable. For example, one could consider using both specific model of self, a relationship-level variable, and global model of self, a person-level variable which was assessed only once for each participant (i.e., a between-individual variable). Relationship-level variables vary both within-individuals, between their different relationships, and between individuals,

as one individual can have generally different scores for these relationship-level variables in comparison to another participant. Thus a relationship-level variable's variance can be divided into within-subject variance and between-subject variance. Variables from both the relationship-level and the person-level can be used to explain the variance in a relationship-level outcome variable. For example, we could consider the extent to which the global model of self (Z) and the relationship-specific model of self (X) explain the variance in the general rating of the quality of interactions with specific close others (Y). The relationship-specific predictor entered in the model also varies within and between individuals, it can therefore help explain the two types of variance in the selected outcome variable, that is, it can potentially explain the variance in the quality of different participants' interactions, that is between-individual variance, and also explain the variance in the quality of a person's interactions from one relationship to another, that is within-individual variance. Additionally, person-level variables can be used to explain variation in the outcome variable. Person-level variables, which are assessed once for each participant, only have person-level variance. Therefore, they can only be expected to explain person-level variance in the outcome variable, that is these predictors can only be used to explain how the quality of one person's interactions differs from that of another person. It cannot explain variations in the quality of any one person's interactions from one relationship to the next as the predictor remains constant for all of a person's different relationships. Because of these two levels of predictors, HLM requires that both a lower-level model and an upper-level model be specified, that is one model contains only relationship-level variables and another contains only person-level variables. The lower-level model is the same as for regression analyses. The upper-level model takes into account the non-independence of within-subject observations at the relationship-level, acknowledging that these were repeated measures assessed within each of the individual participants.

A simple two-level model could contain only one relationship-level predictor to explain a relationship-level outcome. For example, we could start by considering only the relationship-specific model of self to explain the rating of the quality of social interactions with a specific other. In this case the lower-level model is $Y = \beta_0 + \beta_1 X + R$. But to this model, we must add a second upper-level model to account for the non-independence of these observations, that is to acknowledge that multiple relationships were sampled for each participant in the study. The equation for this upper-level model would correspond to: $\beta_0 = \gamma_0 + U_0$, where γ_0 is a person-level intercept, and U_0 is the person-level error. If this detailed equation is incorporated into the lower-level equation, it produces: $Y = \gamma_0 + \beta_1 X + U_0 + R$, where Y is the outcome variable "closeness of the relationship", γ_0 is the person-level intercept (i.e. a constant), X is the relationship-level predictor "relationship-specific model of self", and β_1 is its coefficient. The two remaining elements refer to the two levels of error which arise because of the multilevel nature of the data. U_0 is the person-level error and R is the relationship-level error. These two errors represent the residual unexplained person-level and relationship-level variance. This two-level HLM acknowledges the non-independence in the relationship-level observations (e.g. general quality of interactions) which are repeated within-subject by the use of a person-level intercept and person-level error.

The upper-level model can be expanded to include a person-level predictor. For instance, if one wishes to examine the extent to which both global and relationship-specific models of self (i.e., a person-level variable and a relationship-level variable) can both significantly explain portions of the variance the general quality of interactions with a specific other (i.e., a relationship-level outcome variable), both predictors must be included in models for the appropriate levels. The upper-level model is now expanded to: $\beta_0 = \gamma_{00} + \gamma_{01} Z + U_0$, where γ_{00} is the person-level constant, Z is the person-level predictor (e.g. global model of

self) and γ_{01} is the coefficient indicating the degree of association between Z and the outcome variable. U_0 is the error in estimating the relationship-level constant β_0 with this person-level variable, that is the unexplained person-level variance. When inserted into the lower-level equation, this produces: $Y = \gamma_{00} + \gamma_{01}Z + \beta_1 X + U_0 + R$, where γ_{00} is a constant, γ_{01} tests the main effects of the global model of self on the general quality of social interactions with a specific other, and β_1 tests the main effect of the relationship-specific model of self on this same outcome.

This model can be further developed to test the interaction between person-level and relationship-level predictors. This is done by defining another upper-level model to qualify the association between the relationship-level predictor (e.g., specific model of self) and the outcome variable (e.g., general quality of the interactions with a specific other). The new upper-level model looks similar to the one used to test the main effect of the person-level predictor Z, except that it is used to qualify the coefficient of the relationship-predictor X. It takes this form : $\beta_1 = \gamma_{10} + \gamma_{11}Z + U_1$. When inserted into the lower-level equation, this produces: $Y = \gamma_{00} + \gamma_{01}Z + \gamma_{10}X + \gamma_{11}ZX + (U_0 + U_1) + R$. γ_{00} is a constant. γ_{01} tests the main effect of the person-level predictor, global model of self (Z). γ_{10} tests the main effect of the relationship-level predictor, specific model of self (X). γ_{11} tests the statistical interaction between the person-level predictor (Z) and the relationship-level predictor (X), that is the degree to which the association between X and Y (e.g., specific model of self and quality) varies as a function of Z (the global model of self). $(U_0 + U_1)$ are the residual unexplained variance at the person-level and R is the unexplained variance at the relationship-level. For more detailed explanations, see Bryk and Raudenbush (1992) and Kenny, Kashy and Bolger (1997).

Appendix D

Measure of General Affect

Below is a list of words that describe the way people sometimes feel. Please read each item below and indicate to what extent you have felt this way *during the past week including today*, using this scale:

0	1	2	3	4
Never	**Rarely**	**Sometimes**	**Frequently**	**Always**

_____1. Tense	_____9. Sad
_____2. Satisfied	_____10. Warm
_____3. Regretful	_____11. Irritable
_____4. Friendly	_____12. Lively
_____5. Anxious	_____13. Worthless
_____6. Contented	_____14. Energetic
_____7. Guilty	_____15. Angry
_____8. Happy	_____16. Cheerful

Calculation of Scores:

Positive affect = Mean of items 2, 4, 6, 8, 10, 12, 14, 16

Negative affect = Mean of items 1, 3, 5, 7, 9, 11, 13, 15

Overall general affect = positive affect - negative affect

Appendix E

Measure of Perceived Stress

In response to the following questions, indicate how often you felt a certain way *during the past week.* Don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate, using this scale:

0	1	2	3	4
Never	**Almost never**	**Sometimes**	**Fairly often**	**Very often**

____ 1. In the last week, how often have you felt you were unable to control the important things in your life?

____ 2. In the last week, how often have you felt confident in your ability to handle your personal problems?

____ 3. In the last week, how often have you felt that things were going your way?

____ 4. In the last week, how often have you felt difficulties were piling up so high that you could not overcome them?

Calculation of Perceived Stress Score:

Items 2 and 3 are reverse coded

Total Score = Mean of responses to the 4 items

Appendix F

Measure of Somatic Symptoms

The following list includes several common symptoms or bodily sensations. Most people have experienced most of them at one time or another. Please indicate how frequently *during the past week* you experienced *each symptom*, using this scale:

0	1	2	3	4
Not at all	**A little**	**Moderately**	**Quite a bit**	**A great deal**

_____1. Running nose
_____2. Congested nose
_____3. Sneezing spells
_____4. Coughing
_____5. Bleeding nose
_____6. Little appetite
_____7. Lump in throat
_____8. Cold sores
_____9. Toothaches
_____10. Leg cramps
_____11. Nausea
_____12. Asthma or wheezing
_____13. Cold hands or feet, even in hot weather
_____14. Heartburn
_____15. Constipation
_____16. Face flushes
_____17. Acne
_____18. Back pains
_____19. Sweat, even in cold weather
_____20. Headaches
_____21. Hands tremble or shake
_____22. Dizziness
_____23. Stiff joints
_____24. Sore muscles
_____25. Sore throat
_____26. Chills

Total Score = Sum of responses to the 26 items

Appendix G

Interaction Record

Time:_____ am / pm

Length:_____hrs _____mins

Name:	Gender:
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Others:_____

Nature:

Work___ School___ Task___

Pastime___ Conversation___ Date/Romantic___

Your goal:

Accomplish a task___ Get something from other___

Build relationship___ Give something to other___

Other (specify: chat, no goal...)_____

Initiation:

I initiated 1 2 3 4 5 6 7 Other initiated

Influence:

I influenced more 1 2 3 4 5 6 7 Other influenced more

Intimacy:

Superficial 1 2 3 4 5 6 7 Meaningful

Satisfaction:

Not at all 1 2 3 4 5 6 7 Completely satisfied

You feel the other was:

Not helpful or supportive 1 2 3 4 5 6 7 Very helpful or supportive N.A.

You feel you were:

Not helpful or supportive 1 2 3 4 5 6 7 Very helpful or supportive N.A.

You felt:

Misunderstood 1 2 3 4 5 6 7 Understood

Your mood after the interaction:

Very bad 1 2 3 4 5 6 7 Very good

Tables

Table 1

Composition of the Five Relationships Sampled in Study 2

Nature of the Relationship with:	Partner 1	Partner 2	Partner 3	Partner 4	Partner 5	0 of 5 partners	1 of 5 partners	2 of 5 partners	3 of 5 partners	4 of 5 partners	5 of 5 partners
Peer: close friend, roommate, classmate, or social acquaintance	49	48	54	53	59	1	5	5	20	17	24
- same-sex	44	40	40	34	36	3	13	13	22	16	5
- opposite-sex	5	8	14	19	23	31	21	14	4	2	0
Romantic partner	13	8	3	2	2	44	28	-	-	-	-
Parent	3	7	9	5	4	54	8	10	-	-	-
Family member: sibling or other	5	5	4	6	2	55	13	3	1	0	0
Teacher or boss	0	0	1	0	1	70	2	0	0	0	0
Other	2	4	1	6	4	61	7	2	2	0	0

Notes: Partner 1 is the person with which participants interacted the most frequently and Partner 5 is the one with which they interacted the least frequently. The last six columns of the table indicate the number of participants (out of 72) for whom each type of relationship was represented from zero to five times out of the five partners.

Table 2

Global and Relationships-specific Ratings of Models of Self and Other (Study 1)

Relational Model	Global	Mother	Father	Closest Friend	Romantic Partner	F^a	F^b
Self	1.22	2.70	2.02	3.06	2.85	61.89***	18.64***
	(2.72)	(2.39)	(2.31)	(1.84)	(2.12)	(2.81, 1093.93)	(3.40, 608.92)
Other	.49	1.18	.16	2.21	2.70	62.22***	35.75***
	(2.75)	(2.63)	(2.81)	(2.07)	(2.01)	(2.81, 1096.63)	(3.61, 638.22)

Notes: Cell $n = 391$, except for romantic partner $n = 178$. Scale range for models of self and other: -8 to +8. Standard deviations and degrees of freedom are reported in parentheses. Because of the homogeneity of variance assumption was violated in all four tests, univariate *F*s are those of Greenhouse-Geisser tests (Tabachnick & Fidell, 1996).

[a] Results of repeated measures analyses of variance from which romantic partner was excluded.

[b] Results of repeated measures analyses of variance which included romantic partner.

*** $p < .001$

Table 3

Global and Relationships-specific Ratings of Models of Self and Other (Study 2)

Relational Model	Global	Partner 1	Partner 2	Partner 3	Partner 4	Partner 5	*F*
Self	.58	3.33	2.74	2.51	2.54	2.49	17.26***
	(2.69)	(1.35)	(1.98)	(2.17)	(2.41)	(2.04)	(4.45, 316.00)[a]
Other	.78	2.14	.96	.10	.21	-.54	10.62***
	(2.39)	(2.40)	(2.81)	(2.84)	(2.85)	(2.90)	(5, 355)

Notes: Cell $n = 72$. Scale range for models of self and other: -8 to +8. Standard deviations and degrees of freedom are reported in parentheses.

[a] Because of the homogeneity of variance assumption was violated in this test, the univariate F the of Greenhouse-Geisser test is reported (Tabachnick & Fidell, 1996).

*** $p < .001$

Table 4

Correlation of Global and Relationship-specific Models (Study 1)

	Model of Self					Model of Other				
	Global	**Mother**	**Father**	**Friend**	**Romantic**	**Global**	**Mother**	**Father**	**Friend**	**Romantic**
Model of Self										
Global	—									
Mother	.21***	—								
Father	.25***	.43***	—							
Friend	.21***	.14**	.22***	—						
Romantic	.30***	.11	.17*	.17*	—					
Model of Other										
Global	.09	-.01	.00	.15**	.17*	—				
Mother	-.03	.22***	.02	.09	.07	.21***	—			
Father	.01	.04	.13*	.07	.18*	.16**	.39***	—		
Friend	-.07	-.11*	-.11*	.08	.13	.28***	.18***	.11*	—	
Romantic	-.10	-.10	.00	-.04	.19*	.33***	.09	.12	.16*	—

Notes: Correlation coefficients were calculated using largest available pairwise sample, *n* ranges from 178 to 406.

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

Table 5

Correlation of Global and Relationship-specific Models (Study 2)

	Model of Self						Model of Other					
	Global	**Partner 1**	**Partner 2**	**Partner 3**	**Partner 4**	**Partner 5**	**Global**	**Partner 1**	**Partner 2**	**Partner 3**	**Partner 4**	**Partner 5**
Model of Self Global	—											
Partner 1	.44***	—										
Partner 2	.31**	.10	—									
Partner 3	.14	.03	.25*	—								
Partner 4	.32**	.44***	.15	.20	—							
Partner 5	.23*	.21	.13	.19	.22	—						
Model of Other Global	.11	.02	.31**	-.09	-.15	.11	—					
Partner 1	-.01	-.08	-.02	-.04	-.08	.05	.21	—				
Partner 2	-.02	-.03	.33**	.16	-.05	-.20	.33**	.22	—			
Partner 3	.15	-.01	.13	.10	-.03	.10	.13	.22	.19	—		
Partner 4	.08	-.03	-.06	.02	-.17	-.03	.22	.46***	.11	.30*	—	
Partner 5	-.14	.00	-.19	-.15	-.04	-.09	.05	.22	.23	.15	.23	—

Notes: $n = 72$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6

Results of HLM analyses Examining the Degree of Association Between Global and Specific Relational Models (Studies 1 and 2)

Outcome Variable ▪ Variables Entered as Predictors	γ Coefficient	Proportion of Total Variance at the Person-level (benchmark)	Proportion of Variance Explained at the Person-level	Total Proportion of Variance Explained
Study 1 [a]				
Specific Model of Self				
▪ **Intercept**	.00	.23	.22	.05
▪ **Global Model of Self**	.23***			
Specific Model of Other				
▪ **Intercept**	.00	.12	.37	.05
▪ **Global Model of Other**	.22***			
Study 2 [b]				
Specific Model of Self				
▪ **Intercept**	.00	.19	.36	.07
▪ **Global Model of Self**	.27***			
Specific Model of Other				
▪ **Intercept**	.00	.19	.15	.03
▪ **Global Model of Other**	.18**			

Note: The proportions of variance explained at person-level, the relationship-level and in total are obtained through comparisons with the intercept model (i.e., the benchmark model).

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

[a] $n = 397$. [b] $n = 72$.

Table 7

Means Scores and T-tests of Global and Relationship-specific Models at Time 1 and Time 3 (Study 1)

Relational Model	Time 1	Time 3	*t* *df* = 292
Model of Self			
Global	1.25 (2.66)	1.79 (2.50)	3.61***
Mother	2.63 (2.45)	2.68 (2.32)	.42
Father	1.97 (2.32)	2.10 (2.18)	1.02
Friend	2.94 (1.87)	2.72 (2.07)	1.88
Romantic Partner	3.29 (1.69)	3.30 (1.54)	.05[a]
Model of Other			
Global	.45 (2.76)	.57 (2.40)	.77
Mother	1.17 (2.67)	.98 (2.58)	1.59
Father	.18 (2.80)	.06 (2.67)	.94
Friend	2.17 (2.10)	1.98 (2.15)	1.70
Romantic Partner	3.00 (1.67)	3.21 (1.54)	1.35[a]

Note: Cell $n = 293$, except for romantic partner $n = 98$. Scale range for models of self and other: -8 to +8. Standard deviations are reported in parentheses.

[a] $df = 97$. *** $p < .001$

Table 8

Correlation of Global and Relationship-specific Models at Time 1 and Time 3 (Study 1)

	Time 1									
	Model of Self					Model of Other				
Time 3	**Global**	**Mother**	**Father**	**Friend**	**Romantic**	**Global**	**Mother**	**Father**	**Friend**	**Romantic**
Model of Self										
Global	**.50*** **	.30***	.15**	.30***	.23*	.18**	.07	-.01	-.02	.00
Mother	.23***	**.67*** **	.29***	.10	.14	.03	.22***	.04	-.05	.19
Father	.17**	.42***	**.56*** **	.16**	.08	-.04	.07	.06	-.07	.06
Friend	.19***	.13*	.18**	**.49*** **	.25*	.14*	.10	-.04	.12*	.14
Romantic	.21*	.30**	.06	.24*	**.33*** **	.02	.18	.08	-.11	-.04
Model of Other										
Global	-.01	.01	.05	.10	-.01	**.54*** **	.23***	.19***	.37***	.38***
Mother	.00	.25***	-.06	.09	.00	.24***	**.69*** **	.29***	.20***	.16
Father	-.02	.14*	.17**	.02	.08	.14*	.40***	**.68*** **	.07	.14
Friend	-.07	-.12*	-.07	.19***	.14	.30***	.14*	.07	**.62*** **	.26*
Romantic	-.11	-.06	.05	.12	.13	.48***	.13	.03	.26**	**.53*** **

Note: $N = 293$, except for correlations involving the models of self and other within the romantic relationship where $n = 98$.

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

Table 9

Overall Top-down and Bottom-up Effects for Models of Self and Other (Study 1)

	Top-down SEM (Figure 2)	Bottom-up SEM (Figure 3)
	Models of Self	
	Top-down Effect of Time 1 Global on Time 3 Specific	
Directly	-.06	.07
Indirectly, Through T3 Global	.12	—
Indirectly, Through T1 Specific	.20	—
Total Effect	.26	.07
	Bottom-up Effect of Time 1 Specific on Time 3 Global	
Directly	.32	.00
Indirectly, Through T1 Global	—	.12
Indirectly, Through T3 Specific	—	.32
Total Effect	.32	.44
	Models of Other	
	Top-down Effect of Time 1 Global on Time 3 Specific	
Directly	-.01	.07
Indirectly, Through T3 Global	.08	—
Indirectly, Through T1 Specific	.28	—
Total Effect	.35	.07
	Bottom-up Effect of Time 1 Specific on Time 3 Global	
Directly	.28	.00
Indirectly, Through T1 Global	—	.16
Indirectly, Through T3 Specific	—	.27
Total Effect	.28	.43

Note: $n = 293$. *** $p < .001$.

Table 10

Results of Regression Analyses Attempting to Explain the Residual Variance in General Affect in the Fall Semester at University (Study 1)

Predictors	*n*	Standardized β	Zero-order Correlation *r*	Semi-partial Correlation *sr*	Adjusted R^2
Step 1	248				.00
Global Models					
Self		.06	.06	.06	
Other		-.01	.00	-.01	
Step 2					
Specific Models with:					
Mother	247				.00
Self		-.06	-.02	-.06	
Other		.04	.02	.03	
Father	241				.02
Self		-.04	.01	-.06	
Other		.17**	.15*	.16**	
Friend	247				.00
Self		.12	.13	.11	
Other		-.02	-.01	-.02	
Romantic Partner	77				.01
Self		-.06	-.02	-.06	
Other		.17	.09	.15	

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

Table 11

Results of Regression Analyses Attempting to Explain the Residual Variance in Perceived Stress in the Fall Semester at University (Study 1)

Predictors	*n*	Standardized β	Zero-order Correlation *r*	Semi-partial Correlation *sr*	Adjusted R^2
Step 1	253				.01
Global Models					
Self		-.13*	-.14*	-.13*	
Other		-.01	-.02	-.01	
Step 2					
Specific Models with:					
Mother	252				.00
Self		-.01	-.05	-.01	
Other		.02	.00	.02	
Father	246				.05
Self		.08	-.01	.07	
Other		-.23***	-.21**	-.22***	
Friend	252				.00
Self		-.02	-.08	-.02	
Other		.01	.00	.01	
Romantic Partner	79				.08[a]
Self		-.14	-.21*	-.13	
Other		-.10	.04	-.09	

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

[a] When only this subsample of cases was used, the adjusted $R^2 = .08$ when global models of self and other were entered at step 1.

Table 12

Results of Regression Analyses Attempting to Explain the Residual Variance in Somatic Symptoms in the Fall Semester at University (Study 1)

Predictors	*n*	Standardized β	Zero-order Correlation *r*	Semi-partial Correlation *sr*	Adjusted R^2
Step 1	201				.00
Global Models					
Self		-.12	-.12	-.12	
Other		.02	.01	.02	
Step 2					
Specific Models with:					
Mother	200				.01
Self		.14	.07	.13	
Other		-.08	-.05	-.07	
Father	194				.01
Self		.10	.06	.10	
Other		.05	.05	.05	
Friend	200				.00
Self		-.04	-.08	-.03	
Other		.05	.03	.04	
Romantic Partner	64				.00
Self		.03	-.03	.03	
Other		.02	.06	.02	

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

Table 13

Results of Regression Analyses Attempting to Explain the Residual Variance in General Affect in the Relationship Breakup Sample (Study 1)

Predictors	*n*	Standardized β	Zero-order Correlation *r*	Semi-partial Correlation *sr*	Adjusted R^2
Step 2	334				.01
Status by Global Models					
Breakup/couple X Self		-.05	.05	-.04	
Breakup/couple X Other		.06	.06	.05	
Breakup/single X Self		.08	.11	.06	
Breakup/single X Other		.05	.06	.04	
Step 4					
Status by Specific Models with:					
Mother	332				.00
Breakup/couple X Self		-.09	.02	-.05	
Breakup/couple X Other		.03	.02	.02	
Breakup/single X Self		.00	.05	.00	
Breakup/single X Other		.10	.07	.07	
Father	323				.00
Breakup/couple X Self		-.05	.01	-.03	
Breakup/couple X Other		-.02	.01	-.02	
Breakup/single X Self		-.04	.02	-.02	
Breakup/single X Other		.04	.04	.04	
Friend	333				.01
Breakup/couple X Self		.10	.09	.05	
Breakup/couple X Other		-.06	.07	-.04	
Breakup/single X Self		-.01	.06	.00	
Breakup/single X Other		.12	.10	.07	

Notes: Breakup group $n = 47$. Couple group $n = 124$. Single group $n = 163$. Relationship status effect coding variables as well as global models of self and other were entered in step 1. Relationship-specific models of self and other were entered in step 3. Because only a portion of the sample experienced a breakup and nearly half were assessed over the time periods during which participants adjusted to university, significant main effects of global or relationship-specific models of no particular interest here and generally expected to reiterate the findings of the previous set of analyses. Therefore, results of steps 1 and 2 were not reported in the table.

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

Table 14

Results of Regression Analyses Attempting to Explain the Residual Variance in Perceived Stress in the Relationship Breakup Sample (Study 1)

Predictors	*n*	Standardized β	Zero-order Correlation *r*	Semi-partial Correlation *sr*	Adjusted R^2
Step 2	340				.00
Status by Global Models					
Breakup/couple X Self		.04	-.02	.04	
Breakup/couple X Other		-.07	-.06	-.06	
Breakup/single X Self		.04	-.03	.03	
Breakup/single X Other		-.04	-.04	-.03	
Step 4					
Status by Specific Models					
with Mother	338				.00
Breakup/couple X Self		.04	-.01	.02	
Breakup/couple X Other		.06	.02	.04	
Breakup/single X Self		.06	-.03	.03	
Breakup/single X Other		-.06	-.04	-.04	
with Father	329				.00
Breakup/couple X Self		.03	-.01	.02	
Breakup/couple X Other		.03	.00	.03	
Breakup/single X Self		.05	-.03	.03	
Breakup/single X Other		-.09	-.08	-.08	
with Friend	339				.00
Breakup/couple X Self		-.01	-.04	.00	
Breakup/couple X Other		.09	-.02	.05	
Breakup/single X Self		.04	-.04	.02	
Breakup/single X Other		-.03	-.06	-.02	

Notes: Breakup group $n = 47$. Couple group $n = 126$. Single group $n = 167$. Results of steps 1 and 2 were not reported (see note for Table 13).

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

Table 15

Results of Regression Analyses Attempting to Explain the Residual Variance in Somatic Symptoms in the Relationship Breakup Sample (Study 1)

Predictors	*n*	Standardized β	Zero-order Correlation *r*	Semi-partial Correlation *sr*	Adjusted R^2
Step 2	336				.03
Status by Global Models					
Breakup/couple X Self		-.04	-.06	-.04	
Breakup/couple X Other		-.03	.00	-.03	
Breakup/single X Self		-.07	-.16	-.05	
Breakup/single X Other		-.11	-.09	-.09	
Step 4					
Status by Specific Models with:					
Mother	334				.02
Breakup/couple X Self		.06	.02	.04	
Breakup/couple X Other		.02	.02	.01	
Breakup/single X Self		.06	-.11	.03	
Breakup/single X Other		.02	-.04	.02	
Father	325				.04
Breakup/couple X Self		.13	.05	.08	
Breakup/couple X Other		.00	.01	.00	
Breakup/single X Self		-.04	-.14	-.02	
Breakup/single X Other		-.12	-.10	-.10	
Friend	335				.06
Breakup/couple X Self		.27*	.03	.12	
Breakup/couple X Other		-.05	.02	-.03	
Breakup/single X Self		.31**	-.11	.14	
Breakup/single X Other		-.05	-.09	-.03	

Notes: Breakup group $n = 42$. Couple group $n = 126$. Single group $n = 168$. Results of steps 1 and 2 were not reported (see note for Table 13).

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

Table 16

Correlation of Global and Specific Relational Models and Social Interaction Ratings (Study 2)

		Social Interaction Ratings		
		Quality	**Intimacy**	**Length**
Global Models				
Self	***r***	.05	.02	-.06
Other	***r***	.39***	.35**	.05
Specific Models				
Self	**Mean *r***	.07	.09	.10
	Min. *r*	-.97	-.96	-1.00
	Max. *r*	.97	.99	.99
	St. Dev.	.61	.60	.61
Other	**Mean *r***	.18	.44	.22
	Min. *r*	-.97	-1.00	-.99
	Max. *r*	1.00	1.00	1.00
	St. Dev.	.58	.51	.59

Notes: $n = 65$ for global models, $n = 63$ for specific models of self and $n = 64$ for specific models of other. A lack of variance in specific relational models made correlations of specific models and interaction ratings impossible to calculate for certain participants, resulting in a reduced sample.

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

Table 17

Results of HLM Analyses Using Global and Specific Relational Models to Explain the Quality of Social Interactions (Study 2)

Variables Entered	γ Coefficient	Proportion of Variance Explained at the: Person-level	Relationship-level	Total Proportion of Variance Explained
Model 1				
▪ **Intercept**	.00	.04	.10	.07
▪ **Specific Model of Self**	.11†			
Model 2				
▪ **Intercept**	-.01			
▪ **Global Model of Self**	.08	.02	.10	.06
▪ **Specific Model of Self**	.11†			
Model 3				
▪ **Intercept**	-.02			
▪ **Global Model of Self**	.02	.00	.12	.06
▪ **Specific Model of Self**	.09			
▪ **Global X Specific Interaction**	-.17**			
Model 4				
▪ **Intercept**	-.02	.08	.16	.12
▪ **Specific Model of Other**	.20**			
Model 5				
▪ **Intercept**	-.02			
▪ **Global Model of Other**	.27**	.21	.15	.18
▪ **Specific Model of Other**	.19**			
Model 6				
▪ **Intercept**	-.02			
▪ **Global Model of Other**	.27**	.21	.15	.18
▪ **Specific Model of Other**	.19**			
▪ **Global X Specific Interaction**	.03			

Notes: The proportions of variance explained at person-level, the relationship-level and in total are obtained through comparisons with the intercept model (i.e., the benchmark model). † $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Table 18

Results of HLM Analyses Using Global and Specific Relational Models to Explain the Intimacy of Social Interactions (Study 2)

Variables Entered	γ Coefficient	Proportion of Variance Explained at the: Person-level	Relationship-level	Total Proportion of Variance Explained
Model 1				
▪ **Intercept**	-.02	.03	.10	.07
▪ **Specific Model of Self**	.17**			
Model 2				
▪ **Intercept**	-.02			
▪ **Global Model of Self**	.03	.01	.10	.06
▪ **Specific Model of Self**	.17**			
Model 3				
▪ **Intercept**	-.02			
▪ **Global Model of Self**	.01	.00	.09	.06
▪ **Specific Model of Self**	.15**			
▪ **Global X Specific Interaction**	-.13*			
Model 4				
▪ **Intercept**	-.05	.12	.31	.23
▪ **Specific Model of Other**	.40***			
Model 5				
▪ **Intercept**	-.05			
▪ **Global Model of Other**	.22*	.21	.31	.27
▪ **Specific Model of Other**	.38***			
Model 6				
▪ **Intercept**	-.06			
▪ **Global Model of Other**	.22*	.21	.31	.27
▪ **Specific Model of Other**	.38***			
▪ **Global X Specific Interaction**	.01			

Notes: The proportions of variance explained at person-level, the relationship-level and in total are obtained through comparisons with the intercept model (i.e., the benchmark model). $^{\dagger}p \leq .10$. $^{*}p \leq .05$. $^{**}p \leq .01$. $^{***}p \leq .001$.

Table 19

Results of HLM Analyses Using Global and Specific Relational Models to Explain the Length of Social Interactions (Study 2)

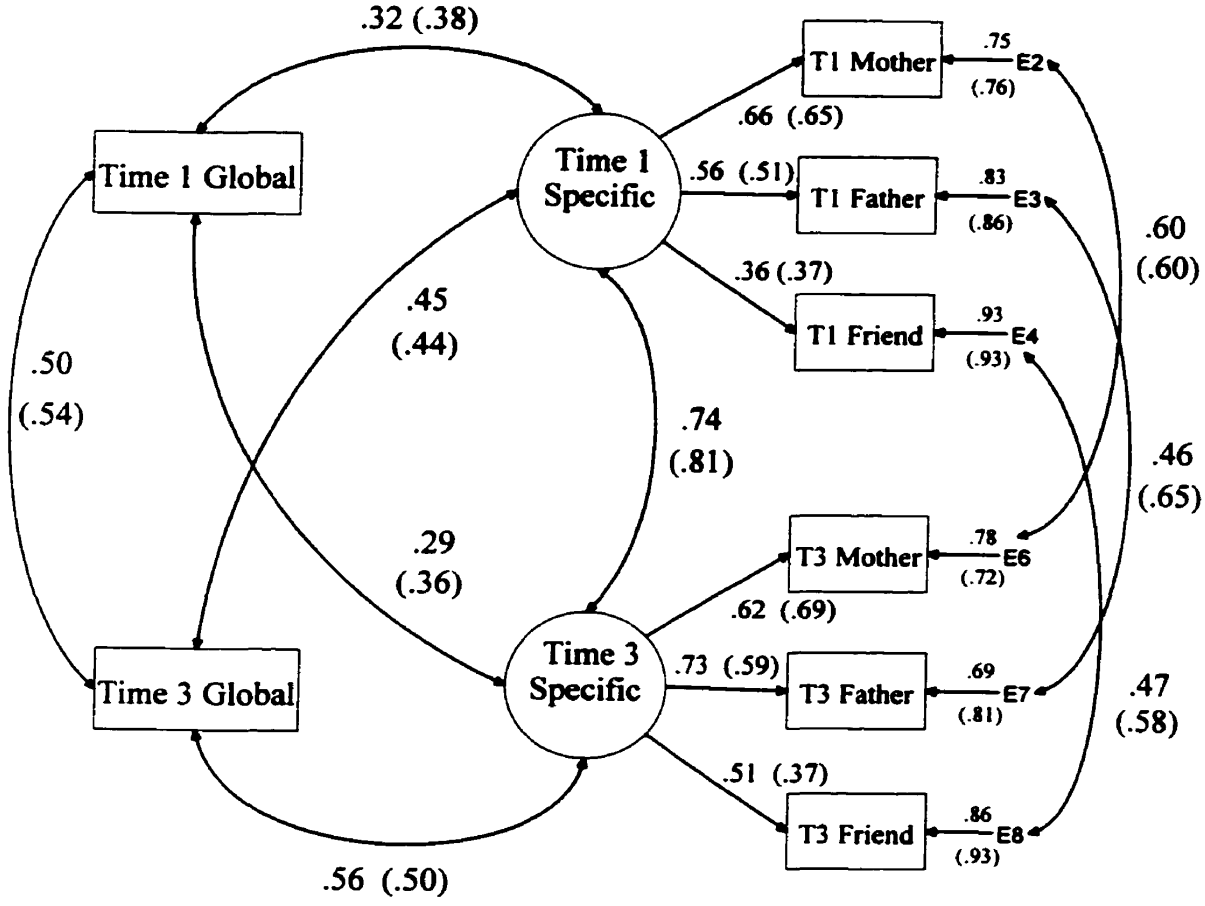
Variables Entered	γ Coefficient	Proportion Variance Explained at the: Person-level	Relationship-level	Total Proportion of Variance Explained
Model 1				
▪ **Intercept**	.00	.25	-.04	.00
▪ **Specific Model of Self**	.13†			
Model 2				
▪ **Intercept**	.00			
▪ **Global Model of Self**	-.06	.25	-.04	.00
▪ **Specific Model of Self**	.13†			
Model 3				
▪ **Intercept**	.01			
▪ **Global Model of Self**	-.04	.27	-.06	-.02
▪ **Specific Model of Self**	.14*			
▪ **Global X Specific Interaction**	.11			
Model 4				
▪ **Intercept**	.01	.06	.04	.05
▪ **Specific Model of Other**	.19**			
Model 5				
▪ **Intercept**	.01			
▪ **Global Model of Other**	.01	.02	.04	.04
▪ **Specific Model of Other**	.19**			
Model 6				
▪ **Intercept**	.01			
▪ **Global Model of Other**	.01	.01	.04	.04
▪ **Specific Model of Other**	.19**			
▪ **Global X Specific Interaction**	.00			

Notes: The proportions of variance explained at person-level, the relationship-level and in total are obtained through comparisons with the intercept model (i.e., the benchmark model). † $p \leq .10$. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Figures

Figure 1

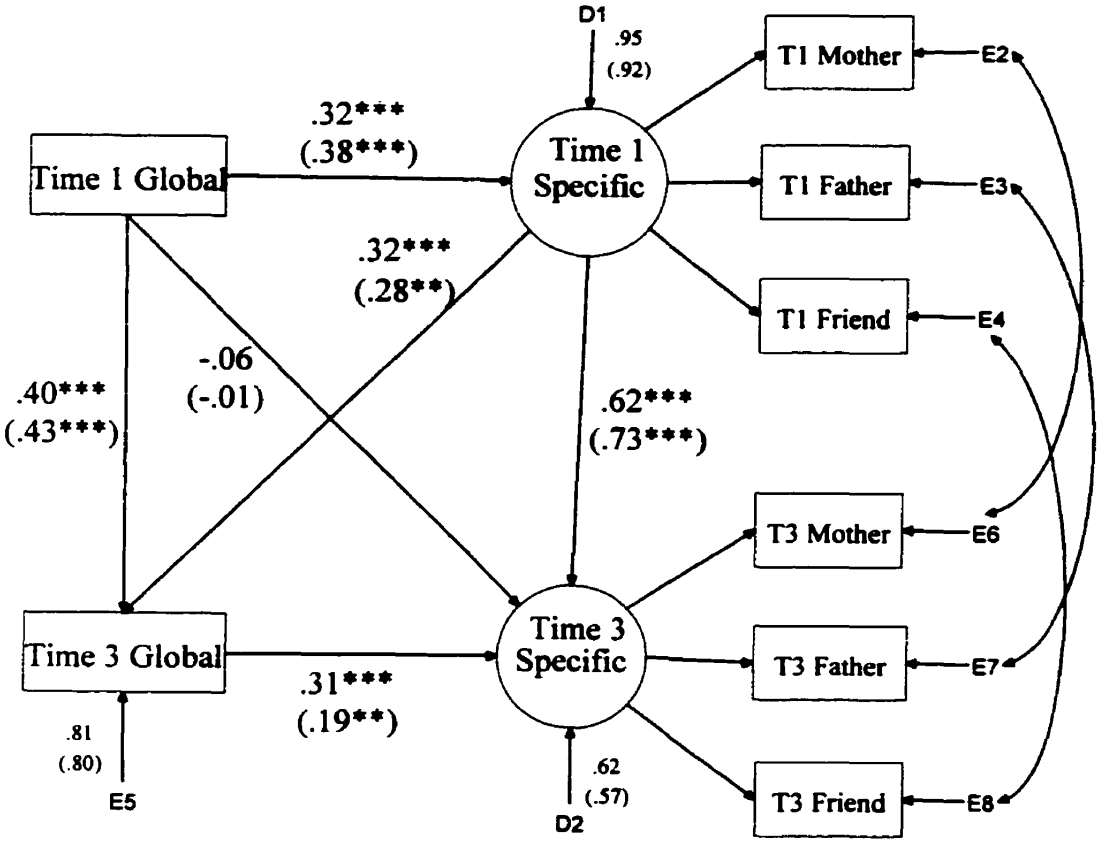
Measurement SEM:
Models of Self and Other (Study 1)



Notes: $n = 293$. Models of self and other were treated in two separate models.
Coefficients for models of other are presented in parentheses.
Models of self: $\chi 2\ (13) = 42.72, p < .001$, CFI = .96, GFI = .97.
Models of other: $\chi 2\ (13) = 59.90, p < .001$, CFI = .94 GFI = .95.
$p < .001$ for all coefficients.

Figure 2

Top-down SEM:
Models of Self and Other (Study 1)



Notes: $n = 293$. Models of self and other were treated in two separate models. Coefficients for models of other are presented in parentheses. Coefficients for relationship-specific measures and the correlation of their error terms were identical to those reported in Figure 1.

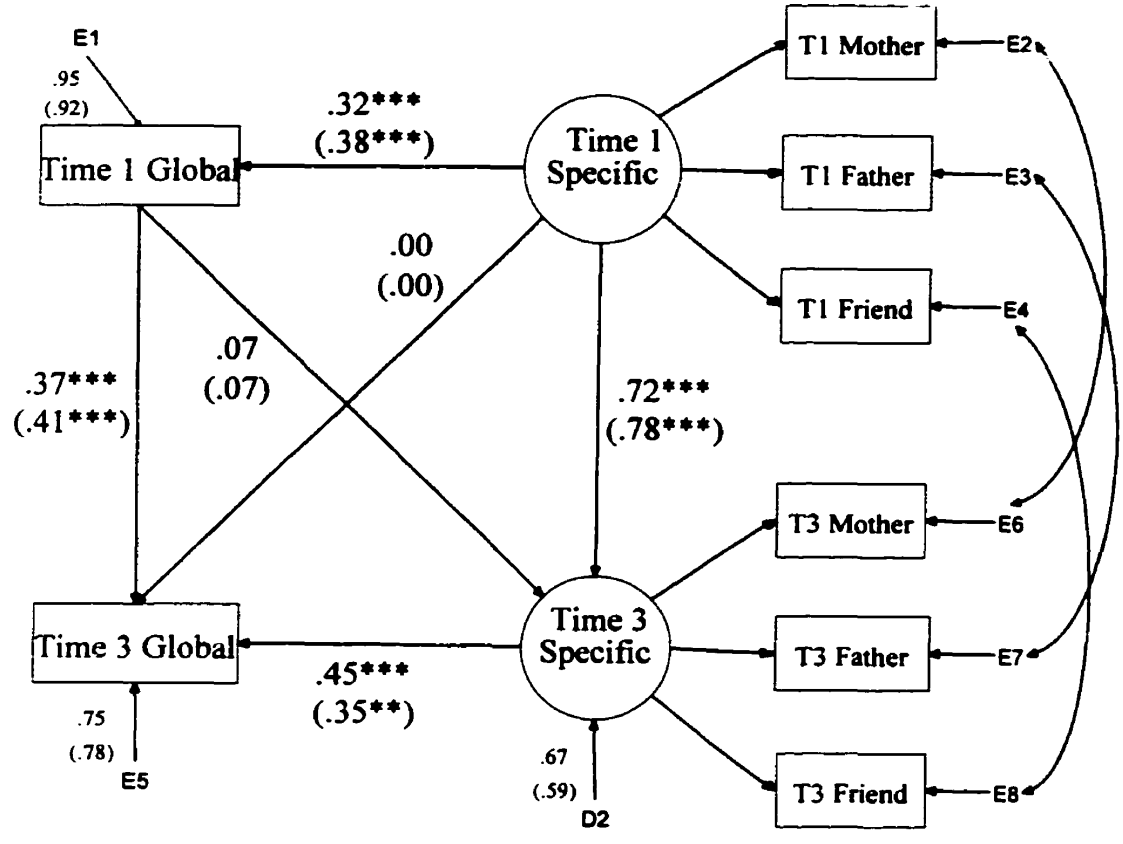
Models of self: $\chi 2\ (13) = 42.72, p < .001$, CFI = .96, GFI = .97.

Models of other: $\chi 2\ (13) = 59.90, p < .001$, CFI = .94 GFI = .95.

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

Figure 3

Bottom-up SEM:
Models of Self and Other (Study 1)



Notes: $n = 293$. Models of self and other were treated in two separate models. Coefficients for models of other are presented in parentheses. Coefficients for relationship-specific measures and the correlation of their error terms were identical to those reported in Figure 1.

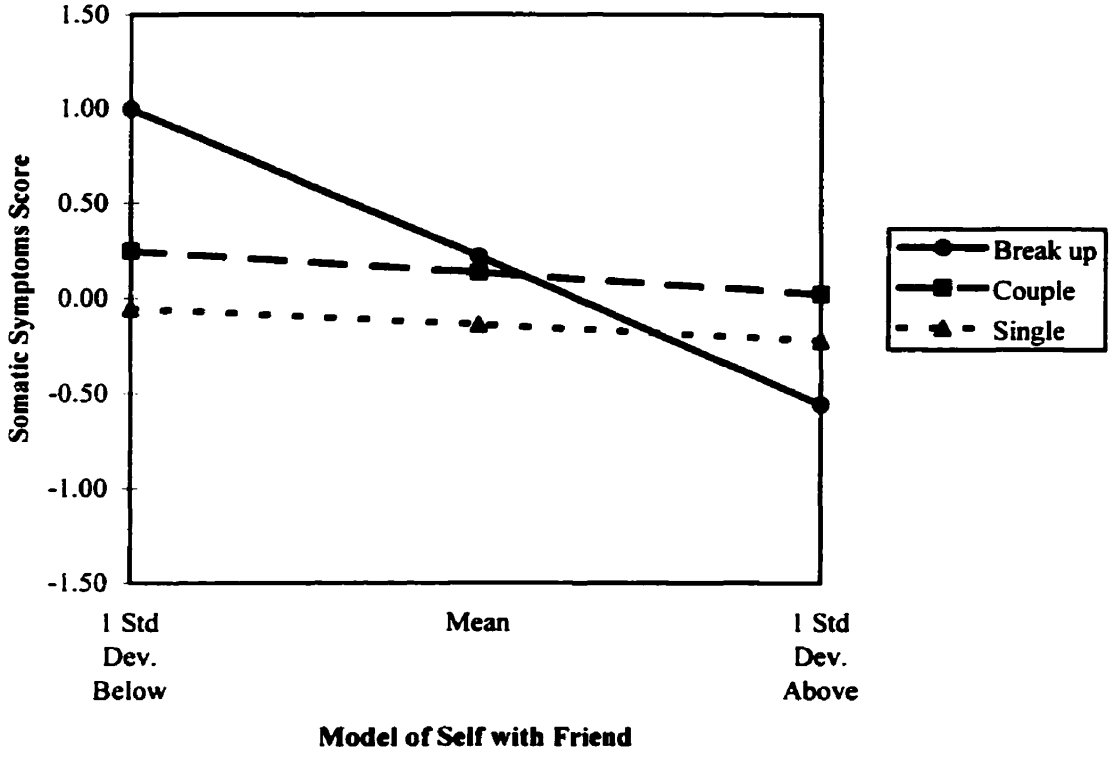
Models of self: $\chi 2\ (13) = 42.72, p < .001$, CFI = .96, GFI = .97.

Models of other: $\chi 2\ (13) = 59.90, p < .001$, CFI = .94 GFI = .95.

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

Figure 4

Interaction Between Relationship Status and Model of Self with Friend (Study 1)



Regression Equations:

Symptoms = β_0 + β_1 Global-Self + β_2 Global-Other + β_3 **Friend-Self** + β_4 Friend-Other

	β_0	β_1	β_2	β_3	β_4
Breakup	1.07	0.07	0.05	**-0.40**	0.09
Couple	0.35	-0.05	0.00	**-0.06**	0.02
Single	0.06	-0.06	-0.03	**-0.04**	0.02