

EFFECTS OF ADULT ROMANTIC ATTACHMENT AND SOCIAL SUPPORT
ON RESILIENCE AND DEPRESSION IN PATIENTS
WITH ACQUIRED DISABILITIES

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The acquirement of a disability (e.g., spinal cord injury, traumatic brain injury, amputation, multi trauma) is a risk factor for psychological disturbance (e.g., depression). Research has established that social support and secure attachment are protective factors against psychological disturbance. Attachment patterns have also been associated with differences in perceived social support. Secure attachment and higher perceived social support have been implicated in greater levels of resilience but need to be validated with a population of individuals who have acquired a disability.

The Experiences in Close Relationships, Social Provisions Scale, Connor-Davidson Resilience Scale, Personal Health Questionnaire – 9 Depression Scale, and a Demographic were administered to 102 adult inpatients at a rehabilitation hospital undergoing an individualized rehabilitation program. Two MANOVAs were conducted to examine the direct associations of attachment classifications with the major dependent variables, as well as the various social support subscales. Path analysis tested two mediational models suggested by literature. Model 1 assessed the mediating role of attachment anxiety and attachment avoidance on the effect of social support on depression and resilience. Model 2 assessed the mediating role of social support on the effect of attachment anxiety or attachment avoidance on depression and resilience. Partial support was obtained for both models based on fit indices. A small but significant difference in the fit of the models was found, favoring Model 1. Clinical and research implications for this population and the limitations of the study are discussed.

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CHAPTER 1

LITERATURE REVIEW

According to Bonanno (2004), estimates suggest that the majority of the U.S. population have experienced at least one “violent or life-threatening situation during the course of their lives” (p. 20). While resilience was once thought of as a trait in children and individuals that made them “invulnerable” or “invincible,” it is now accepted that many, if not most, people in adverse situations possess some capacity for resilience (Masten, 2001). The purpose of this study was to examine predictors of psychological resilience among patients with an acquired disability in an inpatient rehabilitation setting. Specifically, two mediational models suggested by the literature were tested. Model 1 assessed the mediating role of attachment anxiety and avoidance on the effect of perceived social support on depression and resilience. Model 2 assessed the mediating role of social support on the effect of attachment anxiety and attachment avoidance on depression and resilience.

Finn (1999) reports that as many as 24 million Americans have sustained a disabling condition, totaling 1.7 million housebound and 12.5 million partially housebound individuals with disabilities. According to the Centers for Disease Control and Prevention (CDC), 1.4 million Americans sustain a traumatic brain injury (TBI) each year (CDC, 2008). Of these 1.4 million individuals, 50,000 die and 250,000 are hospitalized (CDC, 2008). In regards to TBI, Strom and Kosciulek’s (2007) state that “the impact of TBI can range from mild physical or cognitive disability to a pervasive set of physical, behavioral, emotional, and cognitive deficits that severely affect functioning throughout an individual’s life”(Strom & Kosciulek, 2007, p. 1137).

In addition, an estimated 12,000 Americans each year acquire a spinal cord injury (SCI)

and 255,000 Americans are currently living with an SCI (Spinal Cord Injury Information Network, 2008). The acquirement of a disability is a risk factor for psychological and physical impairments (Craig, Tran, Middleton, 2009; National Spinal Cord Injury Statistical Center, 2006; Ruocco, Swirsky-Sacchetti, & Choca, 2007). In a review of SCI, Richards, Kewman, and Pierce (2000) report that depression is a common problem for individuals with SCI and is related to longer hospital stays, pressure sores, urinary tract infections, spending more time in bed, and increased overall medical expenses. Richards et al. (2000) also review findings that demonstrate the suicide rates are 5-10 times higher in individuals with SCI than the general population. While anxiety disorders have not received as much attention among the SCI population, evidence suggests anxiety rates, social anxiety, and post traumatic stress disorder are elevated (Richards et al., 2000). Individuals with an amputation are also at increased risk for problematic outcomes, including: insomnia, sadness, clinical depression, body image concerns, perceptions of social stigma, feelings of vulnerability, as well as death within two years of surgery (Rybarczyk, Szymanski, & Nicholas, 2000).

The importance of social support to resilience has been established in the general and acquired disability populations (Chwalisz & Vaux, 2000; Luthar, 2006; Masten, 2001). Perceived social support, as opposed to other objective measurements of social support (e.g., social network size), has been found to be the most predictive of well-being (Turner, Fankel, & Levin, 1983). The relationship between perceived social support and attachment strategies has recently been explored (Collins & Feeney, 2004; Florian, Mikulincer, & Bucholtz, 1995; Moreira et al., 2003; Rodin et al., 2007), but the relationship between attachment strategies, social support, depression, and resilience has not been addressed with an acquired disability population. If a relationship can be established between attachment strategies, social support, and resilience,

then a clinical focus on a patient's attachment system can potentially improve their resilience through increased social support utilization. If attachment fully mediates the relationship between social support and resilience, then a clinical focus on attachment strategies alone may improve the resilience and rehabilitation of individuals who have sustained a disability. If, on the other hand, social support fully mediates the relationship between attachment and resilience, then the clinical focus would be on improving the perception and objective aspects of social support, which should increase resilience. If partial mediation is found for either model then the clinical focus would be two-fold; focus on increasing social support as well as adjusting attachment style.

This chapter reviews the literature on parent-child attachment and adult romantic attachment, including the similarities and differences between the two concepts; the importance of behavioral, cognitive, and emotional strategies that are related to differences in attachment histories; and the development, maintenance, and malleability of attachment strategies. Next, the conceptualization and measurement of social support and resilience is discussed and connections with attachment strategies are explored. Depression is examined in relation to adult attachment anxiety and avoidance, perceived social support, and proposed as a measurement of the absence of resilience. Specifically, the acquisition of a disability can negatively impact social support, increase the likelihood of experiencing depression, and activate the attachment system (Armstrong, 1991; Dreer, Elliott, Shewchuk, & Berry, 2007; Gan & Schuller, 2002). The possible relationships between sustaining a disability and attachment strategies, social support, resilience, and depression are integrated throughout the chapter. The chapter concludes with a description of the study and specific hypotheses.

Attachment

Attachment Behavioral System

The attachment behavioral system is one of several behavioral systems that Bowlby discussed as a result of his interest in ethology. According to Bowlby (1969), the attachment system is related to both the fear and exploration systems. As the fear system is activated, so is the attachment system; contrariwise, as the exploration system is activated, the attachment system is deactivated. Specifically, infants and children become attached to a primary caregiver and seek them out for comfort during times of distress, but explore their environment when they feel secure (Bowlby, 1969). From an evolutionary perspective, the drive to seek proximity to the caregiver in times of distress and danger serves to protect the child. This drive to be near the primary caregiver is not believed to be due solely to the provision of food as others had theorized, but rather to an innate desire to be close to and comforted by a caregiver (Harlow, 1962).

The attachment bond is composed of six defining features: a persistent relationship, emotionally significant, safe haven, secure base, proximity seeking and separation distress (Bowlby, 1979). Ideally, children view their primary caregivers as a secure base from which they can explore. During this exploration, they remain aware of their proximity to their caregiver and if they become too distressed they attempt to reconnect with their caregiver, who serves as a safe haven until the fear system is sufficiently reduced and the exploration system is activated again. If the child is unwillingly removed from the caregiver, they will protest the separation.

Individual Differences

Attachment organization is assumed to be a reflection of the history of availability and responsiveness of the caregiver, although some suggest that in-born personality differences, such as temperament, also contribute to individual differences (Vaughn & Bost, 1999). Using the Strange Situation assessment, Mary Ainsworth and her colleagues (1978) classified these individual differences into three categories labeled secure, insecure-resistant, and insecure-avoidant. An additional insecure category was added later and termed disorganized (Main & Solomon, 1990). When children are secure, they use the caregiver as a secure base from which they can explore and return to when they are distressed. This classification does not imply that the fear system is not activated in response to threat; rather it suggests the caregiver is available and responsive, which allows the fear system to subside and the exploration system to reactivate. In comparison, avoidant children often appear to be unaffected by the presence or absence of their caregiver. Specifically, avoidant children explore readily and, after a separation, may actually ignore the caregivers upon their return. They do not display the same level of proximity seeking and separation distress that secure children do. On the other hand, ambivalent/resistant children appear to be overly anxious about their caregivers' availability or responsiveness. They display clingy and resistant behavior much more often than securely attached children. An ambivalent/resistant child appears unable to use their caregiver as a secure base but instead is watchful of abandonment. The disorganized child does not appear to have a coherent attachment strategy, sometimes exhibiting both avoidant and ambivalent/resistant behaviors when distressed.

While a secure attachment organization should be optimal, Bowlby and Ainsworth viewed each of the classifications as adaptive (Weinfield, Sroufe, Egeland, & Carlson, 1999). From an evolutionary perspective, the three coherent categories (i.e. secure, avoidant, and

ambivalent/resistant) are adaptive because they are developed in an attempt to establish and maintain proximity to the caregiver and are matched to the caregiver's interactional style, whereas disorganized attachment style does not provide a consistent way to achieve proximity to the caregiver. However, from a social and developmental perspective, a secure attachment should allow for a greater mastery of the child's environment through exploration and feelings of safety than do any of the insecure attachment strategies.

Internal Working Models

Drawing from cognitive or information processing theory, Bowlby (1973) believed that individuals developed internal working models or mental representations that allowed them to predict future behavior based on past interactions with caregivers. Like information-processing theory states, humans are resistant to, and may even exclude, information that conflicts with their current beliefs (e.g. internal working models). This tendency does not mean that internal working models are unchangeable; in fact, Bowlby theorized that changes in relationships can alter the internal working model. It would be expected that if past interactions are used to predict future behavior and there is a consistent change in the interaction, the predicted behavior would also change.

Parent-child attachment is not thought to directly cause later outcomes; but attachment patterns perpetuated through working models are thought to influence personality and systematically increase or decrease the likelihood of later outcomes. Variables such as dependency, anxiety, anger, and empathy, which are all important to interpersonal relationships, have been shown to vary significantly across attachment categories (Sroufe, Fox, & Pancake, 1983; Urban, Carlson, Egeland, & Sroufe, 1991; Troy & Sroufe, 1987).

Attachment Theory of Mind

The parent-child relationship not only engenders behavioral patterns, but leads to different representational processes (Main, 2000). The notion of internal working models moves the attachment system from purely behavioral strategies to promote proximity and protection to the level of mental representation. Wallin (2007) states “Just as the Strange Situation had enabled investigators to conduct empirical explorations of attachment behavior, Main’s innovations made empirical study of the internal working model possible” (p.26). Main and colleagues (1985) have suggested that internal working models are not so much templates of self and other, but are actually rules for structuring, organizing, and limiting access to information.

Main (1991) incorporated the idea of metacognition, or thinking about thinking, as a direct result of her discovery of the multiple models of attachment held by insecurely attached individuals. Insecurely attached individual’s metacognition is impaired by the need to defensively constrict thinking and reflection at times. Main identifies two elements of metacognition: metacognitive knowledge and metacognitive monitoring. Metacognitive knowledge involves an understanding of the appearance-reality distinction, which makes it possible to realize that thoughts, feelings, ideas, and perceptions may or may not be accurate (Wallin, 2007). The metacognitive knowledge dimension also allows for representational change (i.e., the realization that cognition and affect can change over time) and representational diversity (i.e., the realization that cognitions and affects can be different between people). Metacognitive monitoring “involves a stance of active self-scrutiny that situates us at once inside and outside our experience” (Wallin, 2007, p. 41). According to Wallin (2007), Main was unsure of the connection between metacognition and secure attachment, but later work by Fonagy expanded and clarified the “theory of the mind” related to attachment experience.

Fonagy and Target (1997) focus on the development of *mentalizing* or *reflective function*. Fonagy and Target describe mentalizing as more than self knowledge or awareness, but rather a knowledge of minds in general. They describe both explicit and implicit aspects of mentalization, which allow for understanding the mental states of others (i.e. their thoughts, emotions, and beliefs). Allen (2001) compares the nonconscious perceptual motor skill of riding a bike to the nonconscious “interpretive” skill of mentalizing. Fonagy and Target (1997) go so far as to say that attachment serves the purpose of producing a representational system that is essential for human survival.

Wallin (2007) states that one of Fonagy’s major contributions is his explanation of different ways in which inner experience is related to the external world. Fonagy and colleagues (2002) describe three modes of experience that evolve developmentally in this order: (a) mode of psychic equivalence, (b) pretend mode, and (c) mentalizing or reflective mode. The psychic equivalence mode is the belief that what happens externally is equivalent to the internal. From this mode of experiencing, what happens to the self is equated with what the self is (e.g., if you are told that you are worthless, then you must be). The pretend mode separates the internal from the external without one impacting the other. According to Wallin, this mode of experience can lead to severe disruptions in perception, resulting in grandiosity, narcissism, dissociation, and/or denial. The mentalizing mode of experience involves an awareness of the distinction between subjective experience and the external world but acknowledges the impact one can have on the other. The mentalizing stance allows for reflection of thought, feelings, beliefs, and behaviors of self and other that provide flexibility, whereas the lack of mentalization is characterized by unconscious reactivity. For an individual who has recently acquired a disability and is trying to

adjust, the ability to reflect on their experience may allow for a broader range of thoughts and feelings related to positive adjustment.

Fonagy and Target (1997) report that optimal developmental progression of these states of experience is possible in the context of a secure attachment relationship. Specifically, affect containment and regulation, and play allow for the development of the mentalizing stance towards experience. Parents regulate a child's emotions through communicating that they understand the child's experience, can cope with and reduce it, and by treating the child as if she had an intentional stance. The first aspect involves emotional attunement with the child and an appropriate level of mirroring the child's emotion. This is done through a demonstration of "marked" emotion that acknowledges the child's experience but does not overwhelm the child or leave her feeling as if the emotion was directed at her (Allen, 2001). The second aspect of development, the pretend mode, is made possible by the involvement of a secure attachment figure who provides feedback during times of pretend or imaginative play by the child (Fonagy, Gergely, Jurist, & Target, 2002). The pretend mode creates a necessary link between the internal world of play and the external world of reality and mental states of others. The final step, treating the child as if she had an intentional stance, allows the child to experience herself as a self-agent with her own thoughts, feelings, and beliefs (Fonagy et al., 2002). Fonagy and Target summarize the entire process when they state "the caregiver facilitates the creation of mentalizing models through complex linguistic and quasilinguistic processes, primarily through behaving towards the child in such a way that leads him eventually to see that his own behavior may be best understood by assuming that he has ideas and feelings which determine his actions, and the reactions of others to him, which can then be generalized to other similar beings" (p.

690). In the context of a secure attachment relationship, the child comes to develop and understand a sense of self and others through the mentalizing intentional stance.

Adult Romantic Attachment

Feeney (2008) summarized the work of major theorists who hypothesized that children's interaction with caregivers affects the development of adult attachment style. If parent-child attachment slowly transitions to peers and eventually a romantic partner, then it should follow that the adolescent or adult attachment style is significantly influenced by the nature of the early parent-child attachment. Longitudinal data support the hypothesis that internal working models developed early in life typically continue into adulthood (Hamilton, 2000; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; Weinfield, Sroufe, & Egeland, 2000). Retrospective studies also indicate that avoidant adults remembered their mothers as cold and rejecting, ambivalent/resistant individuals remembered their fathers as unfair, and secure individuals recalled warm and affectionate parents (Feeney & Noller, 1990; See Feeney, 2008 for review). Major life events such as death of a parent, divorce, abuse and major illness have been shown to weaken the correspondence between early parent-child attachment and later adult attachment (Waters et al., 2000). An acquired disability can be considered a major life event that could possibly disrupt the continuity of attachment. Secondary losses, such as a divorce following an acquired disability, may also be significant life events leading to changes in attachment styles.

Many similarities and a few distinct differences exist between the parent-child and adult conceptualizations of the attachment system. Like other attachment bonds, adult romantic attachment involves factors such as proximity seeking, secure base, safe haven, specific attachment figure, and involuntary separation distress (Feeney, 2008). However, while the

attachment system is the main relational system associated with early parent-child attachment, adult romantic relationships are thought to involve three behavioral systems: attachment, caregiving and sexual mating (Bowlby, 1969). These additional systems represent the essential differences between infant and adult attachment. The adult caregiving system involves reciprocity unlike parent-child attachment, which is largely one-sided in nature. That is, two adults are thought to provide care and safety for one another, whereas the infant's primary caregiver is the provider and bears responsibility for the child. The second difference between the two attachment bonds is the sexual mating component present in the adult romantic relationship (Zeifman & Hazan, 2008).

Pioneering work by Hazan and Shaver (1987) identified three types of adult romantic attachment (secure, avoidant, anxious-ambivalent) congruent with the classifications for infants described by Ainsworth (1978) (secure, insecure-avoidant, insecure-ambivalent/resistant). Bartholomew and Horowitz (1991) would later expand upon Hazan and Shaver's typology by identifying polarities on two underlying dimensions: internal working models about self and internal working models about others, which can be either positive or negative. While secure and anxious-resistant categories remained very similar (secure and preoccupied), the avoidant classification was divided into two categories (fearful and dismissing) that more fully described the range of avoidant representations and behaviors.

In a recent review of the literature on the measurement of adult romantic attachment, Feeney (2008) reports that two higher order dimensions have been identified; attachment anxiety (anxiety over relationships issues) and avoidance (discomfort with closeness and interdependence). These dimensions generally represent distinct behavioral strategies in close relationships. Debate is ongoing regarding the best approach to conceptualize (internal working

models versus behavioral strategies) and measure (typology versus dimensions) adult attachment (Crowell, Fraley, & Shaver, 2008). However, the two current approaches map onto one another as follows: (1) secure attachment is characterized by positive views of self and other, which are associated with behavioral strategies indicating low levels of attachment anxiety and attachment avoidance, respectively; (2) preoccupied attachment is characterized by negative view of self and positive view of others, which are also associated with high attachment anxiety and low attachment avoidance; (3) dismissing-avoidant attachment is characterized by either positive view of self and negative view of others, which are associated with low attachment anxiety and high attachment avoidance; and (4) fearful attachment is characterized by either negative view of self and other, which are associated with high attachment anxiety and attachment avoidance.

Attachment, Emotional Regulation, and Defensive Strategies

Shaver and Mikulincer (2002) developed a model, shown in Figure 1, to explain the dynamics of attachment related strategies. The model has three major components involving the monitoring and evaluation of: stressors that may be present in the environment, the external (or internal) attachment figure, and the viability of proximity seeking as a means to regulate distress (Mikulincer, Shaver, & Pereg, 2003; Shaver & Mikulincer, 2002). Insecure attachment representations contribute to pathways of chronic excitation or inhibition in response to threat, namely hyperactivating (attachment anxiety) and deactivating (attachment avoidance) coping strategies (Shaver & Mikulincer, 2002). These strategies reflect an adaptive attempt to maintain closeness with a caregiver or regulate distress, but come at a price. For example, when an individual with a preoccupied attachment style (high attachment anxiety, low attachment avoidance) experiences an acquired disability it could result in attempts to magnify the

dependency needs rather than work towards independence. Specifically, activities of daily living (ADL) that might be realistically accomplished independently might be neglected in order to obtain increased closeness with the caregiver.

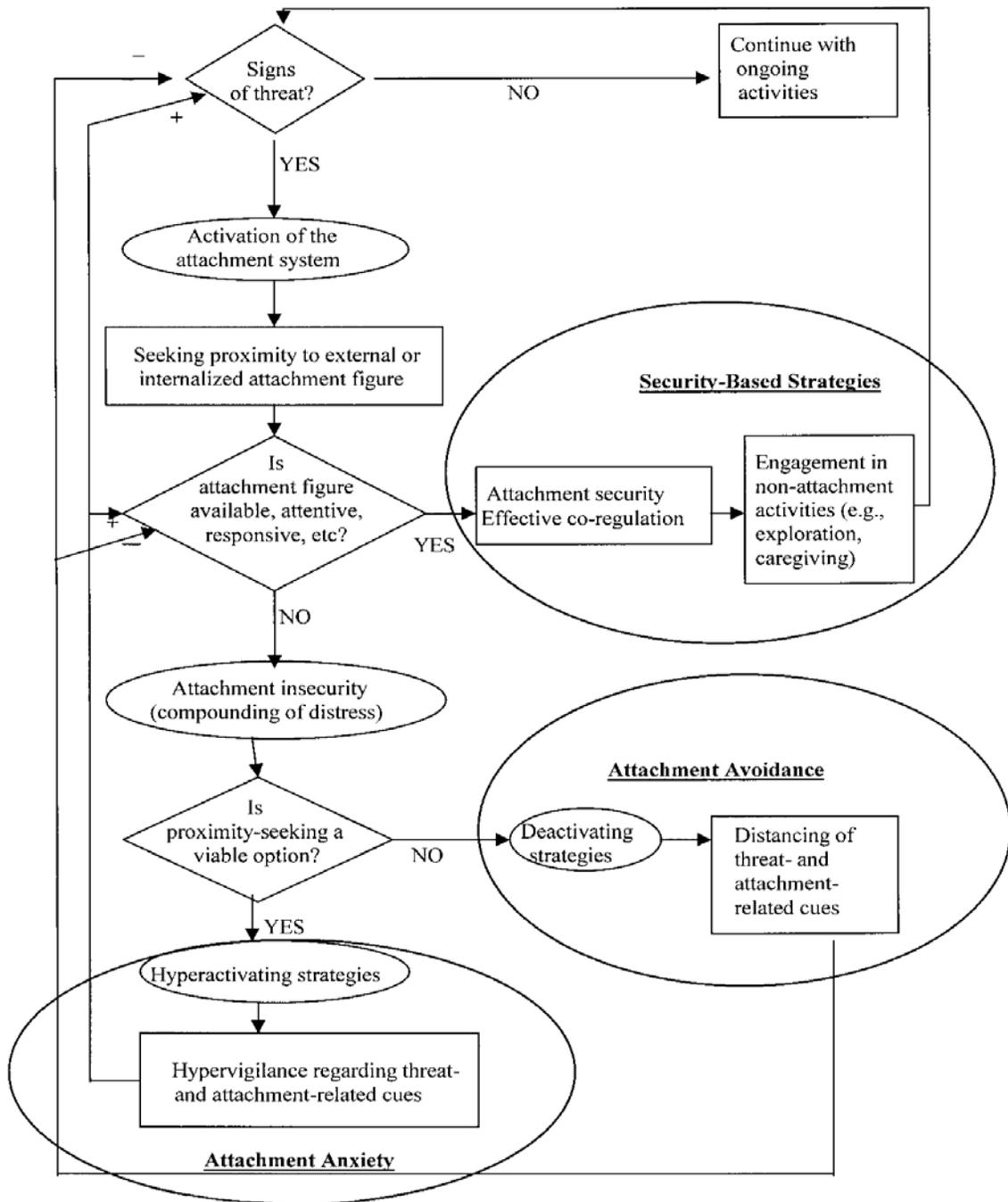


Figure 1. Activation and dynamic of the attachment system (Shaver & Mikulincer, 2002).

An individual with a hyperactivating strategy overemphasizes the threat of distressing situations, whereas an individual with a deactivating strategy suppresses emotions that might be related to distress or weakness (Mikulincer et al., 2003).

When hyperactivating individuals perceive threat in the environment, they view the attachment figure as unavailable or unresponsive, but believe that proximity seeking is still a viable option. Thus, the hyperactivating individual heightens the display of their distress in order to increase the availability and responsiveness of the caregiver. Eventually this leads to a fixation on possible threats in the environment as a way to maintain proximity to the caregiver (Mikulincer et al., 2003). In contrast, when deactivating individuals become aware of threat in the environment and view the attachment figure as unavailable and unresponsive, they believe that proximity seeking is not a viable option. The deactivating individual generally denies the threat, consequently reducing the need for the unavailable and unresponsive caregiver (Mikulincer et al., 2003). Thus the dismissing individual (i.e., high attachment avoidance, low attachment anxiety) who acquires a disability may deny the extent of the disability in an attempt to deactivate the attachment system and avoid anxiety. A deactivating strategy could also lead to difficulty seeking appropriate assistance from caregivers or even medical providers.

Both coping strategies leave the individual at a disadvantage in the process of emotional regulation. Mikulincer et al. (2003) suggest the hyperactivating strategies can lead to “overly energetic, insistent attempt to gain proximity, support, and love,” whereas the deactivating strategies can lead to the absence “of proximity seeking, inhibition of the quest for social support, and active attempts to handle distress alone” (p. 84). Furthermore, Shaver and Mikulincer (2007) state that insecure strategies are considered risk factors that contribute to poor adjustment during stressful periods, emotional problems, and a reduction in resilience.

Shaver and Mikulincer's (2002) model (Figure 1) is applied to the progression of an individual with an acquired disability in the following example. The acquisition of a disability would represent a sign of threat which would activate the attachment system. The activation of the attachment system would cause the individual to consider seeking out an attachment figure at which point they would make a determination about the availability of the caregiver. This is the crucial point in the model at which the individual's perception of their social support becomes pivotal. The history of caregiver availability and the current availability would determine if the individual uses a secure strategy (caregiver determined to be available) or uses an insecure strategy (caregiver determined to be unavailable, inattentive, or unresponsive). A secure strategy might involve the individual talking with their attachment figure about their sadness at the loss of independent functioning; their anger at themselves, others, or God for their disability; or their fear about the future. The responsiveness of the attachment figure could help the individual co-regulate extreme distress. If the attachment history of the individual and the current situation suggest that proximity seeking is an option then either the individual's distress will be effectively co-regulated (secure attachment) or a hyperactivating strategy (preoccupied attachment) would be implemented. For example, the individual might inhibit attempts at independent functioning or magnify distressing affect in hopes that it would increase the care and proximity of the attachment figure. If proximity seeking is not considered to be a viable option then a deactivating strategy would be implemented. For an individual with an acquired disability, this might involve denying the degree of disability or attempting to avoid painful affect that would increase the need for co-regulation.

Mikulincer et al. (2003) proposed that the development of secure strategies involves two stages: the consolidation of co-regulation and self-regulation, shown in (Figure 2).

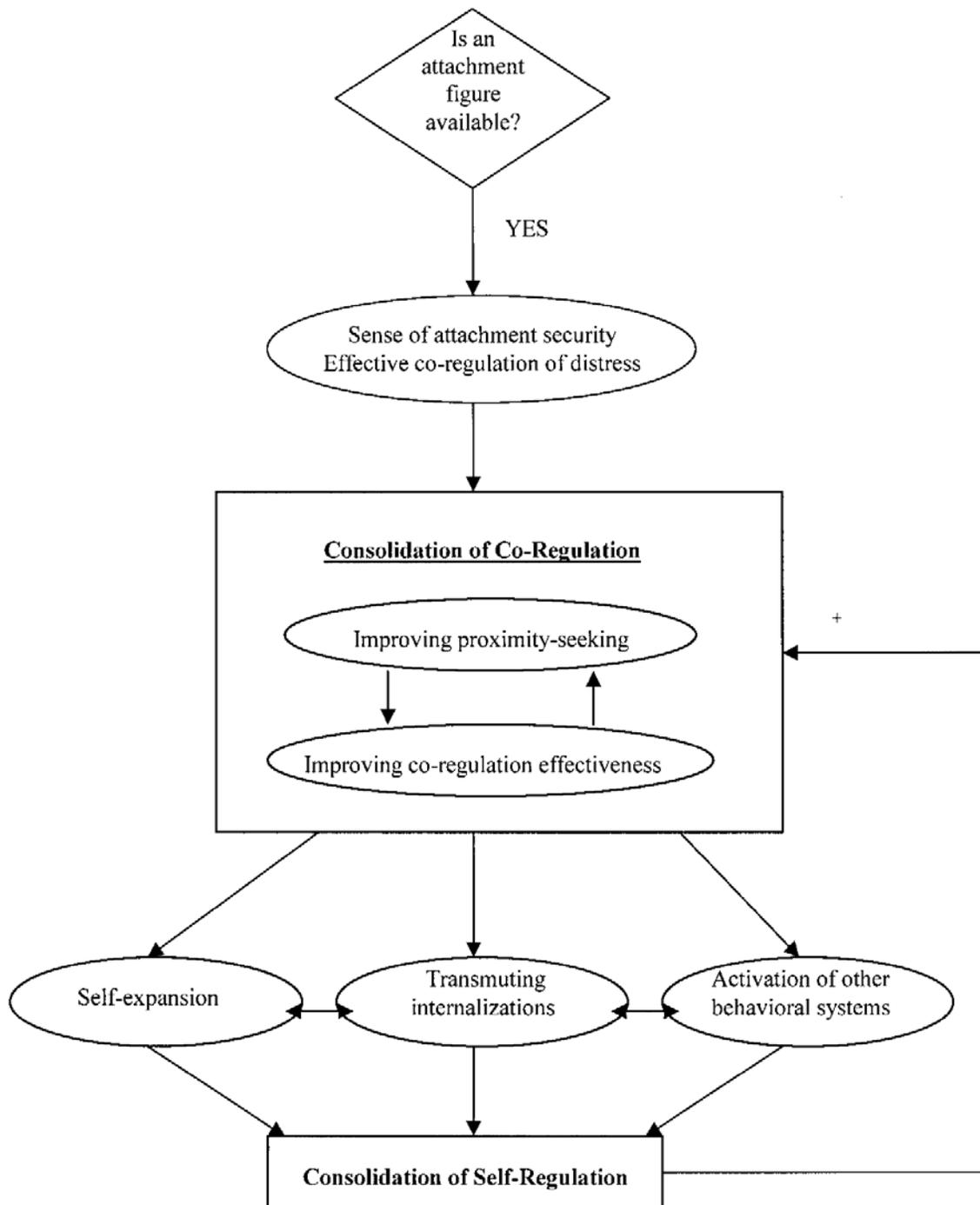


Figure 2. Development of security-based strategies (Mikulincer, Shaver, & Pereg, 2003).

Co-regulation is consolidated by the development of factors (e.g., learning, cognitive development, etc.) that improve the ability and use of distress signaling and proximity seeking. This process contributes to secure attachment characterized by a sense of mastery, agency and

self-directedness (Mikulincer et al., 2003). The move from co-regulation to self-regulation involves three proposed mechanisms: self-expansion, transmuting internalization, and activation of other behavioral systems. Self-expansion involves the incorporation of the attachment figure's skills of regulation, whereas transmuting internalization is the gradual internalization of the attachment figure's affective regulation. Self-expansion involves a change in the self state (similar to identification), while transmuting internalization involves an internalization of another figure (similar to introjection). Finally, the exploration and caregiving systems are activated to allow for individuation, opportunities for self-regulation, and regulation of others' distress. Co-regulation and self-regulation can coexist and are utilized depending on the context when an individual is distressed (e.g., is the attachment figure available?) (Mikulincer et al., 2003). The development of insecure strategies (hyperactivating and deactivating) is a result of consistent perception that the caregiver is unavailable and unresponsive (Mikulincer et al., 2003). Mikulincer et al. (2003) identify proximal and distal causes for variation in the perception of an attachment figure's availability. Proximal causes are specific states of mind that are related to fears and threats a person must deal with as a result of an unavailable attachment figure; distal causes can consist of external factors (e.g., patterns of interaction with the attachment figure) and internal factors (e.g., temperament) that are indirectly related to proximal causes (Mikulincer et al., 2003).

Differences in caregiver availability and responsiveness would have to be considered in context with the increased needs of an individual with an acquired disability.

If the needs are greater than can realistically be met then it could be perceived that the caregiver is unavailable and unresponsive. In such cases, it would be important to broaden the attachment system to include multiple caregivers that could meet the needs of the individual. On

the other hand, if the caregiver was unavailable and unresponsive prior to the disability it is possible that such tendencies would only be magnified following the disability given the increased need of the individual.

Mikulincer et al. (2003) also suggest that two types of negative affect are associated with attachment figure unavailability: frustration of attachment needs due to the failure to gain proximity to the attachment figure, and ineffective co-regulation of distress leading to feelings of vulnerability due to aloneness. The first type is often a result of a failure to obtain positive experiences (love and caring) in combination with negative experiences (anger, rejection, inattention) related to proximity to the caregiver. This type of negative affect may lead to a deactivating strategy with the goal to avoid rejection by the caregiver. For the deactivating individual, proximity is related to indifference and/or punishment. The second type of negative affect is often the result of either ineffective or inconsistent co-regulation of distress that leaves the individual with feelings of vulnerability, helplessness, and a need to work harder to maintain proximity. This engenders a hyperactivating strategy designed to maintain proximity by focusing on environmental threats and increasing displays of distress to elicit responsiveness from the attachment figure (Mikulincer et al., 2003). For the hyperactivating individual, distance is related to danger and vulnerability. The use of insecure strategies in the first stage (consolidation of co-regulation) of the model blocks the development of the second stage (consolidation of self-regulation) of the model (Mikulincer et al., 2003).

Mikulincer et al.'s (2003) review of the literature linking affect and cognition discussed systematic relationships related to various attachment strategies. Specifically, people with security-based attachment strategies recalled positive memories when negative affect was induced (i.e., reading an article about a car accident) and tended to attribute the negative events

to less global and stable causes. Those with hyperactivating strategies recalled negative memories when negative affect was induced and tended to attribute them to more global and stable causes. Those with deactivating strategies were not influenced by the attempt at inducing negative affect. Mikulincer et al. (2003) also reviewed findings examining the effect of inducement of positive affect on cognitions of people with various attachment related strategies. Security-based strategies were associated with more creativity and a greater range of mental categories, whereas hyperactivating strategies were associated with a decrease in creativity and narrowing of mental categories (results typically found with negative affect). As with the inducement of negative affect, the cognitions of those with deactivating strategies were not impacted by the attempts to induce positive affect (i.e., asked to recall a positive memory, provision of positively associated words, and watching comedy movie). It was suggested that people with deactivating strategies appear to generally dismiss affective states regardless of their tone, which leaves them without an important component to decision making (Mikulincer et al., 2003).

Security-based attachment strategies (low attachment anxiety and avoidance) have been related to confidence in handling distress, maintaining mental health during times of stress, positive views of self and others, acknowledgement and expression of emotion, support seeking, and effective coping (see Mikulincer & Florian, 2001, for review). In contrast, several literature reviews have shown that hyperactivating strategies (attachment anxiety) are related to global distress, depression, anxiety, eating disorders, substance abuse, conduct disorders, personality disorders, and reduced well-being (Lopez & Brennan, 2000; Mikulincer & Florian, 2001; Mikulincer et al., 2003). In Shaver and Mikulincer's (2007) review of deactivating strategies (attachment avoidance) they describe the findings as more complex. Some researchers suggest

little to no association between attachment avoidance and well-being or global distress (Mikulincer et al., 2003), but others have found associations with depression associated with perfectionism, self-punishment, and self-criticism (Zuroff & Fitzpatrick, 1995); a hostile view of others (Mikulincer, 1998); substance abuse and conduct disorders (Brennan & Shaver, 1995); heightened reports of somatic complaints (Mikulincer, Florian, & Weller, 1993); and avoidant and schizoid personality disorders (Brennan & Shaver, 1998). Shaver and Mikulincer state that “it seems that deactivating strategies may contribute to mental health under fairly normal circumstances characterized by only mild encounters with stressors. Under highly demanding conditions, however, these strategies seem to collapse, and in such cases avoidant individuals may exhibit high levels of distress and emotional problems” (p. 668). In Shaver and Mikulincer’s (2007) review, they discuss findings suggesting that hyperactivating strategies are related to negative affectivity characterized by emotion focused coping and mental ruminations, whereas deactivating strategies are related to negative affectivity characterized by distancing coping, high levels of emotional control, and reluctance to engage in support seeking. These findings support the notion that insecure attachment styles are related with reduced resilience and increased vulnerability for psychopathology.

For hyperactivating and deactivating individuals, the distress related to acquiring a disability should activate the attachment system and elicit underlying insecure strategies. Insecure strategies, whether hyperactivating or deactivating, have implications for the individual’s ability to rehabilitate. The unreflective heightening of distress signals or avoidance of emotional experience can block the ability to receive satisfactory support from attachment figures. The literature clearly indicates that a hyperactivating strategy places the individual at an increased risk for depression, anxiety, and decreased well-being. Due to increased stress levels,

this task may be even higher for an individual with a hyperactivating strategy who has an acquired disability. For people with a deactivating strategy, the acquirement of a disability would likely overwhelm their ability to avoid and deny his or her distressing affect. The failure of the deactivating strategy leaves the individual susceptible to feelings of depression stemming from vulnerability and helplessness. The need to avoid and the inability to do so independently might lead to problematic substance use as well. Thus, sustaining a disability has the potential to reinforce the hyperactivating individual's belief that he or she is incapable, or threaten the deactivating individual's defensive belief that he or she is completely self-reliant. Secondary issues such as chronic pain, urinary tract infections, bed sores, financial strain, and psychological disability could contribute to feelings of inadequacy and dependency that conflict with the preferred deactivating strategy. The same issues provide additional areas of distress that could be focused on for the hyperactivating strategy; eventually leading to greater impairment.

The distress created by acquiring a disability would serve as a threat that should activate the attachment system. Depending on the severity, an acquired disability can impact the caregiving and sexual mating aspects of adult attachment. Specifically, an acquired disability might interfere with an individual's ability to provide or receive care in ways they previously did. Further, sexual activity may be difficult depending on the nature of the disability. These changes could have significant impacts on the individual's own attachment style, as well as the attachment style of his or her significant other.

Social Support

This section addresses the various definitions of social support found in the literature, as well as the different aspects of social support often assessed. Three models of support and their

accompanying evidence in the literature are reviewed. Finally, attachment theory is provided as an extension of the dynamic model to explain social support within an acquired disability population.

Defining Social Support

Cassel (1976), Caplan (1974), and Cobb (1976) are considered the pioneers in the study of social support. Chwalisz and Vaux (2000) note that the study of social support is expansive, covering multiple disciplines and populations, but the findings are obscured by the various operational definitions and theoretical conceptualizations. Chwalisz and Vaux suggest that the variation revolves primarily around 3 main issues: the range of relevant social ties, the various forms of support measured, and the importance of objective features versus subjective appraisals of social support. Others have referred to these same dimensions as structural, functional, and perceptual (Chronister, Johnson, & Berven, 2006).

Chronister and colleagues (2006) break structural social support into quantity (e.g., size) and characteristics (e.g., composition) and associates Caplan (1974) with the initial focus on this aspect of social support. This dimension is analogous to Chwalisz and Vaux's range of relevant social ties. The structural focus has been criticized for assuming these factors are necessarily associated with support (Chronister et al., 2006). Presumably, this is why structural support typically has not been found to be a strong predictor of health (Knipscheer & Antonucci, 1990; Seeman & Syme, 1987).

Caplan is also known for his emphasis on the second dimension, functional social support (Chronister et al., 2006). As opposed to structural support, which is more focused on quantity, functional support is focused on the quality of support. This dimension is analogous to Chwalisz

and Vaux's various forms of support. Functional support is often divided into emotional (expression and recognition of affect related to support), instrumental (financial, tangible, and physical support), and informational (suggestions, information, and opinions) aspects of support. Functional support, unlike structural support, has received more validation in the literature relating to health (Seeman & Syme, 1987).

The notion of perceptual support is attributed to Cobb (1976) and involves the subjective evaluation of the support an individual is receiving. Others such as Sarason and colleagues (1987) have suggested that the subjective nature of many measures of social support indicate that a personality component is involved in the perception of social support. Chronister and colleagues (2006) state that subjective support is distinct from objective support, which is why "only a portion of perceived support is explained by the actual support received" (p.78). This is one of the most well researched dimensions of social support, but the mechanisms by which it is related to reduced distress are unknown (Chronister et al., 2006).

Vaux (1988) proposed that social support is actually a metaconstruct more appropriately thought of as 3 separate constructs: support network resources, supportive behaviors, and support appraisals. Support network resources involve factors such as the size and structure of the network that contribute to its value (Chwalisz & Vaux, 2000). Supportive behaviors are what most think of as the "efforts to help" (Chwalisz & Vaux, 2000, p. 538). Chwalisz and Vaux suggest that the effectiveness or value of supportive behaviors lie in the contextual fit between the attempted supported behaviors and the supportive needs. Finally, support appraisals are the subjective experiences of support by the individual being assessed. This construct is often referred to as "perceived" support. Support appraisals have been moderately related to network resources and behaviors (Vaux & Athanassopoulou, 1987), and are stronger predictors of well-

being than objective measures (Turner et al., 1983). The first two constructs can often be thought of as “objective” measures of support, whereas appraisal is “perceived” support. Building on the objective versus perceived views social support, the next section addresses the models of social support and the ways in which they are conceivably related to outcomes.

Models of Social Support

In recent reviews of resilience literature, social support is identified as a protective construct throughout the literature (Bonanno, 2004; Chronister et al., 2006; Chwalisz & Vaux, 2000; Luthar, Cicchetti, & Becker, 2000; Luthar, 2006; Masten, 2001; Rutter, 1999), but different models exist to explain how social support is related to management of distress. The model of social support most commonly used is the buffer model. This model was originally proposed by Cobb (1976) and states that a reduced association exists between stressors (e.g. motor vehicle accident, gun-shot wound) and subsequent distress (e.g., increased anxiety and depression) when social support is higher. Closely related to the buffer model is the direct model which states that greater levels of social support (Bowlby, 1969) are related to increased well-being, regardless of whether or not a stressor is present. The buffer model has been validated with measures of emotional support (i.e., assesses different aspects and quality of support) and support appraisals (i.e., subjective experience of being supported), whereas the direct model has been validated with measures of the support network (actual size or number of people considered to be supportive). With respect to studies supporting these models, Chwalisz and Vaux (2000) cite several methodological problems, including the non-specific nature of the stressors, support, processes, outcome, and context. Generally, the literature instead supports a dynamic model of social support (Chwalisz & Vaux, 2000), which accounts for changes in social support that are

possible as a result of stressors. The dynamic model consists of personal variables, such as attractiveness, sociability, likability, as well as social context, which are all subject to change. The interaction of personal variables and contextual changes are central to the dynamic model. For example, an individual who experiences an acquired disability might become more socially isolated post injury due to increased anxiety or depression (i.e., personal variable), which is potentially exacerbated by reactions to support system members, who may feel overwhelmed by the injury and withdraw as well (i.e., contextual factor). Decreased mobility as a result of an acquired disability could also significantly contribute to social isolation and resulting depression. Clearly, both personal and contextual factors can reduce social support.

The literature has demonstrated that acquiring a disability places an individual and their social support system at risk for dysfunction. Armstrong (1991), in reference to individuals with a TBI, states the families initially go through an acute phase of support in which are reactive and crisis-oriented but the prolonged response leaves support members susceptible to feelings of fear, guilt, and anger. Often needs of the caregiver are denied in order to care for the individual who has acquired the disability. Armstrong goes on to state that the spouse's mourning, difficulty of assuming a providing role, as well as possible changes in sexual relationships are often not acknowledged by the caregiver or patient. Dreer et al. (2007) reported that depression was higher in caregivers of patients with SCI than in a non-SCI population. They suggest that role overload, lack of information, financial strain, impaired quality of life, change in health status, and emotional problems all contribute to the caregiver's increased vulnerability to depression. Family dysfunction was found to be higher across all domains of family functioning measured by Gan and Schuller (2002) for individuals with acquired brain injury (ABI). Kowakowsky-Hayner and Kishore (1999) reported an increased stress level for 75% of family members after a

traumatic injury (TI) and no distinguishable differences were observed between families of individuals with SCI or TBI. Perceived burden of partners of individuals with SCI categorized as having major disabilities were significantly elevated over individuals categorized as having minor disabilities (Post, Bloemen, & de Witte, 2005). Difficulty with activities of daily living (ADLs), amount of support given, psychological problems of the patient, partner age, partner gender, and degree of disability were all found to predict the amount of burden perceived. Each of these studies demonstrates the impact an acquired disability and the secondary impairments of such disabilities can have on a social support system. The increased stress, depression, and burn-out could lead to less available and perceived social support.

Attachment and Social Support

The dynamic model addresses important issues with the measurement and conceptualization of social support (Chwalisz & Vaux, 2000) but lacks the theoretical background and research to adequately explain the interaction of social, biological, and psychological factors. Attachment theory, with its emphasis on developmental relationships and the individual's ability to regulate emotions and cognitions in the face of distress (Bowlby, 1969, 1973), provides a dynamic theoretical model to understand aspects of social support as they relate to traumatic injury. Attachment theory can account for beliefs about the self (psychological), willingness to seek the support of others (psychological and social), interpersonal needs (psychological and social), perceptions of support (psychological), and emotional regulation (biological) (Bowlby, 1969) Therefore, attachment theory has the potential to contribute to providing a better understanding and explanation of the impact of social support on individuals post injury.

Sarason et al. (1987) suggest that the way in which someone perceives their social support is filtered through personality factors such as attachment style. An individual's attachment style has been shown to be related to perceptions of, the search for, and utilization of support (Collins & Feeney, 2004; Declercq & Palmans, 2006; Florian et al., 1995). Chronister and colleagues (2006) add the ideas of support mobilization and support deterioration strategies. The support mobilization strategy refers to the tendency for individuals to seek out support during times of distress. Support deterioration refers to individuals who show an inverse relationship between distress experienced and seeking out support. These strategies might be reflective of underlying attachment styles. Secure and preoccupied individuals would likely seek out support in times of distress (i.e., support mobilization), whereas dismissing and fearful attachment individuals would resist seeking out support in times of distress (i.e., support deterioration).

Collins and Feeney (2004) examined the effects of attachment style on perceptions of social support in a college-aged sample. They presented one member of a romantic couple with a distressing situation (i.e., a public speech) and either asked their partners to write supportive statements (subsequently rated by judges to be either high or low support) or provided statements (previously categorized as high and low support) for partners to write and give to the partner facing the stressful situation. The free response statements represented real life responses the distressed partner might typically receive (i.e. objective perceived differences), and the provided statements represented an experimental manipulation (i.e. subjective perceived differences) that allowed the researchers to systematically vary the amount of support received by individuals. The study demonstrated that objective, as well as subjective, differences between secure and insecure attachment styles exist. They also found that insecurely attached individuals, in relation

to securely attached individuals, would retrospectively rate previously rated positive experiences more negatively upon receiving negative support. In other words, when receiving negative feedback from an attachment figure, insecurely attached individuals' memories were altered in a negative direction to assimilate with current experiences. This study demonstrates that an individual's attachment style is predictive of their objective and subjective support received, as well as the likelihood of cognitive distortions related to attachment relationships.

In a recent study of the relationship between attachment security and depressive symptoms in cancer patients, Rodin et al. (2007) found that attachment anxiety was significantly related to depression and perceived social support mediated the relationship between attachment security and depression. However, other studies have reported that attachment mediates the relationship between social support and psychological distress (Moreira et al., 2003). Moreira et al. (2003) also found follow-up interaction effects between adult attachment, social support, and psychological distress. Specifically, when global social support was divided into casual and intimate support, intimate support provided less reduction of distress for preoccupied individuals and casual support provided a greater degree of distress reduction for avoidant individuals. Vogel and Wei (2005) examined the effects of adult attachment on seeking help and the experience of distress in a college-aged sample. They found that attachment anxiety was positively related to acknowledgement of distress and seeking help, whereas attachment avoidance was negatively related to acknowledging distress and seeking help. Both anxiety and avoidance were related to lower perceived support and higher experience of distress. Florian, Mikulincer, and Bucholtz (1995) found that securely attached individuals, as opposed to avoidantly and ambivalently attached individuals, perceived higher emotional and instrumental support and reported higher seeking of both types of support. All of these findings suggest a

relationship between an individual's attachment style, perceptions and seeking of social support, and resilience against negative outcomes such as depression. Because the exact nature of these relationships differs across findings, it seems important for researchers to further examine the directionality of the relationship.

Resilience

This section reviews a range of definitions of resilience, as well as methodological issues. The implications of resilience for an acquired disability population is explored.

Defining Resilience

Resilience has been defined as the “ability to maintain a stable equilibrium” (Bonanno, 2004, p.20), a “dynamic process encompassing positive adaptation within the context of significant adversity” (Luthar et al., 2000, p.543), and “good outcomes in spite of serious threats to adaptation or development” (Masten, 2001, p.228). According to White et al., (2008) resilience comprises “how an individual reacts and adapts to a traumatic event and is presupposed by (a) exposure to a traumatic event and (b) adaptation to that event” (p.9). Seligman (2000) is considered the father of the positive psychology movement, which is interested in the strengths individuals possess that lead to happiness and well-being. This differs from the tendency of clinical psychology to focus on deficits and psychopathology. Definitional differences pose difficulties for the conceptualization and measurement of the construct. While resilience is operationalized in various ways, most assume the presence of a threat or risk, and the adaptation or growth despite it. Recovery (the temporary lapse into pathology before returning to baseline) is a similar concept but is considered conceptually distinct by some

(Bonanno, 2004), whereas others view recovery one form of resilience (Masten, Best, & Garmezy, 1990).

Methodological Views and Issues

Various research methods have been used in the field of resilience. Schoon (2006) identifies three research models of resilience: cumulative, protective, and challenge. The cumulative model implies that the predictive factors of resilience are main effects, in that they are considered to have a positive impact on resilience regardless of the level of risk. The protective model implies that the predictive factors interact to produce resilience. In other words, certain factors become protective (and thus increase resilience) under various levels of risk. The presence of risk is necessary for these factors to become protective. The cumulative model suggests that moderate levels of stress are positively related to resilience because they provide the opportunity for the growth of resilience. A curvilinear relationship between resilience factors and risk is hypothesized from this model.

Luthar et al. (2000) also suggests three models of resilience that have been studied: protective, ecological, and structural-organizational. The protective model has focused on the broad domains of community, family, and the child as predictive of resilience. The ecological context model draws on various theories that focus on “nested levels varying in proximity to the individual” (Luthar et al., 2000, p. 552), which interact over time. The structural-organization model acknowledges historical and current influences but places significant emphasis on the individual’s choice and self-structure. Richardson’s resilience model (2002), with its’ acknowledgement of internal and external factors but focus on choice, could fall under this category.

Within the protective model, Luthar (2006) describes the main findings in the literature for family, community, and child domains. The greatest vulnerability factor for the family is maltreatment. Luthar indicates that a close relationship with at least one parent is the most “robust predictor of resilience.” In particular, parental warmth and control are the most important parenting variables related to resilience. She also states that positive relationships with others, including siblings and external kin are protective factors within the family.

The greatest vulnerability factor for the community domain is violence (Luthar, 2006). This can be buffered to some degree by parenting, as well as positive relationships with peers and teachers. Within individual children, the most important factors associated with resilience are intelligence, emotional regulation, meaning making, and self-efficacy. Luthar (2006) notes that these individual factors should not be overemphasized without acknowledging that the acquisition of many of these factors “depends squarely on relationships” (p. 775).

Masten (2001) presents only two statistical ways in which resilience has been studied. The first is the variable model which focuses on particular variables and their relation to various resilient outcomes. This method looks for statistical relationships between variables among many participants. Masten (2001) also makes the distinction between main effect variable models and interaction variable models, which lead to different intervention strategies. She also discusses the person model, which focuses on different individuals and looks to discover patterns that lead to resilience. This is typically done by assessing individuals from high risk groups that have achieved good or poor outcomes. While the variable model is considered a quantitative design, the person model is considered a qualitative design. Masten (2001) cautions that the person model is often lacking in external validity and, on the whole, has led to the identification of a similar set of variables related to resilience.

Several definitional and measurement issues have been raised in the literature (Luthar et al., 2000; Masten, 2001; White et al., 2008). Most importantly, the construct of resilience has been operationally defined in various ways, which has led to different types and levels of measurement, thus obscuring a comparison of findings (Luthar et al., 2000).

Luthar and colleagues (2000) address the multiple uses of the terminology protective and vulnerable. These terms have been used interchangeably for main effects and for various interaction effects. Luthar et al. propose the terms protective, protective-stabilizing, protective-enhancing, protective-reactive, as well as vulnerable-stable, and vulnerable-reactive. Protective refers to main effects of certain factors on resilient outcomes. Protective-stabilizing refers to stability despite the increase of risk. Protective-enhancing refers to an increased resilience with the increase of risk level. Protective-reactive represents an increase resilience, but more so with lower levels of risk versus higher levels of risk. Vulnerable-stable represents a decrease in resilience, or poorer outcomes, regardless of the level of risk. Vulnerable-reactive implies a decrease in resilience as a result of an increase in risk. All of these terms are proposed by Luthar et al.(2000) to distinguish different main effects and various interaction effects when discussing protective and vulnerability factors in the literature.

Several authors have addressed the issue of defining risk (Luthar et al., 2000; Luthar, 2006; Masten, 2001; Rutter, 1999). Masten (2001) suggests that there must be demonstratable risk to qualify as a study of resilience, and that risk has been measured differently in the literature. For example, SES, number of traumatic life events, community trauma, low birth rate, and divorce have all been examined as risk factors. Luthar et al. (2000) addresses the concerns regarding statistical versus actual risk, as well as objective versus subjective ratings of risk. Specifically, they report that questions about whether the establishment of a general association

between exposure to an event and poor outcomes (i.e., statistical risk) should be assumed to represent risk to individuals in different samples (i.e., actual risk). Additionally, Luthar et al. (2000) note that a differences between subjects, or between subjects and researchers, in terms of what they consider to be a risk factor or poor outcome. In other words, the assumption that an objective risk factor exists is overly simplistic. Rutter (1999) points out that important differences between indicators of risk versus the mechanisms by which risk creates vulnerability should be considered, such as the factors that are risk factors in and of themselves, and the other factors that lead to mediating risk factors, which actually account for the vulnerability. Multiple authors have pointed out that multiple risk factors can, and often do, coexist (Luthar, 2006; Masten, 2001; Rutter, 1999). When these variables are considered together, possible interactions between them that impact resilience and vulnerability should be considered. Luthar (2006) suggests that studies examining multiple risk factors provide greater external validity and accounts for more variance. Studies examining a single risk factor provide greater internal validity and allow for greater specificity regarding conclusions. Masten (2001) also notes that many risk factors fall on a continuum with one end of the spectrum indicating risk, the other providing protection (e.g. parental warmth).

Another factor associated with resilience is the adaptation following risk or threat, but this too has been discussed in regards to methodological concerns. Masten (2001) asks the question what is good or ok? In other words, what events constitute a non-ideal situation and what events constitute risk? Two major approaches have been taken to the measurement of resilience outcomes: (1) using developmental tasks based on culture (2) absence of pathology (Luthar, 2006; Masten, 2001). Developmental tasks have often been measured externally or

behaviorally, whereas absence of pathology is often measured based on internal subjective factors.

The absence of pathology is one measure of resilience (Luthar, 2006; Masten, 2001). For the purposes of the current study, the absence of depression is one measure of resilience. Depression is one of the most common psychiatric disorders, is extremely disabling (Areán & Chatav, 2003), and is listed as a major concern for individuals with SCI, TBI, and amputation (Richards et al., 2000; Rybarczyk et al., 2000; Strom & Kosciulek, 2007). Areán and Chatav (2003) report statistics from the two major epidemiological studies of depression, the Epidemiological Catchment Area Study (ECA) (Robins & Regier, 1991) and the National Comorbidity Study (NCS) (Kessler et al., 1994). Life time rates for at least one episode of major depression range from 6% to 12%. Estimates of gender differences differ between the two studies. The ECA study reports 7% and 8% for women and men respectively, whereas the NCS study reported a life time prevalence rate for women of 21% and 13% for men. Age differences are not well known because of the rapidly changing cohort effects in regards to psychiatric disorders (Areán & Chatav, 2003). More recent data, such as the NCS, has excluded ages above 65 which limits knowledge for older individuals (Areán & Chatav, 2003).

In regards to inpatients with disabilities, the prevalence of depression among individuals with spinal cord injuries ranges from 11% to 30% (Richardson & Richards, 2008), whereas the prevalence rate for patients with TBI is between 14% and 29% (Chan et al., 2008). A recent review of patients following amputation reports depression rates between 25% and 35% within the first two years but fall back to normal ranges long-term (Horgan & MacLachlan, 2004). In all cases, rates of depression are higher following the various acquired disabilities than the population on average. It should also be noted that the percentages provided by the national data

are lifetime prevalence rates, whereas the data for the populations of various disabilities is a shorter time frame.

Depression has also been shown to be related to attachment strategies. According to Dozier et al. (2008), Bowlby proposed 3 pathways to depression in attachment terms: (a) an unresolved loss of a parent, (b) when the child is unable to develop stable, secure attachments, and (c) when a parent leads the child to believe he or she is incompetent and unlovable. Dozier et al. (2008) review the literature on depression relating to different attachment states of mind and comment on how differences found between preoccupied and dismissing could be related to the externalizing or internalizing nature of depressive symptoms. Specifically, they suggest that preoccupied attachment styles are more likely to show internalizing symptoms of depression, whereas dismissing attachment styles are more likely to show externalizing symptoms (Dozier, Stovall-McClough, & Albus, 2008). A recent study examining differences in adult romantic attachment found that insecure attachment styles were related to cognitive vulnerabilities that partially mediated their relationship to anxiety and depressive symptoms (Williams & Risking, 2004).

As mentioned previously, social support has been implicated in the development of depression following stressors (Cobb, 1976). In line with Cobb's hypotheses, depression has been found to be related to social support with individuals with acquired disabilities (Douglas & Spellacy, 2000; Beedie & Kennedy, 2002). For example, Douglas and Spellacy (2000) found that higher levels of social support were associated with lower levels of depression in patients with TBI. Beedie and Kennedy (2002) reported similar findings for an SCI population. Specifically, they found that higher quality of social support was significantly related to lower levels of hopelessness and depression.

Current Study

Research has demonstrated that the acquirement of a disability is a risk factor for various psychological difficulties (Richards, Kewman, & Pierce, 2000; Rybarczyk, Szymanski, & Nicholas, 2000; Strom & Kosciulek, 2007). Social support has been shown to be related to increased resiliency in the general population (Luthar, 2006; Masten, 2001), as well as among individuals with acquired disabilities (Chwalisz & Vaux, 2000). However, research suggests that perceived support varies across attachment styles (Collins & Feeney, 2004; Declercq & Palmans, 2006; Florian et al., 1995; Rodin et al., 2007). Furthermore, as indicated in the previous review, attachment strategies have been related with positive and negative adjustment, which can be considered to reflect various levels of resilience (or lack thereof). All of these findings suggest that the attachment system may be integral to resilience processes via support seeking behavior.

Given that the attachment system is activated by perceived danger (e.g., a newly acquired disability), and different attachment strategies are related to psychological outcomes and perceived social support, it is apparent that understanding the role of attachment anxiety and avoidance has important implications for the treatment of individuals with acquired disabilities. Secure attachment and higher perceived social support have been implicated in greater levels of resilience but need to be assessed with a population of individuals who have acquired a disability (Shaver & Mikulincer, 2007; Chwalisz & Vaux, 2000). The current study examines social support and attachment in relation to resilience and depression with a population of individuals with acquired disabilities. Mediation effects from either social support or attachment anxiety and attachment avoidance on resilience and depression are tested.

Resilience in this study is assessed from a variable model (i.e., attachment avoidance, attachment anxiety, and social support) with elements of protective (e.g., current social support)

and structural organizational explanations (e.g., capacity to change attachment representations and better utilize social support). The variables related to resilience in this study are considered protective (e.g., main effects of predictor variables). In addition to assessing the subjective perception of resilience, the absence of pathology (i.e., depression) as another measure of resilience was examined.

Research Questions and Hypotheses

Given the clinical utility of using attachment categories, a one-way multivariate analysis of variance (MANOVA) was conducted examining the differences between the four attachment classifications (secure, preoccupied, dismissing, and fearful) on the dependent variables of interest (social support, depression, and resilience). It was hypothesized that the secure adults would report significantly higher social support and resilience, and significantly lower depression than adults in the other three classifications. It was also hypothesized that fearful adults would report significantly lower social support and resilience, and significantly higher depression than adults in the other three classifications.

A second MANOVA was conducted assessing differences between attachment classifications across the six subscales of social support (attachment, social integration, reliable alliance, reassurance of worth, guidance, and opportunity for nurturance). It was hypothesized that the secure group would be significantly higher and the fearful group significantly lower on all social support subscales when compared to the other three attachment groups.

Based on studies that have demonstrated the mediating effects of attachment anxiety and avoidance on the association between social support and resilience (Moreira et al., 2003), as well as studies demonstrating the mediating effect of social support on the association of attachment

anxiety and avoidance on depression (the absence of resilience) (Rodin et al., 2007; Vogel & Wei, 2005), two path models are conducted. The first model is based on the idea that attachment classification can change following traumatic events (e.g., death of a parent or major illness) and may reflect a change in social support leading to alterations in attachment style. If the social support network fails to provide the needed assistance and care after the acquisition of a disability the attachment style may change as a result, leading to increased depression and reduced resilience. According to the first model, the relationship between social support and measures of resilience are thought to be mediated by attachment anxiety and avoidance. In regards to the second model, Mikulincer et al. (2003) suggests that an individual's pre-existing attachment system with varying levels of hyperactivating (attachment anxiety) and deactivating (attachment avoidance) strategies will impact perceptions of social support and resilience. That is, the relationship between attachment strategies and resilience may be mediated by social support. Both models are tested to explore if one provides a better fit of the data.

CHAPTER 2

METHOD

Participants

Participants were sampled from inpatient rehabilitation at Baylor Institute for Rehabilitation (BIR) and typically had experienced complete or incomplete spinal cord injuries, traumatic or acquired brain injury, multi-trauma injuries, or amputations and experience a variety of physical and/or secondary health impairments. Participants were 102 adult inpatients at BIR undergoing an individualized rehabilitation program based on the type and severity of their medical condition and subsequent abilities. The mean age of the sample was 44.7 years ($SD = 16.7$), with 60.8% ($n = 62$) reported as male and 37.3% ($n = 38$) reported as female. In regards to race/ethnicity, 83.3% ($n = 85$) were Caucasian, 13.2% ($n = 25$) African American, and 2.9% ($n = 3$) Hispanic. In terms of marital status, 46.1% ($n = 47$) were married, 35.3% ($n = 36$) single, 12.7% ($n = 13$) divorced, 2.9% ($n = 3$) widowed, and 1% ($n = 1$) separated. The disability breakdown of the sample is 81.3% ($n = 83$) SCI, 8.8% ($n = 9$) other (e.g., ALS, Guillian Barre syndrome, etc.), 7.8% ($n = 8$) multi-trauma, and 1.9% ($n = 2$) amputation.

Measures

The Experiences in Close Relationships (ECR) is a 36-item self-report attachment measure developed by Brennan et al. (1998). The ECR uses a 7-point Likert scale ranging from 1 (*disagree strongly*) to 7 (*agree strongly*). The items were derived from a factor analysis of most of the existing self-report measures of adult romantic attachment. The measure can be used to create two subscales, Avoidance and Anxiety, or four attachment categories from the two dimensions. The Avoidance subscale assesses discomfort with closeness and discomfort

depending on other, whereas the Anxiety subscale assesses fear of rejection or abandonment. The four attachment categories that can be created are secure, preoccupied, dismissing, and fearful. Brennan et al. report strong reliability for the avoidance and anxiety dimensions, .94 and .91 respectively. Test-retest reliability for anxiety and avoidance dimensions obtained over a 6 month period was .69 and .71 (Lopez & Gormley, 2002). Other studies have provided evidence of validity. For example, anxiety and avoidance have been positively related with maladaptive perfectionism (Wei, Mallinckrodt, Russell, & Abraham, 2004), negative mood (Wei, Russell, Mallinckrodt, & Zakalik, 2004), and depression (Zakalik & Wei, 2006). In the current study, the two ECR scales demonstrated strong reliability, with Cronbach alphas of .92 for avoidance and .91 for anxiety (see Table 1).

The Social Provisions Scale (SPS) is a 24-item self-report measure of social support developed by Cutrona and Russell (1987). The SPS uses a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). In addition to one global social support scale, six subscales can be created: Attachment, Social Integration, Reassurance of Worth, Reliable Alliance, Guidance, and Opportunity for Nurturance. The subscales subscales provide the following assessments:

- The Attachment subscale assesses emotional closeness from which one derives a sense of security.
- The Social Integration subscale assesses a sense of belonging to a group that shares similar interests, concerns, and recreational activities.
- The Reassurance of Worth subscale assesses recognition of one's competence, skills, and worth by others.

- The Reliable Alliance subscale assesses assurance that others can be counted on for tangible assistance.
- The Guidance subscale assesses advice or information.
- The Opportunity for Nurturance assesses the sense that others rely on one for their well-being.

Cutrona and Russell (1987) report Cronbach's alpha reliability coefficients from .84-.92.

Validity has also been established among individuals experiencing significant life distress (for review, see Curtona & Russell, 1990). The SPS was also found to be predictive of post-partum depression, loneliness, and health status (Cutrona, 1984). In the current study, Cronbach's alpha for the global social support scale was .90. Internal consistency for the six subscales ranged from .62 to .75 (see Table 1).

The Connor-Davidson Resilience Scale (CD-RISC) short form is used to measure the overall resilience of each participant (Campbell-Sills & Stein, 2007). The short form of the CD-RISC assesses one latent factor of resilience that “reflects the ability to tolerate experiences such as change, personal problems, illness, pressure, failure, and painful feelings” (Campbell-Sills & Stein, 2007). The measure consists of 10 items using a 5-point Likert scale ranging from 0 (*not true at all*) to 4 (*true nearly all of the time*). The CD-RISC short form demonstrated good reliability (.85) and construct validity by moderating the relationship between childhood maltreatment and current psychiatric symptoms. The correlation between the 10-item short form and the original 25 item CD-RISC was high ($r = .92$). The current study produced a Cronbach's alpha of .85 (see Table 1).

The Personal Health Questionnaire – 9 Depression Scale (PHQ-9) is a brief 9-item self-report measure of major depressive disorder (Kroenke, Spitzer, & Williams, 2001). In a study of

6000 patients from two separate medical settings (primary care clinics, ob-gyn clinics), the PHQ-9 was found to have excellent internal reliability, with a Cronbach's α of .89 in the primary care population and an α of .86 in the ob-gyn clinic population (Kroenke, Spitzer, & Williams, 2001). Test-retest reliability had a correlation of .84 in the sample. The authors established criterion validity with 589 patients who had an interview by a mental health professional and found strong construct and external validity (Kroenke, Spitzer, & Williams, 2001). The current study produced a Cronbach's alpha of .79 (see Table 1).

A demographic form was created for this study to obtain certain demographic (e.g. age, gender, ethnicity, relationship status, etc.) and injury related information (location and severity of injury, rehabilitation progress, etc.). The data was obtained through medical chart reviews by the resident intern listed on the Institutional Review Board (IRB), as well as the research assistant.

Procedure

This study is part of a larger, ongoing data collection that has obtained IRB approval from Baylor Institute for Rehabilitation (BIR). Appropriate participants were identified by the clinical psychologist on staff. Eligible patients were those who had experienced a traumatic or non-traumatic injury resulting in a need for inpatient rehabilitation. Commonly, these patients have experienced complete or incomplete spinal cord injuries, acquired brain injury (ABI) or traumatic brain injury (TBI), multi-trauma injuries, amputations, and various debilitating illnesses (e.g., amyotrophic lateral sclerosis, Guillian Barre syndrome, etc.).

Prior to recruitment, neuropsychologists working with the TBI patients were consulted regarding potential participants' ability to appropriately complete the measures. Only investigators listed on the IRB approval requested consents from participants. If an investigator

in the study was involved in a patient’s care (e.g., the clinical psychologist working with a patient) they were not utilized with that participant in order to avoid a dual relationship that might impact the study or the patient’s treatment. Potential participants were approached and provided information regarding the nature of the study, including a brief explanation of the purpose, time involved, risks and benefits, and confidentiality. Consent was not immediately required, but rather potential participants were given the opportunity to take additional time to decide if they wished to participate.

Table 1

Reliability Estimates for Scales

Variables	Cronbach’s α
Avoidance (ECR Avoidance)	.92
Anxiety (ECR Anxiety)	.91
Social Support Global (SPS)	.90
Attachment	.66
Social Integration	.62
Reassurance of Worth	.65
Reliable Alliance	.75
Guidance	.68
Opportunity for Nurturance	.69
Resilience (CD-RISC)	.85
Depression (PHQ-9)	.79

All measures were administered by research assistants or the clinical psychologist on staff. Measures were completed at the same time in the participant’s hospital room or occasionally in the clinical psychologist’s office and no follow-up measures were provided. The level of independent completion of the instruments depended on the patient’s functioning and degree of aid needed. Total time of completion was typically less than 30 minutes in duration. If

the investigator read the instruments to the participant, standard directions for each measure were provided, and the participant was also able to view each item as it was read.

Initial Data Examination

Missing data was analyzed with the statistical software package “R” (R Developmental Core Team, 2009). Specifically, probabilistic principal component analysis (PPCA), which combines principal component analysis with EM algorithms, was used in conjunction with Visualization and Imputation of Missing Values (VIM) (Wolfram Stacklies and Henning Redestig CAS-MPG Partner Institute for Computational Biology, 2008; Templ & Alfons, 2009). Two participants were removed due to a failure to complete the majority of the measures. The remaining missing data was found to be missing at random. Expectation-maximization was used to estimate the missing data and was completed at the individual item level and rounded to the nearest whole number. Shapiro-Wilk’s tests of normality were performed and all scales were found to be non-normal. Bootstrap interval estimates are given to address the issues of non-normality and small sample size. Influence plots from individual regression analyses were examined for help identify outliers. One subject had extreme scores on all scales but the observed scores were in line with theory and normal at the multivariate level.

Statistical Analyses

A MANOVA was conducted to examine differences between attachment classifications (secure, preoccupied, dismissing, and fearful) across the major dependent variables (social support, resilience, and depression). Follow up ANOVAs were performed for each dependent variable. Post hoc comparisons were also conducted for each ANOVA using pairwise

techniques. A second MANOVA was conducted to examine differences between attachment classifications (secure, preoccupied, dismissing, and fearful) across the six social support subscales (attachment, social integration, reliable alliance, reassurance of worth, guidance, and opportunity for nurturance). Follow up ANOVA's were performed for each subscale with pairwise post hoc comparisons conducted.

Path analysis was used to test the mediation hypotheses in this study. Path analysis tests structural models with observed variables, or single measurement, non-latent variables (Kline, 1998). Estimations of hypothesized causal paths between observed variables are central to path analysis. Covariances, including correlations, are the foundational statistics used in path analysis. A researcher hypothesizes a model that implicates causal and non-causal relationships between variables. Maximum likelihood estimation (MLE) is typically the estimation technique used in path analysis and is utilized in this study. MLE incorporates a fitting function that, similar to least squares criterion of multiple regression, assesses the discrepancies between observed covariances and hypothesized covariances proposed by the model (Kline, 1998).

The outcome of a path analysis not only addresses hypothesized relationships between observed variables but the overall fit of the data to the model. This is accomplished through fit indices. Each fit index has strengths and limitations. For more information regarding the strengths and weaknesses of the fit indices used in this study refer to the results section. R^2 is also calculated for the endogenous variables in the model and provides a measure of the total variance explained. It is important to recall that while path analysis is considered a causal modeling technique, like other correlational based techniques, correlation does not imply causation. Without longitudinal data, findings from path analysis must be interpreted based on a strong theoretical foundation regarding causality.

Model Hypotheses

Given that multiple mediators are hypothesized, path analysis is utilized to test the mediating effects of attachment styles (anxiety and avoidance) on the relationship between social support and resilience or depression (Figure 3), as well as a competing model of the mediating effects of social support on the relationship between attachment styles (anxiety and avoidance) and resilience or depression (Figure 4).

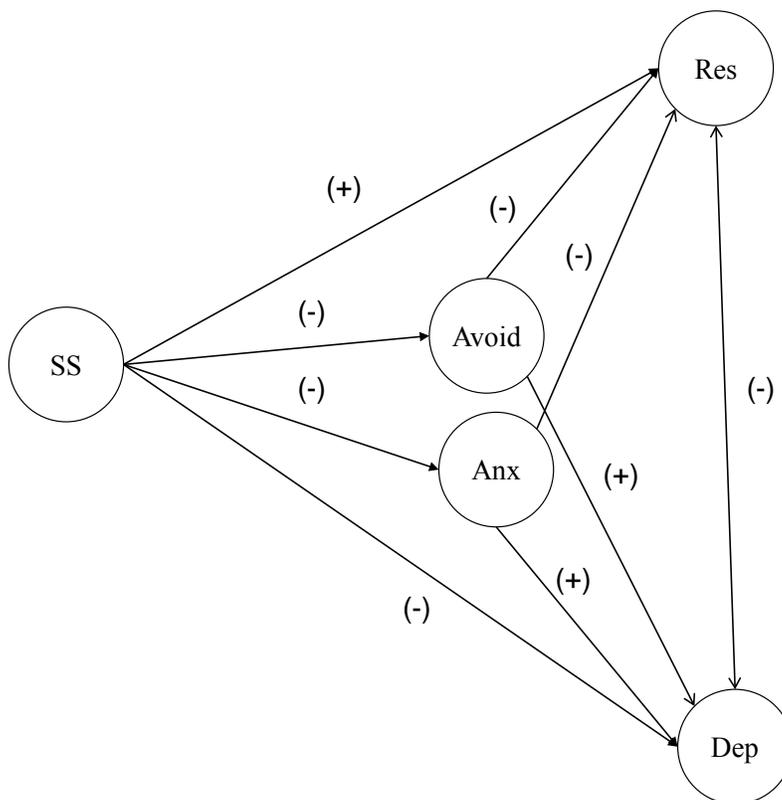


Figure 3. Path model of the mediating role of attachment avoidance and anxiety and social support, resilience, and depression.

In the first model, social support (SPS) serves as the exogenous predictor variable, attachment anxiety and avoidance (ECR) serve as intervening endogenous variables, and resilience (CD-RISC) and depression (PHQ-9) serve as the endogenous variables. In the second model, attachment anxiety and avoidance (ECR) serve as exogenous predictor variables, social support

(SPS) serves as an intervening endogenous variable, and resilience (CD-RISC) and depression (PHQ-9) serve as the endogenous variables.

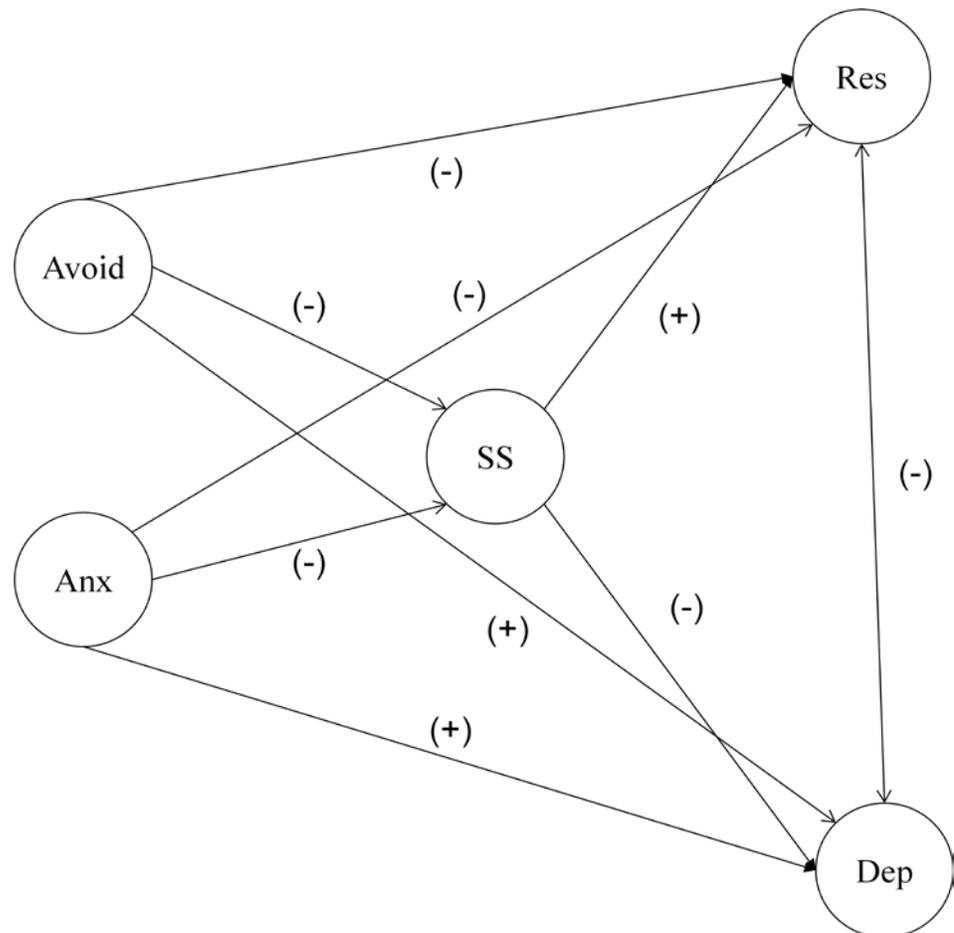


Figure 4. Path model of the mediating role of social support and attachment avoidance and anxiety, resilience, and depression.

The statistical software program Mplus was used to examine the two proposed models. Both models predict that social support and depression are negatively related; social support and resilience are positively related; social support and attachment anxiety and avoidance are negatively related. The model also examines the hypotheses that attachment anxiety and avoidance are negatively related to resilience and positively related to depression. The relationship between resilience and depression is hypothesized to be negative. In regards to mediation effects, Model 1 assesses the hypothesis that attachment anxiety and avoidance

mediate the relationship between endogenous variable social support and the multiple exogenous variables resilience and depression. Model 2 tests the hypothesis that social support mediates the relationship between endogenous variables attachment anxiety and avoidance and the multiple exogenous variables resilience and depression. Multiple fit indices are used to assess the degree of fit for each model including: chi-square model of fit, sample-size adjusted Bayesian information criterion (BIC), comparative fit index (CFI), and standardized root mean square residual (SRMR).

CHAPTER 3

RESULTS AND DISCUSSION

Preliminary Analyses

Means and standard deviations were computed for each scale and are listed in Table 2. ECR Avoidance produced a mean of 2.29 ($SD = 1.07$), ECR Anxiety produced a mean of 2.76 ($SD = 1.26$), SPS produced a mean of 85.57 ($SD = 9.03$), CD-RISC produced a mean of 32.44 ($SD = 5.41$), and PHQ-9 produced a mean of 5.42 ($SD = 4.70$). Attachment classifications were as follows: 61.8% ($n = 63$) secure, 17.6% ($n = 18$) preoccupied, 10.8% ($n = 11$) dismissing, and 9.8% ($n = 10$) fearful. Correlation coefficients were computed among the five scales and can also be found in Table 2. Correlations between attachment avoidance and social support, attachment avoidance and resilience, attachment avoidance and depression, attachment anxiety and depression, attachment anxiety and resilience, attachment anxiety and avoidance, social support and resilience, and resilience and depression were significant at $p < .01$ level. The correlations between attachment anxiety and social support, as well as social support and depression were non-significant. The directions of all hypothesized relationships were supported, though not all were statistically significant.

Multiple t -tests were conducted between the main variables of interest (attachment anxiety and avoidance, social support, depression, and resilience) and demographic variables (gender, race, injury type, cause of injury). Race was collapsed into “white” and “non-white” given the small minority distribution. Injury type was also collapsed into “SCI” and “non-SCI” given the small sample of other types of injuries. No significant differences were observed across the demographics variables on the main variables. Correlations were also computed for

the main variables and age at time of injury, as well as time since injury, with no significant correlations observed.

Table 2

Correlations, Means, and Standard Deviations for Social Support, Attachment Avoidance and Anxiety, Resilience and Depression

Variable	1	2	3	4	5
1. Avoidance(AVD)	1.00				
2. Anxiety (ANX)	.28**	1.00			
3. Social Support (SPS)	-.54**	-.16	1.00		
4. Resilience (RES)	-.35**	-.29**	.44**	1.00	
5. Depression (DEP)	.31**	.37**	-.18	-.41**	1.00
M	2.29	2.76	85.57	32.44	5.42
SD	1.07	1.26	9.03	5.41	4.70

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

Multivariate Analyses of Variance

A one-way multivariate analysis of variance (MANOVA) was conducted to determine the relation of attachment classification (secure, dismissing, preoccupied, and fearful) to three dependent variables: social support, resilience, and depression. The overall test statistic was significant, Wilks's $\lambda = .73$, $F(9, 231) = 3.59$, $p < .01$. The multivariate η^2 based on Wilks's λ was .10. Table 3 contains the means and standard deviations on the dependent variables for the four classifications.

An analysis of variance (ANOVA) for each of the dependent variables was conducted as follow-up tests to the MANOVA. The ANOVAs for social support ($F(3, 97) = 7.98$, $p < .01$, $\eta^2 = .20$), resilience ($F(3, 97) = 4.18$, $p < .01$, $\eta^2 = .12$), and depression ($F(3, 97) = 2.89$, $p < .05$, $\eta^2 = .08$) were all significant. Pairwise comparisons were conducted to find which attachment

classification resulted in higher values for social support and resilience, as well as lower values for depression. The secure classification produced significantly higher scores on resilience than did the fearful classification. The secure classification also produced significantly higher scores on social support than did fearful or dismissing classifications. Despite a significant ANOVA for attachment classification and depression, subsequent pairwise comparisons were non-significant.

Table 3

Means Scores on Social Support, Resilience, and Depression as a Function of Attachment Classification

Dependent Measures	ECR Classification				<i>F</i>
	Secure <i>M (SD)</i>	Dismissing <i>M (SD)</i>	Preoccupied <i>M (SD)</i>	Fearful <i>M (SD)</i>	
SPS	88.2 (7.2) _a	78.2 (13.4) _b	84.3 (8.5)	78.2 (6.3) _b	7.98**
RES	33.5 (5.1) _a	31.8 (6.4)	31.9 (4.6)	27.3 (5.1) _b	4.18**
DEP	4.6 (4.3)	4.9 (3.8)	7.0 (4.7)	8.5 (6.5)	2.89*

Note. Means with different subscripts differ significantly at $p < .05$ or greater. [†] $p < .10$, * $p < .05$, ** $p < .01$

A second MANOVA was conducted to determine the association of the four attachment classifications (secure, dismissing, preoccupied, and fearful) to the six social support subscales (attachment, social integration, reassurance of worth, reliable alliance, guidance, and opportunity for nurturance). The overall test statistic was significant, Wilks's $\lambda = .65$, $F(18, 263) = 2.42$, $p < .01$. The multivariate η^2 based on Wilks's λ was .13. Table 4 contains the means and standard deviations on the dependent variables for the four classifications.

Analyses of variances (ANOVA) on the dependent variables were conducted as follow-up tests to the MANOVA. The ANOVAs for the SPS subscales of attachment ($F(3, 98) = 4.61$, $p < .01$, $\eta^2 = .12$), social integration ($F(3, 98) = 3.02$, $p < .05$, $\eta^2 = .09$), reassurance of worth

($F(3, 98) = 5.05, p < .01, \eta^2 = .13$), reliable alliance ($F(3, 98) = 10.34, p < .01, \eta^2 = .24$), guidance ($F(3, 98) = 7.12, p < .01, \eta^2 = .18$), and opportunity for nurturance ($F(3, 98) = 2.86, p < .05, \eta^2 = .08$) were all significant.

Table 4

Means Scores on Social Support Subscales as a Function of Attachment Classification

Dependent Measures	ECR Classification				<i>F</i>
	Secure <i>M (SD)</i>	Dismissing <i>M (SD)</i>	Preoccupied <i>M (SD)</i>	Fearful <i>M (SD)</i>	
Attachment	15.1 (1.4) _a	13.3 (2.9) _b	14.8 (1.9)	13.7 (1.7)	4.61**
Social Integration	14.3 (1.8)	13.2 (2.4)	14.1 (1.7)	12.7 (1.4)	3.02*
Reassurance of Worth	14.4 (1.9) _a	12.3 (2.1) _b	13.3 (2.1)	13.1 (1.4)	5.05**
Reliable Alliance	15.7 (0.9) _a	13.5 (2.8) _b	15.2 (1.2) _c	14.1 (1.8) _b	10.34**
Guidance	15.2 (1.3) _a	13.5 (2.8) _b	14.9 (1.5)	13.2 (1.6) _b	7.12**
Nurturance	13.5 (2.3)	12.4 (2.6)	12.7 (2.8)	11.4 (1.3)	2.86*

Note. Means with different subscripts differ significantly at $p < .05$ or greater. [†] $p < .10$, * $p < .05$, ** $p < .01$

Post hoc analyses to the univariate ANOVAs for the SPS subscales of attachment, social integration, reassurance of worth, reliable alliance, guidance, and opportunity for nurturance consisted of conducting pairwise comparisons. The secure classification produced significantly higher scores on SPS attachment and reassurance of worth than the dismissing classification. The secure classification also produced significantly higher scores on SPS reliable alliance and guidance than the fearful or dismissing classifications. The preoccupied classification also produced significantly higher scores on reliable alliance than the dismissing classification. Despite significant ANOVAs for attachment classification on SPS subscales for social integration and opportunity for nurturance, subsequent pairwise comparisons were non-significant.

Path Analyses

Model 1

Path analysis was performed in the statistical software program Mplus (Muthen & Muthen, 2007). Model 1 includes social support (SS) as the exogenous predictor variable, attachment avoidance (AVD) and anxiety (ANX) as endogenous mediating variables, and resilience (RES) and depression (DEP) as endogenous outcome variables. The results for Model 1 can be found in Figure 5 and Table 5. The variances accounted for in support of the endogenous variables AVD ($R^2 = .30$), RES ($R^2 = .24$), and DEP ($R^2 = .16$) were significant at the $p < .01$ level, while ANX ($R^2 = .03$) was non-significant.

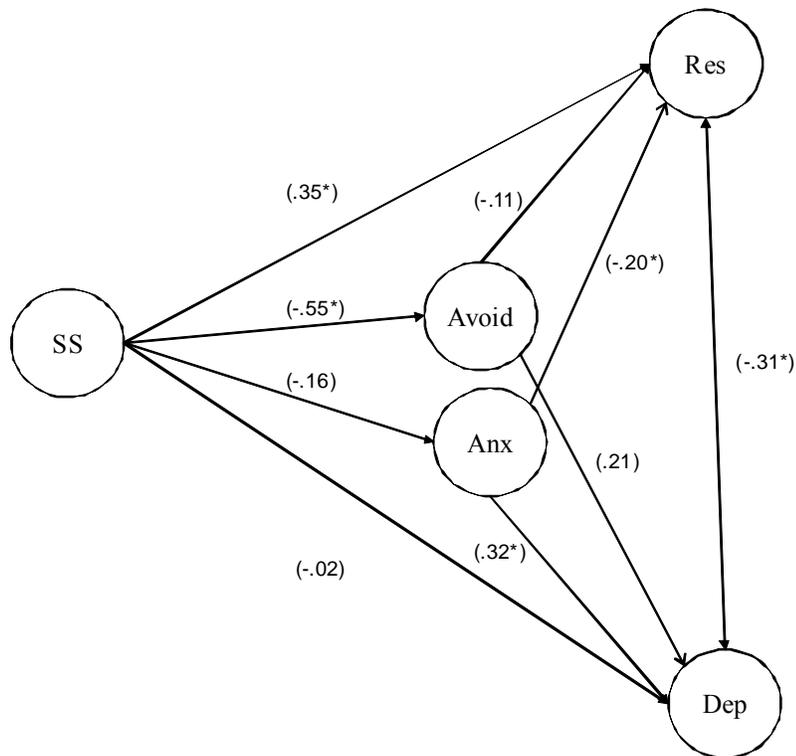


Figure 5. Path model of social support, attachment avoidance and anxiety, and resilience and depression (Model 1).

Table 5

Parameter Estimates for a Path Model of Social Support, Attachment Avoidance and Anxiety, and Resilience and Depression (Model 1)

Causal Variable	Endogenous Variables			
	Resilience		Depression	
	Est.	Bootstrap 95% CI	Est.	Bootstrap 95% CI
Direct Effect	.35**	(.15) – (.54)	-.02	(-.23) – (.19)
Indirect Effect	.09	(-.05) – (.23)	-.17**	(-.31) – (-.02)
Total Effect	.44**	(.27) – (.60)	-.19	(-.40) – (-.03)

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

Significant paths were observed between social support and resilience, social support and attachment avoidance, attachment anxiety and resilience, attachment anxiety and depression, and depression and resilience. As shown in Table 5, a significant direct, but not an indirect, effect was observed between the exogenous predictor variable social support and the endogenous variable resilience. In contrast, a significant indirect effect, but not direct effect, was observed between the exogenous predictor variable social support and endogenous variable depression. These findings indicate that attachment avoidance mediates the relationship between social support and depression, but not between social support and resilience.

The findings from Model 1 suggest that, even when attachment anxiety and avoidance are accounted for, perceived social support has a significant impact on perceived resilience for individuals with an acquired disability.

An indirect effect was found between perceived social support and depression. Specifically, a significant path was observed from perceived social support through attachment avoidance to depression. This suggests that individuals with an acquired disability who have higher perceived social support have lower attachment avoidance, resulting in reduced

depression. No significant path was observed between social support and attachment anxiety but there was a significant direct path between attachment anxiety and depression. The hypothesis that attachment avoidance mediated the relationship between social support and depression was supported, but the hypotheses that attachment avoidance and anxiety mediated the association between social support and resilience was not supported.

Model 2

Model 2 includes attachment avoidance (AVD) and anxiety (ANX) as the exogenous predictor variables, social support (SPS) as endogenous mediating variable, and resilience (RES) and depression (DEP) as endogenous outcome variables. The results for Model 2 can be found in Figure 6 and Table 6. The variances accounted for in support of the endogenous variables SPS ($R^2 = .29$), RES ($R^2 = .22$), and DEP ($R^2 = .15$) were significant at the $p < .01$ level.

Significant paths were observed between attachment avoidance and social support, attachment anxiety and resilience, attachment anxiety and depression, social support and resilience, resilience and depression. A significant indirect, but not direct, effect was observed between the exogenous variable attachment avoidance and endogenous variable resilience. In contrast, a significant direct, but not indirect, effect was observed between the exogenous predictor variable attachment anxiety and endogenous variable resilience. In other words, a mediation effect for resilience was found with attachment avoidance but not anxiety.

Similarly, a significant direct, but not indirect, effect was observed between the exogenous predictor variable attachment anxiety and depression. The significant bivariate correlation observed between attachment avoidance and resilience did not result in a significant path in Model 2 when the mediating effect of social support is accounted for. This finding

suggests that individuals who have sustained injuries and are higher in attachment avoidance have lower perceived social support, which in turn relates to lower perceived resilience.

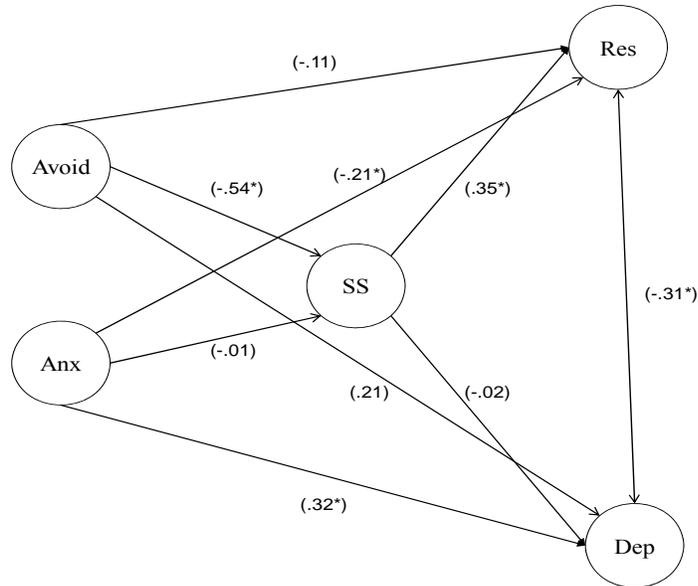


Figure 6. Path model of attachment avoidance and anxiety, social support, and resilience and depression (Model 2).

Table 6

Parameter Estimates for a Path Model of Attachment Avoidance and Anxiety, Social Support, and Resilience and Depression (Model 2)

Causal Variable		Endogenous Variables			
		Resilience		Depression	
		Est.	Bootstrap 95% CI	Est.	Bootstrap 95% CI
Avoidance	Direct Effect	-.11	(-.35) – (.14)	.21	(-.03) – (.45)
	Indirect Effect	-.19**	(-.32) – (-.06)	.01	(-.11) – (.13)
	Total Effect	-.30*	(-.52) – (-.08)	.22*	(.00) – (.44)
Anxiety	Direct Effect	-.21*	(-.38) – (-.03)	.32**	(.13) – (.51)
	Indirect Effect	-.01	(-.07) – (.06)	.00	(-.02) – (.02)
	Total Effect	-.21*	(-.39) – (-.03)	.32**	(.13) – (.50)

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

In regards to attachment avoidance and depression, a significant path was not observed between social support and depression but the direct path between attachment avoidance and depression was approaching significance. The mediating effect of social support on the association between attachment avoidance and resilience was the only hypothesized mediating effect that was substantiated for Model 2. Both attachment anxiety and attachment avoidance had direct effects on depression and resilience, and attachment avoidance had a marginally significant direct path with depression.

Path Model Fit Indices

The fit indices for Model 1 and Model 2 are presented in Table 7. The higher the value for the chi-square model of fit the poorer the fit of the model and it assumes a larger sample size (Kline, 1998).

Table 7

Comparison of Fit Indices

	Model 1	Model 2
Chi-Square Model of Fit	103.9**	95.5**
Sample-Size Adjusted Bayesian Information Criterion (BIC)	2537.9	2543.6
Comparative Fit Index (CFI)	.951	.914
Standardized Root Mean Square Residual (SRMR)	.047	.083

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

Both models would be rejected at the $p < .05$ level but this is difficult to interpret given the smaller sample size. The CFI, on the other hand, is known to be a better index for smaller samples (Tabachnick & Fidell, 2001). The larger the value for CFI the better the fit of the model, with a values about .90 being considered a good fitting model (Kline, 1998). Both

models are considered good fitting models based on their CFI values. The lower the value for the SRMR the better the fit of the model, with values lower than .10 being considered favorable (Kline, 1998). Both models obtained SRMR values below .10 suggesting a favorable fit of the data for each model. The BIC allows for a direct comparison of the models. The individual BIC values obtained are not interpreted but the difference between two models provides the comparison. The difference between the two models is 5.7 which is significant at the $p < .05$ level for samples of 100 subjects (Raftery, 1995). The BIC difference falls in the “positive” range but not the “strong” range (Raftery, 1995). The smaller BIC value is preferred. The BIC, CFI, and SRMR all favor a better fit by Model 1 but the difference is minute and the models can be considered to fit the data equally well.

Discussion

Support was found for both path models when using fit indices appropriate for smaller samples. Slightly greater support for Model 1 was found, but the difference was quite small suggesting that they account for the data equally well. Support was found for hypotheses regarding the directionality of the paths within the model. The same is true regarding significance of paths within the model, with the exception of a non-significant path between attachment anxiety and social support, attachment avoidance and resilience, and social support and depression. A mediation effect was found from social support through attachment avoidance to depression in Model 1. A mediation effect was found for attachment avoidance on the relationship between social support and resilience in Model 2. Partial support was provided for the hypotheses regarding the MANOVAs for attachment classification across the main dependent variables, as well as the social support subscales. The following section addresses the

findings from each model as well as provide theoretical explanations for the findings. The clinical implications for the findings in this study are explored as well. Finally, limitations and directions for future research are addressed.

MANOVAs

Attachment classifications differed across the dependent variables of social support and resilience. Specifically, individuals with secure attachment had greater global social support and resilience than individuals with fearful attachment. This finding is consistent with previous research (Collins & Feeney, 2004; Li, Li, & Dai, 2008). This would suggest that the combination of attachment anxiety and attachment avoidance leads to lower perceived social support and resilience. Fearful individuals also perceived less reliability in alliance and guidance from others than did secure individuals.

It is possible that the lack of a consistent attachment strategy typical of fearful individuals could lead to difficulty maintaining relationships following the acquirement of a disability. At times these individuals might amplify symptoms in order to ensure care from significant others. Alternatively, they might react with distancing and avoidance when caregivers do respond to their attempts at closeness. This could lead to frustration and confusion by the patient and their caregivers. The inability to maintain relationships and difficulty modulating their own affect could lead to feelings of failure and a lack of resilience.

Dismissing individuals also reported significantly lower perceived social support than secure individuals. This finding is also consistent with Li et al.'s (2008) finding that secure individuals were higher in reported social support than dismissing individuals. This would be expected given the tendency of dismissing individuals to distance and avoid close relationships.

This could either reflect an objective lack of social support or the dismissing individual's tendency to perceive others as inadequate and unreliable. The MANOVA examining the various social support subscales provides further clarification. Dismissing individuals differed significantly from secure individuals on the SPS variables of attachment, reassurance of worth, reliable alliance, and guidance. These findings support the possibility that dismissing individuals perceive others in their social support system as unreliable and incapable of helping them. While preoccupied individuals were lower on perceived social support than secure individuals, the groups did not significantly differ. This finding is not consistent with Li et al.'s (2008) study in which they found significant differences between secure individuals and all other attachment categories. One possible explanation why fearful individuals would be significantly lower than secure individuals on perceived social support and preoccupied individuals would not be, is their internal working models of others. They share similar internal working models of a negative self but fearful individuals also view others negatively. This difference could result in fearful individuals avoiding supportive relationships whereas preoccupied individuals would attempt to maintain them due to dependency needs.

It should also be noted that Li et al. (2008) reported significantly lower self-reports of depression for secure individuals than all other attachment categories. The current study did not find significant differences between the categories. A closer examination of the data from this study suggest that preoccupied and fearful individuals appear substantial more depressed than secure or dismissing individuals, but standard deviations are quite high resulting in large within group differences. A relationship between increased attachment anxiety and depression has been reported in the literature (Lopez & Brennan, 2000; Mikulincer & Florian, 2001; Mikulincer et al.,

2003). Li and colleagues also used a different self-report measure of depression and their population differed on many characteristics.

Path Models

Model 1

The finding that social support is directly related to resilience is consistent with previous findings that social support is a protective factor (e.g., Bonanno, 2004; Chronister et al., 2006; Luthar, 2006). It appears that perceiving that others are available and supportive increases the individual's own perception of resilience. The ability to reach out to others successfully could lead to a greater sense of mastery and control in one's life. This might be particularly true for individuals with an acquired disability who experience a sense of mastery through enlisting the aid of others.

The finding from Model 1 that attachment avoidance mediates the relationship between social support and depression is consistent with previous findings that higher levels of social support are related to lower reported depression in patients with an acquired disability (Douglas & Spellacy, 2000; Beedie & Kennedy, 2002). This finding is also consistent with previous research indicating a significant relationship between attachment avoidance and depressive symptoms (Patrick, Hobson, Castle, Howard, & Maughan, 1994; See Dozier et al., 2008 for review). One possible explanation for these findings is that following the traumatic experience of acquiring a disability, the potentially increased social support leads to less attachment avoidance by decreasing the capacity for independence and increasing awareness of others' reliability. This could alter internal working models of self and other. The move towards a more secure attachment strategy results in decreased depression for these individuals.

Model 2

The significant direct path between attachment anxiety and depression observed is consistent with previous research (Cole-Detke & Kobak, 1996; Fonagy, Leigh, Steele, Steele, Kennedy, & Mattoon, 1996, See Mikulincer & Florian, 2001 for review). These findings suggest that disabled individuals with greater attachment anxiety have higher levels of depression. On the other hand, the acquirement of a disability for individuals higher in attachment anxiety might only increase the already incompetent view of the self and the dependency on others, leading to further depression.

The finding from Model 2 that attachment avoidance is directly related to lower perceived social support suggests that individuals who are higher in attachment avoidance expect others to be unavailable and unreliable. As a result, their perception of social support may be negative. Alternatively, because they expect rejection, they may not seek social support and thus receive little. Either way, low social support leads to a more negative perception of the self as less resilient. In regards to attachment avoidance and depression, a significant path was not observed between social support and depression which is unexpected based on previous research (Douglas and Spellacy, 2000; Beddie & Kennedy, 2002) but the direct path between attachment avoidance and depression was approaching significance which is consistent with previous research (Patrick et al., 1994, Zuroff & Fitzpatrick, 1995). This direct path may represent a significant relationship but the model lacks sufficient power. Based on this finding, individuals who are higher in attachment avoidance, regardless of their level of perceived social support, are more likely to experience depression following a sustained disability. One possible explanation for this finding is the hypothesis put forth by Mikulincer and colleagues (2003) that the individual higher in attachment avoidance is able to maintain a high level of functioning *except*

when overwhelmed by distress at which point their defenses falter. The level of perceived support, however, does not appear to impact depression following a sustained disability. This finding is surprising even when attachment is taken into consideration and is not consistent with previous research (Douglas & Spellacy, 2000; Beedie & Kennedy, 2002).

In Model 2, individuals with higher attachment anxiety do not appear to experience lower perceived social support, but are more likely to experience depression and perceive themselves as less resilient. This finding suggests that individuals with higher attachment anxiety are able to maintain adequate levels of social support, at least temporarily, but the need to amplify symptoms may result in dysphonic affect, leading to depression. It is also possible that internal factors associated with the inability to self-regulate emotions leads to depression independent of social support. This finding is consistent with previous research linking attachment strategies high in attachment anxiety and depression (Cole-Detke & Kobak, 1996; Fonagy et al., 1996; see Mikulincer & Florian 2001 for review).

Comparison of Models

Some common themes in the data were noted regardless of the model tested. First, individuals who were higher in attachment avoidance perceived less social support. The interpretive difference between the models is based on whether less social support leads to attachment avoidance, or attachment avoidance leads to lower perceived social support. It seems more theoretically defensible based on a causal relationship that attachment avoidance leads to lower perceived social support. Given the negative perception of others common among individuals higher in attachment avoidance (Bartholomew & Horowitz, 1991), it is possible that they defensively perceive less available support. It is also possible that given the tendency of

individuals higher in attachment avoidance to deactivate emotional expression or reliance on others (Mikulincer et al., 2003), they do less to maintain social support or actively reject it, so their perceptions are accurate. Without a non-disability comparison population, findings cannot be attributed to the acquirement of a disability.

Another finding in both models is that individuals higher in attachment anxiety do not report significantly lower levels of perceived social support. This is also explainable based on attachment theory. Individuals higher in attachment anxiety actively seek to maintain support from significant others through amplification of emotional distress (Mikulincer et al., 2003). This might function to obtain the needed support in this injured population. Alternatively, they might also tend to perceive their social network as more supportive than is accurate due to more positive perceptions of others (Bartholomew & Horowitz, 1991).

An additional finding that was surprising in both models was the lack of significant relationship between social support and depression. Given previous findings in the general population and the acquired disability population supporting the connection between social support and depression (Rodin et al., 2007; Douglas & Spellacy, 2000; Beedie & Kennedy, 2002), it is unclear why no such finding was evident in our sample. In contrast, the perception of higher social support was significantly related to perceived resilience and resilience was negatively related to depression. The path between resilience and depression was bidirectional so it is unclear if a possible moderation effect exists. Attachment avoidance and anxiety did have significant relationships to increased depression in both models, which is consistent with previous findings (Dozier et al., 2008; Williams & Risking, 2004).

Contrary to predictions, attachment avoidance did not have a significant negative relationship to resilience in either model. Bartholomew (1991) reported that individuals higher

in attachment avoidance have a defensively positive perception of themselves, which allows them to maintain independence from others. This may explain the finding that attachment avoidance was unrelated to resilience. The measure used for resilience in this study is highly face valid and asks about perceptions of the self, which may have triggered a need to defensively rate the self as strong. Further, the tendency for an individual higher in attachment avoidance to perceive themselves positively is possibly counterbalanced by a disability that requires assistance from others, resulting in a non-significant relationship with resilience. In contrast, the depression inventory inquires primarily about symptoms and not overall perceptions of the self, thus requiring less need to defensively respond in a positive fashion. It is possible that the severe distress caused by the acquired disability results in failure of defenses to avoid depression but, ironically, the awareness of increased depression necessitates a greater need to project a positive self image (i.e., resilience).

Individuals higher in attachment anxiety tend to perceive themselves in a less positive manner so it makes theoretical sense for these individuals in our sample to rate themselves as less resilient (Bartholomew & Horowitz, 1991). The tendency for these individuals to amplify distress to elicit care from others would also explain the relationship with depression observed (Mikulincer et al., 2003). The tendency of individuals higher in attachment anxiety to “cling” to attachment figures might also be hampered by reduced mobility which could result in a greater degree of helplessness. The non-significant relationship between attachment anxiety and social support, and the stronger relationship between attachment anxiety and depression than was observed with attachment avoidance and depression (despite less perceived social support with increased attachment avoidance) could reflect the amplification of depressive symptoms.

While both models appear to explain the data equally well, it seems most theoretically feasible that social support would mediate the relationship of attachment avoidance and attachment anxiety with resilience or depression. This would also be consistent with previous research by Rodin et al. (2007). The internal working models related to attachment strategies would appear to impact the perception of social support as well as individuals' willingness to seek out and maintain social support. Having said that, further research needs to continue to examine the potentially mediating effects of attachment avoidance and attachment anxiety on the relationship between social support and resilience and depression. The similar fit of the data in this study and previous research demonstrating similar findings (Moreira et al., 2003) supports further examination.

Clinical Implications

The finding that attachment avoidance and attachment anxiety had significant relationships with increased depression suggests that assessment of attachment avoidance and attachment anxiety may be useful for individuals following an acquired disability. In particular, movement towards more secure attachment should be a clinical focus when attempting to prevent or treat depression. For individuals with an acquired disability individual psychotherapy to address attachment related issues may be beneficial for a number of reasons. First, psychotherapy provides an opportunity to identify attachment avoidance and anxiety that could contribute to depression and reduced resilience. Second, with this knowledge, therapy could be focused on increasing awareness of hyperactivating or deactivating coping strategies that are problematic. Third, the therapeutic relationship could provide a context for change through the development of a secure attachment. A safe and collaborative therapeutic relationship could

promote an increase mentalizing capacity for individuals with an acquired disability (Wallin, 2007). Individuals higher on attachment avoidance might demonstrate a “pretend” mode of attempting to deal with the significant life changes brought on by the disability, leaving them disconnected from important affect and cognitions. On the other hand, individuals higher on attachment anxiety might demonstrate a psychic equivalence mode of dealing with the distress, leaving them overwhelmed. The movement towards more security in attachment would likely promote a reflective mode that would allow the individual to be at once inside the experience and reflective of their experience.

Couples and family therapy could also be beneficial based on the findings. The tendency for individuals with higher attachment avoidance to have less perceived social support could be addressed in two ways. On one hand, if the perception is accurate that others cannot be depended on for support, the intervention with the family would be aimed at helping the family provide needed support to the individual with the disability. On the other hand, if the perception is inaccurate and a result of previous relationship failures then times of support by the family or partner that present themselves in session could be pointed out to the individual with a disability. The needs of the family members or partner could also be expressed safely in session which might reduce the negative impacts on the support of individuals with disabilities. A secure attachment with the therapist could allow for discussion of sensitive issues such as changes in sexual functioning as well that might not otherwise be discussed.

It should be noted that the treatment of individuals while inpatient could differ in several ways from individuals who are receiving outpatient treatment. While inpatient individuals could receive daily sessions, outpatients may only be seen once every few weeks or months. While inpatient, individuals would be surrounded by support of nursing staff as well as recreational and

vocational therapists. During outpatient treatment individuals would likely not have the same level of support. These differences could dictate the intensity of treatment as well as the development of a secure attachment with the therapist.

Assessment of attachment styles of individuals with acquired disabilities could allow for the identification of at risk populations, such as fearful attachment styles. This could potentially relate to non-resilient trajectories for these individuals. Identification of populations at risk for depression and other psychological disturbances following the acquirement of a disability could allow for focused treatment intended for prevention of psychological disturbance. Additionally, Richards and colleagues (2000) reported that depression in patients with SCI leads to longer hospital stays, pressure sores, urinary tract infections, spending more time in bed, and increased overall medical expenses. The identification of at risk populations could reduce the costs associated with the acquirement of a disability and rehabilitation process.

Limitations and Future Research

Several limitations were present in the current study. First, data was collected for over a year but given the need of most patients to be assisted in completing the surveys the sample size was smaller than preferred. Data still continues to be collected for the larger study and future replication with a higher sample size would provide greater power. Several paths were approaching statistical significance and would likely be statistically significant with a larger sample size as well. A larger sample size would also likely increase the cell size of the attachment categories in the MANOVAs, possibly resulting in further significant findings.

Second, the study proposed a one-time assessment of the subject and thus no longitudinal data was gathered. Several findings could potentially be impacted by the inpatient rehabilitation

setting and typically recent nature of the injury. Social support may temporarily increase after sustaining a disability as a family and support system mobilizes to deal with the changes in functioning. Additionally, it was not uncommon for subjects to ask if they could include nursing and rehabilitation staff as part of their social support. The patients receive constant support by staff during their stay in addition to possible increases in family support. Follow-up measurements after discharge could assess whether a temporary spike in social support is experienced during inpatient rehabilitation but declines following discharge. The commonly observed burnout in families of individuals who have acquired a disability could be a result of higher levels of attachment anxiety and the constant amplification of symptoms, or the defensive withdrawal and rejection of assistance by individuals higher in attachment avoidance.

Similarly, depression may also show a temporary increase in the time while in the hospital but reduce following discharge when the individual is able to return home and possibly regain partial or full functioning. An interaction effect may also be observed between attachment dimensions, depression, and time since discharge. Specifically, individuals higher in attachment anxiety who amplify distress might experience reduced depression as the attachment system begins to deactivate with time. Individuals higher in attachment avoidance might be able to avoid and deny the significant impact of their acquired disability initially but experience increased distress and depression if their defenses falter as Shaver and Mikulincer (2007) hypothesize. If the perception of the self is one of strength and self-reliance, then the dependence on others could create significant distress and perceptions of hopelessness and helplessness.

It would not be feasible to assess attachment style prior to injury but longitudinal data would allow measurement of potential changes in attachment dimensions over time. Research

suggests that despite the resistance of attachment dimensions to change, significant events or traumas can create change in the attachment system (Waters et al., 2000). The likely activation of the attachment system and resulting positive or negative responses from attachment figures could impact attachment dimensions of the individual. Future studies could include assessment of the caregiver's attachment style in order to address likely treatment by the caregiver to the individual that acquired the disability.

Thirdly, future studies could also include measures to be completed by the family and social support of the individual with an acquired disability. This information would provide "objective" data to compare individuals' perceptions against, as well as gaining the perception of the family members. Issues of burn out and other negative reactions commonly found with support systems could be explored in relation to the individual's experience.

Fourthly, several measurement issues were present in the study. The subscales of the SPS showed poor Cronbach's alphas. The limited number of items on each subscale would increase the negative impact on internal consistency of just one item in an alternative direction. The SPS subscales were of limited value due to their poor internal consistency. The Cronbach's alpha for the PHQ-9, while acceptable, was also slightly lower than expected. This could be the result of the item regarding suicidal ideation, which many individuals higher in depression did not endorse. Additionally, unlike other measures which have similarly worded items assessing a construct, the PHQ-9 has depression symptoms that are quite different from one another. Individuals might have very similar total scores but endorse different symptoms. In other words, the lower internal consistency may be a result of different constellations of symptoms that are part of the larger construct of depression.

Finally, the need for assistance by the research assistant or psychologist in administering the measures should be considered in the response patterns of the subjects. While this aspect of the study was unavoidable, it still might influence subjects to either under-report or over-report on measures. As previously mentioned, it is possible that individuals higher in attachment avoidance may under-report symptoms and individuals higher in attachment anxiety may over-report symptoms. Specifically, individuals higher in attachment avoidance may fear that if they respond accurately they would appear weak, elicit responses of sympathy, and result in cognitive dissonance about the typically held negative views of others and positive views of the self. Alternatively, individuals higher in attachment anxiety might fear that if they don't over-report they will appear more independent than they feel, elicit responses of invalidation, and result in cognitive dissonance regarding typically held positive views of others and negative views of the self. Future studies with a similar population could provide the self-report measures to the subjects capable of completing them without assistance, then have the same subjects recomplete the measures with assistance to assess for effects of responding to an investigator.

Conclusion

The findings from this study have significant implications for future treatment of individuals who have acquired a disability. Consistent with previous findings, social support appears to be important for the perception of individual resilience. In regards to social support, treatment should focus on the development and utilization of social support in order to increase the perception of resilience in the individual. Attachment avoidance and attachment anxiety appear to increase the likelihood or severity of depression in individuals who have acquired a disability. Attachment anxiety and attachment avoidance should be addressed through

individual, couples, or family therapy modalities. Each modality provides the context to address attachment patterns as well as the ability to utilize and develop a more secure social support network. Identification of an individual's attachment strategy and treatment could help aid them through the difficult time following an acquired disability by promoting resilience and avoiding negative outcomes such as depression. While the acquirement of a disability will likely be perceived as a negative event, it might also provide a sensitive time to intervene with long standing attachment patterns, leading to greater well-being.

APPENDIX
DEMOGRAPHIC FORM

Resilience, Attachment, and Social Support Study

Patient ID: _____

Date: _____

Admission Date: _____

Discharge Date: _____

Measure	Date of Completion
Connor Davidson Resiliency Scale	
Social Provisions Scale	
Intrinsic Spirituality Scale	
Satisfaction with Life Scale	
PHQ-9	
Experiences in Close Relationships (ECR)	

Age	
Gender	<ol style="list-style-type: none"> 1. Male 2. Female
Race	<ol style="list-style-type: none"> 1. Caucasian 2. African American 3. Hispanic 4. Asian 5. Bi-Racial 6. Other
Marital Status	<ol style="list-style-type: none"> 1. single 2. separated 3. divorced 4. widowed 5. married
Injury by self or other	<ol style="list-style-type: none"> 1. Yes 2. No
Age at Time of Injury (years/months/days)	
Length of Time Before Admittance to BIR	
Length of Stay at BIR (days)	
Pre-morbid Substance Abuse	
Substance use at time of injury	<ol style="list-style-type: none"> 1. Yes 2. No
FIM Motor	<ol style="list-style-type: none"> 1. _____

FIM Cognitive	2. _____
FIM Total	3. _____
FIM Efficiency	4. _____
BMI	
ASIA rating (SCI)	<ol style="list-style-type: none"> 1. A 2. B 3. C 4. D 5. E
Level of injury (SCI)	<ol style="list-style-type: none"> 1. C 2. T 3. L 4. S
Rancho Scale (TBI only)	
Glasgow Coma Scale (GCS) (TBI and Trauma patients)	
Psychological history	<ol style="list-style-type: none"> 1. Depression 2. Anxiety 3. Other _____
Past Medical history	
Psychotropic medication	<ol style="list-style-type: none"> 1. Antidepressant 2. Mood stabilizers 3. Antianxiety 4. Antipsychotic
Previous trauma	<ol style="list-style-type: none"> 1. Natural Disaster 2. Traumatic Accident 3. Verbal/Emotional Abuse 4. Physical Abuse 5. Sexual Abuse 6. Neglect
Hours of Therapy:	PT: _____ OT: _____ ST: _____ TR: _____ PSYC: _____
Total number of hours in Therapy:	Total: _____
How the Injury Occurred	<ol style="list-style-type: none"> 1. Traumatic 2. Non-Traumatic

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