

Care Receiving: The Relationship Between Attachment and  
Reactions to Being Helped, Relationship Functioning, and  
Perceived Quality of Life in a Sample of Individuals with Multiple Sclerosis

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By

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## ABSTRACT

In healthy adult relationships both participants serve as attachment figures and caregivers, with each partner seeking and providing care for the other as needed (Hazan & Shaver, 1987). However, chronic illness may result in one individual requiring disproportionately more care without being able to fully reciprocate. The purpose of this research was to investigate the relevance of attachment as a predictor of care receiving, relationship, and health related variables, in a sample of adults experiencing a chronic illness. This investigation employed survey methodology, and 68 individuals with Multiple Sclerosis (MS) participated. Hierarchical multiple regression analyses supported theoretically derived hypotheses. Attachment, conceptualized in terms of the orthogonal constructs of attachment anxiety and attachment avoidance, was found to be a relevant construct in predicting self-reported reaction to care receiving, relationship functioning and quality of life in a sample of individuals with MS. Analyses revealed that elevated attachment anxiety is associated with feelings such as anger, embarrassment, and indebtedness in response to receiving help, while elevated attachment avoidance predicted care receiver perceptions that they were being discouraged from continued independence. In terms of relationship functioning, care receivers with elevated attachment anxiety and care receivers with elevated attachment avoidance reported less trust, acceptance, and intimacy in their relationships, and were less committed to their relationships and their relationship partners. Additionally, elevated attachment avoidance was predictive of lower overall relationship satisfaction. Finally, elevated attachment anxiety predicted poorer mental health and overall quality of life, while elevated attachment avoidance predicted poorer physical health. Interactions between attachment constructs and type of caregiver (spouse/partner vs. other) were observed in several analyses suggesting that attachment anxiety exerts its strongest influence within committed relationships, whereas the power of attachment avoidance appears to be generally more pervasive. The results of this investigation can be understood within the context of the biopsychosocial model of coping with chronic illness. Knowledge of attachment style may be clinically useful as it provides insight

into individuals' behaviour and emotional experiences in relationships. Attachment-informed interventions may lead to improvement in relationships and subsequent improvement in psychological functioning and physical health.

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## DEDICATION

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## Attachment and Care Receiving

### General Introduction to the Theoretical Orientation and Purpose of this Investigation

Multiple sclerosis (MS) is a chronic and degenerative neurological disorder. The disease attacks myelin, the protective covering on the axons of nerve cells, resulting in disruption of electrical impulses throughout the central nervous system. Damage to myelin can occur in any part of the central nervous system and may result in difficulties with balance, sensation, motor functioning, vision, speech and cognition. It is usually accompanied by extreme fatigue, alternating phases of relapse and remission, and increasing overall disability. Multiple sclerosis is typically diagnosed in individuals who are 30 to 40 years of age, and is more prevalent in women than in men. The disorder's mid-life onset can result in a significant disruption to the affected individual's career, social functioning and family life.

Given the consequences of MS, most individuals with the illness require some degree of assistance when the disease is active. The amount and nature of the assistance required may increase as the disease progresses. Previously independent adults may have difficulty accepting emerging limitations and the resulting need for assistance from others. How effectively individuals cope with the diagnosis of MS and the effects of the disease may depend, in part, on how able they are to seek and accept help from their spouses and family caregivers. One variable known to influence help seeking behaviour and caregiving in relationships is attachment style. Thus, the purpose of this research was to investigate to what degree attachment is associated with aspects of the caregiving relationships (i.e., receptivity to care receiving, the caregivers' experience of caregiving, the relationship between the individual requiring care and the caregiver) and perceived quality of life for both the caregiver and care receiver.

Originally formulated by John Bowlby (1969/1982<sup>1</sup>, 1973, & 1980), attachment theory suggests that close relationships in adulthood are profoundly influenced by our earliest childhood experiences with our parents or primary caretakers (Feeney, 1999). Attachment refers to the strong, enduring and discriminating bond of affection one individual forms to another individual (Ainsworth 1969; Bowlby, 1982). The attachment bond is characterized by the attached individual's desire for proximity to the attachment figure and by the security and comfort the attached individual derives from the relationship (Ainsworth, 1969; Bowlby, 1958, 1973, 1980, 1982). Although attachment theory was initially focused on the period of infancy and early childhood, Bowlby maintained from its inception that attachment plays a "vital role" in relationships throughout the lifespan (Bowlby, 1982, p. 208).

According to Bowlby's (1973, 1980, 1982) theory, children's initial internal working models of attachment relationships are based on their experiences with their primary caregiver. These models contain information about 'self' ("Am I worth loving?") and others ("Are they trustworthy and dependable?") that affect the individual's predictions and expectations about subsequent close relationships, as well as his/her own relationship behaviour (Bowlby, 1973; Bartholomew & Shaver, 1998). Individuals with a positive model of themselves as a relationship partner can be conceptualized as low in attachment anxiety, because they do not fear being rejected by others. Individuals with a positive model of others can be conceptualized as low in avoidance, because they derive value from participation in relationships and do not expect their partner to behave in abusive ways. These orthogonal constructs underlie 'attachment styles' which represent one operationalization of attachment popular among attachment researchers. In adulthood, attachment style influences individuals' behaviour in initiating, maintaining, and dissolving close relationships, as well as how successfully their relationships weather stressful circumstances (Hazan & Shaver, 1987).

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<sup>1</sup> This citation refers to Bowlby's *Attachment*, originally published in 1969. A second edition was published in 1982. The 1982 edition is a text revision of the original and includes two new chapters. Citations in this text will refer to the second edition.

If care in infancy and early childhood is provided by a consistently responsive and affectionate caregiver, the individual will come to believe that he or she is worth loving (i.e., low attachment anxiety) and that others are trustworthy and worthy of care (i.e., low attachment avoidance). This internal working model of 'self' and 'others' corresponds to the secure attachment style (Ainsworth, Blehar, Waters & Wall, 1978; Bowlby, 1982). Individuals with a secure attachment style tend to form relationships with other secure individuals and generally report a greater degree of satisfaction with their relationships relative to insecure adults (Kobak & Hazan, 1991; Senchak & Leonard, 1992). Secure attachment also functions as an inner resource that helps the individual constructively cope and adjust to stressful situations (Mikulincer & Florian, 1998).

In contrast, a child whose needs are not met or whose needs are met inconsistently may develop an insecure attachment style, believing that he or she is not valuable and/or that others are not dependable (i.e., high attachment anxiety and/or high attachment avoidance; Ainsworth et al., 1978; Bowlby, 1973). Insecure adults, who usually form relationships with other insecure adults, tend to question their own value and are not confident that their partners will remain responsive to their needs (Collins & Read, 1990). Insecure adults have higher rates of relationship failure, relative to secure adults, and tend to view their partners as poor caregivers (Hazen & Shaver, 1987; Kunce & Shaver, 1991). Insecure attachment is also a potential risk factor for difficulties coping with and adjusting to stressful circumstances (Mikulincer & Florian, 1998).

Romantic relationships, adult relationships with siblings and relationships with parents in adulthood are typically egalitarian, and both participants serve as attachment figures and caregivers (Ainsworth, 1989; Hazan & Shaver, 1987). Ideally, these roles remain balanced, with both individuals seeking care and providing care equally. However, when an individual becomes ill, he or she may require disproportionately more caregiving without being able to fully reciprocate. The proposed research project will investigate if attachment anxiety and attachment avoidance, the orthogonal constructs which underlie attachment style, predict the reported experience of care

receiving and caregiving in a sample of individuals with multiple sclerosis and their caregivers.

Research with caregivers (usually of older adults and individuals with dementia) indicates that, relative to their insecure (high attachment anxiety and/or high attachment avoidance) counterparts, secure caregivers report less stress, less burden, and a better quality of life. In addition, secure caregivers provide more emotional support to care receivers (Circirelli, 1993; Carpenter, 2001). Individuals who are uncomfortable in close relationships (i.e., individuals high in attachment avoidance) are more likely to seek institutionalization for their family member, while caregivers who fear rejection and require significant reassurance and attention from relationship partners (i.e., individuals high in attachment anxiety) tend to report few social supports and less satisfaction with the support they have (Markiewicz, Reis & Gold, 1997).

Although few studies have been reported, research on care receiving in later adulthood suggests that poor relationship quality and marital conflict result in negative reactions to being helped (Martire, Schulz, Wrosch, & Newsom, 2003; Newsom & Schulz, 1998). Perceived overprotection and poor communication also have been shown to result in psychological distress and resentment in care receivers (Edwards & Noller, 1998). Therefore, although never explicitly tested, it is reasonable to hypothesize that caregivers with an insecure attachment style (i.e., high attachment anxiety and/or high attachment avoidance) will behave in ways that result in negative reactions in care receivers while insecure care receivers will apply more negative interpretations to their caregivers' intentions and behaviours.

Previous research also indicates that attachment style influences individuals' perceptions about the quality of their life (Hazan & Shaver, 1994). Perceived quality of life is a composite construct that attempts to describe overall satisfaction with life in general. The construct includes aspects of physical, psychological, and social functioning. The proposed research project will determine whether the correlation between attachment and quality of life holds in a population of individuals with multiple sclerosis and their caregivers.

Activated in stressful situations, attachment style may directly influence quality of life because it influences how an individual appraises stressful situations, the coping behaviors employed, and his or her eventual adjustment if adjustment is required (Mikulincer & Florian, 1998; Schmidt, Nachtigall, Wuethrich-Martone, & Strauss, 2002). Having internalized a greater sense of self worth, individuals low in attachment anxiety may find stressful situations inherently less threatening than individuals who are uncertain about the availability of support and who require extensive reassurance from attachment figures (i.e., high attachment anxiety). Similarly, individuals high in attachment avoidance may use ineffective coping strategies such as denial or withdrawal. By contrast, individuals low in attachment anxiety and attachment avoidance are more likely to effectively elicit assistance from friends and family. Finally, because their internal model of self worth and faith in the availability of others provides a sense of consistency, these individuals may find it easier to adjust to altered circumstances.

Indirectly, attachment style may influence perceived quality of life by influencing its component factors. The quality of close relationships and availability of social support, for instance, are critical components of perceived quality of life and have already been shown to significantly influence the perceived quality of life of individuals with MS (Schwartz & Frohner, 2005). Good relationships appear to be protective, conferring increased coping ability and better mental health. Also, relationships between securely attached individuals are more likely to survive the stresses associated with multiple sclerosis.

Using survey methodology, this investigation explored the ability of attachment, specifically the underlying constructs of attachment anxiety and attachment avoidance, to predict reaction to care receiving, reaction to caregiving, relationship satisfaction and perceived quality of life in a sample of individuals with multiple sclerosis and their caregivers. Individuals with MS who volunteered to participate completed a questionnaire consisting of measures of attachment, reactions to being helped, relationship satisfaction and perceived quality of life. Caregivers (i.e., spouses or other

family members) who independently volunteered to participate completed a caregiver survey. In addition to the measures of attachment, relationship satisfaction and perceived quality of life, the caregiver questionnaire included a measure of caregiving burden.

### Attachment Theory

In contrast to the increasingly popular domain specific models of development, attachment theory is more generally applicable. Devised to explain psychological functioning and behaviour in multiple domains, attachment theory is relevant across the lifespan (Ainsworth, 1989; Bowlby, 1982; Waters & Cummings, 2000).

Current formulations of attachment theory are the result of the collaborative efforts of John Bowlby and Mary Ainsworth (Ainsworth & Bowlby, 1991; Bretherton, 1991). Using concepts from psychoanalysis, ethology and system control theory, Bowlby (1973, 1980, 1982) constructed the basic framework of attachment theory. Ainsworth (1967) operationalized attachment concepts and provided the empirical base for the theory's basic tenets (Ainsworth & Bowlby, 1991).

#### *The Foundations of Attachment Theory*

##### *John Bowlby*

Bowlby was born in London, in 1907. Upon the advice of his father, a surgeon, Bowlby entered the University of Cambridge to study medicine (Bretherton, 1991). However, as his studies progressed, he found himself more interested in subjects that would later make up the field of developmental psychology. In order to pursue these interests, Bowlby sought to gain experience working with children. He found such an opportunity working as a volunteer at a school for maladjusted children (Ainsworth & Bowlby 1991; Bretherton, 1991). Of all the children he worked with during this time, two drew his particular attention and would prove influential in his early theoretical formulations. The first was a teenager who never had the experience of a stable mother figure. This boy isolated himself from others emotionally, was remote and affectionless in his interactions, and was beginning to show signs of antisocial behaviour (i.e., stealing). The second child was a highly anxious boy of 7 or 8 years of age who

attached himself to Bowlby and followed him around the school, protesting any separation (Ainsworth & Bowlby, 1991; Bretherton, 1991).

Following his volunteer service, Bowlby entered University College Medical School in London to pursue further training in child psychiatry and psychotherapy (Bretherton, 1991). He was accepted as a student-candidate in the British Psychoanalytical Society, where he came under the influence of Melanie Klein and was exposed to object relations theory. During this period, Bowlby found himself in a reasonably tolerant and encouraging environment, which allowed him to explore his own ideas about child development (Ainsworth & Bowlby, 1991; Bretherton, 1991). Bowlby came to believe that classic psychoanalysis overestimated the importance of children's fantasy worlds on their development and underestimated the influence of actual experiences, particularly in the family environment (Bowlby, 1958, 1982). He was particularly interested in the adverse effect of lengthy or traumatic separations between mothers and their children (Ainsworth & Bowlby, 1991; Bowlby, 1958, 1973, 1980, 1982).

Bowlby's first systematic research on the role of parent-child interactions in personality development took place at the London Child Guidance Clinic (Ainsworth & Bowlby, 1991; Bowlby, 1944). Based on this research, Bowlby wrote the classic paper 'Forty-four juvenile thieves, their characters and home life, (revision published in 1944). In this paper, Bowlby (1944) reported that relative to a matched control group, disruptions (e.g. deprivations or separations) in maternal care were more common in the sample of thieves. Furthermore, such experiences seemed to be especially distinctive of children with affectionless characters. In describing these children, Bowlby noted that they did not develop emotional ties to others, maintained only shallow and superficial relationships, and appeared to lack the capacity for attachment, affection and loyalty. Bowlby came to the conclusion that prolonged separation from their mother could completely disrupt children's normal emotional development. Thus the effects of maternal separation in early childhood became the focus of his professional life.

Bowlby's career in child psychiatry was interrupted by the Second World War. However, as part of the war effort, he worked to validate officer selection procedures

and his development as a scientist continued. During this period, Bowlby developed a profound belief in the necessity of integrating both empirical findings and clinical observation (Ainsworth & Bowlby, 1991; Bretherton, 1991).

After completing his army service in 1945, Bowlby took on the position of head of the Children's Department at the Taverstock Clinic. He promptly renamed the department to the Department for Children and Parents, to reflect his belief in the importance of parent-child relations (Bretherton, 1991). Disappointingly for Bowlby, much of the clinical work being done at the clinic had a Kleinian orientation and regarded the patterns of actual family interaction to be largely irrelevant. Therefore, in order to pursue his interest in the influence of family interaction on both healthy and pathological development, he founded his own research unit independent of the clinical work at Taverstock (Ainsworth & Bowlby, 1991; Bretherton, 1991). Mary Ainsworth joined this research unit in 1950.

#### *Mary Ainsworth*

Mary Ainsworth was born Mary Salter in Ohio in 1913. Soon after her birth, her family relocated to Toronto where she eventually attended university, studying psychology. As an undergraduate student, Ainsworth<sup>2</sup> attended a class taught by William Blatz, and was introduced to his newly developed theory of security (Ainsworth & Bowlby, 1991). Security theory postulates that children must develop a secure dependence on their parents before they can successfully enter into unfamiliar situations and cope on their own. Secure dependence provides a foundation for the learning and skill development necessary to develop self-confidence and eventual emancipation from parents (Ainsworth, 1983; Ainsworth & Bowlby, 1991). Ainsworth's collaboration with Blatz resulted in her dissertation entitled 'An evaluation of adjustment based on the concept of security' (Ainsworth, 1988; Bretherton, 1991). In this document, Ainsworth theorized that familial security provides a basis from which an individual could gradually emerge, forming new skills and interests. Individuals without this 'secure

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<sup>2</sup> Although still Satler at this point, I chose to refer to her as Ainsworth throughout the document for the sake of clarity. Ainsworth is the name under which she published the vast majority of her research and is the name associated with attachment theory.

base' were handicapped in their development (Bretherton, 1991). Additionally, Ainsworth became interested in the relationships between defense mechanisms and security. While Blatz argued that defense mechanisms reduce anxiety and temporarily increase 'felt' security, Ainsworth disagreed (Ainsworth & Bowlby, 1991). She suggested that while behaviours such as withdrawal and disconnection (later discussed by Bowlby (1980) as a response to prolonged separation, and observed in Ainsworth's own research employing the Strange Situation Paradigm) may reduce immediate anxiety, they do not contribute to secure attachment, nor do they address the underlying source of insecurity (Ainsworth et al., 1978; Ainsworth, 1988, Ainsworth & Bowlby, 1991).

Following her graduation in 1939, Ainsworth took a position as a lecturer at the University of Toronto. Like Bowlby, her career was interrupted by the war. Ainsworth joined the Canadian Women's Army Corps and worked as an army examiner. This position which involved counseling, testing and interviewing sparked her interest in clinical work (Ainsworth & Bowlby, 1991; Bretherton, 1991).

After the war, Ainsworth returned to the University of Toronto. In order to further her training in personality assessment, she volunteered at a veteran's hospital and took workshops from Bruno Klopfer<sup>3</sup>. Also, she renewed her collaboration with Blatz and worked to refine the scales originally developed for her dissertation research. This experience with assessment and instrument construction would prove to be essential in her later development of the attachment classification categories (Ainsworth & Bowlby, 1991; Bretherton, 1991).

Mary married Leonard Ainsworth, a veteran and university of Toronto student, in 1950. Following her marriage, Ainsworth left her position at the university to move with her husband to London, England, where he would complete his Ph.D. studies. Without appointment in London, Ainsworth answered an advertisement for a position at the Taverstock clinic, involving research on the effect of maternal-child separation on

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<sup>3</sup> Bruno Klopfer, Ph.D., a German psychologist and expert on the Rorschach Ink Blot test is credited with developing one of the first scientific scoring systems for the personality test and introducing it to North America (Malmgren, 2002).

personality development. The research was to be conducted under the direction of John Bowlby (Ainsworth & Bowlby, 1991; Bretherton, 1991).

### *Theoretical Development*

In order to establish empirical evidence for his assertion that real-life events were significant factors in child development, Bowlby chose to devote the resources of his research unit entirely to understanding the ramifications of mother-child separation. He chose this in particular because unlike ‘disturbed family life’, maternal separations could be objectively quantified (Ainsworth & Bowlby, 1991). With his first research grant, Bowlby hired James Robertson. Robertson had been trained in child observation at the Hampstead Nurseries<sup>4</sup>, and Bowlby gave him the task of observing children in hospitals, institutions and other situations in which they were separated from their mothers (Ainsworth & Bowlby, 1991; Bretherton, 1991).

Robertson began his research in the Central Middlesex Hospital, where he observed that children, especially those under 5, responded adversely to being ‘abandoned’ by their mothers (Ainsworth & Bowlby, 1991; Bowlby, 1952, 1982). The fact that mothers were only allowed to visit once a week for a short time further increased the painfulness of the experience. Initially, Robertson observed that children would protest separation by crying and pleading with their mothers to take them home. Once departed, the children would continue to search for their mothers and behave in ways indicative of acute distress (e.g., inconsolable crying). Generally, these children would reject consolation attempts by alternative figures. Upon continuation of this pattern, children’s crying and searching tended to diminish and they would become quieter and more withdrawn. Finally, if the separation persisted, the children appeared to adapt to their situation. These children would accept care from the nurses, and appeared superficially sociable. However, these children ceased to be emotionally responsive to their mothers and would no longer protest separation (Bowlby, 1952, 1973).

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<sup>4</sup> Anna Freud’s wartime nursery in London, England.

After two years of observations, Robertson began to share his experiences and observations in such a way as to help the hospitalized children. In collaboration with Bowlby, Robertson produced the film ‘A two-year-old goes to hospital’. This profoundly moving film not only furthered Bowlby’s formulations of attachment theory, but also significantly influenced the treatment of hospitalized children and their families throughout the world (Ainsworth & Bowlby, 1991; Bretherton, 1991).

In addition to the work of Robinson, the development of attachment theory was furthered by a request from the World Health Organization. Following the war, Europe was trying to contend with a vast number of homeless children and, impressed with Bowlby’s previous work and the focus of his research unit, the WHO invited Bowlby to write a psychiatric report on the fate of these war orphans (Ainsworth & Bowlby, 1991; Bowlby, 1952). Bowlby (1952) accepted the invitation and moved to Geneva in 1950 to gather information. Bowlby assimilated his findings in the publication *Maternal Care and Mental Health*. Writing this report afforded Bowlby the opportunity to talk to other professionals who had experience with institutionalized children, to review the existing literature, and most importantly, to organize his own ideas in writing (Ainsworth & Bowlby, 1991; Bowlby, 1952). Although his publication was well received and had an impact on the practice of child psychiatry, Bowlby recognized that the material he had accumulated on the profound and devastating effects of maternal separation required a theory to bind it together in a meaningful way (Ainsworth & Bowlby, 1991; Bowlby, 1982).

Ethology<sup>5</sup> provided the inspiration Bowlby required to begin developing a comprehensive theory of children’s ties to their mothers (Bowlby, 1958, 1982; Ainsworth & Bowlby, 1991). Bowlby was particularly drawn to the work of Konrad Lorenz, who observed that imprinting, the process of developing strong social bonds,

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<sup>5</sup> Ethology is the study of animal behaviour. Ethology is especially interested in instincts (i.e., genetically programmed patterns of behaviour) and their inheritance patterns and modification through natural selection. This approach overlaps with comparative psychology and the investigation of the biological basis of human behaviour.

was not linked to food provision. This ran somewhat contrary to the Freudian position that a child's tie to his/her mother was primarily motivated by the narcissistic drive to satisfy basic needs (e.g., the need for food; Bowlby, 1982).

Bowlby (1982) was also encouraged by Harry Harlow's work with Rhesus monkeys because it provided the first empirical support for the concepts central to his developing theory of attachment. In an investigation of the attachment preferences of orphaned infant rhesus monkeys, Harlow and Zimmerman (1959) found that infants developed a strong and persistent attachment to inanimate 'surrogate' mothers, and that they preferred warm cloth covered 'surrogate' mothers to a wire 'surrogates', even when the wire mothers were the only available source of food. According to the Freudian secondary drive theory, the orphaned monkeys should have associated the wire mother with the pleasure associated with receiving food and thus developed an attachment with this surrogate (Bowlby, 1982). This association was not observed. Instead, the infant monkeys preferred to cling to the soft cloth surrogate and even attempted to maintain contact with this surrogate when feeding from the wire mother substitute. Consistent with Bowlby's (1958) theorizing about human attachment, Harlow & Zimmerman (1959) concluded that the affectionate bond that develops between a mother rhesus and her child has little to do with food. Also in support of Bowlby's theoretical formulations regarding the intergenerational transmission of attachment, infant monkeys reared with the 'surrogate' mother were later observed to have disturbed social relationships and poor parenting skills (Harlow, Dodsworth & Harlow, 1965). Bowlby (1982) concluded that this research demonstrated that infant-mother bonding (demonstrated through displays of attachment behaviour such as proximity-seeking) was the result of "contact comfort" fulfilling the infant's attachment needs, rather than the result of food, which fulfilled their physiological needs (p. 213). Extending this to human infants, Bowlby argued that it is caregivers' consistent and appropriate response to infants' attachment needs that results in attachment security and ultimately in stable personality development.

Heavily imbued with concepts from ethology and the results of ethological research, Bowlby's initial formal presentations on attachment theory were in a series of

papers presented to the British Psychoanalytic Society (Bretherton, 1991). In his first presentation<sup>6</sup>, Bowlby addressed the failure of existing theories to explain the strong attachment of infants to their mothers and their intense response to separation. From the perspective of attachment theory, Bowlby (1958, 1982) argued that infants are born ready to start forming social relationships. Powerful instinctual actions such as sucking, clinging, smiling, crying and following are conceptualized as attachment behaviours, which, in the second half of the first year of life, become directed to a specific mother-figure. Bowlby also argued that attachment is not synonymous with dependency and, unlike dependency should not be considered a form of regression in adulthood. Instead, he argued that even in adult life, attachment behaviours are natural and healthy.

In his second presentation<sup>7</sup>, Bowlby (1973) argued that once attached, children's response to prolonged separation follows a predictable sequence. The three stages, based on Robertson's observations of children in long-term hospital wards, are protest, despair and detachment. Upon separation or threat of separation from their mothers, children protest; they cry, cling and try to follow or find their mother. These children are clearly distressed but frequently reject attempts by a substitute caregiver to ameliorate their distress. If the separation continues, children remain preoccupied with their mothers, but become increasingly despondent, hopeless and sad. Children in this stage are often quiet, withdrawn and apathetic. In Bowlby's (1973, 1980, 1982) terminology these children are mourning the loss of their attachment figure. Finally, children enter the detachment stage, indicating that their previous attachment to their mother has become damaged or destroyed. In this stage, children no longer reject the advances of alternative caregivers. However, their apparent sociability is superficial, and they

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<sup>6</sup> Bowlby, J. (1958) The psychoanalytic study of the child. *International Journal of Psychoanalysis*, 39, 1-23. The contents of this paper were later subsumed by and expanded on in Bowlby's attachment trilogy: *Attachment* (1969/1982), *Separation* (1973), and *Loss, Sadness and Depression* (1980).

<sup>7</sup> Bowlby, J. (1960) *Separation Anxiety*, International Journal of Psychoanalysis, 41, 89-113. The contents of this paper were later subsumed by and expanded on in Bowlby's attachment trilogy: *Attachment* (1969/1982), *Separation* (1973), and *Loss, Sadness and Depression* (1980).

demonstrate a virtual absence of attachment behaviour. When reunited with their mother, these children behave apathetically, and tend to maintain their distance. According to Bowlby (1982), detached children are no longer emotionally connected to their mothers and have lost interest in them as special people in their lives. Prolonged detachment is a pathological variant of normal mourning and disrupts children's ability to form new attachments. Detachment is also characterized by preoccupation with material possessions and indiscriminate sociability. Far from indicating adaptation to their loss, the apparent emotional stability and overtly friendly behaviour of detached children suggests "no longer to care for anyone" (Bowlby, 1982, p. 28).

Bowlby (1973, 1980, 1982) also addressed the prevailing view that too much maternal attention would 'spoil' children and result in the kind of exaggerated protest behaviour previously observed in some investigations of institutionalized children. Bowlby argued that, in fact, the opposite is true. Separations are an inevitable part of mother-child interactions, and children's negative reactions to separation are normal and not confined to children and mothers with impaired relationships, nor to dyads in which the mother is overindulgent. Bowlby claimed that children who are well-loved naturally protest being separated from their parents who love them. With continued parental attention and responsiveness to emotional needs, these same children later develop a strong sense of self-reliance as well as the capacity to seek support when conditions demand. Bowlby believed that excessive separation protest and anxiety over potential separation is indicative of adverse family experiences that may have included maternal rejection or threatened abandonment. Finally, Bowlby (1973) noted that a lack of protest at separation is not a sign of precocious maturity or independence, but a defense against the intense emotions resulting from disrupted attachment.

In his final presentation<sup>8</sup>, Bowlby (1980) argued against the prevailing view that, because of their inherent narcissism, children are unable to grieve the loss of a love

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<sup>8</sup> Bowlby, J. (1960) Grief and Mourning in Infancy and Early Childhood. *Psychoanalytic Study of The Child*, 15, 9-52. The contents of this paper were later subsumed by and expanded on in Bowlby's attachment trilogy: Attachment (1969/1982), Separation: Anxiety and Anger (1973), and Attachment and Loss (1980).

object. Rather, Bowlby believed that children experience grief whenever their attachment behaviours are activated by separation from their mother and that children begin the process of mourning when their mother figure continues to be unavailable. Bowlby noted that observational evidence supported the conclusion that children experiencing loss exhibit the same behaviour observed in grieving adults. In addition to (or in place of) verbalizing their longing for the lost individual, children may initially behave aggressively toward and rejecting of potential substitute caregivers. After a period of time, previously attached children begin to seek out new relationships. In the most fortuitous cases, a new mother-figure is available and children develop a new attachment. If no stable mother-figure is available, or if the child experiences a string of transient caregivers, they may reach adulthood unable to form deep and lasting bonds (Bowlby, 1980, 1988).

These presentations provided the foundation and structure for attachment theory and research. The attachment trilogy, Attachment (1969/1982), Separation (1973), and Loss (1980) represents Bowlby's foundational statement of attachment theory and remain at the core of on-going attachment research and theoretical development (Bretherton, 1991).

While Bowlby was formulating and articulating attachment theory, Mary Ainsworth was testing its central concepts.

#### *Empirical Foundations*

Ainsworth left the Taverstock clinic in late 1953. She was aware of Bowlby's interest in ethology but she wasn't wholly convinced of its relevance to the developing theory of attachment. The Ainsworths moved to Uganda where Mary acquired funding for an observational study on mother-child separation during the process of weaning (Ainsworth & Bowlby, 1991).

Ainsworth's study was longitudinal and involved the naturalistic observation of the mother and her un-weaned child in the family home for every 2 weeks for 9 months. During each visit, mothers were interviewed about how the child was cared for, and how the child was developing. Children's interactions with their mothers as well as interactions with and among other family were also observed. Ainsworth was

particularly impressed with the young children's active participation in the attachment relationship (e.g., searching behaviour and contact seeking), and their use of their mothers as a secure base from which the world could be explored (Ainsworth, 1967; Ainsworth & Bowlby, 1991).

On the basis of her observation, Ainsworth (1967; Ainsworth & Bowlby, 1991) was able to divide the children into three attachment categories: secure, insecure and not attached. Secure children cried little, except when separated from their mother, while insecure children were observed to cry frequently, regardless of their proximity to their mother. Children who appeared to have no attachment to their mother were unresponsive to her. As these were the youngest children in the sample, Ainsworth later concluded that attachment had not yet developed (Ainsworth & Bowlby, 1991). Scales to differentiate mothers on maternal sensitivity were also developed. Ainsworth found that maternal sensitivity and time spent holding the infant were correlated with infant classification. More sensitive mothers who offered close contact with their children in response to the children's attachment cues tended to have babies that cried less (i.e., were more secure; Ainsworth, 1967; Ainsworth & Bowlby, 1991). Before the data from this observational investigation were fully analyzed, the Ainsworths relocated to Baltimore, Maryland.

In 1959, Bowlby visited Baltimore. He and Ainsworth renewed their professional relationship, and Ainsworth joined the Tavistock Mother-Infant Interactions Study Group (Ainsworth & Bowlby, 1991). Ainsworth gave Bowlby a detailed description of her Uganda observations and presented some of her initial results and interpretations to the Tavistock study group in the early 1960's. Her subsequent analysis of the data was influenced by their discussions (Ainsworth, 1967; Ainsworth & Bowlby, 1991). Bowlby was similarly influenced by Ainsworth, and incorporated many of her ideas and observations into the writing of *Attachment* (Bowlby, 1969).

Also in the early 1960's, Ainsworth initiated the Baltimore study, which, relative to her Uganda study, focused more on observation than interview. In this investigation, infant-mother dyads were observed at 3-4 week intervals for 3-4 hours per visit, until the infant was 12 months old. Lengthy observations, rather than more frequent

observations, were employed on the assumption that they were more likely to elicit the mothers' natural behaviour during her normal routine. Home visitors hired to make these observations were alerted to pay special attention to behaviours identified as relevant to attachment, and to note the circumstances in which they occurred (Ainsworth & Bowlby, 1991). Although interested in these discrete behaviours, Ainsworth also wanted to discern patterns of attachment behaviour. This required that she refine her techniques for classifying mothers and infants, and thus the 'Strange Situation' procedure was born (Ainsworth et al., 1978; Ainsworth & Bowlby, 1991). Using this paradigm, children were observed in an unfamiliar environment under conditions of high and low stress, intended to activate and deactivate the attachment system (Ainsworth et al., 1978).

Data analysis of the Baltimore study was heavily influenced by Ainsworth's own understanding and ideas about Bowlby's attachment theory and Blatz's security theory, and the results confirmed many of Ainsworth's predictions about exploration and attachment. She observed that babies were more interested in exploration and play when they were alone in the lab with their mother. Play and exploration were restricted when a stranger entered the lab, and when the mother was absent (Ainsworth & Bell, 1970). Infants, it seemed, were using their mother as a 'secure base' from which to safely explore. The concept of an attachment figure serving as a secure base is now a central feature of attachment theory.

Ainsworth was also intrigued by the variety of responses to the mother's return to the laboratory following her short departure. One group of children sought the proximity of their returning mother and initiated contact. A second group appeared angry after the separation. These children cried and wanted to be close to their mothers, but were unable to settle when picked up. A third group searched for their missing mother while she was gone, but avoided or snubbed her upon her return (Ainsworth & Bell, 1970). Ainsworth further observed that these patterns corresponded to those documented by Robertson during his observations of children reunited with their parents following separations of various lengths (Ainsworth & Bell, 1970). Based on these observations, Ainsworth further refined her earlier categorization scheme (Ainsworth,

1967) and proposed the existence of attachment classifications corresponding to children's attachment behaviour: secure, insecure-ambivalent and insecure-avoidant. Further subcategories of each classification were later delineated to better capture children's behaviour across all Strange Situation episodes (Ainsworth & Bell, 1970; Ainsworth et al., 1978). The Baltimore study generated several papers, all of which described striking differences between levels of maternal sensitivity and related infant behaviour.

Following the publication of *Patterns of Attachment* (Ainsworth et al., 1970), which integrated the results of the Baltimore study and other research that demonstrated links between attachment classification and behaviour in infancy and early childhood, the attachment classification system began to engender serious interest among child development researchers (Ainsworth & Bowlby, 1991; Bretherton, 1991). Ainsworth's work, in conjunction with Bowlby's trilogy of attachment, established attachment as a significant and influential area of theorizing and investigation.

### *Fundamentals of Attachment Theory*

#### *The Biological and Evolutionary Foundations of Attachment*

Prior to Bowlby's work, the most prominent theories of the strong and enduring bond between a child and his/her mother were secondary-drive theories. Secondary-drive theory postulates that a child's tie to his/her mother is based on the satisfaction of physiological needs, particularly the need for food (Bowlby, 1958). According to psychoanalytic theory, infants derive pleasure from being fed, and it is in the satisfaction of this drive that they begin to associate the provider (typically the mother) with this feeling of pleasure. Subsequently, a bond develops based on this pleasurable association (Bowlby, 1958; 1982).

Evidence from animal studies and studies of institutionalized children led Bowlby (1958, 1982) to reject the secondary-drive theory. Lorenz (1935, as cited in Bowlby, 1982) for example, presented evidence that goslings bond with their mother despite the fact that they procure their own food and, as described earlier, Harlow & Zimmerman (1959) observed that infant monkeys bonded to a warm cloth surrogate even though it was a wire surrogate that provided food. Although Bowlby

acknowledged that “Man is neither a monkey nor a white rat, let alone a canary or a cichlid fish”, he also recognized that commonalities exist and that theories of human development are informed by the work of comparative psychology and biology (Bowlby, 1982, pg. 7). Observers in residential nurseries and orphanages also noted that children ‘failed to thrive’ and did not develop appropriate social behaviour despite an ample supply of food. Finally, comparative research and research on human infants demonstrated that attachment persisted despite failure by the attachment figures to adequately provide basic necessities (Bowlby, 1982; 1988). Based on this type of evidence and his own observations of mothers interacting with their children, Bowlby suggested that it is a biologically based desire for proximity and not pleasure derived from satisfaction of physiological needs that underlies the bond between infant and mother (Bowlby, 1982).

Attachment theory has its roots in the study of human evolution and biology. Bowlby (1982) argued that for humans to have survived despite an extended period of vulnerability in infancy, the species must be endowed with a behavioral system that ensures proximity between parents and their offspring. Proximity to an adult is beneficial because it confers a greater degree of safety on the immature organism and facilitates the transmission of survival relevant information. Proximity therefore, increases the likelihood that offspring will survive their period of immaturity and successfully reproduce.

Bowlby (1982) characterized proximity-seeking as the goal of a behavioural system shaped by populations of individuals interacting with their environment across time (i.e., evolution). That is, a differential survival rate between offspring seeking proximity and those who did not would increase proximity-seeking behaviour in the population and eventually, this behaviour would become characteristic of the majority of individuals within the population. Bowlby (1973, 1982) also placed great emphasis on access to the attachment figure (i.e. potential proximity), which may replace actual physical proximity as the goal of the attachment system in later childhood and adulthood.

*Control systems and attachment behaviour.*

Bowlby (1973) proposed control systems theory as an alternative to Freud's secondary drive theory. According to Bowlby, biological behaviour control systems, of which attachment is only one of several, are analogous to homeostatic physiological systems such as those that regulate blood pressure and body temperature. In the case of body temperature, for example, the control system has the 'set-goal' of a body temperature of 37 degrees Celsius<sup>9</sup>. The sensory system provides continuous feedback about external environmental and internal physiological conditions and when a change in body temperature is detected, the homeostatic temperature control system is activated and physiological processes engage (e.g., shivering or sweating), to return body temperature to normal.

Unlike physiological control systems, homeostasis in behavioural systems is maintained by behavioural processes rather than physiological ones (Bowlby, 1982). Bowlby referred to this as "environmental homeostasis" (Bowlby, 1982, pg. 372). Behavioural control systems are genetically inherited and involve constellations of instinctual behaviours that work together in a goal directed way. Behavioural systems are inherently flexible and adapt (within limits) according to feedback from internal processes and/or external processes (e.g., the environment; Bowlby, 1982).

According to attachment theory, the attachment system is comprised of a set of behaviours coordinated to achieve the adaptive goal of proximity to a caregiver (Bowlby, 1982; 1988; Ainsworth, 1969). The attachment behaviour system must also work to balance the set-goal of proximity (with all its survival benefits) with exploratory behaviour and the development of independence (Waters & Deane, 1985).

The human infant is born with several instinctual behaviours such as crying, clinging, and smiling (Bowlby, 1958, 1982). According to attachment theory, these behaviours are attachment behaviours which become organized and focused on a specific caregiver sometime in the second half of a child's first year (Ainsworth, 1969; Bowlby, 1958, 1982). As children explore their environment, they monitor their

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<sup>9</sup> This value varies slightly from individual to individual, as does the 'set-goal' of attachment behaviour.

proximity and access to their attachment figure. If, at some point, the distance between themselves and their caregiver becomes too great and they are unsure if proximity can be quickly and easily regained, their attachment system is activated. This activation results in the display of behaviours (e.g., crying, following, etc.) aimed at regaining proximity or access to the attachment figure. Attachment behaviour is terminated when access or proximity is reestablished and no further separation is anticipated (Ainsworth et al., 1978). The distance or length of separation tolerable before the attachment system is activated varies across individuals (Cassidy, 1999). However, it is generally agreed that the threshold for attachment system activation is lowered by novel situations, fright, illness and stress (Ainsworth et al., 1978; Bowlby, 1982, 1988; Weiss, 1991).

In conceptualizing attachment as an innate behavioural system, Bowlby (1973) provided a theory of human development that explained the nature and purpose of the bond between very young children and their primary caregivers. Furthermore, his theory lent itself to empirical investigation, and research has validated it as an accurate predictor of children's behaviour (e.g., proximity-seeking, environmental awareness, and exploratory behaviour). The multitude of investigations generated following the presentation of attachment theory has ensured the theory's longevity and evolution. Finally, Bowlby achieved his aim of understanding child development in terms of children's lived experiences rather than through the postulation of intra-psychic events and drive reduction.

### *The Attachment Bond*

At the heart of attachment theory is the attachment bond. In the period of infancy and early childhood, the term 'attachment bond' refers to the powerful and enduring tie a child develops to his/her mother or primary caregiver<sup>10</sup>. More generally, an attachment bond is the bond of affection one individual has for another clearly

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<sup>10</sup> Attachment research initially focused on the relationship between infants and their mothers. The term 'primary caregiver' recognizes that infants form attachment relationships to the individuals who take primary responsibility for their care, and that this individual may or may not be their mother. In this text, the terms 'mother' and 'primary caregiver' are used interchangeably.

specified individual who is perceived to be stronger, wiser and better able to cope with life's demands (Ainsworth 1969; Bowlby, 1982). Healthy attachment bonds are characterized by trust and affection and result in the attached individual developing strong, stable feelings of security. It is important, however, to remember that while bonding is an important manifestation of attachment, attachment is essentially a property of individuals, and not of the relationships in which they participate in (Bowlby, 1982, 1988).

One fundamental characteristic of the attachment bond is the attached individual's desire to maintain proximity and/or access to the attachment figure (Ainsworth 1969; Bowlby, 1982). As noted earlier, *proximity maintenance* is the 'set-goal' of the attachment behaviour system, which evolved through environmental adaptation (Bowlby, 1982). Actual proximity is critically important in infancy and early childhood, when the physical presence of, or physical contact with, the mother is required to establish, maintain, or reestablish a child's sense of security. In later years, (middle childhood, adolescents, and adulthood), confidence in the easy accessibility of the attachment figure replaces the need for physical proximity in many (but not all) situations (Kobak, 1999). Proximity-seeking behaviors, including checking the attachment figure's accessibility, intensify under novel, threatening, or stressful conditions and when the attached individual is tired, scared, ill, or injured (Ainsworth 1969, 1970; Bowlby, 1958, 1982).

A successful outcome of proximity-seeking (i.e., felt security) further depends on the attachment figure's consistent and sensitive responsiveness to the attachment behavior and the willingness and ability of this individual to provide appropriate care behaviors (Ainsworth et al., 1978; Bowlby, 1973). In other words, the attachment figure must act as a *secure base* (Ainsworth, 1969; Ainsworth & Bell, 1970; Bowlby 1982). Acting as a secure base means providing children with a 'safe haven' from which they can begin to master an unknown and largely unpredictable environment, and to which they can return in times of need. Having a secure base allows children to relax their vigilance on proximity and access, and focus on exploration and play (Waters & Cummings, 2000). Effective secure base behaviour and appropriate maternal response

also assists children in developing the emotional self-regulation required to participate in other social relationships (Robbins, 2001). In time, the child's experiences with the attachment figure as a secure base will be transformed into the internal working model that will guide behaviour and expectations in future relationships (Bowlby, 1982).

When proximity or access is threatened, children respond with separation protest. Separation protest refers to the onset of signaling behaviours such as smiling and crying and approach behaviours such as following (Ainsworth, 1969, Bowlby, 1973, 1980, 1982). In these ways, children attempt to maintain proximity by drawing their primary caregivers to them, preventing them from leaving, or preventing the separation by following them.

Attachment figure specificity is also characteristic of the attachment bond. In early life, infants do not discriminate among caregivers or even between caregivers and strangers. However between six and twelve months of age, children begin to restrict and direct their attachment behavior to one specific caregiver (Ainsworth, 1969; Ainsworth et al., 1978; Bowlby, 1982). Usually, the attachment figure is the individual who is primarily responsible for care provision. Of course, children form other attachments to significant individuals in their lives and research suggests that the security of the primary attachment affects a child's ability to form these secondary attachments (Ainsworth, 1991; Weiss, 1991; Wood, Emmerson & Cowan, 2004). However, it is the primary attachment figure that the child seeks proximity to, uses as a secure base and protests separation from. In times of crisis, attempts to substitute another individual, even a secondary attachment figure with whom the child is very familiar, may be met with resistance and rejection (Bowlby, 1973, 1980, 1982).

Once formed, attachment bonds are remarkably persistent. Attachment behavior does not lessen as a function of habituation. In fact, attachment behavior is more reliably elicited in well established relationships. The attachment bond also persists in the absence of reinforcement (Bowlby, 1973, 1980, 1982, 1988; Weiss, 1991).

The attachment bond also appears to be inaccessible to conscious control and insensitive to actual experience with the attachment figure. Even when an individual recognizes the permanent loss of an attachment figure, as in death, attachment feelings

and behaviors persists (Bowlby 1973, 1980; 1982, 1988). Individuals also continue to protest the inaccessibility of their attachment figure when caring and reliable alternatives are available. The attachment bond also persists in the face of rejection, neglect and/or abuse by the attachment figure (Hopkins, 1993). This may help explain strong and persistent protests often observed in children removed from an abusive parent. While their attachment feelings may be conflicted and associated with negative emotions such as anger and fear, security remains linked to the proximity of the attachment figure, especially under conditions of threat (Bowlby, 1988).

### *Working Models*

One of the fundamental tenets of attachment theory is that a child's earliest relationship experiences profoundly influence all future close relationships. Bowlby (1982) proposed the concept of an 'internal working model' as the mechanism by which early attachment experiences exert their effect.

Once the attachment system begins to function and focus on a specific attachment figure, children begin to construct a cognitive representation (i.e., an internal working model) of this relationship and its external context. These developing representations are constructed through interaction with the attachment figure over time and come to specify an individual's model of 'self' and 'others' in close relationships. An individual's model of 'self' is a reflection of their attachment figure's judgment of them as communicated through behaviour and language. Similarly the model of others is based on the verbal and non-verbal behaviour of the attachment figure (Bowlby, 1982).

Individuals who experience consistent, responsive and caring behaviour from their attachment figure come to believe they are valuable and that others are trustworthy and dependable. Consequently, these individuals are likely to seek support when they require it and behave in a manner that elicits this support (Bowlby, 1973; Bretherton & Mulholand, 1999). Individuals who did not experience sensitive caregiving in early relationships may have lower self-esteem and lower expectations about the availability and dependability of others. Anticipating less support from others, such individuals may behave in a distrusting or hostile manner that deters caring behaviour in others.

This, in turn, reinforces the belief that they are not worth loving (Bowlby, 1973; Bretherton & Mulholand, 1999). Thus, the internalization of relationship information and the development of an internal working model becomes the filter through which attachment relevant information is perceived, processed, and organized. The internal working model guides an individual's expectations in close relationships, his/her predictions about the behaviour of others, and allows for the development of a plan to meet his/her attachment needs (Bowlby, 1973; 1988).

Working models are somewhat contradictory in that they are both stable and flexible. Working models are continually updated and revised as new relationship experiences are accumulated. To explain this process, Bowlby (1973) borrowed the Piagetian concepts of assimilation and accommodation. Assimilation is the process by which new information is incorporated into pre-existing frameworks without substantially changing them. Accommodation, by contrast, is the substantial alteration of internal frameworks in order to account for newly acquired information. Thus, occasional aberrations in caregiver behaviour are unlikely to undermine established working models. However, a dramatic and/or persistent change in the behaviour of the attachment figure will result in a reconstruction of the attached individual's internal working model (Bowlby, 1973, 1982, 1988; Bretherton & Mulholand, 1999).

#### *Attachment Style*

Attachment style is a descriptive classification that theoretically reflects an individual's internal working model. Using children's response to the Strange Situation, Ainsworth initially identified the secure (group B), insecure-avoidant (group A), and insecure-anxious/ambivalent (group C) attachment styles (Ainsworth, et al., 1978). However, as research in the area progressed, a number of researchers noted that a small but significant proportion of children could not be placed in one of these major categories (Main, 1990; Main, & Hesse, 1990; Main, & Solomon, 1990). The attachment behaviour of these children was unusual and unpredictable and did not appear to have any underlying organization. This group (group D) was labeled as having a disorganized/disoriented attachment style (Main, 1990; Main, & Hesse, 1990; Main, & Solomon, 1990).

*Secure Attachment Style*

In the Strange Situation procedure, secure children are actively interested in exploring the environment and investigating the available toys. These children are distressed by their mothers' departure and show signs of missing her. Proximity is sought upon her return, but the children can be soothed and can soon resume play. Ainsworth associated secure attachment with high maternal sensitivity to the child's communications (Ainsworth et al., 1978).

The secure attachment style has been associated with a variety of healthy behaviours throughout development. Secure attachment appears to foster the development of empathy, conscience, self-reliance and social competence. Relative to insecure children, secure children have higher self-esteem, better emotional health, a more positive affect and appear better able to cope with stress, fear and worry (Kestenbaum, Farber & Sroufe, 1989; Kobak & Sceery, 1988; Robbins, 2001). Secure children have a more balanced perspective and are able to assign both positive and negative characteristics to themselves and others (Verschueren, Marcoen, & Schoefs, 1996). Secure children also have a better understanding of and tolerance for negative emotions (Laible & Thompson, 1998).

Caregivers of securely attached children are sensitive and responsive to attachment behaviour and they provide prompt and appropriate responses. However, they are not so over-attentive that the child is never allowed to be angry or distressed (Ainsworth et al., 1978). These caregivers are flexible and adapt to their infant's demands rather than enforce a strict schedule. Caregivers of secure children are interested in the child's feelings and perspective and generally convey a feeling of love and acceptance toward them (Magid & McKelvey, 1987).

*Avoidant Attachment Style*

In the Strange Situation procedure, insecure-avoidant children focus their attention on the toys and seem to be uninterested in their mother. However, they do not seem to have the same relaxed interest of the secure child. These children demonstrated minimal disturbance when separated from their mother, and tended to ignore or avoid

her upon her return. This attachment pattern was related to caregiver insensitivity and rejection of the child's attachment behaviours (Ainsworth et al., 1978).

In an attempt to avoid rejection, insecure-avoidant children may try to be precociously independent and self-sufficient (Bowlby, 1988). These children have poor self-esteem and may believe themselves to be repulsive and untouchable (Hopkins, 1990). Avoidant children may appear hostile to others, display poor social behaviour and fail to develop age appropriate relationships. These children may also show out-of-context or exaggerated anger responses and more than normal disobedience (Hopkins, 1990). Research also suggests that many avoidant children appear oblivious to pain and do not seek comfort from their caregivers (Hopkins, 1990). These children are indiscriminately and inappropriately friendly to strangers and are at risk for developing phobias and other psychiatric problems (Hopkins, 1990).

Caregivers of insecure-avoidant children generally avoid physical contact and rebuff attachment behaviour. These caregivers tend to perceive their child's demand as conflicting with their own. In general, these caregivers convey a sense of rejection to the child (Hopkins, 1990).

#### *Anxious/Ambivalent Attachment Style*

In the Strange Situation procedure, insecure-anxious/ambivalent children appear preoccupied with their mother's availability. They are highly distressed upon separation from their mother, are not easily settled once she has returned and are unable to return to play. Following the reunion, these children often express anger toward their mother. This attachment pattern was also associated with caregiver insensitivity to infant cues, but was additionally associated with unpredictability of maternal response (Ainsworth et al., 1978).

Insecure-anxious/ambivalent children may appear overly-dependant, immature, possessive and spoiled (Garelli, 2002). These children also have difficulty regulating their emotions. Anxious/ambivalent children tend to have an exaggerated attachment response and may exhibit attachment behaviours in situations that do not warrant them or react more strongly than seems appropriate (Sroufe, Carlson, Levy, & Egeland,

1999). The anxious/ambivalent attachment style has been associated with behavioural and emotional problems (Warren, Huston, Egeland, & Sroufe, 1997).

Caregivers of insecure-anxious/ambivalent children tend to be unpredictable with regard to their response to the child's attachment behaviours. These individuals may only sporadically monitor the child's attachment behaviours and respond tardily and/or inappropriately, or fail to respond at all (Bowlby, 1988). At other times, the caregiver may be intrusive and over-controlling (Robbins, 2001).

#### *Disorganized/Disoriented Attachment Style*

In the Strange Situation procedure disorganized/disoriented children exhibit no consistent pattern of behaviour and their behaviour was often contradictory. These children would appear anxious/ambivalent at one point and avoidant at another. In addition, these children exhibited unusual behaviours such as 'freezing' at which time they appeared extremely conflicted and unable to discern a course of action (Main, 1990; Waters & Valenzuela, 1999). The disorganized attachment pattern is distinctly different from the three previously described 'organized' attachment styles.

Disorganized attachment may result from extreme stress or conflict in the child's environment. Stress and conflict are hypothesized to disrupt the child's ability to organize attachment behaviour and to lower the threshold for attachment behaviour activation (Waters & Valenzuela, 1999). A low threshold for activation might result in the child being unable to discriminate situations that require an attachment response from those that do not.

Another hypothesized etiology of disorganized attachment is the 'frightened or frightening maternal behaviour' hypothesis (Main & Hesse, 1990). In this conceptualization, fear is at the core of disorganized attachment. When attachment figures behave in frightening and/or unpredictable way activation of the attachment system produces a conflict. Fear signals the child to move away from the fear inducing stimulus, while the attachment system prompts them to seek proximity to their (frightening) attachment figure. As a result, behaviour is disrupted. Children with this pattern of attachment may also appear apprehensive of their attachment figure even while seeking reassurance (Main & Hesse, 1990).

*The Development of Attachment*

Bowlby (1982) initially identified four phases of attachment development. There are no sharp boundaries between phases, and movement through the phases may be disrupted by unfavorable environmental conditions. The first phase encompasses the first eight to twelve weeks of life. During this phase, babies display behaviours such as crying, sucking, rooting, and orienting. Closer to the end of this period, babies begin to display pro-social behaviours such as smiling and cooing. These behaviours serve the purpose of drawing the caregiver to the infant and increasing the time the caregiver spends in close proximity. Behaviour during this phase is not directed toward any specific person, as the infant's ability to distinguish one person from another is extremely limited (Bowlby, 1969).

In the second phase, social behaviour intensifies and the infant responds to most people in a 'friendly' way (i.e., smiling). However, it is during this phase that infants begin to discriminate their mother (or primary caregiver) from other adults and direct more social behaviour toward her (Bowlby, 1982). Attachment behaviour becomes increasingly complex and the infant begins to initiate more attachment interactions (Bowlby, 1982; Marvin, & Britner, 1999). This phase usually lasts until the infant's sixth month.

Beginning between month six and nine, infants' move into phase three and begin to consolidate their attachment behaviour and show an obvious preference for a specific individual (usually their mother). Additionally, their repertoire of behaviour for demonstrating this preference has also expanded. Many infants of this age are able to follow their mothers if she departs and most will greet her upon her return (Bowlby, 1969). Although mother is preferred, secondary attachment figures to whom the infant responds favorably are also selected. During this period indiscriminate responding is expected to cease. Strangers are treated with increasing caution and infants' may display alarm or withdrawal behaviour in response to their presence (Bowlby, 1982). Also during this period, the attachment system begins to function in a goal-directed, feedback-correcting manner. Infants seek to maintain proximity to their mothers and may even be able to use their working model to predict her behaviour. However, the

concept of their mother as an autonomous agent with set-goals of her own is still undeveloped (Bowlby, 1982). Children continue to develop through this stage until they are about 3 years old.

In the fourth stage of attachment development, children begin to recognize factors that influence their mother's behaviour and can infer information about her set-goals. In line with their cognitive development and dramatic language development, children are acquiring insight into their mother's motives and empathy for her feelings and are in a better position to communicate their needs and reciprocate affection. Furthermore, as the "goal-directed partnership" emerges, children are able to inhibit or modify their attachment behaviour to accommodate their mother's goals (Bowlby, 1982, p. 267). Also in this stage, children develop the cognitive capacity to recognize the causal relationship between the goals of their caregiver and the caregiver's behaviour. This enables children to engage in negotiations with their attachment figure regarding a shared plan for maintaining proximity and access (Bowlby, 1982; Marvin & Britner, 1999).

Although the establishment of a goal-directed partnership represents the final stage of attachment development, Bowlby argued that the attachment behavioural system continues to undergo significant changes throughout the lifespan (Bowlby, 1982). As children acquire additional experience with close relationships, attachment behaviour becomes more sophisticated and abstract. Also, elaboration of the activating and terminating conditions within the attachment behavioural system and the development of the relationship between the attachment system and other behavioural systems remains an on-going process (Marvin & Britner, 1999). One of the most important developments in the attachment behavioural system that occurs as children mature is the change in attachment figure choice. As they accumulate more experience interacting and developing relationships with adults other than their parents and with same-age peers, children increasingly use these individuals as attachment figures (Marvin & Britner, 1999). Although the attachment to parents remains important (usually this is a life-long bond), the focus of attachment behaviour is gradually shifted

to peers in adolescence and to a romantic partner in adulthood (Ainsworth, 1991; Marvin & Britner, 1999).

### Adult Attachment and Close Relationships

Although initial empirical work and theoretical speculation in the area of attachment focused on the periods of infancy and early childhood, Bowlby (1979) conceptualized attachment as a 'cradle to grave' phenomenon (p.179). Hazen and Shaver (1987) observed that the bonds of love described in the context of research on adult romantic relationships were strikingly similar to those infants form to their primary caregiver and were among the first to postulate that romantic love could be understood as an attachment process.

In their review of the literature on romantic love, Hazan and Shaver (1987) encountered a myriad of often-contradictory results and no single conceptual framework with which to interpret them. For example, although researchers treated love as a unidimensional construct, and assumed that the underlying dynamics remained consistent across individuals, experimental observation suggested that love takes multiple forms. At minimum, there appeared to be healthy and unhealthy forms of love (Hazan & Shaver, 1987), but no theory was available to explain how and why these different forms developed. Furthermore, no framework existed that included both positive (e.g. caring) and negative (e.g. jealousy) aspects of love and explained their interactions. Hazan and Shaver (1987) suggested several reasons why attachment theory might provide the framework required to satisfactorily encompass and explain existing data.

Firstly, they argued that attachment theory assumes that different forms of love develop from the same underlying dynamic due to individual social experience (Hazan & Shaver, 1987). Secondly, attachment theory recognizes the existence of both healthy and unhealthy forms of love and explains how each form develops in response to specific situations. Thirdly, attachment theory provides a context for understanding separation and loss and their relationship to love. Finally, Hazan and Shaver (1987)

argued that attachment theory places adult romantic love on the continuum of human social development, which is understandable in an evolutionary context. Through the lens of attachment theory, different relationship styles are recognized as the result of adaptation to previous social experiences.

#### *Conceptualizing Love as an Attachment Process*

In order to explore the potential utility of attachment theory for the domain of adult romantic relationships, Hazan and Shaver (1987) generated several hypotheses that could be empirically tested. These hypotheses were derived by applying, as literally as possible, the theoretical ideas and research findings of Bowlby and Ainsworth.

Based on previous research with infants, Hazan and Shaver (1987) predicted that roughly 60% of adults would classify themselves as secure. The remaining 40% were expected to split fairly evenly into the insecure categories of avoidant and anxious/ambivalent. They predicted that trust, friendship, and positive emotions would characterize the most important love relationships of secure individuals. Secure individuals were expected to have confidence in themselves as likable, report that others are trustworthy, and report believing in the existence of enduring love. Finally, Hazan and Shaver (1987) predicted that secure individuals would report remembering their mother as dependable and caring.

Hazan and Shaver (1987) predicted that for insecure individuals of the avoidant type, love experiences would be marked with a fear of closeness and lack of trust. Avoidant individuals were expected to doubt the durability of love and report that their happiness does not depend on the availability of a love partner. Vulnerability to loneliness was predicted to be higher in avoidant individuals than in secure individuals but lower than in anxious/ambivalent individuals. This prediction was based on the reasoning that while avoidant individuals may feel loneliness to a degree comparable to anxious/ambivalent individuals, avoidant type people would attempt to ignore or deny this feeling in order to maintain their belief that they do not require the love of a partner.

Finally, avoidant individuals were expected to remember their mothers as cold and rejecting (Hazan & Shaver, 1987).

Insecure individuals in the anxious/ambivalent category were expected to describe their experience of love as a preoccupying struggle; a painful yet exciting attempt to merge with another (Hazan & Shaver, 1987). It was predicted that the anxious/ambivalent individuals would report falling in love frequently but being unable to find ‘true love’. These individuals would also be expected to exhibit more doubt about themselves as desirable romantic partners. When reporting their memories of their mothers, anxious/ambivalent individuals were predicted to remember a mix of positive and negative experiences. Anxious/ambivalent individuals were expected to be the most vulnerable to loneliness relative to individuals with one of the other attachment styles (Hazan & Shaver, 1987).

In order to test their hypotheses, Hazan and Shaver (1987) developed the first measure of adult attachment (see Table 3.1). The measure was derived by translating the descriptions Ainsworth et al. (1978) provided of the three infant attachment styles into language appropriate to adult love. Individuals were expected to read each of the three descriptions and to endorse the description that most closely described their most important love relationship. This measure, along with questions tapping love experiences, working models of love relationships, and attachment history were published as a ‘love quiz’ in a newspaper. In total, 1200 people completed the quiz and returned their responses. Early analysis indicated that results were stable after the first few hundred replies, so data entry was terminated after the first 620 questionnaires. Of these first questionnaires, 205 were from men and 415 were from women. Participants ranged in age from 14 years to 82 years; 91% reported primarily heterosexual relationships and 42% were married (Hazan & Shaver, 1987).

Data analysis revealed that, as predicted, 56% of the respondents classified themselves as secure. Twenty-five percent classified themselves as avoidant. The anxious/ambivalent category was endorsed by 19% of participants. Also, in accordance

with their hypothesis, the most important love experience of individuals who self-classified as secure was described as trusting, friendly and happy. Secure individuals reported being able to accept and support their partners, while overlooking their partners' faults. The marriages of secure individuals lasted longer, and proportionally fewer individuals in this category were divorced. Secure individuals believed that while it waxed and waned in intensity, love endured. In comparison with individuals who endorsed an insecure attachment description, secure individuals were more likely to report that they remembered having a caring relationship with both parents and that their parents had a warm relationship with each other (Hazan & Shaver, 1987).

Table 3.1

*The Hazan and Shaver (1987), Adult Attachment Types*

Attachment style	Descriptive Paragraph
Secure	I find it relatively easy to get close to others and am comfortable depending on them and having them depend on me. I don't often worry about being abandoned or about someone getting too close to me.
Avoidant	I am somewhat uncomfortable being close to others; I find it difficult to trust them completely, difficult to allow myself to depend on them. I am nervous when anyone gets too close, and often, love partners want me to be more intimate than I feel comfortable being.
Anxious/ambivalent	I find that others are reluctant to get as close as I would like. I often worry that my partner does not really love me or won't want to stay with me. I want to merge completely with another person, and this desire sometimes scares people away.

Adapted from Hazan and Shaver (1987).

Avoidant individuals exhibited a fear of intimacy and described love experiences fraught with extreme emotional variability and jealousy. These participants indicated

that the notion of romantic love popularized by movies does not exist, intense feelings of love seldom last, and finding someone to ‘really fall in love with’ is rare. Avoidant individuals typically reported remembering their mothers as cold and rejecting (Hazan & Shaver, 1987).

The love experiences of anxious/ambivalent individuals were characterized by obsession with their partner, intense sexual attraction, strong desire for reciprocation of love, intense jealousy and emotional variability. In general, these individuals claimed to fall in love easily, but indicated ‘true love’ was hard to find. Like secure individuals, anxious/ambivalent participants tended to acknowledge that romantic feelings wax and wane over the course of a relationship. Anxious/ambivalent individuals typically reported remembering their mothers positively, but tended to describe their fathers as unfair (Hazan & Shaver, 1987).

In general, individuals in all three attachment categories agreed on the core experiences that define romantic love. It was the relative value given to each experience that discriminated individuals endorsing one attachment style from individuals in other categories. For example, secure individuals emphasized happiness, friendship and trust while insecure individuals emphasized happiness, sexual attraction, and a desire for reciprocation. Emphasis on acceptance differentiated avoidant types from secure and anxious/ambivalent individuals, while emphasis on obsessive preoccupation differentiated anxious/ambivalent individuals from respondents with either a secure or avoidant attachment style (Hazan & Shaver, 1987).

The results of this investigation provided support for Hazan and Shaver’s (1987) proposition that adult romantic love is an attachment process. However, their initial study had limitations that must be considered when weighing the importance of their findings. Due to space limitations, participants were asked about only one romantic relationship, and when assessing respondents’ internal working model of attachment, only their representation of ‘other’ was evaluated. Again, due to space limitations the relationship between attachment style and loneliness was not adequately addressed.

Hazan and Shaver (1987) conducted a second study to address these limitations and to provide a conceptual replication of their first investigation.

Participants in study two were 108 university students; 38 men and 70 women. These participants completed the same measures as participants in the initial study with the addition of a measure of their internal working model of ‘self’ in close relationships and a measure of loneliness (Hazan & Shaver, 1987).

The prevalence rates of each attachment style in the second study were found to replicate those observed in study one; 56% of participants were classified as secure, 23% as avoidant, and 20% as anxious/ambivalent. When asked to describe their experiences of love, the same attachment-specific patterns of responding were observed, although significance was not always achieved in between-group comparisons, due to the smaller sample in the second study (Hazan & Shaver, 1987).

Once again, love, as experienced by secure individuals, was characterized by happiness, trust and friendship (Hazan & Shaver, 1987). Avoidant individuals reported a fear of closeness and anxious/ambivalent individuals reported love experiences marked by jealousy, desire for reciprocation and emotional variability. The questions that were included to assess the relationship between attachment style and the internal working model of self revealed that secure individuals generally reported being easy to get to know, and liked by most people. They also believed in the good heartedness and good intentions of others. Anxious/ambivalent individuals reported having more self-doubts and believed that they were misunderstood and under appreciated by others. They also reported that other people were not as willing to commit to a relationship as they themselves were. Avoidant individuals’ responses fell in between the responses of secure and anxious/ambivalent individuals. Although the result was non-significant, more avoidant individuals reported that they could get along fine by themselves, relative to the other two attachment styles (Hazan & Shaver, 1987).

The attachment history reported by secure and anxious/ambivalent individuals replicated the results found in study one. However, avoidant individuals were more

similar to secure individuals in study two. In this investigation, avoidant participants were more likely to remember positive traits in their parents and to report that their parents had a good relationship. In addition to positive traits, avoidant individuals also reported memories of their parents as critical, disinterested and rejecting. Hazan and Shaver (1987) hypothesized that the positive memories recalled by avoidant individuals in study two were the result of defensiveness; idealization of this important prior relationship to avoid negative feelings. This was presumed to be an immature response that decreased with age. Hazan and Shaver reexamined the data from study one participants of similar age to study two participants and found a similar pattern of responses for avoidant participants, thus supporting their explanation.

Also in line with predictions, anxious/ambivalent participants reported experiencing the most loneliness, while secure participants reported experiencing the least. Again, avoidant individuals fell in between the high and low points set by the anxious/ambivalent and secure individuals (Hazan & Shaver, 1987).

The results found in study one and study two, and the consistency of the data across studies, provided compelling evidence that attachment theory is applicable to love relationships in adulthood (Hazan & Shaver, 1987). As predicted, individuals self-classified into the three attachment styles in roughly the same proportions as are observed in infants. The validity of these classifications was supported by participants' experiences in close relationships, their internal models of 'self' and 'others' in close relationships, and reported attachment history. As expected each attachment style was associated with a particular constellation of love experiences that differentiated each style from the others, while agreeing on a core set of experiences that defined romantic love. With regard to internal working models, Hazan and Shaver (1987) observed that individuals with different attachment styles held different beliefs about the nature of romantic love, their own love worthiness, and the trustworthiness and availability of others and that these beliefs fit logically with attachment orientation. Finally, as expected, adult attachment style was strongly correlated with individuals' retrospective

reports of their relationship with their parents and their parents' relationship with each other (Hazan & Shaver, 1987).

Independently, the results of study one and the results of study two, each provide strong support for attachment theory's validity as a theoretical framework for understanding close relationships in adulthood. Clearly, individuals are able to classify themselves according to attachment categories, and these categories correspond to unique love experiences, and attachment histories. The consistency of the results between the two studies simply solidifies this position. However, Hazan and Shaver's (1987) investigation was not without limitations, the most serious of which was the measure of attachment itself.

Hazan and Shaver (1987) noted that the use of a retrospective self-report measure may not have been the ideal way to classify individuals into attachment categories. Participants' memories are likely to be imperfect and responses may have been biased in self-serving and/or defensive ways. Also, the single item design of the measure required that each attachment category encompass a number of relationship variables. Reliability might be increased by describing all the important variables and allowing individual's to consider each one independently.

Another limitation acknowledged by Hazan and Shaver (1987) is that continuity between infant and adult attachment style is assumed by attachment theory. However, as their research showed, continuity is not perfect. In their investigation, the correlation between attachment history and current attachment style was stronger in younger participants. As an explanation for this finding, Hazan and Shaver suggested that throughout adulthood, individuals have the opportunity to participate in a number of close relationships (both platonic and romantic), and that as working models of self and other are adjusted to accommodate information from new experiences and on-going relationship dynamics, attachment style may also change (Hazan & Shaver, 1987).

Finally, how the attachment system is integrated with other systems affecting close relationships in adulthood needs to be specified. Love, viewed through the lens of

attachment theory, is a biological process molded by evolution to facilitate long term partnerships between sexual partners for the purpose of providing reliable care to offspring. Therefore, attachment must affect and be affected by both the sexual system and the caregiving system (Hazan & Shaver, 1987).

In their conclusion, in addition to acknowledging the limitations of their groundbreaking investigation, Hazan and Shaver (1987) identified several theoretical issues that required further clarification. They proposed that the results of future investigations aimed at providing this clarification will require modifications to attachment theory, as they translated it, because adult relationships are presumably more complex than infant-caregiver relationships, despite fundamental commonalities.

The 1987 investigation by Hazan and Shaver was seminal in establishing attachment theory as a framework for understanding adult behaviour in close relationships. From this theoretical perspective, adult romantic love is an attachment process that depends on the same biological substrates as attachment in infancy. Their work provided the impetus for future research investigating close relationships within an attachment framework.

Following the work of Hazen & Shaver (1987), researchers investigating close adult relationship consistently reported finding a relationship between attachment style and measures of the characteristics assumed to be associated with the experience of love (Feeney & Noller, 1991). The secure attachment style was found to correlate positively with the characteristics of intimacy, relationship satisfaction, and self-esteem. The avoidant attachment style was correlated with relationships reported to be less satisfying, intimate, and committed. With the exception of passion, the anxious attachment style was found to be inversely related to positive characteristics such as intimacy and commitment (Feeney & Noller, 1991).

This research also supported the position that attachment style reflects a fundamental variation across individuals in their approach to close relationships. Feeney and Noller (1990), for example, demonstrated that avoidant individuals can be

consistently differentiated from individuals with a secure attachment style by responses indicating mistrust of others and avoidance of intimacy. Similarly, individuals with an anxious/ambivalent attachment style were reported to be distinguished by their endorsement of items reflecting a need for dependence and desire for commitment (Feeney & Noller, 1990).

The work following Hazan and Shaver (1987) significantly contributed to establishing links between attachment styles and previously established characteristics of love relationships, and was generally supportive of the use of attachment concepts in the study of close relationships. However, Feeney and Noller (1991) recognized that a critical piece of data was missing; no research had been conducted to investigate the relevance of attachment concepts to individuals in close relationships.

#### *The Relevance of Attachment to Individuals in Close Relationships*

Feeney and Noller (1991) argued that although attachment style appeared to be a strong predictor of several important relationship characteristics, it is possible that participants may not have thought about the components of each style or judged them as important until prompted to do so by self-report questionnaires (Feeney & Noller, 1991). In other words, spontaneous disclosure of attachment-related concepts may not be common. If this is so, attachment style may be an experimental construct without ecological validity (Feeney & Noller, 1991).

In order to investigate the relevance of attachment concepts to adults in close relationships, Feeney and Noller (1991) conducted a study that asked participants to supply a verbal report describing their current relationship. These reports were audio taped and analyzed using content analysis. Two-weeks later, participants completed the Hazan and Shaver (1987) single item measure as part of a larger measurement package. Participants ranged in age from 17 to 30 years and had been dating their current partner for an average of 10 months (Feeney & Noller, 1991).

Analysis of the audiotapes revealed participants were making spontaneous reference to attachment constructs. Furthermore, the content of the verbal descriptions

differentiated individuals who were subsequently categorized into the secure, avoidant, or anxious/ambivalent attachment styles. Secure participants emphasized the importance of closeness and openness in romantic relationships while simultaneously valuing individual identity. Avoidant participants wanted to maintain an emotional distance from their partners, while the verbal report of anxious/ambivalent individuals were characterized by a demanding and over-involved relational style (Feeney & Noller, 1991).

Feeney and Noller (1991) concluded that the results of this investigation demonstrated the salience of attachment concepts to young adults in dating relationships. The three attachment styles appeared to reflect important differences in close relationship attitudes and behaviours, and the components of each style were spontaneously disclosed by individuals who were describing their relationship experience (Feeney & Noller, 1991).

#### *Measuring Attachment*

As described earlier in this chapter the Hazen and Shaver (1987) single item measure of attachment classifies individuals as secure, avoidant, or anxious/ambivalent according to their endorsement of one descriptive paragraph (see Table 3.1). These classifications were intended to be adult extensions of the three patterns identified in studies of infant-caregiver interactions (Brennan, Clark, & Shaver, 1997). Although useful in establishing the utility of attachment theory in the area of close adult relationships, the measure was inadequate for more detailed investigation. In an attempt to improve the measurement of adult attachment, numerous extensions and revisions of the original measure were suggested, most of which held to the three-category conceptualization (Brennan, Clark, & Shaver, 1997). Additionally, several researchers proposed alternative measures based on specific constructs such as ambivalence and compulsive self-reliance gleaned from the writings of Bowlby and Ainsworth (Brennan, Clark, & Shaver, 1997).

After reviewing several measures, using both self-report and interview styles, and attempting to integrate the measurement constructs and Bowlby's conception of internal working models, Bartholomew (1990; Bartholomew & Horowitz, 1991) proposed a 4 category, 2 dimensional model of attachment in adulthood (see Figure 3.1). This model retained the styles measured by Hazan and Shaver (1987), and added an additional avoidant attachment style; dismissing avoidance<sup>11</sup>. Underlying the four attachment styles are the bipolar dimensions of 'model of self' and 'model of other' (Bartholomew, 1990).

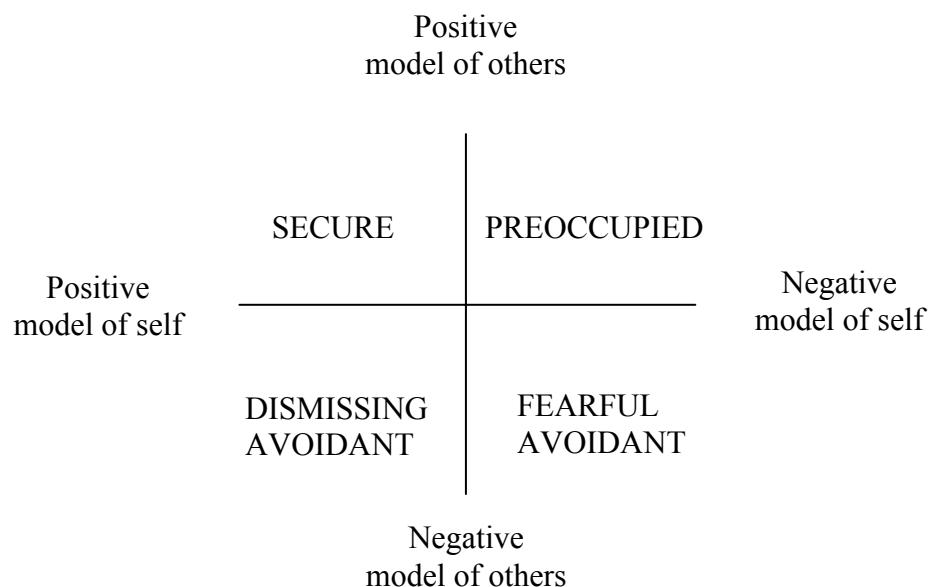


Figure 3.1. Bartholomew's (1990) four category model of adult attachment plotted on the dimensions of 'model of self' and 'model of other'.  
Adapted from Bartholomew (1990).

Continuing to refine the conceptualization and measurement of adult attachment, Brennan, Clark and Shaver, (1997), undertook an extensive review of existing attachment-related constructs and attachment measurement tools. Factor analysis of 323

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<sup>11</sup> The Anxious/ambivalent style was later reformulated as the preoccupied attachment style. See Brennan and Shaver (1995).

items from existing self-report measures revealed two essentially independent factors that corresponded to the dimensions of Avoidance and Anxiety (see Figure 3.2). These dimensions corresponded conceptually to Bartholomew's four types but were more theoretically parsimonious. Using Bartholomew's labeling scheme, securely attached individuals are not anxious about abandonment and do not avoid intimacy. Individuals with a preoccupied attachment style demonstrate anxiety regarding abandonment but do not avoid intimacy. Dismissing avoidant individuals avoid intimacy but lack anxiety about abandonment. Finally, the Fearful avoidant attachment style combines avoidance of intimacy with anxiety about abandonment (Brennan, Clark & Shaver, 1997). This two-dimensional model which conceptualizes attachment as continuous rather than categorical has become the area standard (Fraley &Shaver, 2000)<sup>12</sup>. Brennan, et. al, (1997) used the factor analysis to develop the Experiences in Close Relationship Scale (ECR). Really two independent scales combined, the ECR measures both attachment related anxiety and avoidance.

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<sup>12</sup> Whether or not attachment is best conceptualized as a dimensional or typological construct is a questions of some controversy. This topic is addressed in detail in the final section of chapter 3.

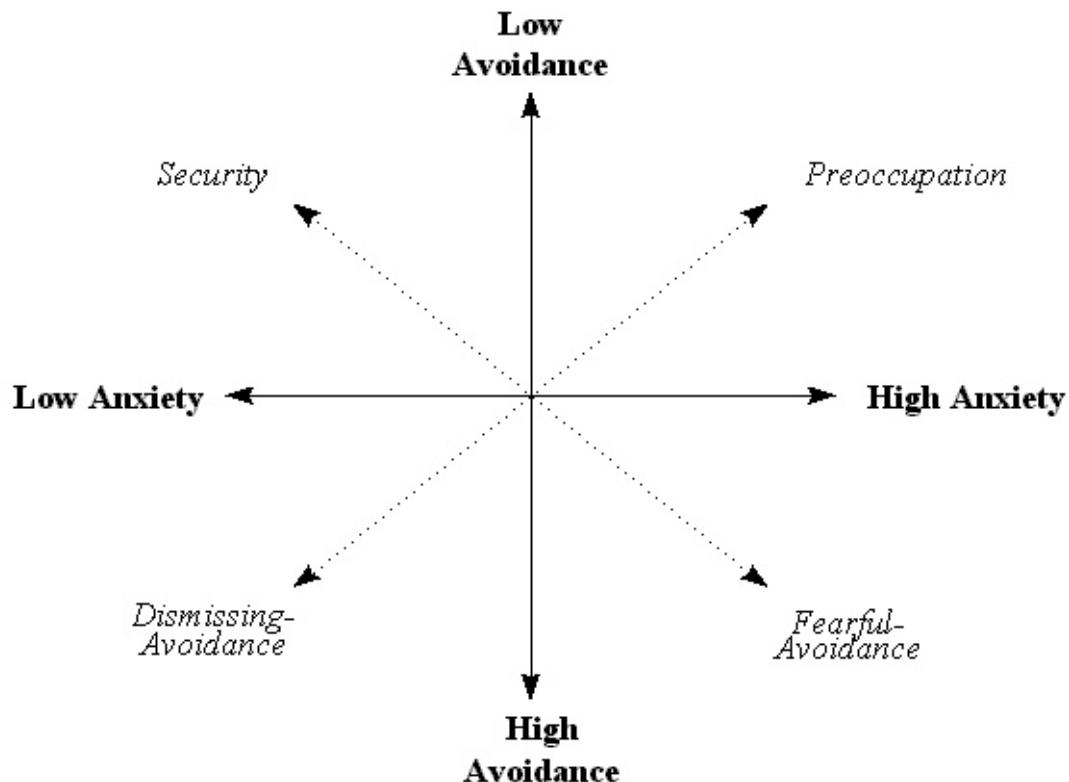


Figure 3.2. The two-dimensional model of individual differences in adult attachment.  
Source: Fraley and Shaver (2000).

#### *Attachment and Relationship Functioning*

The secure attachment style is associated with a desire for intimacy, and an appreciation of the need to maintain a balance between closeness, dependence and individual autonomy (McCarthy & Taylor, 1999). The preoccupied (or anxious/ambivalent) style is associated with an intense desire for closeness and a fear of rejection, which may lead individuals to seek extreme forms of intimacy at the expense of their autonomy (McCarthy & Taylor, 1999). The avoidant attachment style can be characterized by the need for distance in close relationships, avoidance of dependency and discomfort with intimacy (McCarthy & Taylor, 1999). Given these differences in the attitudes and behaviors associated with each attachment style, it is not surprising that

researchers have demonstrated that attachment style is correlated with relationship quality. Furthermore the differences observed between individuals with contrasting attachment styles are both theoretically meaningful and logically reasonable.

#### *Attachment and Relationship Satisfaction in Married Individuals*

Kobak and Hazen (1991) investigated the relationship between attachment and relationship functioning in a sample of 40 married couples. Each member of these couples completed the marital Q set, which has items describing attachment security and marriage functioning, the Hazan and Shaver (1987) single item attachment measure, and the Dyadic Adjustment Scale (DAS), which measures marital attitudes. The couples also participated in problem solving and communication tasks from which observers derived ratings of problem solving communication and confiding communication (Kobak & Hazen, 1991).

As predicted, Kobak and Hazen (1991) found that attachment style was correlated with marital adjustment, with secure participants reporting greater adjustment. In both men and women, secure attachment was related to having a psychologically available partner. The results of this investigation also highlighted the reciprocal nature of relationships, and the relationship between spousal behaviour and attachment style. In the problem-solving task, for example, the wives of secure husbands were observed to be less rejecting and more supportive. By contrast, insecure husbands reported their wives to be psychologically unavailable, and their wives were observed to be more rejecting and less supportive of their spouse during problem solving (Kobak & Hazen, 1991). In the confiding task, the husbands of secure wives were observed to be better listeners.

In addition to concluding that attachment style is a significant predictor of marital adjustment, Kobak and Hazen (1991) also suggested that individuals with a secure attachment style may enjoy more successful marriages, because they are more flexible, and better able to adjust and accommodate to the needs of their spouse. In this

way, initially insecure spouses may move toward security, increasing marital stability (Kobak & Hazen, 1991).

#### *Attachment and Relationship Satisfaction in Dating Relationships*

Brennan and Shaver (1995) investigated romantic relationship functioning in a sample of 242 university students. This sample was unique, in that participants were chosen from a larger initial sample in order to ensure an approximately equal distribution of participants among the secure, anxious/ambivalent and avoidant attachment classifications (Brennan & Shaver, 1995). Participants in this investigation completed the Hazan and Shaver (1990)<sup>13</sup> single item measure of attachment. In addition, these participants indicated on a 7 point scale, how self-descriptive each style appeared to be. Participants also completed seven, ten-item scales created by Brennan & Shaver (1995) and listed in Table 3.2, designed to tap theoretically relevant attachment concepts (Brennan & Shaver, 1995). As a measure of relationship functioning, participants completed the Relationship Ratings Form (RRF).

The sample in this investigation comprised 94 couples. Brennan and Shaver (1995) used the data from these participants to investigate partner-matching according to attachment type. The data indicated that approximately 80% of participants with a secure attachment style were in a relationship with another secure individual. In the remaining 20% of cases, the majority of individuals were involved with a partner classified as having an anxious attachment style. In the case of participants with an avoidant attachment style, approximately 50% had a secure partner. Most of the remaining avoidant individuals were paired with other participants with an avoidant attachment style. Despite their over-sampling, Brennan and Shaver (1995) found that individuals in relationships were seldom categorized with an anxious attachment style. In fact, only 11% of the individuals making up the 94 couples had an anxious attachment style. Of the anxious individuals who were in relationships, most were involved with a partner who had an avoidant attachment style. Only one couple was

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<sup>13</sup> A slight modification of the original 1987 measure.

found to be an anxious-anxious pairing. This replicated earlier results (Collins & Read, 1990; Kirkpatrick & Davis, 1994) that indicated that individuals with an anxious attachment style were far less likely to be in a romantic relationship, relative to individuals with other attachment styles (Brennan & Shaver, 1995).

Table 3.2

*Brennan & Shaver (1995) Attachment Scales*

Attachment scale
Frustration with Partners
Proximity-Seeking
Self-reliance
Ambivalence
Trust/Confidence in Others
Jealousy/Fear of Abandonment
Anxious Clinging to Partners

In terms of relationship satisfaction, individuals with a secure attachment style indicated they were more satisfied with their relationships than were avoidant and anxious/ambivalent individuals. Again, supporting the importance of reciprocity, individual relationship satisfaction was also found to be related to partner attachment style. Participants with secure partners had higher ratings of relationship satisfaction relative to participants with an insecure partner (Brennan & Shaver, 1995).

*Additional Research Findings Relevant to Attachment in Close Relationships*

Since 1987, research investigating the connection between attachment and adult relationships has been robust. Attachment theory has been established as a viable organization framework for research on close relationships (Hazen & Shaver, 1994), and attachment style has been demonstrated to be useful in furthering our understanding of individual and dyadic variables relevant to relationship functioning including:

- Relationship building variables such as attraction (Klohnen & Lou, 2003), hostility to others (Mikulincer & Shaver, 2001), self-representation

(Mikulincer, 1995), social competence (Mallinckrodt & Wei, 2005), and partner selection (Frazier, Byer, Fischer, Wright, & DeBord, 1996).

- Relationship sustaining variables such as perceived equity (Grau & Doll, 2003), commitment (Morgan & Shaver, 1999), support seeking and support-giving (Simpson, Rholes and Nelligan, 1992), coping with stress (Mikulincer & Florian, 1998), intimacy (Feeney, & Noller, 1990), and general satisfaction (Gallo & Smith, 2001).
- Relationship straining variables such as defensiveness (Mikulincer, & Orbach, 1995), jealousy (Mesa, 1999), conflict (Creasey & Ladd, 2005), domestic violence (Bond & Bond, 2004) and insecurity (Shaver, Schachner & Mikulincer, 2005) and
- Relationship dissolution variables such as adjustment to divorce (Birnbaum, Orr, Mikulincer, & Florian, 1997), bereavement, and loss (Fraley & Bonanno, 2004).

Generally, these investigations have demonstrated that relative to the insecure styles, the secure attachment style is related to better individual functioning within relationships, more positive functioning within couples/pairs, and stronger, healthier, more resilient relationships. Preoccupied attachment and attachment anxiety have been linked to maladaptive dependency in relationships (Alonso-Arbiol, Shaver, & Yarnoz, 2002), exaggerated distress in response to potential relationship threats (Feeney & Noller, 1992), affective instability (Pietromonaco & Feldman Barrett, 1997), greater perceived instability in relationships (Campbell, Boldry, Simpson, & Kashy, 2005), and greater difficulty in terminating abusive relationship (Henderson, Bartholomew, & Dutton, 1997). Avoidant attachment and attachment avoidance have been linked to reduced caregiving and care seeking in relationships (Simpson et al., 1992), less desire for physical contact (Fraley, Davis & Shaver, 1998). All forms of attachment insecurity have been associated with biased information processing (Meyer, Pilkonis & Beevers, 2004).

*Attachment and Relationship Satisfaction in Adult Friendships*

Following the extension to adult romantic relationships (Hazen & Shaver, 1987), researchers focused most intently on attachment as it relates to dating and marriage. However, as the transfer of attachment behaviour from parents to peers is an important developmental step, several investigators argued that friendships constitute important attachment relationships which persist into adulthood (Bippus & Rollin, 2003; Langan, 2001; Marvin & Britner, 1999). As such, many of the findings linking attachment style to relationship characteristics (e.g., supportiveness) in adult romantic relationships should also apply to non-intimate adult relationships.

Bippus and Rollin (2003) investigated relationship maintenance, conflict management, and relationship satisfaction in young adult friendships. This investigation was somewhat unique in that the investigators analyzed the relationship between individuals' attachment styles and their behaviour as reported by their close friends, rather than by their own self-report. The authors argued that they employed this procedure because they believed relational partners might be more likely to disclose negative behaviours and relationship conflict.

Two-hundred and fifty undergraduate university students served as participants in this study. Each participant identified someone whom they considered to be a close, but not romantic, companion, with whom they had an established relationship. Most of the participants nominated a same-gender friend and the mean length of their friendships was 5 years (Bippus & Rollin, 2003).

Participants' attachment style was assessed using the 4 descriptions provided by Bartholomew and Horowitz's (1991). Approximately half of participants identified themselves as securely attached. An additional 40% of participants fell evenly into the categories of fearful and dismissive, while the final 10% self-described as preoccupied. Nominated friends completed measures assessing their perceptions of the participants' maintenance behaviour and conflict style within the friendship. These individuals also completed a questionnaire which measured their own relationship satisfaction.

Bippus and Rollin (2003) found that friends perceived secure participants to use more pro-social behaviours which served to support and maintain the friendship. Relative to insecure participants (i.e., fearful, dismissive and preoccupied) secure participants were rated as having better conflict management skills, and were judged to be more likely to address conflicts and seek resolution rather than avoid them. Finally, friends of securely attached participants, as opposed to friends of participants with fearful, dismissive and preoccupied attachment styles, reported significantly greater satisfaction with their friendships.

The work of Bippus and Rollin (2003) supports the argument that attachment is a relevant construct within many types of adult relationships, not just intimate ones. Other researchers investigating attachment in the context of friendship have demonstrated that when compared to adolescents and adults with insecure attachment styles, individuals with a secure attachment style are more responsive to their partner's needs, are more likely to seek-support for themselves, manage conflict more effectively, and exhibit better affective regulation (Creasey, Kershaw, & Boston, 1999; Florian & Mikulincer, 1995). Friendship quality and relationship satisfaction have also been found to be positively related to attachment security (Langan, 2001).

#### *Attachment and Affect regulation*

Several researchers have suggested that it is the individual's ability to regulate emotions that provides the pathway through which early attachment experience influence adult intimate relationships (Brennan & Shaver, 1995). Each attachment classification has been observed to be related to a distinct style of managing emotional experiences. Emotional management may be characterized as a behavioural manifestation of an individual's internal working model. Researchers further argue that it is an individual's emotional reactions and behaviours, dictated by his or her attachment status, that contribute significantly to the correlations observed between attachment and variables such as relationship satisfaction and quality of life (Brennan & Shaver, 1995).

In addition to investigating relationship functioning, Brennan and Shaver (1995) also investigated the relationship between attachment and affect-regulation strategies. Significant differences were found between participants with secure, avoidant and anxious/ambivalent attachment styles on the seven scales assessing attachment constructs listed in Table 3.2.

Relative to participants with a secure attachment style, anxious/ambivalent and avoidant participants reported higher levels of frustration and anger with previous relationship partners who did not make them feel loved and appreciated (Brennan & Shaver, 1995). Secure individuals differed from insecure individuals in that they were more likely to seek-proximity with their partner in times of stress. Avoidant individuals preferred to be self-reliant, while individuals with an anxious attachment tended to become jealous and ‘clingy’. Secure individuals were also high in trust and low in ambivalence, compared to participants with either insecure attachment style. Ambivalence was especially pronounced in individuals with an avoidant attachment style (Brennan & Shaver, 1995).

Anxious/ambivalent individuals were ambivalent in the sense that they were both needy and angry. These individuals were unsatisfied and angry with their partners who they judged to be insufficiently available and responsive, and simultaneously feared being abandoned by them. Unlike anxious/ambivalent individuals, people with an avoidant attachment style are ambivalent in the sense that they were unsure of how they felt toward their partner. Based on these observations, Brennan and Shaver (1995) argued that the descriptor ‘preoccupied (with attachment)’ better captures the attachment characteristics and associated behaviours of individuals previously labeled anxious/ambivalent (Brennan & Shaver, 1995)

Based on the results of their investigation and previous studies, Brennan and Shaver (1995) concluded that the avoidant attachment style can be characterized by the consistent denial of attachment needs. As the label implies, avoidant individuals avoid attachment relationships involving self-disclosure, emotional dependency, and

commitment. Individuals with an avoidant attachment style show a general inability to introspect on their own feelings, fail to seek support from partners in times of stress, and tend to view the ending of intimate relationships as inconsequential (Mikulincer & Nachson, 1991; Simpson, 1990). Individuals with this attachment style may use work and/or alcohol to avoid/deny attachment need in themselves and others (Brennan & Shaver, 1995; Hazan & Shaver, 1990).

Brennan and Shaver (1995) concluded that the anxious/ambivalent attachment style is characterized by preoccupation with attachment needs and the threat of potential loss or abandonment. These individuals fall in love easily and quickly become jealous, clingy and overly dependant on their partner. Additionally, anxious/ambivalent individuals are quick to express fear of abandonment and anger toward their partner for failing to be sufficiently appreciative (Hazan & Shaver, 1990).

With regard to the secure attachment style, Brennan and Shaver (1995) concluded that these individuals are characterized by tendencies opposite to those characterizing insecure attachment styles. Additionally, secure individuals are more trusting of their partners, more open and self-disclosing, and more flexible and sensitive in expressing their ideas and feelings and in responding to their partner's needs (Brennan & Shaver, 1995).

#### *Conceptualizing Attachment: A Matter of Type or Dimensions?*

Although the Experiences in Close Relationships scale (ECR; Brennan, Clark, & Shaver, 1997) can be used to classify individuals into one of four attachment categories, the current investigation will utilize a dimensional approach, and explore the predictive power of attachment avoidance and attachment anxiety, the constructs upon which classification is based. While still controversial, several experts in the field, including the scales authors, advocate viewing attachment in dimensional (i.e., based on underlying characteristics which are measured on a continuum) rather than typological terms (i.e., as types, styles or categories; Brennan, Clark, & Shaver, 1997, Fraley and Spieker, 2003, Fraley & Waller, 1998; Fraley & Shaver, 2000).

As stated previously, the categorical conceptualization of attachment originated in the work of Ainsworth and colleagues (Ainsworth & Bell, 1970; Ainsworth et al., 1978). In fact, Ainsworth et al. (1978) argued that classification is the “first step toward grasping the organization of complex behavioral data” (pg. 56). They further argued that classification was beneficial because it directed researchers to investigate the etiology of the patterns of behaviour observed in each category, and to identify the dimensions on which the classified groups differ (Ainsworth et al., 1978). In term of dimensions, Ainsworth et al. (1978) were themselves able to identify 4 dimensions (i.e., proximity- and contact-seeking behavior, contact-maintaining behavior, avoidance, and resistance), which appeared to be crucial for establishing attachment classification. Nevertheless, they provided three reasons to retain categories as opposed to formulating a dimensional conceptualization of attachment. Firstly, concern was expressed that the “patterns of behaviour” characteristic and definitive of each classification would be lost or obscured by quantifying component behaviors in dimensional terms (Ainsworth et al., 1978, pg.57). Secondly, Ainsworth et al. (1978) suggested that a dimensional approach was premature, in that the currently established dimensions may not reflect all the behaviours relevant to attachment classification. Therefore, moving to a dimensional approach might stifle on-going research potentially “freez(ing) our knowledge in its present state” (Ainsworth et al., 1978, pg. 58). Ainsworth et al. (1978) argued that the categorical approach was more flexible and more easily able to assimilate or accommodate to the results of future investigations. Finally, Ainsworth et al. (1978) argued that viewing attachment style as differing in type rather than degree, would promote research aimed at investigating “why and how” the patterns of behaviour characteristics of each attachment style arouse (pg. 58).

Ainsworth et al. (1978) made these arguments despite the fact that the discriminant function analysis reported yielded two orthogonal functions which were remarkably accurate in differentiating between attachment classifications. The first discriminant function was related to avoidance, while the second was related to behaviours intended to gain and maintain proximity to the attachment figure. The first discriminate function differentiated between type A (infants categorized as insecure

avoidant) and not type A infants, while the second function differentiated between type C infants (infants categorized as anxious-ambivalent) and not type C infants (Ainsworth et al., 1978; Fraley & Waller, 1998). Additionally, their advocacy of the categorical approach was maintained despite the fact that they acknowledged subgroups within each classification, which could easily be interpreted as evidence that attachment behaviour falls on a continuum rather than into discrete categories.

The threefold typological model of attachment advocated by Ainsworth et al. (1978) became the standard for attachment researchers (Fraley & Waller, 1998). Consequently, research in the area of attachment conceptualization largely focused on extending the categorical model (i.e., adding and refining categories) rather than testing its validity (Fraley & Waller, 1998). A tripartite model was also used by Hazen and Shaver (1987) in their initial test of the applicability of attachment theory to close relationships in adulthood. Although the conceptualization of attachment in typological terms enjoys substantial popularity, the fact that several investigations have used statistical techniques which assume dimensional constructs indicates a lack of consensus in the field (Fraley & Waller, 1998). Furthermore, as Water and Beauchaine (2003) point out, there is nothing inherent in attachment theory that “requires [or] predicts discrete patterns of attachment” (pg. 418).

Fraley and Waller (1998) were among the first to propose that attachment is “a variable on which people differ in degree rather than in kind” (pg. 108). In support of their position Fraley and Waller (1998) referred to research results that demonstrated substantial within attachment group variance on non-differentiating (i.e., outcome) variables. Griffin and Bartholomew (1994) for example, reported an average correlation of .33 within attachment groups, when they assessed the relationship between model of self (an attachment differentiating factor) and interpersonal anxiety. If attachment, as a construct, was truly categorical such within group variability would be expected to be smaller (Fraley & Waller, 1998).

There is also the question of etiology. Fraley and Waller (1998) argue that the variables influencing the development of working models of attachment are likely to be diffuse and largely measurable only at the behavioural level. Therefore, the variability

observed in attachment likely represents the combined influence of any number of variables (e.g., from infant temperament to responsiveness of a romantic partner). Fraley and Waller acknowledge that while it is possible to incorporate this variability into a categorical system (e.g., proposing a threshold effect), assuming a dimensional model of attachment provides a more parsimonious explanation. Observations from investigations of attachment stability demonstrate that the determinants of attachment vary within and across individuals in response to attachment experiences (e.g., Davila, Karney, & Bradbury, 1999), a finding that is better accounted for by the formulation of attachment as a continuum upon which individuals move across relationships and across their lifespan.

Fraley and Waller (1998) further argued that the necessity of subgroups within the three core attachment categories reflects the variability and continuous nature of the factors underlying reductionist categorization. The presence of quantifiably different attitudes and/or behaviours within discrete categories would suggest that individuals are not only varying across categories, but are varying within groups due to the influence of latent dimensional constructs (Fraley & Waller, 1998).

In contrast to the problem of subcategories, is the finding that some individuals are difficult to categorize. While this presents a difficulty for typological models, it is predicted by dimensional conceptualization. Statistically, individuals who fall near artificially imposed cut-off scores would be more difficult to classify, as their responses and/or patterns of behaviour may share similarities with more than one categorical style (Fraley & Waller, 1998).

Finally, support for the dimensional approach to attachment conceptualization can also be found in the literature on the measurement of attachment. Due to inherent difficulties in categorical measures (e.g., they assume that attachment styles are independent), the use of continuous scales has become increasingly popular (Fraley & Waller, 1998). In response to the burgeoning number of measurement instruments, and in an attempt to bridge the adult and child attachment literature, Brennan, Clark and Shaver, (1997) conducted a factor analysis of 323 items from available self-report attachment measures. Factor analysis revealed two essentially independent factors that

corresponded to the dimensions originally observed by Ainsworth et al. (1978): 1) avoidance and 2) anxiety (Brennan et al., 1997). As dimensional factors appear to underlie categorization, it seems sensible to suggest that the construct itself is dimensional. Fraley and Waller (1998), and Fraley and Spieker (2003) noted that although Ainsworth et al. (1978) recognized the dimensional underpinnings of attachment classification, the statistical methods necessary for distinguishing dimensional from categorical models were not yet available. Therefore, in addition to the empirical observations supportive of a dimensional approach, Fraley and Waller (1998) and Fraley and Spieker (2003) provided statistical evidence that attachment is not categorically distributed.

Using multiple taxometric procedures (Meehl, 1992; Meehl & Yonce, 1994), Fraley and Waller (1998) analyzed Relationship Styles Questionnaire (RSQ; Griffin & Bartholomew, 1994) data from a large sample of undergraduate students. Taxometric procedures were derived for the purpose of determining if a construct is categorical, and represents a “naturally occurring”, “nonarbitrary” classification (Meehl, 1992, pg. 120). According to Meehl (1992) a true category exists if its members share a common source of variation on observable characteristics. For example, if security is a taxon (i.e., a naturally occurring classification), then the attachment system (i.e., the latent source of membership characteristics) of individuals rated as secure will operate in a way that is quantitatively different relative to individuals rated as insecure, and will result in the individuals performing observable behaviours indicative of security (Fraley & Spieker, 2003). This approach also implies that within a sample of individuals who are members of the same latent class, the covariation between behaviours indicative of the class will be negligible (Fraley & Spieker, 2003). For example, in a group of individuals representing all attachment categories, willingness to depend on others, and willingness to allow others to be dependent, are characteristics that are expected to covary and distinguish secure individuals from individuals in other categories. However, these same characteristics are expected to behave relatively independently in the classified sample. It is the observed change in covariance between discriminating characteristics,

as a function of the proportion of category and non-category members in the sample, which form the foundation of taxonomic analysis.

Scored according to the prototype approach, the RSQ yields scores that indicate the degree to which an individual ‘fits’ each attachment category (Griffin & Bartholomew, 1994). The RSQ can also be used to generate scores on the dimensional variables of anxiety and avoidance. Fraley and Waller (1998) completed separate analyses for both scoring procedures. Both analyses revealed functions consistent with dimensional variables. The authors therefore concluded that the categorical model “does not capture the natural structure of attachment” (pg. 108). Rather, attachment represents a variable upon which people vary as a matter of degree. Fraley and Spieker (2003) replicated these results using Strange Situation data from the National Institute of Child Health and Human Development (NICHD) study of early child care. Based on these analyses, Fraley and Spieker advocated for a model of attachment which is based on two underlying continuous variables, and went so far as to suggest that the use of categorical models may hinder the ongoing development of attachment theory.

### Caregiving

As the reciprocal system to attachment, caregiving is an integral component of adult love relationships (Collins & Feeney, 2000). The two systems are independent but highly integrated and complementary (Collins & Feeney, 2000). The attachment system promotes self-protection by prompting individuals to seek proximity to caregivers and achieve felt security. The caregiving system guides attachment figures to be responsive and sensitive in meeting the security needs of the attached person (Carnelley, Pietromonaco, & Jaffe, 1996).

The importance of caregiving in infancy is obvious; without adequate care, humans would not survive this period of immaturity. Beyond the easily apparent physical requirements of caregiving, quality caregiving is also characterized by the provision of sensitive and appropriate emotional support. Good caregiving is assumed to contribute to healthy development and appropriate social and emotional functioning in adulthood.

Ideally, close relationships in adulthood involve the reciprocal provision of caregiving (Collins & Feeney, 2000). Each partner provides care upon which the other can comfortably rely. This allows each person to feel nurtured, cared for and secure; feelings that are critical for healthy relationship functioning and long term stability (Collins & Feeney, 2000).

Not all adults are motivated to be a responsive caregiver, and caregiving skill varies across individuals. While the attachment system is present at birth, the caregiving system matures over the course of childhood and adolescence. Furthermore, the development of the caregiving system is heavily influenced by the existing attachment system as well as experiences with caregivers (Carnelley et al., 1996). In fact, it can be argued that working models of attachment formed in early life necessarily include information about caregiving. This information specifies the rules that guide caregiving

behaviour in adulthood, including the response to attachment distress in significant others (Collins & Feeney, 2000). Based on this reasoning, adult attachment style should be related to the provision of caregiving in close relationships. The empirical evidence supports this contention (Carnelley et al., 1996; Collins & Feeney, 2000; Fenny, 1996; Kunce & Shaver, 1994). Further, research suggests that good caregiving is associated with more satisfying relationships (Carnelley et al., 1996; Collins & Feeney, 2000; Fenney, 1996).

Although reciprocal caregiving is ideal in the context of close relationships in adulthood, it is not always possible. As a result of illness, accident, or chronic disability individuals may require assistance from others to deal with the emotional, cognitive and physical demands of every-day life, and familial caregiving is becoming an increasingly common practice in today's society. Changes in health care philosophy have resulted in an increased focus on community resources aimed at preventing the institutionalization of ill or frail-older family members. As a result, the responsibility of assisting with the day-to-day care of these individuals often falls to spouses, parents, adult children or other family members (Fast, Forbes & Keating, 1999; Gillear, 1984). High levels of stress are associated with the experience of caregiving, and providing care has been associated with significant negative impact on caregiver psychological and physical health (Fast et al, 1999; Barusch & Spaid, 1989). Among older adults (i.e., > 65) research has shown caregiving to be a risk factor for mortality, with caregivers reporting the greatest burden facing the greatest increase in mortality rate (Schulz & Beach, 1999).

#### *Caregiving and Attachment*

Carnelley et al. (1996) investigated the relationship between attachment style, caregiving and relationship functioning in both dating couples and married couples. Based on the principle that how individuals function within a relationship is affected by their own characteristics and the characteristics of their partners, Carnelley et al. looked at the dependant variables as a function of both the individual's attachment style and the attachment style of their romantic partner.

Fifty-two dating partners participated in the first study (Carnelley et al., 1996). One member of each couple was a university student enrolled in at least one psychology class. On average, the participants were 21 years of age, and couples had been dating for 21 months. Participants completed measures of the caregiving they received in childhood, their own experience of caregiving, and relationship functioning. In addition, participants completed a measure intended to tap their working model of attachment. From their responses on this questionnaire, scores for fearful avoidance and preoccupation were derived for each participant (Carnelley et al., 1996).

The results of this investigation indicated that individuals high in fearful avoidance reported providing significantly less caregiving in their romantic relationships than individuals with other attachment styles (Carnelley et al., 1996). These individuals were less engaged in actively providing care and more likely to neglect or ignore their partner's needs (Carnelley et al., 1996). In terms of relationship functioning, differences were observed between male and female participants. In women, personal attachment and partner's caregiving showed the strongest correlation with relationship functioning. Women who were low in fearful avoidance were more satisfied with their relationships than women who were high on this attachment factor. Also, women with partners who provided more caregiving reported higher satisfaction with their relationships and better interactions with their partner (Carnelley et al., 1996). In men, personal attachment and partner attachment showed the strongest correlation with relationship functioning. Specifically, men who were low in fearful avoidance, compared to men who were high on this measure, were more satisfied with their relationships and reported better exchanges with their partners. Also, men whose partners had high levels of preoccupation were less satisfied relative to men with partners lower in preoccupied behaviour (Carnelley et al., 1996). Unlike women, men's evaluation of their relationship was not significantly influenced by their partners' caregiving behaviour (Carnelley et al., 1996).

The second study reported by Carnelley et al. (1996) involved 36 married couples. Couples had been married for an average of 14 years and the average age of participants was 42 years. Participants completed the same set of questionnaires used in

study 1, with the exception of the measure of relationship functioning. In this study, the researchers used the Dyadic Adjustment Scale which is specific to married couples.

The results of study 2 indicated that, as in study 1, fearful avoidance was associated with lower levels of caregiving. In contrast to the first study, Carnelley et al. (1996) observed that high preoccupation was also associated with lower levels of caregiving. Also, Carnelley et al. found that individuals were likely to be paired with a partner who reported similar levels of caregiving. That is, participants who reported providing high levels of caregiving were more likely to have a partner who also reported providing high levels of caregiving (Carnelley et al., 1996).

With regard to partners' attachment, women married to men high in fearful avoidance or to preoccupied men reported less caregiving behaviour. Also, women high in fearful avoidance were more likely to be married to men high in fearful avoidance and/or preoccupation. Preoccupied women were more likely to be married to men high in fearful avoidance. In summary, insecure individuals are more likely to be married to insecure partners (Carnelley et al., 1996).

In terms of relationship functioning, women high in fearful avoidance and/or preoccupation reported lower relationship satisfaction and less positive interaction with their spouses. In men, as in women, high fearful avoidance and/or preoccupation was associated with less relationship satisfaction. Also, men's rating of relationship satisfaction and marital interactions was positively correlated with their partners' caregiving behaviour (Carnelley et al., 1996).

Carnelley et al. (1996) concluded that their investigation provided some support for the link between attachment style and caregiving behaviour. Overall, insecure attachment was associated with lower levels of caregiving activity. In particular, high fearful avoidance was associated with reduced caregiving behaviour. Married participants high in preoccupation reported similar levels of caregiving. Support for the hypothesis that relationship satisfaction and adjustment is influenced by the partner's ability to provide good caregiving was mixed. In the study of dating couples, only women's relationship satisfaction was related to partner caregiving. In the married sample, men and women (although to a lesser extent in men) were more satisfied with

their relationship and reported better marital interactions when their partner was a good caregiver who provided a “safe haven of comfort and security” (Carnelley et al., 1996, pg. 274).

Building on previous research in the area, Feeney (1996) conducted an investigation of attachment and spousal caregiving. In particular, Feeney looked at the relationship between attachment style and caregiving style within individuals, and the relationship between partner caregiving and marital satisfaction. An investigation of the extent to which individuals were married to partners with similar attachment and caregiving styles was also investigated (Feeney, 1996). Two hundred and twenty-nine married couples participated in this research. Couples were categorized into two groups according to the length of time they had been married (i.e., one group consisted of couples married less than 10 years, while the second group consisted of couples married for 10 years or more). Couples completed a self-administered questionnaire package consisting of measures of attachment, caregiving style and marital satisfaction. Attachment was measured in two ways. One measure required individuals to endorse one of 4 descriptive paragraphs corresponding to the secure, preoccupied (insecure anxious/ambivalent), dismissing (insecure avoidant), and fearful attachment styles. Additionally, individuals completed a 15-item questionnaire that yielded a score on the attachment dimensions of ‘comfort with closeness’ and ‘anxiety over relationships’ (Feeney, 1996).

Analysis of participants’ attachment style based on their endorsement of attachment descriptions revealed that all categories were represented (Feeney, 1996). The secure attachment category was the largest single category, with 41% of wives and 39% of husbands endorsing this description. In terms of the insecure attachment styles, 13% of wives and 26 % of husbands fell into the preoccupied category, 13% of wives and 20% of husbands had a fearful attachment style, and 32% of wives and 14% of husbands were found to endorse a dismissing attachment style (Feeney, 1996).

Feeney (1996) also reported support for the hypothesis that individuals tend to pair with other individuals who are similar in terms of attachment and caregiving style. In terms of attachment, individuals high in anxiety over relationships were found to be

paired with partners high in anxiety and low in comfort with closeness. In terms of caregiving, women who reported being responsive caregivers were likely to be paired with a man who also reported being a responsive caregiver and who was low in compulsive caregiving (Feeney, 1996).

Individual attachment style was also found to correlate with caregiving style. Individuals with a secure attachment were found to have the most favorable caregiving style, which was characterized by responsiveness to partner needs and low levels of compulsive caregiving (i.e., being domineering). Individuals with a fearful attachment style were more likely to have a caregiving style low in responsiveness and high in compulsive caregiving. Dismissing individuals had an intermediate level of responsiveness and a lack of compulsive caregiving characteristics. Finally, the scores of preoccupied individuals fell in between those of secure and fearful participants (Feeney, 1996). In terms of attachment dimensions, responsive caregiving was positively related to comfort with closeness and negatively with anxiety over relationships. Compulsive caregiving was found to correlate negatively with comfort with closeness and positively with anxiety (Feeney, 1996).

The analysis of relationship satisfaction revealed that relationship satisfaction was significantly influenced by individuals' own attachment style and their partners' caregiving style. Martial satisfaction was positively correlated with individuals' comfort with closeness and negatively correlated with anxiety over relationships. Marital satisfaction was also positively correlated with partner's responsive caregiving (Feeney, 1996).

In her discussion, Feeney (1996) concluded that the data reported supported the hypothesis that attachment style and caregiving style are highly correlated, and that individuals tend to pair with partners with similar attachment and caregiving styles. With regard to marital satisfaction, one's own attachment style and the caregiving style of one's partner appear to be reliable predictors (Feeney, 1996). Individuals who have a secure attachment style and experience sensitive and responsive caregiving by their romantic partners report the most satisfying relationships (Feeney, 1996).

*Attachment and Caregiving in the Context of Health Decline*

Attachment behaviour becomes particularly salient in times of stress. Chronic illness is one stress that may activate the ill partner's attachment system and his/her spouse's caregiving system. Research suggests that attachment style may prove to be a relevant variable in determining how both the caregiving partner and care receiving partner cope with their transformed relationship.

Using a three-category model (Secure; Anxious-ambivalent; Avoidant) in a study of primary caregivers of individuals with dementia, Markiewicz, Reis and Gold (1997) found that caregivers with avoidant attachment styles were more likely to seek institutionalization for their family member relative to their securely attached counterparts. Caregivers with an anxious-ambivalent attachment style reported fewer social supports, and less satisfaction with the support they did receive than caregiving individuals with either alternative attachment style.

Circirelli (1993) reported similar findings from his investigation of adult daughters providing care for their elderly dependant mothers. Specifically he reports finding an inverse relationship between reported burden and attachment security. Magai and Cohen (1998) also investigated caregiver burden in caregivers for individuals with mid-to late-stage dementia. As reported by Circirelli, caregivers with secure attachment experienced lower levels of burden than caregivers in other attachment categories.

Carpenter (2001) lends additional support for the relationship between attachment style and caregiver quality of life. Carpenter (2001) conducted an investigation of adult daughters providing various levels of care to their community dwelling mothers. Participants completed an assessment that included measures of attachment, caregiving (instrumental and emotional) and caregiver burden. Attachment dimensions (security and anxiety) were assessed using the Adult Attachment Scale (Collins & Read, 1990; Hazan & Shaver, 1987), and the Relationship Questionnaire (Bartholomew & Horowitz, 1991). Carpenter (2001) found that individuals rated as high on security and low on anxiety provided more emotional care to their mothers. Furthermore, high security was related to lower levels of burden.

Morris, Morris and Britton (1988) observed that marital intimacy was related to perceived strain and depression in caregivers of individuals with dementia. Lower levels of intimacy correlated with higher levels of strain and depression. Higher levels of depression were also associated with the degree to which intimacy declined following the onset of the dementia. They concluded that, in general, poor premorbid relationship functioning makes caregiving more stressful (Morris, et al., 1988).

### Care Receiving

With a well-established base of research and ongoing programs of research, it is clear that caregiving, especially in the context of age-related or chronic disease, is an important topic of psychological inquiry that researchers are treating seriously (Newsom, 1999). However, implied in the term caregiver, is the individual receiving care. Surprisingly, given the thousands of articles that have been published on caregiving, very few investigations have systematically studied it from the care receivers' point of view (Newsom, 1999). Lack of research in this area has left untapped an important source of information relevant to improving the lives of care receivers and the people who care for them (Cotrell & Schulz, 1993). Although a definitive picture has yet to emerge, initial investigation suggests that many individuals receiving care experience a range of positive and negative reactions to the help they receive.

#### *Attachment Style and Care Receiving*

Collins and Feeney (2000) were among the first researchers to extend the attachment framework to include care receiving. They attempted to investigate the relationship between attachment and both caregiving and care seeking, as these processes occur in the context of typical daily stressors (Collins & Feeney, 2000). Collins and Feeney (2000) predicted that couples in well-functioning relationships would participate in more caring and supportive interactions, interactions which are essential to the establishment and maintenance of trust and security. Further, because attachment relationships between adults are fundamentally reciprocal, individuals who feel secure in a committed relationship and who are close to their partner will be more likely to seek support when they feel threatened and are more likely to provide more responsive caregiving when their partner requires it (Collins & Feeney, 2000).

Participants in this investigation were 93 romantic couples who had been dating, on average, for 12.6 months (Collins & Feeney, 2000). One member of each couple was a university student, and the average age of participants was 19 years. As participants, each couple was videotaped during an interaction in which one partner (the designated care seeker) disclosed a problem, worry or stressful issue that was a current personal concern (Collins & Feeney, 2000). This interaction was coded by trained observers using indexes of emotional disclosure (i.e., conveying need through an expression of emotional distress), instrumental disclosure (i.e., giving details of the problem), indirect support seeking (i.e., hinting), and direct support seeking (i.e., asking for help; Collins & Feeney, 2000).

Prior to the laboratory interaction, all participants completed a measure of their mood (Collins & Feeney, 2000). Following the interaction, couples completed the mood questionnaire again. They also completed measures of relationship quality, perceived stressfulness of the problem, and perception of caregiving behaviour (Collins & Feeney, 2000). Attachment style was measured using the Adult Attachment Scale, which measures individuals' anxiety and avoidance, comfort with intimacy, and comfort with dependence on others (Collins & Read, 1996), and Bartholomew's four attachment prototype measure, which yields a score for 'model of self' and 'model of others' (Bartholomew & Horowitz, 1991).

In their analysis, Collins and Feeney (2000) reported that individuals high in avoidance tended to use indirect support seeking strategies. Individuals low in anxiety tended to provide high levels of support even when their partner used indirect support seeking behaviours. Individuals high in anxiety provided less support, were less responsive to their partners, and tended to display negative caregiving behaviours. Caregiving by individuals high in anxiety was better if their partner used direct care seeking behaviour. Contrary to expectations, no relationship was found between care seekers' attachment style and their perception of their partner's behaviour.

With regard to relationship quality, caregivers in well-functioning relationships were observed to provide better overall caregiving (Collins & Feeney, 2000). These individuals were responsive and emotionally supportive of their partner and engaged in

less negative caregiving. Care seekers who indicated high levels of satisfaction with their relationships were observed to have caring and supportive partners. Relationship satisfaction was also related to individual's perceptions of caregiving. Caregivers in satisfying relationships perceived themselves to be supportive and caring and their partner agreed. Care seekers in satisfying relationships perceived their partners to be more supportive (Collins & Feeney, 2000). Collins and Feeney concluded that caregiving and care-seeking are highly integrated processes that shape the nature and quality of the other through their interaction. Furthermore, an individual's attachment style affects their ability to seek and provide care.

Collins and Feeney (2000) also concluded that their research offers compelling evidence that good caregiving has significant benefits for the care receiver. Care seekers who perceived their partners to be responsive to their concerns and supportive of them reported a better mood after the interaction than they did before. They further suggested that the small acts of caring that accompany everyday interactions between partners accumulate over time and contribute to long term relationship satisfaction and possibly improved health and psychological well-being.

#### *Care Receiving in the Context of Health Decline*

In order to investigate the experience and consequences of receiving care due to a decline in health, Newsom and Schulz (1998) reviewed data conducted as part of the Caregiver Health Effects Study (CHES). The CHES is an on-going longitudinal study designed to investigate the physical and psychological ramifications of caregiving in married couples. All participants were 65 years or older (Newsom & Schulz, 1998).

In the course of their participation in the CHES, care recipients indicated if they had difficulty with any of the six activities of daily living (ADL) or eight instrumental activities of daily living (IADL) listed in Table 5.1. Care receivers were also asked if they received help with any of the ADLs and IADLs, and if so, how much mental or emotional strain they experienced in the course of receiving assistance. Caregivers were asked if they assisted with any of these activities. Participants also completed measures

of mental health, physical health and marital quality<sup>14</sup> (Newsom & Schulz, 1998; Martire et al., 2003).

Analysis of the data indicated that caregiver assistance was not always positively perceived (Newsom & Schulz, 1998). In fact, almost 40% of care receiving participants reported experiencing emotional stress in association with receiving care. A variety of factors, such as perceived control and self-esteem were shown to be related to negative reactions to being helped (Newsom & Schulz, 1998).

Table 5.1

*Activities of Daily Living and Instrumental Activities of Daily Living*

Activities of Daily Living	Instrumental Activities of Daily Living
Bathing	Using Telephone
Dressing	Traveling
Toileting	Shopping
Transfer	Preparing Meals
Continence	Housework
Feeding	Taking Medicine
	Managing Money

Adapted from Newsom & Schulz (1998).

Insufficient assistance was a major component in negative reactions to help. However, this was only true for participants with low perceived control. Newsom and Schultz (1998) suggest that these individuals are more affected by the level of help they receive and therefore react more negatively when they perceive the assistance they receive as inadequate (Newsom & Schulz, 1998).

Low self-esteem was also related to negative care receiver reactions to caregiver assistance. The strength of this relationship was found to be positively correlated to the amount of help required. In care receivers with low self-esteem, the likelihood of

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<sup>14</sup> In the sample referred to by Newsom and Schulz (1998), the mean age of care recipients was 76.5 years while the mean age of caregivers was 76.6 years. In the care receiver sample, 52% of participants were female. Women comprised 47% of the caregiver sample.

negative reactions to assistance increased as more help was required (Newsom & Schulz, 1998). Newsom and Schulz (1998) suggest that care receivers with low self-esteem may attribute their requirements for assistance to personal inadequacy. This attribution increases the mental and emotional strain they experience in the course of receiving help. Also, individuals with low self-esteem may be more sensitive to issues of reciprocity and their feelings of indebtedness may also lead to defensive reactions to caregiver assistance (Newsom & Schulz, 1998).

Finally, Newsom and Schulz (1998) reported an interaction between marital conflict and negative care receiver reactions. In care receivers who received more help, marital conflict was associated with greater levels of distress in reaction to care receiving (Newsom & Schulz, 1998).

Continuing the work of Newsom and Schulz (1998) Martire, Schulz, Wrosch and Newsom (2003) analyzed data from two later data collection points in the CHES. The interval between data collection was one year. In addition to assessing the strain of care receiving and the psychological well-being of care receivers, Martire et al (2003) also investigated care receivers' perceptions of the adequacy and sufficiency of the care being provided. Perceived quality of spousal care was assessed using an eight item Likert-type questionnaire that asked care receivers to rate the quality of care provided by their spousal caregivers. Scale items focused on the amount of help provided, the manner in which help was provided and the timing of provided help. A measure of global mastery assessing care receivers beliefs about their own efficacy and sense of control in their own lives was also included at both data collection points.

Martire et al. (2003) found that care receivers reported their spouses to be providing more care than was desired or required. They also observed female care receivers to be less satisfied with the manner in which care was provided relative to their male counterparts. In terms of mental health, poor quality care as perceived by the care receiver was related to more depressive symptoms and less global mastery in care receivers. In fact, perceived quality of care was found to predict depressive symptoms and care receiver mastery scores one year later. This relationship was significant after controlling for the effects of sociodemographic characteristics, physical health, marital

quality, care receiver strain and caregiver well-being. Martire et al. also concluded that care receiver reactions to being helped extended beyond the care receiving situation to influence their global beliefs about the quality of their life and their ability to handle life's challenges.

Martire et al. (2003) also commented on the "dynamic and cyclical nature of the caregiving-care receiving process" (p. 599). In their investigation, they observed that greater symptoms of depression and lower mastery scores in caregivers were related to poorer perceived quality of care. They argued that the research to date suggests that poor psychological health in caregivers results in poorer quality of care as perceived by care receivers. Poorer quality care contributes to diminished care receiver physical and mental health. In turn, diminished physical capacity, declining self-esteem, declining motivation, increasing apathy and negative mood further erodes caregivers' psychological health and their ability to provide quality care. In summary, Martire et al. (2003) reiterated the importance of additional research on the impact of care receiving on the physical and mental health of both care receivers and caregivers.

Edwards and Noller (1998) examined caregiver-care receiver communication and its effect on the health of care receivers. Their investigation involved 53 older individuals receiving care from their spouse. The average age of care receiver was 78 years of age, while the average age of caregivers was 74.5 years of age. Caregivers completed measures of anxiety and depression, overall psychological well-being, life satisfaction, caregiver burden, coping strategies and relationship satisfaction. Care receivers completed measures of functional ability, anxiety and depression, overall psychological well-being, life satisfaction and relationship satisfaction (Edwards & Noller, 1998).

In addition to completing the questionnaires, couples participating in this investigation were videotaped as they discussed an important caregiving issue chosen by the care receiver (Edwards & Noller, 1998). These tapes were than reviewed and rated by both outside observers and the relevant care receiver for overprotection, supportive communication and patronizing communication (Edwards & Noller, 1998).

Analysis revealed that the well-being of care receivers was related to their perception of their caregiver's communications (Edwards & Noller, 1998). Care receivers who judged their caregiver to be patronizing also reported having poor overall psychological health and more conflictual marital relationships. Overprotection was also perceived negatively by some care receivers (Edwards & Noller, 1998).

#### *Attachment and Care receiving in the Context of Health Decline*

##### *The biopsychosocial model.*

The proposed role of attachment as a relevant variable in understanding individuals' response to care receiving and quality of life can be placed in the larger context of the biopsychosocial model of health, initially proposed by Dr. George Engel (1977). In 1977, Engel proposed the need for a new model for medical science. Engel's (1977) article was prompted by an apparent crisis in psychiatry, perceived by many of its practitioners. Some writers on the practice of psychiatry accused the discipline of becoming a "hodgepodge of unscientific opinion...politicking for 'mental health' and other esoteric goals" (Engle, 1977, p.129), and extorted the discipline to return to the biologically focused medical model. Engel disagreed, and postulated that the medical model itself was at the root of a crisis not only within psychiatry, but within the discipline of medicine as a whole.

The biomedical model, the dominant model of medical research and practice throughout the 20<sup>th</sup> century, is fundamentally a reductionist model which assumes that all disease is the result of cellular abnormalities (Wade & Halligan, 2004). Other closely related assumptions of the biomedical model include the following (Wade & Halligan, 2004):

- The development and manifestation of disease is not affected by non-biological factors, although these factors may influence the disease's consequences.
- Health is equated with the absence of disease
- Mental phenomena (e.g., emotional disturbance) are unrelated to biological dysfunction.

- Patients are victims of disease who bear little or no responsibility for its presence
- Patients are passive recipients of treatment, although their cooperation is expected.

An exclusionary assumption may also be included as part of this model, which holds that phenomena which cannot be shown to be caused by biological dysfunction cannot be classified as disease (Engel, 1977). Therefore, the biomedical model is not relevant to behavioural disturbances, psychological phenomena or other “problems of living” (Engle, 1977, p. 129). Engel (1977) argued that the division between strictly biological based disease and emotional/social disturbances was not as sharp as the biomedical model assumed, especially as illness is experienced by patients.

Devised by scientists as a means of studying disease, the longevity of the biomedical model can be attributed to its utility (Engel, 1977; 1980; Wade & Halligan, 2004). Grounded in the scientific method, the biomedical model has facilitated remarkable advancements in our understanding and treatment of disease, while simultaneous fostering communication among researchers, practitioners and patients (Engel, 1977; Wade & Halligan, 2004). However, despite its success and contribution to medical science, the biomedical model has a “crippling flaw” (Engel, 1980, p. 536). The model’s inherent dualism, which separates physical from mental functioning, fails to include the patients who are experiencing disease, as well as their psychological and social environments. Thus, the biomedical model “leaves no room in its framework for the social, psychological and behavioural dimensions of illness” (Engel, 1977, pg. 130), dehumanizing individuals seeking services from medicine by reducing them to ‘objects’ in need of study (Borrell-Carrio, Suchman & Epstein, 2004).

Engle (1977; 1980) termed his alternative, unitary (as opposed to dualistic), and holistic model the biopsychosocial model. As its premise, the biopsychosocial model holds that the experience of physical health and illness results from the reciprocal interaction of biological, psychological and social processes (Suls & Rothman, 2004). Engel (1977; 1980) proposed that in order to accurately understand, diagnose and successfully treat disease, clinicians need to develop an understanding of their patients’

physical and mental functioning, as well as gather information about their social context. When discussing social context, Engel referred to the importance of microsystems (i.e., familial relationships, social relationships) as well as macrosystems (i.e., cultural factors; the healthcare system; Engle, 1977; 1980).

The biopsychosocial model attempts to humanize medical processes by placing the patient, as an individual human being, at the center of any investigation, regardless of whether it is clinical or research oriented. The model further extorts clinicians to rely as heavily on their relationships with their patients, and information gathered in interviews, as they do on the results of ‘scientific’ testing. Fundamentally, the biopsychosocial perspective recognizes the role of psychological, social and behavioural factors in the development, maintenance, severity and resolution of illness as well as the role of patients’ conceptualization of illness, as a factor in their response to treatment (e.g. compliance with recommendations; Belar, 2003; Borrell-Carrio et al., 2004; Engle, 1977; 1980; Suls & Rothman, 2004; Wade & Halligan, 2004). Engle (1977; 1980) also proposed the interaction between physical functioning, mental health and social context to explain the variability in disease presentation both within and across individuals.

Engel’s ideas were well received by many researchers and practitioners in a variety of health disciplines, and the biopsychosocial model has fueled significant advances in the understanding of health and illness (Suls & Rothman, 2004). As the conceptual base for health psychology, the biopsychosocial model has been the foundation on which health psychologists have pioneered the multidisciplinary, multisystemic approach to understanding human functioning (Suls & Rothman, 2004). Research has demonstrated the utility of the approach by demonstrating that biological, psychological, and social processes operate in an integrative manner to produce health outcomes (Suls & Rothman, 2004). Investigations have also provided important information about the role of patients’ perceptions in their willingness to seek care and adhere to treatment (for review see Leventhal, Leventhal, & Cameron, 2001).

The theory of attachment itself can be conceptualized as a biopsychosocial model, as it postulates the existence of a psychological and behaviour system rooted in biology which determines the development of social relationships (Maunder & Hunter,

2001). In terms of the current investigation, the biopsychosocial model of health is reflected in the hypotheses that attachment is an important predictor of psychosocial functioning and perceived health.

*Attachment and care receiving in the context of health decline:  
Theoretical connections.*

Although not yet explicitly linked to attachment style it seems plausible that care receivers with an insecure attachment style will react more negatively to receiving help. Insecure individuals high in attachment avoidance may resent having to rely on others for assistance and subsequent feelings of indebtedness may be detrimental to their self-esteem. High attachment anxiety may result in greater sensitivity to caregiver behaviour and a tendency to apply more negative interpretations to these behaviours and the intentions that underlie them. Also, insecure caregivers may provide care in a way that results in negative reactions in the care receiver (e.g. overprotection, inadequate care, patronizing communication). Individuals with MS and their spouse or family caregivers represent an appropriate population in which to investigate the relationship between attachment, caregiving and care receiving.

## Multiple Sclerosis

### *What is MS?*

MS is an unpredictable, chronic and, in many cases, disabling disease of the central nervous system (Joy & Johnston, 2001). Meaning “many scars”, the term multiple sclerosis refers to the lesions that occur on the brain and spinal cord as the disease progresses (Joy & Johnston, 2001). These lesions, comprised of dead, demyelinated cells, disrupt the transmission of nerve impulses. The most visible result of compromised nerve impulse conduction is disruption of motor control, although dysfunction can occur in any part of the central nervous system and the symptoms of MS are widespread and varied.

The prevailing opinion among experts is that MS is probably an autoimmune disease (Joy & Johnston, 2001). The cause of MS is unknown, but evidence suggests a “multifactorial aetiology” including biological and environmental factors (Beck et al., 2005, p. 516). When the disease is active, the body’s natural defenses malfunction and begin attacking native nerve cells as it would foreign invaders. In MS, myelin is targeted. Myelin is a fatty tissue that insulates the axon of nerve cells and allows for the efficient transmission of nerve impulses. Inflammation, damage or destruction of myelin often occurs in patches, forming the lesions characteristic of the disease. Once cells are damaged the functions controlled by these cells are distorted, diminished or permanently lost (Joy & Johnston, 2001). Although symptoms may be experienced intermittently in a large number of individuals with MS (i.e., a remitting-relapsing pattern of symptom occurrence), it is now recognized that the disease remains active in most patients for the majority of the time (Joy & Johnston, 2001).

Worldwide, the prevalence rate of MS is approximately 1 in 1000 (Joy & Johnston, 2001). In Canada prevalence rates are higher and have been estimated to be 24 in 1000 (Beck et al., 2005). Beck et al. (2005) found this prevalence rate to vary

from 18 in 1000 to 35 in 1000 depending on the geographical location surveyed. The Canadian prairies have one of the highest MS prevalence rates within Canada (Beck et al.). Women are almost twice as likely to be diagnosed with MS as men (2/3 of individuals diagnosed are women) and the disease is more common among individuals of Northern European heritage and among those who spend their childhood in northern latitudes (Joy & Johnston, 2001) (see Figure 6.1). These findings are not entirely consistent with the lower rate of MS observed among Canada's aboriginal peoples who, while not sharing a similar genetic heritage, also live in northern latitudes (Beck et al., 2005). The disease is typically diagnosed in young adulthood (between the ages of 20 to 40), although individuals in their fifties have also been diagnosed. The average age of diagnosis in Canada is 30 years. Rarely, MS is diagnosed in childhood.

Most individuals who are diagnosed with MS will live with the disease for decades (Joy & Johnston, 2001). Current research suggests that MS reduces life expectancy by only 10-15 years and given the typically early age of diagnosis, many individuals survive 30 years or more after disease onset (Joy & Johnston, 2001).

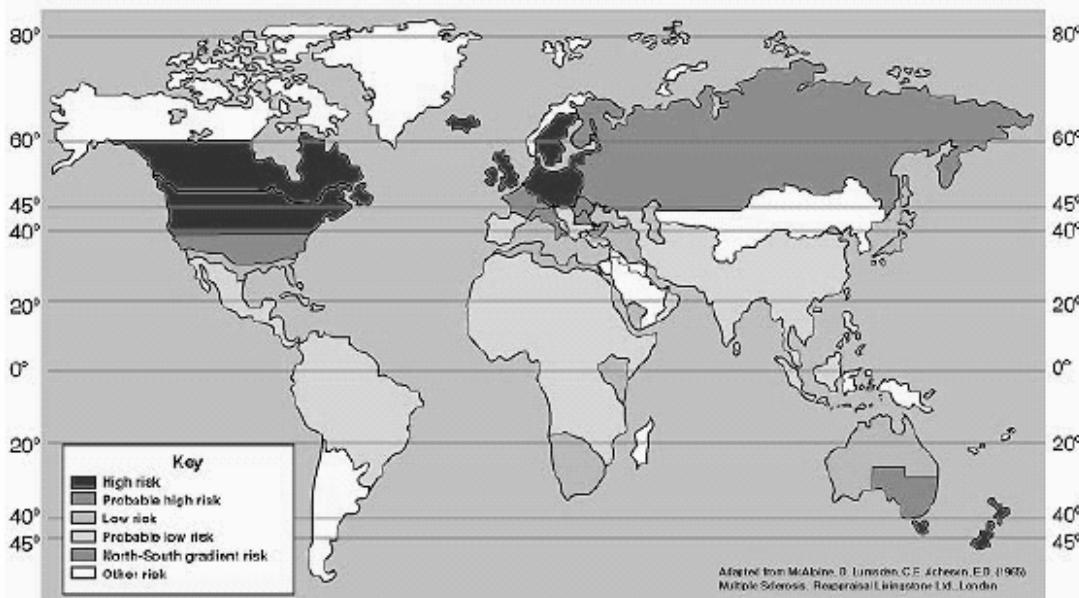


Figure 6.1. Map of MS distribution.

Source: Joy and Johnston, (2001). Reprinted with Permission.

*Disease Classifications and Symptoms*

MS takes many forms. The most common form of MS is the relapsing-remitting variety. About 85% of newly diagnosed individuals receive this classification and overall, approximately 55% of individuals have this type of MS (Joy & Johnston, 2001). Relapsing-remitting MS is characterized by the sudden onset of acute symptom exacerbations (relapses) that are followed by complete or partial recovery (Joy & Johnston, 2001). In the early stages, relapses typically involve disturbances in the sensory, motor, cerebellar, or visual systems. As the disease progresses, relapses involving bladder, bowel, and cognitive disturbances are more likely.

Approximately 10-20% of individual with MS experience a benign-remitting course (Joy & Johnston, 2001). These individuals experience few symptom exacerbations and show excellent recovery of function upon remittance (Joy & Johnston, 2001). Individuals with this type of MS typically maintain their health with little evidence of impairment or disability even decades after diagnosis (Joy & Johnston, 2001).

Primary progressive MS is relatively rare, accounting for about 10% of diagnoses. Individuals with this type of MS experience gradually worsening symptoms in the absence of well-defined relapses or periods of remission (Joy & Johnston, 2001).

Some of the individuals originally diagnosed with relapsing-remitting MS will begin to experience a gradual worsening of symptoms with or without superimposed relapses. These individuals are reclassified as having secondary progressive MS. Untreated, one-quarter of individuals with relapsing-remitting MS will transition to secondary progressive MS within 25 years (Joy & Johnston, 2001).

Progressive-relapsing MS is a relatively rare classification, occurring in approximately 5% of individuals with MS. This type of MS is characterized by a gradual worsening of the disease and reoccurring relapses from which there may or may not be remittance (Joy & Johnston, 2001).

Although MS can affect any part of the central nervous system, the symptoms of MS are typically related to the most heavily demyelinated sections (Joy & Johnston,

2001). Symptoms of MS include vision problems, loss of balance and coordination, tremors, numbness, paralysis, extreme fatigue and cognitive problems (Joy & Johnston, 2001).

#### *Coping with MS*

While each individual may have a characteristic approach to managing stress, coping is better conceptualized as a context sensitive and dynamic process rather than as a stable personality trait (Penley, Tomaka,& Wiebe, 2002). The cognitive theory of stress and coping developed by Folkman and Lazarus recognizes this and proposes that it is the interaction between internal or external environmental stimuli and an individual' appraisal of this stimuli that determines if stress is experienced (Folkman, Lazarus, Gruen, & DeLongis, 1986). Under this theory, stress occurs when an individual appraises stimuli as excessively taxing, as exceeding currently available resources, or as a threat to personal safety or well-being. Cognitive appraisal and coping strategies act as mediators between stress and its immediate and long term consequences (Everly & Lating, 2003; Folkman et al., 1986).

Cognitive appraisal refers to the process of cognitive interpretation through which meaning is assigned to the world around us (Everly & Lating, 2003). As individuals interact in their environments, they are constantly engaged in the conscious or unconscious process of assessing surrounding stimuli. This “process of appraising which circumstances are harmful and which are benign is crucial to the production of stress reactions” (Lazarus, 1998, p. 117). The process of appraisal has both primary and secondary components. Primary appraisal involves a direct appraisal of the potential stressor to determine if it is personally relevant (Folkman et al., 1986). The determination of personal relevance may be influenced by a variety of psychological factors including affective state, values, goals, and personal philosophy, as well as beliefs about self, others and the world (Folkman et al., 1986). Secondary appraisal occurs when stimuli are recognized as stressful and the affected individual must determine what, if anything, can be done to overcome, avoid, ameliorate, or alter the stressors' potential negative effects (Folkman et al., 1986). Options for managing the

stressor are assessed and might include accepting the situation caused by the stressor, trying to change the situation, gathering more information, changing behaviour to accommodate to or ameliorate the effects of the stressor, ignoring or avoiding the consequences and/or seeking social support (Folkman et al., 1986). Coping is the application of one or more of these strategies to manage the internal and external consequences of stress. In the Folkman-Lazarus model, coping functions to deal directly with the source of the stress (problem-focused coping) and to regulate affect (emotion-focused coping). Examples of problem-focused coping include attempting to alter the nature of the stressor, the environment in which it occurs or oneself, the rational application of logical, cognitive, problem solving techniques. Examples of emotion-focused coping include relaxation strategies, detachment, avoidance and positive reappraisal (Folkman et al., 1986). Most people use a combination of problem-focused and emotion-focused strategies as they deal with each stressful circumstance. However, specific coping strategies have been demonstrated to be associated with more positive or more negative, short term and long term health consequence of stress exposure (Penley, Tomaka & Wiebe, 2002).

Illness is one stimuli that typically produces stress in an affected individual. As such, coping with illness has received significant research attention. Within the context of chronic illness, several investigations have found a relationship between reliance on emotion-focused coping in general, and the use of avoidance coping, more specifically, and high levels of psychological distress (Bloom & Spiegel, 1984; Revenson & Felton, 1989; Vitaliano, Katon, Maiuro, & Russo, 1989; Pakenham, 1999). By contrast, the use of problem-focused coping has been found to be associated with lower levels of psychological distress (Pakenham, 1996; 1999; Revenson & Felton, 1989; Vitaliano et al., 1989).

Several investigations of stress and coping specifically focused on understanding this process in individuals with MS also appear in the published literature. Multiple sclerosis is associated with an unpredictable course, and a wide array of potential physical and psychological symptoms. MS has a profound effect on individuals in

terms of their biological, psychological and social functioning (Pakenham, 1999). Additionally, individuals with MS have a higher rate of emotional disturbance when compared to other patient groups experiencing a similar level of physical disability (Pakenham, 1999). Already at greater risk for illness associated stress, effectively managing stress is of particular importance for individuals with MS, as some evidence suggests that psychological stress may trigger an exacerbation in disease activity and ultimately result in lesion development and subsequent decline in function (Mohr et al., 2002).

Pakenham (1999) applied the Lazarus-Folkman stress-coping model to the investigation of adjustment to MS. The study was longitudinal in design and 122 individuals with MS participated in interviews and completed self report scales, including measures of emotion-focused coping and problem-focused coping at the time of recruitment (Pakenham, 1999). Twelve months later, 98 individuals with MS completed a second set of measures, including measures of depression, global distress, subjective health and social adjustment (Pakenham, 1999). Cross-sectional analysis from data gathered at baseline indicated that greater use of emotion-focused coping was associated with greater psychological distress, including increased depression, and poorer social adjustment. In contrast, use of problem focused coping was associated with greater social adjustment (Pakenham, 1999). Analysis of the longitudinal data found that greater reported use of emotion-focused coping at the onset of the study was related to greater psychological distress, increased depression, poorer subjective health, and poorer social adjustment. By contrast greater reported use of problem-focused coping was associated with less psychological distress and depression, better perceived health and greater social adjustment (Pakenham, 1999). While these findings are consistent with previous findings, Pakenham was dissatisfied with the measure of coping used in his investigation, specifically because some of the more positive methods of emotion-focused coping (e.g., acceptance and positive reappraisal) were not included. Pakenham went on to develop a scale specifically designed to assess coping in individuals with MS (Pakenham, 2001).

McCabe, McKern and McDonald (2004) found similar results in a sample of 381 individuals with MS. Again, over reliance on emotion-focused coping (i.e., detachment) was associated with poor psychological adjustment. Use of problem-focused coping was associated with better adjustment in men, while seeking social support predicted less psychological distress in women. In summary, McCabe et al. (2004) concluded that education programs for individuals with MS should focus on teaching problem-focused coping strategies.

#### *Quality of Life Research in MS*

Research with individuals with MS suggests that the disease has a significant psychological component, which may have a more significant impact on perceived quality of life than the direct consequences of the disease itself. In fact, MS patients generally report that their quality of life depends more on their mental health than their level of physical disability or bodily pain (Joy & Johnston, 2001). Therefore, it is critical that the factors associated with the recovery and/or maintenance of good mental health be determined in order to assist individuals with MS to maximize their quality of life.

Individuals often report that depression is a significant problem (Fruehwald et al., 2001). MS has also been associated with social and relationship difficulties that require significant adjustment (Clayton et al., 1999). Consistent and reliable social support and familial support have also been found to be protective factors. Rogers and Calder (1990) demonstrated that emotional health was associated with marital adjustment across all levels of disability. Also, possibly due to its chronic and unpredictable nature, MS has been associated with a lower perceived ‘quality of life’ relative to individuals without MS and individuals with other debilitating/intrusive medical conditions (Nicholl et al., 2001; Mullins et al., 2001).

Aronson (1997) conducted an investigation of quality of life in 647 individuals with MS and 345 caregivers. Participants in this study completed measures of their current disease course, symptom severity, and perceived quality of life. For caregivers, analysis revealed that poor perceived quality of life was related to providing care for a

spouse, a long duration of caregiving, worse MS symptoms and the care receiver having an unstable type of MS (Aronson, 1997). In care receivers, lower satisfaction with quality of life was most strongly related to interference with social activities. Worse MS symptoms, fatigue, unemployment and an unstable type of MS were also associated with care receivers indicating a poor perceived quality of life (Aronson, 1997).

### The Current Study: Rationale and Hypotheses

The research proposed herein is founded on the tenets of the biopsychosocial model. Implicit in the research design is the assumption that psychological, social and biological factors interact in an integrative manner to produce physical and mental health outcomes. As recommended by researchers in the area of health psychology (i.e., Suls & Rothman, 2004), this investigation attempted to incorporate factors from all three domains in order to better understand the interactive relationships between psychological factors (i.e., attachment) and psychosocial functioning and perceived health. The influence of macrosystems is also acknowledged through the collection of data regarding age, gender, marital status and employment status. Such information facilitates our understanding of the cultural correlates of health and illness and places the current research in a sociocultural context. Theoretically, information from multiple factors from several systems will be useful in understanding how individuals adapt to chronic illness, and in assisting caregivers and care receivers to maximize possible health outcomes for both parties.

#### *Reaction to Care Receiving*

Research suggests that individuals receiving care experience both positive and negative reactions to the help they receive (Martire et al., 2003 & Newsom & Schulz, 1998). As an initial step in understanding how individuals cope with receiving care, in terms of the Folkman-Lazarus model, this investigation included measures assessing individuals' appraisal of care receiving. Attachment is hypothesized to predict appraisal of the caregiving experience, and the impact of care receiving on self-esteem.

Hypothesis 1: Attachment anxiety and attachment avoidance together are expected to predict scores on all care receiving scales. Increasing attachment anxiety and attachment avoidance are expected to result in more negative reactions to being helped.

Hypothesis 2: Attachment anxiety and attachment avoidance are expected to demonstrate independent influences on specific aspects of the care receiving experience.

Conceptually, the anxiety component of attachment is associated with internal model of self, fear of rejection and/or abandonment, and felt security. An individual high in attachment anxiety typically wants more intimacy and closeness than his/her partner is willing to provide. Even when receiving objectively good care, individuals high in attachment anxiety may judge it to be inadequate and judge their caregivers to be insufficiently attentive and caring. Conversely, individuals relatively low in attachment anxiety feel they are worthy of love, and feel able to reciprocate in relationships. These individuals are expected to judge their partners to be good caregivers, and rate the quality of care they receive positively. These individuals are not expected to react to care receiving with anger or embarrassment or feel unreasonably indebted to their caregivers. In more specific terms, attachment anxiety is expected to predict:

1. Judgments about the adequacy and sufficiency of care received;
2. Judgements about caregiver intentions;
3. Affective responses to care receiving;
4. Self-esteem reactions to care receiving.

As attachment anxiety increases, positive responses to care are expected to decline.

Conceptually, attachment avoidance is associated with internal models of others, self-disclosure and intimacy in relationships, and desire for close relationships.

Individuals high in attachment avoidance typically seek to maintain an emotional distance from their partners. These individuals pride themselves on their autonomy and dislike having to depend on others. As a result, individuals high in attachment avoidance are expected to find receiving care significantly stressful and will likely report negative reactions such as embarrassment and anger as a result of receiving help (the relationship between attachment avoidance and these characteristics is expected to be stronger relative to the relationship predicted for attachment anxiety). Specifically, such individuals are expected to view care receiving as a threat to their independence,

and caregivers as undermining their autonomy. Negative assumptions may also be made regarding caregivers' motivations for providing care. Individuals high in attachment avoidance are also expected to be sensitive to perceived overprotection, and their feelings of indebtedness may result in resentment toward the caregiver. Conversely, individuals relatively low in attachment avoidance are expected to seek assistance when assistance is required, appreciate the care they receive, and judge their caregivers to be supportive of their continued independence. As these individuals view themselves as valuable relationship partners, they are not expected to feel indebted to their caregivers for the care they provide.

In more specific terms, attachment avoidance is expected to predict:

1. Affective responses to care receiving, including feelings of anger, embarrassment and indebtedness;
2. Desire for independence;
3. Perceived overprotection by caregivers, feelings of anger.

As attachment avoidance increases, negative thoughts and feelings about receiving care are also expected to increase, while help seeking behaviour is expected to decline.

#### *Reaction to Caregiving*

Just as living with MS can be stressful and require lifestyle adaptations, providing care for a spouse or family member with MS can be equally challenging. Given previous research findings that have established a relationship between coping with the demands of caregiving (e.g., emotional distress) and attachment style (Markiewicz, Reis, & Gold, 1997; Feeney, 1996; Carnelley et al., 1996), this investigation is expected to demonstrate the predictive power of attachment avoidance and attachment anxiety for different aspects of the caregiving experience.

Hypothesis 3: Attachment anxiety and attachment avoidance are both expected to predict caregiver burden. Increasing attachment anxiety and attachment avoidance are expected to be associated with greater reported burden.

Hypothesis 4: Attachment avoidance is predicted to account for a larger proportion of the variance in the measure of caregiver burden.

Individuals high in attachment anxiety typically require a significant amount of attention and reassurance from relationship partners, and may demand more caregiving than they provide. These individuals may interpret illness/disability in their partner as a form of abandonment, and/or they may perceive the support they receive as caregivers inadequate. Consequently, increasing attachment anxiety is expected to predict increases in reported feelings of resentment and in reported levels of caregiver burden, although this relationship is expected to be weaker relative to the one observed between these variables and attachment avoidance.

Individuals high in attachment avoidance are uncomfortable in relationships demanding significant commitment, and dislike having someone else being dependent on him or her. Therefore, attachment avoidance is expected to predict perceived burden. As attachment avoidance increases, ratings of caregiver burden are also expected to increase.

Hypothesis 5: Attachment anxiety is expected to predict individuals' use of coping strategies. High attachment anxiety may be associated with inadequate internal resources and inappropriate methods for eliciting external assistance. Therefore, as attachment anxiety increases, ratings regarding the use of resources for coping with caregiving are predicted to decline.

### *Relationship Functioning*

For the purpose of this investigation, the relationship of interest is the one between individuals with MS and their caregivers. This may be a spousal/committed partner relationship, or a relationship between an individual with MS and a family member (i.e., parent, sibling or adult child). While the first can clearly be classified as a romantic relationship, the second is being conceptualized as a form of adult friendship.

Both, however, are examples of the types of close relationships formed in adulthood and the predictions for this investigation are based on the close relationship literature.

Hypothesis 6: As both attachment avoidance and attachment anxiety are integral to individuals' emotional experiences and behaviour in relationships, both are expected to predict all aspects of relationship functioning measured in this investigation.

Specifically, as attachment anxiety and attachment avoidance increase, ratings of positive relationship attributes such as intimacy, trust and commitment are expected to decline, while ratings of negative aspects, such as ambivalence and conflict are expected to rise.

Hypothesis 7: Attachment avoidance and attachment anxiety are expected to be differentially influential on some specific aspects of relationship functioning.

Attachment anxiety is related to individuals' sense of themselves as relationship partners and felt security. Increasing attachment anxiety is expected to predict:

1. Lower relationship satisfaction;
2. Increasing demands on relationship partners;
3. Conflict within the relationship;
4. Lower ratings of caregivers as affectionate and attentive;
5. Lower ratings of caregivers as caring (i.e., being supportive, championing);
6. Lower ratings of relationships in terms of closeness/intimacy.

Attachment avoidance is related to individuals' attitudes toward others in relationships, and their desire for close relationships. Increasing attachment avoidance is expected to predict:

1. Lower tolerance for interpersonal closeness;
2. Less relationships caring and intimacy;
3. Less relationship commitment;

4. Lower relationship viability.

Hypothesis 8: For individuals with MS, attachment anxiety is expected to be a more significant predictor of relationship satisfaction. In these individuals, chronic illness has both activated the attachment system, and threatened their sense of identity and self-worth. Subsequently, individuals in the MS sample may feel more vulnerable and less certain of their partners continued love and support. The strength of these feelings, reflected, in part, by their anxiety ratings is expected to predict satisfaction, with increasing attachment anxiety predicting declining satisfaction scores.

Hypothesis 9: For individuals providing care to individuals with MS, attachment avoidance is expected to account for a greater proportion of the variance in relationship satisfaction scores. For these individuals, the prospect of caregiving, increasing recipient dependence and the potential loss of autonomy, may seem overwhelming. The magnitude of these fears, reflected, in part, in their attachment avoidance ratings, is expected to predict satisfaction, with increasing avoidance predicting declining satisfaction scores.

*Perceived Quality of life*

*Individuals with MS*

Living with MS often requires individuals to make adjustments to their lifestyle and expectations for the future. How individuals cope with MS-related change, and their appraisal of their own mental, physical and overall quality of life is expected to correlate with attachment style.

Hypothesis 10: Attachment anxiety and attachment avoidance together are expected to predict scores on all quality of life scales. Increasing attachment anxiety and attachment avoidance are expected to result in more negative appraisals of quality of life.

Hypothesis 11: Relative to attachment avoidance, attachment anxiety is expected to be the stronger predictor of perceived physical health, perceived mental health, perceived overall quality of life, and use of coping strategies.

High attachment anxiety is associated with negative self-appraisal, feelings of dissatisfaction within relationships, limited internal resources and poor coping skills. Thus, as attachment anxiety scores increase, individuals are expected to be more critical of themselves and their abilities, both physically and mentally, and to report an inferior overall quality of life, relative to individuals lower on the attachment anxiety scale. Individuals with MS who are high in attachment anxiety are also expected to have more difficulty finding ways to cope with their illness, and therefore report lower use of coping strategies.

Attachment avoidance is also expected to predict quality of life scores, though not as strongly as attachment anxiety. High attachment avoidance is associated with discomfort with close relationships, and avoidance of dependency. Therefore, individuals with MS high in attachment avoidance are expected to resent the fact that having MS requires them to accept help from others. This resentment is hypothesized to influence their perspective on their life as a whole, and result in lower scores across all quality of life areas surveyed.

Hypothesis 12: High attachment avoidance is hypothesized to predict greater utilization of coping strategies. This hypothesis is based on the argument that because individuals high in attachment avoidance prefer to retain their independence, they might be expected to search out coping strategies that will support continued autonomy.

### *Caregivers*

Hypothesis 13: In contrast to individuals with MS, attachment avoidance is expected to be the strongest predictor of quality of life ratings by caregivers. Increasing attachment

avoidance is expected to predict lower perceived physical health, lower perceived mental health, and lower perceived overall quality of life.

As was the case for relationship satisfaction, as attachment avoidance increases, individuals become less tolerant of relationship demands, and perceived dependency in their partners. Feeling trapped in the caregiving role, and perceiving their partner to be unnecessarily demanding, individuals high in attachment avoidance are expected to rate their health and quality of life as poor. Additionally, individuals high in attachment avoidance may be inclined to push their partner to be more independent than they are able, causing conflict in the relationship. Thus, as avoidance increases, individuals are expected to view their situation as negatively impacting their mental and physical health, and ultimately their overall quality of life.

## Methods

### *Participants*

Research participants were recruited with the assistance of the MS Society of Canada - Saskatchewan Division, Alberta Division, and Edmonton Chapter. In Saskatchewan, individuals with multiple sclerosis (MS) and their family caregivers were invited to participate in this research via a recruitment notice in MS Society of Canada – Saskatchewan Division publications(Fall, 2002) and through an information booth at the MS Society of Canada – Saskatchewan Division family caregiving conference held in Saskatoon on November 2, 2002. An informational advertisement for the research study also appeared on the MS Society of Canada – Saskatchewan Division web page. Interested individuals contacted the author and requested a survey package.

In Alberta, participants were recruited through MS support groups. Several groups were provided with information regarding the rationale for the investigation and how the results of the study might be helpful to the MS community.

### *The Survey Instrument*

The data for this investigation was gathered through the use of a self-report survey. Individuals with MS were asked to complete a survey which was 22 double-sided pages in length. Caregivers completed a different version which was 15 double-sided pages in length. Both questionnaires used large print (i.e., 16 point font) for easier readability.

The survey itself was a compilation of existing self-report questionnaires, portions of existing measures, and questions generated for use in similar research. The survey encompassed four sections: 1) The Impact of MS on Quality of Life; 2) Relationship Characteristics; 3) Accepting Help/Caregiving; 4) General Participant Information.

A toll-free phone number was provided to participants in both Alberta and Saskatchewan, by which they could contact the author for survey materials, to ask questions, or receive assistance in completing the questionnaires. All participants also had the option of completing the survey electronically.

### *Section 1: The Impact of MS on Quality of Life*

This section assessed the impact of MS on the lives of individuals with the disease as measured by the Multiple Sclerosis Quality of Life – 54 (MSQoL; Vickrey, Hays, Harooni, Myers, & Ellison, 1995) and on the lives of caregivers as measured by the RAND<sup>15</sup> 36-Item Short Form Health Survey (Vickrey et al., 1995). In addition, this section assessed the nature of the coping strategies that individuals employed.

Participants with MS completed the Coping with Multiple Sclerosis Scale (CMSS; Pakenham, 2001) and caregivers completed the Coping with Multiple Sclerosis Caregiving Inventory (CMSCI; Pakenham, 2002).

#### *Multiple Sclerosis Quality of Life – 54 (MSQoL-54) and Rand 36-Item Short Form Health Survey.*

The MSQoL-54 (Vickrey et al., 1995) was used to assess participants' perceived quality of life. The MSQoL-54 is a self-administered survey instrument built on the RAND-36-Item Short Form Health Survey (Vickrey et al., 1995).

The RAND-36 is a standard tool for assessing health related quality of life (Vickrey et al., 1995). The RAND-36 was initially designed as a brief measure of functioning and well being derived from longer measures used in the Medical Outcomes Study<sup>16</sup> (Ware & Sherbourne, 1992). The RAND 36 subscales measure physical functioning, bodily pain, role limitations due to physical and emotional health problems, general mental health, social functioning, energy/fatigue, and general perception of health (Ware & Sherbourne, 1992). It also includes one question designed to assess

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<sup>15</sup> RAND is an independent, nonprofit institution dedicated to improving policy and decision making through research and analysis

<sup>16</sup> The Medical Outcome Study was a longitudinal investigation of health outcomes for patients with chronic illness that examined the influence of care provider, patient and health system characteristics.

perceived change in health status. The RAND-36 has been extensively tested and its reliability and validity have been established (Ware & Sherbourne, 1992).

In order to take advantage of the strengths of both generic instruments (i.e., cross-disease comparisons and comparisons with the general population) and illness specific measures (sensitive within-disease comparison), Vickrey et al. (1995) added 18 MS specific questions to the RAND-36 creating subscales measuring Health Distress, Sexual Function, Sexual Satisfaction, Cognitive Function and Overall Quality of Life. Additional items were generated by reviewing the literature and in consultation with two physicians specializing in the diagnosis and management of MS and with one MS nurse specialist. The final measure consists of 52 items distributed onto 12 subscales and two additional independent items (Vickrey et al., 1995). Composite scores of physical health and emotional health can also be calculated (see Table 7.1).

Initial reliability and validity as well as the scale's utility in research with individuals with MS were investigated by Vickrey et al. (1995). One hundred seventy-nine adults with a definitive diagnosis of MS participated in the research study. This diverse group included newly-diagnosed individuals, individuals with a lengthy history of living with MS, individuals with relatively mild symptoms, and individuals with advanced cases of the disease (Vickrey et al, 1995).

Internal consistency reliability of the 12 subscales ranged from 0.75 to 0.96 (see Table 7.1). Multi-trait scaling analysis was also used to demonstrate item discrimination across scales (Vickrey et al, 1995). Test-retest reliability was established by having a subset of the initial test group complete the MSQoL-54 after a 30 day delay. Reliability for the composite scores of physical health and mental health was calculated to be .88 and .87 respectively. The test-retest reliabilities for the subscales were found to range from 0.67 to 0.96. The Role Limitations -Physical subscale was found to have the lowest test-retest reliability. Given the unpredictable, relapsing/remitting and degenerative nature of many forms of MS this was not unexpected.

Table 7.1  
*Subscales of the MSQoL-54 and Associated Reliabilities*

Subscale	Internal	Test-Retest
	Consistency Reliability	Reliability
Physical Function	.96	.96
Role Limitations - Physical	.86	.67
Role Limitations - Emotional	.84	.73
Pain	.92	.86
Mental Health	.87	.85
Energy	.84	.85
Health Perceptions	.80	.69
Social Function	.75	.77
Cognitive Function	.90	.86
Health Distress	.91	.78
Overall Quality of Life	.86	.87
Sexual Satisfaction	-	.75
Sexual Function	.85	.94
Change in Health	-	.90
Physical Health Composite	.96	.88
Mental Health Composite	.95	.87

Table adapted from Vickrey et al, 1995.

Factor analysis suggested a two factor solution was appropriate, supporting the use of the two composite scores. Internal consistency reliability of the Mental Health Composite was calculated to be .95 while the test-retest reliability was reported as .87. Internal consistency reliability of the Physical Health Composite was calculated to be .96 while the test-retest reliability was reported as .88.

Construct validity, the extent to which the MSQoL-54 adequately covers domains relevant to quality of life in individuals with MS, was supported by the process of including input from both relevant literature and experts in the area during scale construction. Construct validity was further supported by demonstrating moderate associations between scores on the MSQoL-54 and participants scores on comparison instruments measuring symptom severity, ambulation, role functioning and mental health (Vickrey et al., 1995). The Physical Function, Role Limitations-Physical, Health Perceptions, Social Function, Health Distress, and Overall Quality of Life subscales, as well as the Physical Health Composite, and the Mental Health Composite were the most sensitive to symptom severity and level of ambulation. Furthermore, the Physical Health Composite differentiated between symptom levels (i.e., no symptoms, mild symptoms, moderate symptoms and severe symptoms).

Physician diagnosis of depression was associated with scores on MSQoL-54 subscales tapping emotional well-being (Vickrey et al., 1995). Role Limitations-Emotional was particularly sensitive to depressive symptoms.

Vickrey et al. (1995) reported floor and ceiling effects on the Role Limitations-Physical and Role Limitations-Emotional subscale, and floor effects on the Physical Functioning subscale. Other researchers have also reported these effects (Hobart et al., 2001; Nicholl, Lincoln, Francis & Stephan, 2001). Vickrey et al. (1995) suggest these findings may limit the utility of the instrument in longitudinal research. As expected, SF-36 scores for this population of individuals with MS were significantly lower than those reported in studies sampling the general American population (Vickrey et al., 1995).

A subsequent investigation of 102 individuals with MS in the United Kingdom found reliability and validity results consistent with Vickrey et al. (1995; Jacoby et al., 1998). Jacoby et al. (1998) also demonstrated a relationship between MSQoL-54 scores and both ratings of neurological impairment and scores on the Kurtzke Expanded Disability Status Scale (Kurtzke, 1993), further establishing the scale's construct validity. The authors concluded that the MSQoL-54 has acceptable psychometric

properties and is appropriate for use in research involving individuals with MS (Vickrey et al., 1995).

*Coping with Multiple Sclerosis Scale (CMSS).*

The CMSS (Pakenham, 2001) was completed by participants with MS. The scale was used to gather participants' self-reported response to living with MS and the coping strategies they employed in response to illness-related stressors. The CMSS asks individuals to describe their main MS related problem, and then indicate on a 5 point scale ranging from 0 (*does not apply or never*) to 4 (*very often*), how often they have tried each of 36 strategies to cope with this problem. If no specific problem is identified, participants are instructed to indicate how often they utilize each strategy to cope with their MS 'in general' (Pakenham, 2001).

The CMSS was developed by Ken Pakenham (2001) in response to the need for a scale measuring coping for use in investigating the variables relevant to predicting adjustment to MS (Pakenham, 2001). Pakenham (2001) noted that although many generic measures of coping exist, they do not adequately evaluate unique and diverse strategies used in response to MS. Because different diseases vary significantly in the challenges they present, researchers investigating chronic illness have recommended the use of disease-specific coping instruments (Maes et al., 1996; Pakenham, 2001).

Items for the CMSS were derived based on data gathered during an open-ended interview on coping strategies. The sample for this investigation was fairly representative of the MS population at large, and included individuals who varied by age, level of disability and type of MS (Pakenham, 2001). The extensive list of coping mechanisms generated was reduced to 36 by eliminating redundant responses and grouping like responses. The 36 responses were transformed into scale items by rewording them to reflect the underlying coping strategies. To establish content validity, Pakenham (2001) had three health professionals specializing in MS review the items and rate their relevance to MS coping strategies. All 36 items were deemed relevant (Pakenham, 2001).

The reliability and validity of the CMSS was investigated in a sample of 414 participants recruited through three Australian MS societies. Once again, the sample

was diverse in terms of age, time since diagnosis, level of disability, and disease course (Pakenham, 2001). In addition to the CMSS, all participants completed a survey package containing measures of demographics, illness, cognitive functioning, subjective health status, and psychological distress. A subset of participants also completed measures of social adjustment, depression, dyadic adjustment, sexual relations and functional disability.

Factor analysis yielded a 7 factor solution, with seven items failing to load significantly or uniquely on any one factor. This solution resulted in the development of seven subscales that correspond to distinct ways of coping (see Table 7.2). The subscales were found to be moderately correlated, indicating that they were tapping distinct portions of a common construct (Pakenham, 2001). Internal reliabilities of the subscales ranged from .58 to .70.

Convergent validity was tested by comparing the CMSS with the Ways of Coping Checklist (WCC; Folkman & Lazarus, 1988). All CMSS scales, except the Physical Assistance subscale, correlated to at least one WCC scale. The correlations were moderate, indicating some conceptual similarity (Pakenham, 2001). In terms of divergent validity, Pakenham (2001) demonstrated that the CMSS subscales were not confounded by demographic and illness factors. Finally, in a test of criterion validity, CMSS subscales were found to correlate with theoretically related variables. For example, Acceptance was negatively related to psychological distress, depression, and positively related to subjective health status, social adjustment, and marital adjustment. In contrast, using Avoidance as a coping strategy was associated with higher levels of psychological distress, poorer subjective health and poorer social adjustment. Regression analyses also showed the CMSS to account for a greater amount of the variance in most adjustment domains relative to the WCC (Pakenham, 2001).

Based on the results of his investigation, Pakenham (2001) concluded that the CMSS is a valid and reliable instrument that measures a broad range of coping strategies. Independent sub-scales, conceptual linkages, theoretical consistency and brevity also recommend it as a research tool (Pakenham, 2001).

Table 7.2  
*CMSS Subscale Reliability*

Subscale	Internal Consistency Reliability
Acceptance	.58
Problem Solving	.74
Energy Conservation	.61
Avoidance	.58
Emotional Release	.56
Personal Health Control	.57
Physical Assistance	.70

Adapted from Pakenham (2001)

*Coping with MS Caregiving Index (CMSCI).*

In the survey for caregivers, how spouses, partners and family caregivers adjust to the demands of caring for an individual with MS was assessed using the CMSCI.

The CMSCI was developed by Ken Pakenham (2002) in response to the need for a MS-specific measure of coping with the demands of caregiving appropriate for use in survey research. The CMSCI consists of 34 items on five subscales. Individuals completing the inventory are asked to identify the main problem they are experiencing in caregiving for a individual with MS in the preceding month. With this problem in mind, individuals are asked to indicate on a 5 point scale ranging from 0 (*does not apply or never*) to 4 (*very often*), how often they have tried each of 34 strategies. If no specific problem is identified, participants are instructed to indicate how often they utilize each strategy to cope with their MS care-recipient ‘in general’ (Pakenham, 2002).

During measure development, coping strategies were collected in open-ended interviews with caregivers of individuals with MS. The sample for this phase of instrument construction was recruited with the assistance of Australian MS societies, and was generally representative of the diverse population of caregivers (Pakenham, 2002). The extensive and comprehensive list of coping strategies derived from the interview data was reduced to 34 items by eliminating redundant responses and

combining like responses. The items were reworded to reflect the underlying strategy and the resulting 34 items constitute the CMSCI (Pakenham, 2002).

Reliability and validity were investigated in a survey of 231 caregivers. Most of the caregivers (92%) lived with the individuals with MS to whom they provided care. All caregivers completed a survey comprised of the CMSCI, and measures of demographics, caregiving context, psychological distress and coping. A subset of participants also completed measures of dyadic adjustment, caregiving impact, and reciprocity and conflict (Pakenham, 2002).

Factor analysis yielded a 5 factor solution. Only one item failed to load significantly and uniquely on a single factor. These five factors were theoretically meaningful and were used to develop the five subscales of the CMSCI (See Table 7.3). The subscales were found to be moderately correlated with each other, indicating they were empirically distinct, and assessed different facets of the same underlying construct. Internal reliabilities for the subscales ranged from .57 to .76 (Pakenham, 2002).

Table 7.3  
*CMSCI Subscale Reliability*

Subscale	Internal Consistency Reliability
Avoidance	.76
Criticism and coercion	.75
Positive reframing	.57
Supportive engagement	.62
Practical Assistance	.75

Adapted from Pakenham (2002)

In support of the scale's construct validity, participants completing the questionnaire indicated that all 34 items were relevant to coping with MS caregiving and no additional strategies were suggested (Pakenham, 2002).

Convergent validity was established through comparisons between scores on the CMSCI and the WCC (Folkman & Lazarus, 1988). Analysis revealed relatively weak

associations between the two measures indicating that although they share conceptual similarities the instruments are not interchangeable (Pakenham, 2002).

Criterion validity was demonstrated by using the CMSCI to predict caregiver adjustment. Coping strategies were found to explain significant additional variance in all adjustment dimensions, except relationship conflict, after the variance explained by demographic variables and appraisal variables was accounted for (Pakenham, 2002). The results were also consistent with previous empirical findings indicating that passive avoidant, emotion focused coping is associated with poorer adjustment to the caregiving role while supportive engagement coping strategies are associated with better caregiver adjustment. The results were also theoretically consistent with the stress and coping caregiving model (Pakenham, 2002).

### *Section 2 – Relationship Characteristics*

This section was intended to gather information on participants' attachment style as measured by the Experiences in Close Relationships Inventory (ECR; Brennan, Clark, & Shaver, 1997). The Relationship Rating Form (RRF; Davis, 2001) was used to assess participants' experiences in their current relationship with their partner, spouse or other caregiver.

#### *Experiences in Close Relationships Inventory (ECR).*

The ECR (Brennan, Clark & Shaver, 1997) is a two-factor instrument consisting of 36 items that provide a score for individuals on the dimensions of anxiety and avoidance.<sup>17</sup> Items are answered on a seven point scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*).

Internal consistency reliability of the Avoidance dimension was reported as .94. Internal consistency reliability of the Anxiety dimension was reported as .91 (Brennan, Clark & Shaver, 1997).

#### *Relationship Rating Form (RRF).*

The RRF (Davis, 1996) is a 68-item questionnaire that assesses close friendships and romantic relationships. The scale was originally devised in 1982 and revised in

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<sup>17</sup> See pages 44-45 for a discussion of the development of the ECR scale.

1996 (Davis, 1996). The current version is comprised of 17 subscales measuring seven global characteristics (see Table 7.4). The additional dimensions of Maintenance, Coercion, and Equality are also included, but do not contribute to the global scales. Individuals respond to 68 individual questions and indicate their answer using a 7 or 9 point scale that ranges from *not at all* to *completely or extremely*.

Much of the research in constructing and validating the scale was conducted using college students in romantic relationships and friendships. However, the RRF has been used in research with individuals ranging in age from 18 to 80 years (Davis & Todd, 1982, 1985; Davis, Kirkpatrick, Levy, & O'Hearn, 1994; Davis & Latty-Mann, 1987; Davis, Todd, & Denneny, 1988).

As shown in Table 7.4, internal consistency reliability and test-retest reliability have been established for RRF global characteristics and associate subscales (Davis, 1996) and range from .57 to .90 (internal consistency reliability) and from .62 to .82. (test-retest reliability; Chappell & Davis, 1996).

Construct validity was investigated by having groups of individuals rate the scale items according to how well they fit intended definitions (Davis & Todd, 1985). Ratings were also made regarding item relevance (Davis & Todd, 1985). Several studies have also shown that the global scales are positively correlated with long-term satisfaction and stability in relationships (Davis, et. al. 1994; Davis, et al., 1988).

Further evaluation of the RRF's psychometric properties was conducted by Hendrick and Hendrick (1989) using a sample of 391 unmarried college students. Hendrick and Hendrick demonstrated that the subscales of the RRF correlated with the appropriate subscales on alternative measures of love and did not correlate with theoretically unrelated subscales on alternative measures, providing further support for the scale's construct validity. In terms of reliability, Hendrick and Hendrick found internal consistency for the subscales to be between .78 and .93.

Table 7.4  
*Reliabilities for the RRF Global Characteristics and their Associate Subscales*

	Internal Consistency <sup>a</sup>	Test-retest <sup>b</sup>
Viability	.80	.74
	.61	.69
	.63	.71
	.59	.62
Intimacy	.76	.78
	.75	.71
	.57	.75
Care	.89	.78
	.79	.79
	.82	.60
	.76	.75
Passion	.82	.82
	.68	.77
	.71	.77
	.65	.77
Satisfaction	.90	.73
	.83	.66
	.81	.75
	.77	.74
	.90	.60
Commitment	.89*	.81
Conflict/ Ambivalence		
	.73	.64
	.70	.65

<sup>a</sup> Data adapted from Davis, Todd and Denneny (1988) n=140

<sup>b</sup> Data from Davis and Latty-Mann (1987) (n=62)

Further evaluation of the RRF's psychometric properties was conducted by Hendrick and Hendrick (1989) using a sample of 391 unmarried college students. Hendrick and Hendrick demonstrated that the subscales of the RRF correlated with the appropriate subscales on alternative measures of love and did not correlate with theoretically unrelated subscales on alternative measures, providing further support for

the scale's construct validity. In terms of reliability, Hendrick and Hendrick found internal consistency for the subscales to be between .78 and .93.

### *Section 3 - Accepting Help / Caregiving*

Section 3 assessed how participants with MS react to requiring and accepting help from spouses and family caregivers and how spouse and family members are reacting to the demands of caregiving.

#### *Reactions to being helped.*

The assessment of participants' reactions to being helped consisted of a set of six scales adapted by Newsom et al. (1998). As this is an emerging area of investigation, psychometric data on the properties of four of these scales has yet to be published in refereed journals. Unfortunately, no psychometrically validated alternatives exist.

1. The Specific Reactions to Help and Indebtedness Scale (Newsom et al., 1998) is an 11 item scale that asks participants to reflect on the feelings they experience when they receive help with daily activities. Items on the scale refer to feelings of anger and embarrassment, and the impression that accepting help places care receivers in the debt of their caregivers (e.g., *When my partner/family member helps me do something I become angry*). Item statements are judged on a five point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

2. The 13 items on the Appropriateness, Sufficiency and Helping Intentions Scale (Newsom et al., 1998) ask about the help participants typically obtain from their spouse or other caregivers. Specifically, the scale asks care receivers to assess the extent to which the right kind of care is provided at the right time, and about their perceptions as to their caregivers motives for providing care (e.g., *My partner/family member does not help me as often as I would like to be helped*). Item statements are judged on a five point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

3. The Self-Esteem Reactions to Being Helped Scale (Newsom et al., 1998) is based on the Rosenberg Self-Esteem Scale (RSS; Rosenberg, 1968; 1986). The RSS has well established reliability and validity. Reported test-retest correlations typically range from .82 to .88, and internal consistency reliability has been found to range from

.77 to .88 in a variety of samples (Blascovich & Tomaka, 1993; Rosenberg, 1986). Newsom et al. (1998) modified the items to reflect self-esteem in the context of care receiving. For example, the item "I feel that I have a number of good qualities" from the RSS becomes "When I get help from my spouse I still feel I have a number of good qualities". The 10 items on this scale are answered on a five point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

4. The Independence, Dependence and Encouragement Scale (Newsom et al., 1998) asks participants to reflect on the type of help they have received in the past month and on any negative interactions they may have had with their caregiver. The scale is specifically focused on care receiver perceptions that their caregiver is behaving in ways which encourage their independence (e.g., *Told me I could make my own decision*) or encourage their dependence on others (e.g., *Suggested that I be more reliant on others*). The scale has nine items that are judged on a five point scale which ranges from 1 (*not at all*) to 5 (*very much*).

5. The Dependence/Independence Scale (Newsom et al., 1998), asks participants to indicate how much they like doing things for themselves. This scale reflects participants' desire for personal autonomy and their perception of self-sufficiency as a positive character trait (e.g., "It's very important to me to retain my independence"). The scale's six items are answered on a five point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

6. The Overprotection Scale (Thompson & Sobolew-Shubin, 1993) presents a series of statements about caregiver behaviour. The scale specifically asks participants to reflect on whether their caregivers are encouraging them to continue to be as independent as possible, or whether caregivers are being overprotective, and completing tasks care receivers still feel capable of carrying out (e.g., *If my partner/family member would let me, I could do more for myself than I do now*). Care receivers respond to each of 15 statements on a five point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

*The Zarit Burden Interview (ZBI).*

The ZBI (Zarit, Orr, & Zarit, 1985) was used to measure the stress associated with providing care for an ill spouse or family member. The Burden Interview consists of 22 questions that ask participants to reflect on the effect their spouse/family members' illness has on their life. Participants respond to each item on a five point scale, and possible responses range from 0 (*never*) to 4 (*nearly always*).

The ZBI is well cited in the literature and has excellent psychometric properties. The validity of the measure has been demonstrated by correlating scores on the ZBI with a global rating of burden (.71) and with the Brief Symptom Inventory (.41; Derogatis, 1975). Reported internal reliability ranges from .88 to .91 and test-retest reliability has been reported as .71 (Gallagher, et al., 1985; Zarit et al., 1987).

*Section 4 - General Participant Information*

Section 4 requested demographic information about the individual completing the questionnaire as well as general information about his/her diagnosis of MS or the diagnosis of his/her partner. Information pertaining to MS related level of disability and the amount and kind of care being received by individuals with MS, or being provided by caregivers, was not collected.

Following section 4, participants were thanked for their assistance and their contribution to MS research was acknowledged. Participants were also given space to add any further comments they felt were important. On the final page, participants were given the opportunity to request a summary of the research results.

## Results

### *Sample Characteristics*

#### *Survey Response*

In total, 95 individuals returned completed or partially completed surveys. Sixty-eight surveys were returned by individuals with MS (49 females and 19 males). Twenty-seven surveys were returned by the spouse, partner or other caregivers (9 females and 18 males). Within this sample, 19 spousal couples returned completed or partially completed surveys. The gender distribution in each sample is due, in part, to the fact that MS is more common in women.

Fifty-eight surveys (44 individual forms and 14 spouse, partner or other caregiver forms) were requested in Saskatchewan, most as a result of the information display at the MS family conference (Saskatoon, 2002). Three additional packages were also made available for distribution at support groups. Thirty-one individual forms (70%) and 13 spouse, partner or other caregiver forms (93%) were returned. Additionally, two individuals with MS completed the survey using an online version of the questionnaire.

In Alberta, 61 surveys were distributed (42 individual forms and 19 spouse, partner or other caregiver forms). Most participants received their package at MS support group meetings. However, a small number of individuals requested packages by phone or email. Thirty-five individual forms (83%), and 14 spouse, partner or other caregiver forms (74%) were returned.

#### *Missing Data*

Although 68 surveys were returned by individuals with MS, only 64 were complete with regard to the Experiences in Close Relationships scale, this investigation's measure of attachment. Individuals who did not complete this scale were

excluded from the multiple regression analyses of care receiving, relationship functioning and quality of life, but their information is included (when available) in the description of the data set as a whole. Also, among the individuals who provided attachment data, some participants did not complete all of the dependant measures. As a result, sample size varies depending on the variables/analyses under discussion. Essentially, data is missing because it was not provided by participants. No participants were excluded from investigation analyses for other reasons.

Caregiver data and data from caregiver-care receiver couples were included in descriptive analyses according to availability.

#### *Demographics*

Means and standard deviations for age are presented in Table 9.1, for the sample of individuals with MS and for the spouse, partner or other caregiver sample. When the two samples were compared, the individuals with MS were found to have a younger mean age,  $t(91) = -1.95, p = .05$ . For participants with MS, the mean age for females (46.8 years) was observed to be significantly lower than the mean age for males (53.3 years),  $t(65) = 2.43, p = .018$ . In contrast, in the caregiving sample the mean age for females (58.1 years) appeared higher than the mean age for males (50.5), but the difference only approached statistical significance  $t(24) = -1.86, p = .076$ .

Table 9.1

*Means and Standard Deviations for Age for All Participants, and for Males and Females in the Sample of Individuals with MS, and the Sample of Spouse, Partner or Other Caregivers*

Sample	Individuals with MS			Spouse, partner or other caregivers		
	N	Mean (years)	Standard Deviation	N	Mean (years)	Standard Deviation
All participants	67	48.6	10.07	26	53.2	2.04
Males	18	53.3	9.90	17	50.5	9.21
Females	49	46.8	9.17	9	58.1	11.19

The mean age at which participants reportedly received the diagnosis of MS was 36.1 years ( $SD = 10.85$ ), and the mean time since receiving diagnosis was 12.5 years ( $SD = 9.12$ ). Additional demographic information for the sample of individuals with MS, and the sample of caregivers is presented in Table 9.2.

#### *Attachment*

Means and standard deviations for the Experiences in Close Relationships (ECR) Avoidance and Anxiety scales for all participants, for the individuals with MS, and for spouse, partner, or other caregiver sub-samples are shown in Table 9.3.

Inspection of ECR Avoidance Scale scores revealed that, in general, participants were relatively low on attachment avoidance. That is, 90% of individuals achieved ECR Avoidance Scale scores of 4.5 or lower. The observed range restriction was most pronounced in the spouse, partner and other caregiver sample, in which no scores above 4.5 occurred. While undesirable statistically, this finding is not unexpected, as individuals high in attachment avoidance are difficult to recruit for participation in research investigating close relationships (Kurdek, 2002). No difference in mean attachment avoidance was observed between the individuals with MS and the sample of spouse, partner, or other caregivers,  $t(85) = 1.33, p = .187$ .

ECR Anxiety Scale scores were somewhat more evenly distributed across the available range, with the majority of individuals (48%), reporting mid-level ECR Anxiety Scale scores. However, as was the case for attachment avoidance, individuals very high in attachment anxiety are underrepresented. In this sample, 90% of participants had a mean score of 5.14 or lower on the ECR Anxiety Scale. Once again, the spouse, partner, or other caregiver sample demonstrated the most pronounced range restriction. In this sample, the maximum score observed was 4.28. However, unlike the scores on the ECR Avoidance Scale, individuals with MS were observed to have significantly higher ECR Anxiety Scale scores, relative to the spouse partner, or other caregiver sample,  $t(85) = 3.00, p = .001$ .

Table 9.2

*Frequency Data for Education Level, Type of MS, and Employment Status for Participants with MS and for Spouse, Partner or Other Caregivers*

Category	(n=68)	Spouse, partner or other caregivers
		Individuals with MS
Education level		
Grade school	1 (2%)	1 (4%)
High school	21 (31%)	9 (33%)
Some college	21 (31%)	5 (19%)
College degree	18 (27%)	10 (37%)
Graduate degree	6 (9%)	1 (4%)
Type of MS		
Relapsing-remitting	26 (38%)	10 (37%)
Progressive <sup>a</sup>	32 (47%)	12 (44%)
Don't Know	10 (15%)	5 (19%)
Employment Status		
Employed	11 (16%)	18 (67%)
Not Employed	47 (69%)	8 (30%)
Homemaker	9 (13%)	1 (4%)

<sup>a</sup>This category includes primary progressive, secondary progressive, and progressive (unspecified) MS.

Table 9.3

*Means and Standard Deviations for the ECR Avoidance and ECR Anxiety Scales*

Statistic	All Participants (N=87)	Individuals with MS (n=64)	Spouse, partner or other caregivers (n=23)
ECR Avoidance Scale			
Mean (SD)	2.92 (1.24)	3.03 (1.28)	2.63 (1.11)
ECR Anxiety Scale			
Mean (SD)	3.35 (1.35)	3.56 (1.37)	2.66 (1.00)

Note: The minimum and maximum scores on the ECR Anxiety Scale and ECR Avoidance Scale are 1 and 7 respectively. Increasing scores correspond to greater levels of attachment avoidance and attachment anxiety.

*Close Relationships*

As might be expected, given the relatively low scores observed on the ECR Avoidance Scale, 77 participants (89%), reported being married or in a close romantic relationship. In the sub-sample of individuals with MS, 54 participants (84%) reported being married or in a close romantic relationship at the time of their diagnosis, and 45 (70%) reported that this relationship endures.

All of the caregivers who responded were married or in committed relationships, and all but one reported their partner to be an individual with MS. The single exception was a parent providing care to their young adult child. Of the caregivers in a relationship with an individual with MS (n=26), twenty-four (92%) report having been in this relationship when their partner was diagnosed with MS.

*Analysis of the Dependent Measures for Individuals with MS*

In order to investigate the predictive power of attachment anxiety and attachment avoidance on each of the dependent measures in the areas of care receiving, relationship functioning, and perceived quality of life, as well as the influence of selected demographic variables, hierarchical multiple regression was used to analyze the data collected from individuals with MS. The primary goal of this research was to investigate the ability of attachment anxiety, attachment avoidance and the additive combination of these variables to predict reactions to being helped, relationship functioning and quality of life for individuals receiving care. Consequently, anxiety and avoidance were always entered into the regression equation, regardless of their zero-order correlation with the dependent variable of interest.

As the initial step in analyzing the data from the dependent measures collected from individuals with MS, a correlation matrix was generated to explore whether variables other than anxiety and avoidance were related to scores on the dependent measures, and to determine if demographic variables correlated with attachment variables. The variables gender, age, type of caregiver, type of MS, and time since diagnosis, were included in this analysis. Gender and age were chosen for inclusion because they could potentially moderate the influence of attachment on the dependent variables. There are mixed results from previous research investigating the relationships between these variables and asking for and receiving help from others, behaviour in close relationships, and perceived quality of life. For example, some investigations report strong relationships (e.g., between age and perceived quality of life; Ford, Gerry, Johnson, & Tennant, 2001), while others find little evidence of a relationship (e.g., between gender and care receiving; Martire, Schulz, Wrosch, & Newsom, 2003).

Type of caregiver (spouse/partner or other) was chosen for inclusion because previous research suggests that individuals may respond differently to receiving care from a spouse or partner, relative to receiving care from a friend, or hired assistant (Shibusawa & Chen, 2002). Differences in response to type of caregiver may be observed in response to care receiving, relationship functioning and/or perceptions of quality of life.

Type of MS (progressive or remitting) was included as an indicator of severity. Theoretically, individuals may differ in their response to care receiving depending on the type of care required and the perceived necessity of care. Certainly, severity of illness has been substantiated as a factor related to caregiver response (Aronson, 1997), and a similar relationship may exist for care receiving individuals. Disease severity may also impact individuals' relationships and quality of life.

Finally, time since diagnosis was included because, theoretically, individuals may differ in their response to care receiving, perceptions of relationship functioning and perceived quality of life, as they adjust to their illness, as their symptoms increase in severity, and/or as they become accustomed to the necessity of asking for help and/or receiving care.

*Care Receiving*

Do attachment variables (i.e., ECR Anxiety and ECR Avoidance Scales scores) predict reactions to being helped? If observed, are these relationships moderated by demographic and illness related variables?

*Reliability of Care Receiving Scales*

Reaction to care receiving is an emerging area of research, and as such, the measures being utilized are still being refined. As the reliability of the scales used to measure reaction to care receiving has not been empirically established, Cronbach's Alpha was calculated for each scale (see Table 9.4). Reliability was found to be adequate for all scales except for the Independence, Dependence and Encouragements Scale and the Dependence/Independence Scale. Further inspection of the Independence, Dependence and Encouragements Scale suggested that the scale items might be measuring the two independent factors of Discouragement of Independence (5 items) and Encouragement of Dependence (4 items). It appears, given individuals' responses in this survey that being discouraged from independence was not perceived as encouragement toward dependence and encouraging appropriate dependency was not necessarily perceived as discouraging the maintenance of independence. Therefore, the items for each of these factors were combined into two scales, the reliabilities of which are reported in Table 9.4. The Dependence/Independence Scale was excluded from the analysis, due to low Cronbach's alpha.

Table 9.4

*Internal Reliability, as indicated by Cronbach's Alpha, for the Care Receiving Scales*

Scale	Cronbach's Alpha
Specific Reactions to Help and Indebtedness Scale ( <i>N</i> = 11)	.66
Appropriateness, Sufficiency and Helping Intentions Scale ( <i>N</i> = 13)	.88
Self-esteem Reactions to Help Scale <sup>a</sup> ( <i>N</i> = 10)	.91
Independence, Dependence and Encouragements Scale ( <i>N</i> = 9)	.34
Dependence/Independence Scale ( <i>N</i> = 6)	.39
Overprotection Scale ( <i>N</i> = 18)	.88
Discouragement of Independence Scale ( <i>N</i> = 5)	.72
Encouragement of Dependence Scale ( <i>N</i> = 4)	.79

Note: *N* refers to the number of items on each scale. The Independence, Dependence, and Encouragements Scale was divided, subsequently, into two scales, the Discouragement of Independence and Encouragement of Dependence Scales.

#### *Preliminary Analysis of Care Receiving Data*

Forty-eight (71%) of the individuals with MS listed their spouse or partner as the individual from whom they most often receive care. An additional 11(16%) cited other family members as caregivers. The remaining 9 (13%) participants indicated they were most likely to seek caregiving from friends, MS support groups, hired assistants, and faith communities.

Initial correlation analysis revealed significant correlations between certain demographic variables and several of the care receiving scales. These relationships will be described in detail in the appropriate section, along with the related regression analysis. Means and standard deviations for each scale are provided in Table 9.5. Sample sizes differ from those reported earlier in the text due to incomplete survey data. Results of the correlation analysis are provided in Table 9.6.

Caregiver type (spouse/partner caregiver vs. non-spouse/partner caregiver) was the only demographic variable observed to correlate with ECR Anxiety and ECR Avoidance Scale scores. These correlations suggest that higher scores on the ECR Anxiety and ECR Avoidance Scales are related to having a non-spouse/partner caregiver, relative to a spouse or partner caregiver (see Table 9.6).

Table 9.5

*Means and Standard Deviations for the Care Receiving Scales*

Scale	All individuals with MS <i>n</i> =63	Individuals with spouse/partner caregivers <i>n</i> =46	Individuals with non-spouse/partner caregivers <i>n</i> =17
Specific Reactions to Help and Indebtedness Scale	2.70 (.44)	2.63 (.39)	2.89 (.51)
Appropriateness, Sufficiency and Helping Intentions Scale	2.25 (.67)	2.15 (.63)	2.54 (.71)
Self-esteem Reactions to Help Scale <sup>a</sup>	2.58 (.74)	2.50 (.67)	2.79 (.86)
Discouragement of Independence Scale	3.72 (.87)	3.86 (.80)	3.34 (.96)
Encouragement of Dependence Scale	1.66 (.76)	1.46 (.60)	2.19 (.90)
Overprotection Scale	2.36 (.59)	2.24 (.51)	2.67 (.68)

Note: minimum scale score = 1, maximum scale score = 5. Increasing scores indicate more negative assessments of care receiving. Standard deviations appear in brackets

<sup>a</sup> *N* = 62 for all individuals with MS, and *n* = 16 for individuals with non-spouse/partner caregivers.

Table 9.6.

*Pearson Correlation Coefficients for Care Receiving Scales, Selected Demographic and Illness Related Variables, and ECR Anxiety and ECR Avoidance Scale scores*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	1	.37**	-.51**	.28*	.25*	.05	-.17	-.12	-.18	-.16	.23	-.04	.00
2. Time since diagnosis		1	-.38**	.05	-.05	.10	.10	.13	-.14	.06	-.01	.02	.04
3. Type of MS <sup>a</sup>			1	-.28	.15	-.13	.04	-.15	.05	-.01	.07	-.36**	-.21
4. Gender <sup>b</sup>				1	-.17	-.11	.04	.21	-.27*	-.01	-.01	.10	-.19
5. Type of Caregiver <sup>c</sup>					1	-.41**	-.33**	-.27*	-.26*	-.17	.27**	-.43**	-.33*
6. ECR Avoidance						1	.50**	.29*	.49**	.50**	-.01	.36**	.56**
7. ECR Anxiety							1	.30*	.43**	.40**	-.23	.32**	.36**
8. Specific reactions to help and indebtedness								1	.37**	.51**	-.21	.33**	.32**
9. Appropriateness, sufficiency and helping intentions									1	.54**	.01	.26*	.59**
10. Self-esteem reactions to help										1	.12	.16	.45**
11. Discouragement of Independence											1	-.40**	-.12
12. Encouragement of Dependence												1	.61**
13. Overprotection													1

<sup>a</sup> Relapsing-remitting MS was coded as 1 and Progressive MS was coded as -1

<sup>b</sup> Male participants were coded as 1 and female participants were coded as -1

<sup>c</sup> Spouse/partner caregivers were coded as 1 and non-spouse/partner caregivers were coded as -1

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

#### *Analysis of Care Receiving Scales*

In order to determine if ECR Anxiety Scale scores and ECR Avoidance Scale scores predict scores on the care receiving scales, and to determine if the predictive power of the attachment measures is moderated by caregiver type, hierarchical

regression analyses were conducted<sup>18</sup>. Caregiver type was included because of its significant correlation with ECR Anxiety and ECR Avoidance Scale scores, the main predictor variables, as well as with five of the six care receiving scales (sees Table 9.6). Therefore, in addition to including ECR Anxiety, ECR Avoidance and caregiver type in the care receiving regression equations, the interaction terms Anxiety x Caregiver Type<sup>19</sup> and Avoidance x Caregiver Type were also included.

*Specific Reactions to Help and Indebtedness.*

Table 9.7 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety and Caregiver Type x Avoidance on the Specific Reactions to Help and Indebtedness Scale.

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<sup>18</sup> As part of initial data screening to ensure linear regression was appropriate for this data set, Mahalanobis distance was calculated to detect the presence of multivariate outliers. One multivariate outlier was detected for all regressions with ECR Anxiety, ECR Avoidance, caregiver type, Anxiety x Caregiver Type and Avoidance x Caregiver Type as the independent variables. Variable transformation did not provide a resolution to this problem.

The case in question is part of the sub sample of individuals receiving care from someone other than a spouse or partner. This individual appears to have been detected as having an unusual pattern of ECR Anxiety and ECR Avoidance scores within this sub sample. This individual had the highest ECR Anxiety score, a relatively low ECR Avoidance score, and a large difference between the two values. The data was checked for accuracy and scores were found to be legitimate. Theoretically, this individual's attachment scores are not unusual. However, attachment theory would also suggest that an individual with this pattern (high attachment anxiety, low attachment avoidance) would likely be in a romantic relationship. Investigation of this individual's demographic information indicates that although this individual is detected as unusual in the small group of individuals receiving care from individuals other than spouses or partner sampled for this investigation, this individual is a legitimate member of this population. Therefore, I decided to retain, rather than delete, the data associated with this individual case, recognizing that illegitimate outliers can distort results and lead to erroneous conclusions. In order to further investigate the legitimacy of this decision, analyses with the outlier removed were conducted. No substantial differences, which would fundamentally change the conclusions drawn from the data presented, were observed.

<sup>19</sup> For all regression analyses, ECR Anxiety Scale and ECR Avoidance Scale values were centered. These centered values were entered into the regression equations, and used to create interaction terms.

Table 9.7

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver type, and Caregiver Interactions on the Specific Reactions to Help and Indebtedness Scale*

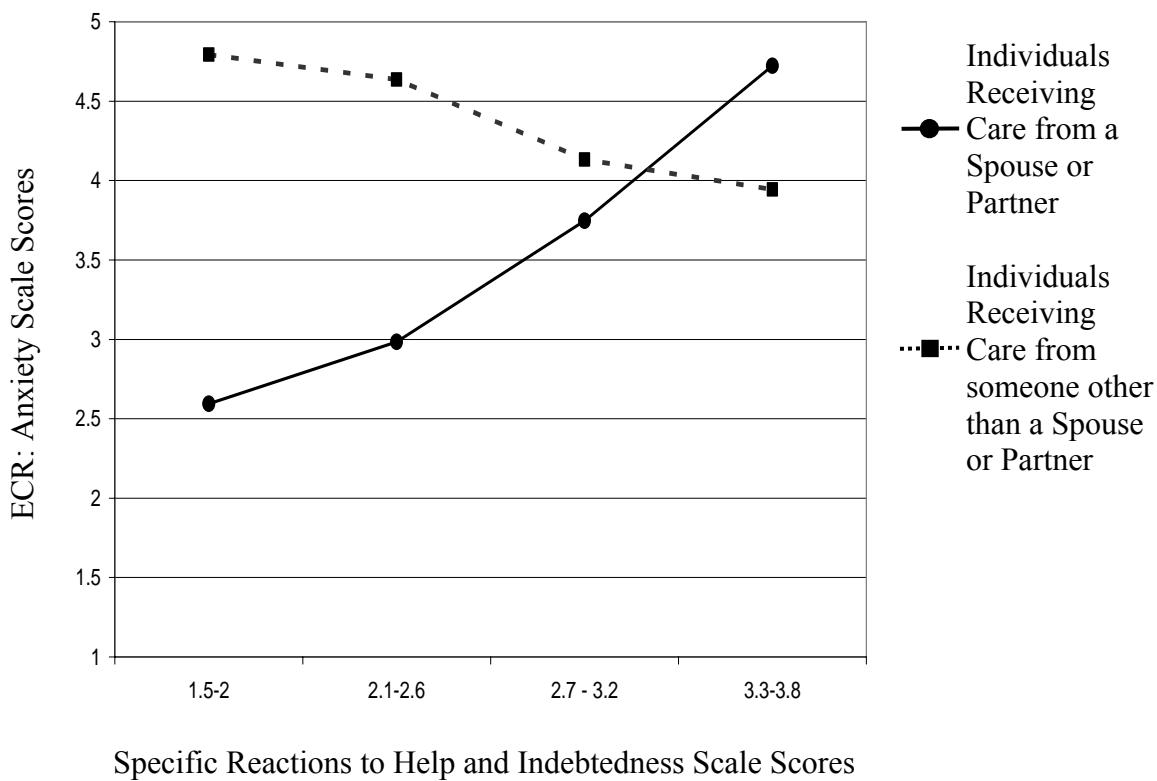
	$R^2$	$R^2_{\text{adjusted}}$	B	B	$sR^2$
Step 1	.137	.093			
ECR Anxiety			.061	.189	<i>ns</i>
ECR Avoidance			.044	.128	<i>ns</i>
Caregiver Type			-.077	-.158	<i>ns</i>
Step 2	.233	.166			
Caregiver Type x Anxiety			.190	.564*	.095
Caregiver Type x Avoidance			-.057	-.154	<i>ns</i>

\* p < .05

With all variables entered into the equation,  $R^2 = .233$ ,  $F(5,57) = 3.472$ ,  $p = .008$ . After ECR Anxiety, ECR Avoidance and caregiver type were entered on the first step, R was significantly different from zero, and 14% of the variance in Specific Reactions to Help and Indebtedness Scale scores was accounted for,  $R^2 = .137$ ,  $F(3,59) = 3.130$ ,  $p = .032$ . None of the variables entered on step 1 emerged as unique significant predictors, accounting for unique variance in Specific Reactions to Help and Indebtedness Scale scores. This finding suggests that, in combination, elevated ECR Avoidance scores, elevated ECR Anxiety scores, and being cared for by someone other than a spouse or partner is predictive of negative reactions to being helped and an increased sense of indebtedness to ones' caregiver. The potential moderating effects of caregiver type were analyzed on step 2.

The interaction terms entered on step 2 accounted for an additional 10% of variance,  $R^2_{\text{chg}} = .096$ ,  $F_{\text{chg}}(2,57) = 3.575$ ,  $p = .034$ . At this step, the Caregiver Type x Anxiety interaction emerged as a significant predictor, accounting for all of the

additional variance accounted for on this step. The correlations between ECR Anxiety Scale scores and scores on the Specific Reactions to Help and Indebtedness Scale, for individuals receiving care from a spouse or partner,  $r(44) = .40, p = .006$ , and for individuals receiving care from someone other than a spouse or partner,  $r(15) = -.30, p = .24$ , were inspected. These correlations indicated that for individuals receiving care from a spouse or partner, higher scores on the ECR Anxiety Scale are related to increasingly negative reactions to being helped. Conversely, for individuals receiving care from someone other than a spouse or partner, scores on the Specific Reactions to Help and Indebtedness Scale are not significantly related to ECR anxiety scores. Figure 9.1 provides a visual representation of the Caregiver Type x Anxiety interaction.



*Figure 9.1. Interaction between ECR Anxiety Scale scores and Caregiver Type on the Specific Reactions to Help and Indebtedness Scale.*

#### *Appropriateness, Sufficiency and Helping Intentions.*

In addition to care giver type, gender was also observed to correlate with scores on the Appropriateness, Sufficiency and Helping Intentions Scale suggesting that

relative to male participants, female participants tend to perceive the help they receive from their caregivers as more inappropriate and less sufficient to their needs (see Table 9.6). Female participants also tend to make more negative judgments regarding their caregivers' intentions with regard to care giving behavior. Despite being correlated with the dependent measure, gender was not included in the hierarchical regression. This decision was made in order to maintain parsimony across the set of analyses conducted in this investigation and, in light of the small sample size, to preserve statistical power. Table 9.8 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety and Caregiver Type x Avoidance on the Appropriateness, Sufficiency and Helping Intentions Scale scores.

Table 9.8

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver type, and Caregiver Interactions on the Appropriateness, Sufficiency and Helping Intentions Scale*

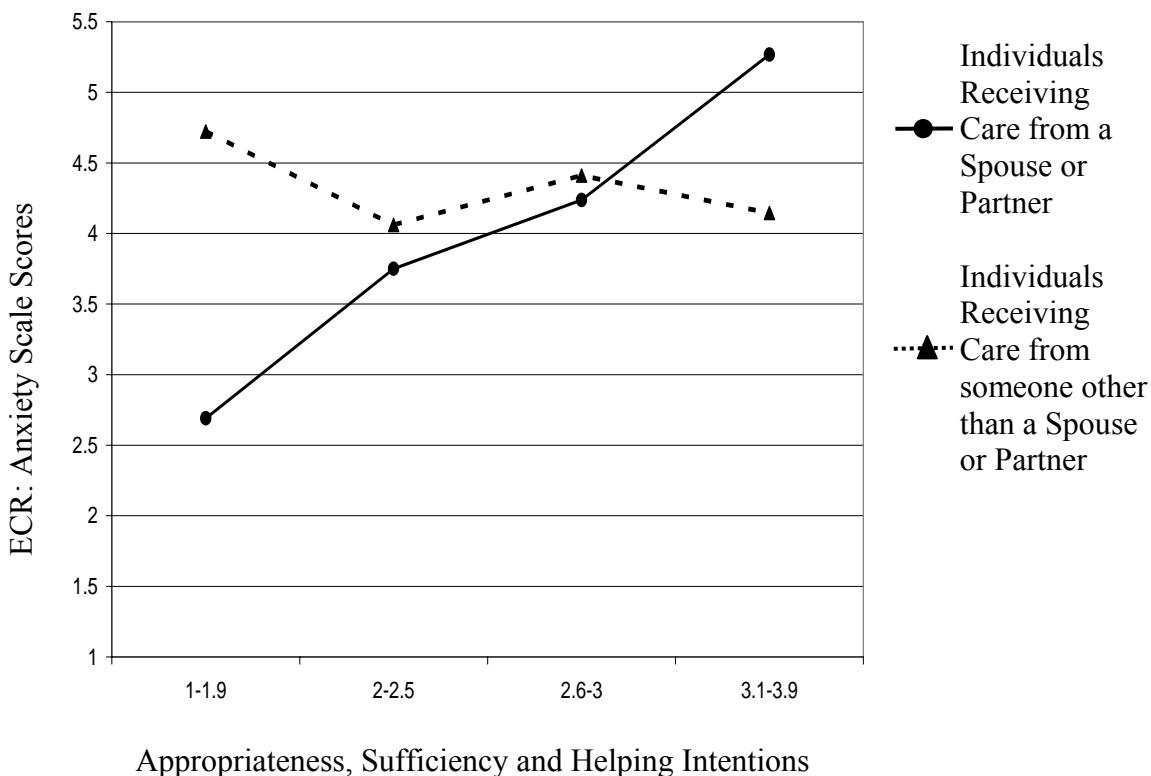
	$R^2$	$R^2_{\text{adjusted}}$	B	$\beta$	$sr^2$
Step 1	.291	.255			
ECR Anxiety			.119	.243	<i>ns</i>
ECR Avoidance			.189	.358*	.087
Caregiver Type			-.025	-.033	<i>ns</i>
Step 2	.381	.326			
Caregiver Type x Anxiety			..277	.538 <sup>a</sup>	.086
Caregiver Type x Avoidance			-.104	-.184	<i>ns</i>

\* $p < .05$ .

With all variables entered into the equation,  $R^2 = .419$ ,  $F(5,57) = 7.006$ ,  $p < .001$ . After ECR Anxiety, ECR Avoidance, and caregiver type were entered on the first step,  $R$  was significantly different from zero, and 29% of the variance in Appropriateness,

Sufficiency and Helping Intentions Scale scores was accounted for,  $R^2 = .357$ ,  $F(3,59) = 8.083$ ,  $p < .001$ . At this step, ECR Avoidance emerged as a significant predictor, accounting for unique variance in Appropriateness, Sufficiency and Helping Intentions Scale scores (see Table 9.8). The main effect of attachment avoidance indicates that increasing attachment avoidance is associated with more negative appraisals of the appropriateness and sufficiency of the help being received as well as caregiver intentions.

The interaction terms entered on step 2 accounted for an additional 9% of variance,  $R^2_{chg} = .089$ ,  $F_{chg}(2,57) = 4.112$ ,  $p = .021$ . At this step, the Caregiver Type x Anxiety interaction emerged as a significant predictor, accounting for all of the additional variance accounted for on this step. Therefore the correlations between ECR Anxiety Scale scores and scores on the Appropriateness, Sufficiency and Helping Intentions Scale for individuals receiving care from a spouse or partner,  $r(44) = .52$ ,  $p < .001$ , and for individuals receiving care from someone other than a spouse or partner,  $r(15) = -.17$ ,  $p = .520$ , were inspected. These correlations indicate that, for individuals receiving care from a spouse or partner, increasing attachment anxiety is related to increasing negative reactions to being helped. Similar to the previously described care receiving scale, for individuals receiving care from someone other than a spouse or partner, attachment anxiety appears relatively unrelated to judgments regarding appropriateness, sufficiency and helping intentions. Figure 9.2 provides a visual representation of the Caregiver Type x Anxiety interaction.



*Figure 9.2. Interaction between ECR Anxiety Scale scores and Caregiver Type on the Appropriateness, Sufficiency and Helping Intentions Scale.*

#### *Self Esteem Reactions to Help.*

Table 9.9 provides a summary of the regression of anxiety, avoidance, caregiver type, Caregiver Type x Anxiety and Caregiver Type x Avoidance on the Self Esteem Reactions to Help Scale.

With all variables entered into the equation,  $R^2 = .427$ ,  $F(5,56) = 8.331$ ,  $p < .001$ . After anxiety, avoidance and caregiver type were entered on the first step,  $R$  was significantly different from zero, and 28% of the variance Self Esteem Reactions to Help Scale scores was accounted for,  $R^2 = .281$ ,  $F(3,58) = 7.562$ ,  $p < .001$ . Of the variables entered on step 1, only avoidance emerged as significant predictor, uniquely accounting for 12% of the variance in Self Esteem Reactions to Help Scale scores (see Table 9.9). Inspection of the regression coefficients for ECR Avoidance indicates that as attachment avoidance increases individuals' experience increasingly negative effects

on their self-esteem in reaction to receiving care (i.e., self-esteem, as it relates to care receiving, declines).

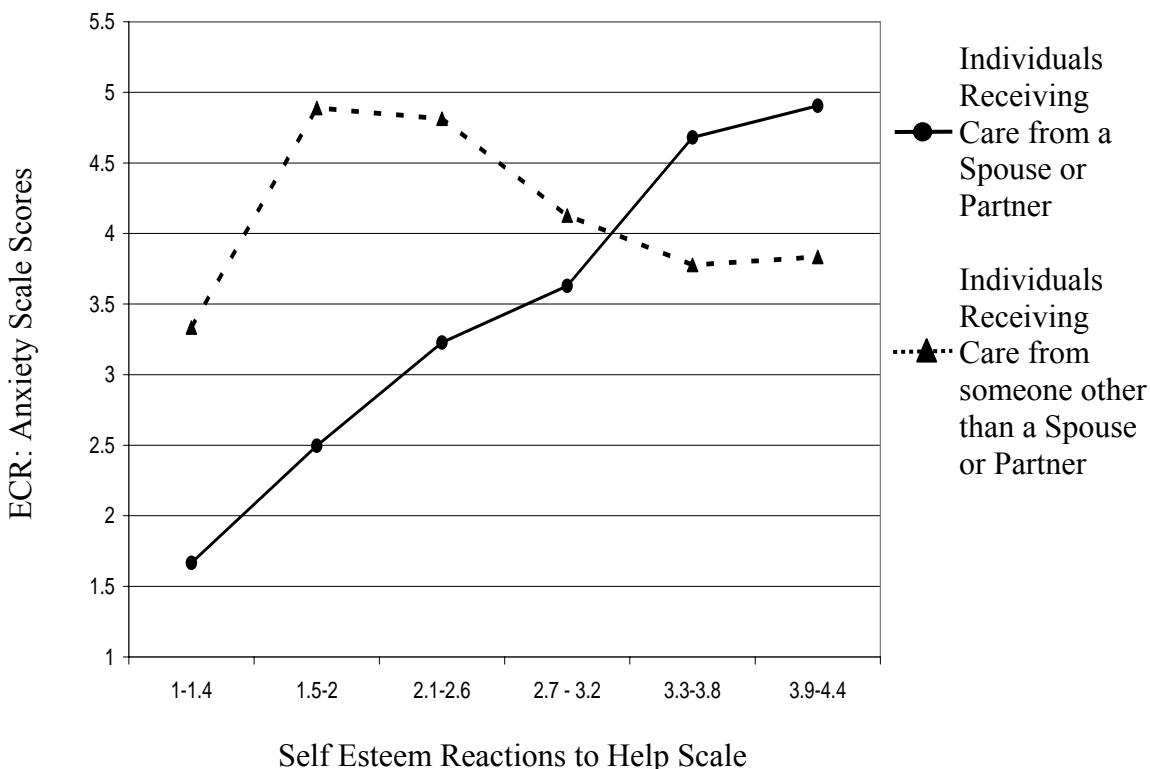
Table 9.9

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver type, and Caregiver Interactions on the Self Esteem Reactions to Help Scale*

	$R^2$	$R^2_{\text{adjusted}}$	B	B	$sr^2$
Step 1	.281	.244			
ECR Anxiety			.115	.211	<i>ns</i>
ECR Avoidance			.254	.413*	.122
Caregiver Type			.037	.044	<i>ns</i>
Step 2	.427	.375			
Caregiver Type x Anxiety			.401	.710*	.144
Caregiver Type x Avoidance			-.098	-.150	<i>ns</i>

\* p < .05

The interactions entered on step 2 accounted for an additional 15% of variance,  $R^2_{\text{chg}} = .145$ ,  $F_{\text{chg}}(2,56) = 7.099$ ,  $p = .002$ . At this step, the Caregiver Type x Anxiety interaction emerged as a significant predictor. Inspection of the correlations between ECR Anxiety and Self Esteem Reactions to Help Scale scores for individuals receiving care from a spouse or partner,  $r(44) = .563$ ,  $p < .001$ , and for individuals receiving care from someone other than a spouse or partner,  $r(14) = -.407$ ,  $p = .118$ , indicates that for individuals receiving care from a spouse or partner, elevated attachment anxiety is related to lower care receiving related self-esteem. No clear relationship exists between attachment anxiety and self esteem reactions to help for individuals receiving care from an individual other than their spouse or partner. Figure 9.3 provides a visual representation of the Caregiver Type x Anxiety interaction.



*Figure 9.3. Interaction between ECR Anxiety Scale scores and Caregiver Type on the Self Esteem Reactions to Help Scale.*

#### *Discouragement of Independence.*

Table 9.10 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety and Caregiver Type x Avoidance on the Discouragement of Independence Scale.

With all variables entered into the equation,  $R^2 = .220$ ,  $F(5,57) = 3.207$ ,  $p = .041$ . After ECR Anxiety, ECR Avoidance and caregiver type were entered on step 1,  $R$  was significantly different from zero,  $R^2 = .129$ ,  $F(3,59) = 2.925$ ,  $p = .041$ , and approximately 13% of variance in Discouragement of Independence Scale scores was accounted for. On this step, caregiver type emerged as a significant predictor, uniquely accounting for 6% of variance in Discouragement of Independence Scale scores. As suggested by the previously discussed correlation, inspection of the regression coefficient for caregiver type indicated that being cared for by a spouse or partner was associated with higher scores on the Discouragement of Independence Scale. Relative

to participants receiving care from someone other than a spouse or partner, individuals receiving care from a spouse or partner were more likely to report that their partner discouraged them from being independent in their daily lives.

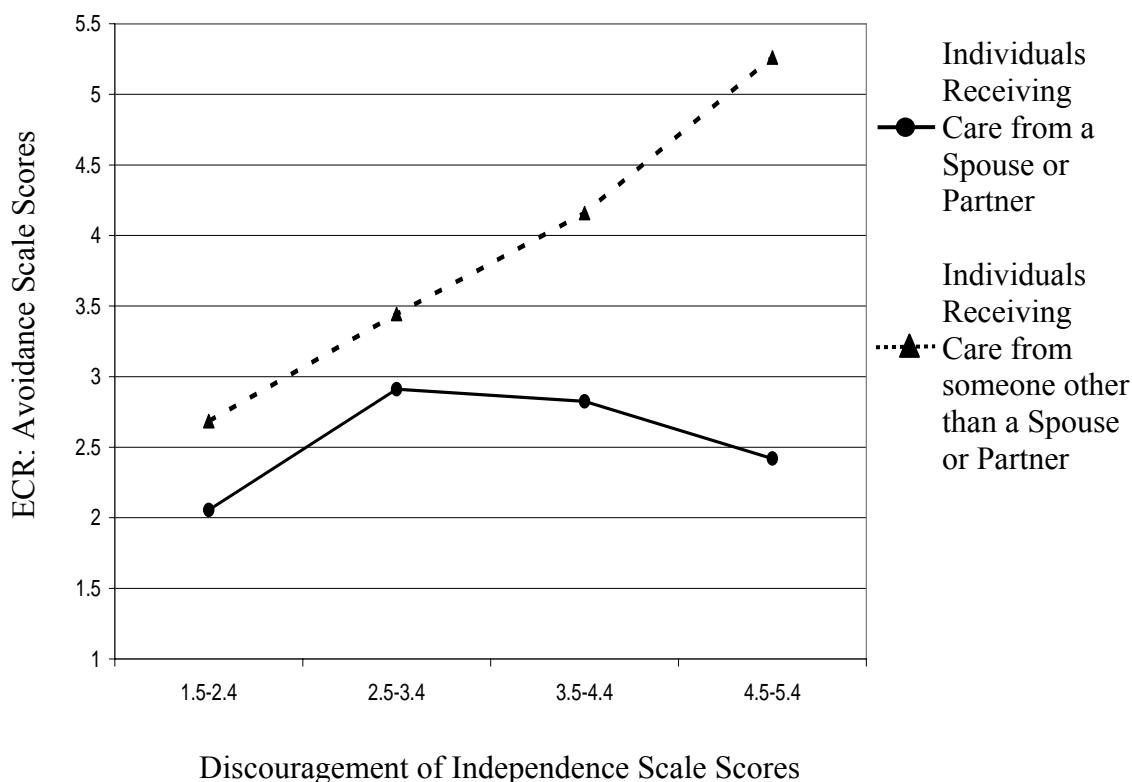
Table 9.10

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver Type, and Caregiver Interactions on the Discouragement of Independence Scale*

	$R^2$	$R^2_{\text{adjusted}}$	B	$\beta$	$sr^2$
Step 1	.129	.085			
ECR Anxiety			-.161	-.254	ns
ECR Avoidance			.153	.232	ns
Caregiver Type			.269	.278*	.063
Step 2	.220	.151			
Caregiver Type x Anxiety			.173	.269	ns
Caregiver Type x Avoidance			-.250	-.343*	.088

\* p < .05

The interactions entered on step 2 accounted for an additional 9% of variance,  $R^2_{\text{chg}} = .09$ ,  $F_{\text{chg}}(2,57) = 3.289$ ,  $p = .045$ . At this step, the Caregiver Type x Avoidance interaction emerged as a significant predictor. Inspection of the correlations between ECR Avoidance Scale Scores and Discouragement of Independence Scale scores for individuals receiving care from a spouse or partner,  $r(44) = -.132$ ,  $p = .382$ , and for individuals receiving care from someone other than a spouse or partner,  $r(15) = .54$ ,  $p = .025$ , indicates that for individuals receiving care from someone other than a spouse or partner, as attachment avoidance increases, individuals' rate their partners as more likely to discourage them from being independent. Figure 9.7 provides a visual representation of the Caregiver Type x Avoidance interaction.



*Figure 9.4. Interaction between ECR Avoidance and Caregiver Type on the Discouragement of Independence Scale.*

#### *Encouragement of Dependence.*

Type of MS (i.e., relapsing or progressive) was observed to be correlated with scores on the Encouragement of Dependence Scale (see Table 9.6). This correlation indicated that individuals with progressive MS were more likely, relative to individuals with relapsing-remitting MS, to report that their caregivers encouraged them to be more dependent in their daily lives. Despite this significant relationship, type of MS was not included in the regression equation. This decision was based on the significant number of participants who reported that they did not know what type of MS they had ( $n = 10$ ), further reducing an already small sample. Table 9.11 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety and Caregiver Type x Avoidance on Encouragement of Dependence Scale.

With all variables entered into the equation,  $R^2 = .245$ ,  $F(5,57) = 3.691$ ,  $p = .006$ .

After ECR Anxiety, ECR Avoidance and caregiver type were entered on the step 1,  $R$

was significantly different from zero,  $R^2 = .238$ ,  $F(3,59) = 6.134$ ,  $p = .001$ , and approximately 24% of variance in Encouragement of Dependence Scale scores was accounted for. On this step, caregiver type emerged as a significant predictor, uniquely accounting for 8% of variance in Encouragement of Dependence Scale scores.

The interactions entered on step 2 did not account for a significant amount of additional variance,  $R^2_{chg} = .007$ ,  $F_{chg}(2,57) = .258$ ,  $p = .773$ .

Table 9.11

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver type, and Caregiver Interactions on the Encouragement of Dependence Scale*

	$R^2$	$R^2_{adjusted}$	$B$	$\beta$	$sr^2$
Step 1	.238	.199			
ECR Anxiety			.078	.140	<i>ns</i>
ECR Avoidance			.091	.152	<i>ns</i>
Caregiver Type			-.273	-.322*	0.084
Step 2	.245	.178			
Caregiver Type x Anxiety			.008	.013	<i>ns</i>
Caregiver Type x Avoidance			-.058	-.091	<i>ns</i>

\*  $p < .05$

*Overprotection Scale.*

Table 9.12 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety and Caregiver Type x Avoidance on the Overprotection Scale.

With all variables entered into the equation,  $R^2 = .427$ ,  $F(5,57) = 8.497$ ,  $p < .001$ . After ECR Anxiety, ECR Avoidance and caregiver type were entered on the first step,  $R$  was significantly different from zero, and 33% of the variance in Overprotection Scale scores was accounted for,  $R^2 = .328$ ,  $F(3,59) = 9.597$ ,  $p < .001$ . At this step, ECR

Avoidance emerged as a significant predictor, accounting for unique variance in Overprotection Scale scores (see Table 9.12). However, this main effect is qualified by a significant interaction between ECR Avoidance and Caregiver Type.

Table 9.12

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver type, and Caregiver Interactions on the Overprotection Scale*

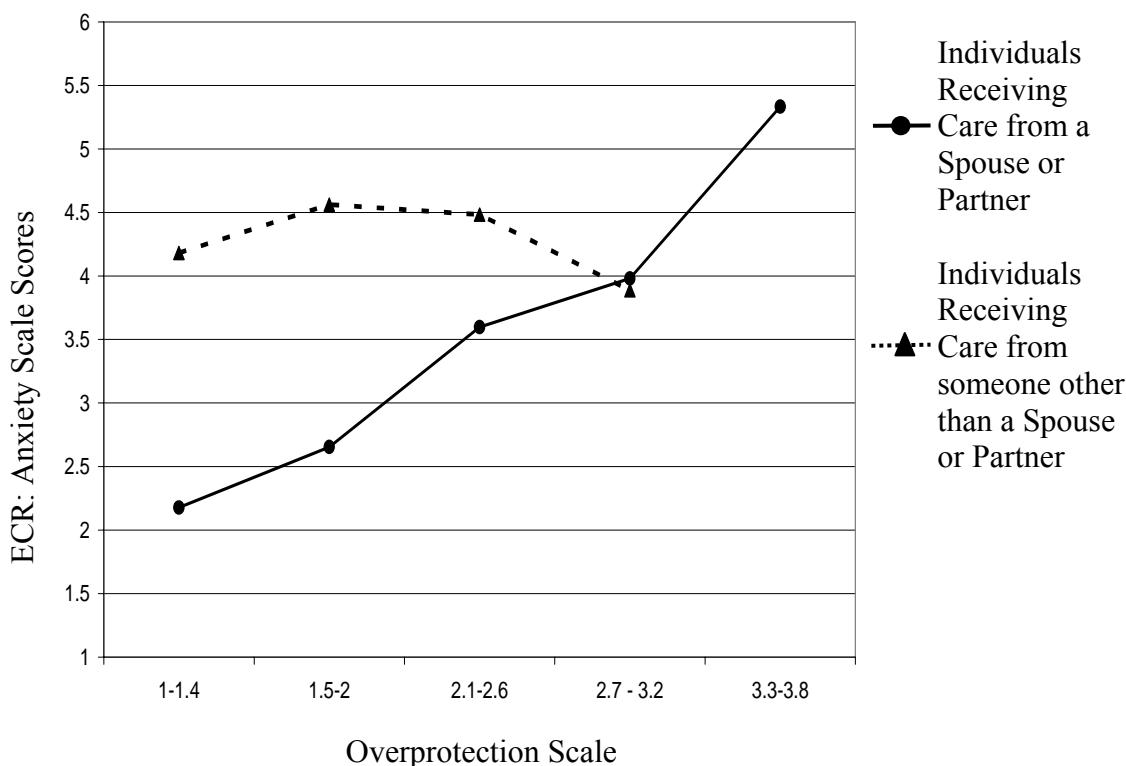
	$R^2$	$R^2_{\text{adjusted}}$	B	$\beta$	$Sr^2$
Step 1	.328	.294			
ECR Anxiety			.038	.088	<i>ns</i>
ECR Avoidance			.216	.469*	.149
Caregiver Type			-.070	-.107	<i>ns</i>
Step 2	.427	.377			
Caregiver Type x Anxiety			.240	.533*	.085
Caregiver Type x Avoidance			-.124	-.150*	.047

\*  $p < .05$

The interactions entered on step 2 accounted for an additional 10% of variance,  $R^2_{\text{chg}} = .099$ ,  $F_{\text{chg}}(2,57) = 4.929$ ,  $p = .011$  in Overprotection Scale scores. At this step, the Caregiver Type x Anxiety interaction and the Caregiver Type x Avoidance interaction emerged as significant predictors<sup>20</sup>. Inspection of the correlations between ECR Anxiety Scale scores and Overprotection Scale scores for individuals receiving care from a spouse or partner,  $r(44) = .42$ ,  $p = .003$  and for individuals receiving care

<sup>20</sup> Readers will note that the variance accounted for by the interaction terms entered on Step 2 is greater than the  $R^2_{\text{chg}}$  reported. Typically, the unique variance accounted for by each regression term should not be more than the collective variance accounted for by the regression equation. However, the inclusion of correlated predictors in a regression model can produce squared semipartial correlations which combine to exceed  $R^2$  or  $R^2_{\text{chg}}$  (Tabachnick & Fidell, 2000).

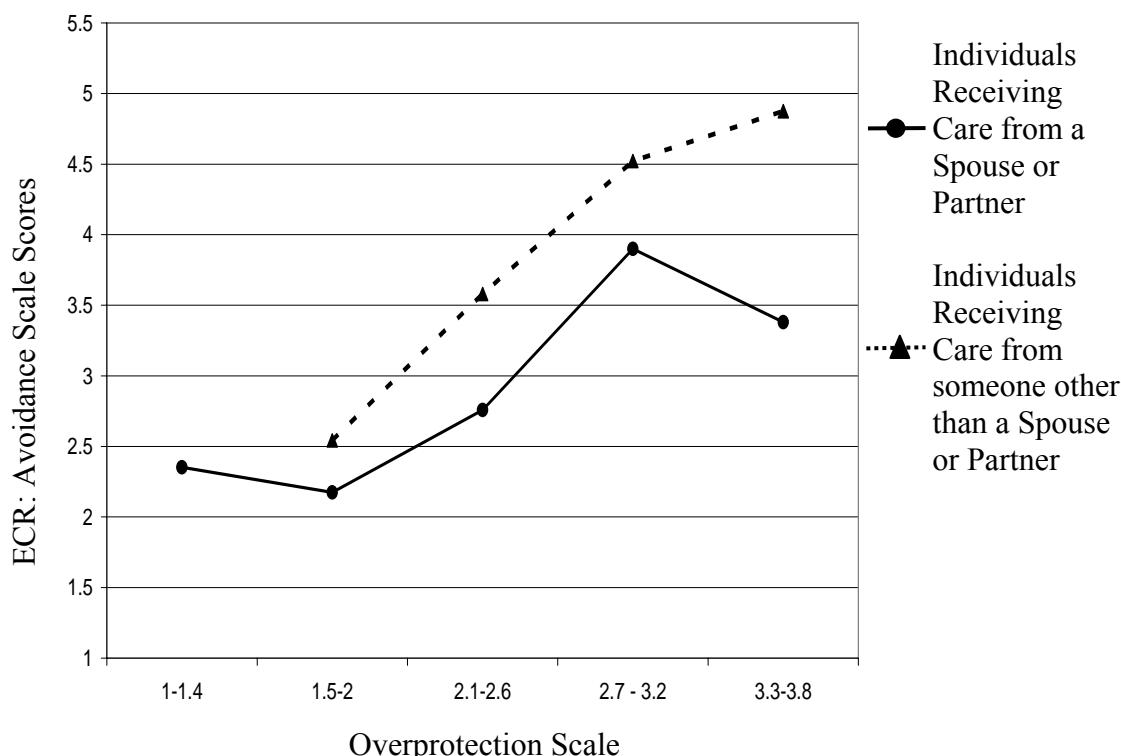
from someone other than a spouse or partner,  $r(15) = -.15, p = .562$ , indicates that for individuals receiving care from a spouse or partner, as attachment anxiety increases, individuals rate their caregivers as increasingly overprotective, and less likely to treat them as mature adults and equals. No consistent relationship between attachment anxiety and overprotection was detected for individuals receiving care from a non spouse or partner. Figure 9.5 provides a visual representation of the Caregiver Type x Anxiety interaction.



*Figure 9.5. Interaction between ECR Anxiety Scale Scores and Caregiver Type on the Overprotection scale*

Inspection of the correlations between ECR Avoidance Scale Scores and Overprotection Scale scores for individuals receiving care from a spouse or partner,  $r(44) = .41, p = .005$ , and for individuals receiving care from someone other than a spouse or partner,  $r(15) = .62, p = .008$ , indicate that for both groups, as attachment avoidance increases, individuals' rate their partners as more overprotective, more likely

to encourage restriction of responsibilities and social activities, and more likely to treat them as a dependent, rather than as an autonomous adult and partner. The interaction occurs because this relationship is stronger for individuals receiving care from a non spouse or partner. Figure 9.6 provides a visual representation of the Caregiver Type x Avoidance interaction.



*Figure 9.6. Interaction between ECR Avoidance Scale scores and Caregiver Type on the Overprotection Scale*

#### *Discussion of the Care Receiving Analyses*

The care receiving scales measured:

- Emotional reactions to receiving care such as embarrassment, anger, and powerlessness, as well as the perception that recompense for the care being received is inadequate or impossible (the Specific Reactions to Help and Feeling of Indebtedness Scale).

- Individuals' perceptions about the help they receive (e.g., too much or not enough), as well as their perceptions about why their caregivers are providing assistance, and their caregivers' emotional reactions to providing care (the Appropriateness, Sufficiency and Helping Intentions Scale).
- Changes in self-evaluation (e.g. pride in self, self worth, self respect) as a result of receiving care (the Self-Esteem Reactions to Help Scale).
- Participants' perceptions that their caregiver behaves in ways which discourages their autonomous behaviour (the Discouragement of Independence Scale).
- The extent to which care receivers perceive their caregivers to be encouraging them to be dependent and to accept assistance with daily living (the Encouragement of Dependence Scale).
- The extent to which care receivers perceive their caregivers to be overprotective and over controlling (the Overprotection Scale).

With the exception of the Discouragement of Independence Scale, the initial correlation analysis revealed that, as attachment anxiety and attachment avoidance increased so did participants' reports of negative reactions to receiving care. As predicted, increasing fear of abandonment, personal insecurity and desire for proximity (i.e. attachment anxiety) was associated with increasing feelings of care receiving related anger and embarrassment, feelings of indebtedness, perceptions that the help received is inappropriate and insufficient, a decline in self-respect, and increased feelings of unworthiness and self devaluation. Furthermore, with increasing attachment anxiety, individuals appeared to infer more negative reasons to explain their caregivers' helping behaviour. Unexpectedly, increasing attachment anxiety was also related to greater perceptions that caregivers were encouraging dependence. This correlation was not predicted because, at least theoretically, individuals high in attachment anxiety prefer being dependent in relationships, and may perceive encouragement of their dependency as indications that their partner cares for them. Possibly, individuals high in attachment anxiety might view encouragement of dependency as a sign that their partner

believes them to be weak or burdensome. This in turn would reinforce their belief that they are not adequate relationship partners and increase their fear of abandonment. Thus, although they crave dependency, they might be sensitive to the encouragement of dependency as a sign of impending rejection. The correlation between Attachment Anxiety and the Overprotection Scale was also unanticipated because, theoretically, individuals high in attachment anxiety tend to seek out in their partners the kind of behaviour measured on the overprotection scale.

As predicted, increasing desire for autonomy, self-reliance and emotional distance in relationships (i.e., attachment avoidance) was related to increased negative emotional reactions to care receiving, perceptions of indebtedness, feelings of unworthiness and self-devaluation, as well as greater participant reports of being encouraged to increasing rely on their caregivers for assistance and support. Although not predicted, attachment avoidance was also found to correlate with Appropriateness, Sufficiency and Helping Intentions Scale scores. This finding likely reflects scale content which speaks to caregivers providing too much assistance and/or providing assistance when it is perceived to be unnecessary. Again, high attachment avoidance is associated with a reluctance to become dependent on others, and individuals high in attachment avoidance may be more likely to interpret help as an infringement on their autonomy.

Correlation analysis revealed that, with the exception of the Discouragement of Independence Scale and the Encouragement of Dependence Scale, receiving care from someone other than a spouse or partner was associated with more negative reactions to being helped and greater perceptions that the care provided did not meet care receiver needs. Individuals within committed partnerships may have felt more at ease with their caregiver and may be more likely to believe their spouse or partner helps them out of love and reciprocity, rather than obligation, or because they are being paid. As a result these individuals might have felt more able to ‘repay’ their caregiving, and maintain their own sense of esteem, by making other contributions to the relationships.

Previous research indicated that gender might also be an important variable in understanding individuals’ responses to care receiving and care giving (Navaie-Waliser,

Spriggs, & Feldman, 2002), and some evidence for this was found in the analysis of Appropriateness, Sufficiency and Helping Intentions Scale scores. Women were revealed to be harsher judges of the care they received, and more likely to infer negative motivations as the basis of their caregivers' behaviour.

Hierarchical regression analysis revealed that ECR Anxiety and ECR Avoidance, entered with caregiver type predicted scores on all the care receiving scales. These findings suggest that understanding an individual's attachment (both attachment anxiety and attachment avoidance) as well as knowing who their caregiver is, aids in predicting the likelihood that an individual will respond adversely, or have a negative emotional reaction to care receiving. On the Appropriateness, Sufficiency and Helping Intentions Scale, and the Self-Esteem Reactions to Help Scale, Attachment Avoidance emerged as a significant individual predictor, accounting for unique variance in the dependent measures, and no interaction with Caregiver Type was observed on step two of the regression. This indicates that for these scales, attachment avoidance is the more powerful attachment predictor, regardless of who is providing care (i.e., spouse or non-spouse). Attachment Anxiety did not emerge as an independent predictor of care receiving scale scores, but its effects were moderated by Attachment Anxiety x Caregiver Type interactions.

On step two of the regression analyses for the Specific Reactions to Help and Indebtedness Scale, the Appropriateness, Sufficiency and Helping Intentions Scale, and the Self Esteem Reactions to Help Scale a significant interaction between ECR Anxiety and Caregiver Type were observed. These interactions indicated that attachment anxiety was a significant predictor of individuals' emotional reactions to care receiving, feelings of indebtedness, perceptions as to the appropriateness and sufficiency of help being received, as well as caregiver intentions and changes in self-esteem related to receiving care, but only in the sample of individuals receiving care from a spouse or partner. For participants being cared for by a spouse or partner, stronger feelings of insecurity and fear of rejection (i.e. attachment anxiety) predicted stronger negative reaction to being helped, such as anger, embarrassment, and feelings of indebtedness, more negative judgments about the kind and quality of care received, as well as a further

reduction in participants' sense of themselves as capable, useful individuals, who are desirable as relationship partners.

Initially, attachment avoidance was expected to be a better predictor of responses on the Specific Reactions to Help and Feeling of Indebtedness Scale, as highly avoidant people avoid being in a position of dependence on others, and are likely to react negatively if the situation is forced upon them. While attachment avoidance was found to help predict scores on the Specific Reactions to Help and Indebtedness Scale when combined with additional information, attachment anxiety appeared to be a better unique predictor. The strong relationship between attachment anxiety and Specific Reactions to Help and Indebtedness scale scores observed in this investigation, for individuals with spousal caregivers, may be understood in light of the tendency of individuals high in attachment anxiety to monitor the reciprocity in relationships, and their inclination to judge their partners as not contributing as much as they do to the relationship (Brennan & Shaver, 1995). When individuals with elevated attachment anxiety become care receivers, they may continue to 'keep score', and judge themselves as harshly as they previously judged their partner. As a result, they are both angry and embarrassed to have to receive care. This causes them to further devalue themselves as a relationship partner, and they may experience strong feelings of indebtedness due to their sensitivity regarding exchange within relationships.

While the overall regression equation for the Encouragement of Dependence Scale was significant, only caregiver type accounted for unique variance in the dependant measure. Having a non-spouse/partner caregiver, relative to a spouse or partner caregiver, appeared to predict higher scores on the Encouragement of Dependence Scale, and an increasing sense of being pushed to rely more on caregivers. The addition of interaction terms did not improve the regression model, indicating that the influence of attachment avoidance and attachment anxiety do not depend on type of caregiver.

Despite moderate correlations with ECR Anxiety Scale scores and ECR Avoidance, attachment does not appear to be a good predictor of individuals' perceptions regarding the degree to which their caregivers encourage dependency. This

is surprising, as individuals high in attachment avoidance were expected to be particularly sensitive to threats to their autonomy, and behaviour by their caregiver which was perceived to foster dependency. However, as the unreliability of the original Independence, Dependence and Encouragements scale demonstrated, encouraging dependence does not appear to be perceived as discouraging independence. Possibly, individuals can accept legitimate and practical assistance, without activating their attachment system, as long as they feel they can still maintain their individual autonomy. It is also possible, despite face validity, that this new scale is not adequate for measuring individuals' perceptions that they are being encouraged toward inappropriate dependency on their caregiver.

Analysis of the Discouragement of Independence Scale scores revealed an interaction between Attachment Avoidance and Caregiver Type. This observation was the only instance in which attachment appeared to exert a greater effect on individuals receiving care from someone other than a spouse or partner. For this group of participants, increasing attachment avoidance predicted higher scores on the Discouragement of Independence Scale, reflecting participants' perceptions that caregivers are not encouraging continued independence and personal autonomy. Participants in the sample of individuals receiving care from someone other than a spouse or partner were already higher in avoidance than individuals being cared for by a spouse or partner. Therefore, it might be assumed that these individuals were already demonstrating a greater resistance to threats to their autonomy. As a result, the influence of attachment avoidance is stronger in this group.

Finally, hierarchical regression analysis of the Overprotection Scale, revealed interactions with caregiver type for both attachment anxiety and attachment avoidance. Inspection of the correlations between ECR Anxiety and Overprotection Scale scores for both caregiver types indicated that for individuals receiving care from a spouse or partner, as attachment anxiety increases, individuals rate their caregivers as increasingly overprotective, and less likely to treat them as mature, autonomous adults. This relationship was not observed for individuals receiving care from a non spouse or partner. This finding was surprising, as theoretically, individuals with elevated

attachment anxiety would be more likely to rate their partners as under protective. However, this finding may be related to the similar finding from the analysis of the Specific Reactions to Help and Indebtedness scale data. Perhaps attachment anxiety is related to dissatisfaction with care in general. Assuming this is possible, individuals with elevated attachment anxiety might have endorsed items intended to be indicative of overprotection, to indicate their perception of the inappropriateness of the care they are receiving. Such a finding might also highlight the influence of attachment constructs on perception, as individuals with elevated attachment anxiety appear to interpret the overprotection items differently than individual who are lower in attachment anxiety. It might also be argued, as was the case for the Encouragement of Dependence Scale, that individuals with MS with elevated attachment anxiety may be sensitive to caregiver overprotection as an indicator of their own inadequacy as a relationship partner. As a result, behaviour they might typically appreciate is perceived negatively in the context of MS.

For both individuals receiving care from a spouse or partner, and individuals receiving care from someone other than a spouse or partner, as attachment avoidance increased, individuals rated their partners as more overprotective, and more likely to treat them as a dependant rather than as an equal partner. However, this relationship was stronger in the sample of individuals receiving care from someone other than a spouse or partner.

The proposed utility of attachment avoidance as a predictor of perceived overprotection was based on the relationship between perceived overprotection and threats to autonomy. As noted previously, individuals high in attachment avoidance value their independence. As a result, these individuals are more sensitive to behaviour which they perceive as intruding on their independence. They may also be less willing to admit when they need help (Vogel & Wei, 2005). Therefore, as the results of this investigation imply, individuals with elevated attachment avoidance may view their caregivers' behaviour as overprotective and interfering, even if it is objectively appropriate.

*Relationship Functioning in the Sample of Individuals with MS*

Do attachment measures (i.e., ECR Anxiety and ECR Avoidance scores) predict participant ratings of relationship functioning, and if so, is this association moderated by demographic variables?

Although both individuals with MS and caregivers completed the same measure of relationship functioning (i.e., the Relationship Rating Form), data from the two groups were analyzed separately. This allowed the potential interaction between caregiver type and attachment anxiety and attachment avoidance to be explored in the sample of individuals with MS. Means and standard deviations for the Relationship Rating Form (RRF) for the sample of individuals with MS are presented in Table 9.13. In addition to the relationships between attachment anxiety and caregiver type, and attachment avoidance and caregiver type, which were observed in the previous correlation analysis (see Table 9.6), the initial correlation analysis including RRF data revealed ECR Avoidance Scale scores and ECR Anxiety Scale scores to be significantly related to scores on all RRF scales (see Table 9.14).

In order to determine if ECR Anxiety Scale scores and ECR Avoidance Scale scores predict scores on the RRF scales, and to determine if the predictive power of the attachment measures is moderated by caregiver type, hierarchical regression analyses were conducted. Again, caregiver type was included because of its significant correlation with ECR Anxiety and ECR Avoidance Scale scores, the main predictor variables, as well as with six of the seven care receiving scales (see Table 9.14). Therefore, in addition to including ECR Anxiety, ECR Avoidance and caregiver type in the relationship functioning regression equations, the interaction terms Anxiety x Caregiver Type and Avoidance x Caregiver Type were also included.

Table 9.13.

*Means and Standard Deviations for the Relationship Rating Form Scales for Participants with MS.*

Scale	All individuals with MS n=64	Individuals with spouse/partner caregivers n=46	Individuals with non-spouse/partner caregivers n=18
Viability	6.83 (1.74)	7.17 (1.64)	5.96 (1.74)
Intimacy	6.63 (1.53)	7.05 (1.38)	5.57 (1.42)
Passion	6.53 (1.87)	7.14 (1.51)	4.97 (1.82)
Care	6.75 (2.11)	7.47 (1.67)	4.90 (2.00)
Commitment	7.06 (2.55)	8.02 (1.76)	4.63 (2.67)
Conflict/Ambivalence	2.77 (1.52)	2.65 (1.51)	3.08 (1.57)
Global Satisfaction	6.66 (2.26)	7.31 (1.82)	5.00 (2.49)

Note: minimum scale score = 1, maximum scale score = 9. Increasing scores indicate more of the factor measured by the scale. Standard deviations appear in brackets

Table 9.14.

*Pearson Correlations Between the Relationship Rating Form Scales, Selected Demographic Variables, and ECR Anxiety and ECR Avoidance*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	1.00	.30*	-.52**	-.29*	.24	.06	-.16	-.04	.06	-.12	-.03	-.01	-.10	.06
2. Time since diagnosis		1.00	-.40**	-.02	.04	.10	.20	-.04	-.15	-.09	-.05	-.05	.16	.01
3. Type of MS <sup>a</sup>			1.00	.30*	.18	-.14	.01	.02	.10	.18	.06	.07	-.03	.00
4. Gender <sup>b</sup>				1.00	-.20	-.08	.07	.25*	.17	.05	.04	.16	-.23	.06
5. Type of Caregiver <sup>c</sup>					1.00	-.43**	-.35**	.31*	.44**	.53**	.55**	.46**	-.13	.60**
6. ECR Avoidance						1.00	.52**	-.74**	-.74**	-.70**	-.75**	-.79**	.45**	-.68**
7. ECR Anxiety							1.00	-.50**	-.63**	-.41**	-.53**	-.50**	.46**	-.56**
8. RRF Viability								1.00	.85**	.71**	.85**	.91**	-.73**	.79**
9. RRF Intimacy									1.00	.66**	.79**	.81**	-.67**	.78**
10. RRF Passion										1.00	.77**	.77**	-.43**	.74**
11. RRF Care											1.00	.90**	-.54**	.84**
12. RRF Commitment												1.00	-.60**	.87**
13. RRF Conflict/Ambivalence													1.00	-.71**
14. RRF Global Satisfaction														1.00

<sup>a</sup> Relapsing-remitting MS was coded as 1 and Progressive MS was coded as -1

<sup>b</sup> Male participants were coded as 1 and female participants were coded as -1

<sup>c</sup> Spouse/partner caregivers were coded as 1 and non-spouse/partner caregivers were coded as -1

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

### *RRF Viability*

Table 9.15 provides a summary of the regression of these variables on the RRF Viability Scale scores. Although gender was observed to be correlated with RRF Viability Scale scores, it was not included in the regression analysis in order to maintain parsimony across analyses and preserve statistical power.

Table 9.15

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver Type, and Caregiver Type Interactions on the RRF Viability Scale*

	$R^2$	$R^2_{\text{adjusted}}$	B	B	$Sr^2$
Step 1	.563	.541			
ECR Anxiety			-.211	-.166	<i>ns</i>
ECR Avoidance			-.904	-663 **	.292
Caregiver Type			.052	.027	<i>ns</i>
Step 2	.602	.567			
Caregiver Type x Anxiety			-.439	-.329 *	.035
Caregiver Type x Avoidance			-.018	-.012	<i>ns</i>

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

With all variables entered into the equation,  $R^2 = .602$ ,  $F(5,58) = 17.525$ ,  $p < .001$ . After ECR Anxiety, ECR Avoidance, and caregiver type were entered on the first step,  $R$  was significantly different from zero, and 56% of the variance in RRF Viability scores was accounted for,  $R^2 = .563$ ,  $F(3,60) = 25.743$ ,  $p < .001$ . At this step, ECR Avoidance emerged as a significant predictor, accounting for unique variance in RRF Viability scores (see Table 9.15). These results suggest that at lower levels of attachment avoidance, individuals judge their relationship with their caregiver to be

more accepting, trusting, respectful and tolerant. The interactions entered on step 2 did not account for a significant amount of additional variance,  $R^2_{chg} = .039$ ,  $F_{chg}(2,58) = 2.836$ ,  $p = .067$ .

#### *RRF Intimacy*

Table 9.16 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety and Caregiver Type x Avoidance on the RRF Intimacy Scale.

Table 9.16

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver Type, and Caregiver Type Interactions on the RRF Intimacy Scale*

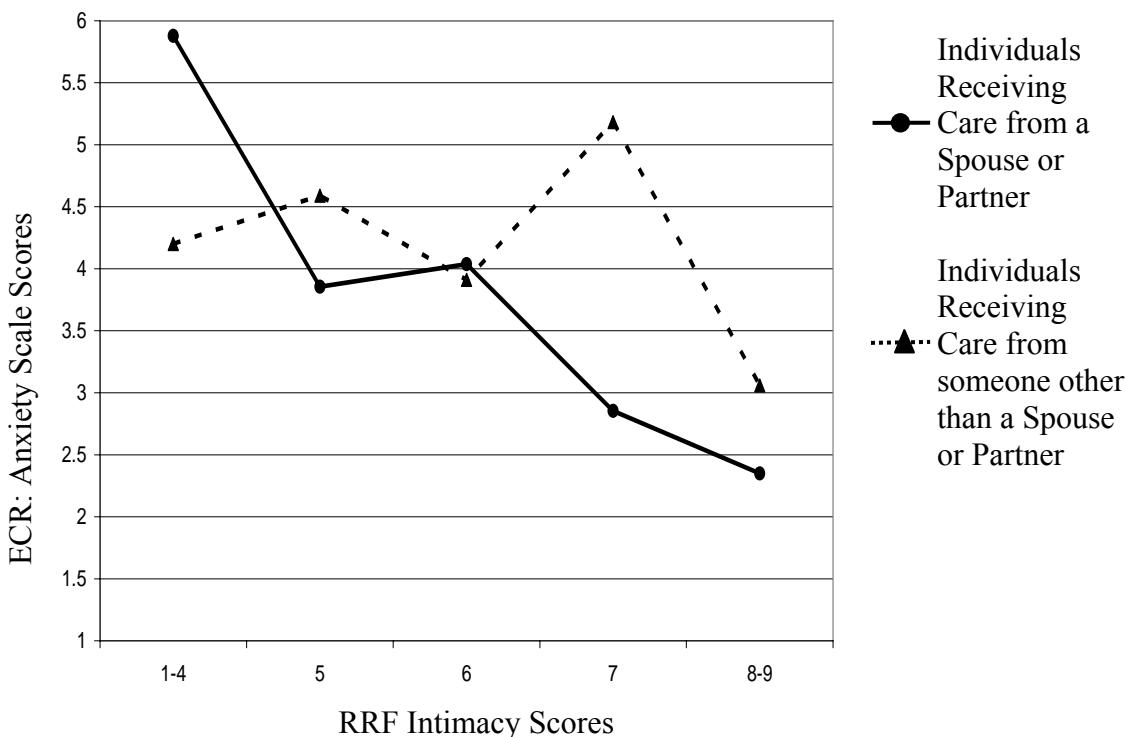
	$R^2$	$R^2_{adjusted}$	B	B	$sr^2$
Step 1	.639	.621			
ECR Anxiety			-.364	-.326**	.076
ECR Avoidance			-.633	-.527**	.185
Caregiver Type			.169	.080	<i>ns</i>
Step 2	.689	.662			
Caregiver Type x Anxiety			-.410	-.349*	.039
Caregiver Type x Avoidance			-.028	-.022	<i>ns</i>

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

With all variables entered into the equation,  $R^2 = .689$ ,  $F(5,58) = 25.640$ ,  $p < .001$ . After ECR Anxiety, ECR Avoidance, and caregiver type were entered on the first step,  $R$  was significantly different from zero, and 64% of the variance in intimacy scores was accounted for,  $R^2 = .639$ ,  $F(3,60) = 35.406$ ,  $p < .001$ . At this step, ECR Avoidance and ECR Anxiety emerged as significant predictors, each accounting for unique variance in intimacy scores (see Table 9.16). These results suggest that at lower levels of attachment avoidance, individuals judged their relationship to have more intimacy,

they reported that were more likely to confide in their partner, and they judged their partner to be more understanding. The presence of attributes characteristic of relationship intimacy decline as attachment avoidance increases. The main effect of attachment anxiety, which followed a pattern similar to that of avoidance, was moderated by a significant interaction with Caregiver Type.

The interactions entered on step 2 accounted for an additional 5% of variance in intimacy scores,  $R^2_{chg} = .049$ ,  $F_{chg}(2,58) = 4.607$ ,  $p = .014$ . At this step, the Caregiver Type x Anxiety interaction emerged as a significant predictor. Inspection of the correlations between ECR Anxiety and RRF Intimacy Scale scores for individuals receiving care from a spouse or partner,  $r(44) = -.71$ ,  $p < .001$ , and for individuals receiving care from someone other than a spouse or partner,  $r(16) = -.014$ ,  $p = .957$ , indicates that for individuals receiving care from a spouse or partner, as anxiety increases, individuals rate their relationships to be less intimate, their partner to be less understanding, and indicate that they are less likely to confide in their partner. No consistent relationship between ECR Anxiety and Intimacy was detected in the sample of individuals receiving care from a non-spouse/partner. Figure 9.7 provides a visual representation of the Caregiver Type x Anxiety interaction.



*Figure 9.7. Interaction between ECR Anxiety and Caregiver Type for the RRF Intimacy Scale*

#### *RRF Passion*

Table 9.17 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety and Caregiver Type x Avoidance on the RRF Passion Scale. With all variables entered into the equation,  $R^2 = .566$ ,  $F(5,58) = 15.101$ ,  $p < .001$ . After ECR Anxiety, ECR Avoidance, and caregiver type were entered on the first step,  $R$  was significantly different from zero, and 55% of the variance in Passion Scale scores was accounted for,  $R^2 = .548$ ,  $F(3,60) = 24.234$ ,  $p < .001$ . At this step, ECR Avoidance and caregiver type emerged as significant predictors, accounting for unique variance in RRF Passion Scale Scores (see Table 9.17). These results suggest that at lower levels of attachment avoidance, individuals feel they have a stronger interpersonal bond with their relationship partner, and that this bond is unique and exclusive to themselves and their partners. These feelings tend to be lower for individuals who report higher levels of attachment avoidance. With regard to caregiver type, individuals receiving care from a spouse or partner reported a stronger bond with

their caregiver, relative to individuals receiving care from someone other than a spouse or partner. The interactions entered on step 2 did not account for a significant amount of additional variance,  $R^2_{chg} = .018$ ,  $F_{chg}(2,58) = 1.182$ ,  $p = .314$ .

Table 9.17

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver Type, and Caregiver Type Interactions on the RRF Passion Scale*

	$R^2$	$R^2_{adjusted}$	$B$	$\beta$	$Sr^2$
Step 1	.548	.525			
ECR Anxiety			-.036	-.027	<i>ns</i>
ECR Avoidance			-.823	-.563**	.211
Caregiver Type			.572	.278*	.062
Step 2	.566	.528			
Caregiver Type x Anxiety			.114	.079	<i>ns</i>
Caregiver Type x Avoidance			.181	.114	<i>ns</i>

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

#### *RRF Care*

Table 9.18 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety and Caregiver Type x Avoidance on the RRF Care Scale. With all variables entered into the equation,  $R^2 = .642$ ,  $F(5,58) = 25.640$ ,  $p < .001$ . After ECR Anxiety, ECR Avoidance, and caregiver type were entered on the first step,  $R$  was significantly different from zero, and 64% of the variance in RRF Care Scale scores was accounted for,  $R^2 = .641$ ,  $F(3,60) = 35.406$ ,  $p < .001$ . At this step, ECR Avoidance and caregiver type emerged as significant predictors, each accounting for unique variance in RRF Care Scale scores (see Table 9.18).

Table 9.18  
*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver Type, and Caregiver Type Interactions on the RRF Care Scale*

	$R^2$	$R^2_{\text{adjusted}}$	B	B	$sr^2$
Step 1		.641	.623		
ECR Anxiety				-.237	-.155
ECR Avoidance				-.913	-.554**
Caregiver Type				.613	.264*
Step 2		.642	.611		
Caregiver Type x Anxiety				-.081	-.050
Caregiver Type x Avoidance				.003	.002

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

These results suggest that individuals who report lower levels of attachment avoidance, also report feeling more dedicated to, and willing to support, their relationship partner, and that they felt supported in return. These characteristics are lower in individuals who report higher levels of attachment avoidance. Individuals receiving care from a spouse or partner tend to report more caring relationships, characterized by mutual dependence and support, relative to individuals receiving care from someone other than a spouse or partner. The interactions entered on step 2 did not account for a significant amount of additional variance,  $R^2_{\text{chg}} = .001$ ,  $F_{\text{chg}}(2,58) = .074$ ,  $p = .929$ .

#### *RRF Commitment*

Table 9.19 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety and Caregiver Type x Avoidance on the RRF Commitment Scale. With all variables entered into the equation,  $R^2 = .639$ ,  $F(5,58) = 20.494$ ,  $p < .001$ . After ECR Anxiety, ECR Avoidance, and caregiver type

were entered on the first step,  $R$  was significantly different from zero, and 62% of the variance in commitment scores was accounted for,  $R^2 = .617$ ,  $F(3,60) = 32.254$ ,  $p < .001$ . At this step, ECR Anxiety, ECR Avoidance and caregiver type all emerged as significant predictors, each accounting for unique variance in RRF Commitment Scale scores (see Table 9.19). These results suggest that individuals being cared for by a spouse or partner report being more committed to their partner and their relationship and are more likely to report commitment to be reciprocal, relative to individuals being cared for by someone other than a spouse or partner. In terms of attachment variables, at lower levels of attachment anxiety, individuals report being more committed to their relationship and their relationship partner. Level of commitment and perceptions of partners' commitment are lower in individuals reporting higher levels of attachment anxiety. The main effect of attachment avoidance, which followed a pattern similar to that of attachment anxiety, was moderated by an interaction with caregiver type, which approached significance.

**Table 9.19**  
*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver Type, and Caregiver Type Interactions on the RRF Commitment Scale*

	$R^2$	$R^2_{\text{adjusted}}$	$B$	$\beta$	$sr^2$
Step 1	.617	.598			
ECR Anxiety			-.425	-.228*	.037
ECR Avoidance			-.824	-.412*	.113
Caregiver Type			.979	.348*	.096
Step 2	.639	.607			
Caregiver Type x Anxiety			-.178	-.091	<i>ns</i>
Caregiver Type x Avoidance			.365	.169	<i>ns</i>

\*  $p < .05$ .

The interactions entered on step 2 did not account for a significant amount of additional variance,  $R^2_{chg} = .021$ ,  $F_{chg}(2,58) = 1.71$ ,  $p = .190$ .

#### *RRF Conflict/Ambivalence*

Table 9.20 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety and Caregiver Type x Avoidance on the RRF Conflict/Ambivalence Scale. With all variables entered into the equation,  $R^2 = .337$ ,  $F(5,58) = 7.012$ ,  $p < .001$ . After ECR Anxiety, ECR Avoidance, and caregiver type were entered on the first step, R was significantly different from zero, and 29% of the variance in conflict/ambivalence scores was accounted for,  $R^2 = .286$ ,  $F(3,60) = 8.004$ ,  $p < .001$ . At this step, both ECR Anxiety and ECR Avoidance emerged as significant predictors, accounting for unique variance in conflict/ambivalence scores (see Table 9.20). These results suggest that as attachment avoidance increases, individuals report more conflict with their relationship partner, and report being more ambivalent about the future of the relationship. A similar pattern was observed for attachment anxiety, but this main effect was moderated by an interaction with caregiver type.

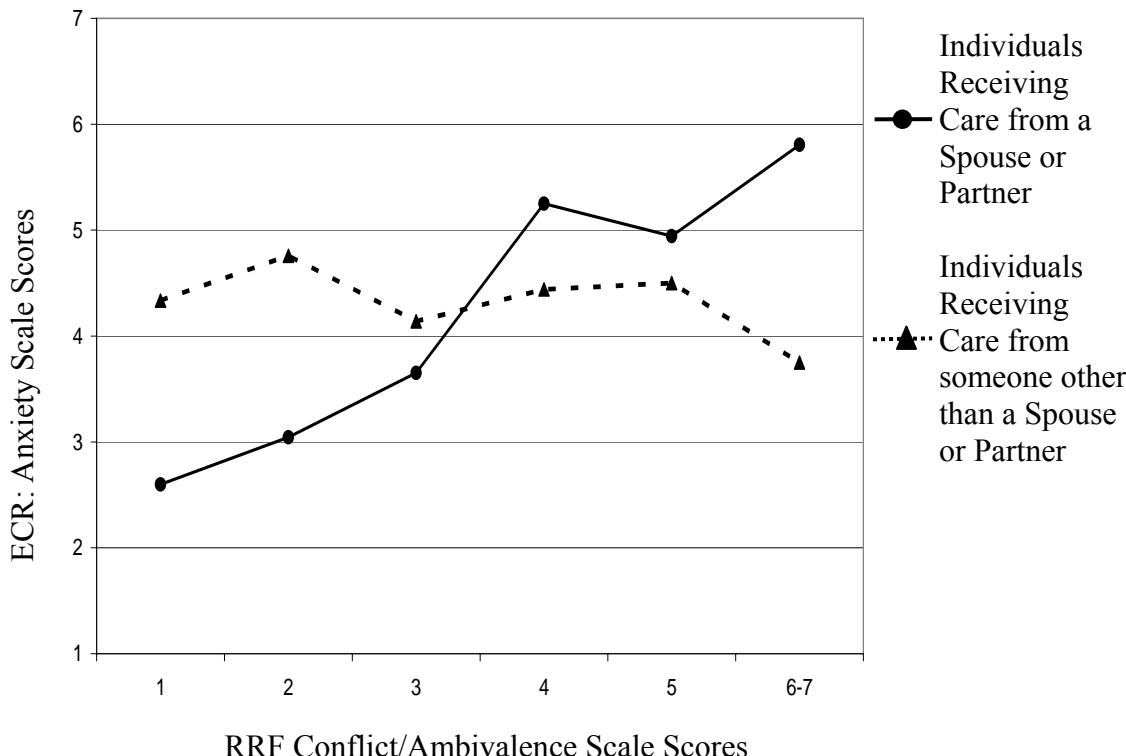
Table 9.20

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver Type, and Caregiver Type Interactions on the RRF Conflict/Ambivalence Scale*

	$R^2$	$R^2_{adjusted}$	$B$	$\beta$	$sr^2$
Step 1	.286	.250			
ECR Anxiety			.366	.330*	.077
ECR Avoidance			.401	.336*	.075
Caregiver Type			.219	.130	<i>ns</i>
Step 2	.377	.323			
Caregiver Type x Anxiety			.595	.508*	.083
Caregiver Type x Avoidance			-.042	-.032	<i>ns</i>

\*  $p < .05$

The interactions entered on step 2 accounted for an additional 9% of variance in RRF Conflict/Ambivalence Scale scores,  $R^2_{chg} = .091$ ,  $F_{chg}(2,58) = 4.230$ ,  $p = .019$ . At this step, the Caregiver Type x Anxiety interaction emerged as a significant predictor. Inspection of the correlations between ECR Anxiety and RRF Conflict/Ambivalence Scale scores for individuals receiving care from a spouse or partner,  $r(44) = .61$ ,  $p < .001$ , and for individuals receiving care from someone other than a spouse or partner  $r(16) = -.20$ ,  $p = .427$ , indicates that for individuals receiving care from a spouse or partner, as anxiety increases, individuals rate their relationships to be more conflictual and they express more ambivalence about their partner. No consistent relationship between ECR Anxiety and Conflict/Ambivalence Scale scores was detected in the sample of individuals receiving care from a non-spouse/partner. Figure 9.9 provides a visual representation of the Caregiver Type x Anxiety interaction.



*Figure 9.8. Interaction between ECR Anxiety and Caregiver Type for the RRF Conflict/Ambivalence Scale.*

### *RRF Global Satisfaction*

Table 9.21 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety and Caregiver Type x Avoidance on the RRF Global Satisfaction Scale.

With all variables entered into the equation,  $R^2 = .652$ ,  $F(5,58) = 21.778$ ,  $p < .001$ . After ECR Anxiety, ECR Avoidance, and caregiver type were entered on the first step,  $R$  was significantly different from zero, and 65% of the variance in global satisfaction scores was accounted for,  $R^2 = .646$ ,  $F(3,60) = 69.588$ ,  $p < .001$ . At this step, ECR Avoidance emerged as a significant predictor, accounting for unique variance in global satisfaction scores (see Table 9.21). This result suggests that individuals reporting lower levels of avoidance, relative to those reporting high avoidance levels, judge their relationship to be more successful, enjoyable, and reciprocal. These individuals also report feeling good about themselves as relationship partners. The interactions entered on step 2 did not account for a significant amount of additional variance,  $R^2_{chg} = .006$ ,  $F_{chg}(2,58) = .541$ ,  $p = .585$ .

Table 9.21

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver Type, and Caregiver Type Interactions on the RRF Global Satisfaction Scale*

	$R^2$	$R^2_{adjusted}$	B	B	$sr^2$
Step 1	.646	.628			
ECR Anxiety			-.160	-.097	<i>ns</i>
ECR Avoidance			-1.20	-.677**	.304
Caregiver Type			.352	.141	<i>ns</i>
Step 2	.652	.623			
Caregiver Type x Anxiety			-.223	-.128	<i>ns</i>
Caregiver Type x Avoidance			.133	.069	<i>ns</i>

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

*Discussion of the Relationship Functioning Analyses*

The RRF scales measured:

- Participants' perceptions of the level of acceptance, tolerance, trust and respect they had for their caregiver (RRF Viability);
- Participants' perceptions of how much they understood and confided in their caregivers (RRF Intimacy);
- Participants' report thinking about their caregivers, the perceived exclusiveness of their relationships and the presence of sexual intimacy (RRF Passion);
- Participant's perceptions of partner supportiveness and mutual dependency within relationships (RRF Care);
- Participants' commitment to their relationships, their perception of their partners' commitment and their belief that the relationship will endure (RRF Commitment);
- Participants' perceived conflict within their caregiver-care receiver relationship, as well as the extent to which the care receiving individual was uncertain about their feelings toward their partner and their relationship (RRF Conflict/Ambivalence);
- Participants' ratings of the successfulness of their relationship with their caregiver, perceived reciprocity within the relationship, how much they enjoy their relationship, and the extent to which their partner makes them feel worthwhile and special (RRF Global Satisfaction).

As expected, the initial correlation analysis revealed that as ECR Anxiety Scale scores and ECR Avoidance Scale scores increased, positive relationship characteristics measured by RRF Scales declined, while scores on the RRF Conflict/Ambivalence Scale increased. Comfort with close relationships, emotional openness, positive self-image, trust and felt security were related to more positive ratings of relationship intimacy, viability care, passion, commitment, overall relationship satisfaction, and less conflict and ambivalence.

Gender was observed to correlate with scores on the RRF Viability Scale. Male participants reported perceiving greater acceptance, tolerance and respect in their relationships relative to female participants. This is consistent with other investigations which suggest that women may tend to be less satisfied with their committed relationships (Rogers & Amato, 2000).

With the exception of the RRF Conflict/Ambivalence scale, the RRF scales were also observed to correlate with caregiver type. These correlations suggest that individuals receiving care from a spouse or partner judge their relationships to be more respectful, accepting and tolerant, and their partners to be more dependable and supportive, relative to those individuals receiving care from someone other than a spouse or partner. These correlations also suggest that individuals receiving care from someone other than a spouse or partner experience their relationship with their caregiver to be less intimate, and less passionate, and they report a lower level of overall satisfaction with their relationship, as well being less committed to the relationship and to the caregiver themselves relative to individuals receiving care from a spouse or partner. The correlations observed between positive RRF scales and caregiver type may reflect the nature of adult romantic relationships, arguably the strongest and most intimate of adult relationships, which demand high levels of tolerance, acceptance, trust, care, intimacy respect and commitment, in order to remain viable.

Hierarchical regression analysis revealed that ECR Anxiety and ECR Avoidance, entered with caregiver type predicted scores on all RRF scales. These findings suggest that understanding an individual's attachment (in terms of both attachment anxiety and attachment avoidance), as well as knowing who his or her caregiver is, aids in predicting perception of positive and negative aspects of relationships functioning. On the RRF Viability scale, the RRF Intimacy scale, the RRF Passion scale, the RRF Care scale, the RRF Conflict/Ambivalence scale and the RRG global satisfaction scale, attachment avoidance emerged as a significant individual predictor, accounting for unique variance in the dependent measures. Again attachment avoidance appears to be the more powerful predictor, relative to attachment anxiety, regardless of whether it is spouse/partner or non-spouse/partner who is providing care.

In the case of RRF Viability, and RRF Conflict/Ambivalence, correlation results supported a priori predictions. As hypothesized, individuals who are reluctant to engage in close relationships, who remain emotional distant in relationships, and who are suspicious of the demands of others, tend to report themselves to be less accepting, tolerant, trusting and respectful of their partners. These individuals may also be predisposed to experience greater tension in their relationships, uncertainty about their feelings toward their relationships and relationship partners, and may feel trapped in intimate relationships. As a result, their relationships are more conflictual and ultimately less viable.

Contrary to initial prediction were the findings from the RRF Intimacy and RRF Care regressions. Initially, it was hypothesized that attachment anxiety would be the component of attachment most relevant to intimacy and caring in close relationships. This prediction was based on the theoretical conceptualization of attachment anxiety as being associated with a strong desire for interpersonal closeness, and interpersonal dependence, as well as sensitivity to partner support and attention. Typically, individuals high in attachment anxiety report wanting more intimacy than their partner provides, and report being dissatisfied with the amount of care they receive from their relationship partners, as they judge it to be inadequate to their needs. However in this investigation, when caregiver type is not taken into consideration, it appears that individuals who are uncomfortable in close relationships (i.e., higher in attachment avoidance) avoid behaviours which create and maintain emotional closeness, including showing interest in and learning about one's partner, as well demonstrating supportiveness and tolerance of mutual dependency.

The observation that attachment avoidance rather than attachment anxiety is a more powerful predictor of general relationship functioning was also unexpected. Originally, the low self-esteem and sensitivity to rejection which are associated with high anxiety were hypothesized to result in individuals being more critical of their partner and their relationships, and thus being less satisfied overall. This analysis showed that it was higher ECR Avoidance Scale scores which predicted lower scores on the RRF Global Satisfaction Scale, indicating lower ratings of the successfulness,

reciprocity, and overall pleasure in the relationship. Possibly, the discomfort individuals high in attachment avoidance have with relationships in general leads them to judge these caregiving relationships harshly. Regardless of caregiver type, individuals with elevated attachment avoidance are more likely to report they do not enjoy their relationships with caregivers, they do not acknowledge them as meeting their needs, and they are suspicious of the motivations of their caregiving relationship partners.

Significant interactions were observed between ECR Anxiety and Caregiver Type on the RRF Intimacy Scale and the Conflict/Ambivalence Scale. On these scales, ECR anxiety emerged as a predictor of RRF scale scores, but only for individuals receiving care from a spouse or partner. For this group of participants, low attachment anxiety predicted high scores on the RRF Intimacy Scale. Such a result is not surprising, given the expectation that spousal relationships will be more intimate than other relationships in adulthood. As a result the attachment bond is stronger, and when activated, as is the case when an individual develops a chronic disease, the working models of attachment exert a stronger influence on characteristics of the relationship. An interaction between attachment avoidance and caregiver type was likely not observed, because avoidant individuals are unlikely to confide in and seek to understand their partner, regardless of the type of relationship they are participating in. In this group, increased attachment anxiety predicted greater conflict in their relationship and less certainty about their feelings toward their caregiver. Individuals high in attachment anxiety question their worth as a relationship partner, and are vigilant to signs of rejection by their partner. This might lead to increased conflict, and the perception that relationship partners are not being sufficiently responsive to their needs.

Finally, on the RRF Commitment Scale, each of the predictor variable accounted for unique variance in the dependant measure. As hypothesized, increasing attachment avoidance and increasing attachment anxiety predicted decreasing RRF Commitment Scale scores. Attachment avoidance was again observed to be the strongest single predictor. Individuals who are uncomfortable in close relationships report lower levels of commitment to their relationships and have lower expectations that their relationships will endure. In terms of attachment anxiety, individuals high in attachment anxiety

typically express concern that their relationships are not permanent, and that their relationship partners are not sufficiently committed to their relationships.

#### *Quality of Life*

For participants with MS, do attachment measures (i.e., ECR Anxiety Scale and ECR Avoidance Scale scores) predict ratings of quality of life and the use of coping strategies? If these relationships are observed, are they moderated by demographic variables?

Means and standard deviations for the Multiple Sclerosis Quality of Life – 54 (MSQoL-54) Physical Health Composite, Mental Health Composite, and Overall Quality of Life Composite, as well as for the Coping with Multiple Sclerosis Scale (CMSS) are provided in Table 9.22.

Initial correlation analysis revealed significant correlations between gender and the MSQoL-54 Physical Health Composite and Mental Health Composite. In both cases, the correlation indicates that relative to male participants, female participants report greater satisfaction with their functioning. Results of the correlation analysis are provided in Table 9.23.

In order to determine if ECR Anxiety Scale scores and ECR Avoidance Scale scores predict scores on the MSQoL-54 scales and the CMSS Total Coping Composite, and to determine if the predictive power of the attachment measures is moderated by caregiver type, hierarchical regression analyses were conducted. Again, caregiver type was included because of its significant correlation with ECR Anxiety and ECR Avoidance Scale scores (sees Table 9.23). Gender was not included in the regression analyses for the MSQoL-54 Physical Health Composite and Mental Health Composites in order to maintain parsimony with previous analyses and preserve statistical power. Regression terms were ECR Anxiety, ECR Avoidance, caregiver type, Anxiety x Caregiver Type and Avoidance x Caregiver Type.

Table 9.22

*Means and Standard Deviations for the Multiple Sclerosis Quality of Life – 54 and Coping with Multiple Sclerosis Scale for the entire sample of individuals with MS, as well as for caregiver type and gender subgroups*

	All individuals with MS	Individuals with spouse/partner caregivers	Individuals with non- spouse/partner caregivers	Males	Females
Scale	<i>N</i> = 61	<i>n</i> = 45	<i>n</i> = 16	<i>n</i> = 17	<i>n</i> = 44
MSQoL-54 Physical Health	42.53 (16.83)	42.75 (17.12)	41.92 (16.51)	33.83 (11.72)	45.90 (17.39)
MSQoL-54 Mental Health	58.35 (21.52)	59.10 (22.13)	56.24 (20.23)	49.12 (16.82)	61.91 (22.24)
MSQoL-54 Overall Quality of Life <sup>a</sup>	58.71 (20.24)	60.80 (19.40)	52.71 (22.01)	51.67 (20.85)	61.59 (19.49)
CMSS Total Coping Composite <sup>b</sup>	15.60 (2.82)	15.20 (2.60)	16.66 (3.22)	15.31 (2.87)	15.72 (2.83)

Note: For the MSQoL- 54, minimum scale scores = 0 and maximum scale scores = 100. Higher scores are indicative of greater satisfaction with health and quality of life.

For the CMSS Total Coping Composite, the minimum scale scores is 0, and maximum scale score = 28. Higher scores are indicative of greater usage of a variety of coping strategies.

Standard deviations appear in brackets

<sup>a</sup> *N* = 62 for all individuals with MS, *n* = 46 for individuals with spouse/partner caregivers, and *n* = 18 for male participants.

<sup>b</sup> *N* = 63 for all individuals with MS, *n* = 46 for individuals with spouse/partner caregivers, *n* = 17 for individuals with non-spouse/partner caregiver, and *n* = 19 for male participants.

Table 9.23

*Pearson Correlations Between the MSQoL-54 Composites, the CMSS Total Coping Composite, and Selected Demographic Variables, and ECR Anxiety Scale Scores and ECR Avoidance Scale Scores*

	1	2	3	4	5	6	7	8	9	10	11
1. Age	1.00	.37**	-.51**	.28*	.25*	.05	-.17	-.24	.04	.01	.06
2. Time since diagnosis		1.00	-.38**	.05	-.05	.10	.10	-.16	-.01	-.05	-.04
3. Type of MS <sup>a</sup>			1.00	-.28	.15	-.13	.04	.24	.05	.25	-.23
4. Gender <sup>b</sup>				1.00	-.17	-.11	.04	-.32*	-.27*	-.23	-.07
5. Type of Caregiver <sup>c</sup>					1.00	-.41**	-.33**	.02	.06	.18	-.23
6. ECR Avoidance						1.00	.50**	-.40**	-.29*	-.39**	-.20
7. ECR Anxiety							1.00	-.36**	-.47**	-.48**	-.27*
8. Physical Health								1.00	.69**	.74**	.22
9. Mental Health									1.00	.76**	.26*
10. Overall Quality of Life										1.00	.30*
11. CMSS Total Coping Composite											1.00

<sup>a</sup> Relapsing-remitting MS was coded as 1 and Progressive MS was coded as -1

<sup>b</sup> Male participants were coded as 1 and female participants were coded as -1

<sup>c</sup> Spouse/partner caregivers were coded as 1 and non-spouse/partner caregivers were coded as -1

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

#### *MSQoL-54 Physical Health Composite*

Table 9.24 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety, and Caregiver Type x Avoidance on the MSQoL-54 Physical Health Composite.

With all variables entered into the equation,  $R^2 = .228$ ,  $F(5,55) = 3.246$ ,  $p = .012$ . After ECR Anxiety, ECR Avoidance, and caregiver type were entered on the first

step,  $R$  was significantly different from zero, and 22% of the variance in Physical Health Composite scores was accounted for,  $R^2 = .223$ ,  $F(3,57) = 5.461$ ,  $p = .002$ . At this step, ECR Avoidance emerged as a significant predictor accounting for unique variance in physical health composite scores (see Table 9.24). These results suggest that lower attachment avoidance predicts greater satisfaction with physical functioning, and fewer perceived limitations due to physical disability or pain.

Table 9.24

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver Type, and Caregiver Interactions on the MSQoL-54 Physical Health Composite*

	$R^2$	$R^2_{\text{adjusted}}$	B	B	$sr^2$
Step 1	.223	.182			
ECR Anxiety			-2.915	-.240	<i>ns</i>
ECR Avoidance			-4.750	-.356*	.086
Caregiver Type			-3.763	-.198	<i>ns</i>
Step 2	.228	.158			
Caregiver Type x Anxiety			1.409	.111	<i>ns</i>
Caregiver Type x Avoidance			.096	.007	<i>ns</i>

\*  $p < .05$ .

The interactions entered on step 2 did not account for a significant amount of additional variance,  $R^2_{\text{chg}} = .050$ ,  $F_{\text{chg}}(4,52) = 1.187$ ,  $p = .327$ .

*MSQoL-54 Mental Health Composite*

Table 9.25 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety, and Caregiver Type x Avoidance.

Table 9.25

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver Type, and Caregiver Interactions on the MSQoL-54 Mental Health Composite*

	$R^2$	$R^2_{\text{adjusted}}$	B	B	$sr^2$
Step 1	.251	.212			
ECR Anxiety			-7.329	-.472*	.176
ECR Avoidance			-1.867	-.109	ns
Caregiver Type			-3.400	-.140	ns
Step 2	.254	.186			
Caregiver Type x Anxiety			1.339	.082	ns
Caregiver Type x Avoidance			-.899	-.049	ns

\*  $p < .05$ .

With all variables entered into the equation,  $R^2 = .254$ ,  $F(5,55) = 3.738$ ,  $p = .001$ . After ECR Anxiety, ECR Avoidance, and caregiver type were entered on the first step,  $R$  was significantly different from zero, and 25% of the variance in mental health composite scores was accounted for,  $R^2 = .251$ ,  $F(3,57) = 6.365$ ,  $p = .001$ . At this step, ECR Anxiety emerged as a significant predictor, accounting for unique variance in mental health composite scores (see Table 9.25). This suggests that lower attachment anxiety predicts greater satisfaction with mental and emotional health, and fewer perceived limitations due to low mood or cognitive difficulties.

The interactions entered on step 2 did not account for a significant amount of additional variance,  $R^2_{\text{chg}} = .003$ ,  $F_{\text{chg}}(2,55) = .009$ ,  $p = .906$ .

*MSQoL-54 Overall Quality of Life*

Table 9.26 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety, and Caregiver Type x Avoidance on the MSQoL-54 Overall Quality of Life Composite.

Table 9.26

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver Type, and Caregiver Interactions on the MSQoL-54 Overall Quality of Life*

	$R^2$	$R^2_{\text{adjusted}}$	B	B	$sr^2$
Step 1	.251	.212			
ECR Anxiety			-5.488	-.373*	.100
ECR Avoidance			-3.335	-.207	ns
Caregiver Type			-.577	-.025	ns
Step 2	.364	.198			
Caregiver Type x Anxiety			1.695	.066	ns
Caregiver Type x Avoidance			1.017	.099	ns

\*  $p < .05$ .

With all variables entered into the equation,  $R^2 = .264$ ,  $F(5,56) = 4.017$ ,  $p = .003$ . After ECR Anxiety, ECR Avoidance, and caregiver type were entered on the first step,  $R$  was significantly different from zero, and 25% of the variance in Overall Quality of Life Composite scores was accounted for,  $R^2 = .251$   $F(3,58) = 6.482$ ,  $p = .001$ . At this step, gender, ECR Anxiety emerged as a significant predictor, accounting for unique variance in Overall Quality of Life Composite scores (see Table 9.26). These results suggest that low attachment anxiety predicts higher ratings of overall satisfaction with current quality of life.

The interactions entered on step 2 did not account for a significant amount of additional variance,  $R^2_{\text{chg}} = .013$ ,  $F_{\text{chg}}(2,56) = .490$ ,  $p = .615$ .

#### *Coping with Multiple Sclerosis Scale (CMSS)*

For this analysis, individuals' scores on each of the seven CMSS subscales were combined to produce a Total Coping Composite. This score is indicative of individuals'

use of coping strategies in general, rather than providing information about their particular coping strategies (see Table 9.22). Correlation analysis did not reveal any significant correlations between Total Coping Composite score and age, gender, time since diagnosis, type of MS or caregiver type (see Table 9.23). The CMSS Total Coping Composite score was observed to be negatively correlated with ECR Anxiety scale scores, suggesting that low attachment anxiety was related to greater use of a variety of coping strategies. Caregiver type was included in the regression because of its significant correlation with ECR Avoidance and ECR Anxiety. Table 9.28 provides a summary of the regression of ECR Anxiety, ECR Avoidance, caregiver type, Caregiver Type x Anxiety, and Caregiver Type x Avoidance on the CMSS Total Coping Composite score.

Table 9.27

*Hierarchical Regression: ECR Anxiety, ECR Avoidance, Caregiver Type, and Caregiver Type Interactions on the CMSS Total Coping Composite*

	$R^2$	$R^2_{\text{adjusted}}$	B	B	$sr^2$
Step 1	.212	.172			
ECR Anxiety			-.635	-.311*	.07
Avoidance			-.417	-.186	ns
Caregiver Type			-1.312	-.416*	.14
Step 2	.278	.214			
Caregiver Type x Anxiety			-.292	-.136	ns
Caregiver Type x Avoidance			.716	.299*	.07

\*  $p < .05$

With all variables entered into the equation,  $R^2 = .278$ ,  $F(5,57) = 4.379$ ,  $p = .002$ . After ECR Anxiety, ECR Avoidance, and caregiver type were entered on the first step,  $R$  was significantly different from zero, and 21% of the variance in CMSS Total Coping Composite scores was accounted for,  $R^2 = .212$ ,  $F(3,59) = 5.280$ ,  $p = .003$ . At this step, ECR Anxiety and caregiver type emerged as significant predictors, each

accounting for unique variance in CMSS Total Coping Composite scores (see Table 9.27). The main effect of attachment anxiety indicates that at higher attachment anxiety levels, individuals are less likely to employ strategies to help them cope with MS related physical and emotional difficulties. The main effect of caregiver type suggested that individuals receiving care from someone other than a spouse or partner were more likely to utilize coping strategies to deal with physical and emotional challenges, relative to their counterparts receiving care from a spouse or partner.

The amount of additional variance accounted for by the interactions entered on step 2 was not found to be significant,  $R^2_{chg} = .066$ ,  $F_{chg}(2,57) = 2.598$ ,  $p = .083$ .

#### *Discussion of the Quality of Life and Coping Analyses*

The MSQoL-54 scales measured:

- Participants' perceptions of various components of physical functioning, including general physical functioning, distress over disability, energy level, limitations due to physical difficulties, and pain (Physical Health Composite);
- Participants' perceptions of various components of mental health, including emotional well-being, distress over disability, energy level, limitations due to emotional functioning, and cognitive functioning (Mental Health Composite);
- Participants' perception of their quality of life and their emotional reaction to life in general (Overall Quality of Life Composite).

The CMSS measure assesses the use of a variety of strategies for coping with the mental and physical consequence of MS. Coping strategies queried included active approaches such as using assistive devices, and more passive strategies such as resting frequently.

As expected, the initial correlation analysis revealed that participants with lower ECR Anxiety and ECR Avoidance Scale scores tended to report better physical health, mental health and perceived quality of life, relative to individuals with higher attachment anxiety and attachment avoidance. Gender was also observed to correlate with physical and mental health, indicating that female participants with MS were

reported better physical functioning and emotional well-being relative to their male counterparts.

Also as predicted, the initial correlation analysis revealed that at higher ECR Anxiety Scale scores, participants reported less frequent use of coping strategies. However, the hypothesized positive correlation between ECR Avoidance Scale scores and CMSS scores was not observed.

Hierarchical regression revealed that ECR Anxiety and ECR Avoidance entered with caregiver type did predict scores on the Physical Health Composite, Mental Health Composite, and Overall Quality of Life Composite. Higher attachment avoidance, higher attachment anxiety and receiving care from a spouse or partner predicted better perceived physical and mental health functioning, and better overall quality of life.

However, contrary to predictions, attachment avoidance emerged as the more powerful predictor, relative to attachment anxiety. In this investigation, elevated attachment avoidance predicted lower scores on the Physical Health Composite. Individuals high in attachment avoidance dislike being dependent on others. Therefore, the necessity of having to ask for and accept help may cause them distress, and negatively influence their perception of their physical health. However, it is equally possible that individuals high in attachment avoidance are accurate in their perceptions of their physical health. High attachment avoidance and concomitant failure to ask for and accept needed help may contribute to poorer physical functioning relative to individuals lower in attachment avoidance who are able to acknowledge their needs and receive assistance from others.

As predicted, elevated attachment anxiety predicted lower scores on the Mental Health Composite and Overall Quality of Life Composite. High attachment anxiety is associated with negative self-appraisal, fear of abandonment, poor coping skills and limited internal resources. As a result, individuals high in attachment anxiety tend to devalue themselves, and fear others share their opinion and will ultimately abandon. This negativity and uncertainty may result in a pervasive dissatisfaction leading to poorer mental health and perceived quality of life, compared to individuals low in

attachment anxiety who have a more positive self-image, greater confidence in their own coping abilities, and more faith in their partner's commitment.

In terms of the CMSS Total Coping Composite, hierarchical regression revealed that ECR Anxiety and ECR Avoidance entered with caregiver type (i.e., spouse or partner vs. other) did predict scores on the CMSS Total Coping Composite. As hypothesized, elevated attachment anxiety predicted lower use of coping strategies. Individuals high in attachment anxiety tend to have limited internal resources and poor coping skills. They also have low levels of confidence in their ability to care for their own emotional and physical needs. Therefore, these individuals are less likely to seek out and employ strategies to cope with difficulties arising from their MS.

Caregiver type was also a significant independent predictor and appeared to be a more powerful predictor of CMSS scores, relative to attachment anxiety. Results indicated that receiving care from someone other than a spouse or partner was associated with greater use of coping strategies.

### *Caregiving*

#### *Results and Discussion*

Due to the small sample of caregivers who elected to participate in this investigation ( $N = 27$ ), caregiver data were not subjected to correlational or multiple regression analysis. However, descriptive statistics for the dependent measures in the areas of coping with caregiving (see Tables 9.28 and 9.29), relationship functioning (see Table 9.30) and perceived quality of life (see Table 9.31) were calculated in order to provide information about the central tendency and dispersion of caregiver responses. Also, as gender (Markowitz, Guterman, Sadik, & Papadopoulos, 2003; Navaie-Waliser, Spriggs, & Feldman, 2003), and severity of illness (Aronson, 1997), as indicated by type of MS, have been demonstrated to contribute to caregiver's subjective experience of burden, descriptive statistics for the measures completed by the caregivers are also presented in terms of these characteristics (see tables 9.28, 9.29, 9.30, and 9.31)<sup>21</sup>.

The average Zarit Burden Inventory score in this sample is indicative of mild to moderate perceived burden (Zarit et al., 1980; see table 9.28). Within the sample, 9 participants reported experiencing little or no burden (34.6%), 11 reported experiencing mild to moderate burden (42.3%), 5 reported experiencing moderate to severe burden (19.2%), and 1 reported experiencing severe burden (3.8%). Not surprisingly, caregivers of individuals with a progressive form of MS report higher burden than caregivers caring for individuals with a relapsing-remitting form of the disease. However, presumably because of the relatively large standard deviation associated with each mean, this difference is not statistically significant in this sample.

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<sup>21</sup> The sample sizes vary for each instrument due to incomplete survey data. The sample size in the case of Caregiver Type was further reduced due to the loss of participants who did not indicate what type of MS their care receiver was diagnosed with.

*Table 9.28**Means and Standard Deviations for the Zarit Burden Inventory*

Scale	All Caregivers <i>N</i> = 25	Men <i>n</i> = 17	Women <i>n</i> = 8	Caregivers of Individuals with Relapsing/ Remitting MS <i>n</i> = 9	Caregivers of Individuals with Progressive MS <i>n</i> = 12
Zarit Burden Inventory	30.04 (13.47)	29.35 (14.69)	31.5 (11.21)	26.67 (16.52)	33.33 (11.91)

Note: Standard deviations appear in brackets

Minimum scale score = 0, maximum scale score = 88. Higher scores are indicative of greater burden.

In terms of coping with the demands of caregiving, mean scores on the Coping with MS Caregiving Index (CMSCI) suggest that the coping strategies being assessed with this instrument were not strongly endorsed by study participants (see Table 9.29). The highest scores were observed on the Supportive Engagement subscale. This strategy, which involves turning to other people for support, also appeared to be endorsed more strongly by female participants relative to male participants, and by caregivers of individuals with a progressive form of MS relative to caregivers of individuals with a relapsing-remitting form of the disease. Once again, however, the difference is not statistically significant in this sample. The remaining strategies were used “rarely” to “sometimes”, with the exception of criticism and coercion which was rarely used. It is possible that the CMSCI does not include the coping strategies most typically used by the individuals who participated in this study. Alternatively, the low ZBI scores might indicate that the majority of caregivers in this sample did not feel they needed to use coping strategies to address the specific stresses associated with MS caregiving.

*Table 9.29**Means and Standard Deviations for the Coping with MS Caregiving Index*

Scale	All Caregivers N = 26	Male Caregivers n = 18	Female Caregivers n = 8	Caregivers of Individuals with Relapsing/ Remitting MS n = 10	Caregivers of Individuals with a Progressive Form of MS n = 11
CMSCI	1.72	1.70	1.75	1.50	1.90
Avoidance <sup>a</sup>	(.49)	(.52)	(.43)	(.63)	(.26)
CMSCI					
Practical Assistance <sup>a</sup>	1.97	1.88	2.15	1.41	2.69
	(1.35)	(1.53)	(.83)	(.79)	(1.69)
CMSCI					
Supportive Engagement <sup>a</sup>	2.72	2.52	3.18	2.60	2.83
	(.73)	(.68)	(.65)	(.93)	(.50)
CMSCI					
Criticism and Coercion <sup>a</sup>	.95	.97	.93	.62	1.25
	(.61)	(.63)	(.60)	(.40)	(.52)
CMSCI					
Positive Reframing <sup>a</sup>	2.14	1.98	2.50	2.14	2.42
	(.74)	(.65)	(.85)	(.74)	(.65)
CMSCI Total					
Coping Composite <sup>b</sup>	9.32	8.79	10.51	8.27	10.66
	(2.113)	(2.06)	(1.82)	(2.25)	(1.39)

Note: Standard deviations appear in brackets

<sup>a</sup> Minimum scale score = 0, maximum scale score = 4. Higher scores are indicative of greater utilization of a particular coping strategy.

<sup>b</sup> Minimum scale score = 0, maximum scale score = 20. Higher scores are indicative of greater utilization of coping strategies in general.

As was the case for care receivers, the Relationship Rating Scale (RRF) was used to assess caregiving participants' perceptions of relationship functioning. RRF scores for the sample of caregivers (see Table 9.30) were found to be very similar to those observed for the sample of individuals with MS (see Table 9.13).

Table 9.30

*Means and Standard Deviations for the Relationship Rating Form Scales: Caregiver Sample*

	All Caregivers	Male Caregivers	Female Caregivers	Caregivers of Individuals with Relapsing/ Remitting MS	Caregivers of Individuals with a Progressive Form of MS
Scale	N = 24	n=17	n = 7	n = 10	n = 10
Viability	7.12 (1.41)	7.02 (1.51)	7.32 (1.23)	7.14 (1.82)	7.19 (1.02)
Intimacy	6.97 (1.32)	6.67 (1.28)	7.71 (1.19)	6.75 (1.60)	7.28 (1.09)
Passion <sup>a</sup>	6.23 (1.71)	5.97 (1.90)	6.96 (.68)	5.75 (2.26)	6.68 (1.12)
Care	6.86 (1.67)	6.67 (1.76)	7.33 (1.39)	6.68 (2.16)	7.21 (1.28)
Commitment	7.60 (1.83)	7.24 (2.01)	8.46 (.99)	6.95 (2.41)	7.98 (1.27)
Conflict/ Ambivalence	2.69 (1.67)	2.00 (1.63)	2.57 (1.34)	2.38 (1.87)	2.75 (1.12)
Global Satisfaction	6.97 (1.67)	6.71 (1.86)	7.63 (.87)	6.51 (2.11)	7.40 (1.34)

Note: minimum scale score = 1, maximum scale score = 9. Increasing scores indicate more of the factor measured by the scale. Standard deviations appear in brackets

<sup>a</sup> N = 23 for all caregivers, and n = 6 for female participants.

Table 9.31

*Means and Standard Deviations for the RAND-36 for the Sample of Caregivers*

Composite Scale	Caregivers N = 26 <sup>a</sup>	Male Caregivers n=18 <sup>b</sup>	Female Caregivers n = 8 <sup>c</sup>	Caregivers of Individuals with Relapsing/ Remitting MS n = 10 <sup>d</sup>	Caregivers of Individuals with a Progressive Form of MS n = 11 <sup>e</sup>
Physical Health	80.50 (16.84)	82.19 (15.72)	76.69 (19.74)	87.11 (10.37)	74.23 (19.65)
Mental Health	63.39 (16.36)	65.36 (14.28)	59.43 (20.25)	68.32 (11.94)	59.78 (16.65)
Overall Quality of Life	70.13 (15.88)	68.53 (16.30)	73.54 (15.41)	71.85 (17.67)	71.67 (12.27)

Note: minimum scale score = 0, maximum scale score = 100. Higher scores are indicative of greater satisfaction with health and quality of life. Standard deviations appear in brackets

<sup>a</sup> N = 27 for the Mental Health Composite, and N = 25 for Overall Quality of Life

<sup>b</sup> N = 17 for Overall Quality of Life

<sup>c</sup> N = 9 for the Mental Health Composite

<sup>d</sup> N = 9 for Overall Quality of Life

<sup>e</sup> N = 12 for the Mental Health Composite

In general caregivers reported their relationships to be functioning well, with moderate to high perceived intimacy, care, and passion. These individuals were generally satisfied with their relationships, viewed their relationships as viable, and were committed to them. Reported conflict within their relationships and ambivalence regarding their relationships and relationship partners was relatively low, compared to scores on all other RRF indices.

The RAND-36 was used to assess perceived physical health, mental health, and overall quality of life in caregiving participants. Not surprisingly, mean scores on the RAND-36 Physical Health Composite suggest that the caregivers in this sample enjoy greater perceived physical health (i.e., fewer role limitations due to physical health, less fatigue and less pain; see Table 9.31) relative to participants in the MS sample (see Table 9.22). Scores on the Mental Health Composite are similar in the two samples, suggesting that both caregivers and care receivers experience some problems with role limitations due to emotional problems, and diminished emotional well-being. Caregiver scores on the Overall Quality of Life Composite, suggest that caregivers, relative to care receivers, may be somewhat more positive in their perceptions about the quality of their life in general.

#### *Care Receiver-Caregiver Couples*

##### *Results and Discussion*

As previously stated, 22 couples participated in this research. Completed surveys were available for 20 of these couples. This sample proved quite diverse on a number of demographic variables. In terms of age, participating couples ranged from 30 to over 60 years. The mean age of individuals in this groups was 48.9 years ( $SD = 9.8$ ). The average age difference between partners was 3.5 years ( $SD = 2.6$ ) and no difference in age was observed for male and female participants. On average, the couples in this sample reported being married for 21.7 years ( $SD = 11.8$ ), but relationship length ranged from less than one year to 46 years. Most of these partnerships (i.e., 90%) were established before one partner received a diagnosis of MS. The average time since diagnosis was 9.8 years ( $SD = 9.0$ ), but time since diagnosis ranged from 1 year to 37 years. The diagnoses of relapsing-remitting MS and progressive MS were equally represented in the sample (i.e., 40% in each group) and 20% of couples reported the type of MS experienced by one partner was unknown.

The purpose of collecting data from couples was to investigate attachment within caregiver-care receiver dyads. Unfortunately, the low number of couples participating in this investigation precluded planned statistical analysis. However, descriptive statistics for attachment avoidance and attachment anxiety (see Tables 9.32), were

calculated, in order to provide information about the central tendency and dispersion of attachment scores for this sample of caregiver-care receiver couples. Table 9.33 provides ECR attachment avoidance and ECR attachment anxiety values for each caregiver-care receiver couple. This information is presented to provide a visual indicator of the relationship between attachment anxiety and attachment avoidance within individuals and across dyads. Data is arranged from lowest Attachment Avoidance caregiver score.

Table 9.32

*Measures of Central Tendency and Dispersion for the ECR Avoidance Scale and ECR Anxiety Scale in a Sample of Caregiver-Care Receiver Dyads*

Statistic	All Couples (N=20)	Individuals with MS (n=10)	Spouse, partner or other caregivers (n=10)
ECR Avoidance Scale			
Mean (SD)	2.47 (1.01)	2.45 (.95)	2.49 (1.10)
ECR Anxiety Scale			
Mean (SD)	2.91 (.96)	3.11 (.93)	2.71 (.99)

Note: The minimum and maximum scores on the ECR Anxiety Scale and ECR Avoidance Scale are 1 and 7 respectively. Increasing scores reflect increasing attachment anxiety and attachment avoidance.

Table 9.33

*Attachment Avoidance and Attachment Anxiety Scores for  
Caregiver-Care Receiver Couples*

	Caregivers		Care Receivers	
	Attachment Avoidance	Attachment Anxiety	Attachment Avoidance	Attachment Anxiety
1	1.06	1.00	3.22	3.00
2	1.12	2.31	2.28	2.28
3	1.17	4.28	1.39	2.44
4	1.22	1.33	1.00	1.67
5	1.22	1.44	1.44	3.39
6	1.33	3.28	4.61	4.17
7	1.94	3.22	2.06	2.76
8	2.28	1.44	1.94	3.83
9	2.33	2.28	2.22	3.56
10	2.56	1.94	3.22	3.41
11	2.56	3.28	2.94	2.28
12	2.59	2.24	2.28	3.72
13	2.78	3.83	2.22	1.94
14	3.00	3.61	1.72	1.94
15	3.28	2.22	2.17	4.89
16	3.33	3.39	2.18	3.39
17	3.56	2.56	4.31	3.82
18	3.61	2.72	1.61	1.72
19	4.44	4.22	3.67	4.11
20	4.50	3.61	2.44	3.78

Note: The minimum and maximum scores on the ECR Anxiety Scale and ECR Avoidance Scale are 1 and 7 respectively. Increasing scores reflect increasing attachment anxiety and attachment avoidance.

### General Discussion

Although it begins in infancy, attachment exerts a profound effect throughout the lifespan. The orthogonal constructs of attachment avoidance and attachment anxiety, which correspond to the internal working models of self and other, play definitive roles in the establishment, maintenance and dissolution of social relationships (i.e., friendships, romantic partnerships, and family relationships), as well as individuals' concepts of themselves as relationship partners. In adulthood, attachment is typically reciprocal, with both partners providing and receiving care and support as needed. A chronic illness, such as multiple sclerosis may change this balance, and one individual may have to adjust to disproportionately receiving care, while the other takes on the role of primary caregiver. The effects of caregiving have received substantial investigation (see Ohaeri, 2002 and Pruchno, 2000 for reviews), and previous research has demonstrated that attachment constructs are related to individuals' thoughts and feelings about caregiving, as well as their caregiving behaviour (e.g., deciding when to seek institutional support for the individual receiving care; Markiewicz, Reis, & Gold, 1997). Attachment has also been established to influence individuals' perceptions of quality of life and relationship satisfaction in the context of caregiving (Carnelley et al., 1996; Carpenter, 2001; Circirelli, 1993). However, few studies have investigated the impact of caregiving on the individual receiving care and factors affecting the care receiving experience have yet to be fully identified. Research in this area has the potential to improve the lives of care receivers and, because responses to care receiving are likely to influence the person providing it, the lives of caregivers. The central purpose of this investigation was to investigate the hypotheses that attachment constructs (i.e., attachment anxiety and attachment avoidance) predict reaction to care receiving, relationship quality and quality of life in a population of individuals with MS. Results for care receivers were generally consistent with stated hypotheses and provided support

for the conclusion that both attachment anxiety and attachment avoidance are relevant to understanding individuals' responses to care receiving, relationship satisfaction and perceived quality of life in the context of chronic illness.

### *Sample Characteristics and Generalizability of Research Conclusions*

#### *Sample Size, Power and Type I Error*

Required sample size for multiple regression analysis is a topic of controversy among researchers (Maxwell, 2000). Several 'rules of thumb' exist for determining minimum sample size and the recommendations range from modest (i.e., 10 participants per predictor variable) to demanding (i.e., 100 participants per predictor variable; Maxwell, 2000). In general, sixty-eight participants (the size of the sample of individuals with MS) provide adequate power to test the regression model, as a whole, to predict scores on the dependent variables (Green, 1991; Stevens, 1996). However, it is a small sample size for testing the unique predictive power of attachment anxiety and attachment avoidance (Green, 1991). A small sample may result in a failure to detect unique predictive effects of attachment avoidance and/or attachment anxiety on reaction to care receiving, relationship functioning, and quality of life. Low power is a particular problem for hierachal regression because more power is needed to detect interaction effects. Despite being smaller than recommended, samples of similar size to the one reported in this investigation are common for investigations of similar topics found in the published literature (Baronet, 2003; McNulty, Livneh, & Wilson, 2004). While the results of this preliminary work in a relatively new area of investigation are interesting, they should be considered exploratory and conclusions should be made with caution. Future research with larger samples would be beneficial in confirming, clarifying, and extending the findings of this research.

Type I error, the probability of rejecting the null hypothesis when it is true, is related to the number of statistical calculations conducted. In general, as the number of analyses increases, the probability of committing a Type I error also increases, unless accommodations are made to compensate for repeated tests. In this investigation, 17

hierarchical multiple regression analyses were conducted, using  $p = .05$  as the required probability level for determining statistical significance. This results in a Type I error probability of 58% for independent tests. However, given that many of the dependent measures in this investigation were correlated, the actual Type I error rate will be lower than this. Several options were available to address Type I error. First, scales could be combined to form composite scores, which would reduce the number of regression analyses. While this would yield results of greater statistical confidence, it would also dramatically reduce the amount and detail of information produced. For this reason, this option was rejected. Secondly, the  $p$  value for determining significance could be lowered to .003 which would yield an experimentwise Type I error probability of 5% (i.e.  $p = .05$ ). However, by decreasing the ‘area of rejection’ (i.e.,  $p$  value) for each test, power is also diminished, increasing the possibility that effects will be missed (i.e., the probability of Type II error). In a relatively new area of investigation failing to detect potential relationships may be a more serious problem than erroneously proposing the existence of an effect, as replications and extensions tend to be derived from significant results. For this reason, this approach was also rejected. Instead, the potentially high Type I error rate was accepted for two reasons. First, this investigation is exploratory in nature; the intent is to produce results that can be used to guide future and potentially more statistically rigorous research. Second, the results of this investigation are largely commensurate with a priori hypotheses based on attachment theory. Consequently, theoretical confidence compensates somewhat for the uncertainty implied by an inflated Type I error rate.

#### *Participant Characteristics*

The participants in this investigation were all volunteers recruited with the assistance of the Multiple Sclerosis Society of Canada, Saskatchewan division and Edmonton chapter. The response rate for the self-report survey instrument was very good. This is likely due to the fact that the majority of individuals were given information about the investigation prior to their participation and because they actively chose to participate by requesting a survey package. The disadvantage of this recruitment method is that self-selection makes it difficult to determine the

generalizability of these results to all individuals with MS, and even more challenging to make assumptions about the applicability of these results to individuals in other caregiving/care receiving relationships. It must be recognized that whenever volunteers serve as participants it is possible that those choosing to participate differ from those who choose not to participant in ways that would substantially change the results of the research. With this caveat in mind, the best way to evaluate the possible extensions of the conclusions of this research is through a thorough examination of the sample characteristics.

Not surprisingly, given the disproportionate rates of MS in women and men, the majority of the individuals with MS who chose to participate in this investigation were female. As most of the caregivers who participated were spouses or partners the resulting sample of caregivers was predominantly male. In the sample of individuals with MS, gender did not appear to be a relevant variable in terms of the questions being considered in this investigation (e.g., gender was only found to correlate with the dependent measure in three analyses and it was not found to correlate with either attachment avoidance or attachment anxiety).

In the sample of individuals with MS, a wide range of ages was represented (i.e., 21 to 78). However the majority of individuals were in their 40's and 50's. Men were found to be older than women by 6-7 years. The caregiver sample was older than the sample of individuals with MS, on average, and had a slightly smaller range of ages (33-71). The majority of caregivers were found to be in their 40's, 50's and 60's. The age difference between the individuals with MS and caregiver samples likely results from the fact that the caregiver sample was almost entirely made up of spouses of individuals with MS and reflects the fact that women tend to marry men who are older than themselves (Statistics Canada, 2001).

Overall, both the individuals with MS and caregiver samples reported greater levels of educational attainment relative to the general populations of 25-64 years olds in Saskatchewan and Alberta (Statistics Canada, 2001a). In both samples, the majority of individuals reported having some college-level education or a college degree. In the sample of individuals with MS, 36% reported holding a University Degree, with this

percentage being 41% in the caregiver sample. In contrast, Census Canada found this level of educational attainment in 18% of individuals in Saskatchewan and 21% of individuals in Alberta (Statistics Canada, 2001a).

Not surprisingly, caregivers reported a significantly greater rate of employment relative to individuals with MS. Previous studies have suggested that 50 - 80% of individuals cease employment within 10 years of diagnosis (Rao, et. al., 1991). In this investigation, 70% of individuals with MS reported being unemployed, while the mean time since receiving a diagnosis of MS was 9 years. Only three individuals in the MS sample were retirement age (i.e., over 65 years).

In terms of diagnostic categories, the proportion of individuals with MS participating in this research reporting relapsing-remitting MS was consistent with that reported by the MS Society of Canada (2005) for Canada as a whole, while the proportion of individuals reporting a progressive form of MS was slightly lower than expected. Although relapsing-remitting MS is the most frequent initial diagnosis (approximately 75%; MS Society of Canada, 2005), the MS Society of Canada reports that after 10 years approximately 35% of individuals will continue to have relapsing-remitting MS, while the remaining 65% will have one of several progressive forms of the disease. In this investigation, these proportions were 38% and 47% respectively. Somewhat surprisingly, 15% of the individuals with MS reported that they did not know their diagnosis. This is even more surprising in light of the fact that the mean time since diagnosis for these individuals was 19½ years. As no additional questions regarding diagnosis were put to participants, the reason individuals answered in this way (e.g., changing diagnoses across time) is unknown.

For the purpose of generalizability, the prototypical individual with MS who volunteered to participate in this research, was a married woman in her 40's or 50's, with some university-level education. She is not currently employed. She received a diagnosis of MS about 10 years ago, and receives care from her husband or partner. However, the failure to find differences related to age, gender, time since diagnosis, and type of MS on measures of attachment anxiety and attachment avoidance suggests that

findings related to attachment may be cautiously extended beyond those individuals with characteristics matching those of the prototype.

For caregivers, the prototypical participant in this investigation was a male in his 40's, 50's or 60's, with university-level education. This individual is currently employed. His spouse is an individual with MS and they were already married at the time of diagnosis. While study results appear to be most applicable to male caregivers, the failure of age and type of MS to be significantly related to measures of attachment anxiety and attachment avoidance suggests that research findings may be cautiously extended to male caregivers whose characteristics deviate from those of the prototype.

#### *Attachment*

Although previous research has predominantly discussed attachment in terms of "attachment styles", more recent developments in the measurement and conceptualization of attachment have led some of the foremost researchers in the area to advocate for a dimensional approach to attachment rather than a categorical one (Fraley & Waller, 1998; Fraley & Spieker, 2003). This is largely because the categorical approach tends to confound the two underlying dimensions of attachment anxiety and attachment avoidance, making it more difficult to determine the differential contribution of each aspect to a particular research finding. For example, while secure attachment style has been observed to predict participation in close relationships (Brennan & Shaver, 1995), it is impossible to know whether attachment anxiety or attachment avoidance is more germane to this finding. This is because the 'secure attachment' category includes individuals low to moderate in both attachment anxiety and in attachment avoidance. As a result, findings predominantly related to attachment anxiety, previously ascribed to the 'secure' attachment style, may well apply to some members of the 'dismissing/avoidant' attachment category because this category shares the same range in terms of attachment anxiety. Subsequently, this investigation operationalized attachment in terms of both attachment anxiety and attachment avoidance.

As a whole, the sample tended to be low to moderate on attachment avoidance. As previously noted, individuals high in avoidance are often underrepresented in

attachment research, as they are less likely than other individuals to voluntarily participate in investigations focused on intimate relationships. More specific to the sample participating in this investigation is the high proportion of individuals who report being married or in a committed relationship. Participation in such relationships is characteristic of lower avoidance and would not be expected of individuals very high in attachment avoidance. While scores across the seven point range were observed on the avoidance portion of the ECR scale, the vast majority of responses were below 4.5. Statistical analysis revealed that caregivers and individuals with MS reported similar average levels of attachment avoidance.

In terms of attachment anxiety, ECR scores were observed to be more evenly distributed in both the sample of individuals with MS, and the sample of spouse, partner or other caregivers, with the latter sample showing slightly less range. In contrast to scores on attachment avoidance, individuals with MS were observed to have significantly higher anxiety scores relative to the spouse, partner or other caregiver sample. This is not surprising, as chronic illness is more likely to affect an individuals' sense of self and their perceived value as a relationship partner, as opposed to their desire for close relationships and their estimation of the desirability of others as relationship partners.

Within the individuals with MS sample, average scores on the attachment anxiety and attachment avoidance measures were found to be higher in the group of individuals being cared for by someone other than a spouse or partner. Such a finding is expected, as previous attachment investigations have shown that individuals high in attachment avoidance are more likely to avoid long-term committed relationships, while individuals high in attachment anxiety fervently desire intimate relationships but have difficulty maintaining them due to their high needs and constant demands on their relationship partner (Brennan & Shaver, 1995).

As a consequence of the under representation of individuals high in attachment avoidance, the results of this investigation speak to the capacity of attachment avoidance to predict reaction to care receiving, reaction to caregiving, relationship functioning and perceived quality of life, only through moderate levels of attachment avoidance. It is

important to note however, that when present, the relationship between attachment avoidance and the dependent variable was linear; there is no empirical or theoretical reason to postulate that this relationship would not continue to hold at high levels of attachment avoidance.

Of the demographic variables investigated in preliminary correlation analyses of data from the individuals with MS sample, only caregiver type was associated with attachment anxiety and attachment avoidance. As discussed earlier, higher levels of attachment anxiety and attachment avoidance are related to a lower probability of being in a committed relationship. Therefore, it is not surprising that being cared for by someone other than a spouse or partner is associated with greater attachment anxiety and attachment avoidance relative to individuals who name their spouses or partners as their primary caregivers.

One question not addressed in this investigation, is the stability of attachment in the present sample of individuals with MS and their caregivers. That is, it is unclear whether attachment as measured in this investigation represents a stable construct based on early relationship experiences or if participants' attachment avoidance and attachment anxiety reflect changes as a result of the diagnosis of MS, either in themselves or their relationship partner. The existing literature suggests a moderate degree of attachment stability extending from infancy through adulthood (Fraley, 2002). However, under conditions of unpredictable and powerful life events, such as the diagnosis of a chronic, potentially debilitating disease, estimates of stability might be expected to decline. On-going longitudinal studies of attachment stability may have the opportunity to address this question, as some participants may become disabled during the course of their participation in such research. Supporting the relative stability of Attachment is the failure of ECR Attachment Anxiety and ECR Attachment Avoidance to correlate with age, type of MS, and time since diagnosis in this sample. This might suggest that attachment variables do not change significantly as individuals with MS and caregivers mature, experience MS related disability, and adapt to life with MS.

*Individuals with MS**Data Analysis*

Data analysis using hierachal regression allowed the shared predictive power of attachment avoidance and attachment anxiety to be determined (in combination with additional relevant variables), as well as each variables independent contribution and the predictive power of important interactions. Interaction terms were included because correlation analysis revealed important sub-groups within the sample of individuals with MS. These groups were observed to be individuals receiving care from a spouse or partner and individuals receiving care from someone other than a spouse or partner. This appears to be a particularly salient variable as attachment constructs were found to be differentially influential on care receiving and relationship functioning depending on caregiver type.

*Care receiving*

Although many studies have investigated aspects of caregiving, only a small minority have included the perspective of the individuals who receive care (Newsom & Schulz, 1998; Martire, Schulz, Wrosch, & Newsom, 2003). While investigations on care receiving are too few to establish definitive findings in the area, the research available suggests that a significant number of individuals receiving care experience negative reactions and that an individuals' reaction to receiving care may have significant influence on their mental and physical well-being, as well as the health of the individual providing care (Newson, 1999). The reported investigation is one of the first to explore attachment anxiety and attachment avoidance as determinants of perceptions associated with care receiving.

Six scales were used to assess individuals' reactions to care receiving. These scales measured care receiver anger, embarrassment, feelings of indebtedness, self-esteem reactions to care receiving, care receiver perceptions regarding the appropriateness and sufficiency of care, caregiver overprotection, and care receiver perceptions that caregivers were behaving in ways that undermined autonomy and fostered dependence. In accordance with existing research, about twenty to thirty

percent of participants in this investigation acknowledged experiencing significant negative reactions to the help they received (Newsom & Schulz, 1998).

While the overall regression equation was expected to be significant for all care receiving variables, separate predictions were made for attachment anxiety and attachment avoidance regarding the ability of each attachment factor to independently predict emotional reactions to receiving care. Attachment anxiety, being related to individuals' model of themselves as a relationship partner, desire for interpersonal closeness, and fear of rejection, was hypothesized to predict negative judgments about the adequacy and sufficiency of care, cynical attitudes regarding caregiver motivations for providing care, feelings of anger, embarrassment and indebtedness, and declining self-esteem in relation to care receiving. Attachment avoidance, being related to individuals' models of others in relationships, discomfort with self-disclosure, and uneasiness with interpersonal closeness, and lack of desire for close relationships, was hypothesized to predict embarrassment and anger in response to care receiving, the perception of caregiving as a threat to independence, and judgments of caregiver behaviour as overprotective. Attachment avoidance was also expected to predict feelings of indebtedness toward caregivers.

As predicted, attachment anxiety and attachment avoidance, in combination with caregiver type, were found to predict a significant proportion of the variance of scores on all care receiving variables. In general, the regression models accounted for 22% – 43% of variance in the care receiving scales. Overall, data analysis indicated that higher levels of attachment anxiety and attachment avoidance, and receiving care from someone other than a spouse or partner predicted more negative reactions to care receiving. However, these effects were qualified by interactions, typically between attachment anxiety and caregiver type. Specifically, interactions between ECR Attachment Anxiety and caregiver type were observed on the Specific Reactions to Help and Indebtedness Scale, the Appropriateness, Sufficiency and Helping Intentions Scale, the Self Esteem Reactions to Help Scale, and the Overprotection Scale. These interactions suggest that the utility of attachment anxiety for predicting reactions to receiving care is predominantly confined to those individuals receiving care from a

spouse or partner. Although this finding was not anticipated, it is reasonable that attachment anxiety, the component of attachment most closely associated with the desire to establish and perpetuate personal relationships, would have its strongest influence on care receiving within attachment relationships in which emotional closeness, reciprocity and equality is the norm - that is, within intimate adult relationships.

Initial predictions, when applied to the sample of individuals receiving care from a spouse or partner, were found to be supported. For this group, higher levels of anxiety predicted more negative reactions to care receiving. As expected, the poor internal representation of self as a relationship partner, the intense desire for interpersonal closeness and fear of rejection, all consistent with high attachment anxiety, resulted in care receivers who were dissatisfied with the quality and quantity of care they received. At the same time, these care receivers tended to be embarrassed about receiving care, and reported feeling indebted to their care givers, further devaluing themselves as desirable partners. This is consistent with the results of other investigations that have demonstrated that attachment anxiety is related to dissatisfaction with the attentiveness and responsiveness of relationship partners, and negative attributions regarding partners' behaviours (Campbell, Simpson, Boldry, & Kashy, 2005; Cassidy, 2000).

Contrary to predictions, elevated attachment anxiety also predicted high scores on the Overprotection Scale, for individuals receiving care from a spouse or partner. Previous research would suggest that individuals high in attachment anxiety would seek out behaviour in their partners that others might perceive to be intrusive, controlling and restrictive (Alonso-Arbiol, Shaver, & Yarnoz, 2002). However, individuals high in attachment anxiety are also vigilant for signs of rejection from their partner and tend to misperceive social cues (Alonso-Arbiol et al., 2002; Meyer, Pilkonis, & Beevers, 2004; Mikulincer & Shaver, 2001). When confronted with the additional stresses of MS, these individuals may perceive overprotective behaviour as further evidence that they are not adequate and equal relationship partners. Subsequently, as a means of defending against rejection and attempting to appear more secure and self-reliant, highly anxious individuals report their spousal caregivers to be overprotective. Whether this report is a genuine reflection of their affective response to perceived overprotection could not be

determined by this investigation. It is possible, that while highly anxious individuals report their spouses to be overprotective, they might simultaneously crave and elicit such behaviour (Shaver, Schanchner, & Mikulincer, 2005).

In contrast to attachment anxiety , the results pertaining to attachment avoidance suggest that it may have a more general and pervasive influence, affecting how individuals respond to the care giving behaviour of others in many types of relationships, not just close (i.e. intimate) relationships. In line with predictions, attachment avoidance independently accounted for unique variance in Self Esteem Reactions to Help Scale scores and Appropriateness, Sufficiency and Helping Intentions Scale scores. Individuals high in attachment avoidance rarely engage in proximity seeking behaviour and tend to resist dependency in committed relationships (Cassidy, 2000; Mikulincer, Gillath, & Shaver, 2002). Compulsive self-reliance and ambivalence toward emotional attachment (conscious or unconscious defences against rejection), may be perceived as a sign of character strength and thus become a source of personal pride. The results of this investigation suggest that when circumstances such as illness or disability force such individuals to accept help, their sense of self is shaken and their self-esteem declines. Furthermore, individuals high in attachment avoidance avoid relying on others because experience has taught them that attachment figures are potentially unreliable (Cassidy, 2000). The necessity of relying on a caregiver and perceived loss of autonomy may be another explanation for the decline in self-esteem in response to care receiving observed in this investigation. Finally, because individuals high in attachment avoidance have a negative model of others in relationships, they might be disinclined to believe that the care giving provided is a natural outcome of a mutually respectful, reciprocal, and intimate relationship. As a result, they experience a greater sense of indebtedness relative to individuals lower in attachment avoidance. These results are consistent with research that indicates that individuals high in attachment avoidance prefer to give less and take less within intimate relationships (Grau & Doll, 2005).

Attachment avoidance was also a factor in two significant interaction terms with caregiver type. On the Overprotection scale, both caregiver groups demonstrated the

same general pattern of effects. As predicted, increasing attachment avoidance predicted higher ratings of caregiver overprotection. Not surprisingly, given their preference for self-sufficiency and personal autonomy, individuals high in attachment avoidance perceived their caregivers to be overly intrusive and their care to be demeaning. The strength of this relationship was found to be stronger in the sub-sample of individuals receiving care from a non-spouse. This is not entirely surprising as the fact that the individuals in this group are not participating in an intimate relationship suggests that relative to individuals receiving care from a spouse or partner, they are already demonstrating greater sensitivity to perceived threats to their sense of self and personal autonomy.

Results from the Discouragement of Independence Scale revealed the only instance in which an attachment variable exerted a greater effect on individuals receiving care from someone other than a spouse or partner. In this sub-sample, individuals with elevated attachment avoidance reported their non-spousal caregivers as more discouraging of their continued autonomy in their daily lives, relative to individuals low in attachment avoidance. Possibly, as a means of identifying and defending against aversive interpersonal dependency and a loss of esteem, these individuals were more sensitive to and critical of behaviour in their non-spousal caregivers which they perceived as discouraging their independence. This interpretation is consistent with previous research which indicates that individuals high in attachment avoidance tend to be defensive regarding their own personal shortcomings and behaviour, may be self-reliant to the point of causing themselves distress, tend to ignore or repress potentially threatening information, and deny needs and behave in ways (such as criticizing their caregivers) which create distance in relationships when faced with a threat to their internal model of self (Collins & Read, 1990; Mikuliner, Orbach & Iavnieli, 1998; Siefert, 2005).

Surprisingly, despite predictions and first-order correlations, attachment avoidance did not predict scores on the Encouragement of Dependency Scale. This scale and the Discouragement of Independence Scale were produced when reliability analysis showed the Independence, Dependence and Encouragements Scale to be

unreliable. While the derived Discouragement of Independence Scale behaved somewhat in line with expectations, attachment unexpectedly failed to predict Encouragement of Dependence Scale scores. Subsequently, results from both measures should be taken with caution, and additional research is needed to clarify the underlying constructs.

*Attachment and Relationship Functioning.*

In 1987, Hazan and Shaver established attachment as an important theoretical framework for understanding many of the dynamics and individual differences in adult romantic relationships. Since then research in the area has been prolific and has demonstrated the importance of attachment to factors relevant to relationship functioning such as choice of partner (Frazier et al., 1996), commitment (Morgan & Shaver, 1999), intimacy (Feeney & Noller, 1990), coping with stressful events (Mikulincer & Florian, 1998), affect regulation (Brennan & Shaver, 1995), support seeking and support giving (Simpson et al., 1992; Vogel & Wei, 2005), relationship satisfaction (Gallo & Smith, 2001), relationship dissolution (Davila & Bradbury, 2001) and spousal abuse (Bond & Bond, 2004). Research has also expanded to investigate relationship functioning in other types of adult interpersonal relationships in adulthood, including friendships and adult familial relationships (Ainsworth, 1989; Bender, 1999; Langan, 2002).

In this investigation the Relationship Rating Form (RRF) was used to assess individuals' perceptions of relationship functioning. The seven RRF subscales assessed participants' relationships with their partner (i.e., their caregiver) in terms of Viability, Intimacy, Passion, Care, Commitment, Conflict/Ambivalence, and Global Satisfaction. Given that attachment is a key component of individuals' experiences and behaviour in close relationships, attachment anxiety and attachment avoidance were expected to predict participant rating on all RRF subscales. However, as individuals high in attachment anxiety often feel their partners are not contributing equally to the relationship and tend to perceive their partner to be insufficiently caring and attentive, attachment anxiety was expected to be a more powerful predictor of these relationship attributes. Due to this same dissatisfaction and perception of inequity, high attachment

anxiety was also expected to predict greater relationship conflict. Finally, attachment anxiety was expected to be a stronger predictor, relative to attachment avoidance, of overall relationship satisfaction in this study. This outcome was predicted because having a chronic illness such as MS upsets the natural reciprocity in adult relationships and threatens the affected individual's sense of self worth. Individuals with MS, high in attachment anxiety, might believe their illness makes them less desirable relationship partners, and thus become even more sensitive to signs of rejection in their partners' behaviours. Fear of abandonment coupled with perceived insufficiency of reassurance, lowers perceptions of general satisfaction with the relationship. As individuals high in attachment avoidance are uncomfortable in close relationships, in general, and might attempt to create distance as their partner's demands increase, attachment avoidance was expected to be the stronger predictor of relationship commitment, relative to attachment anxiety. For similar reasons attachment avoidance was predicted to be the stronger predictor of relationship viability.

As predicted, attachment anxiety and attachment avoidance, in combination with caregiver type, were found to predict scores on all care receiving variables. Attachment was strongly predictive of positive relationship attributes such as intimacy and caring, and regression equations accounted for 57% to 69% of variance in these care receiving scales. By contrast, attachment was a less powerful predictor of conflict and ambivalence, although still accounting for 38% of variance on this RRF scale. Overall, data analysis indicated that lower levels of attachment anxiety and attachment avoidance predicted better relationship functioning. However, caregiver type was again found to be an important variable for understanding the ability of attachment to predict intimacy, commitment and conflict in relationships, most specifically for individuals receiving care from a spouse or partner.

For individuals receiving care from a spouse or partner, attachment anxiety was observed to predict the level of acceptance, tolerance, trust, respect, and intimacy participants reported as present in their relationships. As attachment anxiety increased, participants reported less of these positive qualities as present in their relationship with their caregiver. Attachment anxiety also predicted commitment to relationships and to

relationship partners, irrespective of caregiver type. For both individuals being cared for by a spouse or partner and those being cared for by someone other than a committed partner, higher relationship-related self-esteem, reduced fear of rejection, and fewer demands on relationship partners (e.g., for affection and reassurance) predicted greater endorsement of attributes associated with relationship commitment. The results relevant to attachment anxiety replicate previous findings, using both categorical and dimensional models of attachment in diverse types of adult relationships (Brennan & Shaver, 1995; Cambell et al., 2005; Langan, 2002).

In this investigation, attachment anxiety was generally found to be a less powerful independent predictor of relationship factors than attachment avoidance. An exception to this pattern was observed on the scale measuring relationship conflict and feelings of ambivalence. On this scale, attachment anxiety demonstrated equivalent predictive power when compared to attachment avoidance and was observed to predict higher reported conflict. Although this scale also measured ambivalence toward one's partner, this component is unlikely to be related to attachment anxiety, as individuals high in attachment anxiety typically demonstrate strong attachments to their relationship partner and significant fear that the relationship may end (Cassidy, 2000). Once again, the findings related to relationship conflict were restricted to individuals receiving care from a spouse or partner. Other investigations have also demonstrated a relationship between attachment anxiety and conflict within romantic relationships (Cambell et al., 2005; Gallo & Smith, 2001). Individuals high in attachment anxiety are hyper-vigilant to negative events and emotions, employ highly emotional and frequently ineffective coping strategies, misperceive cues in their partners, and demonstrate dysfunctional behaviour in response to attachment threat. These behaviours broaden relationship conflict, and serve to further reinforce perceptions of conflict (Cambell et al., 2005, Cassidy & Berlin, 1994; Mikulincer & Florian, 1998; Simpson et al., 1992).

Contrary to predictions, avoidance was found to be a more consistent and powerful predictor of the relationship qualities assessed in this investigation, relative to attachment anxiety. Perceived reciprocity, mutual dependency, supportiveness, relationship enjoyment, and esteem derived from participation in a close relationship

were all significantly related to attachment avoidance. Additionally, individuals with elevated attachment avoidance reported themselves to be less tolerant, trusting and accepting in relationships, and reported high levels of ambivalence toward their relationships and their relationship partner. Again, while the latter conclusion is based on a scale that included items tapping both conflict and ambivalence, prior research would suggest attachment avoidance to be related to the ambivalence component (Brennan & Shaver, 1995).

Finally, elevated attachment avoidance was found to predict low levels of personal commitment and perceived partner commitment. This provides further evidence that avoidance may be the more important attachment factor for understanding both intimate and non-intimate adult relationships.

While the strength of the predictive power of attachment avoidance for relationship characteristics was surprising (Gallo & Smith, 2001), the existence of the relationship is well supported by previous investigations. Individuals high in attachment avoidance prefer to be self-reliant, fail to seek support from partners in times of stress, fail to provide support to their partners, demonstrate low relationship commitment, and behave in ways that create emotional distance between themselves and their partners. Consequently, it is not surprising that their relationships are less healthy, caring, intimate, and satisfying, and have higher rates of dissolution (Hazen & Shaver, 1987; Brennan & Shaver, 1995; McCarthy & Taylor, 1999; Mikulincer & Nachson, 1991; Shaver et al., 2005; Simpson, 1990).

#### *Attachment and Quality of Life*

The unpredictable nature of MS may cause significant mental distress in individuals with the disease, and has been shown to significantly impact perceived quality of life (Joy & Johnston, 2001). Therefore, it is critical that factors affecting quality of life be delineated in order to assist individuals living with MS to achieve and maintain as high a quality of life as possible. This investigation employed quality of life and coping measures specifically designed for use with individuals with MS.

The MSQoL-54 provided a measure of participants' perceived mental health, physical health and overall quality of life. The CMSS was used as an indicator of

participants' use of coping strategies to deal with the emotional and physical stresses associated with living with MS. Participants in this investigation reported comparable quality of life scores to those reported in other investigations of individuals with MS (Solari & Radice, 2001; Vickrey et al., 1995).

As attachment anxiety is related to an individual's internal working model of themselves, attachment anxiety was hypothesized to be the strongest predictor of participants' quality of life ratings. It was predicted that relative to low attachment anxiety, high attachment anxiety would be associated with negative appraisals of mental and physical health and a pessimistic report of overall quality of life. As anxiety is also related to internal resources and coping ability, high anxiety was also hypothesized to predict poor utilization of coping strategies.

Attachment avoidance was also hypothesized to predict MSQoL-54 scores, following a similar pattern to that predicted for attachment anxiety. The predictive power of attachment avoidance was expected to be weaker, relative to attachment anxiety, because attachment avoidance is related to a negative internal model of others, as opposed to self. Rather, the predicted relationship between attachment avoidance and quality of life was based on the expectation that individuals high in attachment avoidance would dislike the necessity of receiving care associated with having MS. The imposed care receiver role was expected to result in lower scores related to quality of life.

Unlike attachment anxiety, attachment avoidance was expected to be positively correlated with the use of coping strategies. Individuals' high in attachment avoidance typically prefer self-sufficient coping strategies, and were expected to prefer the use of coping strategies over requesting help from a caregiver. Therefore, as attachment avoidance increased, the reported use of coping strategies was also expected to rise.

As predicted, attachment anxiety and attachment avoidance, in combination with caregiver type, were found to predict scores on all quality of life variables. These results are consistent with previous investigations in which attachment has been demonstrated to be a moderate predictor of health and coping with chronic illness (Feeney & Ryan, 1994; Myers & Vetere, 2002; Schmidt et al., 2002; Waller, Scheidt, &

Hartmann, 2004). Regression models were reasonably strong, accounting for 23% to 36% of variance in the quality of life scale scores and 28% of variance in coping score. Overall, data analysis indicated that lower levels of attachment anxiety and attachment avoidance predicted better quality of life and greater use of coping strategies. Gender may also be an important factor, relevant to perceived quality of life, as female participants reported better physical health, mental health and overall quality of life relative to male participants.

As predicted, attachment anxiety predicted perceived mental health and overall quality of life. Individuals predisposed to perceptual and cognitive negativity, who feel their partners are insufficiently attentive and unsupportive, and who have a poor self-concept, also judge their mental health and overall quality of life to be poor. This result is consistent with previously reported results which suggest that individuals with a preoccupied attachment style tend to present themselves to others as vulnerable and needy, and are typically high reporters of symptoms of psychological distress (Waller et al., 2004). This behaviour occurs in an attempt to elicit and maintain care giving behaviour in others. Also consistent with the hypotheses of this investigation and previous research findings, high attachment anxiety predicted reduced use of coping strategies (Mikulincer, & Florian, 1998).

Contrary to predictions, attachment avoidance, relative to attachment anxiety, was a better predictor of perceived physical health, and did not predict perceived mental health or overall quality of life. In this sample, high attachment avoidance predicted lower levels of perceived physical health. Finally, attachment avoidance was found to predict use of coping strategies, but only for individuals receiving care from someone other than a spouse or partner, and the relationship was not in the expected direction. In this investigation, in the sample of individuals receiving care from a non-spouse, high attachment avoidance predicted lower, rather than greater, use of coping strategies. Possibly, the tendency of individuals high in attachment avoidance to deny problems is responsible for these findings. The use of coping strategies would require an acknowledgement of the physical and/or mental impact of MS, which might be internalized as personal weakness and a potential vulnerability. Therefore, individuals

high in attachment avoidance may not access coping strategies on the grounds that they are unnecessary. The observation of a relationship between attachment avoidance and coping only in the non-spousal caregiving group may reflect greater denial tendencies as evidenced by higher average attachment avoidance scores relative to the sample of individuals receiving spousal care.

#### *Caregivers*

Caregiving is the reciprocal of the attachment system and an integral component of adult attachment relationships (Collins & Feeney, 2000). While the attachment system prompts individuals to seek proximity to caregivers when their physical or emotional safety is threatened, the caregiving system promotes consistent and sensitive responding by attachment figures (Carnelley, Pietromonaco, & Jaffe, 1996).

A substantial research base exists on the possible positive benefits and potential negative consequences of caregiving within attachment relationships (i.e., informal caregiving) and the relationship between attachment and aspects of caregiving such as burden, mental health, physical health, quality of life, relationship satisfaction and commitment to continued care provision have been investigated (Barusch & Spaid, 1989; Carnelley et al., 1996; Collins & Feeney, 2000; Fenny, 1996; Kunce & Shaver, 1994). In these investigations, higher levels of attachment security were linked to more positive caregiver outcomes. Although caregivers participated in this survey investigation, sample size was insufficient to test the proposed hypotheses.

In descriptive terms, the sample of caregivers was observed to be diverse on such variables as age, education level, employment status, type of MS in partner, length of time since partners' diagnosis, length of relationship, and health status. Also, the sample of caregivers participating in this investigation was somewhat different than those typically described in caregiving research. While previous research has tended to focus on the experience of women, who take on caregiving roles more often than males (Navaie-Waliser, Spriggs, & Feldman, 2002), the caregiver sample in this investigation was comprised of more than twice as many male participants as female participants. As any of the variables previously mentioned may moderate or mediate the relationship between attachment anxiety and attachment avoidance, and caregiver burden,

relationship quality and quality of life, future research with larger samples, including an adequate representation of male caregivers, is required.

In terms of the dependent measures in this investigation, basic descriptive statistics were calculated. On the Zarit Burden Inventory, participants reported experiencing predominantly mild to moderate burden. Individuals providing care for an individual with a progressive form of MS were observed to have a higher average score relative to caregivers caring for individuals with a relapsing-remitting form of the disease. While this finding did not appear to be statistically significant in this sample, it makes theoretical sense, and would likely be significant in a larger sample. Caregivers did not strongly endorse the coping strategies included on the Coping with MS Caregiving Index, which might imply that this scale does not reflect the strategies commonly used in this sample, or that the caregivers surveyed in this investigation are not actively employing coping strategies to deal specifically with MS caregiving related stressors.

In terms of relationship functioning, the caregivers in this sample were generally satisfied with their partnerships, and they expressed commitment to their relationships and relationship partners. Caregivers reported moderate to high perceived intimacy, care, and passion within their relationships, and RRF responses suggested that they viewed their relationships as viable over the long term. Reported conflict and ambivalence was relatively low compared to scores on other RRF indices.

Finally, when measured using the RAND-36, the mean of the Physical Health Composite was observed to be higher than the mean of the Mental Health Composite, with mean Overall Quality of Life falling between these two composites. Potentially, the lower Mental Health Composite scores may reflect the emotional stress of providing care to an individual (and in the case of the caregivers in this sample, a loved one) with a chronic, unpredictable and potentially disabling disease. Again, although not tested statistically, caregivers caring for individuals with a relapsing-remitting form of MS appeared to enjoy better physical and mental health than those caregivers caring for individuals with a progressive form of the disease. Such a finding is sensible, as caring for an individual with progressive MS likely requires more physical caregiving and the

steady progression of physical and/or mental decline likely takes a significant emotional toll.

Further research with caregivers of individuals with MS is required to provide greater insight into the burden, coping strategies, relationship functioning and quality of life experienced by these individuals, and to determine the predictive utility of attachment anxiety and attachment avoidance.

#### *Caregiver - Care Receiver Couples*

Twenty caregiver-care receiver couples participated in this investigation. Unfortunately, the sample size precluded planned statistical analysis.

#### *Implications for Care Receivers and Caregivers*

Although care receiving research is only in its earliest stages, it is crucial to the health of individuals receiving care that research results be translated into practical suggestions for care receivers, caregivers and clinicians. This investigation corroborates findings which suggest that a significant proportion of individuals with MS have negative reactions to care receiving (Newson, 1999; Newson & Schulz, 1998). Furthermore, measures of attachment appear to provide important information about how an individual will respond to accepting help. Because attachment is easily measured using self-administered instruments, there is no barrier to including information about attachment anxiety and attachment avoidance into care/support planning for individuals with MS and their caregivers.

Both elevated attachment anxiety and elevated attachment avoidance are associated with compromised mental representations of self and poor insight (Mikulincer, 1995). Therefore, providing individuals with MS with information on the two attachment factors and their behavioural manifestations may assist individuals in identifying areas of strength as well as areas of concern. Furthermore, individuals could be assisted in identifying thoughts, behaviours and circumstances which activate the attachment system in themselves and their partners, and develop strategies to address attachment needs. For example, recent research suggests that while individuals with high levels of attachment avoidance deny attachment needs and outwardly appear to experience low attachment related distress, they may, in fact, have stronger feelings

which are repressed (Mikulincer et al., 2002). Therefore, individuals high in attachment avoidance need interventions which allow them to access the assistance they need without compromising their sense of self and autonomy. Individuals caring for an individual high in attachment avoidance should strive to provide care without being intrusive, and without appearing to discourage their independence.

While adapting behaviour to current attachment style is one option, care receivers and caregivers may opt to try to moderate elevated attachment styles. Theoretically, attachment is somewhat paradoxical in that the working models which underlie attachment behaviour are both flexible and resistant to change (Bowlby, 1973; 1982, 1988). As Bowlby (1982) noted, working models are adaptive because they are constantly being revised in response to new relationship information. This allows individuals to learn from past relationships, adapt their behaviour to current relationships, and plan for future interactions. Failure to revise working models results in maladaptive interpersonal behaviour (Bowlby, 1982). However, working models cannot be so malleable that one instance of rejection completely disrupts previously secure attachment behaviour. Working models may also be self-reinforcing, in that they predispose individuals to attend differentially to specific relationship information, and affect how this information is perceived, processed and used to guide relationship behaviour (Hazen & Shaver, 1994). Individuals high in attachment avoidance, for example, tend to view others as unreliable and are especially attentive to evidence which confirms this view. Furthermore, their behaviour, based on these selective perceptions may negatively influence the behaviour of their relationship partner, resulting in further reinforcement of their own maladaptive internal working model of others (Hazen & Shaver, 1994). Secure individuals are likely to process information, manage stress and behave in ways that reinforce their own security and the security in their partner.

On the question of attachment stability, the literature is similarly conflicted. Researcher's have documented the relative stability of attachment in adulthood while recognizing that attachment may be altered (positively and negatively) as the result of stressful life events, negative relationship characteristics (e.g., domestic violence) and positive relationship characteristics (e.g., relationship stability; Crowell, Treboux, &

Waters, 2002; Fraley, 2002). Part of the difficulty confronting researchers in this area is the observation that while attachment security appears stable and acts to buffer individuals from threats to their models of self and others, insecure attachments appear unstable and more likely to change in response to internal or external pressures (Crowell et al., 2002). This is an encouraging observation, as it suggests that individuals low in attachment anxiety and attachment avoidance are likely to remain so, despite confronting stressful circumstances such as chronic illness. Of greater utility is the implication that individuals high in attachment anxiety or attachment avoidance may respond to interventions designed to ameliorate attachment insecurity. It might be beneficial for individuals with MS and MS caregivers with high attachment anxiety and/or attachment avoidance to attend educational sessions that provide information on improving relationship factors which might foster change in the attachment system (i.e., communication, problem solving, etc.). Individual, couple and/or group therapy may also provide care receiver and caregivers with positive relationship experiences that foster the revision and updating of internal working models and result in improved interpersonal relationships (Bretherton & Mulholand, 1999).

#### *Strengths, Limitation and Future Directions*

The perspective of care receivers is a seriously neglected area of research. Therefore, the greatest strength of this investigation is that it adds to our body of knowledge regarding the experience of adults receiving care as a result of a chronic illness. Reported results also add to the growing body of knowledge about attachment in adulthood. Specifically this research is among the first to specifically investigate the orthogonal constructs of attachment anxiety and attachment avoidance. This research also contributes to the recognition of health and illness as the result of complex and integrative relationships between psychological, social, biological and cultural factors (Borrell-Carrio et al., 2004).

No investigation is without its flaws, however, and there are many limitations apparent in this investigation, which may serve as a guide for future researchers.

Care receiving is a relatively new area of investigation and as such, the scales for assessing reactions to being helped are still in the developmental stages. As a result,

part of the analyses in this investigation involved reliability analysis of the care receiving scales being utilized. For the most part, the scales were adequately reliable, with the exception of two scales intended to measure aspects of independence and dependence. One of these scales had to be dropped from further analysis, while the second was reconstituted as two new scales. Future research is required to clarify the utility of these scales, and to explore how care receiving individuals conceptualize independence and dependence. This investigation indicated they are not being considered as two ends of a single continuum. Also, while the care receiving scales have good face validity, future validity studies (e.g. studying construct, convergent and divergent validity) are required to demonstrate their utility in further research.

Also, as this was a mail survey, all independent and dependent measures are based on self-report. Beyond the necessity of relying on the veracity of participants, self-report does not present undo difficulties in the measurement of most constructs, especially when they are intended to quantify an individual's perception (e.g., perceived relationship functioning or quality of life). Attachment, however, is a complex construct with both conscious and unconscious components that present unique measurement challenges. Obviously, by asking people to reflect on their thoughts, feelings and behaviours as they relate to their own adult relationships, self-reported attachment instruments assesses consciously available schema. As a result, it is unlikely that they assess all of the same aspects of the attachment system that are accessed by objectively coded interview-based assessments (Cobb, Davila, & Bradbury, 2001). Furthermore, self-reported attachment may be more sensitive to circumstantial factors and thus more likely to fluctuate over time (Davilia, Karney, & Bradbury, 1996). Additional research utilizing divergent methods for determining attachment would be beneficial to further elucidate the relationship between attachment constructs and the variables measured in this investigation, the most important being reaction to care receiving.

Deficits in the amount and kind of information collected from participants also represent areas of weakness in this research. While some demographic information was collected, no information was gathered from participants regarding the kind and amount of care required and the kind and amount of care received. Furthermore, an objective

measure of physical and mental disability was not included in the survey. Previous research has found restricted mobility to be related to greater needs in terms of assistance as well as greater perceived need on the part of the care receiver (O'Hara, De Souza & Ide, 2004). Greater physical disability has also been found to be associated with poorer perceived mental health (O'Hara, et al., 2004). Therefore, it is reasonable to assume that care receiving requirements, as well as physical and mental health status, will be relevant to an individual's experience of care receiving, and the relationship between attachment and care receiving might change as a function of care receiving requirements and/or objective level of disability.

The analysis of coping in this investigation also represents a significant limitation. While the Coping with MS scale (Pakenham, 2001) includes both problem-focused and emotion-focused strategies, this differentiation was not investigated in this research. Research in the area of attachment and coping is ongoing and previous investigations have demonstrated relationships between attachment avoidance and attachment anxiety, and negative emotion-focused coping strategies (e.g., Schmidt, Nachtigall, Wuethrich-Martone & Strauss, 2002; Wearden, Cook & Vaughan-Jones, 2003). Additional research on attachment and coping in the context of chronic illness is necessary to clarify and extent the nature of the relationships between these variables and health outcome.

It must also be noted that this investigation represents correlational research and no causal implication can be drawn from the data analysis presented. However, because hypotheses and analyses were theoretically derived, the results were also interpreted in a manner consistent with the tenants of attachment theory. While attachment theory provides a parsimonious framework for understanding the relationship between attachment and care receiving, relationship functioning and quality of life in a sample of individuals with MS, demonstrating the causal relationships implied will require future empirical investigations. The results of such investigations might be expected to have significant implications, as the direction of the causal relationship will undoubtedly influence the development and application of clinical interventions.

Finally, the focus of this research was on investigating the independent predictive power of attachment avoidance and attachment anxiety. Therefore, the interaction between these variables was not included in the regression equations. Future research is necessary to confirm the importance and utility of conceptualizing attachment in terms of dimensions rather than categories. Such research will likely require larger sample sizes in which participants are more evenly distributed along both the avoidance and anxiety axes, such that the constructs are not only theoretically, but statistically orthogonal.

Once again, because care receiving has received little attention in the empirical literature, the area is open for exploration. While attachment was evaluated in this investigation, as one theoretically related factor in the biopsychosocial milieu there are undoubtedly many other interpersonal and extrapersonal variables that influence the care receiving experience. In line with the biopsychosocial perspective, future research would do well to place individuals receiving care at the center of research investigation and consider their thoughts and feelings about receiving care as the foundation for future work in the area. Also, the measures used to assess reaction to care receiving in this investigation were not intended to be an exhaustive inventory of possible negative reactions. Again, further investigation into the kinds of negative reactions individuals have in response to the care they receive will be beneficial. Ultimately, research needs to address the causes of difficulties in care receiving in order to generate suggestions for their remediation.

While the recognition of the complex interactions between variables from multiple systems and their roles in maintaining health and coping with disease represents an important advance in healthcare research and practice, development of the biopsychosocial perspective needs to continue (Suls & Rothman, 2004). Specifically, further research is required to elucidate the linkages within and between systems which will account for their integrative effects (Suls & Rothman, 2004). Attachment may represent one of these 'linking' variables. Attachment represents an adapted psychological system which underlies perception, information processing, affect and behaviour as individuals interact in their social world. As such it might be

conceptualized as one mechanism facilitating the bi-directional connections between physical health, emotional well-being and social/cultural/environmental factors. Additional investigations might focus on delineating both the direct (i.e., system) and moderating (i.e., linking) effects of attachment.

In terms of understanding attachment itself, the move to conceptualize the system in terms of dimensions rather than categories opens the field of attachment research for re-investigation of some of the seminal findings. Further research is necessary to determine which components of attachment (i.e., attachment avoidance, attachment anxiety, or their combination) are most strongly related to the observed relationships between attachment styles and relationship functioning, caregiving and personality processes.

Finally, care receiving, and the relationship between attachment and negative reactions to being helped documented in this investigation would benefit from further research with additional samples of caregivers and care receivers, diverse in terms of characteristics such as reason for receiving care, and level of disability.

#### *Final Summary and Conclusions*

In a sample of individuals with MS, attachment was found to be a relevant construct in predicting reaction to care receiving, relationship functioning and quality of life. Furthermore, the results of this investigation support the utility of a dimensional operationalization of attachment by demonstrating that each of the orthogonal constructs of attachment anxiety and attachment avoidance has independent relationships with care receiving, relationship functioning, and quality of life variables.

Individuals' with elevated attachment anxiety have a strong desire for close relationships, but fear rejection. These individuals also have a fragile sense of self and poor coping skills. When their attachment system is activated, such as when they are faced with a chronic disease such as MS, they tend to seek proximity with their attachment figure. In this investigation attachment anxiety was found to predict reactions to receiving care such as anger, embarrassment and feelings of indebtedness as well as care receivers' judgments regarding the appropriateness and sufficiency of the care they receive, their beliefs about their caregivers motivations for caring, self esteem

changes in responses to assistance, and perceptions of caregiver overprotection, with increasing attachment anxiety predicting more negative reactions to being helped. Individuals with elevated attachment anxiety also reported less trust, acceptance, and intimacy in their relationships, and were less committed to their relationships and their relationship partners. Attachment anxiety appears to exert its strongest influence within committed relationships, as these findings were predominantly observed in the sample of individuals receiving care from a spouse or partner. Finally, attachment anxiety predicted perceived mental health, physical health, and overall quality of life in a sample of individuals with MS, regardless of who provided care.

Individuals high in attachment avoidance are uncomfortable with interpersonal closeness and mutual dependence in relationships. These individuals value independence, may be self-reliant to the point of causing self-harm, and tend to deny their attachment needs. When their attachment system is activated, such as when they are faced with a chronic disease such as MS, they tend to behave in ways that create distance between themselves and others. In this investigation, attachment avoidance was found to predict care receivers' judgments about the appropriateness and sufficiency of the care received, self-esteem changes as a result of receiving care, perceptions that they were being discouraged from continued independence, sensitivity to overprotection and negative beliefs about the motivations of their caregivers.

Attachment avoidance also predicted trust, acceptance, tolerance, intimacy, passion, caring, ambivalence, overall relationship satisfaction and care receivers' commitment to their relationships and relationship partners. In this sample of individuals with MS, greater attachment avoidance predicted poorer relationship functioning. Finally, attachment avoidance was observed to predict perceived physical health and overall quality of life, but not perceived mental health. Attachment avoidance was found to be generally more powerful and pervasive in its influence, exerting its influence regardless of caregiver type.

Negative reactions to care receiving are neither unusual nor inconsequential (Newsom, 1999). While this investigation establishes attachment as an important variable in understanding and predicting individuals' reactions to receiving care,

additional research is required to improve our understanding of the care receiving experience and further delineate additional factors which are important to both positive and negative reactions to being helped.

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