

**THE CONSTRUCT AND CONCURRENT VALIDITY OF
WORKER/PEER ATTACHMENT**

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SUMMARY

Despite decades of interest in the organizational and managerial factors that influence an individual's attachment to the organization, very little is known about the personal characteristics that may influence an individual's interpersonal relations at work and attachment to the organization. In the context of a changing workplace, in which greater importance is being placed on worker interpersonal skills and organizational commitment, individual differences in adult attachment styles represent a potentially important determinant of intrapersonal and interpersonal criteria as well as organizational commitment. The purpose of this research was to empirically validate a work-related measure of adult attachment and to examine the criterion-related validity of this measure for work outcomes and organizational commitment.

The research builds upon social psychological theories and research investigating individual differences in attachment styles during childhood (e.g., Bowlby 1969/1982) and in romantic relationships (e.g., Hazan and Shaver, 1987). Using findings obtained by Brennan, Clark, and Shaver (1998), two versions of a two-dimensional measure of work-related attachment were developed and investigated in two work-related contexts: academic work and paid employment. The two studies investigated the construct validity of the measures in each setting. In Study 1, conducted in the academic context, evidence on test reliability, discriminant and convergent validity, and the criterion-related validity of the measure for college adjustment was examined. In Study 2, conducted in the work context, evidence was obtained on the construct validity of the measure and the concurrent validity of the measure for a variety of work outcomes related to the process

of organizational attachment, employee well-being and job performance. The overall patterns of findings provide empirical evidence for the psychometric properties, construct validity and criterion-related validity of the new measures across work settings; and indicate the role that individual differences in attachment plays in predicting organizationally-relevant work outcomes, such as coping, work-life balance, adjustment, and organizational commitment.

This paper contains background on infant and adult attachment, a definition and explanation of worker attachment, previous and current measurement techniques for attachment, and a framework that demonstrates the construct validity of worker attachment. Many of the correlate variables had existing relationships with adult attachment and therefore their relationships with worker and peer attachment served as construct validation. Yet, other variables, especially the antecedents and criteria, demonstrated new relationships in the current contexts that had not previously been explored (e.g., organizational socialization, organizational commitment and work-life balance). The results of the construct and criterion-related validation studies on worker/peer attachment will be discussed, and in the final section of this paper the result's implications on today's workplace will be considered.

CHAPTER 1

INTRODUCTION

Changes in the nature of work, such as the post-industrial boom of service-based jobs, have spurred greater attention to factors that affect interpersonal relations within the workplace (Mount, Barrick, & Stewart, 1998). The increased use of team structures and leadership strategies designed to promote employee commitment to the work unit and coworkers has led to extensive research on the work conditions and situations that promote employee cooperation in teams and commitment (e.g., Mathieu & Zajac, 1990; Mitchell, Holtom, Lee, & Erez, 2001). To date, however, a lot of research in this area has focused on work conditions. The research on the characteristics of workers that contribute to positive interpersonal relations in the workplace has been disappointing. Existing dispositional predictors of interpersonal performance and commitment, such as affiliation or agreeableness, have not allowed for strong assessment tools (e.g., Meyer, Allen, & Smith, 1993; Mount et al., 1998). These variables tend to be one-dimensional assessments of preferences for social settings and do not get at the dyadic nature of relationships. They measure what types of situations people prefer and don't assess what one expects from and how they interact with other people. In summary, employee relations and organizational commitment to date have been viewed primarily as a result of situational influences such as job insecurity and job redesign.

The current investigation builds on existing theories and research on childhood attachment and adult romantic attachment for the purpose of developing measures that capture individual differences in relational tendencies in achievement settings, such as the

workplace and academia. Attachment theory, in which attachment is defined as the "systematic patterns of expectations, needs, emotions, emotion-regulation, and social behavior" (Shaver & Mikulincer, 2002, p. 134), has been used throughout developmental and social psychology as a framework for studying interpersonal relationships (e.g., Ainsworth, Blehar, Waters, & Wall, 1978; Hazan & Shaver, 1987). In general, Bowlby's (1969) attachment theory describes internal working models that reflect individual differences in terms of self, others and the interpersonal environment. These internal working models are created through early experiences with separation and attachment and are thought to continue into adulthood and reflect distinct behavior patterns (Bowlby, 1969/1982). Attachment has been used to look at infant-primary caregiver relationships, romantic relationship, close relationships, and relationships within groups or teams (Ainsworth et al., 1978; Brennan, Clark, & Shaver, 1998; Hazan & Shaver, 1987; Smith et al., 1999). The research on adult attachment (i.e., romantic and close relationship attachment) has flourished within the social and developmental domains since its introduction (Hazan and Shaver, 1987; Rholes & Simpson, 2004). This research is grounded in childhood/infant attachment theory (Bowlby, 1968/1982), and has focused on construct measurement, specifying the relations among adult attachment and other personality trait measures and adult behavior in close relationships.

Adult attachment has been studied by social and personality psychologists using measures of attachment to one's current peers or a romantic partner (i.e., close relationships are viewed as attachment processes), whereas developmental psychologists have focused on attachment within the nuclear family, typically by measuring attachment to a primary caregiver (Bernier & Dozier, 2002). Adult attachment has been associated

with other non-ability traits (Gallo, Smith, & Ruiz, 2003), but it has also shown unique predictive validity for important social behaviors and attitudes making it an essential prediction tool in development and social psychology (Griffin & Bartholomew, 1994). Existing research on romantic partners has shown that individual differences in attachment significantly predict relationship status, interpersonal dependency, relationship length, commitment, and relationship satisfaction even after other variables such as the Big Five (i.e., a commonly studied theory of personality including 5 personality traits: neuroticism, extraversion, conscientiousness, agreeableness and openness to experience) are statistically controlled. Specifically, the Big Five had a .17 multiple correlation with relationship status, which changed to .33 when attachment variables were added ($\Delta R^2 = .08, p < .02$). Also, there was a .45 multiple correlation between relationship length and the Big Five, which increased to .61 ($\Delta R^2 = .17, p < .001$) when attachment was added. Similarly, the prediction of relationship satisfaction increased when attachment variables were added to the Big Five to .49 ($\Delta R^2 = .09, \Delta F = 2.95, p = .04$). Finally, a .13 increase in R^2 to .45 ($\Delta F = 4.05, p < .01$) was found when attachment variables were added to the Big Five for the prediction of relationship commitment (Griffin & Bartholomew, 1994; Shaver & Brennan, 1992).

Using the same strategy of extension used by researchers in the romantic attachment domain, the current research began with Bowlby's (1969/1982) latent construct of attachment as the foundational construct from which to develop individual differences variables that reflects tendencies and preferences with respect to interpersonal relations in the workplace. In the current investigation measures of attachment predicted selective attitudes, coping styles, and behaviors at work pertaining to social relations, and

organizational commitment (i.e., a work-related analog to relationship commitment). Similar to the theory and methodology used in the adult attachment literature, *worker/peer attachment* was measured using a self-report questionnaire (e.g., Brennan et al., 1998) and validated by examining its reliability, relations with personality variables, and prediction of work-related attitudes and behaviors. The viability of the measures was investigated in a two-part validation process using two distinct samples: academia and work.

This paper is divided into the following sections. In the first section, I review previous research on infant and adult (i.e., romantic or close relationship) attachment. Then, a definition of worker attachment is provided, which is followed by a discussion on previous attachment measurement techniques as well as the current methodology. After outlining the measurement process, the theoretical antecedents to worker/peer attachment are addressed. Then, I discuss the process of attachment within the organization. After the construct has been introduced, there is a section on the construct validity of worker/peer attachment in which theoretically similar correlates (i.e., constructs with previous relationships with close relationship attachment or conceptual relationships with worker/peer attachment) are presented along with their proposed relationships with worker/peer attachment. Then, criteria associated with the new predictors, worker and peer attachment, are reviewed and relationships between the predictors and interpersonal or relationship-based criteria are proposed. At the end of Chapter 1 a summary of all of the hypotheses will be given. In Chapter 2 the methodology and results for Study 1 are outlined. In Chapter 3 the methodology and results for Study 2 are presented. Finally, in

Chapter 4 the results of this investigation are discussed as well as the studies limitations and impact on today's workplace.

Background

Attachment has been studied for four decades by various researchers using several psychological frameworks (i.e., clinical, development, cognitive, differential and social). Early theorists asserted that attachment theory attempted to explain the same phenomena as did theories of 'dependency needs', 'object relations', and 'individuation' (Ainsworth, 1969; Bowlby, 1980). In the remainder of this section I provide a brief review of both infant and romantic (i.e., close relationship) attachment theory.

Overview

John Bowlby's early ideas on personality development and its role in child-primary caregiver interactions stimulated substantial research on infant attachment (Bowlby, 1969/1982). Bowlby conceptualized attachment as a paradigm to explain the desire for human beings to make strong affectional bonds to others, such as primary caregivers; and to account for forms of emotional distress and personality disturbance (i.e., anger, emotional detachment, anxiety, and depression). Bowlby posited that unwilling separation and loss gave rise to emotional distress and personality disturbance factors in infants that are maintained throughout the individuals' lives. Bowlby's attachment theory seeks to explain this phenomenon (Bowlby, 1980). Attachment theory proposes that human beings possess an innate disposition to direct *attachment behaviors* towards primary caregivers (Tracy, Lamb, & Ainsworth, 1976). Bowlby (1980) defined attachment behaviors as the following:

Attachment behavior is conceived as any form of behaviour that results in a person attaining or retaining proximity to some other differentiated and preferred individual. So long as the attachment figure remains accessible and responsive the behavior may consist of little more than checking by eye or ear on the whereabouts of the figure and exchanging occasional glances and greetings. In certain circumstances, however, following or clinging to the attachment figure may occur and also calling or crying, which are likely to elicit his or her caregiving. (p.39)

These attachment behaviors form organized behavioral systems that have one thing in common, increasing proximity to a primary caregiver. Attachment behavior is a distinct concept from *attachment bonds*, which refer to "emotional ties that exist between individuals and their attachment figures" (Rholes & Simpson, 2004, p.4). In summary, Bowlby believed that primary caregivers could be described as a secure base from which an infant could explore the world and a sanctuary to come back to in times of stress. He claimed that continuous experience with the caregiver served as the foundation upon which individuals developed cognitive-affective structures about the self, others and interpersonal relationships. Bowlby termed these cognitive-affective structures "working models." "Working models," developed during the first year of life (Ainsworth, 1989), serve as shortcuts that enable infants to organize expectations about what happens to them.

Developing and building upon Bowlby's original conceptualization of attachment theory, Mary Ainsworth pursued research on attachment theory in tandem with Bowlby. Ainsworth asserted that Bowlby's construct of attachment could be "elaborated and

redefined through further research" (Ainsworth et al., 1978, p. 4), and sought to develop an empirical test and classification for infant attachment. Ainsworth felt that "for Bowlby the inexplicable finding pertained to a young child's responses to separation from his mother figure" (Ainsworth et al, 1978, p. 4). Her research pursued the explanation of infant reactions to both separation and fear, which resulted in the classification of infants into three *attachment styles*: secure, anxious-ambivalent, and avoidant. Attachment styles are defined as:

Stable, global individual differences in (1) tendencies to seek and experience comfort and emotional support from persons with whom one has an attachment bond and (2) presumptions about the responsiveness of attachment figures to bids for comfort and support. (Rholes & Simpson, 2004, p. 4)

The attachment styles delineated by Ainsworth and her colleagues originated from the development of their test of infant attachment, the Strange Situation. The Strange-Situation procedure was based on Ainsworth and colleagues' (1978) belief that an infant's response to separation from a primary caregiver evoked measurable attachment behaviors. The Strange Situation consisted of eight episodes in which infants experienced a series of distressing separations and reunions with their mothers and strangers. Early manipulation episodes were thought to be less stressful for the infant than later episodes. Infant behavior was monitored by an observer in an adjacent room through a one-way mirror. All sessions were either videotaped or a narrative record was made to determine differences in infants' behavior patterns.

Ainsworth and colleagues (1978) posited that differences in behavior patterns generated in the strange-situation episodes resulted from differences in infant and maternal behavior at home during the infant's first year of life (Ainsworth et al., 1978). Bowlby, as well as Ainsworth and colleagues, suggested distinct phases that the mother and infant go through that develop attachment. Therefore, each pattern of attachment behavior was thought to be associated with certain patterns of maternal care during the attachment phases (Ainsworth et al., 1978; Hazan & Shaver, 1987; Tracy & Ainsworth, 1981). Ainsworth and colleagues developed the Strange Situation to classify children at 12 and then 18 months into one of three attachment styles. This classificatory system (i.e., typology) was supplemented with quantitative measures (e.g., behavioral scores) to group infants depending on their patterns of behavior. Ainsworth and colleagues preferred the typology approach, as opposed to using only quantitative measures of behavior, because they believed it allowed for a more comprehensive view of behavior patterns and allowed for more flexibility with respect to new patterns that were not yet observed or quantified. The three main attachment categories developed using the strange-situation ratings were terms Grouped A, B, and C (Ainsworth et al., 1978); these groupings make-up the three main attachment styles that have been copiously studied over the past few decades.

The most evident behavior exhibited by infants classified as belonging to the Group A category was avoidance of the mother in reunion episodes. This group of infants is commonly thought to have an *avoidant* attachment style. Avoidant infants frequently exhibit the behaviors Bowlby referred to as *detachment*. Subsequent research has suggested that approximately 23% of infants fall into this category (Campos, Barrett,

Lamb, Goldsmith, & Stenberg, 1983). Infants in the Group B classification sought proximity and contact with their mothers, especially during the reunion episodes. They tended to resist release from the mother and protest when the mother put them down. This group is posited to have a *secure* attachment style. Later research suggests that this group includes 62% of infants (Campos et al., 1983). The final category of infants, Group C, consisted of infants that demonstrated significant resistance from contact and interaction with the mother, especially during the last episode. Yet, these infants showed some seeking of proximity and contact to the mother and seeking to maintain contact once it was gained similar to a secure infant, which Ainsworth and colleagues believed made the infants seem ambivalent to the mother. Generally, this group displayed more maladaptive behaviors than other infants, such as excessive anger or passivity. This group of infants is often referred to as *anxious-ambivalent*; and infants in the anxious-ambivalent category frequently exhibit the behaviors Bowlby called *protest* (Ainsworth et al., 1978). Research has shown that this is the smallest group of infants (this is consistent with Ainsworth and colleagues original findings), and this group is approximately 15% of the infant population (Campos et al., 1983). It is also noteworthy that Ainsworth and colleagues specified certain subgroups for all of the groups previously mentioned (A₁, A₂, B₁, B₂, B₃, B₄, C₁, C₂), but for this paper the specific subgroups will not be examined because they have not been frequently studied in the adult attachment literature.

Adult Attachment

Early conceptualizations of attachment asserted that infant attachment persists into adulthood (Ainsworth, 1989; Bowlby, 1969/1982). Attachment theory proposes that infant attachment experiences create "working models" and consequent behavior patterns

that are crucial to an individual's personality (Bowlby, 1973). There has been a lot of controversy regarding the continuity or stability of attachment, but there is research evidence to suggest continuity in the infant-primary caregiver attachment over time (Ainsworth, 1989; Lamb, Thompson, Gardner, Charnov, & Estes, 1984). For example, Main and colleagues (George, Kaplan, & Main, 1996; Main, Kaplan, & Cassidy, 1985) have done research on assessing attachment beyond infancy. They found that attachment can be measured in an individual's sixth year of life with similar results to that obtained during infancy using the strange-situation. Also, Hazan and Shaver (1987) found that adult attachment security and insecurity is predicted by one's self-reported attachment history. In addition, cross-generational patterns have been found (i.e., adults' attachment histories predict that of their children) implying there may also be continuity across generations. Generally, these continuity studies suggest that infant attachment has some stability across the lifespan and early attachment styles may influence childhood and adult behavior as well as attachment (George et al., 1996; Hazan & Shaver, 1987). Although attachment theorists believe that individuals form new principal attachment figures later in life (e.g., sexual pair bond), they maintain that the initial infant-parent attachment does not cease to exist (Ainsworth, 1989).

More recent theories of adult attachment represent extensions of early childhood attachment theory. Attachment theory states that individuals may form new attachments later in life. Ainsworth (1989) made clear the distinctions among relationships, affectional bonds, and attachments. Relationships may include different behavioral systems, one of which is attachment. Affectional bonds are thought to be unique from relationships in that they are enduring, a characteristic of the internal organization of a

person (i.e., not dyadic like relationships), and they are more specific. Ainsworth claimed that attachments are unique affectional bonds in that they have all of the qualities of affectional bonds, but they also include comfort and security (i.e., a secure base) achieved through the relationship that allows the individual to explore or take on other activities. Theorists interested in adult attachment have interpreted Ainsworth's ideas on what attachment entails to expand the original theory to other contexts. Attachments are thought to be distinguished by: "(a) persistence, (b) specificity to a particular individual, (c) emotional significance, (d) desire for proximity or contact, (e) distress at involuntary separation, and (f) security and comfort seeking" (Cassidy, 2000, p. 111).

Hazan & Shaver (1987, 1990) were the first to measure attachment using a target other than the primary caregiver inspiring research in social/personality psychology in which "attachment styles are conceptualized as systematic patterns of expectations, needs, emotions, and emotion-regulation strategies, and social behavior that result from the innate 'attachment behavioral system' (Bowlby, 1969/1982) and a particular history of attachment experiences" (Shaver & Mikulincer, 2002, p. 134). Hazan and Shaver viewed romantic relationships as attachment systems and examined the outcomes of individual differences in adult attachment. They suggested that romantic love is an attachment process that is distinct from infant-parent attachment, but is influenced by individuals' attachment histories given individual differences in the "working models" and behavior patterns created by initial attachment experiences.

Hazan and Shaver's (1987) initial work on love as attachment mirrored Ainsworth and colleagues' work in that they assessed the same three attachment styles developed by the Strange Situation: avoidant, secure, and anxious-ambivalent. One

notable difference, however, was that Hazan and Shaver (1987) assessed the individual's attachment style through the use of a self-report questionnaire in which individuals self-classified their most important romantic relationship into one of the three described styles of attachment. The authors conducted two studies, one in an academic context (i.e., undergraduate students) and one in which a "love quiz" was printed in a local newspaper. Individuals were asked to return the "love quiz" printed in the newspaper and the first 620 responses were used. Hazan and Shaver's methodology (i.e., a typology) will be discussed in greater detail later when I discuss the disadvantages of typologies. Hazan and Shaver (1987) found that 56% of the adults participating in the study classified themselves as secure, 24% classified themselves as avoidant, and finally 20% classified themselves as anxious-ambivalent. These findings were similar to the proportions found in infant-parent attachment studies (e.g., 62% secure, 23% avoidant, and 15% anxious-ambivalent) demonstrating that the frequency of the attachment styles, even when directed toward a romantic partner rather than a primary caregiver, is somewhat stable from infancy to adulthood (Campos et al., 1983). These consistent findings served as initial evidence that the latent construct of attachment can be transferred to romantic relationships, which implies that various other domains may fulfill the criteria for an attachment bond.

To further assess romantic attachment and its consistency with infant-parent attachment, Hazan and Shaver examined the adult participants' romantic experiences, "working models," attachment histories (from memory), and feelings of loneliness. Their findings indicated that the adult attachment styles were associated with different emotions regarding romantic experiences in that each of the attachment styles were tied

to a different set of emotions (i.e., the emotion means were significantly different for the three attachment styles). Secure individuals experienced more trust (academic sample means for trust: secure $M = 3.57$, anxious $M = 3.35$, and avoidant $M = 3.25$, $F(2, 104) = 3.03$, $p < .05$; newspaper sample means for trust: secure $M = 3.43$, anxious $M = 3.13$, and avoidant $M = 3.11$, $F(2, 571) = 16.21$, $p < .001$), friendship (academic sample means for friendship: secure $M = 3.61$, anxious $M = 3.39$, and avoidant $M = 3.34$, $F(2, 104) = 3.30$, $p < .05$; newspaper sample means for friendship: secure $M = 3.50$, anxious $M = 3.19$, and avoidant $M = 3.18$, $F(2, 571) = 22.96$, $p < .001$), and less fear of closeness in love experiences (academic sample means for fear of closeness: secure $M = 2.13$, anxious $M = 2.45$, and avoidant $M = 2.63$, $F(2, 104) = 4.48$, $p < .01$; newspaper sample means for fear of closeness: secure $M = 1.88$, anxious $M = 2.15$, and avoidant $M = 2.30$, $F(2, 571) = 22.65$, $p < .001$). Avoidant individuals had higher levels of fear of closeness than secure and anxious-ambivalent individuals. Finally, anxious-ambivalent individuals reported higher levels of desire for union (academic sample means for desire for union: anxious $M = 3.29$, avoidant $M = 2.83$, and secure $M = 2.92$, $F(2, 104) = 3.41$, $p < .05$; newspaper sample means for desire for union: anxious $M = 3.25$, avoidant $M = 2.81$, and secure $M = 2.69$, $F(2, 571) = 22.67$, $p < .001$), and desire for reciprocation (academic sample means for desire for reciprocation: anxious $M = 3.64$, avoidant $M = 3.21$, and secure $M = 3.18$, $F(2, 104) = 7.50$, $p < .001$; newspaper sample means for desire for reciprocation: anxious $M = 3.55$, avoidant $M = 3.24$, and secure $M = 3.22$, $F(2, 571) = 14.90$, $p < .001$). These findings regarding attachment differences in adults' feelings experienced in romantic relationships are consistent with conceptualizations of infant attachment in that

attachment security is related to the infant's feelings experienced in his or her relationship with a primary caregiver.

Additionally, Hazan and Shaver found that the adult's "working models" of self and relationships were related to their attachment style, in that mean differences were found among the attachment styles regarding agreement with "mental-model" statements. For example, anxious-ambivalent individuals were significantly more likely to agree with the statement "It's easy to fall in love. I feel myself beginning to fall in love often" (Hazan & Shaver, 1987, p. 516) than secure and avoidant individuals (i.e., avoidant $M = .04$, anxious $M = .20$, and secure $M = .09$, $F(2, 571) = 9.33$, $p < .001$). These differences suggest that the three attachment styles are associated with different expectations about romantic love and beliefs about others, and therefore that the "working models" in Bowlby's infant attachment theory are also applicable in adult attachment.

Further evidence to support attachment consistency from infancy to adulthood was partially demonstrated in Hazan and Shaver's study through the prediction of secure versus insecure attachment styles via attachment histories. This was done using adjective checklists regarding the individual's relationship with his or her parent and his or her parent's marital relationship. Hazan and Shaver's (1987) extension of attachment into the adult domain served as a catalyst for a whole new area of research. There have been many subsequent studies on adult attachment demonstrating small to medium correlations between romantic/close relationship attachment and personality as well as interpersonal traits. All correlation effect sizes in this paper will follow the standard for size of effects for correlation coefficients in Cohen (1988); effects from $r = .10$ to $r = .29$ are considered small, $r = .30$ to $r = .49$ are considered medium and those over $r = .50$ are

considered large (e.g., Shaver & Brennan, 1992; Gallo et al., 2003). Also, moderate associations have been shown between self-report romantic attachment patterns and behavior within romantic relationships both reported by the romantic partners and observed within the laboratory setting (Jacobvitz et al., 2002; Simpson, Rholes, & Nelligan, 1992; Simpson, Rholes, & Phillips, 1996). Almost all of these studies have maintained that romantic attachment is the adult parallel to Bowlby and Ainsworth's infant-parent attachment (Shaver & Mikulincer, 2004).

Attachment and Work

Attachment theory (Bowlby, 1969/1982) has not commonly been studied by industrial and organizational psychologists. However, attachment theory provides a potentially useful framework for understanding the ties between personality, affect and motivation, which are individual differences constructs that are critical to organizational theories (Barrick & Mount, 1991; Gallo et al., 2003; Shaver & Mikulincer, 2002).

Attachment theory presents potentially useful constructs for understanding the overlap in these individual differences variables. The nomological network of attachment and its relationship with motivational and personality traits will be discussed in more detail in later sections. In contrast to the social and personality domains, theories of “attachment” found in the organizational literature have taken a very macro (i.e., systems-oriented) perspective and have largely ignored dispositional factors (i.e., person-focused factors) of employee attachment (Herscovitch & Meyer, 2002). Additionally, research on the prediction of interpersonal behaviors or "relationship skills," which are associated with the attachment patterns, has largely ignored attachment theory and opted for more

common, broad personality dimensions frequently used in the organizational literature such as the Big Five (e.g., Mount et al., 1998).

As previously discussed, attachment in the organizational research has largely been viewed as an employee attitude towards a situation or impersonal target (e.g., Herscovitch & Meyer, 2002; Mathieu & Zajac, 1990; Meyer & Allen, 1991). Examples of these attitudinal theories related to workers' psychological states are: organizational commitment (i.e., the likelihood that an individual will stay in a certain organization), job satisfaction (i.e., an affective and cognitive evaluation of one's job), and job embeddedness (Brief & Weiss, 2002; Meyer & Allen, 1991; Mitchell et al., 2001). These variables are largely thought to be improved or enhanced by system-oriented processes such as organizational socialization (Bauer, Morrison, & Callister, 1998), and they serve as crucial constructs for understanding turnover within the organization (Mitchell et al., 2001). Yet, individual differences are predictive of these psychological states in addition to the macro-level interventions. Research on job satisfaction has demonstrated that biologically based traits influence one's level of job satisfaction and 30% of the variance in job satisfaction can be attributed to genetics (Arvey, Bouchard, Segal, & Abraham, 1989). Some individuals inherit dispositions that lead them to seek happiness while other individuals are disposed to seek negative situations (Arvey et al., 1989; Staw & Ross, 1989). Despite limited areas of research on dispositions such as genetics and job satisfaction, individual differences related to these "attachment" constructs have been less prominent in the literature than the environment in which the individual works.

Organizational research on attachment to people within the organization and interpersonal relations is crucial for today's service-based industry. Research in this area

includes studies on interpersonal behaviors (i.e., relationship skills), contextual performance (e.g., cooperative behaviors), and various other variables, which typically focus on macro-level predictors or broad personality traits, as opposed to individual characteristics that influence interpersonal functioning (Borman & Motowidlo, 1997; Kanfer, 2003; Lepine & Van Dyne, 2001; Mount et al., 1998). Attachment in the social domain is conceptualized as an individual-level disposition that guides behaviors and emotions with respect to others, and therefore it is reasonable to assume that attachment would predict these important criteria (Feeney, 1999; Feeney, 2004; Shaver & Mikulincer, 2002). Therefore, worker/peer attachment presented a potentially fruitful variable that taps the dyadic nature of relationships within an organization and predicts employee interpersonal or relationship-based performance and work attitudes.

Despite this disconnect between attachment in the work domain and attachment in development/social psychology, there is limited empirical work investigating the relationship between romantic attachment and work-related variables. The original work was conducted by Hazan & Shaver (1990) using the adult romantic attachment styles they developed (Hazan & Shaver, 1987) and measures of work-related criteria such as job satisfaction and demographic variables. The authors suggested that work is similar to what Bowlby (1969/1982) called exploration in that romantic adult attachment supports work behaviors in the same fashion that infant attachment supports exploration. Given this parallel the authors hypothesized the following:

In the same way that Ainsworth et al.'s (1978) avoidant infants appeared to explore to avoid seeking contact with their mothers, adults can approach their work compulsively or use it as a distraction from relational

deficiencies. For someone with anxious/ambivalent proclivities, work can be viewed as an opportunity to satisfy attachment needs, a sideline that may interfere with job performance (Hazan & Shaver, 1990, p. 271).

The results from Hazan and Shaver's study were in the expected direction given the beneficial affect-regulation strategies and motivational tendencies of secure individuals (Elliot and Reis, 2003; Shaver & Mikulincer, 2002). Securely attached individuals had higher levels of work satisfaction in terms of job security, coworkers, income, opportunities for challenge, and advancement. They were more confident about their work and were not consumed by fear of failure (i.e., they had lower means for worry they won't impress others and fear of rejection for poor work than insecure individuals: secure $M = 2.29$, avoidant $M = 2.83$, and anxious $M = 2.88$, $F(2, 233) = 10.98$, $p < .001$). Additionally, secure individuals reported that they valued work, but they viewed their relationships as more important than work (means for relationship more important than work: secure $M = 1.81$, avoidant $M = 1.62$, anxious $M = 1.67$, $F(2, 658) = 12.34$, $p < .001$), and they did not let problems from work interfere with their relationships (means for work harms health/relationships: avoidant $M = 2.50$, anxiety $M = 2.25$, and secure $M = 1.93$, $F(2, 233) = 12.31$, $p < .001$).

Anxious-ambivalent individuals had lower levels of work satisfaction concerning job security (means for happy with job security: anxiety $M = 2.76$, avoidant $M = 2.76$, and secure $M = 2.91$, $F(2, 658) = 6.69$, $p < .001$), coworker recognition (means for unhappy with recognition: anxiety $M = 2.36$, avoidant $M = 2.18$, and secure $M = 1.99$, $F(2, 658) = 6.42$, $p < .001$), and advancement (means for unhappy with advancement: anxiety $M = 2.34$, avoidant $M = 2.22$, and secure $M = 2.08$, $F(2, 658) = 3.08$, $p < .05$).

These individuals reported that problems from their relationships often interfere with their work performance (i.e., poor affect-regulation) and they are afraid of failure due to the rejection it may bring (Hazan & Shaver, 1990). Assuming attachment is a disposition developed in infancy, anxious individuals' motivation is impaired by their fear of failure and therefore they create avoidance-related goals. This is partially demonstrated with Hazan and Shaver's (1990) finding that anxious individuals had the lowest incomes of the three attachment styles. The average means for level of income were \$30,000 to \$40,000 in the sample; whereas the anxiety income mean was \$20,000 to \$30,000, and the secure and avoidant income means were the same as the average (i.e., the secure and avoidance income means were significantly higher than the anxiety mean $F(2, 644) = 24.83, p < .001$).

The avoidant attachment style was related to low levels of satisfaction with coworkers, but it was similar to secure attachment in its relationship to satisfaction with job security and opportunities for learning. Also, avoidant individuals reported comparable incomes to secure individuals, but they were less likely to want to take vacations (means for viewing vacations are pleasureless: avoidant $M = 2.55$, anxiety $M = 2.37$, and secure $M = 2.13$, $F(2, 233) = 5.79, p < .01$), and they felt that work interfered with social activities (means for work harms health/relationships: avoidant $M = 2.50$, anxiety $M = 2.25$, and secure $M = 1.93$, $F(2, 233) = 12.31, p < .001$). That is, avoidant individuals were proposed to use work as an excuse to avoid social situations (Hazan & Shaver, 1990). Despite Hazan and Shaver's (1990) methodology (i.e., using categorical, single-item instruments) these initial results provide evidence that there is a relationship between attachment and work-related variables given the significantly different means

found for work-related variables among the three attachment styles. The current investigation provides a lot more information about these relationships.

Two other studies investigating the linkage between romantic attachment and work have examined individual differences in attachment (i.e., attachment anxiety and avoidance traits) as inputs to team-related processes and outcomes (Rom and Mikulincer, 2003; Smith, Murphy, and Coats, 1999). Smith and colleagues (1999) developed a measure of group attachment by modifying existing self-report anxiety and avoidance attachment scales to refer to social groups as opposed to a romantic partner. They found that group attachment predicts group identification (anxiety $r = -.32, p < .001$, avoidance $r = -.75, p < .001$) and a variety of group processes and outcomes, such as: negative affect (anxiety $r = .46, p < .001$, avoidance $r = .28, p < .001$), the amount of activity an individual gives to a group (anxiety $r = -.31, p < .05$, avoidance $r = .15, ns$) time they spend with the group (anxiety $r = -.27, p < .001$, avoidance $r = -.11, ns$), number of social supports (anxiety $r = -.31, p < .001$, avoidance $r = -.56, p < .001$) satisfaction with social supports (anxiety $r = -.44, p < .001$, avoidance $r = -.59, p < .001$), collective self-esteem (anxiety $r = -.48, p < .001$, avoidance $r = -.45, p < .001$), and ways of resolving conflicts (Smith et al., 1999). Attachment avoidance was negatively related to positive affect ($r = -.58, p < .001$) and positively correlated with fewer and less satisfying social supports ($r = -.56, p < .001$) and plans to leave the group ($r = .65, p < .001$). It is interesting to note that group attachment was found to be conceptually and empirically distinct from adult romantic attachment (correlations between group and relationship attachment: group attachment anxiety and relationship attachment anxiety $r = .70$, group

attachment avoidance and relationship attachment avoidance $r = .41$). This suggests a degree of independence between group and romantic relationship attachment orientations.

If individuals create different attachment patterns in different contexts with different targets, it is possible that individuals with secure romantic attachment may have insecure attachment related to work. Yet, previous attachment experiences will cause some amount of consistency from prior attachment styles to attachment in the work domain. This is similar to the consistency from infant to romantic/close relationship attachment (Cassidy, 2000), or romantic/close relationship attachment to group attachment (Smith et al., 1999). There should be consistency in romantic/close relationship attachment and worker attachment in that close relationship attachment will be an important antecedent to worker attachment. Basically, one's infant attachment style, or "working models" of self and others, carries across the lifespan (Bowlby 1969/1982) influencing romantic/close relationship attachment, group attachment, (Cassidy, 2000; Shaver & Mikulincer, 2004; Smith et al., 1999) and worker/peer attachment. Because individuals are posited to develop relationships with others prior to their initial work experience, it seems reasonable to propose that romantic/close relationship attachment affects worker attachment. Yet, similar to romantic/close relationship attachment, extreme or pivotal situations can change one's attachment style (Cassidy, 2000; Shaver & Mikulincer, 2002). In the workplace, socialization and early work experiences, where an individual is developing his/her model of self and others as a worker, may provide such a context for changes in attachment.

A follow-up study to the work done by Smith and colleagues (1999) was conducted by Rom and Mikulincer (2003). The authors claimed that attachment theory is

relevant to group contexts given the group as a whole or individual group members can fulfill the "definitional criteria" for what constitutes an attachment bond (i.e. proximity seeking, support and relief during times of stress, and exploration facilitation), suggesting that individual differences in attachment will influence affective reactions, cognition, and behavior in group interactions. They proposed that the study done by Smith et al. (1999) did not measure some of the important variables for understanding the link between group processes and the attachment system such as cognition, affect, and behavior during group interactions. Additionally, Smith et al.'s work did not investigate any group-level variables such as group cohesion, which is defined as "the level of coordination, cooperation, support, and consensus that exist among group members (Hogg, 1992; Levine & Moreland, 1990)" (Rom & Mikulincer, 2003). Rom and Mikulincer posited that group cohesion could be viewed as a part of the group attachment bond since group members in highly cohesive groups would receive more support from the group during times of stress. Finally, the authors measured attachment working models that were not considered by Smith and colleagues.

As expected, adult attachment anxiety and avoidance were found to predict negative group-related cognitions, such as challenge-appraisal (avoidance $\beta = -.36, p < .01$) and threat appraisal (anxiety $\beta = .43, p < .01$), and emotions (anxiety $\beta = .34, p < .01$, avoidance $\beta = .28, p < .01$) due to the hyperactivating and deactivating strategies used by insecure individuals that will be discussed in more detail later. Attachment anxiety was indicative of a negative model of the self as a group member, which was claimed to be a consequence of their overall negative model of self in which they see themselves as helpless and unworthy. Anxious individuals saw group interactions as a threat and had

negative emotional reactions. Also, anxiety was found to predict pursuit of closeness goals ($\beta = .34, p < .01$) and consequently impaired performance because these individuals were inappropriately looking for love and security from the group (Rom & Mikulincer, 2003).

Individuals that scored high on the avoidance dimension had more distancing goals and self-reliance ($\beta = .35, p < .01$). These individuals did not see the benefit to group interaction and they did not contribute as much to closeness and consensus elevation. The deactivating strategies used by avoidant individuals in interdependent situations were believed to influence their poor socioemotional functioning (e.g., being less likely to help the group work well together). Group interactions were thought to break down the avoidant individuals' deactivating strategies because they were not able to avoid this highly interdependent situation, which resulted in impaired task performance. Avoidant individuals have been found to have the same level of performance as secure individuals in other more autonomous contexts (e.g. Hazan & Shaver, 1990), but the group context may present a situation where avoidant individuals' affect-regulation strategies are broken down and they are no longer able to perform well (Rom & Mikulincer, 2003).

Additionally, group cohesion was shown to moderate the relationships between attachment anxiety and its criteria (cohesion X anxiety interaction effects: $\beta = .21, p < .05$), such as instrumental functioning. That is, highly cohesive environments were claimed to evoke a group-level attachment security that buffered the hyperactivating strategies used by anxious individuals and therefore allowed for better task functioning and performance (Rom & Mikulincer, 2003). Finally, similar to Smith et al. (1999) the

authors found that group attachment patterns and romantic/close relationship attachment patterns are not the same constructs. The group attachment orientations were able to uniquely predict instrumental group functioning and they were affected by group processes such as cohesion, unlike romantic/close relationship attachment patterns. This was critical to consider when defining worker attachment. Given these preliminary sources of empirical evidence for the theoretical connection between work-related variables and attachment a new construct was developed, worker attachment.

Definition

I define worker attachment as “*systematic patterns of expectations, needs, emotions, affect-regulation strategies, and social behavior within the workplace that result from the 'attachment behavioral system' (Bowlby, 1969/1982), one's history of attachment experiences (i.e., one's pattern of attachment in close relationships), and early, formative work experiences.* Several aspects of this definition are worth noting. First, it is based on Shaver and Mikulincer's (2002) definition of adult attachment making it consistent with the previous attachment literature. It builds on Bowlby's (1969/1982) latent construct of attachment and "working models" of self and others. Second, attachment bonds developed during romantic/close relationships are represented as antecedents to worker attachment. Previous cognitive-affective structures developed from earlier attachment relationships are proposed to remain and serve as an antecedent to this new model of attachment (i.e., new attachment "bonds"). Additionally, early formative experiences at work (e.g., socialization) that affect attitudes and the way in which work relationships are viewed will also serve as an important antecedent. In summary, the attachment bonds that an individual creates at work will partially reflect

his/her previous attachment relationships that guide expectations and behaviors, but they will also be a result of the novel socialization and individual experiences within the workplace given the construction of new attitudes and values that direct behavior (Cable & Parsons, 2001).

It is important to note that attachment is a disposition (Bowlby 1969/1982), similar to personality traits such as the Big Five, and therefore will not likely change from one situation to the next (e.g., Bowlby 1969/1982; Brennan et al., 1998; Hazan & Shaver, 1987; Shaver & Mikulincer, 2002). Therefore, the most appropriate way to conceptualize attachment is as a personality trait. As is true with all personality traits, there is some situational dependency to attachment (Mischel, 1968), but secure or insecure attachment in one domain (e.g., home) indicates that the individual will have a similar style within another domain (e.g., work) because the individual's working model of self and others remains the same (Bowlby 1969/1982; Rom and Mikulincer, 2003). Early formative, experiences at work (e.g., socialization) impact individual expectations and social behaviors within the work domain (Bauer, Morrison, & Callister, 1998), and therefore are considered an antecedent to worker attachment. Daily events in the workplace, which occur after an individual is socialized, are not posited to change an individual's attachment in regards to work (e.g., a fight with a coworker) given the reinforcing cycle of attachment (Shaver & Mikulincer, 2002). Perhaps extreme events, such as suddenly being laid-off from a job one had many resources invested in, would result in changes in attachment. This is no different from any person-oriented disposition or romantic attachment in which extreme life circumstances can change how a person

perceives the world (i.e., their view of self and others) and consequently behaves (Cassidy, 2000).

Measurement

Research conducted on adult attachment in the developmental and social/personality domains has followed two different assessment traditions. Developmental psychologists have maintained a framework closer to Bowlby and Ainsworth's original work in that they have kept the measurement of adult attachment within the nuclear family (i.e., infant-parent attachment). They have developed measurement techniques for adults that attempt to elicit memories from childhood to determine the individual's attachment style. These measurement techniques usually consist of interviews. Alternatively, social and personality psychology research, such as the work done by Hazan and Shaver (1987), has extended Bowlby's original attachment theory to measure adult attachment using current peers (e.g., romantic partners) as attachment figures (Bernier & Dozier, 2002). These assessment methods usually consist of self-report questionnaires.

The measurement techniques developed by developmental and social/personality psychologists have been distinct and have used different targets (i.e., primary caregiver versus a romantic partner) to determine individual differences in adult attachment. The assessment of worker attachment will be methodologically similar to the social/personality self-report assessment method in which the target is changed from the primary caregiver. Relations at work present a new opportunity to form attachment bonds. Therefore, it is most appropriate to measure these new attachments in the same fashion as romantic/close relationship attachment given the common theoretical model.

Some previous issues regarding the measurement of attachment using this social/personality framework will be discussed before introducing the current assessment method.

Previous Techniques

Original self-report measures of adult attachment created by social/personality psychologists classified individuals into discrete attachment styles or categories (e.g., Bartholomew & Horowitz, 1991; Hazan & Shaver, 1987) based on the Strange-Situation classifications (Ainsworth et al., 1978) and Bowlby's (1969/1982) "working models." This taxonomic technique has been criticized by contemporary adult attachment researchers given adult attachment does not seem to fit a taxonomic model. The use of a taxonomy to represent adult attachment results in a loss of crucial information, measurement precision, statistical power, and consequently an inappropriate conceptualization of attachment when the model is not perfect (Fraley, Waller, & Brennan, 2000). Therefore, many romantic attachment questionnaires have been made that allow for adult attachment to be assessed using dimensional models within the social and personality domains (e.g., Griffin & Bartholomew, 1994; Brennan et al., 1998, etc.). Today, it is widely agreed by adult attachment theorists in the social domain that dimensional measures, as opposed to taxonomies/typologies, are the most precise and conceptually appropriate tool for assessing adult attachment (Fraley et al., 2000; Shaver & Mikulincer, 2002). Yet, taxonomic models may still be appropriate for clinical classifications and theory (e.g., George, Kaplan, & Main, 1996; Main, Kaplan, & Cassidy, 1985).

There have been numerous continuous, multi-dimensional measures developed in the social domain that have looked at romantic/close relationship attachment using the self-report technique (Stein, Jacobs, Ferguson, Allen, & Fonagy, 1998). All of these measures will not be reviewed in this paper. Only the measures frequently used in the social psychology literature, which were seen as critical to the development of the Worker/Peer Attachment Scales will be discussed. Additionally, there is no information provided on developmental or clinical assessment tools (i.e., interviews) because the assessment tradition associated with the social/personality perspective, questionnaires, is assumed to be most appropriate.

As previously discussed Hazan and Shaver (1987) developed the first adult attachment assessment method that used an attachment figure other than the primary caregiver. This self-report measure, termed the *Adult Attachment Questionnaire (AAQ)*, includes only one item that forces the individual to choose an attachment style that best match his/her experiences in romantic relationships. Due to the statistical limitations of a single-item questionnaire, a subsequent questionnaire based on the AAQ was developed by Simpson (1990), the *Adult Attachment Scale [d]*. This questionnaire includes 13 statements regarding romantic attachment and uses a 7-point Likert-type scale (i.e., ratings from strongly agree to strongly disagree) to determine individual differences in romantic attachment. The scale has demonstrated the following internal consistency estimates: secure ($\alpha = .51$), avoidant ($\alpha = .79$), and anxious ($\alpha = .59$). The scale was later revised to be a 17-item scale with two factors found using exploratory principal-axis factor analysis, avoidance and ambivalence/anxiety (Stein et al., 1998).

The next major development in the measurement of romantic attachment came from Bartholomew and Horowitz (1991). Although their view of adult attachment was influenced by the work described above, they claimed that the working models discussed in Bowlby's attachment theory were the foundation for studying adult attachment. Bartholomew and Horowitz interpreted Bowlby's working models as having two core dimensions, an individual's internal model of the self and others. They proposed that both of these dimensions could be either positive or negative therefore creating four prototypic forms of adult attachment. The adult attachment patterns developed through this model are: Secure (i.e., a positive view of self and a positive view of others), Preoccupied (i.e., a negative view of self and a positive view of others), Dismissing (i.e., a positive view of self and a negative view of others), and Fearful (i.e., a negative view of self and a negative view of others). Basically, Bartholomew and Horowitz separated the two dimensions of the avoidant attachment pattern to create four, as opposed to three, distinct adult attachment styles.

Bartholomew and Horowitz conducted semi-structured interviews about an individual's current relationships with peers as well as initial relationships with family members to determine an individual's association with the four attachment patterns. They collected self-report and friend-report data to compare the results obtained from the different methods of assessment. Their self-report questionnaire was called the *Relationship Questionnaire (RQ)* and it was a taxonomic measure, similar to Hazan and Shaver's (1987) original romantic love questionnaire, but it gave four prototypic descriptions of attachment patterns (as opposed to three) and the target was close peer relationships instead of romantic love. For example, the dismissing description read: "I

am comfortable without close relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me" (Griffin & Bartholomew, 1994, p. 432). They asserted their results demonstrated that the four-dimensional model of adult attachment was validated. Yet, there was only some consistency (i.e., an average within dimension correlation of .43) in the attachment patterns obtained from self-ratings, early family relationship ratings through the Family Attachment Interview, and current peer relationship ratings through the Peer Attachment Interview (Griffin & Bartholomew, 1994) as well as test-retest reliability ranging from .49 to .71 (Bartholomew and Horowitz, 1991). These results suggest minor to moderate stability of attachment over time.

After further consideration of the *RQ* assessment methods, Griffin and Bartholomew (1994) developed a 30-item self-report questionnaire that measured the four attachment patterns (i.e., Secure, Dismissing, Preoccupied, and Fearful) using a 5-point Likert-type scale. This assessment tool was named the *Relationship Scale Questionnaires (RSQ)*. The items in the RSQ can form the 4 dimensions described by Griffin and Bartholomew (1991, 1994) as well as other attachment dimensions (e.g., Hazan and Shaver's 3 dimensions) depending on the items one chooses to combine. The scale was developed by altering previous prototypic questionnaires to create a dimensional measure of attachment. The authors created items from the prototypic statements. An example of an item from this scale that is used to measure secure attachment is, "I find it relatively easy to get close to others" (Griffin & Bartholomew, 1994, p. 439). The scale was developed for romantic relationships in general, but the

instructions can be adjusted and used for different targets such as close relationships and other specific relationships.

Internal reliabilities (i.e., alpha coefficients) reported on the RSQ have ranged from .41 (Secure) to .70 (Dismissing; Stein et al., 1998). Also, small consistency after 8 months (i.e., test-retest reliabilities) was found (e.g., .53 for females and .49 for males). Additionally, factor analysis confirmed the two-factor solution (i.e., a model of self and others) and some evidence for convergent validity was demonstrated through medium correlations (.43) between self-report attachment styles and variables of self and others as well as self-reports and partner ratings. Evidence for discriminant validity was also partially demonstrated with small correlations (-.09) between attachment styles within measures (interview, self-report and partner rating).

In 1998, Brennan, Clark, and Shaver created the *Experiences in Close Relationships Scale (ECR)* after conducting a review of all the existing adult attachment assessment tools. Their research suggested that attachment styles are best viewed as regions in a two-dimensional space. That is, factor analysis indicated two factors with a small correlation ($r = .11$): *attachment related anxiety* and *attachment-related avoidance*. The three attachment styles discussed in Ainsworth et al.'s typology could be represented by these two dimensions. Secure individuals fall in a region where both anxiety and avoidance are low; anxious-ambivalent (anxious-resistant) individuals fall in a region where anxiety is high and avoidance is low, and finally the avoidant region is less straightforward. Avoidant individuals may fall in a region where avoidance is high and anxiety low, but some researchers have claimed, such as Bartholomew and Horowitz (1991), that there are two types of avoidant attachment styles. That is, there are

dismissing avoidants (high on avoidance, low on anxiety) and fearful avoidants (high on avoidance, high on anxiety). Therefore, the region that composes avoidant individuals depends on the researcher's conceptualization of attachment.

Brennan and colleagues used this representation of attachment to develop a 36-item self-report questionnaire that consists of 18 anxiety-items and 18 avoidance-items. The scale asks the participant about his/her close relationships; the target of the scale is one's "romantic partner." Brennan et al.'s (1998) framework has been widely accepted by social/personality attachment theorists (Shaver & Mikulincer, 2002), and served as an important tool in developing an attachment measure for the work domain. The alpha coefficients (internal reliability) for the two factors in ECR scale were: .91 for anxiety and .94 for avoidance (Brennan et al., 1998). The retest reliabilities after 3 weeks for both anxiety and avoidance were .70. Additionally, some evidence for construct validity was demonstrated through significant correlations in the expected directions with other self-report measures of adult attachment (Mallinckrodt & Wang, 2004). The predictive validity of the ECR has been shown in that the ECR is highly related to intimacy, marital satisfaction, discord, depression, and dedication (Crowell, Fraley, & Shaver, 1999; Shaver & Mikulincer, 2002).

Fraley, Waller, and Brennan (2000) further developed the *ECR* to create the *Experiences in Close Relationships Scale – Revised (ECR-R)* using item response theory. The ECR-R is a 36-item self-report questionnaire that includes 18 items that measure anxiety and 18 items that measure avoidance. This scale is a revised version of the ECR and it includes 20 items (i.e., 7 of the Avoidance items and 13 of the Anxiety items) from the original ECR scale. The target of the scale is "romantic partner" as in the ECR scale.

The authors used IRT techniques on items from the ECR, AAS, RAAS, and RSQ to create avoidant and anxiety scales that contained more information and had greater precision than the original ECR scales. IRT analyses demonstrated high item discrimination for the items in both scales and higher levels of test information (Theta) than the original ECR (Fraley, Waller, Brennan, 2000). There has not been a lot of empirical research on the construct validity and reliability of this new scale (Fairchild & Finney, 2006; Sibley, Fischer, & Liu, 2005). The little research that has been done on the ECR-R suggests that there is strong internal consistency (i.e., alpha's above .90) in the anxiety and avoidance scales, and there is initial evidence for the construct and predictive validity of the scales. For example, Fairchild and Finney (2006) demonstrated that the ECR-R scales have the expected relationships with: touch (avoidance-touch $r = .51$), social support (avoidance-social support $r = -.45$, anxiety-social support $r = -.43$), loneliness (avoidance-loneliness $r = .37$, anxiety-loneliness $r = .53$), and worry (anxiety-worry $r = .39$). As stated by Sibley, Fischer, and Liu (2005) after doing a construct validation study of the ECR-R, "In sum, it appears that the ECR-R provides one of, if not the, most appropriate self-report measure of adult romantic attachment currently available" (p. 1534).

Dimensionality

The different scales of adult attachment discussed above measure distinct dimensions depending on the authors' interpretations of attachment. The appropriate model of adult attachment has been debated in the literature for two decades. An author's belief regarding the dimensionality of adult attachment is thought to be a consequence of their interpretation of Bowlby and Ainsworth's original work (Griffin & Bartholomew,

1994). Many researchers have suggested that adult attachment patterns should reflect the original attachment styles developed by Ainsworth et al. (1978) and therefore their measures have maintained the same three-factor model (e.g., Hazan & Shaver, 1987; Simpson, 1990). On the other hand, Bartholomew and colleagues (e.g., Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994) developed a model of adult attachment that more closely mirrored Bowlby's "working models" as opposed to Ainsworth et al.'s strange-situation classifications resulting in a two-dimensional model with four corresponding patterns/styles.

Recent research suggests that a two-dimensional model is probably the most appropriate conceptualization of romantic/adult attachment due to higher levels of reliability and validity, but it appears that these dimensions should reflect anxiety and avoidance (Brennan et al., 1998; Shaver & Mikulincer, 2002), as opposed to one's view of self and others (Griffin & Bartholomew, 1994). Brennan et al.'s (1998) conceptualization of adult attachment styles as regions in a two-dimensional space has been the most validated and accepted view of adult attachment by social/personality psychologists (Fairchild & Finney, 2006; Shaver & Mikulincer, 2002; Sibley et al., 2005; Rholes & Simpson, 2004). As was stated by Fairchild and Finney (2006) when contrasting the validity of the various scales:

Like Bartholomew and Horowitz (1991), Brennan, Clark, et al. believed that there were four possible attachment categories associated with the anxiety and avoidance dimensions. Importantly, the dimensional nature of the ECR scores allowed for differentiation among attachment styles, while preventing the loss of information that typically accompanies categorical

techniques (Fraley & Waller, 1998; Griffin & Bartholomew, 1994) (p. 119).

The ECR and ECR-R scales appear to be the most conceptually similar to Bowlby's (1969/1982) original work on attachment anxiety and avoidance and their high levels of reliability and validity further support this conclusion (Brennan et al, 1998; Fairchild & Finney, 2006; Shaver & Mikulincer, 2002; Sibley et al., 2005).

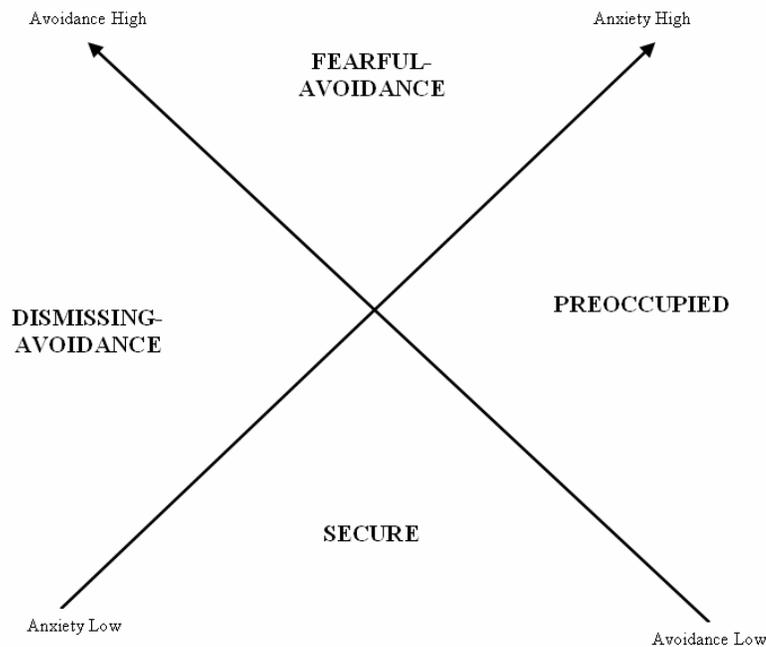


Figure 1. Dimensional model of adult attachment (from Brennan et al., 1998).

Figure 1 shows a pictorial representation of the two-dimensional model of adult attachment. As the model of adult attachment was constructed in the work domain a dimensional measure of attachment was most appropriate, as opposed to a typology, which assessed anxiety and avoidance. Therefore, the ECR-R served as an important template for the Worker and Peer Attachment Scales that will be discussed in more detail in later sections.

Target

Another important issue to consider in the assessment of worker attachment was the target of the self-report questionnaire items. Romantic attachment assessment tools have typically used either romantic partners or close relationships (e.g., Bartholomew & Horowitz, 1991; Brennan et al., 1998; Collins & Read, 1990; Stein et al., 1998). On the other hand, the group attachment research has used social groups in general, and specific social groups that one belongs to as the target (e.g., Smith et al., 1999). Group attachment anxiety is thought to reflect individuals' perceptions of worthiness as a group member and worry concerning group acceptance and consequent acceptance seeking behavior. Group avoidance is believed to measure individuals' views of group closeness as being undesirable and consequent independent behavior (Smith et al., 1999). In summary, the group attachment research has changed the target of attachment in self-report questionnaires and consequently developed modified versions of what attachment-related anxiety and avoidance are believed to measure.

Research on infant and romantic attachment would suggest that the target of worker/peer attachment needed to be relationship-based to fulfill the attachment figure requirements (Ainsworth, 1989; Ainsworth et al., 1978), but the group attachment research has shown that social groups as a whole can fulfill the requirements of attachment-related bonds (Smith et al., 1999; Rom & Mikulincer, 2003). These differing views of attachment figures and attachment-related bonds brought about two options for the target of worker/peer attachment, coworkers/peers and the organization/university in general. I believe that both coworkers/peer and the organization/university as a whole can fulfill the three criteria for attachment relations: (1) *proximity maintenance*—showing

preference for someone or something and seeking proximity in times of stress or threat, (2) *safe haven*—relieving distress and serving as a source of support and comfort, and (3) *secure base*—facilitating exploration and risk taking (Ainsworth, 1989; Bowlby, 1969/1982; Rom & Mikulincer, 2003).

The organization/university and coworkers/peers alike could be used by an employee or student for proximity protection or safeguarding. During times of stress an individual may turn to his/her coworkers/peers or the organization/university in general to relieve distress and gain support. For example, during stressful organizational times such as downsizing, employees may seek proximity and emotional comfort from other coworkers and leaders. Also, the stress and uncertainty may make the employee/student more aware of his/her desire to remain with the organization (i.e., affective commitment), which could be viewed as showing preference for something in times of stress.

Therefore, being part of the organization/university or relying on coworkers/peers would serve as comfort and support (Meyer & Allen, 1991). Additionally, organizational policies and initiatives during these times of stress may further serve as sources of support. Finally, both coworkers/peers and organizations/universities can facilitate exploration and risk taking. Hazan and Shaver (1990) argued that work can serve as a place for exploration that attachment supports or allows. Secure attachment would allow individual's the optimal environment for exploration, risk taking and self-growth. It should be noted that these targets are most appropriate for job incumbents or current students. The measurement of individual differences in job seeker attachment may use more general targets, such as organizations one has worked for in the past or people one has worked with before.

Although both organizations/universities in general and coworkers/peers appeared to be viable targets for a Worker/Peer Attachment Scales, coworkers/peers are believed to serve as the best target due to the interpersonal nature of attachment-related avoidance (Bartholomew & Horowitz, 1991; Brennan et al., 1998). Many researchers believe that attachment anxiety reflects one's model of self whereas attachment avoidance reflects one's model of others (Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994). This has been further demonstrated by the relationship between attachment avoidance and interpersonal personality dimensions such as extraversion and agreeableness (Shaver & Brennan, 1992; Gallo et al., 2003). Specifically, Gallo and colleagues (2003) found the avoidant-agreeableness correlation to be $-.36, p < .01$ for women and $-.34, p < .01$ for men and the avoidant-extroversion correlation to be $-.25, p < .01$ for women, and $-.35, p < .01$ for men. Therefore, to measure worker/peer attachment it is necessary to evoke one's model of self as a worker/student as well as one's model of others at work/school, which is most appropriately assessed by asking employees/students about the people they work with, as opposed to the organization/university as a whole.

Therefore, a measure of worker attachment was developed, using the Experiences in Close Relationships – Revised (ECR-R; Fraley et al., 2000) as a template, changing the target to the coworker: Worker Attachment Scale (WAS). Example items from this scale can be found in Appendix A. It is assumed that attachment in the work domain is distinct from romantic attachment so many of the items have been changed to measure attachment in the workplace (i.e., worker attachment). Also, additional items were added to the scales to completely capture attachment anxiety and avoidance in the work domain.

To refine and validate the measure of worker attachment two studies were conducted using two distinct samples: an organization with paid employees and an academic environment with college students. Study 1 was conducted using an undergraduate sample of psychology students at a large southeastern university. Because these students do not necessarily hold full-time jobs, coworkers do not serve as an appropriate target. Therefore, fellow students were used as the conceptual parallel to coworkers in this study resulting in a Peer Attachment Scale (PAS). Example items from this scale can be found in Appendix B.

Study 1 was necessary to do for a variety of reasons. First, the PAS is more similar to existing measures of attachment (e.g., close relationship attachment) and therefore it is proposed that it is more consistent than the WAS with existing scales (e.g., Brennan et al., 1998). Also, the sample allowed for two separate measurement periods therefore providing test-retest and predictive validity evidence. Additionally, the academic sample allowed for the assessment of inter-rater agreement because the student's self-report ratings of attachment were matched with peer ratings of his/her attachment. This process will be discussed in more detail in later sections. The investigation of the core new scale (i.e., worker attachment) was done using the work sample. These individuals had full-time work experience, which allowed for the exploration of hypotheses regarding worker attachment antecedents, processes and outcomes.

Reliability Issues

Another assessment issue considered during scale construction was reliability. To validly test the construct of worker attachment, stable measures of attachment-related

anxiety and avoidance at work (or school) were developed. In the validation process of the WAS and PAS three important reliability issues were tested: psychometric properties, test-retest reliability, and inter-rater agreement/consistency.

Psychometric Properties

Internal consistency for the anxiety and avoidance scales was tested in a similar manner to the romantic attachment scales (Brennan et al., 1998; Stein et al., 1998). Additionally, the WAS and PAS was conceptualized as two distinct factors or dimensions: attachment anxiety and avoidance. Therefore, the following hypothesis was proposed:

Hypothesis 1: Worker attachment (measured by the WAS) and peer attachment (measured by the PAS) comprise two consistent dimensions with high degrees of measurement precision (i.e., Cronbach's alpha coefficients of .80 or higher): attachment anxiety and attachment avoidance.

Test-Retest Reliability

Also, worker attachment was believed to be stable across time similar to romantic attachment (Shaver & Mikulincer, 2002), and relatively stable across jobs, which is analogous to other dispositions. Of course, changes in one's job and/or organization may affect his/her worker attachment as changes in a romantic relationships sometimes affect one's romantic attachment, such as anxious/ambivalent or avoidant individuals that had secure attachment prior to a destructive relationship (Cassidy, 2000). Yet, worker attachment is posited to be fairly consistent across time because of the reinforcing nature (i.e., cycle) of the affect-regulation strategies and behaviors associated with attachment (Cassidy, 2000; Shaver & Mikulincer, 2002). To investigate test-retest reliability issues

the preliminary investigation measured attachment at two distinct time periods. The test-retest reliability was only assessed in the preliminary study to limit the analysis to within jobs. It is posited that the student will still be a student at time 2 and he/she will not have changed organizations (i.e., universities) given he/she is still participating in the study. This assumption can not be made in the work sample because individuals are often switching departments and jobs. Therefore, the following hypothesis was presented:

Hypothesis 2: Peer attachment anxiety and avoidance (measured by the PAS) will demonstrate high levels of test-retest reliability from one measurement period to another (i.e., $r \geq .80$).

Inter-Rater Reliability

It is advised that measures of worker attachment should not serve as selection tools, which avoids a lengthy discussion on self-presentation issues commonly associated with selection assessment tools. However, worker attachment may provide a valuable tool for development and potentially placement purposes, so a discussion on the issues associated with social desirability and the mechanisms that were used to handle these issues is imperative.

The assessment of adult attachment through questionnaires relies on the assumption that the questionnaire is an implicit measure of attachment. That is, the measures will draw on research participants' (i.e., workers' or students') individual differences in attachment avoidance and anxiety that are not necessarily understood by the individual. Implicit measures have been criticized for tapping into more than the individual's attitude or disposition given our exposure to society and cultural norms (Arkes & Tetlock, 2003). For example, research looking at implicit prejudice (i.e., an

attitude) has been claimed to measure cultural stereotypes that an individual has been exposed to as opposed to the individual's attitude (Arkes & Tetlock, 2003). These can be cultural stereotypes learned over one's life or stereotypes that are elicited through priming or the context in which they take the questionnaire (e.g., being shown a video that reinforces stereotypes prior to the questionnaire). This argument assumes that people are aware of cultural stereotypes whether they endorse them or not, and therefore implicit measures will activate these stereotypes resulting in the majority of participants reporting a prejudice they don't necessarily have (Arkes & Tetlock, 2003).

A similar concern could be raised regarding the assessment of attachment. Individuals entering the workforce have been most likely exposed to societal norms concerning adaptive and maladaptive expectations, needs, emotions, and behaviors. Therefore, there is a danger that while answering implicit measures individuals are biased by these norms (i.e., they answer the items in accordance with societal norms as opposed to their own beliefs). This problem may be exacerbated in the workplace. Attachment is in theory "typical" personality, but often time individuals will respond, especially in the work setting, in a "maximal" or socially desirable fashion. That is, they will report more socially desirable attitudes and behaviors and underreport behaviors and attitudes that are not socially respected (Krosnick, 1999).

The effects of social desirability will be examined via peer ratings of the participant to test inter-rater agreement (i.e., reliability). Methods similar to this have been used in the social and developmental domains (e.g., Griffin & Bartholomew, 1994; Main et al., 1985). Often, researchers will examine the degree of consistency among different methods of attachment assessment, such as interviews, self-reports, partner

reports, etcetera (Griffin & Bartholomew, 1994). The use of a multiple-rater framework is particularly important in the work context where social desirability is thought to be especially high. Given inter-rater agreement is one method to examine social desirability issues the following hypotheses were tested in the PAS validation processes:

Hypothesis 3a: The anxiety dimension of attachment (measured by the PAS) is posited to be significantly, positively related to fellow students' ratings of the target's attachment anxiety.

Hypothesis 3b: The avoidance dimension of attachment (measured by the PAS) is posited to be significantly, positively related to fellow students' ratings of the target's attachment avoidance.

Antecedents

It is posited that early full-time work experiences will have the largest impact on worker attachment outside from an individual's existing close relationship attachment pattern. One of the most common constructs discussed in the organizational literature regarding early work experiences is organizational socialization. This is "the process by which an individual acquires the attitudes, behaviors and knowledge needed to participate as an organizational member (Van Mannen & Schein, 1979)" (Bauer et al., 1998, p. 150). It is believed that the socialization process has a strong and lasting effect on the behaviors and attitudes of employees that stay with the organization, such as being more valuable and committed to the organizational goals (Bauer et al., 1998).

Research on the socialization process has paid special attention to the early work experiences in which employees are unfamiliar with the environment and the way in which people in the organization interact, which creates high levels of stress and anxiety.

These initial experiences are commonly referred to as “reality shock.” Newcomers at this stage are forced to learn the interpersonal norms within the organization.

Newcomers must reevaluate their assumptions about how people respond to actions and events, and must seek information about why people behave as they do (Jones, 1986). Given the anxiety the newcomers face as they try to make sense of their new environment it is likely that they pay close attention to organizations' "people processing" tactics (Van Maanen & Schein, 1979) (Cable & Parsons, 2001, p. 3).

In a parallel fashion to Ainsworth et al.'s (1978) findings that the behavior patterns of parents in response to their child influences the attachment style the infant develops, it could be assumed that the initial socialization experiences an adult has at his/her first full-time job may influence his/her attachment pattern in regards to work. Of course, adults bring with them an existing close relationship attachment pattern that guides their expectations, affect and behavior during these initial experiences, but the organizational research has found that the process of socialization actually changes an individual's attitudes, behaviors and values (Bauer et al., 1998; Cable & Parsons, 2001). Therefore, both organizational socialization and romantic/close relationship attachment patterns were proposed as antecedents to one's worker attachment in the current investigation.

Similar to the research on group attachment patterns, which found a degree of independence between group and romantic relationship orientations (Smith et al., 1999), worker attachment does not completely overlap with romantic/close relationship attachment. The constructs are distinct given individuals create different attachment patterns in new contexts. Yet, significant relationships between the two constructs were

posited given the reinforcing cycle of attachment and common foundations (Shaver & Mikulincer, 2002). Early work experiences, such as the organizational socialization process at one's first full-time job, are particularly important to the development of one's orientation towards work (i.e., worker attachment) because it represents the individual's first experience with the novel context of work. It is possible that early traumatic experiences at work (e.g., being laid off from a company an employee worked hard for and thought he/she would spend his/her entire career with) may influence an individual's worker attachment in a severe way. The best example of this type of experience would be the young employees laid off after the "Tech Boom" in the late 1990s where dot-com layoffs rose 600 percent in the second half of 2000 (Chapman, 2001). These individuals may have developed anxious worker attachment patterns after this experience in that they no longer knew what to expect from an organization.

To operationalize organizational socialization, previous research has classified socialization tactics into six scales. These scales/tactics are believed to have two ends: institutionalized and individualized, and three main topics that the tactics are concerned with: context, content and social aspects (Jones, 1986). Because worker attachment is believed to be an interpersonal or relational variable (e.g., Gallo et al., 2003), the scales associated with the social aspects of socialization were investigated in the current study. These scales are believed to "reflect social or interpersonal aspects of the socialization process" (Jones, 1986, p. 265), and have been found to be predictive of newcomer adjustment to the organization and role orientation (Jones, 1986). The two social scales of organizational socialization are: (1) serial (institutionalized pole) versus disjunctive (individualized pole), and (2) investiture (institutionalized pole) versus divestiture

(individualized pole). Serial processes are experiences newcomers have with a role model whereas disjunctive processes are seen as socialization situations in which newcomers do not have role models and are left alone to "develop their own definitions of situations" (Jones, 1986, p. 265). Investiture processes are described as situations where newcomers receive reinforcing social support whereas divestiture processes occur when newcomers receive negative social support from organizational members in an effort to change the newcomers' previous beliefs (Jones, 1986).

Therefore, the following hypotheses were proposed regarding the antecedents of worker attachment. The effects of socialization were posited to be small to medium given previous relationships between individual difference variables (e.g., job satisfaction, self-efficacy) and the socialization scales range from $-.03$ to $.65$ (Jones, 1986); and worker attachment was hypothesized to also be influenced by romantic/close relationship attachment. The relationship between worker/peer attachment and romantic/close relationship attachment was posited to be medium given the common theoretical foundation and previous correlations between different attachment constructs. For example, the relationships between group attachment and relationship attachment range from $.41$ to $.70$ (Smith, Murphy, and Coats, 1999). All of the correlational hypotheses will follow the standard for size of effects for correlation coefficients in Cohen (1988); effects from $r = .10$ to $r = .29$ are considered small, $r = .30$ to $r = .49$ are considered medium and those over $r = .50$ are considered large.

Hypothesis 4a: Serial and investiture socialization tactics are posited to be significantly negatively related to the anxiety dimension of attachment (measure by the WAS). These effects will be small to medium.

Hypothesis 4b: Preoccupied and fearful romantic/close relationship attachment styles (measured by the RQ) is posited to be significantly positively related to the anxiety dimension of attachment (measured by the WAS and PAS). These effects will be medium.

Hypothesis 4c: Serial and investiture socialization tactics are posited to be significantly negatively related to the avoidance dimension of attachment (measured by the WAS). These effects will be small to medium.

Hypothesis 4d: Dismissing and fearful romantic/close relationship attachment styles (measured by the RQ) are posited to be significantly positively related to the avoidance dimension of attachment (measured by the WAS and PAS). These effects will be medium.

The hypothesized impact of socialization on one's model of self and others as a worker further emphasizes the need for the worker attachment construct in today's changing work environment in which downsizing, mergers, and acquisitions are common (Dordevic, 2004; Laycock, 2003), and individuals typically do not work for one organization their entire life as they did in the 1950s (Leinberger & Tucker, 1992; Rousseau, 1995; Hall & Moss, 1998). Early, formative experiences at work that change an individual's expectations and behaviors may influence individual differences in attachment, which individuals bring with them from one job to the next. Of course, worker attachment is slightly malleable, as are romantic and group attachment patterns (Cassidy, 2000; Smith et al., 1999). It is posited that the original formation of the worker attachment pattern influences all subsequent behavior, affect and emotion at work due to the attachment system's reinforcing cycle (Shaver & Mikulincer, 2002) in which the

affect-regulation strategies associated with worker attachment patterns continue to strengthen the pattern as the individual moves organizations or jobs.

Tenure

It could also be proposed that individuals that stay with an organization for an extended period of time will experience an external reinforcing cycle (Shaver & Mikulincer, 2002) in which they have similar experiences with coworkers from that organization. Although individuals within an organization may begin with differing attachment patterns, which are maintained due to the reinforcing cycle of affect-regulation strategies associated with attachment (Shaver & Mikulincer, 2002), these attachment patterns may become more homogenous over time for two reasons. First, similar experiences within the organization or a department may lead individuals to have similar expectations and social behaviors over time (i.e., a cohort effect). Both of these variables are crucial components to the definition of attachment (Shaver & Mikulincer, 2002). Therefore, similarities in social behaviors and expectations seen over time within an organization or department may lead to worker attachment homogeneity.

Second, Schneider (1987) proposed an attraction-selection-attrition (ASA) framework in which individuals within an organization become more homogenous over time in respect to personality and values. Individuals are attracted to organizations that match their values and personality (attraction); they are then selected into organizations that desire attributes similar to theirs (selection/recruitment); and finally people within an organization that do not fit consequently leave (attrition). This model and the homogeneity hypothesis have received some indirect support from turnover, job choice, and value congruence research as well as minimal direct support (Schneider, Goldstein,

& Smith, 1995). Therefore, individuals with worker attachment patterns that do not fit an organization will be more likely to leave, resulting in the increased homogeneity of worker attachment within an organization. The same logic can be applied to a given department within an organization. Each department will most likely have its own norms and climate resulting in attrition from employees that do not fit (Schneider et al., 1995). Although both explanations are viable, the second explanation (i.e., the ASA effect) is preferred given the consistency of attachment over time. Therefore, the following hypotheses were given. The effects were posited to be small to medium given there are other factors that will affect homogeneity and attrition, such as other personality variables, values and the work environment.

Hypothesis 5a: Average unit tenure is positively associated with the anxiety dimension of attachment (measured by the WAS) departmental homogeneity. These effects will be small to medium.

Hypothesis 5b: Average unit tenure is positively associated with the avoidance dimension of attachment (measured by the WAS) departmental homogeneity. These effects will be small to medium.

Construct Validity

The most crucial argument regarding attachment relates to its construct validity and whether or not attachment is an essential area of research, independent from overlapping constructs. There has been some concern that attachment is a general theory of personality that does not need further development (Bernier & Dozier, 2002). Specifically, many empirical studies have been devoted to determining whether or not attachment in its totality gives more information than theories of its overlapping pieces,

such as the Big Five (Gallo et al., 2003). These studies have examined the correlates and discriminant validity of adult attachment measures to demonstrate that attachment anxiety and avoidance are not redundant constructs given other correlated cognitive, emotional, and behavioral expressions of hyperactivating and deactivating strategies (Shaver & Mikulincer, 2004). In the current investigation the correlates or the nomological network of conceptually similar constructs (Shaver & Mikulincer, 2004) was investigated. The previous research in this area will briefly discussed before the current hypotheses are presented.

Previous research on adult attachment correlates has shown that the two dimensions of attachment, avoidance and anxiety, are related to a broad set of conceptually similar constructs. Self-reported attachment anxiety has demonstrated statistically significant relationships in the expected directions with: trait anxiety, threat appraisal, self-esteem, and cognitive representations and attitudes towards others, which provides initial, minimal evidence for the construct validity of attachment. Attachment avoidance has been associated with: defensiveness, social desirability, coping behaviors (i.e., distancing), mental schemas of self and others, reactions to the needs of others, exploration and cognitive openness (Shaver & Mikulincer, 2004). Additionally, research done by Mickelson, Kessler, and Shaver (1997) has demonstrated that anxiety and avoidance are related to an external locus of control (i.e., anxious group $r = .21/.14, p < .001$, avoidant group $r = .13/.15, p < .001$), neuroticism (i.e., anxious group $r = .29, p < .001$, avoidant group $r = .29, p < .001$), introversion (i.e., anxious group $r = .14, p < .001$, avoidant group $r = .35, p < .001$), low self esteem (i.e., anxious group $r = -.37, p < .001$, avoidant group $r = -.32, p < .001$) and low levels of openness to experience (i.e., anxious

group $r = -.10, p < .001$, avoidant group $r = -.12, p < .001$). This section will explore the correlates of worker/peer attachment and introduce the construct validation hypotheses.

Trait Complexes

Researchers such as Ackerman (2003) and Snow (1978) have proposed that "it may be that combinations of traits have more predictive power than traits in isolation" (Ackerman, 2003, p. 92). This argument posits that the underlying source of correlations among traits is crucial to determine to predict behavior for both practical and theoretical purposes. Practically speaking, behavior is rarely predicted by an isolated trait and therefore the more variance we can account for the better we can predict performance or behavior. Theoretically, science is advanced by connecting constructs that are thought to be unrelated (i.e., that have different names) to avoid overlapping research on similar constructs that go by different names (Ackerman, 1997). It is possible that individual differences in attachment serve as a trait complex for the person-oriented correlates previously mentioned as well as the correlates discussed in the following sections. This nomological network is believed to have greater validity for certain work criteria than independent traits. Attachment theorists have stated that "attachment patterns appear to be central organizing factors in personality and social development, and attachment theory appears to provide valuable leads about the underlying reasons for associations among a variety of social and personality variables" (Mickelson et al., 1997). The present study examined the relationships between worker/peer attachment and conceptually associated constructs. This allowed for a construct validation approach in which worker/peer attachment is studied in relation to non-ability individual differences variables in a nomological network.

Murray's Needs

Henry Murray's (1938) major work, *Explorations in Personality*, described a theory of motivation and personality in which behavior is driven by needs or a desire for something that one does not have. Needs, according to Murray, could be classified into two categories: (1) primary needs and (2) secondary needs. He referred to the primary needs as viscerogenic needs, which were innate or biologically-based needs for survival. They included: air, water, food, sex, lactation, urination, defecation, harmavoidance, noxavoidance, heatavoidance, coldavoidance, sentience, and passivity. More importantly, he outlined secondary needs, referred to as psychogenic needs, which were dependent upon and perhaps derived from the primary needs. He believed that personality was created by these needs. An individual's personality was thought to be formed by the extent to which he or she experiences the following needs: acquisition, conservance, order, retention, construction, achievement, recognition, exhibition, inviolacy, dominance, deference, similitude, autonomy, contrariety, aggression, abasement, blameavoidance, affiliation, rejection, nurturance, succorance, play, cognizance, and exposition. The most commonly investigated secondary needs have been the need for achievement (e.g., McClelland, 1985), dominance or the need for power (e.g., Winter & Stewart, 1977), and the need for affiliation (e.g., McAdams & Constantian, 1983).

Murray claimed that the environment played a crucial role in the demonstration of these needs. Force from the environment serves as a *press* (i.e., pressure that compels one to act) on an individual's *need* in an interaction he termed *thema* (i.e., a press-need interaction), therefore generating observable attributes. Researchers (e.g., Randolph,

Smart, & Nelson, 1997) have claimed that there is a strong parallel between Murray's need-press perspective of personality and Bowlby's attachment theory, given their common foundations. Attachment theory posits that an individual's ability to survive is increased by seeking proximity to a caregiver (i.e., the need for survival is fulfilled due to environmental pressure that compels the individual to act or seek proximity). These similar perspectives to personality development both have foundations in psychoanalytic theory and both theories emphasize the importance of the environment and its interaction with the individual (i.e., they are some of the earliest interactionist or person-situation interaction theories of personality development).

In the same fashion that Ainsworth et al. (1978) developed the Strange Situation to assess individual differences in infant attachment by measuring infant reactions to strange environments, Murray and Morgan (Murray, 1938) developed the Thematic Appreciation Test (TAT) to assess individual differences in adult personality by measuring adult reactions to an unfamiliar picture. The TAT is a projective personality test that asks the participant to tell a story about a picture they are shown as a rater measures or scores the defining attributes of the previously stated needs. Many researchers have expanded upon Murray's theory of needs to develop personality assessment measures that are both motive-based, projective measures of needs such as the need for achievement (see McClelland, 1985) as well as self-report, objective measures of needs such as the Edwards Personal Preference Schedule (EPPS) scales (Edwards, 1959), and Jackson's (1984) Personality Research Form (PRF).

Although Murray's theory of needs was grounded in psychoanalytic theory it was highly influenced by the origins of trait theory, specifically G. W. Allport's theory of

traits (Allport, 1935, 1937), which was published in a volume shortly before Murray's *Explorations in Personality*. Murray (1938) believed that the defining attributes in his theory of needs could be seen as traits if they were repeatedly demonstrated by an individual and that the needs themselves could also be seen as special types of traits, which he termed '*motivational traits*.' Much of the subsequent work on Murray's theory of needs has been devoted to the development of objective, self-report tests that assess needs, similar to Murray's secondary needs, as personality or motivational traits that are grounded in motivational theory (Jackson, 1984).

Despite the congruence between Murray's theory of needs and Bowlby's attachment theory (e.g., Randolph et al., 1997), there has been very little work done investigating the relationship between the needs or personality traits assessed in self-report needs inventories and the adult attachment styles assessed in self-report questionnaires. One study that did in fact examine the linkage of these two theories (Randolph et al., 1997) used Jackson's (1984) PRF and Bartholomew and Horowitz's (1991) RQ to examine the relationship between the 22 personality scales of the PRF and the 4 adult attachment patterns of the RQ. Specifically, they were interested in determining whether the personality traits assessed by the PRF were able to discriminate among the 4 attachment patterns. They found that 12 of the PRF traits were able to discriminate among the attachment patterns. The most effective classification took place when two of the PRF traits were included: affiliation and cognitive structure. In combination they were able to classify 47.6% of the participants correctly. Affiliation refers to the extent to which an individual values friendships/relationships and demonstrates acceptance of others, which is conceptually similar to the concept of

avoidance in attachment theory. Cognitive structure indicates the extent to which an individual desires definitive answers and factual information, which is less conceptually related to attachment theory.

Although there were many limitations to this study, such as the use of only college students and exploratory methodology, it did provide some evidence for overlap in Murray's needs and attachment patterns (i.e., minimal evidence for convergent validity). Fortunately, no matter how many PRF personality variables were combined they were unable to classify individual's with greater than 52.4% accuracy (i.e., only slightly over twice the base rate), suggesting there is a lot of the attachment construct that is unexplained by needs or motivational traits. It should also be noted that the RQ is no longer a well-accepted measure of attachment patterns due to its taxonomic framework (Griffin & Bartholomew, 1994).

In the current research, I explored Murray's needs that are conceptually similar to the two dimensions of worker/peer attachment: anxiety and avoidance. I posited that there would be significant, small to medium correlations found between individual differences in attachment (i.e., anxiety and avoidance) and the interpersonal/motivational traits or needs, but some discriminant validity was also expected (Costa & McCrae, 1988; Murray, 1938). Given the following descriptions, relationships with attachment anxiety or avoidance were assumed for the following of Murray's needs: affiliation, autonomy, deference (i.e., emulating others), dominance (i.e., controlling others), nurturance, and succorance (i.e., seeks support of others).

Using similar constructs to the interpersonal needs depicted by Murray and colleagues, the *interpersonal circle* (IPC) has undergone almost 50 years of research on

the individual differences in interpersonal behavior (Leary, 1957; Wagner, Kiesler, & Schmidt, 1995; Wiggins, 1979). The IPC model classifies interpersonal acts within a two-dimensional space. The first dimension is *affiliation*, which ranges from friendliness to hostility or warmth to coldness. The second dimension is *control*, ranging from dominance to submissiveness. These dimensions form poles of a circumplex from which interpersonal behavior can be described. Similar to attachment theory, the interpersonal theory of personality and social functioning proposes that an adult's personality is influenced by previous relationships or social experiences, especially early experiences that have lasting effects on one's view of self and others over time (Gallo et al., 2003; Wagner et al., 1995).

Gallo and colleagues (2003) created a framework for the study of adult attachment in relation to other conceptually similar interpersonal constructs and social functioning. They explored the relationship between adult attachment and the IPC by placing the anxiety and avoidance scales of attachment into the interpersonal circumplex to determine the extent of their correspondence. The correlations indicated that both the anxiety and avoidance scales were negatively related to affiliation, although they found some small gender differences indicating that the anxiety-affiliation relationship was not significant for men. Specifically, the anxiety-affiliation correlation for women was $-.20$, $p < .01$, and for men was $-.12$, *ns*. The avoidant-affiliation correlation for women was $-.36$, $p < .01$, and for men was $-.34$, $p < .01$. Additionally, they found that both anxiety and avoidance were inversely correlated to dominance (i.e., the anxiety-dominance correlation for women was $-.23$, $p < .01$, and for men was $-.28$, $p < .01$; the avoidant-dominance correlation for women was $-.25$, $p < .01$, and for men was $-.35$, $p < .01$).

These results imply that attachment insecurity is related to a hostile-submissive interpersonal style. These previous relationships found between both Murray's needs (Randolph et al., 1997) and interpersonal styles (Gallo et al., 2003) with adult attachment, suggest that similar relationships exist with worker/peer attachment. Therefore, in the current investigation the following were proposed to be correlates of worker attachment anxiety: affiliation (negative relationship), dominance (negative relationship), and succorance (positive relationship). The anxiety dimension of attachment was also posited to be unrelated to deference, nurturance and autonomy because there had been no research to my knowledge linking these constructs to attachment anxiety and I believed they were conceptually unrelated. In addition, the following were hypothesized to be correlates of worker attachment avoidance: affiliation (negative relationship), dominance (negative relationship), deference (negative relationship), nurturance (negative relationship), and autonomy (positive relationship). The avoidance dimension of attachment was posited to be unrelated to succorance given no previous relationship was known and I believed they were not theoretically similar.

Personality

To further explore the convergent and discriminant validity of worker/peer attachment, relationships with personality variables that are more commonly investigated in the organizational literature were examined. The most common trait perspective for the study of personality within industrial and organizational psychology is the "Big Five", which depicts a five-factor model of personality that has been used to predict job performance and training proficiency across a variety of jobs (Barrick & Mount, 1991). The "Big Five" was derived from factor analytic research on personality in an attempt to

create a systematic taxonomy of personality. Research done by Norman (1963) on the five-factor model derived the terms for the five factors commonly used today: Extraversion, Emotional Stability, Agreeableness, Conscientiousness, and Culture. It should be noted that the Culture factor is often referred to as Openness to Experience in the organizational literature (Barrick & Mount, 1991). Overall, the five-factor model of personality, which is also referred to as the Five-Factor Theory (FFT), is often used as a model of personality that taps affective, motivational, experiential and interpersonal traits (McCrae & Costa, 1989), although not all researchers accept the model (Block, 1995). Many personality theorists would argue that the attachment dimensions, motivational traits or needs, and the interpersonal circumplex overlap with pieces of this all-encompassing theory of personality (Costa & McCrae, 1988; Gallo et al., 2003; McCrae & Costa, 1989; Shaver & Brennan, 1992); but it would be inappropriate to conclude that the more specific and precise theories of personality (e.g., attachment) could be completely explained by the Big Five model.

Despite the considerable body of research demonstrating the strength of the five-factor model (i.e., the Five-Factor Theory) as a framework and prediction tool (Barrick & Mount, 1991; Costa & McCrae, 1995; Goldberg & Saucier, 1995), the model is imprecise and was based on methodology (i.e., factor analysis) as opposed to theory (Block, 1995). The Big Five model of personality was based on trait research done by Allport and Cattell stemming from a lexical approach to personality, which has primarily been studied using factor analysis. Block (1995) argued that despite the widespread acceptance for this broad, practical framework of normal personality, the Five-Factor Theory of personality does not represent a personality structure. It is a variable-centered

factor structure of personality data, and true personality structure lies within individuals, not data. He claimed that "no functioning 'psychological system,' with its rules and bounds, is designated or implied by the 'Big Five' formulation; it does not offer a sense of what goes on within the structured, motivation-processing, system-maintaining individual" (Block, 1995, p. 188). Despite subsequent arguments regarding the model's utility (Costa & McCrae, 1995; Goldberg & Saucier, 1995), the claims made by Block regarding its oversimplification of personality are important when looking at the criterion-related validity of personality in the work domain.

The first dimension of the five-factor model is extraversion; this dimension is often described by traits such as being talkative, gregarious, assertive, sociable and active (Barrick & Mount, 1991). The lower-order traits included in this global personality dimension are: warmth, gregariousness, assertiveness, activity, excitement-seeking, and positive emotions (Costa & McCrae, 1988; Terracciano & Costa, 2003). Extraversion is interpersonal by definition. It impacts the amount of social stimulation that one prefers as well as the general character of social interaction (McCrae & Costa, 1989). Research has shown that extraversion, along with the agreeableness dimension that will be discussed in more detail later, delineates the two-dimensional plane that the interpersonal circumplex occupies (McCrae & Costa, 1989). That is, there is a strong convergence between the interpersonal circumplex and the Big Five traits that have an interpersonal nature. Additionally, extraversion has been associated with interpersonal needs delineated by Murray and measured by the PRF. Specifically, McCrae and Costa (1988) found that extraversion is associated with a need for social contact (i.e., affiliation), fun (i.e., play), and attention (i.e., exhibition). Most importantly, extraversion has also been

moderately associated in the expected direction with individual differences in attachment. More securely attached adults reported higher levels of extraversion while avoidant individuals report lower levels of extraversion. Gallo and colleagues reported an avoidant-extraversion correlation for women of $-.25, p < .01$, and $-.35, p < .01$ for men (Shaver & Brennan, 1992; Gallo et al., 2003). This provides further evidence for the relationship between attachment and an individual's interpersonal nature originally hypothesized by Bowlby (1980).

The second dimension of the five-factor model of personality is emotional stability, which is also commonly referred to as neuroticism. This dimension has been associated with being anxious, angry, embarrassed, emotional, depressed, insecure, and worried (Barrick & Mount, 1991). The lower-order traits included in this personality dimension are: anxiety, angry hostility, depression, self-consciousness, impulsiveness, and vulnerability (Costa & McCrae, 1988; Terracciano & Costa, 2003). Additionally, it has been associated with Murray's needs measured by the PRF. Specifically, individuals with higher levels of neuroticism are thought to worry more about others' opinions (i.e., social recognition), desire sympathy and care (i.e., succorance), and be more defensive and guarded (i.e., defence; McCrae & Costa, 1988). Given the characteristics associated with this trait, it conceptually follows that it also demonstrates a relationship with adult attachment patterns. Individuals with higher levels of attachment anxiety and avoidance also report higher levels of neuroticism while individuals with higher levels of attachment security report lower levels of neuroticism. Gallo and colleagues (2003) reported anxiety-neuroticism correlations for women and men as $.39, p < .01$ and $.44, p < .01$ respectively. Also, they found a $.29, p < .01$ avoidant-neuroticism correlation for

women and a .35, $p < .01$ avoidant-neuroticism correlation for men. Additionally, individuals with higher levels of preoccupied attachment (i.e., high anxiety, low avoidance) demonstrate higher levels of neuroticism than dismissing individuals, which have been shown to have low levels of anxiety and high levels of avoidance (Shaver & Brennan, 1992; Gallo et al., 2003). This relationship is in the expected direction and helps to distinguish the distinctness of the insecure attachment patterns. Although insecure attachment is thought to be associated with anxiety, insecurity, and emotionality, this relationship is stronger for the dimension that represents one's view of self (i.e., anxiety) than the more interpersonal dimension of avoidance as is seen above.

Another dimension from the five-factor model of personality is agreeableness, which is also referred to as likeability. This dimension is defined by traits such as being flexible, good-natured, forgiving, soft-hearted, tolerant, cooperative, trusting, and tolerant (Barrick & Mount, 1991). The lower-order dimensions associated with this trait are: trust, straightforwardness, altruism, compliance, modesty, and tender-mindedness (Terracciano & Costa, 2003). As was discussed earlier, this dimension is interpersonal in nature and it, along with extraversion, defines the interpersonal plane delineated by the interpersonal circumplex. For example, warmth from the interpersonal circumplex is viewed as an agreeable (i.e., high on agreeableness) form of extraversion by Gallo and Colleagues (2003), while disagreeable (i.e., low on agreeableness) interpersonal forms of extraversion include assertiveness and excitement seeking. Researchers have suggested that agreeableness has both interpersonal and attitudinal elements making it more complex and broader than the interpersonal circumplex (McCrae & Costa, 1989).

Agreeableness has also been moderately associated with some of Murray's interpersonal needs measured by the PRF (i.e., associations range from .16 to .48). Agreeable individuals are thought to enjoy helping people (i.e., nurturance), be apologetic and modest (i.e., abasement), and not be either authoritarian (i.e., dominance) or confrontational (i.e., aggression). As expected, the agreeableness dimension has also been associated with adult attachment patterns. Specifically, higher levels of agreeableness are associated with higher levels of attachment security (i.e., low anxiety, low avoidance). The insecure attachment-agreeableness correlations have been demonstrated to range from $-.12$, *ns*, to $-.36$, $p < .01$ (Gallo et al., 2003). Agreeableness has also been shown to discriminate (i.e., different relationships have been found) between the two forms of insecure attachment (i.e., anxiety and avoidance) similar to emotional stability. Individuals demonstrating preoccupied attachment (i.e., high anxiety, low avoidance) are more strongly associated with higher levels of agreeableness than dismissing individuals (i.e., low anxiety, high avoidance), consistent with the interpersonal nature of the avoidance dimension of attachment. Secure individuals are more agreeable than avoidant individuals (i.e., the avoidant-agreeableness correlation was found to be $-.36$, $p < .01$ for women and $-.34$, $p < .01$ for men), but not necessarily anxious individuals given the non-significant finding for men (Shaver & Brennan, 1992; Gallo et al., 2003).

The final two dimensions of the five-factor model of personality are conscientiousness and openness to experience. These will be discussed in less detail than the prior dimensions because past research has shown that their relationships with attachment are weaker empirically (i.e., the anxiety-conscientiousness correlation is not

significant for men, and the anxiety- and avoidance-openness to experience correlations are all not significant). Conscientiousness includes two sets of traits. The first group of traits is related to dependability. These include things such as being organized, responsible, careful, and thorough. Additionally, conscientiousness also includes a volitional or motivational set of traits such as being achievement-oriented, hardworking, and persevering (Barrick & Mount, 1991). The lower-order dimensions related to this trait are: competence, order, dutifulness, achievement-striving, self-discipline, and deliberation (Terracciano & Costa, 2003).

Given the volitional component of conscientiousness it follows that this dimension is also related to some of Murray's needs measured by the PRF that have been studied and discussed as motives (McClelland, 1985). Specifically, Costa and McCrae (1988) found that conscientiousness is correlated with needs such as organization (i.e., order), accomplishment (i.e., achievement), persistence (i.e., endurance), carefulness (i.e., low impulsivity), and thoughtfulness or exactness (i.e., cognitive structure). Although conscientiousness is less conceptually similar to attachment than the previous dimensions it overlaps slightly with the motivational aspects of attachment. Additionally, conscientiousness demonstrates a moderate negative relationship with attachment anxiety and avoidance (i.e., the anxiety-conscientiousness correlation is $-.23, p < .01$ for women and the avoidance-conscientiousness correlation is $-.21, p < .01$ for women and $-.20, p < .01$ for men), but the exact pattern of the relationship has been found to change by gender in that anxiety has no relationship to conscientiousness for men (Gallo et al., 2003).

Openness to experience is the least well-defined of the five dimensions. It includes traits that range from being intelligent to being cultured and curious, and it has

gone by the names: culture, intellect, and intellectence (Barrick & Mount, 1991). The lower-order dimensions that compose this trait are: fantasy, aesthetics, feeling, actions, ideas, and values (Costa & McCrae, 1988; Terracciano & Costa, 2003). Again, this dimension has been associated with Murray's needs measured by the PRF. Individuals with higher levels of openness to experience are thought to appreciate change (i.e., change), intellectual incentive (i.e., understanding), and artistic experiences (i.e., sentience), and they tend to be investigative (i.e., low harmavoidance) and original (i.e., autonomy). Openness to experience has been shown to be weakly related to attachment insecurity (i.e., non-significant correlations), but similar to conscientiousness the patterns tend to differ by gender in that avoidance has a zero relationship (i.e., $r = -.01$, *ns*) with openness to experience for women (Gallo et al., 2003).

The relationship between extraversion and agreeableness with attachment avoidance is clear given the interpersonal nature (i.e., a view of others) of all three individual differences. Additionally, the association between neuroticism and attachment anxiety can be simply explained through both dimension's emphasis on one's view of self. The five-factor dimensions of conscientiousness and openness to experience, which don't deal as directly with one's view of self and others, have a less obvious relationship with attachment anxiety and avoidance and consequently have shown weaker relationships empirically (Gallo et al., 2003). These previous findings regarding adult attachment and the five-factor model led to the assumption that similar relationships exist when attachment is manifested in the workplace or achievement settings as opposed to close relationships. Therefore, neuroticism was believed to be a correlate of worker attachment anxiety (positive relationship). The anxiety dimension of attachment was posited in the

current investigation to be unrelated to extraversion, agreeableness, conscientiousness and openness to experience. Also, the following personality variables were hypothesized to be correlates of worker attachment avoidance: agreeableness (negative relationship), extraversion (negative relationship), and neuroticism (positive relationship). The avoidance dimension of attachment was posited in the current investigation to be unrelated to conscientiousness and openness to experience.

Interpersonal Trust

The final construct creating the nomological network of variables linked to worker/peer attachment is interpersonal trust. Trust has been shown to be related to adult attachment styles in previous construct validation studies in the romantic domain (Collins & Read, 1990; Hazan & Shaver, 1987; Simpson, 1990). Specifically, researchers (e.g., Hazan & Shaver, 1987) have found that secure individuals experience more trust and less fear of closeness in love experiences than avoidant and anxious-ambivalent individuals, perhaps due to their positive past experiences (Pietromonaco, Greenwood, & Barrett, 2004; Shaver & Mikulincer, 2002; Simpson, Rholes, & Nelligan, 1992). Additionally, trust is a component of the agreeableness dimension of the Big Five previously discussed (Terracciano & Costa, 2003). Past research has demonstrated moderate correlations between attachment avoidance and agreeableness (Shaver & Brennan, 1992; Gallo et al., 2003) suggesting a relationship may exist between attachment avoidance and trust in the romantic domain. These assumptions naturally extend to relationships in today's interpersonal (i.e., service-based) work environment.

There are two types of trust: institutional and interpersonal (e.g., McAllister, 1995; Sitkin & Roth, 1993). Institutional trust deals with formal organizational controls

so it is less relevant to attachment. Interpersonal trust is one's belief that things are going to happen the way one expects (McAllister, 1995), and therefore is based on relationship histories and previous experiences. It was proposed in the current investigation that interpersonal trust is related to worker/peer attachment given it is grounded in individuals' beliefs about others and their consequential decisions (Bartholomew & Horowitz, 1991; McAllister, 1995; Shaver and Mikulincer, 2002). Cook and Wall (1980) delineated two crucial components to interpersonal trust in the workplace "(i) faith in the trustworthy intentions of others, and (ii) confidence in the ability of others, yielding ascriptions of capability and reliability" (p. 40). These beliefs are directed towards coworkers (Cook & Wall, 1980). Interpersonal trust at work was posited in the current investigation to show moderate correlations with worker/peer attachment given their common relationship- and expectancy-based foundations and identical target: coworkers. Thus, interpersonal trust at work was hypothesized to be a correlate of both worker/peer attachment anxiety and worker/peer attachment avoidance (negative relationships).

Given the abundance of conceptually similar constructs to worker/peer attachment, these related variables were treated as correlates in the current investigation. I expected that all of these variables overlap with one another to some degree and with worker/peer attachment. In order to investigate the relationships between the correlates and worker/peer attachment anxiety and avoidance, I conceptualized these variables as two distinct sets or blocks, Set *A* and Set *B*. Set *A* contains all of the worker attachment anxiety correlates and Set *B* contains all of the worker attachment avoidance correlates. The factor structure of these variables is not known and therefore it was not appropriate to impose a factor structure. As stated by Blalock (1982), "We often find ourselves

talking about large sets or blocks of variables that, on the surface, might be expected to be highly intercorrelated but that have not been clearly distinguished or measured” (p. 260). Such is the case in the current investigation so I treated the correlates of attachment anxiety and avoidance as sets of variables in order to examine the incremental validity of worker/peer attachment over and above the sets (Cohen, West, and Aiken, 2003). These predictions will be discussed in the next section. The following hypotheses investigate the relationships among all of the theoretically related constructs (i.e., the correlates) and worker/peer attachment.

Hypothesis 6a: The anxiety dimension of attachment (measured by the WAS and PAS) is posited to be related to all correlates in Set *A*: affiliation (negative relationship), dominance (negative relationship), succorance (positive relationship), neuroticism (positive relationship), and interpersonal trust at work/school (negative relationship).

Hypothesis 6b: The avoidance dimension of attachment (measured by the WAS and PAS) is posited to be related to all correlates in Set *B*: affiliation (negative relationship), dominance (negative relationship), deference (negative relationship), nurturance (negative relationship), autonomy (positive relationship), agreeableness (negative relationship), extraversion (negative relationship), neuroticism (positive relationship), and interpersonal trust at work/school (negative relationship).

Hypothesis 6c: The anxiety dimension of attachment (measured by the WAS and PAS) is posited to be unrelated to deference, nurturance, autonomy, extraversion, agreeableness, conscientiousness and openness to experience.

Hypothesis 6d: The avoidance dimension of attachment (measured by the WAS and PAS) is posited to be unrelated to succorance, conscientiousness and openness to experience.

Criterion-Related Validity

This section will discuss relationships between worker/peer attachment and associated criteria to complete the validation framework. In general the correlations obtained from self-report adult attachment styles and other conceptually similar constructs, such as the neuroticism, trait anxiety, global distress and self-esteem, have rarely exceeded .50 indicating that more than 25% of the variance in attachment is not explained by alternative constructs (Shaver & Mikulincer, 2004). Individual differences in attachment are believed to have unique criterion-related validity (i.e., concurrent validity) for certain constructs or behaviors over alternative personality or individual differences measures. Existing research has shown that individual differences in attachment significantly predict relationship status, interpersonal dependency, relationship length, commitment, and relationship satisfaction even after other variables such as the Big Five are statistically controlled, as was discussed earlier (Griffin & Bartholomew, 1994; Shaver & Brennan, 1992).

The attachment dimensions are more suitable for predicting specific interpersonal variables than the broad Big Five dimensions due to their higher levels of specificity and conceptual relationship with interpersonal criteria (John, 1990). Therefore, worker attachment was hypothesized to show unique criterion-related validity for certain interpersonal or affective-based criteria in the achievement domain, similar to the incremental validity demonstrated by adult attachment in the romantic relationship (i.e.,

social) literature. Interpersonal and affective variables within the workplace are vital workplace criteria given today's service-based economy, increased use of team-based designs, and environment of change (Dordevic, 2004; Laycock, 2003; Mount, Barrick, & Stewart, 1998; Rousseau, 1995), but they are not well predicted by existing individual differences measures. It was believed that worker/peer attachment would aid in a better explanation or prediction of these criteria.

I believe that theoretically-based frameworks of personality structure, such as worker/peer attachment, are more useful in the prediction of criteria that require higher fidelity than the broad five dimensions (Barrick & Mount, 1991; Mount et al., 1998). Shaver and Brennan (1992) quote John (1990) when describing the problems with the Big Five and the differences between it and the attachment dimensions:

The Big Five are to personality what the categories "plant" and "animal" are to the world of biological objects—extremely useful for initial, rough distinctions (high bandwidth) but less of value for predicting specific behaviors and outcomes (low fidelity). In contrast, more specific and content-rich constructs, such as the attachment-style variables, have higher fidelity; their specific variance cannot be reduced to, or represented by, broader dimensions (John, 1990, pp. 93-94).

The following sections will review crucial criteria that were hypothesized to be better predicted by worker/peer attachment than the ubiquitous, broad Big Five dimensions.

Coping

Mikulincer and Shaver (2004) stated that attachment relationships determine an individual's model of self and others (i.e., self-concept) as well as his/her ability to

regulate emotions (i.e., affect-regulation). Furthermore, they asserted that "individual differences in the sense of attachment security are manifested in modes of affect regulation" (Mikulincer & Shaver, 2004, p. 162). That is, an individual's display of his/her attachment style is evident in the way he/she regulates his/her emotions.

Research illustrating the affect-regulation strategies tied to the attachment system has predominately used Shaver and Mikulincer's (2002) model of the dynamics of attachment-system activation (Mikulincer, Shaver, & Pereg, 2003). This model includes three main stages that depict attachment system activation, hyperactivation, and deactivation. There are distinct affect-regulation strategies used by individuals for each of the attachment patterns. Avoidant (i.e., dismissing) individuals habitually cope with their distress and insecurity by removing themselves from stressful situations and they tend to try to achieve independence (i.e., deactivation), which results in them avoiding their personal problems and presenting themselves to others in a positive light (Mikulincer, 1998). On the other hand, anxious-ambivalent (i.e., preoccupied) individuals have affect-regulation strategies that result in a hyperactivation of "distress-related cues" and they make an effort to win the affection and support of others (Mikulincer, 1998, p. 432). In comparison, secure individuals are thought to have positive self-views that are not influenced by stressful situations, that is, situations that impede affect-regulation strategies for insecure individuals (Mikulincer, 1998).

Due to these distinct affect-regulation strategies, attachment patterns are associated with levels of distress and coping mechanisms (Shaver & Mikulincer, 2002). Specifically, researchers have shown that secure and insecure individuals have affect-regulation strategies that allow them to deal with stress and distress in different manners.

Secure individuals tend to deal with stress and distress by seeking proximity to and support from attachment figures and relying on internalized representations of supportive attachment figures. As a result they feel comforted and soothed by either the actual presence of an attachment figure or thoughts about attachment-figure availability. These affect-regulation strategies do not work as well for insecure individuals (Mikulincer & Shaver, 2004, p. 165).

In general, it appears that secure attachment helps buffer against the effects of stress due to differences in affect-regulation (Mikulincer, Florian, & Weller, 1993).

The cognitive phenomenological theory of stress and coping proposes two different coping strategies (i.e., problem- and emotion-focused strategies) to stressful events, which are defined as "person-environment interactions that are appraised by the person as relevant to their well-being and as taxing or exceeding coping resources" (Folkman, Lazarus, Pimley, & Novacek, 1987, p. 172). Coping, in general, is thought to be the process (i.e., acts and thoughts) individuals use to handle these stressful events. Problem-focused coping refers to attempts to change the stressful situation, whereas emotion-focused coping deals with the regulation of stressful emotions (Folkman & Lazarus, 1988; Folkman et al, 1987; Lazarus & Folkman, 1984). There are many forms of both problem- and emotion-focused coping. Problem-focused coping includes interpersonal (i.e., confrontive) and intrapersonal (i.e., cognitive) forms of coping. Emotion-focused coping includes many forms of affect regulation such as: escape avoidance, distancing, self-control, positive reappraisal, and accepting responsibility. Additionally, coping mechanisms such as seeking social support have both problem- and

emotion-focused components depending on its use. Problem-focused coping is more effective in changeable situations (e.g., job loss), whereas emotion-focused coping is more effective in situations that can not be changed (e.g., the death of a family member).

Research investigating the relationship between attachment patterns and affect-regulation as well as interpersonal/relationship functioning has shown that avoidant individuals habitually engage in more social distancing behaviors (i.e., an emotion-focused coping mechanism); and secure individuals are more likely to seek support from others during times of stress (e.g., for highly secure women, $\beta = .23$ for the relationship between anxiety/fear and support seeking behavior) because of their greater levels of trust and positive, past experiences (i.e., a problem-focused form of coping). Secure individuals engage in more productive, problem-focused forms of coping than insecure individuals and they use more diverse coping strategies (Feeney, 2004; Pietromonaco et al., 2004; Shaver & Mikulincer, 2002; Simpson et al., 1992). It is possible that anxious individuals may also seek the support of others, especially their romantic partners, during times of stress due to their desire for their partner to take care of their attachment-related needs (Collins et al., 2004); but this social seeking behavior would be viewed as an emotion-focused form of coping because the anxious individuals' goals are not to alter stressful situations but rather to regulate their emotions through their partners support. The coping strategies used by secure individuals are more problem-focused (i.e., more effective when the situation is changeable) than the strategies used by insecure individuals.

It was assumed in the current investigation that the same relationship exists in the work domain. Individuals with low levels of worker/peer attachment anxiety and

avoidance were proposed to use more problem-focused coping strategies when encountering problems at work, and individuals with higher levels of worker/peer attachment anxiety or avoidance were posited to use more emotion-focused coping strategies due to their poor affect regulation. Consequently, the following hypotheses were proposed regarding worker/peer attachment's prediction of emotion- and problem-focused coping over and above the correlates or sets of variables previously discussed. The effects were hypothesized to be medium given previous research suggests attachment is related to emotion- and problem-focused coping (Feeney, 2004; Pietromonaco et al., 2004; Shaver & Mikulincer, 2002; Simpson et al., 1992), and I believed the attachment dimensions were more precise than the Big Five and the other correlates in the prediction of this affect-related criterion. Previous research on the Big Five and coping has shown that the relationships between the Big Five traits and emotion- and problem-focused coping range from only $r = .16, p < .01$ and $r = .26, p < .001$ (Kardum & Krapić, 2001), suggesting there is a considerable amount of variance to be accounted for in coping. All of the criterion-related validity hypotheses will follow the standards for size of effect for the hierarchical regression of sets in Cohen et al. (2003); effect of .02 is small, .15 is medium, and .35 is large. Also, the standards for size of effect in simple regression in Cohen et al. (2003) will be used; effect of .10 is small, .30 is medium, and .50 is large.

Hypothesis 7a: The anxiety dimension of attachment (measured by the WAS and PAS and the peer's ratings of the target's attachment anxiety) is posited to be significantly positively related to emotion-focused coping over and above the worker attachment anxiety correlates (Set A). These effects will be medium.

Hypothesis 7b: The anxiety dimension of attachment (measured by the WAS and PAS and the peer's ratings of the target's attachment anxiety) is posited to be significantly negatively related to problem-focused coping over and above the worker attachment anxiety correlates (Set **A**). These effects will be medium.

Hypothesis 7c: The avoidance dimension of attachment (measured by the WAS and PAS and the average peer ratings of the target's attachment avoidance) is posited to be significantly positively related to emotion-focused coping over and above the worker attachment avoidance correlates (Set **B**). These effects will be medium.

Hypothesis 7d: The avoidance dimension of attachment (measured by the WAS and PAS and the average peer ratings of the target's attachment avoidance) is posited to be significantly negatively related to problem-focused coping over and above the worker attachment avoidance correlates (Set **B**). These effects will be medium.

Work-Family Conflict

In recent years, changes to the U.S. demographic characteristics (e.g., more women entering the workforce) has increased concern about a worker's ability to manage both work and personal life responsibilities in both the organizational literature and corporate policies/initiatives (Laycock, 2003; Martins, Eddleston, & Veiga, 2002). This movement has been termed work-life balance and includes many corporate initiatives, such as work childcare centers, telecommuting, flexible work schedules, and various other practices that assist employees in balancing work and life responsibilities. This issue has also received attention in the organizational literature in studies that examine

work-family conflict and its consequences (Greenhaus & Beutell, 1985; Martins et al., 2002). Work-family conflict has been defined as "a form of interrole conflict in which the role pressures from the work and family domains are mutually incompatible in some respect. That is, "participation in the work (family) role is made more difficult by virtue of participation in the family (work) role" (Greenhaus & Beutell, 1985, p. 77). There are three forms that work-family conflict can take: time-based conflict, strain-based conflict, and behavior-based conflict.

For the purposes of this research, I believed strain-based conflict was the most important type of conflict. Strain-based conflict is analogous to "negative emotional spillover" from work to non-work. That is, stressful events at work, such as coping with a new job, poor person-organization fit, disappointment, and extreme changes, may make it hard for an individual to have a happy and fulfilling life outside of work due to the tension, fatigue, frustration, and worry that these stressful events create (Bartolome & Evans, 1980; Greenhaus & Beutell, 1985). This emotional spillover also exists in the opposite direction because stressful events at home such as divorce, family conflict, and other family issues make it hard for someone to function optimally at work due to the stress, worry, and frustration associated with family problems.

Hazan and Shaver (1990) found that negative emotional spillover from home to work was associated with an individual's attachment pattern. For example, they demonstrated that anxiously attached individuals allowed personal life issues to interfere with their productivity at work unlike securely attached individuals. That is, anxious individuals had higher mean levels of endorsement for love interfering with work than secure individuals (means for how much does love interfere with work: anxious $M =$

1.86, avoidant $M = 1.77$, and secure $M = 1.63$, $F(2, 658) = 7.19$, $p < .001$). Additionally, avoidant individuals in Hazan and Shaver's study reported negative emotional spillover from work to home. Specifically, they had higher mean levels of endorsement for work harming relationships than secure individuals (means for work harms health/relationships: avoidant $M = 2.50$, anxious $M = 2.25$, and secure $M = 1.93$, $F(2, 233) = 12.31$, $p < .001$). Basically, these results suggest that anxious individuals report more family-work conflict (i.e., FWC: negative spillover from home to work) and avoidant individuals report more work-family conflict (i.e., WFC: negative spillover from work to home) than secure individuals (Hazan and Shaver, 1990; Netemeyer, Boles, & McMurrian, 1996). I believed these romantic/close relationship attachment relationships with work-life balance would also exist for worker/peer attachment.

Research has typically looked at situational factors as antecedents to WFC and FWC, such as working long hours (Rantanen, Pulkkinen, & Kinnunen, 2005). Solutions suggested in the literature to combat work-family problems have usually included human resource practices (i.e., work-family policies and incentives) and other macro-level suggestions, such as changing the nature of the job or work factors (e.g., Batt & Valcour, 2003; Byron, 2005). Organizational policies influence an employee's ability to balance the demands of home and work. Although these policies and practices inevitably influence employee perceptions, there also are person-oriented variables that predict WFC or FWC. Prior to the 1990s, job attitudes studied in the organizational literature, such as organizational commitment and job satisfaction, were largely seen as results of situational influences such as job redesign and organizational development similar to WFC and FWC. The job satisfaction literature transformed this view after researchers

found that job attitudes are somewhat consistent over time and across jobs, and therefore both dispositional and situational variables are important antecedents (Staw & Ross, 1985).

Several work-family studies have attempted to change the work-family literature in a similar fashion by examining personality (i.e., the Big Five factors) as an antecedent to WFC and FWC (e.g., Bruck & Allen, 2003; Rantanen et al., 2005; Wayne, Musisca, & Fleeson, 2004). The strongest relationships have been found between neuroticism and WFC and FWC. Wayne and colleagues (2004) found a medium ($\beta = .38, p < .001$) relationship between WFC and neuroticism and a medium relationship ($\beta = .30, p < .001$) relationship between FWC and neuroticism. In most studies (e.g., Bruck & Allen, 2003; Rantanen et al., 2005; Wayne et al., 2004) a small to medium, positive correlation exists. Although the results are somewhat mixed, agreeableness also demonstrates a small to medium, negative relationship with WFC and in one study with FWC. That is, Wayne and colleagues (2004) found a small ($\beta = .15, p < .001$) relationship between agreeableness and WFC. A small, negative relationship exists between conscientiousness and WFC and FWC in some studies as well (Bruck & Allen, 2003; Rantanen et al., 2005; Wayne et al., 2004). For example, Wayne et al. (2004) reported $\beta = -.16, p < .001$ for the conscientiousness-WFC relationship and $\beta = -.23, p < .001$ for the conscientiousness-FWC relationship.

These initial findings suggest that dispositional factors play a role in employee perceptions of conflict between work and home. It could be argued that the Big Five measures are not the appropriate tools for predicting WFC and FWC. As was discussed earlier, the Big Five are useful for rough, initial distinction or predictions (John, 1990).

Previous studies on attachment have found that attachment avoidance and anxiety are related to poor affect-regulation strategies and consequently ineffective forms of coping (e.g. Mikulincer, 1998; Mikulincer & Shaver, 2004; Pietromonaco et al., 2004; Shaver & Mikulincer, 2002; Simpson et al., 1992). It was therefore hypothesized in the current investigation that specific outcomes such as WFC and FWC are best predicted with an individual difference measure that taps into whether or not an individual can cope with the demands from home and work as well as his/her expectations, beliefs and behaviors in the workplace. Therefore, the following hypotheses were posited regarding worker/peer attachment's prediction of WFC and FWC after statistically controlling for the correlates or sets. The effects were hypothesized to be medium given the most variance accounted for by a Big Five trait in FWC trait was 9%, and in WFC was 14% (Wayne et al., 2004). I believed that attachment anxiety could account for 15% more of the variance in FWC, and attachment avoidance could account for 15% more of the variance in WFC given the Hazan and Shaver (1990) findings.

Hypothesis 8a: The anxiety dimension of attachment (measured by the WAS and PAS and the average peer ratings of the target's attachment anxiety) is posited to be significantly positively related to FWC over and above the worker attachment anxiety correlates (Set *A*). These effects will be medium.

Hypothesis 8b: The avoidance dimension of attachment (measured by the WAS and PAS and the average peer ratings of the target's attachment avoidance) is posited to be significantly positively related to WFC over and above the worker attachment avoidance correlates (Set *B*). These effects will be medium.

Performance

Job performance is another critical criterion for demonstrating the criterion-related validity and utility of worker attachment. The original work done on the relationship between the attachment system and job performance was conducted by Hazan & Shaver (1990) using the adult romantic attachment styles they created (Hazan & Shaver, 1987). In this study income was used as the criterion. Although this may indirectly reflect performance, income is also influenced by many other variables. Hazan and Shaver (1990) found that anxious individuals had the lowest incomes of the three attachment styles. Although, avoidant individuals reported equivalent incomes to secure individuals, but they reported other work related problems not associated with secure individuals. These findings provided some initial evidence for the attachment-performance relationship. In the current research this relationship was investigated in more detail by delineating certain aspects of performance (i.e., interpersonal versus technical aspects of performance) that are related to the attachment dimensions.

Recently, many researchers have suggested the utility of personality traits as predictors of workplace performance because of the increased use of teamwork and abundance of service-oriented jobs (e.g., Mount et al., 1998). Specifically, Mount and colleagues (1998) found that emotional stability/neuroticism and agreeableness are valid predictors of team and dyadic service performance, with the personality trait-performance relationship being stronger for teamwork than service performance. Specifically, the emotional stability-team job performance true-score correlation found using meta-analysis was .25 and the agreeableness-team job performance true-score correlation was .35. The emotional stability-dyadic service job performance true-score correlation was

.14 and the agreeableness-dyadic service performance true-score correlation was .22. Despite its importance in illuminating the need for personality and affective predictors within today's workplace, this research has focused on the broad, low fidelity Big Five personality dimensions and the estimated true-score correlations have not exceeded .35 (John, 1990; Mount et al., 1998). Given the nature of team-based and dyadic service-based jobs, I believed that the validity coefficients for predictors of these types of jobs (i.e., interpersonal job performance) should be much closer to .50. Schmidt and Hunter (1998) reported validity coefficients above .50 for general mental ability's prediction of job performance in general. This coefficient is even higher for complex jobs or jobs requiring more general mental ability (Schmidt & Hunter, 1998). When predicting performance for jobs that require interpersonal skills, I believe that personality/interpersonal style predictors should have validity coefficients closer to that of the general mental ability validity coefficients for technical jobs. For these validity coefficients to approach .50, a more theoretically driven framework for understanding interpersonal performance in the workplace is needed, such as the worker attachment system.

Prior research exists suggesting that romantic attachment patterns are related to interpersonal work behavior both in individual and group contexts (Hazan & Shaver, 1990; Rom & Mikulincer, 2003). Although avoidant individuals report less satisfaction with coworkers, they may be as productive as secure individuals for certain types of jobs not requiring interpersonal skill (Hazan & Shaver, 1990). Yet, they have been shown to be less productive in group contexts because of their poor socioemotional performance (i.e., contributing to the cohesion and morale of a group) and consequential instrumental

or task performance due to the potential breakdown of their affect-regulation strategies in interpersonal environments.

Anxious individuals tend to have poor productivity or task performance in both individual and interpersonal environments because of their detrimental affect-regulation strategies and motivational tendencies, such as pursuit of closeness goals. These tendencies leave anxious individuals unsatisfied with their coworkers and unable to perform their jobs optimally (Hazan & Shaver, 1990; Rom & Mikulincer, 2003).

Therefore, I assumed that attachment patterns related to work would also predict interpersonal behavior within the workplace. For example, attachment-related avoidance and anxiety were posited to negatively predict interpersonal aspects of performance (e.g., communication, teamwork, relationship skill, etc.). Yet, performance on non-interpersonal (i.e., technical) tasks, such as problem analysis and strategic management, was proposed to be negatively predicted by worker attachment anxiety, but not worker attachment avoidance. The following hypotheses were posited about worker attachment's prediction of job performance after the effects of the correlates previously discussed are partialled out. The effects were hypothesized to be medium given the Big 5 traits have previously accounted for 2 to 13% of the variance in interpersonal performance, and I believed a better prediction tool could allow for 25% of the variance to be accounted for in interpersonal performance.

Hypothesis 9a: The anxiety dimension of attachment (measured by the WAS) is posited to be significantly negatively related to interpersonal job performance (i.e., relationship skills, managing conflict, teamwork/cooperation, communication, motivating others, customer focus, and promotes change) over

and above the worker attachment anxiety correlates (Set **A**). These effects will be medium.

Hypothesis 9b: The anxiety dimension of attachment (measured by the WAS) is posited to be significantly negatively related to technical job performance (i.e., problem analysis, planning/organizing, process/quality improvement, results orientation, and strategic management). These effects will be medium.

Hypothesis 9c: The avoidance dimension of attachment (measured by the WAS) is posited to be significantly negatively related to interpersonal job performance (i.e., relationship skills, managing conflict, teamwork/cooperation, communication, motivating others, customer focus, and promotes change) over and above the worker attachment avoidance correlates (Set **B**). These effects will be medium.

Hypothesis 9d: The avoidance dimension of attachment (measured by the WAS) is posited to be unrelated to technical performance.

Adjustment

Another criterion I believed to be important to examine for the academic sample was college adjustment (Baker & Siryk, 1984; Baker, McNeil, & Siryk, 1985). Research has shown that individuals with insecure attachment styles have trouble with affect- and emotion-regulation, as was discussed earlier in the section on coping, and have higher levels of psychological distress (Shaver & Mikulincer, 2002). Stressful or threatening situations break down avoidant individuals' affect-regulation strategies and exacerbate anxious individuals' affect-regulation strategies, and consequently inhibit individuals with insecure attachment from successfully handling stressful events. Also, insecurely

attached individuals typically have emotion-focused coping strategies, which are not as productive in situations that can be changed (Pietromonaco et al., 2004; Shaver & Mikulincer, 2002; Simpson et al., 1992).

It was predicted in the current investigation that insecure individuals do not adjust to college as well as secure individuals. College is a time in which individuals face many changes and pressures, which will theoretically activate the insecure individuals' ineffective coping strategies (Shaver & Mikulincer, 2002). Additionally, Lapsley and Edgerton (2002) found that secure attachment is associated with better college adjustment and fearful (i.e., high avoidance and high anxiety) and preoccupied (i.e., low avoidance and high anxiety) attachment are negatively associated with college adjustment (i.e., correlations for social adjustment to college with: secure $r = .33, p < .01$, fearful $r = -.42, p < .01$, preoccupied $r = -.23, p < .01$, and dismissing $r = .09, ns$; correlations for personal-emotional adjustment to college with: secure $r = .26, p < .01$, fearful $r = -.29, p < .01$, preoccupied $r = -.26, p < .01$, and dismissing $r = -.09, ns$). Given romantic attachment is predictive of college adjustment, it was proposed that attachment with regards to one's peers or fellow students would also demonstrate a significant relationship. Therefore, peer attachment anxiety and avoidance were hypothesized to predict college adjustment, although the attachment avoidance relationship was believed to not be as strong given the non-significant findings between the dismissing attachment style and college adjustment. Thus, the following hypotheses were posited about peer attachment's prediction of college adjustment after controlling for the attachment anxiety and avoidance correlates. The incremental predictive validity effect of attachment anxiety was hypothesized to be medium given it is theoretically more related to

adjustment than the correlates (i.e., attachment is grounded in reactions to stressful situations; Ainsworth et al., 1978), but it has not accounted for more than 18% of the variance in college adjustment in previous research (Lapsley and Edgerton, 2002). Given the previous empirical work and theoretical reasoning, peer attachment anxiety was hypothesized to account for 15% more of the variance in college adjustment above its correlates (e.g., the broad, low fidelity Big 5 traits).

Hypothesis 10a: The anxiety dimension of attachment (measured by the PAS and average peer ratings of the target's attachment anxiety) is posited to be significantly negatively related to college adjustment over and above the worker attachment anxiety correlates (Set A). These effects will be medium.

Hypothesis 10b: The avoidance dimension of attachment (measured by the PAS and average peer ratings of the target's attachment anxiety) is posited to be significantly negatively related to college adjustment. These effects will be medium.

Organizational Commitment

The final criterion that was investigated in the validation of worker/peer attachment was organizational commitment. Organizational commitment, its antecedents, correlates and consequences have been frequently studied in the organizational literature (e.g., Herscovitch & Meyer, 2002; Mathieu & Zajac, 1990; Meyer & Allen, 1991). The definition of organizational commitment varies slightly from one researcher to the next, but in general it is "a bond or linking of the individual to the organization" (Mathieu & Zajac, 1990, p. 171), which enhances the likelihood that the individual will remain with his/her current organization (Herscovitch & Meyer, 2002).

The most common predictors of organizational commitment are: the work environment and organizational structure, role states, and a few person variables such as tenure and protestant work ethic. Notably, these person variables have been fairly superficial and the correlations obtained have been small. For example, protestant work ethic has shown an average correlation of .289 with organizational commitment (Mathieu & Zajac, 1990). Researchers such as Mathieu and Zajac (1990) have commented that the person variables typically included in organizational commitment studies are used as descriptive statistics and there has been very little theoretical research investigating the relationship between individual differences and organizational commitment (Mathieu & Zajac, 1990). Dispositions that predict one's desire to remain or commit have not typically been investigated.

Meyer and Allen (1991) presented a three-component model of organizational commitment that represents an employee's commitment profile. It includes three distinct psychological states regarding commitment that employees can experience diverse combinations of at the same time. This framework has been helpful in understanding the different types and consequences of commitment and has been well-accepted by many organizational theorists (e.g., Dordevic, 2004; Herscovitch & Meyer, 2002). The first component is *affective commitment*, or the desire to remain with an organization. This form of commitment has been related to various work outcomes, such as: attendance, maximal performance, and helping behaviors. The second component is *continuance commitment*, which is defined as the employee's mind-set regarding the perceived cost of leaving. This component is associated with employees doing the minimal amount of work that needs to be done to maintain employment. The final component is *normative*

commitment, which is thought to be the employee's perception of his/her obligation to remain with the company. Employees with high levels of normative commitment may engage in the same behaviors as individuals with high levels of affective commitment only if they feel it is part of their work duty and that they are obligated to in response to the benefits they receive (Meyer & Allen, 1991).

Several authors have also investigated the antecedents or predictors of these three components of organizational commitment. There is far less empirical research on the antecedents of normative commitment than the other two components. Research on the predictors of continuance commitment has largely focused on investments and the availability of alternatives. It is defined as the employee's mind-set regarding the cost of leaving the organization, which has been found to be best predicted by anything that enhances that perceived cost. Affective commitment has received far more research and it is predicted by similar variables to the antecedents of organizational commitment in general as was previously discussed: organizational structure, job-related characteristics, work experiences, and some person characteristics. Some of the individual dispositions (i.e., person characteristics) that are moderately associated with affective commitment are: need for achievement ($r = .20, p < .05$) and autonomy ($r = -.30, p < .05$). Similar to the general disposition-commitment relationship, the relationships between dispositions and affective commitment have been moderate (Mathieu & Zajac, 1990; Meyer & Allen, 1991; Morris & Snyder, 1979). It should also be noted that many of the person characteristics associated with affective commitment are also associated with attachment patterns (Gallo et al., 2003, Shaver & Brennan, 2002; Shaver & Mikulincer, 2002). It was believed in the current investigation that these previously studied dispositions, such

as autonomy, are too specific for predicting affective commitment and a more comprehensive person characteristic associated with affect, personality, and behavior was needed for fruitful prediction. Individual differences in attachment were proposed to serve as better predictors for an individual's desire to remain with an organization (i.e., affective commitment), the attitudinal and behavioral component of organizational commitment (Meyer & Allen, 1991).

Specifically, I hypothesized worker/peer attachment to have a relationship with affective commitment (i.e., a psychological state regarding one's desire to remain) and not necessarily normative or continuance commitment for three reasons. First, affective commitment is associated with on-the-job behaviors that are also thought to be related to adult attachment such as attendance (Hazan & Shaver, 1990), helping behaviors or contextual performance (Kanfer, 2003), and overall performance (Hazan & Shaver, 1990; Meyer & Allen, 1991); suggesting worker attachment is a distal predictor to these affective commitment consequences. Second, affective commitment is the only form of commitment that has been associated with individual dispositions, such as autonomy (Meyer & Allen, 1991). Finally, romantic attachment has been associated with relationship commitment or one's desire to stay in a relationship (Shaver & Brennan, 1992). Affective commitment could be seen as the organizational/work parallel to relationship commitment whereas worker attachment is the work parallel to romantic attachment. Therefore, the following hypotheses were proposed about the prediction of worker/peer attachment's prediction of affective commitment after adjusting for the correlates in Sets *A* or *B*. The incremental predictive validity effect was hypothesized to be medium because Shaver and Brennan's (1992) previous research has indicated that

attachment accounts for 13% more of the variance in relationship commitment over and above the Big 5 (i.e., $\Delta R^2 = .13$, $\Delta F = 4.05$, $p < .01$). Because I am viewing affective commitment as the organizational parallel to relationship commitment, similar amounts of incremental predictive validity were expected in the current investigation.

Hypothesis 11a: The anxiety dimension of attachment (measured by the WAS and PAS and the average peer ratings of the target's attachment anxiety) is posited to be significantly negatively related to affective commitment over and above the worker attachment anxiety correlates (Set **A**). These effects will be medium.

Hypothesis 11b: The avoidance dimension of attachment (measured by the WAS and PAS and the average peer ratings of the target's attachment avoidance) is posited to be significantly negatively related to affective commitment over and above the worker attachment avoidance correlates (Set **B**). These effects will be medium.

Summary – Hypotheses

In summary, all of the following hypotheses regarding the construct and criterion-related validation of worker/peer attachment were investigated in the current study:

Hypothesis 1: Worker attachment (measured by the WAS) and peer attachment (measured by the PAS) comprises two consistent dimensions with high degrees of measurement precision (i.e., Cronbach's alpha coefficients of .80 or higher): attachment anxiety and attachment avoidance.

Hypothesis 2: Peer attachment anxiety and avoidance (measured by the PAS) will demonstrate high levels of test-retest reliability from one measurement period to another (i.e., $r \geq .80$).

Hypothesis 3a: The anxiety dimension of attachment (measured by the PAS) is posited to be significantly positively related to fellow students' ratings of the target's attachment anxiety.

Hypothesis 3b: The avoidance dimension of attachment (measured by the PAS) is posited to be significantly positively related to fellow students' ratings of the target's attachment avoidance.

Hypothesis 4a: Serial and investiture socialization tactics are posited to be significantly negatively related to the anxiety dimension of attachment (measured by the WAS). These effects will be small to medium.

Hypothesis 4b: Preoccupied and fearful romantic/close relationship attachment styles (measured by the RQ) is posited to be significantly positively related to the anxiety dimension of attachment (measured by the WAS and PAS). These effects will be medium.

Hypothesis 4c: Serial and investiture socialization tactics are posited to be significantly negatively related to the avoidance dimension of attachment (measure by the WAS). These effects will be small to medium.

Hypothesis 4d: Dismissing and fearful romantic/close relationship attachment styles (measured by the RQ) are posited to be significantly positively related to the avoidance dimension of attachment (measured by the WAS and PAS). These effects will be medium.

Hypothesis 5a: Average unit tenure is positively associated with the anxiety dimension of attachment (measured by the WAS) departmental homogeneity. These effects will be small to medium.

Hypothesis 5b: Average unit tenure is positively associated with the avoidance dimension of attachment (measured by the WAS) departmental homogeneity.

These effects will be small to medium.

Hypothesis 6a: The anxiety dimension of attachment (measured by the WAS and PAS) is posited to be related to all correlates in Set *A*: affiliation (negative relationship), dominance (negative relationship), succorance (positive relationship), neuroticism (positive relationship), and interpersonal trust at work/school (negative relationship).

Hypothesis 6b: The avoidance dimension of attachment (measured by the WAS and PAS) is posited to be related to all correlates in Set *B*: affiliation (negative relationship), dominance (negative relationship), deference (negative relationship), nurturance (negative relationship), autonomy (positive relationship), agreeableness (negative relationship), extraversion (negative relationship), neuroticism (positive relationship), and interpersonal trust at work/school (negative relationship).

Hypothesis 6c: The anxiety dimension of attachment (measured by the WAS and PAS) is posited to be unrelated to deference, nurturance, autonomy, extraversion, agreeableness, conscientiousness and openness to experience.

Hypothesis 6d: The avoidance dimension of attachment (measured by the WAS and PAS) is posited to be unrelated to succorance, conscientiousness and openness to experience.

Hypothesis 7a: The anxiety dimension of attachment (measured by the WAS and PAS and the peer's ratings of the target's attachment anxiety) is posited to be

significantly positively related to emotion-focused coping over and above the worker attachment anxiety correlates (Set **A**). These effects will be medium.

Hypothesis 7b: The anxiety dimension of attachment (measured by the WAS and PAS and the peer's ratings of the target's attachment anxiety) is posited to be significantly negatively related to problem-focused coping over and above the worker attachment anxiety correlates (Set **A**). These effects will be medium.

Hypothesis 7c: The avoidance dimension of attachment (measured by the WAS and PAS and the average peer ratings of the target's attachment avoidance) is posited to be significantly positively related to emotion-focused coping over and above the worker attachment avoidance correlates (Set **B**). These effects will be medium.

Hypothesis 7d: The avoidance dimension of attachment (measured by the WAS and PAS and the average peer ratings of the target's attachment avoidance) is posited to be significantly negatively related to problem-focused coping over and above the worker attachment avoidance correlates (Set **B**). These effects will be medium.

Hypothesis 8a: The anxiety dimension of attachment (measured by the WAS and PAS and the average peer ratings of the target's attachment anxiety) is posited to be significantly positively related to FWC over and above the worker attachment anxiety correlates (Set **A**). These effects will be medium.

Hypothesis 8b: The avoidance dimension of attachment (measured by the WAS and PAS and the average peer ratings of the target's attachment avoidance) is

posited to be significantly positively related to WFC over and above the worker attachment avoidance correlates (Set **B**). These effects will be medium.

Hypothesis 9a: The anxiety dimension of attachment (measured by the WAS) is posited to be significantly negatively related to interpersonal job performance (i.e., relationship skills, managing conflict, teamwork/cooperation, communication, motivating others, customer focus, and promotes change) over and above the worker attachment anxiety correlates (Set **A**). These effects will be medium.

Hypothesis 9b: The anxiety dimension of attachment (measured by the WAS) is posited to be significantly negatively related to technical job performance (i.e., problem analysis, planning/organizing, process/quality improvement, results orientation, and strategic management). These effects will be medium.

Hypothesis 9c: The avoidance dimension of attachment (measured by the WAS) is posited to be significantly negatively related to interpersonal job performance (i.e., relationship skills, managing conflict, teamwork/cooperation, communication, motivating others, customer focus, and promotes change) over and above the worker attachment avoidance correlates (Set **B**). These effects will be medium.

Hypothesis 9d: The avoidance dimension of attachment (measured by the WAS) is posited to be unrelated to technical performance.

Hypothesis 10a: The anxiety dimension of attachment (measured by the PAS and average peer ratings of the target's attachment anxiety) is posited to be

significantly negatively related to college adjustment over and above the worker attachment anxiety correlates (Set **A**). These effects will be medium.

Hypothesis 10b: The avoidance dimension of attachment (measured by the PAS and average peer ratings of the target's attachment anxiety) is posited to be significantly negatively related to college adjustment. These effects will be medium.

Hypothesis 11a: The anxiety dimension of attachment (measured by the WAS and PAS and the average peer ratings of the target's attachment anxiety) is posited to be significantly negatively related to affective commitment over and above the worker attachment anxiety correlates (Set **A**). These effects will be medium.

Hypothesis 11b: The avoidance dimension of attachment (measured by the WAS and PAS and the average peer ratings of the target's attachment avoidance) is posited to be significantly negatively related to affective commitment over and above the worker attachment avoidance correlates (Set **B**). These effects will be medium.

CHAPTER 2

STUDY 1

Study 1 involved surveying undergraduate students at a large southeastern university during two separate time periods to determine the psychometric properties of the Peer Attachment Scale (i.e., the parallel for students to the Worker Attachment Scale), along with its relationship with other non-ability measures and relevant criteria. Participants were also asked to identify up to three peers at school who would agree to fill out a survey on his/her attachment style for purposes of inter-rater agreement.

Method

Participants

166 undergraduate students enrolled in a psychology course at a large southeastern university came to the information session for the present study. 158 students completed the first web-based survey and 150 students completed the second web-based survey making a complete sample of 150 participants. The gender distribution of the sample was 51% female and 49% male, which differs from the university's gender distribution (i.e., 29% female and 71% male). Also, the mean participant age was the same as the university's student age ($M = 20$, $SD = 2.52$; Office of Institutional Research and Planning, 2006). In addition to the 158 participants, the participants were asked to give the names and email addresses of up to three fellow students they are close with to have them answer questions regarding their peer attachment style. 327 peers filled out surveys on the participants ranging from zero to three peers per participant. 10 of the peers that filled out surveys corresponded to participants that had not completed his/her survey. Therefore, there were 317 peer

ratings used in the current investigation. There were 125 in the Peer 1 group, 104 in the Peer 2 group, and 88 in the Peer 3 group.

Procedure

Volunteer undergraduate students were awarded extra credit points in their psychology courses if they completed both Sessions 1 and 2. The students came to an information session at the psychology department in which they were given information on the study, asked for their email address, and asked if they wanted to give the names and emails of three peers to complete the Peer Attachment Scale on him/her. The participants were then emailed an on-line, one-hour survey that had to be completed within 24 hours of the information session, in order to obtain a higher response rate. The survey included various scales that will be described in the following sections as well as demographic questions such as gender, age, ethnicity, tenure at the university, etc. If the names/emails of peers were given, the peers were emailed a link to complete the questionnaire (i.e., a web-based survey containing the Peer Attachment Scale – peer ratings). Also, the participants were asked to rate how well they know each of the peers filling out the survey on him/her on a 4-point scales as part of the first survey. Finally, the participant was emailed an on-line survey two weeks after completing Session 1. After completion the participant received two extra credit points as well as up to 3 more points if his/her peers completed the survey on him/her. The data were matched using the participant's name and email address as well as their peers' names and email addresses. In a couple of cases the name/email of the peer given by the participant in Survey 1 did not match the name they previously gave during the information session and therefore those ratings on how well the participant knew the peer were deleted. Also, some of the

participants did not rate how well they knew their peers. Consequently, a small number of peer ratings did not have corresponding ratings from the participant on how well he/she knows him/her.

Measures

The following scales were included in the on-line surveys completed by the undergraduate psychology students. There were two versions of the survey for both Session 1 (i.e., Time 1) and Session 2 (i.e., Time 2) in order to counterbalance order effects. The measures were presented in reverse order in the two versions with the PAS always being presented in the middle and the biographical questions in Session 1 always being presented first. Specifically, the order of measures in Session 1 for Version 1 was: Biographical Questions, Big Five – IPIP, PAS, Interpersonal Trust at School, and EPPS; and for Version 2 was: Biographical Questions, EPPS, Interpersonal Trust at School, PAS, and Big Five – IPIP. The order of measures in Session 2 for Version 1 was: Brief COPE, School-Family/Life Balance scales, PAS, SACQ, and Organizational Commitment scales (Short Form); and for Version 2 was: Organizational Commitment scales (Short Form), SACQ, PAS, School-Family/Life Balance scales, and Brief COPE.

Peer Attachment Scale (PAS)

This measure was completed in both Sessions 1 and 2. It contains two scales: peer attachment avoidance and peer attachment anxiety. The development of these scales was previously discussed, and example items can be found in Appendix B. The items were responded to along a 6-point *strongly disagree-strongly agree* response scale.

Peer Attachment Scale – Peer Rating (PAS – PR)

This measure was completed by the peers chosen by the participant. It contains two scales: peer attachment avoidance and peer attachment anxiety. The scales were adapted from the PAS to reflect the third person. Example items can be found in Appendix C.

Romantic/Close Relationship Attachment

This measure was completed in Session 1. Romantic/close relationship attachment was measured using a revised version of Bartholomew & Horowitz's (1991) Relationship Questionnaire (RQ). This measure includes four brief paragraphs describing the four attachment styles. In the current investigation each sentence in the paragraphs served as an item, making the RQ a continuous measure. The secure attachment style has 4 items, the dismissing attachment style has 3 items, the preoccupied attachment style has 4 items, and the fearful attachment style has 5 items. Therefore, there are 16 items in this measure. Each participant was asked to rate on a 6-point scale the degree to which they resemble each of the four styles. The directions in the current study were changed from Bartholomew and Horowitz's (1991) directions to state: "How well does each of the set of statements below describe your interpersonal style." Also, the response scales were adjusted from a 7-point to a 6-point scale.

Edwards Personal Preference Schedule (EPPS)

This measure was completed in Session 1. A normative version of the Edwards Personal Preference Schedule (Edwards, 1954, 1959) was created in a similar fashion to previous studies (e.g., Piedmont, McCrae, Costa, 1992). That is, normative response scales were created for each distinct item on the EPPS (1954). The items were responded

to along a 6-point *strongly disagree-strongly agree* response scale. Normative scales were created only for the needs included in the hypotheses: deference, autonomy, affiliation, succorance, dominance, and nurturance. Each scale contains 9 items.

Big Five – IPIP

This measure was completed by each of the participants during Session 1 (i.e., the first survey). Goldberg's (1999) International Personality Item Pool (2001) was used to measure the Big Five dimensions: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Each scale contains 20 items and the items were responded to along a 6-point *strongly disagree-strongly agree* response scale.

Interpersonal Trust at School

This measure was completed in Session 1. Two dimensions of Cook and Wall's (1980) Interpersonal Trust at Work measure, Faith in Intentions of Peers and Confidence in Actions of Peers, were adapted to create the Interpersonal Trust at School measure. The target was changed from workmates to classmates. The items were responded to along a 6-point *strongly disagree-strongly agree* response scale.

Brief COPE

This measure was completed in Session 2. The Brief COPE (Carver, 1997) was used to measure coping styles. The measure is an adaptation of Carver, Scheier, and Weintraub's (1989) COPE scales. The scales were combined to be measures of emotion- and problem-focused coping, and the items were changed to avoid contractions (i.e., "I've" was changed to "I have"). Previous studies have used the same methodology to measure emotion- and problem-focused coping, which are typically measured using the unreliable Ways of Coping Checklist (Folkman, Lazarus, Dunkel-Schetter, DeLongis, &

Gruen, 1986; Guppy, Edwards, Brough, Peters-Bean, Sale, & Short, 2004), to avoid the problems associated with the measure (e.g., Ben-Zur & Yagil, 2005). The Brief COPE scales: Active Coping, Positive Reframing, Planning, and Use of Instrumental Support were combined to create the Problem-Focused Coping Scale. The Brief COPE scales: Venting, Behavioral Disengagement, Denial, Acceptance, Humor, and Self-Distraction (Mental Disengagement) were combined to make the Emotion-Focused Coping Scale. The Brief COPE scales: Substance Use, Use of Emotional Support, Religion, and Self-Blame were not included because the parallel scales in the Ben-Zur and Yagil (2005) study were not used. The items were responded to along a 6-point *I haven't been doing this at all- I've been doing this a lot* response scale.

School-Family/Life Conflict

This measure was also completed in Session 2. Netemeyer and colleagues' (1996) work-family conflict (WFC) and family-work conflict (FWC) scales were adjusted to reflect school-family/life conflict and family/life-school conflict. Questions about work were changed to questions about school and the wording was adjusted to be appropriate for the current sample. The items were responded to along a 6-point *strongly disagree-strongly agree* response scale.

Student Adaptation to College Questionnaire (SACQ)

This measure was also completed during Session 2. Baker and colleagues' (1985) SACQ was used to measure student adaptation to college. The measure contains four dimensions: Academic Adjustment (AA), Social Adjustment (SA), Personal-Emotional Adjustment (PA), and Institutional Adjustment (AG). The items were responded to along a 6-point *Very untrue of me-Very true of me* response scale.

Organizational Commitment (Short Form)

This measure was completed in Session 2. A short form of Meyer, Allen, and Smith's (1993) Organizational Commitment measure was developed. It contains the same dimensions as the original scale: affective commitment, normative commitment, and continuance commitment. Two items with the strongest factor loadings and that made conceptual sense were retained for each dimension (Lee, Allen, Meyer, & Rhee, 2001; Meyer et al., 1993). Also, the target was changed from organization to the university's name. The items were responded to along a 6-point *strongly disagree-strongly agree* response scale.

Results

After conducting a reliability analysis and exploratory and confirmatory factor analyses on both scales only one item in the Peer Attachment Avoidance scale was removed. High internal consistency coefficients were found for both scales prior to the item deletion (i.e., Peer Attachment Anxiety $\alpha = .94$ at Time 1 and $\alpha = .95$ at Time 2; Peer Attachment Avoidance $\alpha = .90$ at Time 1 and $\alpha = .91$ at Time 2). Also, none of the items had negative item-total correlations or greatly influenced the Cronbach's alpha if deleted. A Principal Axis factor analysis demonstrated nine factors had eigenvalues over one, but a scree plot showed that there were two factors. When a two-factor solution was imposed, one of the items in the Peer Attachment Avoidance scale cross-loaded on the Peer Attachment Anxiety scale, and in retrospect was viewed as a bad item. The factor loadings for the PAS can be found in Table 1. The deletion of the cross-loading item (i.e., PAS35) can be theoretically justified. The item reads: "I am nervous when fellow students ask me too many questions about my opinions or thoughts." The item asks the

participant about being nervous, which is typically associated with attachment anxiety. Therefore, the hypothesized model did not include this item in additional analyses. The item, PAS35, was also deleted from the Peer Attachment Avoidance scale at Time 2 as well as the peer rating scales of Peer Attachment Avoidance.

In order to test the fit of this model a confirmatory factor analysis (CFA) was done using LISREL 8.72 (Jöreskog, K., & Sörbom, D., 2005) in which the latent constructs were allowed to correlate in the hypothesized model due to their significant correlation with one another ($r = .28, p < .01$). As several authors recommend (James, Mulaik, & Brett, 1982), the fit of the hypothesized model was tested in comparison to alternative models. Analysis of the hypothesized model (i.e., the model with all observed variables except PAS35 and correlated latent constructs) indicated the data fit the model reasonably well, Root Mean Square Error of Approximation (RMSEA) = .086, Comparative Fit Index (CFI) = .92, Standardized Root Mean Square Residual (SRMR) = .095, $\chi^2(778, N = 158) = 1610.58, p < .01$. Although these indices do not adhere to Hu and Bentler's (1999) rule of thumb for good approximate fit, SRMR $\leq .08$ and (CFI $\geq .95$ or RMSEA $\leq .06$), it does demonstrate acceptable approximate fit by their standards and therefore provides moderate support for Hypothesis 1.

Alternative model 1 was exactly the same as the hypothesized model, but the latent constructs were not allowed to correlate. This model had slightly worse approximate fit, RMSEA = .086, CFI = .92, SRMR = .12, $\chi^2(779, N = 158) = 1618.26, p < .01$. The difference in chi-squared was significant ($\chi^2(1) = 7.68, p < .01$), indicating the hypothesized model has better fit than the more constrained model and the latent constructs are not orthogonal. Alternative model 2 (i.e., a model that does not include

PAS35 and the other observed variables with cross-loadings: PAS15, PAS21, PAS9, PAS25, PAS29) had reasonable approximate fit as well, RMSEA = .088, CFI = .93, SRMR = .090, $\chi^2(593, N = 158) = 1221.99, p < .01$. Although alternative model 2 has slightly better fit than the hypothesized model ($\chi^2(185) = 388.59, p < .01$), the hypothesized model was retained for several reasons: reliability, validity, and utility (i.e., the additional items do not present a significant cost to the organization). The internal consistency reliability (alpha) for the hypothesized model and alternative model 2 is the same for both models (i.e., $\alpha = .94$), but the internal consistency of the Peer Attachment Avoidance scale declines .01 when using alternative model 2 (i.e., $\alpha = .90$ for alternative model 2). Also, the correlations between the predictors and criteria were almost exactly the same for both models (see Appendix D). Given the cost and time of the additional 5 items is slight, the hypothesized model in which PAS35 is not included in the Peer Attachment Avoidance scale was retained. Alternative model 3 (i.e., a three-factor model in which all of the cross-loading items were included in a third factor: PAS15, PAS21, PAS9, PAS25, PAS29, and PAS35) had reasonable approximate fit as well, RMSEA = .081, CFI = .93, SRMR = .092, $\chi^2(816, N = 158) = 1634.28, p < .01$. The chi-squared difference test was not significant ($\chi^2(38) = 23.7, ns$), but the hypothesized model had a lower chi-squared value than alternative model 3 (i.e., the three-factor model). This suggests the hypothesized model is better than alternative model 3, but not significantly better.

Table 1. Principal Axis Factor Analysis of the PAS (Hypothesis 1)

Item Description	Varimax-Rotated Factor	
	Peer Attachment Anxiety	Peer Attachment Avoidance
PAS1	0.68	-0.07
PAS2	0.73	0.16
PAS3	0.82	0.04
PAS4	0.79	-0.02
PAS5	0.82	-0.03
PAS6	0.74	-0.08
PAS7	0.74	0.03
PAS8	0.83	0.08
PAS10	0.72	0.10
PAS11	0.26	0.11
PAS12	0.66	0.04
PAS13	0.53	0.10
PAS14	0.72	0.08
PAS15	0.60	0.27
PAS16	0.69	0.13
PAS17	0.63	0.16
PAS18	0.42	0.12
PAS19	0.71	0.05
PAS20	0.66	0.15
PAS21	0.38	0.16
PAS9	0.32	0.18
PAS37	0.12	0.48
PAS32	-0.10	0.71
PAS22	0.03	0.71
PAS23	0.09	0.70
PAS24	0.18	0.51
PAS25	0.34	0.57
PAS29	0.31	0.58
PAS26	0.04	0.66
PAS27	0.18	0.59
PAS28	0.19	0.44
PAS30	0.26	0.49
PAS31	-0.16	0.66
PAS33	-0.11	0.31
PAS34	-0.02	0.69
PAS35	<i>0.46</i>	<i>0.19</i>
PAS36	0.08	0.55
PAS39	0.09	0.62
PAS40	0.13	0.43
PAS41	0.07	0.58
PAS42	0.22	0.41
PAS38	0.10	0.70

An independent sample t-test was performed in order to determine whether there were gender differences in peer attachment anxiety and avoidance. There were no gender differences in the current investigation for peer attachment anxiety (i.e., $t(156) = -.26, ns$) or for peer attachment avoidance (i.e., $t(156) = 1.62, ns$). Also, a one-way ANOVA was done in order to determine if there were any ethnicity differences in peer attachment. It was found that no significant differences between the 6 ethnic groups existed for peer attachment anxiety (i.e., $F(4, 153) = 1.55, ns$) or peer attachment avoidance (i.e., $F(4, 153) = .63, ns$).

The descriptive statistics, internal consistency reliabilities, test-retest reliabilities, and correlations are provided in Table 2. In support for Hypothesis 1, the internal reliability (i.e., Cronbach's alpha) for both the Peer Attachment Anxiety and Peer Attachment Avoidance scales are high at both of the time periods (i.e., Peer Attachment Anxiety $\alpha = .94$ at Time 1 and $\alpha = .95$ at Time 2; Peer Attachment Avoidance $\alpha = .91$ at Time 1 and $\alpha = .91$ at Time 2). Also, the large correlation between Peer Attachment Anxiety at Time 1 and Peer Attachment Anxiety at Time 2 (i.e., $r = .79, p < .01$) is evidence of test-retest reliability for the Peer Attachment Anxiety scale. Test-retest reliability was also found for the Peer Attachment Avoidance scale (i.e., $r = .83, p < .01$). These test-retest reliability results provide support for Hypothesis 2. Finally, Hypothesis 3 was partially supported. $R_{WG(I)}$ for the 3 peers and the self-ratings was calculated for both peer attachment anxiety and peer attachment avoidance, assuming a random (i.e., uniform) distribution, in order to assess the amount of inter-rater agreement among the peers and the participant. The following inter-rater reliability coefficients (i.e., the within-group agreement among the four judges: the participant, Peer 1, Peer 2, and Peer

3) were found: peer attachment anxiety $r_{WG(1)} = .93$ and peer attachment avoidance $r_{WG(1)} = .93$. These coefficients indicate high levels of inter-rater reliability. The correlation between the participant self-ratings of peer attachment avoidance and his/her peer ratings were medium (i.e., $r = .46, p < .01$) in support for Hypothesis 3b, but the peer attachment anxiety relationship with the peer ratings was small (i.e., $r = .23, p < .01$). In order to determine if the correlations were significantly different the DEPCOR program (see Silver, Hittner, & May, 2006) was used because the correlations were from the same sample and consequently dependent. DEPCOR produces results based on the Dunn and Clark (1969) method and the Meng, Rosenthal, and Rubin (1992) method. Hittner, May, and Silver's (2003) Monte Carlo evaluation demonstrated that the Dunn and Clark (1969) z statistic has the best statistical properties, and therefore the z statistic was used to report the results. The correlations were found to be significantly different ($z = -2.47, p < .05$). All of the peer ratings were used in the average. The correlational analyses between how well a participant knows his/her peer and the peer rating can be found in Appendix E (i.e., Table E1).

Also, two different groups of average peer ratings were created. Group 1 was the high acquaintance group, which included an average of all of the peer ratings that were from peers that the participant knew well or very well. The correlations for this group were: attachment anxiety $r = .23, p < .01$ and attachment avoidance $r = .45, p < .01$ ($N = 129$). Group 2 was the low acquaintance group, which included an average of the peer ratings that were from peers the participant did not know well or knew somewhat well. The correlations for this group were: attachment anxiety $r = .20, ns$ and attachment avoidance $r = .33, p < .05$ ($N = 48$). Post-hoc comparisons of the correlations using z'

transformation of r (Cohen et al., 2003) indicate the attachment avoidance correlations are not significantly different in the high and low acquaintance group ($z_{test} = .82, ns$), and the attachment anxiety correlations are also not significantly different in the two groups ($z_{test} = .18, ns$).

Table 2. Descriptive Statistics and Reliability Analyses (Hypotheses 1-3)

Variable	Data Source	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Peer Attachment Anxiety (Time 1)	P1	2.65	0.92	(.94)					
2. Peer Attachment Anxiety (Time 2)	P2	2.55	0.95	.79**	(.95)				
3. Average Peer Ratings of Attachment Anxiety	PE	2.41	0.63	.23**	.28**	(.94)			
4. Peer Attachment Avoidance (Time 1)	P1	3.00	0.76	.28**	.25**	.20*	(.91)		
5. Peer Attachment Avoidance (Time 2)	P2	2.89	0.76	.30**	.38**	.13	.83**	(.91)	
6. Average Peer Ratings of Attachment Avoidance	PE	2.73	0.66	.06	.05	.43**	.46**	.41**	(.94)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations and test-retest reliability coefficients are below the diagonal. P1 = participant rating at time 1; P2 = participant rating at time 2; PE = peer ratings. $N = 158$ for P1; $N = 150$ for P2; $N = 139$ for PE

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

Hypothesis 4 predicted that the close relationship attachment styles would be related to peer attachment anxiety and avoidance given they are theoretical antecedents to peer attachment. The descriptive statistics, internal consistency reliabilities, and correlations for the Close Relationship Attachment Style scales and the PAS are provided in Table 3. The medium to large correlation between the Peer Attachment Anxiety scale and the Preoccupied Close Relationship Attachment scale ($r = .50, p < .01$) supports Hypothesis 4b, but the small correlation between the Peer Attachment Anxiety scale and the Fearful Close Relationship Attachment scale ($r = .25, p < .01$) provides marginal

support for Hypothesis 4b. Also, Hypothesis 4d was supported in that medium correlations were found between the Peer Attachment Avoidance scale and the Fearful and Dismissing Close Relationship Attachment scales (i.e., Fearful $r = .46, p < .01$; Dismissing $r = .34, p < .01$). It should be noted that the internal consistency coefficients for the Close Relationship Attachment scales are very low due to the small number of items in each scale. Therefore, these results should be interpreted cautiously.

Table 3. Antecedent Analyses of Peer Attachment (Hypothesis 4)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Peer Attachment Anxiety (Time 1)	2.65	0.92	(.94)					
2. Peer Attachment Avoidance (Time 1)	3.00	0.76	.28**	(.91)				
3. Secure Close Relationship Attachment	3.66	0.67	-.39**	-.45**	(.10)			
4. Preoccupied Close Relationship Attachment	3.52	0.85	.50**	.00	-.19**	(.60)		
5. Fearful Close Relationship Attachment	3.63	0.77	.25**	.46**	-.46**	.15	(.56)	
6. Dismissing Close Relationship Attachment	3.79	0.87	-.06	.34**	-.13	.29**	.29**	(.49)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations are below the diagonal. $N = 158$

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

In an effort to validate the PAS, Hypothesis 6 predicted that convergent and discriminant validity would be found. The descriptive statistics, internal consistency reliabilities, and correlations for the peer attachment correlates are provided in Table 4. Hypothesis 6a posited that the anxiety dimension of attachment (measured by the Peer Attachment Anxiety scale) would have significant relationships with the following correlates: affiliation (negative relationship), dominance (negative relationship),

succorance (positive relationship), neuroticism (positive relationship), and interpersonal trust at school (negative relationship). Two of these relationships were supported (i.e., neuroticism $r = .54, p < .01$ and succorance $r = .25, p < .01$), and three of the relationships were not found (interpersonal trust at school $r = -.05, ns$; affiliation $r = .06, ns$; and dominance $r = .01, ns$). Also, Hypothesis 6b predicted the avoidance dimension of attachment (measured by the Peer Attachment Avoidance scale) would be related to the following correlates: affiliation (negative relationship), dominance (negative relationship), deference (negative relationship), nurturance (negative relationship), autonomy (positive relationship), agreeableness (negative relationship), extraversion (negative relationship), neuroticism (positive relationship), and interpersonal trust at school (negative relationship). In complete support for Hypothesis 6b all of these relationships were found (i.e., affiliation $r = -.52, p < .01$; dominance $r = -.20, p < .05$; deference $r = -.30, p < .01$; nurturance $r = -.34, p < .01$; autonomy $r = .19, p < .05$; agreeableness $r = -.33, p < .01$; extraversion $r = -.58, p < .01$; neuroticism $r = .31, p < .01$; and interpersonal trust at school $r = -.51, p < .01$). In an effort to demonstrate discriminant validity, Hypothesis 6c suggested the anxiety dimension of attachment has non-significant relationships with deference, nurturance, autonomy, extraversion, agreeableness, conscientiousness and openness to experience. This was partially demonstrated by peer attachment anxiety's relationship with deference ($r = .14, ns$), nurturance ($r = .08, ns$), autonomy ($r = -.01, ns$), agreeableness ($r = -.06, ns$), and openness to experience ($r = -.12, ns$); but there was not enough power to detect a meaningful effect (i.e., the power was below .80 for all of the relationships). Also, a significant relationship was found with extraversion ($r = -.35, p < .01$) and

conscientiousness ($r = -.33, p < .01$). Hypothesis 6d suggested the avoidance dimension of attachment is unrelated to succorance, conscientiousness and openness to experience. This was again partially demonstrated by peer attachment avoidance's relationship with conscientiousness ($r = -.12, ns$) and openness to experience ($r = -.14, ns$), but again there was not enough power to detect a meaningful effect. Also, a significant relationship was found with succorance ($r = -.26, p < .01$).

Given both attachment anxiety and avoidance were strongly related to neuroticism and each other, the partial correlation between attachment anxiety and avoidance was calculated controlling for neuroticism. It was found that the correlation decreased from .28 to .14 when controlling for neuroticism, which suggests some of the shared variance between the attachment dimensions can be explained by neuroticism.

Table 4. Descriptive Statistics and Correlations among Correlates (Hypothesis 6)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Peer Attachment Anxiety (Time 1)	2.65	0.92	(.94)													
2. Peer Attachment Avoidance (Time 1)	3.00	0.76	.28**	(.91)												
3. Neuroticism	2.98	0.84	.54**	.31**	(.91)											
4. Extraversion	4.11	0.86	-.35**	-.58**	-.22**	(.93)										
5. Openness to Experience	4.34	0.75	-.12	-.14	.02	.28**	(.88)									
6. Agreeableness	4.27	0.65	-.06	-.33**	-.21**	.12	.09	(.87)								
7. Conscientiousness	4.27	0.75	-.33**	-.12	-.22**	.15	.14	.11	(.92)							
8. Interpersonal Trust at School	4.10	0.87	-.05	-.51**	-.03	.21**	.00	.29**	.05	(.81)						
9. Deference	4.52	0.55	.14	-.30**	.08	.15	.19*	.49**	.12	.33**	(.63)					
10. Affiliation	4.94	0.67	.06	-.52**	.05	.49**	.21*	.46**	.02	.36**	.56**	(.81)				
11. Autonomy	3.98	0.63	-.01	.19*	-.05	.04	.41**	-.37**	-.10	-.16*	-.20**	-.20*	(.73)			
12. Nurturance	5.07	0.65	.08	-.34**	.14	.28**	.15	.60**	.07	.36**	.57**	.75**	-.28**	(.85)		
13. Succorance	4.50	0.78	.25**	-.26**	.31**	.18*	.11	.14	-.09	.25**	.39**	.56**	-.11	.54**	(.85)	
14. Dominance	4.14	0.76	.01	-.20*	.00	.38**	.25**	-.31**	.11	-.03	.10	.18*	.29**	-.08	.22**	(.82)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations are below the diagonal. *N* = 158

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

The same correlational analyses were also done using the average peer ratings of attachment anxiety and avoidance. The descriptive statistics, internal consistency reliabilities, and correlations for the peer attachment correlates using the peer ratings of attachment are provided in Table 5.

Table 5. Descriptive Statistics and Correlations among Correlates using Average Peer Ratings

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Average Peer Ratings of Attachment Anxiety	2.41	0.63	(.94)													
2. Average Peer Ratings of Attachment Avoidance	2.73	0.66	.43**	(.94)												
3. Neuroticism	2.98	0.84	.30**	.18*	(.91)											
4. Extraversion	4.11	0.86	-.17	-.41**	-.22**	(.93)										
5. Openness to Experience	4.34	0.75	-.04	-.08	.02	.28**	(.88)									
6. Agreeableness	4.27	0.65	-.05	-.18*	-.21**	.12	.09	(.87)								
7. Conscientiousness	4.27	0.75	-.10	-.06	-.22**	.15	.14	.11	(.92)							
8. Interpersonal Trust at School	4.10	0.87	-.03	-.17	-.03	.21**	.00	.29**	.05	(.81)						
9. Deference	4.52	0.55	.02	-.14	.08	.15	.19*	.49**	.12	.33**	(.63)					
10. Affiliation	4.94	0.67	.00	-.35**	.05	.49**	.21*	.46**	.02	.36**	.56**	(.81)				
11. Autonomy	3.98	0.63	-.07	.08	-.05	.04	.41**	-.37**	-.10	-.16*	-.20**	-.20*	(.73)			
12. Nurturance	5.07	0.65	.00	-.22*	.14	.28**	.15	.60**	.07	.36**	.57**	.75**	-.28**	(.85)		
13. Succorance	4.50	0.78	.09	-.23**	.31**	.18*	.11	.14	-.09	.25**	.39**	.56**	-.11	.54**	(.85)	
14. Dominance	4.14	0.76	-.24**	-.29**	.00	.38**	.25**	-.31**	.11	-.03	.10	.18*	.29**	-.08	.22**	(.82)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations are below the diagonal. N = 158; N = 139 for attachment dimensions

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

A comparison of the correlate relationships with the self-ratings and peer ratings of attachment are provided in Table 6. The overall pattern suggests that many of the relationships between attachment avoidance and the correlates are maintained with the peer ratings, and the relationships between attachment anxiety and the correlates slightly change with the peer ratings. These differences will be discussed in more detail later.

Table 6. Comparison of Attachment Anxiety and Avoidance Correlates using Peer and Self-Ratings

Variable	Attachment Anxiety		Attachment Avoidance	
	Self-Ratings of Peer Attachment Anxiety	Average Peer Ratings of Attachment Anxiety	Self-Ratings of Peer Attachment Avoidance	Average Peer Ratings of Attachment Avoidance
Neuroticism	.54**	.30**	.31**	.18*
Extraversion	-.35**	-.17	-.58**	-.41**
Openness to Experience	-.12	-.04	-.14	-.08
Agreeableness	-.06	-.05	-.33**	-.18*
Conscientiousness	-.33**	-.10	-.12	-.06
Interpersonal Trust at School	-.05	-.03	-.51**	-.17
Deference	.14	.02	-.30**	-.14
Affiliation	.06	.00	-.52**	-.35**
Autonomy	-.01	-.07	.19*	.08
Nurturance	.08	.00	-.34**	-.22*
Succorance	.25**	.09	-.26**	-.23**
Dominance	.01	-.24**	-.20*	-.29**

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

The descriptive statistics and correlations for peer attachment anxiety and avoidance and their theoretical criteria are provided in Table 7. These relationships will be further investigated using regression techniques in order to test Hypotheses 7, 8, 10, and 11. Also, it should be noted that there were no hypotheses regarding peer

attachment's relationship with continuance and normative commitment, but these correlations are provided.

Table 7. Descriptive Statistics and Correlations among Criteria

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Peer Attachment Anxiety (Time 1)	2.65	0.92	(.94)									
2. Peer Attachment Avoidance (Time 1)	3.00	0.76	.28**	(.91)								
3. Emotion-Focused Coping	2.77	0.71	.11	-.14	(.78)							
4. Problem-Focused Coping	3.77	0.96	.01	-.29**	.54**	(.85)						
5. Family/Life-School Conflict	2.66	1.06	.31**	.15	.24**	.13	(.85)					
6. School-Family/Life Conflict	4.09	1.18	.19*	-.01	.37**	.37**	.34**	(.92)				
7. Student Adjustment to College	4.09	0.43	-.48**	-.31**	-.33**	.01	-.38**	-.33**	(.88)			
8. Affective Commitment	4.34	1.15	-.14	-.36**	-.16*	.14	-.19*	-.11	.44**	(.68)		
9. Continuance Commitment	3.98	1.22	.23**	.11	.08	.00	.03	.11	-.22**	-.11	(.47)	
10. Normative Commitment	3.67	1.36	.07	-.30**	.06	.20*	.16	.07	.13	.49**	.10	(.71)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations are below the diagonal. *N* = 150

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

Hypotheses 7, 8, 10, and 11 propose the concurrent validity of peer attachment and incremental validity for certain criteria over and above its correlates. The relationships between peer attachment anxiety and avoidance and conceptually related criteria were investigated using both the self-report of PAS and peer reports from the academic sample in a cross-validation effort.

In order to examine the relationships among peer attachment and criteria controlling for all of the correlates, an analysis of sets was done (Cohen et al., 2003). This methodology was chosen because the correlates, related to attachment anxiety and avoidance, do not necessarily form a common factor, but rather they are “multiple independent or overlapping categories” (Cohen et al., 2003, p. 162). Therefore, the anxiety dimension of attachment (measured by the PAS and the average peer ratings of the target’s attachment anxiety) was hypothesized to have significant relationships with all correlates in Set **A**: affiliation, dominance, succorance, neuroticism, and interpersonal trust at school. Also, the avoidance dimension of attachment (measured by the PAS and the average peer ratings of the target’s attachment avoidance) was hypothesized to be related to all correlates in Set **B**: affiliation, dominance, deference, nurturance, autonomy, agreeableness, extraversion, neuroticism, and interpersonal trust at school. In order to test Hypotheses 7a, 7b, 8a, 10a, and 11a (i.e., the criterion-related validity hypotheses regarding peer attachment anxiety) a hierarchical regression was done in which Set **A** was entered in Step 1 and the Peer Attachment Anxiety scale was entered at Step 2. This was done for both the participant rating and the average peer ratings. These results can be found in Table 8. It should be noted that the sample size is smaller for the peer ratings (i.e., $N = 136$) given 14 participants did not have any peers fill out the ratings on them.

The aggregate amount of variance accounted for by Set A in emotion-focused coping was 7% (i.e., $R^2 = .07$, $F(5, 144) = 2.295$, $p < .05$), whereas peer attachment anxiety only accounted for 1% of the variance (i.e., $R^2 = .01$, $F(1, 148) = 1.83$, *ns*). Hypothesis 7a and 7b were not supported in the academic sample. Hypothesis 7a suggested that after adding the anxiety dimension of attachment (measured by the PAS as well as the average peer ratings of the target's attachment anxiety) to the emotion-focused coping regression equation as a predictor in addition to Set A, there would be a significant change in R^2 (i.e., participant rating $\Delta R^2 = .00$, $\Delta F(1, 143) = .00$, *ns*; and peer ratings $\Delta R^2 = .00$, $\Delta F(1, 129) = .07$, *ns*). Also, Hypothesis 7a proposed that there should be a significant and positive beta weight found for the prediction of emotion-focused coping by peer attachment anxiety over Set A, which was not found (i.e., participant rating $\beta = .00$, *ns*; peer ratings $\beta = .02$, *ns*). Although it should be noted that Set A also did not have incremental predictive validity over peer attachment anxiety ($\Delta R^2 = .06$, $\Delta F(5, 143) = 1.90$, *ns*).

Set A accounted for 9% of the variance in problem-focused coping (i.e., $R^2 = .09$, $F(5, 144) = 2.68$, $p < .05$), whereas peer attachment anxiety did not account for any of the variance in problem-focused coping (i.e., $R^2 = .00$, $F(1, 148) = .88$, *ns*). Hypothesis 7b posited a medium change in R^2 for the problem-focused coping regression equation, which was not found (i.e., participant rating $\Delta R^2 = .00$, $\Delta F(1, 143) = .13$, *ns*; peer ratings $\Delta R^2 = .00$, $\Delta F(1, 129) = .93$, *ns*). Hypothesis 7b also posited there should be a significant and negative beta weight for the anxiety dimension of attachment's (measured by the PAS and the average peer ratings of the target's attachment anxiety) prediction of problem-focused coping over Set A, which again was not found (i.e., participant rating β

= -.03, *ns*; and peer rating $\beta = -.09$, *ns*). Set A did demonstrate significant incremental predictive validity over peer attachment anxiety ($\Delta R^2 = .09$, $\Delta F(5, 143) = 2.68$, $p < .05$).

Set A accounted for 5% of the variance in family/life-school conflict (i.e., $R^2 = .05$, $F(5, 144) = 1.46$, *ns*), whereas peer attachment anxiety alone accounted for 9% of the variance in family/life-school balance (i.e., $R^2 = .09$, $F(1, 148) = 15.33$, $p < .01$). Support for Hypothesis 8a was not found in the academic sample, but incremental predictive validity was found. The anxiety dimension of attachment predicted family/life-school balance over and above Set A (i.e., $\Delta R^2 = .06$, $\Delta F(1, 143) = 9.56$, $p < .01$). These effects are small indicating a 6% increase in the amount of variance accounted for as opposed to the 15% hypothesized. Also, these results were not supported with the average peer ratings of the participant's attachment anxiety (i.e., $\Delta R^2 = .01$, $\Delta F(1, 129) = .62$, *ns*). In addition, Hypothesis 8a suggested a significant and positive beta weight for the anxiety dimension of attachment's (measured by the PAS and the average peer ratings of the target's attachment anxiety) prediction of family/life-school balance over Set A, which was found with the participant rating but not the peer ratings (i.e., participant rating $\beta = .29$, $p < .01$; and peer rating $\beta = -.07$, *ns*). Set A did not have any incremental predictive validity over peer attachment anxiety for the prediction of family/life-school balance (i.e., $\Delta R^2 = .01$, $\Delta F(5, 143) = .45$, *ns*).

Set A accounted for 30% of the variance in student adjustment to college (i.e., $R^2 = .30$, $F(5, 143) = 12.46$, $p < .01$), and peer attachment anxiety accounted for 23% of the variance in student adjustment to college (i.e., $R^2 = .23$, $F(1, 147) = 42.79$, $p < .01$). Hypothesis 10a was not supported in the current investigation, but incremental predictive validity was found. The anxiety dimension of peer attachment was significantly

negatively related to college adjustment over and above Set A. That is, for the participant rating there was a significant change in R^2 (i.e., $\Delta R^2 = .06$, $\Delta F(1, 142) = 13.18$, $p < .01$), which is a small effect instead of the medium effect hypothesized; and a significant and negative beta weight was found (i.e., $\beta = -.29$, $p < .01$). These results were not replicated with the peer ratings (i.e., $\Delta R^2 = .00$, $\Delta F(1, 128) = .71$, *ns*; and $\beta = -.07$, *ns*). All of the measures in Set A also had incremental predictive validity over peer attachment anxiety (i.e., $\Delta R^2 = .14$, $\Delta F(5, 142) = 6.11$, *ns*; and $\beta = -.07$, $p < .01$).

Finally, Set A accounted for 22% of the variance in organizational affective commitment (i.e., $R^2 = .22$, $F(5, 143) = 7.95$, $p < .01$), whereas peer attachment anxiety only accounted for 2% of the variance in affective commitment (i.e., $R^2 = .02$, $F(1, 147) = 2.71$, *ns*). Hypothesis 11a was not supported in the academic sample. The anxiety dimension of attachment (measured by the PAS and the average peer ratings of the target's attachment anxiety) was not a significant, negative predictor of affective commitment over and above Set A (i.e., participant rating $\Delta R^2 = .00$, $\Delta F(1, 142) = .62$, *ns* and $\beta = -.07$, *ns*; peer ratings $\Delta R^2 = .01$, $\Delta F(1, 128) = 1.05$, *ns* and $\beta = .09$, *ns*). Set A did demonstrate significant incremental predictive validity over peer attachment anxiety for affective commitment (i.e., $\Delta R^2 = .20$, $\Delta F(5, 142) = 7.34$, $p < .01$). Although, peer attachment anxiety was a significant predictor of continuance commitment over and above Set A (i.e., participant rating $\Delta R^2 = .03$, $\Delta F(1, 142) = 5.19$, $p < .05$; and $\beta = .22$, $p < .05$).

Table 8. Analyses of Peer Attachment Anxiety's Criterion-Related Validity (Hypotheses 7a, 7b, 8a, 10a, and 11a)

Step and variable	Participant rating of Peer Attachment Anxiety					Peer ratings of Peer Attachment Anxiety				
	β	R^2	ΔR^2	F	F_{change}	B	R^2	ΔR^2	F	F_{change}
DV = Emotion-Focused Coping										
1. Set A		.07	.07	2.23*	2.23*		.10	.10	2.89*	2.89*
2. Set A										
Peer Attachment Anxiety (H7a)	.00	.07	.00	1.90	.00	.02	.10	.00	2.40*	.07
DV = Problem-Focused Coping										
1. Set A		.09	.09	2.68*	2.68*		.11	.11	3.20**	3.20**
2. Set A										
Peer Attachment Anxiety (H7b)	-.03	.09	.00	2.24*	.13	-.09	.12	.01	2.82**	.93
DV = Family/Life-School Conflict										
1. Set A		.05	.05	1.46	1.46		.05	.05	1.38	1.38
2. Set A										
Peer Attachment Anxiety (H8a)	.29**	.11	.06	2.88**	9.56**	-.07	.06	.01	1.25	.62
DV = Student Adjustment to College										
1. Set A		.30	.30	12.46**	12.46**		.31	.31	11.38**	11.38**
2. Set A										
Peer Attachment Anxiety (H10a)	-.29**	.36	.06	13.46**	13.18**	-.07	.31	.00	9.58**	.71
DV = Affective Commitment										
1. Set A		.22	.22	7.95**	7.95**		.21	.21	6.67**	6.67**
2. Set A										
Peer Attachment Anxiety (H11a)	-.07	.22	.00	6.71**	.62	.09	.21	.01	5.73**	1.05
DV = Continuance Commitment										
1. Set A		.03	.03	.93	.93		.03	.03	.87	.87
2. Set A										
Peer Attachment Anxiety	.22**	.07	.03	1.67	5.19*	.00	.03	.00	.72	.00

Note. DV = dependent variable; H = hypothesis. $N = 150$ for the participant ratings; $N = 136$ for the peer ratings

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

In order to test Hypotheses 7c, 7d, 8b, 10b, and 11b (i.e., the criterion-related validity hypotheses regarding peer attachment avoidance) a hierarchical regression in which Set **B** was entered in Step 1 and the Peer Attachment Avoidance scale was entered at Step 2 was conducted. In the same fashion as the previous analyses, this was done for both the participant ratings and the average peer ratings. These results can be found in Table 9. It should be noted that the sample size is again smaller for the peer ratings (i.e., $N = 136$) given 14 participants did not have any peers fill out the ratings on them.

The avoidance dimension of attachment (measured by the PAS and the average peer ratings of the target's attachment avoidance) was hypothesized to have the same relationships with emotion- and problem-focused coping as peer attachment anxiety. Although in these analyses Set **B** (the peer attachment avoidance correlates) was controlled for as opposed to Set **A**. Set **B** accounted for 18% of the variance in emotion-focused coping (i.e., ($R^2 = .18$, $F(9, 140) = 3.33$, $p < .01$), whereas peer attachment avoidance only accounted for 2% of the variance ($R^2 = .02$, $F(1, 148) = 3.13$, ns). Yet, incremental predictive validity was found although contrary to the hypothesized relationship. After adding the Peer Attachment Avoidance scale to the emotion-focused coping regression equation as a predictor in addition to Set **B**, there was a significant change in R^2 for the participant rating (i.e., $\Delta R^2 = .03$, $\Delta F(1, 139) = 5.81$, $p < .05$) as was hypothesized in Hypothesis 7d, but not for the peer rating (i.e., $\Delta R^2 = .01$, $\Delta F(1,125) = 1.08$, ns). Yet, a significant and positive beta weight was expected and instead a negative beta weight was found for peer attachment avoidance's prediction of emotion-focused coping (i.e., participant rating $\beta = -.28$, $p < .05$; and peer rating $\beta = -.10$, ns). Set **B** also

had incremental predictive validity over peer attachment avoidance (i.e., $\Delta R^2 = .19$, $\Delta F(9,139) = 3.69$, $p < .01$).

Set **B** accounted for 17% of the variance in problem-focused coping ($R^2 = .17$, $F(9, 140) = 3.26$, $p < .01$), and peer attachment avoidance accounted for 8% of the variance (i.e., $R^2 = .08$, $F(1, 148) = 13.38$, $p < .01$). Hypothesis 7d posited a medium change in R^2 for the problem-focused regression equation, which was found for the participant rating (i.e., $\Delta R^2 = .05$, $\Delta F(1, 139) = 8.29$, $p < .01$), but the effect was again small instead of the hypothesized medium effect. Also, the hypothesized beta weight was found in that it was significant and negative ($\beta = -.34$, $p < .01$). These findings were not supported with the peer ratings (i.e., $\Delta R^2 = .01$, $\Delta F(1, 125) = 2.28$, *ns*; and $\beta = -.14$, *ns*). Set **B** also demonstrated incremental predictive validity over peer attachment avoidance (i.e., $\Delta R^2 = .14$, $\Delta F(9, 139) = 2.71$, $p < .01$).

Also, Set **B** accounted for 16% of the variance in school-family/life balance (i.e., $R^2 = .16$, $F(9, 140) = 2.85$, $p < .01$), whereas peer attachment avoidance accounted for none of the variance in school-family/life balance (i.e., $R^2 = .00$, $F(1, 148) = .01$, *ns*). The avoidance dimension of attachment (measured by the PAS and the average peer ratings of the target's attachment avoidance) was hypothesized to predict school-family/life balance over and above Set **B** using hierarchical regression. These effects were suggested by Hypothesis 8b to be medium, but they were not supported in the current investigation (i.e., participant rating $\Delta R^2 = .00$, $\Delta F(1, 139) = .01$, *ns*; and peer rating $\Delta R^2 = .00$, $\Delta F(1, 125) = .15$, *ns*). A significant and negative beta weight was also not found as posited by Hypothesis 8b (i.e., participant rating $\beta = -.01$, *ns*; and peer rating

$\beta = -.04, ns$). Set **B** demonstrated incremental predictive validity over peer attachment avoidance (i.e., $\Delta R^2 = .16, \Delta F(9, 139) = 2.84, p < .01$).

Set **B** accounted for 36% of the variance in student adjustment to college (i.e., $R^2 = .36, F(9, 139) = 8.74, p < .01$), and peer attachment avoidance accounted for 10% of the variance in student adjustment to college (i.e., $R^2 = .10, F(1, 147) = 15.89, p < .01$). Hypothesis 10b was supported in the current investigation. After conducting simple regression analyses, both the participant and peer ratings of peer attachment avoidance negatively predicted college adjustment. These effects were medium for the participant ratings as hypothesized (i.e., $\beta = -.31, p < .01$), but small for the peer ratings (i.e., $\beta = -.18, p < .05$). It should be noted that the relationship was not hypothesized to be as strong as the peer attachment anxiety relationship and therefore no incremental validity was proposed. Regardless, a hierarchical regression was also done in order to confirm that there was no incremental validity of peer attachment avoidance over Set **B**, and the hypothesis was correct (i.e., participant rating $\Delta R^2 = .00, \Delta F(1, 138) = .00, ns$).

Although, Set **B** demonstrated incremental predictive validity for student adjustment to college over peer attachment avoidance (i.e., $\Delta R^2 = .26, \Delta F(9, 138) = 6.35, p < .01$).

Finally, Set **B** accounted for 32% of the variance in organizational affective commitment (i.e., $R^2 = .32, F(9, 139) = 7.21, p < .01$), and peer attachment avoidance accounted for 13% of the variance in peer attachment avoidance (i.e., $R^2 = .13, F(1, 147) = 22.07, p < .01$). Hypothesis 11b suggested the avoidance dimensions of attachment (measured by the PAS and the average peer ratings of the target's attachment avoidance) should be a significant, negative predictor of affective commitment over and above Set **B** and that these effects should be medium. These findings were not supported with the

participant rating (i.e., $\Delta R^2 = .00$, $\Delta F(1, 138) = .09$, *ns*; and $\beta = .03$, *ns*) or the peer ratings (i.e., $\Delta R^2 = .00$, $\Delta F(1, 124) = .30$, *ns*; and $\beta = -.05$, *ns*). Set **B** did demonstrate incremental predictive validity for affective commitment over peer attachment avoidance (i.e., $\Delta R^2 = .19$, $\Delta F(9, 138) = 4.24$, $p < .01$). Also, peer attachment avoidance did not have incremental predictive validity for the other forms of organizational commitment (i.e., continuance and normative commitment).

Table 9. Analyses of Peer Attachment Avoidance's Criterion-Related Validity (Hypotheses 7c, 7d, 8b, 10b, and 11b)

Step and variable	Participant rating of Peer Attachment Avoidance					Peer ratings of Peer Attachment Avoidance				
	β	R^2	ΔR^2	F	F_{change}	β	R^2	ΔR^2	F	F_{change}
DV = Emotion-Focused Coping										
1. Set B		.18	.18	3.33**	3.33**		.21	.21	3.68**	3.68**
2. Set B										
Peer Attachment Avoidance (H7c)	-.28*	.21	.03	3.69**	5.81*	-.10	.22	.01	3.42**	1.08
DV = Problem-Focused Coping										
1. Set B		.17	.17	3.26**	3.26**		.20	.20	3.43**	3.43**
2. Set B										
Peer Attachment Avoidance (H7d)	-.34**	.22	.05	3.92**	8.29**	-.14	.21	.01	3.35**	2.28
DV = School-Family/Life Conflict										
1. Set B		.16	.16	2.85**	2.85**		.18	.18	2.97**	2.97**
2. Set B										
Peer Attachment Avoidance (H8b)	-.01	.16	.00	2.55**	.01	-.04	.18	.00	2.67**	.15
DV = Student Adjustment to College										
1. Peer Attachment Avoidance (H10b)	-.31**	.10	.10	15.89**	15.89**	-.18*	.03	.03	4.25*	4.25*
DV = Affective Commitment										
1. Set B		.32	.32	7.21**	7.21**		.31	.31	6.33**	6.33**
2. Set B										
Peer Attachment Avoidance (H11b)	.03	.32	.00	6.46**	.09	-.05	.32	.00	5.69**	.30

Note. DV = dependent variable; H = hypothesis. $N = 150$ for the participant ratings; $N = 136$ for the peer ratings

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

Because the actual correlates of peer attachment found in the academic sample were not exactly the same as the hypothesized correlates, the hierarchical regression analyses were also done using the actual correlates of peer attachment anxiety and avoidance. This was done to ensure that peer attachment anxiety and avoidance demonstrate incremental predictive validity even when accounting for the measures that actually overlap with the constructs. Therefore, the incremental validity of the Peer Attachment Anxiety scale was investigated over all its correlates (i.e., neuroticism, extraversion, conscientiousness, and succorance). This will be referred to as Adapted Set **A**. These analyses were only done for the criteria that peer attachment anxiety had previously shown criterion-related validity (i.e., family/life-school conflict, student adjustment to college, and continuance commitment). The results are provided in Table 10. Peer attachment anxiety maintained its incremental validity over Adapted Set **A** for the prediction of family/life-school conflict (i.e., $\Delta R^2 = .05$, $\Delta F(1, 144) = 8.27$, $p < .01$; and $\beta = .29$, $p < .01$), student adjustment to college ($\Delta R^2 = .02$, $\Delta F(1, 143) = 4.89$, $p < .05$; and $\beta = -.19$, $p < .05$), and continuance commitment ($\Delta R^2 = .03$, $\Delta F(1, 143) = 4.30$, $p < .05$; and $\beta = .22$, $p < .05$).

Table 10. Analyses of Peer Attachment Anxiety's Incremental Predictive Validity over Actual Correlates

Step and variable	Participant rating of Peer Attachment Anxiety				
	β	R^2	ΔR^2	F	F_{change}
DV = Family/Life-School Conflict					
1. Adapted Set <i>A</i>		.09	.09	3.54**	3.54**
2. Adapted Set <i>A</i>					
Peer Attachment Anxiety	.29**	.14	.05	4.63**	8.27**
DV = Student Adjustment to College					
1. Adapted Set <i>A</i>		.38	.38	22.40**	22.40**
2. Adapted Set <i>A</i>					
Peer Attachment Anxiety	-.19*	.40	.02	19.38**	4.89*
DV = Continuance Commitment					
1. Adapted Set <i>A</i>		.03	.03	.99	.99
2. Adapted Set <i>A</i>					
Peer Attachment Anxiety	.22*	.06	.03	1.67	4.30*

Note. DV = dependent variable. $N = 150$

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

The same analyses were also done for peer attachment avoidance and its criteria using Adapted Set *B* (i.e., the variables that were found to correlate with peer attachment avoidance). Adapted Set *B* includes all of the variables in Set *B* in addition to succorance, which is: neuroticism, extraversion, agreeableness, interpersonal trust at school, deference, affiliation, autonomy, nurturance, succorance, and dominance. The results are provided in Table 11. Peer attachment avoidance also maintained its predictive validity. That is, it was still a significant predictor over Adapted Set *B* for emotion-focused coping (i.e., $\Delta R^2 = .03$, $\Delta F(1, 138) = 5.45$, $p < .05$; and $\beta = -.28$, $p < .05$), and problem-focused coping ($\Delta R^2 = .04$, $\Delta F(1, 138) = 7.78$, $p < .01$; and $\beta = -.33$, $p < .01$).

Table 11. Analyses of Peer Attachment Avoidance’s Incremental Predictive Validity over Actual Correlates

Step and variable	Participant rating of Peer Attachment Avoidance				
	β	R^2	ΔR^2	F	F_{change}
DV = Emotion-Focused Coping					
1. Set B		.18	.18	3.11**	3.11**
2. Set B					
Peer Attachment Avoidance (H7c)	-.28**	.21	.03	3.41**	5.45**
DV = Problem-Focused Coping					
1. Set B		.18	.18	3.12**	3.12**
2. Set B					
Peer Attachment Avoidance (H7d)	-.33**	.23	.04	3.68**	7.78**

Note. DV = dependent variable; $N = 150$

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

Discussion

Consistent with the ECR and research on adult attachment (e.g., Mallinckrodt & Wang, 2004), the results of Study 1 (academic sample) suggest that the Peer Attachment Anxiety and Peer Attachment Avoidance scales have high levels of internal consistency and test-retest reliability. Also, research conducted on adult attachment has examined the extent to which self-reports of attachment anxiety and avoidance are consistent with ratings of attachment by others. For example, Banai et al., (1998) demonstrated medium to large correlations between participant’s self-ratings of attachment and attachment ratings made by a friend or new acquaintance. Specifically, in the Banai et al. (1998) study correlations between self-ratings and friend ratings of the attachment dimensions ranged from .42 to .62. However, correlations between self-ratings and ratings made by a new acquaintance were notably lower, ranging from .28 to .32. In the current investigation, results obtained in Study 1 (academic sample) showed strong within-group agreement among the participant and the 3 peer ratings of attachment anxiety and avoidance. Similar to prior findings by Banai et al (1998), moderate positive

relationships were also obtained between participant ratings of attachment and average peer ratings (i.e., anxiety $r = .23, p < .01$; avoidance $r = .46, p < .01$).

It is interesting to note, however, that the participant-peer correlations obtained for anxiety were lower than those obtained for avoidance. Post-hoc comparison of the correlations indicates a significant difference, with self-ratings of attachment avoidance more similar to peer ratings of attachment avoidance than the self- and peer ratings of attachment anxiety. Although several explanations may be offered for this difference in the strength of association between self- and peer ratings of the two attachment dimensions, one possibility is that these results reflect differences in the external observability of the two dimensions. In particular, it may be that attachment anxiety is less easily observed by others than attachment avoidance. Conceptually, attachment avoidance is posited to reflect an interpersonal dimension, or model of others. In contrast, attachment anxiety is conceptualized as an intrapersonal dimension and is often explained as a model of self (Bartholomew & Horowitz, 1991; Shaver & Mikulincer, 1998). The present findings suggest that among young adults, an individual's model of others and associated behaviors towards others, such as distancing and avoidance of emotional closeness (i.e., attachment avoidance), are more easily observed by peers than an individual's model of self and associated affective behaviors, such as worrying and insecurity (i.e., attachment anxiety).

Further examination of this issue was conducted by dividing peers into two groups based on their level of acquaintance to the participant; namely, peers that the participant reported knowing well (i.e., the high acquaintance group) and peers with whom the participant reported less familiarity (i.e., the low acquaintance group).

Correlations obtained between self and high acquaintance peers showed larger self-peer ratings for attachment avoidance ($N = 129, r = .45, p < .01$), and less agreement for attachment anxiety ($N = 129, r = .23, p < .01$). For the low acquaintance peer group, a correlation of .33 ($p < .05$) was obtained between self-peer ratings of attachment avoidance, but the self-peer ratings correlation for attachment anxiety was non-significant ($N = 48, r = .20, ns$). These supplementary findings are consistent with findings by Banai and colleagues' (1998) indicating that self-peer agreement is stronger for higher levels of acquaintanceship than lower levels of acquaintance, but the difference between the correlations in the two groups were not significant. In addition however, the current findings also suggest that attachment avoidance may be more easily observed than attachment anxiety, even among close peers. Although it is also possible that the observed difference in self-peer agreement for these dimensions may be a function of inadequate sampling of observable attachment anxiety-related behaviors; additional research is needed to investigate potential differences in the observability of these attachment dimensions.

Also, confirmatory factor analyses provided moderate support a non-orthogonal two-dimensional conceptualization (i.e., anxiety and avoidance) of peer attachment. Earlier work on the ECR has shown that these attachment dimensions are largely empirically independent (Shaver & Mikulincer, in press), yet the results of Study 1 (academic sample) indicate a small correlation between the peer attachment anxiety and avoidance dimensions, and the factor model that allowed the latent constructs to correlate had significantly better approximate fit. Therefore, these findings indicate that the PAS scales are not completely orthogonal.

Some of the hypotheses regarding the convergent validity of peer attachment anxiety were supported in the current investigation. Peer attachment anxiety demonstrated a positive relationship with succorance and a negative relationship with neuroticism. Peer attachment anxiety was also negatively related to extraversion and conscientiousness, which was not predicted. Additionally, peer attachment avoidance demonstrated all of the relationships hypothesized: affiliation (negative relationship), dominance (negative relationship), deference (negative relationship), nurturance (negative relationship), autonomy (positive relationship), agreeableness (negative relationship), extraversion (negative relationship), neuroticism (positive relationship), and interpersonal trust at work/school (negative relationship). Peer attachment avoidance was also negatively related to succorance, which was not hypothesized. Interesting, both peer attachment anxiety and avoidance had a similar pattern of findings in that medium to large relationships with neuroticism and extraversion were found. Yet, peer attachment avoidance had significant relationships with many of the trust-related variables, which will be discussed in more detail later.

The investigation of self-peer rating agreement for the attachment dimensions extends prior research and suggests that peer ratings of attachment avoidance and anxiety may not capture the same aspects of the latent trait as self-ratings. To date, no studies have examined the convergent and discriminant validity of the attachment anxiety and avoidance scales using peer ratings. As noted previously, peer ratings of attachment avoidance were more strongly related to self-ratings on this dimension than were peer ratings of attachment anxiety to self-ratings of attachment anxiety. This rating similarity is also seen in the pattern of correlations between peer ratings of attachment avoidance

and the self-ratings of conceptually similar variables such as the Big Five. Specifically, all of the observable (i.e., behaviorally-based) attachment avoidance-correlate relationships are maintained with the exception of autonomy, which was only weakly related to the self-ratings of attachment avoidance (i.e., average peer ratings relationships: affiliation $r = -.35, p < .01$, dominance $r = -.29, p < .01$, and extraversion $r = -.41, p < .01$). Yet, the correlations between attachment avoidance with interpersonal trust at school and deference were non-significant for the average peer ratings of attachment avoidance.

Examination of the relations between peer ratings of the attachment dimensions and all self-rated Big Five correlates shows that only self-rated neuroticism was significantly correlated with peer ratings of both attachment dimensions (i.e., attachment anxiety_{peer} – neuroticism_{self} $r = .30$; attachment avoidance_{peer} – neuroticism_{self} $r = .18$). In contrast, although self-rated attachment anxiety and self-rated extraversion were significantly negatively correlated, peer ratings of attachment anxiety were not significantly related to self-ratings of extraversion. However, a small negative correlation was obtained between peer-rated attachment anxiety and self-ratings of dominance. This pattern of findings suggests that behavioral insecurity aspects of attachment anxiety may be more readily observable to others, although further investigation is necessary.

Similarly, although self-ratings of attachment avoidance are related to trust correlates, peer ratings of attachment avoidance show only a small relation with self-rated agreeableness and non-significant relations with deference and interpersonal trust at school. This pattern of associations further suggests that peer ratings of less behavioral

markers of trust are less sensitive than self-ratings. As such, it would be informative to investigate how individuals and peers may differ in their assessment of interpersonal trust. Although it seems reasonable that peer ratings of interpersonal trust should be related to individual differences in attachment avoidance, it may also be that peer ratings of trust may be less on the individual's interpersonal attachment style and more on non-personal, instrumental variables, such as information-sharing behavior.

Perhaps the most essential takeaway from Study 1 (academic sample) was the demonstration of incremental predictive validity for the PAS, which reveals that the PAS is not a redundant personality measure. Specifically, peer attachment anxiety predicts family/life-school conflict and student adjustment to college over and above similar variables such as the Big Five, needs and interpersonal trust at school. The Peer Attachment Anxiety scale accounted for 9% of the variance in family/life-school conflict (i.e., family and life issues spilling into school) whereas all of the other variables in combination only accounted for 5% of the variance. Also, peer attachment anxiety accounted for 23% of the variance in student adjustment to college; personality, needs, and interpersonal trust at school combined accounted for 30% of the variance. For both family/life-school conflict and student adjustment to college, peer attachment anxiety appears to be a more simplistic and efficient predictor than existing personality measures. All of the other individual differences variables combined can predict 7% more of the variance in student adjustment to college, but it is unlikely that this additional predictive validity would be worth the additional time it takes to complete all of these measures. The Peer Attachment Anxiety scale is a short measure that demonstrates strong predictive validity for crucial variables within the academic context.

Additionally, peer attachment avoidance predicts emotion- and problem-focused coping over and above similar personality variables, needs and interpersonal trust at school. Peer attachment avoidance accounted for an additional 3% of the variance in emotion-focused coping, and an additional 5% of the variance in problem-focused coping. The direction of both of these relationships was negative suggesting that high levels of attachment avoidance predict that the coping strategies measured in the Brief COPE (Carver, 1997) will be less likely to be used. There are various reasons these coping strategies are not being used by avoidant individuals, which will be discussed in greater detail later.

Interestingly, peer attachment anxiety had incremental, predictive validity for continuance commitment in the academic sample. Specifically, individual differences in attachment anxiety contributed an additional 3% to the variance accounted for in continuance commitment, beyond that of related constructs. That is, students with high levels of peer attachment anxiety reported staying with their current university because the cost of leaving seemed too great. These young adults may fear the unknown and therefore feel stuck at their current university given they are not strong enough to handle change or stress (Shaver & Mikulincer, 2002). Although this relationship was not originally hypothesized, and there is some construct confusion regarding commitment to a university which will be discussed in more detail later, it is in line with the pattern of behaviors associated with peer attachment anxiety. These individuals are unable to effectively regulate their emotions and are desperate for protection from an overwhelming world (Shaver & Mikulincer, 2002), and the university may be serving as a source of protection.

CHAPTER 3

STUDY 2

In Study 2 the psychometric properties of the Worker Attachment Scale were tested, and the construct and criterion-related validity of worker attachment was examined using relevant work-related correlates and criteria. This study was conducted at a large southeastern company using both supervisors and managers. Participants in Study 2 were also given additional socialization and demographic scales, and performance criteria associated with attachment were explored in this study to demonstrate the criterion-related validity of this new scale in the work domain.

Method

Participants

250 supervisors and managers were asked to complete a take-home survey at a large southeastern company. 129 surveys were returned with a complete sample of 85 participants (i.e., participants that included both the survey and performance ratings). The gender distribution of the returned surveys was 32% female and 68% male. Also, the mean participant age was 44, $SD = 7.40$. The sample largely consisted of corporate employees, but supervisors and managers throughout the United States were also surveyed. The participants worked in 19 different departments, but there was an overrepresentation of Human Resources employees.

Procedure

Paper-and-pencil questionnaires were given to supervisors and managers at the corporate headquarters and throughout the nation. Supervisors and managers in different geographic regions from the headquarters were given their surveys and consent forms by

their managers. These individuals were asked to volunteer in the study and were encouraged to fill out the survey by upper management at the organization. When given the survey the participant signed the consent form and returned it to the researcher or their manager. Each participant was given a coded survey to match survey responses to performance data from the company while maintaining confidentiality. The participant was asked to print out their 360 degree performance evaluations on critical skills and behaviors from the company's intranet before filling out the survey. His/her name was not on the performance evaluations to maintain anonymity. The participant was asked to write the code number from their survey at the top of his/her performance evaluation. Therefore, each survey had a code at the top that was matched by the researcher to performance evaluations. The participants were given envelopes with postage addressed to the psychology department. They were asked to complete the paper-and-pencil questionnaire, and then seal the questionnaire and performance evaluation in the envelope and place the envelope in the mail.

Measures

The following measures come from two sources. They are either scales that were included in the paper-and-pencil survey completed by the supervisors and managers or performance data from the company's intranet.

WAS

The WAS was included in the paper-and-pencil survey and it contains two scales: worker attachment avoidance and worker attachment anxiety. The development of these scales was previously discussed, and example items can be found in Appendix A. The items were responded to along a 6-point *strongly disagree-strongly agree* response scale.

Romantic/Close Relationship Attachment

The same measure was included in the paper-and-pencil survey as described in Study 1.

Socialization

This measure was included in the paper-and-pencil survey. It is an adapted version of the Jones' (1986) Socialization measure. As opposed to assessing one's current socialization experience it assesses whether or not an individual was socialized by the first organization they worked for. There are 6 scales in the Jones (1986) measure: Collective versus Individual, Formal versus Informal, Investiture versus Divestiture, Sequential versus Random, Serial versus Disjunctive, and Fixed versus Variable. Only the two scales associated with the social aspects of socialization were included in the current investigation: Investiture versus Divestiture and Serial versus Disjunctive. The items were responded to along a 6-point *strongly disagree-strongly agree* response scale.

Self-Report Unit Tenure

This was assessed in the paper-and-pencil survey using a single item: "How many years have you worked in your current department?"

EPPS

The same measure was included in the paper-and-pencil survey as described in Study 1.

Big Five – IPIP

Goldberg's (1999) International Personality Item Pool (2001) was also used in this study to measure the Big Five dimensions: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Each scale contained 10 items, as

opposed to 20 due to time constraints. The items were responded to along a 6-point *strongly disagree-strongly agree* response scale.

Interpersonal Trust at Work

This measure was included in the paper-and-pencil survey. Two dimensions of Cook and Wall's (1980) Interpersonal Trust at Work measure, Faith in Intentions of Peers and Confidence in Actions of Peers, were adapted to create a measure appropriate for U.S. workers. The target was changed from workmates to coworkers. The items were responded to along a 6-point *strongly disagree-strongly agree* response scale.

Brief COPE

The same measure was included in the paper-and-pencil survey as described in Study 1.

Work-Family Conflict

Netemeyer and colleagues' (1996) work-family conflict (WFC) and family-work conflict (FWC) scales were included in the paper-and-pencil survey. The items were responded to along a 6-point *strongly disagree-strongly agree* response scale.

Job Performance Ratings

360 degree performance ratings on both interpersonal and technical performance were obtained by the individual from his/her annual performance evaluation found on the company's intranet. Each employee at the company is rated on 16 critical skills. All 16 critical skills have various behaviors associated with them (i.e., each critical skill includes 4-6 behaviors). The employee receives a score from his/her manager, coworkers, and self-rating on each of the behaviors associated with the skills. In total there are 72 behaviors the employees are rated on. They are rated on a 5-point scale with 5 indicating

extraordinary behavior and 1 indicating he/she is not effective. The 360 degree ratings are combined to create a total score for the behavior (i.e., the self-rating, manager rating, and coworker ratings are combined), but this is not an average given more than one coworker completes the performance ratings for each employee. Also, the behaviors are averaged to create critical skills scores for: self-rating, manager rating, coworker ratings, and total ratings. For the purposes of this study, 11 of the total critical skill scores were used to investigate interpersonal and technical performance. The interpersonal performance skills are as follows: relationship skills (example behavior: "develops relations across groups/functions), managing conflict (example behavior: "proactively takes action to resolve conflict situations"), teamwork/cooperation (example behavior: "encourages others to work cooperatively"), communication (example behavior: "speaks with confidence"), motivating others (example behavior: "Shares credit with others when appropriate), customer focus (example behavior: "solicits feedback from customers"), and promotes change (example behavior: "responds flexibly to changing situations"). The technical performance skills are: planning/organizing (example behavior: "allocates appropriate resources to tasks"), strategic management (example behavior: "identifies long-term risks and returns associates with a course of action"), process/quality improvement (example behavior: "sets quality standards"), and results orientation (example behavior: "gets the job done on time"). The performance data was coded in the same fashion as the survey responses.

Organizational Commitment

Meyer, Allen, & Smith's (1993) Organizational Commitment measure was included in the paper-and-pencil survey. There are three scales included in this measure:

affective commitment, normative commitment, and continuance commitment. The items were responded to along a 6-point *strongly disagree-strongly agree* response scale.

Department

The participant's department was obtained using a single item: "What department do you currently work in? _____"

Results

Initial internal consistency coefficients for both scales were: Worker Attachment Anxiety $\alpha = .88$ and Worker Attachment Avoidance $\alpha = .88$. Also, after conducting a reliability analysis none of the items had negative item-total correlations or greatly influenced the Cronbach's alpha if deleted. An exploratory Principal Axis factor analysis indicated 11 factors had eigenvalues over one, but the scree plot demonstrated a two-factor solution. When imposing a two-factor solution, the Principal Axis factor analysis revealed that two of the Worker Attachment Anxiety scale items cross-loaded: "I don't often worry about being ignored" (anx10), and "I rarely worry about my coworkers wanting to work with me" (anx21). These were the only two reverse-scored items in the Worker Attachment Anxiety scale, which may have been confusing. These items were removed. Also, two of the Worker Attachment Avoidance items loaded on the wrong factor: "I prefer not to be approached by coworkers during the day" (avod9), and "I get uncomfortable when a coworker wants help on a project" (avod10). In addition, one of the Worker Attachment Avoidance items cross-loaded: "I am nervous when coworkers ask me too many questions about my opinions or thoughts" (avod15). This was the same item that cross-loaded in the academic sample. Therefore, these three items that seem to tap both worker attachment anxiety and worker attachment avoidance were also removed

from the hypothesized model. The internal consistency estimates for both scales after the item deletions were still high in support for Hypothesis 1 (i.e., Worker Attachment Anxiety $\alpha = .91$; and Worker Attachment Avoidance $\alpha = .89$). The Principle Axis factor loadings are provided in Table 12.

In order to test the fit of this model a confirmatory factor analysis (CFA) was done using LISREL 8.72 (Jöreskog, K., & Sörbom, D., 2005) in which the latent constructs were allowed to correlate in the hypothesized model due to their significant correlation with one another ($r = .36, p < .01$). Analysis of the hypothesized model (i.e., the model with all observed variables except anx10, anx21, avod9, avod10, and avod10) indicated mediocre fit, RMSEA = .10, CFI = .88, SRMR = .094, $\chi^2(628, N = 126) = 1368.60, p < .01$. Although these indices do not adhere to Hu and Bentler's (1999) rule of thumb for good approximate fit, SRMR $\leq .08$ and (CFI $\geq .95$ or RMSEA $\leq .06$), it does demonstrate mediocre approximate fit by their standards and therefore provides moderate support for Hypothesis 1.

Alternative model 1 was exactly the same as the hypothesized model, but the latent constructs were not allowed to correlate. This more constrained model had worse approximate fit than the hypothesized model, RMSEA = .10, CFI = .87, SRMR = .13, $\chi^2(629, N = 126) = 1382.97, p < .01$. The chi-squared difference was significant ($\chi^2(1) = 14.37, p < .01$), which indicates the hypothesized model has better fit and the latent constructs are not orthogonal. Alternative model 2 (i.e., a model that does not include anx10, anx21, avod9, avod10, and avod15 and the other observed variables with cross-loadings; avod8 and avod20) had reasonable approximate fit as well, RMSEA = .10, CFI = .87, SRMR = .091, $\chi^2(559, N = 128) = 1241.54, p < .01$. Although this model has

slightly better fit given the chi-squared statistics ($\chi^2(69) = 127.06, p < .01$), the hypothesized model was retained because the model had slightly better fit using the Hu and Bentler (1999) standards, and there were no theoretical reasons to drop the additional worker attachment avoidance items. Alternative model 3 (i.e., a three-factor model in which all of the cross-loading items were included in a third factor: anx10, anx21, avod8, avod9, acod10, avod15, and avod20) had reasonable approximate fit as well, RMSEA = .09, CFI = .88, SRMR = .091, $\chi^2(816, N = 126) = 1714.73, p < .01$. Although the chi-squared difference test was significant ($\chi^2(188) = 346.13, p < .01$), indicating the hypothesized two-factor model had significantly better fit than alternative model 3 (i.e., the three-factor model).

Table 12. Principal Axis Factor Analysis of the WAS (Hypothesis 1)

Item Description	Varimax-Rotated Factor	
	Worker Attachment Anxiety	Worker Attachment Avoidance
anx1	0.60	0.16
anx2	0.68	0.12
anx3	0.74	0.19
anx4	0.74	0.05
anx5	0.63	-0.02
anx6	0.60	0.02
anx7	0.67	0.04
anx8	0.79	0.06
anx9	0.63	0.22
<i>anx10</i>	<i>0.16</i>	<i>0.30</i>
anx11	0.54	0.15
anx12	0.62	0.09
anx13	0.43	-0.07
anx14	0.69	0.10
anx15	0.52	0.20
anx16	0.51	0.20
anx17	0.64	0.08
anx18	0.53	0.24
anx19	0.28	0.14
anx20	0.44	0.20
<i>anx21</i>	<i>0.22</i>	<i>0.23</i>
avod1	0.13	0.63
avod2	0.05	0.66
avod3	0.06	0.37
avod4	0.15	0.74
avod5	0.20	0.37
avod6	0.01	0.47
avod7	0.19	0.51
avod8	0.36	0.50
<i>avod9</i>	<i>0.40</i>	<i>0.07</i>
<i>avod10</i>	<i>0.35</i>	<i>0.08</i>
avod11	0.03	0.43
avod12	-0.05	0.57
avod13	0.13	0.56
avod14	0.06	0.79
<i>avod15</i>	<i>0.37</i>	<i>0.26</i>
avod16	0.18	0.62
avod17	0.18	0.64
avod18	0.01	0.63
avod19	0.04	0.45
avod20	0.23	0.31
avod21	0.14	0.64

An independent sample t-test was performed in order to determine whether there were gender differences in worker attachment anxiety and avoidance. There were no gender differences in the current investigation for worker attachment anxiety (i.e., $t(126) = .59, ns$), but there were gender differences for worker attachment avoidance (i.e., $t(126) = -2.63, p < .01$). Females reported higher levels of worker attachment avoidance than males (Female $M = 2.96, SD = .86$; Male $M = 2.58, SD = .71$). Despite these gender differences, there was not sufficient power in the current investigation to do separate analyses for males and females, especially since the female group was so small (i.e., $N = 41$). These results may suggest that females low on attachment avoidance were underrepresented in this sample given significant differences did not exist in the academic sample, which had a more equal gender distribution.

The descriptive statistics, internal consistency reliabilities, and correlations for the Close Relationship Attachment Style scales, Socialization scales, and the Worker Attachment Scales are provided in Table 13. In partial support for Hypothesis 4a the Worker Attachment Anxiety scale has a medium, negative correlation with the Investiture Socialization scale (i.e., $r = -.35, p < .01$). It is not related to the Serial Socialization scale (i.e., $r = -.14, ns$), although there was not enough power to detect a meaningful nonexistent effect. Also, Hypothesis 4c was supported. The Worker Attachment Avoidance scale is negatively correlated with the Serial Socialization scale (i.e., $r = -.22, p < .05$) and the Investiture Socialization scale (i.e., $r = -.37, p < .01$). These effects are small and medium as hypothesized. In addition, Hypothesis 4b was also supported with worker attachment anxiety's medium-sized relationship with preoccupied and fearful close relationship attachment (i.e., Preoccupied $r = .41, p < .01$ and Fearful $r = .39, p <$

.01). Hypothesis 4d was also supported in that the Worker Attachment Avoidance scale had a medium correlation with the Fearful scale ($r = .39, p < .01$), but its correlation with the Dismissing scale was small ($r = .21, p < .05$). As was true with Study 1, these correlations should be considered cautiously given the low internal reliability coefficients for the close relationship attachment scales.

Table 13. Descriptive Statistics and Antecedent Analyses of Worker Attachment (Hypothesis 4)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Worker Attachment Anxiety	1.68	0.62	(.91)							
2. Worker Attachment Avoidance	2.70	0.78	.36**	(.89)						
3. Secure Close Relationship Attachment	4.01	0.72	-.18*	-.28**	(.22)					
4. Preoccupied Close Relationship Attachment	2.63	0.84	.41**	.19*	-.06	(.59)				
5. Fearful Close Relationship Attachment	3.09	0.79	.39**	.39**	-.13	.36**	(.60)			
6. Dismissing Close Relationship Attachment	4.08	0.83	.03	.21*	.08	-.04	.29**	(.32)		
7. Serial Socialization	4.22	1.18	-.14	-.22*	.07	-.21*	-.12	-.13	(.82)	
8. Investiture Socialization	4.52	0.85	-.35**	-.37**	.13	-.36**	-.31**	-.06	.57**	(.61)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations are below the diagonal. $N = 128$
 * $p < .05$ ** $p < .01$.

Hypothesis 5 was partially supported in the current investigation. The hypothesis asserted that average unit tenure (i.e., mean levels of tenure for participants that returned surveys in each department) should be positively related to the homogeneity or within department similarity of the anxiety and avoidance dimensions of attachment (measured by the WAS). Therefore, the $r_{WG(J)}$ was calculated for both the Worker Attachment Anxiety and Avoidance scales in each department. In order for the department to be

included in the analyses there needed to be at least three members. The descriptive statistics for each department are provided in Appendix F (i.e., Table F1). Departmental homogeneity in attachment anxiety is strongly associated with unit tenure (i.e., $r = .84, p < .01$). Yet, the same results were not found for attachment avoidance ($r = -.35, ns$). These results are provided in Table 14. The analyses were also done with workgroups instead of departments, but the results were not significant. The descriptive statistics and workgroup correlations can be found in Appendix F (i.e., Tables F2 and F3).

Table 14. Average Department Tenure's Prediction of Within-Department Attachment Agreement (Hypothesis 5)

Variable	Average Department Tenure	Worker Attachment Anxiety $r_{WG(19)}$	Worker Attachment Avoidance $r_{WG(18)}$
Average Department Tenure			
Worker Attachment Anxiety $r_{WG(19)}$.84**		
Worker Attachment Avoidance $r_{WG(18)}$	-.35	-.15	

Note. $N = 8, df = 6$
 $*p < .05$ $**p < .01$.

Hypothesis 6 was tested in order to investigate the convergent and discriminant validity of the WAS. The descriptive statistics, internal consistency reliabilities, and correlations for the worker attachment correlates are provided in Table 15. Hypothesis 6a posited that the anxiety dimension of attachment (measured by the Worker Attachment Anxiety scale) would have significant relationships with the following correlates: affiliation (negative relationship), dominance (negative relationship), succorance (positive relationship), neuroticism (positive relationship), and interpersonal trust at

school (negative relationship). Two of these relationships were supported (i.e., neuroticism $r = .42, p < .01$ and interpersonal trust at work $r = -.39, p < .01$), and three of the relationships were not found (succorance $r = .15, ns$; affiliation $r = -.03, ns$; and dominance $r = .01, ns$). Also, Hypothesis 6b predicted the avoidance dimension of attachment (measured by the Worker Attachment Avoidance scale) to be related to the following correlates: affiliation (negative relationship), dominance (negative relationship), deference (negative relationship), nurturance (negative relationship), autonomy (positive relationship), agreeableness (negative relationship), extraversion (negative relationship), neuroticism (positive relationship), and interpersonal trust at school (negative relationship). The following relationships were found in support for Hypothesis 6b: deference $r = -.21, p < .05$; nurturance $r = -.18, p < .05$; agreeableness $r = -.40, p < .01$; extraversion $r = -.36, p < .01$; neuroticism $r = .44, p < .01$; and interpersonal trust at work $r = -.54, p < .01$. Three of the relationships were not found: affiliation $r = -.10, ns$; dominance $r = -.16, ns$; and autonomy $r = .14, ns$. In an effort to demonstrate discriminant validity, Hypothesis 6c suggested the anxiety dimension of attachment has non-significant relationships with deference, nurturance, autonomy, extraversion, agreeableness, conscientiousness and openness to experience. This was supported by worker attachment anxiety's relationship with deference ($r = -.07, ns$), autonomy ($r = .12, ns$), and openness to experience ($r = -.05, ns$); but not with extraversion ($r = -.28, p < .01$), conscientiousness ($r = -.30, p < .01$), agreeableness ($r = -.28, p < .01$), and nurturance ($r = -.18, p < .05$). Hypothesis 6d suggested the avoidance dimension of attachment is unrelated to succorance, conscientiousness and openness to experience. This was supported by worker attachment avoidance's relationship with

openness to experience ($r = -.16, ns$) and succorance ($r = .03, ns$), but not conscientiousness ($r = -.26, p < .01$).

Additionally, the partial correlation between attachment anxiety and avoidance was calculated controlling for neuroticism. Both attachment dimensions had medium correlations with neuroticism and were also related to each other. The correlation between the attachment dimensions decreased from .36 to .21 when controlling for neuroticism. This suggests that some of the overlap in the attachment dimensions can be explained by neuroticism as was also found in Study 1.

Table 15. Descriptive Statistics and Correlations among Correlates (Hypothesis 6)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Worker Attachment Anxiety	1.68	0.62	(.91)													
2. Worker Attachment Avoidance	2.70	0.78	.36**	(.89)												
3. Neuroticism	2.10	0.69	.42**	.44**	(.80)											
4. Extraversion	4.24	0.70	-.28**	-.36**	-.22*	(.78)										
5. Openness to Experience	4.14	0.79	-.05	-.16	-.13	.36**	(.72)									
6. Agreeableness	4.64	0.75	-.28**	-.40**	-.53**	.11	.27**	(.79)								
7. Conscientiousness	4.94	0.67	-.30**	-.26**	-.36**	.16	.02	.17*	(.82)							
8. Interpersonal Trust at Work	4.87	0.76	-.39**	-.54**	-.52**	.15	.10	.39**	.30**	(.88)						
9. Deference	4.42	0.56	-.07	-.21*	-.09	.25**	.23**	.02	.14	.17	(.60)					
10. Affiliation	4.47	0.68	-.03	-.10	-.09	.19*	.40**	.20*	-.06	.06	.34**	(.77)				
11. Autonomy	3.71	0.59	.12	.14	.23**	.09	.32**	-.30**	-.09	-.18*	.11	.21*	(.62)			
12. Nurturance	4.72	0.60	-.18*	-.18*	-.11	.25**	.31**	.18*	.10	.07	.42**	.72**	.13	(.79)		
13. Succorance	3.52	0.85	.15	.03	.11	.064	.35**	.08	-.27**	-.06	.22*	.62**	.19*	.46**	(.86)	
14. Dominance	4.17	0.73	.01	-.16	-.11	.20*	.05	-.09	.29**	.22*	.29**	.24**	.36**	.20*	.16	(.79)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations are below the diagonal. *N* = 129

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

A comparison of the convergent and discriminant validity findings for the academic and work samples are provided in Table 16. Also, various post-hoc analyses were done to investigate the differences between the attachment anxiety and avoidance relationships with several of the correlates in both samples. The DEPCOR program (see Silver, Hittner, & May, 2006) was used because the correlations were from the same sample and shared a variable in common, which consequently made them dependent. The attachment anxiety-agreeableness and attachment avoidance-agreeableness relationships in the academic sample were significantly different ($z = 2.92, p < .01$), but not in the work sample ($z = 1.30, ns$). Also, the attachment anxiety-deference and attachment avoidance-deference relationships in the academic sample were significantly different ($z = 4.73, p < .01$), but not in the work sample ($z = 1.41, ns$). Finally, a significant difference was found between the attachment anxiety and attachment avoidance relationships with interpersonal trust in the academic sample ($z = 5.28, p < .01$), but not the work sample ($z = 1.77, ns$).

Table 16. Comparison of Attachment Anxiety and Avoidance Correlates

Variable	Attachment Anxiety		Attachment Avoidance	
	Peer Attachment Anxiety	Worker Attachment Anxiety	Peer Attachment Avoidance	Worker Attachment Avoidance
Neuroticism	.54**	.42**	.31**	.44**
Extraversion	-.35**	-.28**	-.58**	-.36**
Openness to Experience	-.12	-.05	-.14	-.16
Agreeableness	-.06	-.28**	-.33**	-.40**
Conscientiousness	-.33**	-.30**	-.12	-.26**
Interpersonal Trust at Work/School	-.05	-.39**	-.51**	-.54**
Deference	.14	-.07	-.30**	-.21*
Affiliation	.06	-.03	-.52**	-.10
Autonomy	-.01	.12	.19*	.14
Nurturance	.08	-.18*	-.34**	-.18*
Succorance	.25**	.15	-.26**	.03
Dominance	.01	.01	-.20*	-.16

Note. Correlations in bold support hypotheses

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

The descriptive statistics and correlations for worker attachment anxiety and avoidance and their theoretical criteria are provided in Table 17. These relationships will be further investigated using hierarchical regression techniques in order to test Hypotheses 7, 8, 9, and 11. Also, it should be noted the there were no hypotheses regarding worker attachment's relationship with continuance and normative commitment, but these correlations are provided.

Table 17. Descriptive Statistics and Correlations among Criteria

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. Worker Attachment Anxiety	1.68	0.62	(.91)										
2. Worker Attachment Avoidance	2.70	0.78	.36**	(.89)									
3. Emotion-Focused Coping	2.12	0.82	.20*	.16	(.84)								
4. Problem-Focused Coping	3.05	1.37	.11	.06	.80**	(.92)							
5. Family-Work Conflict	1.86	0.92	.21*	.28**	.36**	.25**	(.88)						
6. Work-Family Conflict	3.56	1.43	.06	.20*	.31**	.22*	.46**	(.94)					
7. Interpersonal Job Performance (Total Rating)*	4.21	0.33	-.12	-.08	.05	.03	.06	.27*	(.96)				
8. Technical Job Performance (Total Rating)*	4.16	0.41	-.16	-.01	.01	-.01	.04	.19	.85**	(.91)			
9. Affective Commitment	4.79	1.15	-.20*	-.42**	-.32**	-.25**	-.41**	-.22*	.07	.06	(.89)		
10. Continuance Commitment	3.48	1.05	.05	.05	.20*	.15	.10	.19*	.01	-.02	.08	(.71)	
11. Normative Commitment	3.85	1.34	-.05	-.22*	-.16	-.07	-.28**	-.14	.03	.03	.62**	.18*	(.88)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. The alphas for the starred variables represent the internal consistency of the critical skills used to create each variable. Correlations are below the diagonal. $N = 129$; $N = 89$ for Interpersonal Job Performance and $N = 87$ for Technical Job Performance

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

Before testing Hypotheses 7, 8, 9, and 11 in the work sample the scale properties for the 360 degree performance ratings (i.e., the data used to test Hypothesis 9) will be discussed. It should be noted that due to the large amount of missing data for the performance ratings a listwise deletion method was used. Therefore, the N for the performance analyses is significantly smaller (e.g., $N = 85$ for the total performance ratings) than the N for the other Study 2 analyses (i.e., $N = 129$). The descriptive statistics, internal consistency coefficients, and correlations for the 11 critical skills (total ratings) included in the interpersonal and technical job performance variables are provided in Table 18. The same information is also provided for the self-ratings, manager ratings, and coworker ratings in Appendix G. Additionally, the relationships among the self-ratings, manager ratings, and coworker ratings for interpersonal and technical job performance are also provided in Appendix G. Table G1 provides the relationships among the self-ratings (i.e., the ratings of the 11 critical skills that create the interpersonal and technical job performance variables) and worker attachment. Table G2 includes the relationships among the manager ratings and worker attachment. Table G3 provides the relationships among the coworker ratings and worker attachment.

As can be seen in Appendix G and Table 18, worker attachment anxiety and avoidance do not have many significant relationships with the total ratings of performance (with the exception of communication: $r = -.22, p < .05$), self-ratings of performance, or coworkers ratings of performance. On the other hand, worker attachment anxiety was found to have significant correlations with the manager ratings of several interpersonal and technical performance dimension (i.e., relationship skills: $r =$

-0.22, $p < .05$; communication: $r = -0.23$, $p < .05$; promotes change: $r = -0.22$, $p < .05$; and planning/organizing: $r = -0.24$, $p < .05$).

Additionally, Table G4 provides the relationships among the self-ratings, manager ratings, and coworker ratings for the interpersonal performance skills; and Table G5 includes the same relationships for the technical performance skills. The results provide some construct validity evidence for the performance dimensions (i.e., critical skills). All of the critical skills have high internal consistency coefficients and show strong correlations among each other within rating method (e.g., all of the coworker ratings of performance are significantly related to one another). Some of these correlations are so high that some method bias appears to be present. Yet, the skills also show relationships with each other between methods (e.g., small to medium correlations were found for all of the critical skills between coworker and manager ratings). The self-ratings had the least convergent validity in that they showed very few relationships with the coworker ratings, especially on the interpersonal performance dimensions. Yet, they were related to some of the manager ratings. It is not surprising that these multi-method ratings for the different performance dimensions (i.e., critical skills) are not large given all of the raters were exposed to different behaviors.

One last thing should be noted about the critical skills performance ratings. There appears to be either leniency bias in the ratings or range restriction. The behaviors rated for each of the skills are rated on a 5-point scale. The means for the total ratings range from 4.09-4.28, the manager ratings range from 4.05-4.23, the coworker ratings range from 4.18-4.32, the self-ratings range from 3.71-4.08, and the standard deviations are relatively small (see Table 18 and Tables G1-G3).

Table 18. Worker Attachment and Total Performance Ratings

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Worker Attachment Anxiety	1.68	0.62	(.91)												
2. Worker Attachment Avoidance	2.70	0.78	.43**	(.89)											
Interpersonal Job Performance															
3. Relationship Skills (Total Rating)	4.27	0.33	-.18	-.17	(.89)										
4. Managing Conflict (Total Rating)	4.09	0.37	-.17	-.12	.78**	(.89)									
5. Teamwork/Cooperation (Total Rating)	4.28	0.39	-.05	-.07	.79**	.78**	(.95)								
6. Communication (Total Rating)	4.23	0.39	-.22*	-.01	.76**	.73**	.69**	(.89)							
7. Motivating Others (Total Rating)	4.19	0.33	-.09	-.07	.78**	.80**	.78**	.76**	(.85)						
8. Customer Focus (Total Rating)	4.26	0.40	-.11	.03	.71**	.73**	.87**	.77**	.73**	(.93)					
9. Promotes Change (Total Rating)	4.14	0.40	-.14	-.07	.72**	.78**	.83**	.73**	.79**	.79**	(.93)				
Technical Job Performance															
10. Planning/Organizing (Total Rating)	4.13	0.43	-.20	-.02	.62**	.66**	.67**	.72**	.75**	.76**	.79**	(.94)			
11. Strategic Management (Total Rating)	4.09	0.51	-.11	.01	.54**	.58**	.52**	.57**	.62**	.53**	.58**	.64**	(.95)		
12. Process/Quality Improvement (Total Rating)	4.15	0.41	-.18	-.03	.67**	.68**	.68**	.74**	.75**	.74**	.82**	.88**	.64**	(.93)	
13. Results Orientation (Total Rating)	4.26	0.47	-.20	.00	.64**	.66**	.71**	.74**	.73**	.80**	.83**	.86**	.58**	.86**	(.97)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations are below the diagonal. *N* = 85

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

In order to examine the relationships among worker attachment and criteria controlling for all of the correlates, an analysis of sets was done in the same fashion as Study 1 (Cohen et al., 2003). Hypotheses 7, 8, 9, and 11 suggest the incremental predictive validity of worker attachment for a variety of criteria over and above conceptually similar variables (i.e., sets of correlates). The sets used in Study 2 were the same as Study 1: Set **A**: affiliation, dominance, succorance, neuroticism, and interpersonal trust at work (i.e., the worker attachment anxiety correlates); and Set **B**: affiliation, dominance, deference, nurturance, autonomy, agreeableness, extraversion, neuroticism, and interpersonal trust at work (i.e., the worker attachment avoidance correlates). The hierarchical regression results can be found in Tables 19 and 20.

Set **A** accounted for 24% of the variance in emotion-focused coping (i.e., $R^2 = .24$, $F(5, 122) = 7.73$, $p < .01$), and worker attachment anxiety accounted for 4% of the variance (i.e., $R^2 = .04$, $F(1, 127) = 5.44$, $p < .05$). Hypothesis 7a was not supported in the work sample. The anxiety dimension of attachment (measured by the WAS) did not significantly predict emotion-focused coping over Set **A** (i.e., $\Delta R^2 = .00$, $\Delta F(1, 121) = .05$, *ns*; and $\beta = -.02$, *ns*) as posited by Hypothesis 7a. Set **A** did demonstrate significant incremental predictive validity for emotion-focused coping over worker attachment anxiety (i.e., $\Delta R^2 = .20$, $\Delta F(5, 121) = 6.33$, $p < .01$).

Set **A** accounted for 17% of the variance in problem-focused coping (i.e., $R^2 = .17$, $F(5, 122) = 4.92$, $p < .01$), whereas worker attachment anxiety only accounted for 1% of the variance in problem-focused coping (i.e., $R^2 = .01$, $F(1, 127) = 1.54$, *ns*). Hypothesis 7b suggested a significant change in R^2 for the problem-focused coping regression equation, which was not found (i.e., $\Delta R^2 = .00$, $\Delta F(1, 121) = .03$, *ns*; and $\beta = -$

.02). Set A did demonstrate significant incremental predictive validity for problem-focused coping over worker attachment anxiety (i.e., $\Delta R^2 = .16$, $\Delta F(5, 121) = 4.51$, $p < .01$).

Set A accounted for 17% of the variance in family-work conflict (i.e., $R^2 = .17$, $F(5, 122) = 4.96$, $p < .01$), and worker attachment anxiety accounted for 4% of the variance in family-work conflict (i.e., $R^2 = .04$, $F(1, 127) = 5.57$, $p < .05$). Yet, in contrast to the academic sample, which provided a good deal of support for Hypothesis 8a, worker attachment anxiety was not found to be a significant and positive predictor of family-work conflict over and above Set A (i.e., $\Delta R^2 = .00$, $\Delta F(1, 121) = .03$, ns ; and $\beta = .02$). Set A did demonstrate significant incremental predictive validity for family-work conflict over worker attachment anxiety (i.e., $\Delta R^2 = .13$, $\Delta F(5, 121) = 3.67$, $p < .01$).

Set A accounted for only 5% of the variance in interpersonal job performance (i.e., $R^2 = .05$, $F(5, 83) = .91$, ns), and worker attachment anxiety only accounted for 2% of the variance in interpersonal job performance (i.e., $R^2 = .02$, $F(1, 87) = 1.29$, ns). Hypotheses 9a was also not supported. Hypothesis 9a predicted a significant increase in R^2 when the anxiety dimension of attachment (measured by the WAS) was added to the multiple regression equation including Set A as predictors of interpersonal job performance. Specifically, it posited a negative beta weight for the attachment anxiety-interpersonal job performance relationship. These results were not found (i.e., $\Delta R^2 = .01$, $\Delta F(1, 80) = .41$, ns ; and $\beta = -.08$, ns). Set A also did not provide incremental predictive validity over worker attachment anxiety (i.e., $\Delta R^2 = .04$, $\Delta F(5, 82) = .73$, ns).

Set A accounted for 11% of the variance in technical job performance (i.e., $R^2 = .11$, $F(5, 81) = 2.00$, ns), and worker attachment anxiety accounted for 3% of the variance

in technical job performance (i.e., $R^2 = .03$, $F(1, 85) = 2.35$, *ns*). Hypothesis 9b stated that the anxiety dimension of attachment should negatively predict technical job performance over Set A. Again, these results were not demonstrated (i.e., $\Delta R^2 = .01$, $\Delta F(1, 80) = 1.27$, *ns*; and $\beta = -.14$, *ns*). It should be noted that Set A did not demonstrate significant incremental predictive validity in technical job performance over worker attachment anxiety as well (i.e., $\Delta R^2 = .10$, $\Delta F(5, 80) = 1.76$, *ns*).

Finally, Set A accounted for 25% of the variance in organizational affective commitment (i.e., $R^2 = .25$, $F(5, 121) = 8.12$, $p < .01$), and worker attachment anxiety accounted for 4% of the variance in affective commitment (i.e., $R^2 = .04$, $F(1, 126) = 5.00$, $p < .05$). Yet, the work sample did not provide evidence for Hypothesis 11a, worker attachment anxiety's incremental, negative prediction of affective commitment over Set A (i.e., $\Delta R^2 = .00$, $\Delta F(1, 120) = .01$, *ns*; and $\beta = .01$, *ns*). Set A did demonstrate significant incremental predictive validity for affective commitment over worker attachment anxiety (i.e., $\Delta R^2 = .21$, $\Delta F(5, 120) = 6.84$, $p < .01$).

Table 19. Analyses of Worker Attachment Anxiety's Criterion-Related Validity (Hypotheses 7a, 7b, 8a, 9a, 9b, and 11a)

Step and variable	Work Sample				
	β	R^2	ΔR^2	F	F_{change}
DV = Emotion-Focused Coping					
1. Set A		.24	.24	7.73**	7.73**
2. Set A					
Worker Attachment Anxiety (H7a)	-.02	.24	.00	6.40**	.05
DV = Problem-Focused Coping					
1. Set A		.17	.17	4.92**	4.92**
2. Set A					
Worker Attachment Anxiety (H7b)	-.02	.17	.00	4.07**	.03
DV = Family-Work Conflict					
1. Set A		.17	.17	4.96**	4.96**
2. Set A					
Worker Attachment Anxiety (H8a)	.02	.17	.00	4.11**	.03
DV = Interpersonal Job Performance (Total Rating)*					
1. Set A		.05	.05	.91	.91
2. Set A					
Worker Attachment Anxiety (H9a)	-.08	.06	.01	.82	.41
DV = Technical Job Performance (Total Rating)*					
1. Set A		.11	.11	2.00	2.00
2. Set A					
Worker Attachment Anxiety (H9b)	-.14	.12	.01	1.88	1.27
DV = Affective Commitment					
1. Set A		.25	.25	8.12**	8.12**
2. Set A					
Worker Attachment Anxiety (H11a)	.01	.25	.00	6.71**	.01

Note. DV = dependent variable; H = hypothesis. $N = 129$; $N = 87$ for the starred variables

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

Set **B** account for 26% of the variance in emotion-focused coping (i.e., $R^2 = .26$, $F(9, 118) = 4.62$, $p < .01$), whereas worker attachment avoidance only accounted for 2% of the variance in emotion-focused coping (i.e., $R^2 = .02$, $F(1, 127) = 3.12$, *ns*).

Hypothesis 7c was not supported in the work sample. The avoidance dimension of

attachment (measured by the WAS) was not a significant, negative predictor of emotion-focused coping (i.e., emotion-focused coping: $\Delta R^2 = .00$, $\Delta F(1, 117) = .15$, *ns*; and $\beta = -.04$, *ns*). Set **B** did demonstrate significant incremental predictive validity for emotion-focused coping over worker attachment avoidance (i.e., $\Delta R^2 = .24$, $\Delta F(9, 117) = 4.20$, $p < .01$).

Set **B** accounted for 18% of the variance in problem-focused coping (i.e., $R^2 = .18$, $F(9, 118) = 2.79$, $p < .01$), whereas worker attachment avoidance did not account for any of the variance in problem-focused coping (i.e., $R^2 = .00$, $F(1, 127) = .40$, *ns*).

Hypothesis 7d was not supported in that worker attachment avoidance did not demonstrate incremental predictive validity for problem-focused coping over Set **B** (i.e., $\Delta R^2 = .00$, $\Delta F(1, 117) = .06$, *ns*; and $\beta = -.03$, *ns*). Set **B** did demonstrate significant incremental predictive validity for problem-focused coping over worker attachment avoidance (i.e., $\Delta R^2 = .17$, $\Delta F(9, 117) = 2.74$, $p < .01$).

All of the measures in Set **B** only accounted for 9% of the variance in work-family conflict (i.e., $R^2 = .09$, $F(9, 118) = 1.35$, *ns*), and worker attachment avoidance accounted for 4% of the variance in work-family conflict (i.e., $R^2 = .04$, $F(1, 127) = 5.47$, $p < .05$). Yet, Hypothesis 8b was not demonstrated given worker attachment avoidance was not a significant, negative predictor of work-family conflict over Set **B** ($\Delta R^2 = .01$, $\Delta F(1, 117) = 1.32$, *ns*; and $\beta = .13$, *ns*). Set **B** also did not demonstrate significant incremental predictive validity (i.e., $\Delta R^2 = .06$, $\Delta F(9, 117) = .92$, *ns*).

Also, Set **B** accounted for 16% of the variance in interpersonal job performance (i.e., $R^2 = .16$, $F(9, 79) = 1.70$, *ns*), and worker attachment avoidance accounted for none of the variance in interpersonal job performance (i.e., $R^2 = .00$, $F(1, 87) = .57$, *ns*). As

was found with worker attachment anxiety, Hypothesis 9c was not supported. Worker attachment avoidance did not significantly predict interpersonal job performance (total ratings) over Set **B** (i.e., $\Delta R^2 = .00$, $\Delta F(1, 78) = .05$, *ns*; and $\beta = -.03$, *ns*). Again, Set **B** also did not demonstrate significant incremental predictive validity for interpersonal job performance over worker attachment avoidance (i.e., $\Delta R^2 = .16$, $\Delta F(9, 78) = 1.62$, *ns*). Also, the nonexistent correlation between worker attachment avoidance and technical job performance (i.e., $r = -.01$, *ns*) serves as partial evidence for Hypothesis 9d, although there was not enough power to provide true evidence for this nonexistent relationship.

Finally, Set **B** accounted for 27% of the variance in organizational affective commitment (i.e., $R^2 = .27$, $F(9, 117) = 4.89$, $p < .01$), and worker attachment avoidance accounted for 18% of the variance in affective commitment (i.e., $R^2 = .18$, $F(1, 126) = 26.80$, $p < .01$). Hypothesis 11b was not supported in the work sample, but incremental predictive validity was found. The avoidance dimension of attachment was significantly negatively related to affective commitment over and above the worker attachment avoidance correlates (Set **B**). These effects were small although they were hypothesized to be medium (i.e., $\Delta R^2 = .03$, $\Delta F(1, 116) = 5.45$, $p < .05$; and $\beta = -.24$, $p < .05$). Set **B** also demonstrated significant incremental predictive validity over worker attachment avoidance (i.e., $\Delta R^2 = .13$, $\Delta F(9, 116) = 2.41$, $p < .05$).

Table 20. Analyses of Worker Attachment Avoidance's Criterion-Related Validity (Hypotheses 7c, 7d, 8b, 9c, 9d, and 11b)

Step and variable	Work Sample				
	β	R^2	ΔR^2	F	F_{change}
DV = Emotion-Focused Coping					
1. Set B		.26	.26	4.62**	4.62**
2. Set B					
Worker Attachment Avoidance (H7c)	-.04	.26	.00	4.14**	.15
DV = Problem-Focused Coping					
1. Set B		.18	.18	2.79**	2.79**
2. Set B					
Worker Attachment Avoidance (H7d)	-.03	.18	.00	2.50**	.06
DV = Work-Family Conflict					
1. Set B		.09	.09	1.35	1.35
2. Set B					
Worker Attachment Avoidance (H8b)	.13	.10	.01	1.35	1.32
DV = Interpersonal Job Performance (Total Rating)*					
1. Set A		.16	.16	1.70	1.70
2. Set A					
Worker Attachment Avoidance (H9c)	-.03	.16	.00	1.52	.05
DV = Affective Commitment					
1. Set B		.27	.27	4.89**	4.89**
2. Set B					
Worker Attachment Avoidance (H11b)	-.24*	.31	.03	5.12**	5.45*

Note. DV = dependent variable; H = hypothesis. $N = 129$; $N = 87$ for the starred variable
 * $p < .05$ ** $p < .01$.

Given the lack of support for Hypothesis 9, additional analyses were done using the critical skills instead of the composite variables (i.e., interpersonal and technical job performance). Worker attachment anxiety and the manager ratings were used instead of the total ratings given these were the only significant correlations found in the prior analyses other than the communication (total rating)-worker attachment anxiety relationship (see Table 18 and Table G1-G5). Additionally, it should be noted that an additional critical skill, influence, was added to the analyses. The critical skill was not

included in the hypothesis tests (i.e., it was not included in the interpersonal or technical job performance dimensions), but demonstrated a relationship with worker attachment anxiety ($r = -.31, p < .01$). First, the incremental validity of worker attachment anxiety over Set A for all of the critical skills (i.e., manager ratings) were investigated and there were no significant changes in R^2 , despite the significant correlations between worker attachment anxiety and the manager's critical skill ratings (see Table G2). Therefore, the next set of analyses examined worker attachment anxiety's incremental validity for the prediction of the various behaviors rated (i.e., the behavioral ratings that make up the critical skill dimensions). These exploratory analyses provide a better sense of worker attachment anxiety and its potential criteria in the work domain. There were two significant changes in R^2 found. Worker attachment anxiety demonstrated incremental predictive validity for planning and organizing behaviors and the ability to relate to other needs and concerns. These results are provided in Table 21.

Table 21. Worker Attachment Anxiety's Predictive Validity for Work Behaviors

Step and behavior	Work Sample				
	β	R^2	ΔR^2	F	F_{change}
DV = Relates opinions to others' needs or concerns (Manager Rating from Influence Factor)					
1. Set A		.08	.08	1.23	1.23
2. Set A					
Worker Attachment Anxiety	-.28*	.13	.06	1.88	4.83*
DV = Prepares for potential problems (Manager Rating from Planning/Organizing Factor)					
1. Set A		.10	.10	1.66	1.66
2. Set A					
Worker Attachment Anxiety	-.34**	.18	.08	2.70*	7.21**

Note. DV = dependent variable. $N = 80$

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

Finally, because the individual differences variables that demonstrated significant relationships with worker attachment in the work sample were not exactly the same as the hypothesized correlates, the hierarchical regression analysis was also done using the actual correlates of worker attachment avoidance. Therefore, the incremental validity of the Worker Attachment Avoidance scale was investigated over all its correlates (i.e., neuroticism, extraversion, agreeableness, conscientiousness, interpersonal trust at work, deference, nurturance, tenure, and age). This will be referred to as Adapted Set **B**. These analyses were only done for the criterion that worker attachment avoidance had previously shown criterion-related validity (i.e., affective commitment). It should be noted that Adapted Set **B** includes tenure and age in addition to the personality, trust, and needs variables. A significant, negative correlation was found between worker attachment avoidance and tenure ($r = -.20, p < .05$) as well as age ($r = -.38, p < .01$), and both correlates were related to affective commitment (i.e., tenure $r = .33, p < .01$; age $r = .39, p < .01$). The results are provided in Table 22. Worker attachment avoidance maintained its incremental validity over the Adapted Set **B** for the prediction of affective commitment (i.e., $\Delta R^2 = .02, \Delta F(1, 114) = 3.97, p < .05$; and $\beta = -.21, p < .05$).

Table 22. Analyses of Worker Attachment Avoidance' Incremental Validity over Actual Correlates

Step and variable	Work Sample				
	β	R^2	ΔR^2	F	F_{change}
DV = Affective Commitment					
1. Adapted Set B		.33	.33	6.18**	6.18**
2. Adapted Set B					
Worker Attachment Avoidance	-.21*	.35	.02	6.11**	3.97*

Note. DV = dependent variable; H = hypothesis. $N = 126$

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

Discussion

Results for Study 2 (work sample) indicate high levels of internal consistency for the WAS scales. Also, confirmatory factor analyses provided marginal support for a non-orthogonal two-dimensional conceptualization (i.e., anxiety and avoidance) of worker attachment. Similar to the findings from Study 1 (academic sample), the anxiety and avoidance scales were found to not be independent contradicting some previous research (Shaver & Mikulincer, in press). The results of Study 2 (work sample) indicate a small to medium correlation between the peer attachment anxiety and avoidance dimensions, and the factor model that allowed the latent constructs to correlate had significantly better approximate fit than the independent-factors model.

Participants in Study 2 (work sample) were full-time workers at a large organization. Therefore, exploratory hypotheses regarding the theoretical antecedents of worker attachment and the process of attachment over time were explored. It was found that the socialization experiences individuals have at their first jobs (investiture and serial socialization) are significantly related to the worker attachment anxiety and avoidance levels of those individuals. Although the direction of this relationship was not tested in

the current investigation, this finding provides evidence that early, formative work experiences (i.e., socialization) may impact the attachment style developed within the work domain. Yet, there are alternative explanations that will be discussed in more detail later.

Also, the results demonstrated that worker attachment anxiety becomes more homogenous as the level of departmental tenure increases. This finding suggests that employees with attachment anxiety levels different from the norms of the department leave over time (Schneider et al., 1995). Although this is interesting and provides some evidence for Schneider's (1987) ASA model, the sample size was extremely small and therefore these departmental results should be considered with caution. Also, the cross-sectional nature of the study did not allow for the exploration of process over time.

The convergent validity hypotheses for the PAS were partially supported in Study 2. The anxiety dimension of attachment was found to be significantly related to neuroticism (positive relationship) and interpersonal trust at work (negative relationship). The avoidance dimension of attachment was significantly related to: deference (negative relationship), nurturance (negative relationship), agreeableness (negative relationship), extraversion (negative relationship), neuroticism (positive relationship), and interpersonal trust at work (negative relationship). Similar to the findings in Study 1, these results suggest a similar pattern of findings for attachment anxiety and avoidance. Both dimensions are positively related to neuroticism and negatively related to extraversion, and the attachment avoidance dimension is also related to many trust-related variables differentiating it from attachment anxiety. This pattern will be discussed in more detail later. Finally, although the attachment dimensions were unrelated to some of the

hypothesized variables (e.g. attachment anxiety is unrelated to nurturance, autonomy and openness to experience; attachment avoidance is unrelated to succorance and openness to experience), there was not enough power in the current investigation to provide evidence for a nonexistent relationship.

The only hypothesized incremental predictive validity found in Study 2 was for attachment avoidance's prediction of organizational affective commitment over and above similar personality traits, needs and interpersonal trust at work. All of the individual differences correlates combined accounted for 27% of variance in affective commitment. Attachment avoidance demonstrated incremental predictive validity even when tenure and age were included, but perhaps more importantly it was able to predict 18% of the variance by itself. The attachment avoidance measure is only 18 items, whereas the other measures combined are 81 items. If considering a cost/benefit ratio, the Worker Attachment Avoidance scale is a much quicker measure that accounts for more than half of the variance in affective commitment than all of the correlates combined. If an organization is looking for a quick measure predictive of one's desire to remain with the organization, perhaps in the early stages of a job when an individual has not yet developed organizational commitment, this quick measure may be better than existing tools such as the Big 5.

CHAPTER 4

GENERAL DISCUSSION

Bowlby's (1969/1982) latent construct of attachment has generated considerable research on adult attachment in both the developmental and personality/social psychology domains (Bernier & Dozier, 2002). Adult attachment styles have been shown to be non-redundant personality variables for the explanation of individual's affect-regulation strategies and expectations regarding others, predictive of numerous relationship-based criteria over and above other commonly studied personality traits (John, 1990; Shaver & Mikulincer, 2002; Shaver & Mikulincer, 2004). The current investigation builds upon this strong tradition of attachment theory to investigate the antecedents, correlates, and consequences of individual differences in attachment in two adult achievement contexts; namely, in a collegiate study and the workplace. Two new measures of adult attachment, appropriate for these contexts, were developed and evidence for the construct validity of these measures, as well as their criterion-related validity was obtained.

Scale Properties of the WAS and PAS

Previous research on adult attachment has focused extensively on the dimensionality and psychometric properties of self-report measures of attachment. In the social psychology domain, the current consensus is that attachment is best represented as a two-dimensional construct (Shaver & Mikulincer, in press). Some authors have posited that the two dimensions reflect Bowlby's "working models" of self and others (e.g., Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994); while other researchers believe the dimensions reflect individual differences in attachment anxiety and avoidance

(Brennan et al., 1998; Shaver & Mikulincer, 2002). Both two-dimensional frameworks of adult attachment are similar in that an interpersonal and intrapersonal dimension is specified. The two-dimensional conceptualization of adult attachment is also consistent with other broad models of personality and interpersonal behavior, such as the *interpersonal circle* (IPC; Leary, 1957; Wagner, Kiesler, & Schmidt, 1995; Wiggins, 1979), which identify two primary dimensions of relationship-based behavior. The current investigation validated a self and peer measure of individual differences in adult attachment based on the ECR (Brennan et al., 1998), a widely used two-dimensional (anxiety and avoidance) measure of close relationship attachment.

Results obtained provide support for the PAS and WAS with respect to the dimensionality of the measures and their reliabilities. Consistent with findings for the ECR, factor analyses of both the PAS and WAS provided moderate support for a non-orthogonal two-dimensional conceptualization (i.e., anxiety and avoidance). Previous research on the ECR has shown that these attachment dimensions are largely empirically independent (Shaver & Mikulincer, in press). Findings obtained in the current investigation, however, showed small to medium correlations between attachment anxiety and avoidance dimensions in both samples (academic sample $r = .28, p < .01$; work sample $r = .36, p < .01$), and the factor models that allowed the latent constructs to correlate had significantly better approximate fit. As such, findings of the present study indicate that the WAS and PAS dimensions are not completely orthogonal. Although the correlations between the attachment dimensions decrease when neuroticism is controlled for in both studies.

Consistent with prior findings for the ECR, both the adapted anxiety and avoidance scales in the academic and work samples showed high levels of internal consistency. Evidence for the reliability of the PAS is also provided in findings obtained from the academic sample. Previous findings for attachment anxiety and avoidance have shown test-retest reliability coefficients of .70 for both scales after three weeks (Mallinckrodt & Wang, 2004). In the current investigation similar test-retest reliability coefficients were obtained over the course of two weeks in the academic sample; namely, anxiety $r = .79, p < .01$ and avoidance $r = .83, p < .01$.

Also, there is moderate support for inter-rater reliability in Study 1 (academic sample). Both scales demonstrated high levels of inter-rater agreement and there were significant correlations found between the self-ratings and average peer ratings, with the participant-peer correlations obtained for avoidance stronger than those obtained for anxiety. There are a variety of reasons these differences could have been found, but it is possible that the results reflect differences in the external observability of the two dimensions. Peer attachment anxiety may be a less observable disposition. Yet, it is also possible that this is a consequence of the scale's items.

Future research should examine the extent to which the inclusion of more behaviorally-based items in the anxiety scale might improve the self-peer agreement. Currently, the ECR and PAS include many items that refer to internal processes (e.g., fear and worry), such as: "I often worry that my fellow students don't like me." Perhaps the behavioral manifestations of some of these processes would serve as better items. For example, the previously cited item could be changed to: "I often probe fellow students to see if they hold negative attitudes toward me." The addition of these behavioral

tendencies in the Peer Attachment Anxiety scale would allow investigation of whether the lower correlations obtained between self-peer ratings are due to the use of items not easily observed by others.

Convergent and Discriminant Validities

The present investigation also examined relationships between worker/peer attachment and conceptually associated constructs, such as the Big Five personality dimensions. These analyses facilitate a construct validation by studying worker/peer attachment dimensions in relation to select, other non-ability individual differences variables in a nomological network. As expected, several relationships that build evidence useful for construct validity were obtained. As predicted, attachment anxiety was positively related to succorance and neuroticism, and negatively related to interpersonal trust at work. Although not hypothesized, attachment anxiety was also negatively related to agreeableness, extraversion, conscientiousness, and nurturance. Empirical support was also found for the predicted negative relationships between attachment avoidance and agreeableness, extraversion, affiliation, dominance, deference, nurturance, and interpersonal trust at work/school, and for the predicted positive relationships between attachment avoidance and autonomy as well as neuroticism. In addition, attachment avoidance was negatively associated with conscientiousness and succorance.

Although not hypothesized, attachment avoidance and attachment anxiety were similarly positively related to neuroticism and negatively related to extraversion. Individuals who were high in either attachment avoidance or attachment anxiety reported higher levels of neuroticism and lower levels of extraversion. Nofhle and Shaver (2006)

suggest that the positive relation of neuroticism to both attachment dimensions (also found in Shaver and Brennan, 1992) stems from the element of insecurity common to all three constructs.

The unexpected negative relationship obtained between extraversion and attachment anxiety is of particular interest. Results of Study 1 (academic sample) and Study 2 (work sample) showed that extraversion was significantly and negatively related to attachment anxiety. As McCrae and Costa (1989) noted, extraversion is often conceptualized as an interpersonal or social trait, suggesting that attachment avoidance should be negatively related to a broad measure of extraversion. However, as Shaver and Brennan (1992) note, extraversion may also be conceptualized as two distinct but related trait tendencies; namely, a trait tendency pertaining to interpersonal behavioral dispositions (e.g., gregariousness, assertiveness, and warmth) and a trait tendency pertaining to individual differences in temperament (e.g., excitement seeking, activity, and positive emotions). The distinction noted by Shaver and Brennan (1992) helps to explain the observed relationship between the attachment dimensions and extraversion. Specifically, attachment anxiety may be negatively related to the temperamental dimension of extraversion (e.g., positive emotions). In contrast, attachment avoidance (i.e., one's view of others and distancing behaviors) may be negatively related to the interpersonal dimension of extraversion. This is further supported by the negative correlation between peer attachment avoidance and the motivational trait or need dominance. The need for dominance is associated with assertiveness (Gallo et al., 2003), which is an interpersonal dimension of the extraversion subscale. It should be noted that

the current investigation did not permit analysis of the attachment dimension relationships with the subscales of extraversion.

Future research should examine the distinct relationships between the attachment dimensions, measured by the WAS and PAS, and the subscales of extraversion. Additionally, the Multidimensional Personality Questionnaire (MPQ) may be another tool to examine the differing relationships between attachment anxiety and avoidance and extraversion (i.e., positive emotionality). Tellegen and colleagues (e.g., Harkness, Tellegen, & Waller, 1995; Patrick, Curtin, & Tellegen, 2002) have done extensive research on negative and positive emotionality, which are similar to the constructs of neuroticism and extraversion. Positive emotionality includes the following subscales: wellbeing, social potency, achievement and social closeness. I believe that attachment anxiety would demonstrate a significant relationship with wellbeing and perhaps social potency, whereas attachment avoidance would demonstrate a strong relationship with social closeness and perhaps social potency. Although these relationships have yet to be determined, the MPQ appears to be a viable option for the further exploration of attachment's relationship with extraversion or positive emotionality.

Partial evidence for discriminant validity of the attachment scales is provided by post-hoc comparisons of the relationships obtained between each attachment scale and correlate measures, such as agreeableness, deference, and interpersonal trust. It should be noted that all three correlate measures are associated with trust. In the current investigation attachment avoidance was moderately, negatively related to agreeableness in both studies, whereas attachment anxiety only demonstrated a small relationship to agreeableness in the work sample and no relationship to agreeableness in the academic

sample. Post-hoc comparisons of these correlations indicate a significant difference between the attachment anxiety-agreeableness and attachment avoidance-agreeableness relationships in the academic sample, but not a significant difference in the work sample. In the academic sample, individuals high in attachment avoidance report lower levels of agreeableness ($r = -.33, p < .01$), but individuals high on attachment anxiety do not report significantly lower levels of agreeableness ($r = -.06, ns$). The significant difference in the size of the inverse relationship between agreeableness and each attachment dimension in the academic samples provides initial, albeit tentative support for discriminant validity of the attachment dimensions.

Attachment avoidance also showed small to medium correlations with deference in both samples, which is the need to follow or emulate others. However, no significant relationship was found between attachment anxiety and deference. Post-hoc comparisons of these correlations indicate a significant difference between the attachment anxiety-deference and attachment avoidance-deference relationships in the academic sample, but not a significant difference in the work sample. Individuals high on attachment avoidance report lower levels of deference (i.e., academic sample $r = -.30, p < .01$ and work sample $r = -.21, p < .05$), but individuals high on attachment anxiety do not report lower levels of deference (i.e., academic sample $r = .14, ns$ and work sample $r = -.07, ns$). Yet, the correlations are only significantly different from one another in the academic sample. These results suggest that among students, individuals who are distrustful of others are less likely to follow or copy other individual's behaviors that they do not trust. These findings, with the exception of the small correlation between attachment anxiety and agreeableness in the work sample, are in accordance with the

hypothesized relationships. Attachment avoidance was expected to be inversely related to agreeableness and deference, but attachment anxiety was not. That is, individuals high in attachment avoidance are less likely to be agreeable and motivated to follow others, perhaps due to a lack of trust, but this was not the case for individuals high in attachment anxiety.

Large negative correlations were also found between attachment avoidance and interpersonal trust at school/work in both samples. Only a medium correlation was found between attachment anxiety and interpersonal trust at work in the work sample and no correlation was found in the academic sample. Post-hoc comparisons of these correlations indicate significant differences between the attachment anxiety and attachment avoidance relationships with interpersonal trust in the academic sample, but not in the work sample. That is, individuals high on attachment avoidance report lower levels of interpersonal trust at work/school (i.e., academic sample $r = -.51, p < .01$ and work sample $r = -.54, p < .01$), but individuals high on attachment anxiety only report lower levels of interpersonal trust in the work domain (i.e., academic sample $r = -.05, ns$ and work sample $r = -.39, p < .01$); and the inverse relationship between attachment avoidance and interpersonal trust is significantly larger than the attachment anxiety-interpersonal trust inverse relationship in the academic sample. These results provide further evidence for the discriminant validity of the attachment dimensions. It was hypothesized that both attachment avoidance and anxiety would be related to interpersonal trust. Although this is supported in the work sample, the results suggest the association is much stronger for attachment avoidance, which was not originally hypothesized. Nettle and Shaver (2006) pointed to attachment avoidance's ties to

parental rejection in order to explain their findings regarding trust. The current investigation takes this a step further and demonstrates the manifestation of this problem in the academic and work domains. A high level of attachment avoidance regarding one's fellow students or coworkers is highly related to his/her faith in other's intentions and confidence in other's abilities (McAllister, 1995). In summary, the current findings suggest a negative model of others (Bartholomew & Horowitz, 1991) is strongly associated with low levels of trust in the workplace.

This finding has potential implications in team-based work environments. Teamwork is increasingly common in today's workplace (Devine, Clayton, Philips, Dunford, & Melner, 1999). Personality variables such as agreeableness, extraversion, and neuroticism (i.e., attachment avoidance correlates) have been shown to predict team performance and team viability (Hackman, 1987; see also Barrick, Stewart, Neubert, & Mount, 1998). Previous research on adult attachment in group contexts has also shown that the deactivating strategies used by avoidant individuals in interdependent situations are associated with poorer socioemotional functioning and task performance (Rom & Mikulincer, 2003). It may be that individual differences in attachment avoidance would serve as a better predictor than Big Five measures for team-based tasks that require high levels of interdependence and trust, based on the strong negative correlations between attachment avoidance and interpersonal trust and the nonexistent to small correlations between the Big 5 traits and interpersonal trust.

An issue of potential practical importance pertains to the use of Big Five measures compared with attachment measures for prediction of trust attitudes. As noted by Murtha, Kanfer, and Ackerman (1996), predictive validities are improved by

correspondence in the breadth of the predictor and criterion variables. In contrast to the breadth of the Big Five measures, the attachment measures investigated in this study are context-specific (i.e., relationship specific) that correspond more closely in breadth to the context-specific criteria. As such, although an individual might be high on both Big Five measures and attachment avoidance, it might be that only attachment avoidance predicts specific trust-related criteria, and that the broader Big Five measures (but not attachment avoidance) would predict non-relationship based performance or performance in roles unrelated to management and/or service (e.g., individual contributor roles). Future research is needed to investigate the incremental predictive validities of attachment across a range of criteria that differ in both breadth as well as specific context. For example, I would expect that attachment avoidance might provide incremental predictive validity, beyond that of Big Five measures when used to predict team functioning in highly interdependent teams, such as surgical or sports teams.

A final aspect of the construct-validity results that warrants attention pertains to observed differences in the pattern of correlations associated with sample population (i.e., the young adult sample used in Study 1 and the working adult sample used in Study 2). The use of two distinct samples provides further information on the generalizability of the findings and highlights the potential influence of situational context in future research with respect to the relationship between attachment avoidance and interpersonal tendencies.

As Nofle and Shaver (2006) note, there has been inconsistency in the prior empirical literature on the relationship between trait measures of conscientiousness and the attachment dimensions (see Nofle & Shaver, 2006). Consistent with past findings,

results of this investigation indicate that attachment anxiety was significantly negatively related to conscientiousness in both the academic and work samples (i.e., academic sample $r = -.33, p < .01$; work sample $r = -.30, p < .01$). However, conscientiousness was not significantly related to attachment avoidance in the academic sample ($r = -.12, ns$), but was significantly negatively related to attachment avoidance in the work sample ($r = -.26, p < .01$). These findings are consistent with the previous research in that the attachment anxiety-conscientiousness relationship appears more prevalent than the attachment avoidance-conscientiousness relationship (Nofle & Shaver, 2006), but also suggests that prior inconsistent findings obtained for the relationship between attachment avoidance and conscientiousness may be associated with sample characteristics. In the working adult study (Study 2), the development and maintenance of effective interpersonal relations is often critical for effective performance of interdependent work roles. In such settings, high levels of conscientiousness are achieved, in part through interpersonal strategies characteristic of individuals low in attachment avoidance. In contrast, in academic settings, effective performance is far less dependent on the development and maintenance of effective interpersonal relations and individuals high in conscientiousness may achieve higher levels of performance even if high in attachment avoidance. The demonstration of a significant negative association between attachment avoidance and conscientiousness in the work sample, but not in the academic sample, suggests that the relationship may be importantly moderated by situational context and the nature of the work tasks. Yet, it should be noted that there was not enough power to detect a meaningful, nonexistent attachment avoidance-conscientiousness effect in the work sample and therefore the results should be considered with caution.

Similarly, differences between the two studies were also obtained with respect to the relationship between attachment avoidance and affiliation. Specifically, self- and peer ratings of attachment avoidance were significantly, negatively related to affiliation in the academic sample (i.e., self-rating: $r = -.51, p < .01$; peer rating: $r = -.35, p < .01$), but a relationship was not found in the work sample (i.e., $r = -.10, ns$). Affiliation has been described as one's acceptance of others (Randolph et al., 1997). Perhaps the work domain is a constrained environment in which norms and climate direct employee relationship values and acceptance of others. Therefore, individual differences in attachment avoidance are less related to affiliation after the socialization process. This constraint may also explain the inconsistency of the succorance (i.e., seeks support of others) findings between the two samples. Succorance was positively related to attachment anxiety (i.e., $r = .25, p < .01$) and negatively related to attachment avoidance (i.e., $r = -.26, p < .01$) in the academic sample, yet these relationships were not found in the work sample. Perhaps the socialization process, which directly relates to providing social support (Jones, 1986), decreases succorance. This is somewhat supported by the lower mean level of succorance in the work sample (i.e., academic $M = 4.5, SD = .78$; work $M = 3.52, SD = .85$). As such, the relationship between attachment and succorance may attenuate after the socialization process. The sample differences and constraints of the work domain will be discussed in more detail. In summary, however, the results of Studies 1 and 2 provide reasonable convergent validity evidence for worker/peer attachment and some evidence for discriminant validity. More importantly, the results provide interesting patterns associated with the attachment dimensions in two distinct contexts.

Attachment Antecedents in the Work Setting

Attachment theorists posit that adult attachment patterns are complex combinations of one's history and infant attachment (Shaver and Mikulincer's, 2002). The current investigation extends this reasoning to the adult domain to propose that one's close relationship attachment and formative experiences in work contexts (e.g., socialization) would influence worker attachment. Results obtained in both studies provided support for the hypothesis that close relationship attachment styles are related to peer and worker attachment. Specifically, attachment anxiety was moderately positively related to preoccupied and fearful romantic or close relationship attachment in both studies, with correlations ranging from .25 to .50. Attachment avoidance was also moderately positively related to dismissing and fearful close relationship attachment in both studies, with correlations ranging from .21 to .46. However, as noted previously, these relationships should be considered with caution due to the small number of items in the Close Relationship Attachment scales.

Study 2 (work sample) also provides initial evidence on the influence that formative organizational experiences (i.e., socialization) may have on adult attachment in the workplace. As expected, attachment anxiety and avoidance were significantly negatively related to level of investiture socialization experience (described by Jones (1986) as socialization processes in which newcomers receive reinforcing social support), providing support for the notion that social support during the initial work period may reduce worker attachment anxiety and avoidance. Although speculative, it may be that investiture socialization experiences reduce the need for succorance and this aspect of attachment insecurity. In a related vein, serial socialization (i.e., socialization

experiences in which an employee is given a role model) was significantly negatively related to the attachment avoidance scale, but was unrelated to attachment anxiety.

Consistent with Jones (1986), serial socialization processes that help an employee define a situation or interpret their experiences within the workplace may lower levels of worker attachment avoidance. Although the associations found in this study do not, of course, provide evidence of causality, they do suggest a potentially important, but previously neglected role of socialization processes in terms of their impact on employee attachment styles in the workplace.

Yet, it is important to note that the socialization experiences measured in the current investigation were for the first full-time job that the individual worked. Although 40% of the participants were still at the same company as their first full-time time job, 60% of the participants had been through at least one subsequent socialization process and the participants in the study had worked for an average of 25 years (with an average tenure at the current organization of 20 years). Therefore, the perceptions of socialization experiences by the participants may have been clouded by events that have occurred during their careers. It could be argued that it is extremely difficult for a person to recollect the experiences he/she had on the job 25 years ago. Additionally, socialization was viewed as an antecedent to attachment in the current investigation, although the research did not provide evidence for causality. It is also possible that one's attachment affects the way that socialization experiences are internalized and/or remembered and therefore attachment is an antecedent to the socialization perception. Attachment predicts emotional reactions and the way that one regulates his/her emotions (e.g., Mikulincer & Shaver, 2004), so this alternative explanation also seems plausible.

Attachment Process in the Work Setting

Findings obtained in Study 2 (work sample) also address the process of attachment within the organization in terms of the similarity of worker attachment levels in departments over time. Consistent with Schneider's Attraction-Selection-Attrition (ASA; Schneider, 1987) model, it was expected that departmental tenure of employees would lead to increased similarity in attachment anxiety among employees in that department. That is, the longer the average tenure of employees in a department, the more homogenous employees were expected to be in terms of attachment anxiety. As predicted, a positive correlation was obtained between the average tenure of employees in a department and worker attachment anxiety homogeneity within that department, although it should be noted that this result should be considered cautiously given the sample *N* for this analysis was only 8 (i.e., there were only 8 departments that had more than 3 employees complete the survey). Nonetheless, this initial finding provides support for additional research to investigate worker attachment as it may develop or change as a function of social context. To date, individual differences in attachment have been conceptualized as relatively stable tendencies that manifest across situations. However, unlike family and romantic relationships in which critical experiences often occur in childhood and late adolescence, critical work experiences that may shape expectations about self and others in the achievement context may not occur until early adulthood. To the extent that work-critical experiences occur later in the life course, it may be that individual differences in attachment styles in the workplace have a different trajectory over the life course. Further, if one assumes an attrition process as suggested by Schneider (1987), then individual differences in attachment among members of

departments should decrease as average employee tenure increases. Although the present study found this pattern for attachment anxiety, it is possible that the nature of the workplace studied may influence whether a similar relation might exist for attachment avoidance. Finally, as discussed in a later section, the homogeneity of attachment among workers may also influence the criterion-related validities of worker attachment.

Sample and Setting Issues

As noted previously, the current investigation enabled study of the theoretical antecedents (although causality was not tested), correlates, and consequences of attachment in two distinct achievement settings. Although evidence was obtained to support the validity of the newly developed attachment measures for each setting, the study sample and setting appeared to influence some of the relationships observed. To better understand how the sample and setting might influence the findings, I discuss the findings in terms of three distinguishing characteristics; sample, nature of the work and tasks performed, and criteria.

Sample Characteristics

Perhaps the most obvious difference between the two samples relates to participant characteristics. Participants in Study 1 (academic sample) were young adults ($M = 20$ years, $SD = 2.52$), with generally fewer than three years in the collegiate setting. Participants in Study 2 (work sample) were mid-life adults ($M = 44$ years, $SD = 7.40$), with high levels of organizational tenure ($M = 20$ years, $SD = 8.82$). Further, mean levels of attachment anxiety and avoidance were notably lower in the work sample than the academic sample (attachment anxiety_{work} $M = 1.68$, attachment anxiety_{academic} $M = 2.65$; attachment avoidance_{work} $M = 2.70$, attachment avoidance_{academic} $M = 3.00$). Although a

number of factors may contribute to the differences in mean attachment levels between the two samples, it is likely that the lower levels observed in the work sample reflect both developmental and organizational experiences as indexed by length of employee tenure and work socialization histories. That is, socialization experiences and the attrition of individuals with high levels of attachment avoidance and anxiety led to lower levels of attachment insecurity in the work sample.

Differences in sample characteristics suggest a restriction of range in the work sample associated with a process of deselection and attrition of employees with high levels of attachment anxiety or attachment avoidance that might impede job performance. Mean job performance in the work sample was quite high, suggesting either leniency bias or range restriction in ratings of these long-tenured employees. In contrast, the mean performance rating in the academic sample was closer to average performance, if 2 were to be considered average on a 4-point scale ($M = 3.05$, $SD = .62$). Yet, it should be noted that the academic sample also had inflated performance ratings. Taken together, the differences between these samples suggests that participants in the work sample likely represent a restricted range of more securely attached and more highly performing individuals than those comprising the academic sample.

Work/Tasks

The nature of work performed in the two studies also differed substantially. In the academic context, high levels of performance are often captured by grade point average or college adjustment. Methods for accomplishing high levels of performance on these criteria are quite variable, and students generally have higher levels of control over the conditions of achievement, including class scheduling, attendance, participation in

class projects, and participation in extracurricular activities that contribute to college adjustment. Of course, there are curriculum requirements that students need to adhere to, but they generally have more flexibility than workers. In the academic setting, students experience high levels of autonomy that set the stage for observing the effects of individual differences in attachment on college performance and adjustment. Consistent with Bowlby (1979) individual differences in attachment influence exploratory behaviors that facilitate performance success. In contrast, workplace performance is typically captured by ratings of the individual's behavior and work products. In this setting, methods for accomplishing work tasks are often prescribed, and employees typically experience lower levels of autonomy and less control over how tasks are to be performed and with whom they must interact. In contrast to the "weaker" situation characteristic of the academic setting, the constrained nature of work roles represents a "stronger" situation (see Mischel, 1968, 1983) in which individual differences in attachment may be less likely to influence performance.

Criteria

The criteria used in Study 1 and Study 2 also differed in several meaningful ways. For example, one aspect of this research investigated the influence of attachment on commitment. In the organizational context, commitment has often been conceptualized as a multidimensional construct involving affective, continuance, and normative commitment. Commitment has also been studied in terms of the individual's commitment to an organization or profession. Typically, organizational psychologists study the organization or occupation as the target of commitment (Meyer, Allen, & Smith, 1993). Accordingly, in Study 2 (work sample) the target of commitment was the

organization. In Study 1 (academic sample), however, the analogous target of commitment is the university or school in which the individual was enrolled. In retrospect, commitment to a university is not necessarily appropriate and is a very different construct than a worker's commitment to his/her employing organization. A similar problem in construct meaning occurs with respect to the work-family conflict criteria. In organizational psychology contexts, work/non-work conflict typically refers to the conflict between the demands of work and non-work life. In Study 1 (academic sample), work was conceptualized as schoolwork, and non-work was modified to include friends as well as family in order to be relevant to student lives. These non-parallel constructs will be discussed again in the section on incremental predictive validity.

Also, the two samples had distinct conceptualizations or forms of interpersonal or non-technical performance. In the work sample interpersonal performance was studied using performance ratings on interpersonal skills such as communication and teamwork/cooperation. This data was not available in the academic sample and therefore self-ratings of adjustment to college were examined. College adjustment refers to the student's ability to adjust to the academic, social and emotional aspects of college (Baker et al., 1985). Obviously, adjustment is related to the performance criteria, but it is a very different construct. Overall, the two studies differed from one another in three main ways: sample characteristics, tasks/work, and criteria studied. These differences will be discussed throughout the criterion-related validity section due to their importance in explaining the incongruent results.

Incremental Predictive Validity

As was previously stated, the incremental predictive validity evidence for attachment was perhaps the most important piece of the current investigation. Findings across the two studies provide a mixed picture with respect to the incremental predictive validity of individual differences in self-ratings of attachment dimensions for setting relevant outcomes, beyond that of personality, motivational traits, and trust measures. Table 23 depicts the supported hypotheses in the current investigation.

Table 23. Criterion-Related Validity Hypotheses Supported in the Current Investigation

Criteria	Academic		Work	
	Anxiety	Avoidance	Anxiety	Avoidance
1. Emotion-Focused Coping	X	Negative Relationship	X	X
2. Problem-Focused Coping	X	Negative Relationship	X	X
3. Family-Work (Family-School) Conflict	Negative Relationship	X	X	X
4. Student Adjustment to College	Negative Relationship	X	N/A	N/A
5. Affective Commitment	X	X	X	Negative Relationship

Note. $N = 150$

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

Attachment and Coping

The predictive validity of the attachment scales for emotion- and problem-focused coping was studied in the both Study 1 and Study 2. Small incremental predictive validity was found for attachment avoidance in Study 1, but not for attachment anxiety. No significant incremental predictive validity of attachment for coping was found in Study 2.

Attachment Avoidance and Coping

In the academic sample (Study 1), self-ratings of attachment avoidance provided small incremental predictive validity for both emotion-focused and problem-focused coping. However, in contrast to expectations, students who were high on attachment avoidance reported less use of both emotion-focused as well as problem-focused coping strategies. Previous research on close relationship attachment has suggested that persons high on attachment avoidance use more emotion-focused coping strategies and distancing coping (Berant, Mikulincer, & Florian, 2003; Mikulincer & Florian, 1995). The contrary pattern of findings obtained in this study suggests that individuals who are high in peer attachment avoidance employ fewer emotion-focused coping strategies because they avoid situations that arouse emotions that require regulation. A review of the items on the Brief COPE scale (Carver, 1997) further indicates that most items refer to activities undertaken in situations, but do not ask about the frequency of behavioral strategies aimed at avoiding situations, such as preemptive distancing or emotional deactivation strategies. One of the emotion-focused scales consisting of two items contains items on self-distraction: "I have been turning to work or other activities to take my mind off things," and "I have been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping." These items may be interpreted as distancing, but they are less related to emotional deactivation strategies such as keeping distance from others and more related to mental distraction techniques. Future research, using a more elaborated measure of emotion-focused coping that includes preemptive strategies potentially used more frequently by attachment avoidant

individuals is needed. This research would ascertain if the distinct findings in the current investigation were due to the adapted construct, peer attachment, or to the measure of coping used.

Additionally, it should be noted that the correlation between attachment avoidance and emotion-focused coping was not significant ($r = -.14, ns$). Yet, when attachment avoidance is added to the emotion-focused regression equation it accounts for 3% of the variance unaccounted for by other measures. This appears to be a case of suppression in that attachment avoidance is suppressing the variance in the conceptually similar variables that is unrelated to emotion-focused coping and the conceptually similar variables are doing to same for attachment avoidance. This relationship needs to be explored in more detail in the future, especially since the results were not replicated among working adults in Study 2.

Attachment Anxiety and Coping

The failure to obtain significant incremental predictive validity for attachment anxiety for emotion- and problem-focused coping in both Study 1 and Study 2 stands in sharp contrast to previous research demonstrating the role of individual differences in attachment anxiety for the prediction of coping in the broader social domain (Feeney, 2004; Mikulincer & Florian, 1995; Shaver & Mikulincer, 2002; Simpson et al., 1992), and to findings by Mikulincer (1998) showing that individuals high in attachment anxiety are less successful in using effective affect-regulation strategies in stressful situations. Yet, previous research has also found mixed results. Berant and colleagues (2003) found that individual differences in attachment anxiety were not related to the use of emotion-focused coping, whereas Mikulincer and Florian (1995) found that individuals with high

levels of attachment anxiety used more emotion-focused coping strategies. Both previous investigations assessed coping with the shortened version of Folkman and Lazarus' (1985) Ways of Coping Checklist (Berant et al., 2003; Mikulincer & Florian, 1995). Ben-Zur and Yagil (2005) suggest the Ways of Coping measure suffers from several psychometric problems including low reliability. As such, one reason for the inconsistencies between the previous findings as well as the current investigation may be due in part to the measures of coping used. Future research, using more reliable measures of emotion- and problem-focused coping, but that also assess attachment-related coping strategies (e.g., distancing and support seeking), may shed further light on this pattern of inconsistent findings.

Attachment Anxiety and Family-Work Conflict

Results obtained provided mixed support for hypotheses predicting significant incremental predictive validities for attachment dimensions on FWC (i.e., family/life-school conflict in Study 1). In Study 1, individual differences in attachment anxiety among students provided significant incremental predictive validity for family/life-school conflict (i.e., family and friend issues spilling into school). As expected, student attachment anxiety contributed an additional 6% to the variance accounted for in family/life-school conflict, beyond that accounted for by individual differences in personality traits, needs, and interpersonal trust. Additionally, peer attachment anxiety accounted for more variance in family/life-school conflict than all of the other correlates combined (i.e., 9% compared to 5%). Individuals high in attachment anxiety reported more non-school issues spilling into or interfering with their school lives than individuals low in attachment anxiety. It is very apparent that the cost/benefit ratio for the prediction

of family/life-school conflict favors peer attachment anxiety to the combination of all of the other predictors. The Peer Attachment Anxiety scale is much shorter than the other measures (i.e., 21 items compared to 54 items) and it has better predictive validity. Therefore, peer attachment anxiety has more utility for predicting the balancing act between personal life and school than existing personality, needs, and interpersonal trust at school measures. Yet, in Study 2 (i.e., the work sample) individual differences in attachment anxiety did not provide significant incremental predictive validity beyond that of related personality, needs, and trust constructs.

The pattern of findings obtained across the two studies suggests that the impact of individual differences in attachment anxiety on the conflict between non-work and work may be mediated by variables associated with the sample and work being done, as was previously discussed. In Study 1, for example, academic work (e.g., studying for tests) is largely self-regulated (e.g., Winne, 2004), and the student typically maintains substantial control over the amount of time spent working. In fact, the mean level for family/life-school conflict in the academic context was higher than the family-work conflict mean in the work sample (i.e., academic $M = 2.66$, $SD = 1.06$; work $M = 1.86$, $SD = .92$). An example item from the family/life-school scale is: “Things I want to do for school don’t get done because of the demands of my family or friends.”

Consistent with Mischel (1977, 1983), the academic context reflects an achievement context in which individual differences in attachment anxiety may exert a stronger influence on conflict by permitting students more control over the direction and intensity of their attention. In contrast, among working adults in Study 2, individuals typically have less control over competing family-work demands given family

interference into work typically leads to job loss. I believe that employees that allow the stresses and strains of their family issues to interfere with work often receive low performance ratings and/or leave the company. In this “strong” context individual differences in attachment anxiety may be a less potent influence on conflict than other situational factors (Mischel, 1983). As such, although attachment anxiety is positively associated with perceptions of family-work conflict (i.e., $r = .21, p < .05$), the incremental predictive validity of attachment anxiety beyond that of related constructs on perceived family-work conflict might occur only when conditions of work are extremely autonomous. As was previously discussed, autonomous environments allow for variability in natural motivational tendencies (e.g., intrinsic motivation) and behaviors, which allows attachment's influence to be more apparent. Yet, the present study did not assess autonomy levels or the nature of the work being done. Also, it should again be noted that the FWC construct was altered in Study 1 (i.e., academic sample) in that work was replaced with school and the concept of family was broadened to family and friends to be more relevant to student lives. To ascertain the potential incremental contribution of attachment anxiety to FWC in work settings, additional research is needed in various work environments using an unaltered FWC measure.

Attachment, College Adjustment, and Work Performance

College adjustment and job performance represent critical indices of success in the academic and work context, respectively. In the current investigation individual differences in attachment anxiety had incremental predictive validity for college adjustment in Study 1 (i.e., the academic sample), but attachment anxiety did not have incremental predictive validity for job performance in Study 2 (work sample).

Attachment Anxiety and College Adjustment

Individual differences in attachment anxiety contributed an additional 6% to the variance accounted for in college adjustment, beyond that of individual differences in personality traits, motivational traits, and trust. Individual differences in attachment avoidance did not demonstrate significant incremental predictive validity for college adjustment.

These findings are consistent with previous results obtained by Lapsley and Edgerton (2002) and provide further support for the role of peer attachment anxiety as a stronger predictor of college adjustment than peer attachment avoidance. As Shaver and Mikulincer (2002) note, attachment anxiety is a particularly valuable predictor in stressful or threatening situations, such as adjusting to college, due to the maladaptive affect-regulation strategies associated with this trait. Attachment anxiety accounts for variance in college adjustment over and above similar constructs such as the Big Five, which are less precise (John, 1990) and appropriate for this criterion. Additionally, peer attachment anxiety accounted for 23% of the variance in college adjustment alone, and all of the correlates combined only accounted for 30% of the variance. Given it does not take much time to complete the brief Peer Attachment Anxiety scale, which is predictive of college adjustment; it may serve as a useful tool within academic environments.

Attachment Avoidance and College Adjustment

Attachment avoidance is also significantly negatively related to college adjustment, but does not show incremental predictive validity beyond that of personality, needs, and interpersonal trust. Perhaps the affect-regulation strategies used by these

individuals (i.e., deactivation) break down during the adjustment process (Shaver & Mikulincer, 2002), but this effect is subsumed by the other similar personality traits such as the Big Five. Attachment avoidance does not provide criterion-related validity beyond that of other commonly studied personality traits.

Attachment Anxiety and Performance

Results obtained in Study 2 did not provide support for the incremental predictive validities of individual differences in worker attachment dimensions for interpersonal and technical job performance, but worker attachment anxiety showed incremental predictive validity for two manager-rated work behaviors. The lack of support for attachment's hypothesized relationship with job performance is possibly due to the constrained sample (e.g., low levels of attachment avoidance and anxiety, high levels of performance ratings) discussed previously and small sample size. Small correlations between worker attachment anxiety and the critical performance skills were found for the manager ratings (i.e., relationship skills: $r = -.22, p < .05$; communication: $r = -.23, p < .05$; promotes change: $r = -.22, p < .05$; planning/organizing: $r = -.24, p < .05$; and influence $r = -.31, p < .05$), but not for the composite interpersonal and technical performance dimensions. It may be that the composite performance variables were too general.

Although the attachment measures were not developed for selection purposes due to potential legal and social desirability issues, a brief discussion on the utility of worker attachment anxiety will be provided. Interpersonal performance in the current investigation was rated on a 5-point scale. If one were to assume that 4 and 5 ratings indicate effective or satisfactory performance, the current sample had 70% of the employees with satisfactory interpersonal performance (i.e., a base rate of 70%). As was

previously stated, the validity coefficient or correlation between worker attachment anxiety and interpersonal performance was $-.12$. If the Worker Attachment Anxiety scale were to be used in a selection context in which the selection ratio was $.50$ (i.e., 50% of the applicants are given job offers), the increase in utility would only be 3-4%. That is, with the new measure being used 73-74% of the employees would have satisfactory levels of interpersonal performance (Taylor & Russell, 1939). Given this small increase in utility (i.e., benefit of the new scale), the cost of administering the Worker Attachment Anxiety scale does not seem practical. It is my belief that adding an additional measure would only be worth the cost if the percent of satisfactory employees could be increased to 85%, which would require a validity coefficient just below $.55$. It should be noted that the validity coefficient for all of the correlates combined was not that much larger (i.e., $r = .23, ns$), which would only lead to a 6-7% increase in the amount of employees performing satisfactorily using the same estimates as before.

Despite the lack of utility, individual differences in worker attachment anxiety showed significant incremental validity for the prediction of two manager ratings of work behaviors: relates opinions to others' needs or concerns, and prepares for potential problems. That is, managers of employees with high levels of worker attachment anxiety reported lower levels of employee competency for select work behaviors. It will take future research using job performance dimensions theoretically associated with attachment in order to understand the nature of this relationship. Specifically, future research should investigate the role of individual differences in attachment for the prediction of specific aspects of team performance (e.g., relationship skills in autonomous

work groups). Also, these studies should use samples with diverse levels of performance, tenure, and age to allow for more variation in the predictors and criteria.

Attachment Avoidance and Commitment

Results of Study 2 indicate that worker attachment avoidance provides significant incremental predictive validity for one component of organizational commitment, affective commitment, beyond personality traits, trust, and need (motivational trait) measures as well as tenure and age. Specifically, individual differences in attachment avoidance contributed an additional 2% to the variance accounted for in affective commitment, beyond that of Adapted Set **B**: personality traits, needs, trust, tenure, and age. Tenure and age were included as control variables in addition to the personality traits, trust, and needs given the significant negative correlations found between worker attachment avoidance and tenure ($r = -.20, p < .05$) as well as age ($r = -.38, p < .01$). Also, both tenure and age were related to affective commitment (tenure $r = .33, p < .01$; age $r = .39, p < .01$). That is, both older workers and employees who had been with the organization for many years reported lower levels of attachment avoidance and higher levels of affective commitment. Yet, workers who were high on attachment avoidance reported lower levels of affective commitment to their organization even after controlling for related individual differences variables, tenure, and age.

These findings obtained in the context of work are consistent with findings obtained in the romantic attachment domain (Shaver & Brennan, 1992). Specifically, research in the romantic attachment domain has shown that attachment avoidance predicts relationship commitment, over and above the Big Five traits (Shaver & Brennan, 1992). Affective organizational commitment is defined as one's desire to remain with an

organization (Meyer & Allen, 1991), which is similar to the conceptualization of relationship commitment, one's desire to remain in a relationship. Individual differences in attachment avoidance are associated with low levels of emotional commitment to both romantic partners and organizations.

In contrast, self-ratings of peer attachment avoidance obtained in Study 1 were not significant predictors of the target individual's affective commitment, beyond that of personality traits, needs, and trust constructs. Several reasons for the failure to find predictive validity in this sample are suggested. First, as noted previously, there were contextual differences in the meaning of affective commitment across the studies. In Study 1 the target of affective commitment for college students is the university, in Study 2 the target of affective commitment is the employees' current organization. Differences in the meaning of affective commitment across these settings, including for example the pay arrangement, suggest that students may maintain lower levels of commitment to schools. Also, it should be noted that the organizational commitment measures used in the academic sample were not reliable. Short (i.e., 2-item) versions of the organizational commitment scales replaced the complete scales in Study 1 (i.e., academic sample). Therefore, the results for Study 1 regarding the criterion-related validity of attachment avoidance for affective commitment should be interpreted with extreme caution.

Practical Implications

The validation of the peer and worker attachment measures has both theoretical and practical implications. Practically speaking, the measures provide additional tools for counseling and organizational development. As was previously discussed, social desirability and perhaps legal issues will prevent the attachment measures from being

used in a selection context. Yet, the measures may provide valuable tools for counseling college or pre-college students and for organizational development purposes.

The Peer Attachment Anxiety scale alone was found to predict more variance in family/life-school conflict than all of the other measures combined. If this brief scale were given to students before they begin college or within their first year it would allow counselors to determine which students were going to have trouble balancing their personal and academic lives. Students with high levels of peer attachment anxiety could subsequently be coached on time-management, studying, and prioritization techniques that may help them with the balancing act of college. Additionally, peer attachment anxiety predicted a considerable amount of the variance in college adjustment (although the correlates combined accounted for more variance). Therefore, this same group of students could also receive advice on how best to handle the college adjustment process. Perhaps certain devices could be in place (e.g., a mentor or counselor) that would make the adjustment process easier for this vulnerable group.

Additionally, attachment has practical implications for the workplace. Time is money within organizations and therefore lengthy questionnaires including many variables are not always well received. It was found in the current investigation that the 18-item Peer Attachment Avoidance scale has a medium to large relationship with affective organizational commitment. Affective commitment has demonstrated small negative relationships with voluntary turnover in previous research (e.g., Payne & Huffman, 2005), and therefore is an important variable to organizations. Turnover is expensive to the organization given the cost of replacement, separation, and training new employees (Tziner & Birati, 1996). Also, researchers have found (e.g., Payne &

Huffman, 2005) that mentoring has a positive relationship with affective commitment. This suggests that organizations could provide mentors to employees with high levels of worker attachment avoidance as part of an organizational development initiative in order to increase levels of affective commitment and decrease turnover. The measurement of worker attachment avoidance would be especially valuable at early stages on the job before an employee has had time to develop organizational commitment attitudes. This mentoring intervention would possibly keep the highly avoidant individuals from developing low levels of affective commitment, which in the end would reduce costs to the organization associated with turnover.

Limitations

The most obvious limitation in the current research pertains to the relatively small sample size in Study 2. The sample size in this field study limits power to detect the criterion-related validity of attachment anxiety for job performance. As such, it is not possible to draw firm conclusions about the failure to obtain support for the hypotheses related to incremental predictive validity of the attachment scales for key outcomes (e.g., interpersonal and technical job performance). Results obtained in Study 2 did, however, provide initial empirical evidence that attachment anxiety plays a unique role in predicting manager ratings of some work behaviors (e.g., relates opinions to others' needs or concerns, prepares for potential problems). Again, however, the small sample size of this field study makes it difficult to detect effects using composite performance data.

A larger sample would allow for the exploration of gender differences. In Study 2, a significant gender difference was found for worker attachment avoidance, but separate regression analyses could not be conducted due to the small sample size. A

larger sample used to investigate this finding in greater detail appears promising. Previous research has shown differential construct and criterion-related validity in the romantic attachment domain. Specifically, differential relationships between the attachment dimensions and the Big Five as well as certain criteria, such as coping, have been reported (e.g., Gallo et al., 2003; Feeney, 2004). Future research is needed to understand these gender differences within the work domain.

Another limitation of the current investigation pertains to the sample differences previously discussed. The nature of the field sample (i.e., Study 2) resulted in unique sample characteristics: high levels of tenure, low levels of attachment avoidance and anxiety, and high levels of performance. Also, departmental tenure was found to be positively correlated to attachment anxiety homogeneity suggesting that individuals with dissimilar levels of attachment anxiety from other individuals within their department leave over time. This constrained environment in which securely attached individuals persevere, and anxious and avoidant individuals leave, may have restricted the relationships between attachment and criteria. Future research, using field samples comprised of employees with varying levels of tenure and experience would provide a better sample.

Another limitation pertains to measurement. A few of the measures (e.g., Close Relationship Attachment scales and the organizational commitment – short form) had scales with only a few items. Because the research was investigating so many variables some of the scales had to be cut down. Unfortunately, this affected the measurement precision and perhaps resulted in undetected relationships (e.g., peer attachment avoidance's prediction of affective commitment). Finally, both correlational studies were

unable to demonstrate causal relationships between attachment and its antecedents as well as its criteria; a longer time lag and experimental research would have allowed for stronger assertions. Experimental designs would allow for an investigation of the direction of the relationships between attachment with its antecedents (e.g., socialization) and criteria (e.g., affective commitment).

Future Research

The results obtained suggest a number of promising directions for future research. Self-peer ratings of attachment anxiety were less strongly correlated than self-peer ratings of attachment avoidance. Additional research is needed to determine whether the smaller correlations between self-peer ratings of attachment anxiety relate to the difficulty that others may have in observing internal events, such as worry, or from the absence of behaviorally anchored items that refer to such events. Behaviorally-based items should be added to the attachment anxiety scale in order to investigate the differential access of information for self and others.

Future studies should also investigate the influence of attachment on objective measures of performance (e.g., assignments completed on time). Both the current investigation and recent work on attachment and leadership used subjective ratings of technical and interpersonal (instrumental and socio-emotional) performance (Davidovitz et al., in press). Objective ratings would compliment the subjective performance ratings and may provide additional insight into the manifestation of worker attachment anxiety and avoidance. Specific, objective data may provide less noise (e.g., leniency bias, aggregation) and capture work outcomes that are more closely related to attachment anxiety.

Similarly, future research is recommended to investigate alternative methods for measuring individual differences in attachment. Perhaps more objective assessment instruments, such as biodata, would allow for a better understanding of attachment by capturing previous experiences. This form of measurement in adulthood would be more similar to the behavioral measurement techniques originally used by Ainsworth and colleagues (1978) in the Strange Situation. Counting specific attachment-related behaviors that individuals report may or may not capture the same construct that was measured by the peer/worker attachment scales. To evaluate this issue, future research should use both methods to compare and contrast the findings.

The present investigation suggests that attachment anxiety and avoidance are similarly related to several broad personality traits (e.g., neuroticism, extraversion), but that the nature of the relationship is different for extraversion (i.e., differential relationships to the interpersonal and temperament dimensions of extraversion). Future research using the WAS and the subscales of the Big Five, which were not included in the current investigation, would clarify the relationships between the attachment dimensions and the Big Five.

The present study does not evaluate the process of attachment in school or work organizations. Quasi-experimental studies, to examine the socialization process, and associated changes in attachment measures would be useful. Also, longitudinal research is needed for the investigation of the attachment process in the workplace. The current investigation suggests that a lack of attachment anxiety homogeneity within a department results in attrition, but this was not investigated over time. Worker attachment should be measured prior to an individual entering the workforce, then after the socialization

process, and continually throughout one's career as they become associated with different work teams and departments. This type of longitudinal research would allow for the investigation of the process of attachment within an organization and would provide more variability in sample characteristics, tasks/work, and the criteria studied. Also, longitudinal research within the work domain should more closely focus on trust. Attachment is potentially a distal predictor of trust given trust derives from attachment, and therefore organizational researchers studying trust should consider this variable in their designs.

Additionally, longitudinal research on Bowlby's (1968/1982) attachment across the lifespan is needed. Consistent with other studies in the adult domain, the present study examined between-individual differences in attachment on specific work outcomes, and made the assumption that: (a) mental models (i.e., model of self and others) that develop in infancy and childhood persist across the lifespan, and (b) that between-individual differences remain relatively stable across the lifespan. The expansion of attachment research to the adult domain, however, suggests that additional research is needed to evaluate potential intra-individual differences in attachment; that is, how an individual's attachment may change over the course of different life experiences and in different social settings (e.g., romantic relationships, work). For example, experiences in one major attachment-related transition (e.g., romantic love, full-time work) may modify the individual's rank-order at subsequent transitions. Further, intra-individual instability in attachment, as might occur following several proximal attachment-related transitions, may also influence work outcomes. Further research is needed to investigate these fundamental issues about the attachment construct and their implications for predicting

work outcomes. For example, it is possible that attachment is a trait that has many different forms or states, such that individual differences in attachment develop differently depending on domain or their associated affective state. This issue needs to be addressed using rigorous longitudinal designs that capture developmental changes in attachment in relation to life transitions in different contexts and across different periods of adult development, such as youth, middle adulthood, and older adulthood.

Conclusion

The results of the current investigation provide initial psychometric information for the WAS and PAS, insight into the differences between peer perceptions of attachment anxiety and avoidance, convergent and discriminant validity evidence, and mixed evidence for criterion-related validity. Factor analytic results for both scales demonstrated evidence for the two non-orthogonal conceptual dimensions of adult attachment: attachment anxiety and attachment avoidance (Brennan et al., 1998). Also, both scales had high levels of internal consistency, and Study 1 provided test-retest and inter-rater reliability evidence for the PAS, however, the self-peer agreement for attachment avoidance was stronger than the self-peer agreement for attachment anxiety. Additionally, the pattern of relationships for the WAS and PAS with conceptually related constructs such as the Big Five (i.e., correlates) provide convergent and some discriminant validity. These patterns are similar to the patterns of relationships found in previous research on attachment in the context of close relationships.

The current investigation also demonstrated unique patterns of correlations associated with self- and peer ratings. The findings suggest that attachment avoidance is a more observable interpersonal trait than attachment anxiety. This is seen in the

relationships between the peer ratings and self-ratings of attachment, which are significantly smaller for attachment anxiety, as well as the relationships between the peer ratings of attachment and the self-ratings of the related constructs such as the Big Five. Many of the correlate associations are maintained for attachment avoidance when using the peer ratings, with the exception of the trust-related variables, which is not demonstrated for attachment anxiety. It is concluded that one's level of attachment avoidance is more apparent to peers than attachment anxiety given attachment avoidance is inherently interpersonal (i.e., a model of others). Future research should refine the attachment scales in order to further examine the visibility of the attachment dimensions and their relationships with overlapping constructs such as the Big Five.

In addition to these differentiations between the attachment dimensions, the two distinct samples in the current investigation (i.e., academic and work samples) allowed for a greater understanding of the antecedents and process of attachment in the workplace. This was seen through sample differences in correlate relationships (e.g., succorance and affiliation), the relationship of attachment measures to socialization scales, and the association between tenure and departmental attachment homogeneity. The latter results suggest that the attachment process can be partly attributed to organizational socialization. Additionally, over time individuals within departments become more homogenous to one another with respect to attachment anxiety. Longitudinal research that begins prior to one's entrance into the workplace and continues through one's career is needed in order to more thoroughly study attachment within the work domain; and longitudinal research across the lifespan is needed to better understand the attachment construct and its evolution.

Finally, the current investigation provided some incremental predictive validity evidence for peer/worker attachment. As has been discussed throughout, there were three main differences between Study 1 (academic sample) and Study 2 (work sample). Specifically, there were differences in sample characteristics, the nature of the work/tasks being done, and the criteria studied. It is believed that the sample and task characteristics of Study 2 resulted in a constrained work sample. Therefore, incremental predictive validities were not demonstrated with one exception. In Study 2, worker attachment avoidance demonstrated incremental predictive validity for affective commitment, which is posited to be the organizational parallel to relationship commitment. In Study 1, attachment avoidance demonstrated incremental predictive validity for both emotion- and problem-focused coping. Also, attachment anxiety had criterion-related validity for the ability to balance family and school demands as well as adjustment to college. This emotional spillover and inability to adapt are viewed as extremely detrimental to one's academic career. Perhaps this group of individuals would benefit from counseling. These initial findings suggest that worker attachment is distinct from other forms of adult attachment and may serve as an important tool for the prediction of coping, family-work conflict, adjustment, and commitment, especially in diverse and autonomous work environments.

APPENDIX A

WORKER ATTACHMENT SCALE (WAS) – EXAMPLE ITEMS

Instructions: The following questions ask about your relations with coworker. Please take a moment to think about your interactions with coworkers. Everyone has different interactions and this study is attempting to look at those differences. Your answers will help us examine some of the different patterns of interactions that people have on the job so please answer as honestly as possible. Before you begin, think about some instances of interpersonal interaction you have had in your current job. The questions ask you to choose a number that best represents your answer. The further away from the middle your answer is, the stronger your feeling about the question. For example if you are asked how much you agree with the statement, " I enjoy talking with friends," and you strongly agree with the statement, you would circle the 6, like this:

I enjoy talking with friends... strongly disagree strongly agree
1 2 3 4 5 **6**

Please answer all of these questions keeping in mind the people that you work with at your current job. The purpose of this research is to investigate what people expect from, and how they get along with, the other people they work with. We are not concerned about previous relationships or relationships in general, just your current relationships in the workplace.

Anxiety Scale

1. I'm afraid that I will lose my coworkers' positive regard.
2. I rarely worry about my coworkers wanting to work with me. [R]
3. I fear that my coworkers will put down the work that I do.
4. My coworkers make me nervous when I give presentations.

Avoidance Scale

1. I prefer not to show coworkers how I feel deep down.
2. I prefer not to be approached by coworkers during the day.
3. I tell my coworkers everything that they need to know. [R]
4. My coworkers understand me and my needs at work.

APPENDIX B

PEER ATTACHMENT SCALE (PAS)

Instructions: The following questions ask about your relations with other students at school. Please take a moment to think about your interactions with other students at Georgia Tech. Everyone has different interactions and this study is attempting to look at those differences. Your answers will help us examine some of the different patterns of interactions that people have so please answer as honestly as possible. Before you begin, think about some instances of interpersonal interaction you have had in class or on campus. The questions ask you to choose a number that best represents your answer. The further away from the middle your answer is, the stronger your feeling about the question. For example if you are asked how much you agree with the statement, "I enjoy talking with friends," and you strongly agree with the statement, you would select the 6.

Please answer all of these questions keeping in mind your fellow students at Georgia Tech. The purpose of this research is to investigate what people expect from, and how they get along with, the other students they work and interact with on campus. We are NOT concerned about previous relationships (e.g., friendships from high school), romantic relationships, or relationships in general, just your current academic relationships here at Georgia Tech.

Anxiety Scale

1. I'm afraid that I will lose my fellow students' positive regard.
2. I rarely worry about my fellow students wanting to work with me. [R]
3. I fear that my fellow students will put down the work that I do.
4. My fellow students make me nervous when I give presentations.

Avoidance Scale

1. I prefer not to show fellow students how I feel deep down.
2. I prefer not to be approached by fellow students during the day.
3. I tell my fellow students everything that they need to know. [R]
4. My fellow students understand me and my needs at school.

APPENDIX C

PEER ATTACHMENT SCALE – PEER RATING (PAS – PR)

Instructions: Please take a moment to think about your friend's interactions with other students at Georgia Tech. Everyone has different interactions and this study is attempting to look at those differences. Your answers will help us examine some of the different patterns of interactions that people have so please answer as honestly as possible. Before you begin, think about some instances of your friend's interpersonal interactions in class or on campus. The questions ask you to choose a number that best represents your answer. The further away from the middle your answer is, the stronger your feeling about the question. For example if you are asked how much you agree with the statement, "I enjoy talking with friends," and you strongly agree with the statement, you would select the 6.

Please answer all of these questions keeping in mind your friend that has given us your name/email and his/her relationships with fellow students at Georgia Tech. The purpose of this research is to investigate what people expect from, and how they get along with, the other students they work and interact with on campus. We are not concerned about previous relationships (e.g., friendships from high school) or relationships in general, just your perspective on your friend's current relationships here at Georgia Tech.

Anxiety Scale

1. He/she is afraid that he/she will lose fellow students' positive regard.
2. He/she rarely worries about fellow students wanting to work with him/her. [R]
3. He/she fears that fellow students will put down the work that he/she does.
4. Fellow students make him/her nervous when he/she gives presentations.

Avoidance Scale

1. He/she prefers not to show fellow students how he/she feels deep down.
2. He/she prefers not to be approached by fellow students during the day.
3. He/she tells fellow students everything that they need to know. [R]
4. He/she believes that fellow students understand him/her and his/her needs at school.

APPENDIX D

ALTERNATE VERSUS HYPOTHESIZED MODEL

Table D1. Alternate versus Hypothesized Model

Variable	Alternate Model		Hypothesized Model	
	Anxiety	Avoidance	Anxiety	Avoidance
1. Emotion-Focused Coping	.15	-.14	.11	-.14
2. Problem-Focused Coping	.04	-.29**	.01	-.29**
3. Family/Life-School Conflict	.32**	.13	.31**	.15
4. School-Family/Life Conflict	.21*	-.03	.19*	-.01
5. Student Adjustment to College	-.48**	-.29**	-.48**	-.31**
6. Affective Commitment	-.12	-.36**	-.14	-.36**
7. Continuance Commitment	.23**	.10	.23**	.11
8. Normative Commitment	.09	-.30**	.07	-.30**

Note. $N = 150$

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

APPENDIX E

PARTICIPANT RELATIONSHIP WITH PEER AND PEER RATINGS

Table E1. Participant Relationship with Peer and Peer Ratings

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. How well the participant knows Peer 1	3.56	0.70								
2. How well the participant knows Peer 2	3.39	0.72	.26**							
3. How well the participant knows Peer 3	3.12	0.82	.32**	.20*						
4. Peer 1 Attachment Anxiety Rating	2.42	0.91	.00	-.20*	-.20					
5. Peer 1 Attachment Avoidance Rating	2.75	0.90	-.05	-.13	-.03	.51**				
6. Peer 2 Attachment Anxiety Rating	2.32	0.73	-.10	.09	.07	.14	.09			
7. Peer 2 Attachment Avoidance Rating	2.69	0.76	-.04	.04	-.10	.19	.35**	.42**		
8. Peer 3 Attachment Anxiety Rating	2.44	0.80	-.12	-.06	.13	.09	.01	.19	.11	
9. Peer 3 Attachment Avoidance Rating	2.64	0.83	-.17	.10	.22	-.05	.09	.22	.14	.43**

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

APPENDIX F

TENURE AND ATTACHMENT HOMOGENEITY

Table F1. Descriptive Statistics for Department Tenure and Attachment Homogeneity

Department	N	Average Tenure	Worker Attachment Anxiety			Worker Attachment Avoidance		
			M	SD	r _{WG(19)}	M	SD	r _{WG(18)}
Human Resources	71	9.34	1.64	0.58	0.97	2.64	0.86	0.91
Engineering	16	11.87	1.67	0.81	0.97	2.65	0.59	0.95
Automotive	3	17.67	1.23	0.27	0.99	1.74	0.37	0.96
Strategy	4	5.25	2.04	0.74	0.95	3.01	0.98	0.92
Plant Engineering	5	17.60	1.76	0.49	0.98	3.10	0.83	0.83
IE	3	6.33	1.53	0.35	0.97	2.76	0.42	0.95
Communications	5	15.70	1.60	0.49	0.98	2.58	0.65	0.89
Transportation	3	11.33	1.40	0.38	0.98	2.93	0.67	0.88

Table F2. Descriptive Statistics for Workgroup Tenure and Attachment Homogeneity

Workgroup	N	Average Tenure	Worker Attachment Anxiety			Worker Attachment Avoidance		
			M	SD	r _{WG(19)}	M	SD	r _{WG(18)}
Employee Relations	22	3.18	1.51	0.45	.98	2.51	0.97	.83
Learning and Development	11	4.66	1.41	0.42	.99	2.56	0.92	.93
Engineering	6	3.33	1.57	0.66	.98	1.98	0.38	.98
Compensation	3	5.33	1.75	0.79	.94	2.59	0.70	.84
Communications	11	9.41	1.89	0.61	.97	2.79	0.62	.96
Human Relations	7	2.86	1.59	0.44	.98	2.75	1.08	.00
Workforce planning	7	3.00	1.92	0.80	.90	2.53	0.69	.97
Finance	3	2.08	2.40	1.54	.76	2.72	0.63	.98
Transportation	4	4.75	1.53	0.46	.98	2.72	0.45	.94
Planning and Development	3	1.08	2.09	0.49	.96	3.13	0.41	.95

Table F3. Average Workgroup Tenure's Prediction of Within-Workgroup Attachment Agreement

Variable	Average Workgroup Tenure	Worker Attachment Anxiety $r_{WG(19)}$	Worker Attachment Avoidance $r_{WG(18)}$
Average Workgroup Tenure			
Worker Attachment Anxiety $r_{WG(19)}$.32		
Worker Attachment Avoidance $r_{WG(18)}$.15	-.23	

Note. $N = 10$, $df = 8$

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

APPENDIX G

360 DEGREE PERFORMANCE RATINGS

Table G1. Worker Attachment and Self Performance Ratings

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Worker Attachment Anxiety	1.68	0.62	(.91)												
2. Worker Attachment Avoidance	2.70	0.78	.40**	(.89)											
Interpersonal Job Performance															
3. Relationship Skills (Self-rating)	4.08	0.49	.04	.05	(.82)										
4. Managing Conflict (Self-rating)	3.83	0.56	-.07	.00	.70**	(.86)									
5. Teamwork/Cooperation (Self-rating)	3.98	0.59	.03	-.05	.66**	.72**	(.91)								
6. Communication (Self-rating)	3.79	0.55	.00	.06	.60**	.61**	.67**	(.83)							
7. Motivating Others (Self-rating)	3.98	0.53	-.13	.02	.64**	.70**	.79**	.76**	(.84)						
8. Customer Focus (Self-rating)	3.88	0.57	-.04	.00	.65**	.61**	.57**	.61**	.69**	(.84)					
9. Promotes Change (Self-rating)	3.84	0.54	-.15	.02	.56**	.75**	.68**	.68**	.75**	.64**	(.85)				
Technical Job Performance															
10. Planning/Organizing (Self-rating)	3.71	0.67	-.07	.08	.51**	.62**	.73**	.70**	.73**	.67**	.64**	(.92)			
11. Strategic Management (Self-rating)	3.72	0.59	-.10	-.15	.47**	.67**	.73**	.58**	.69**	.57**	.77**	.62**	(.88)		
12. Process/Quality Improvement (Self-rating)	3.81	0.54	.00	.07	.47**	.55**	.63**	.60**	.70**	.64**	.66**	.80**	.66**	(.84)	
13. Results Orientation (Self-rating)	3.89	0.65	-.03	.04	.59**	.64**	.66**	.71**	.73**	.78**	.67**	.79**	.63**	.72**	(.91)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations are below the diagonal. *N* = 83

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

Table G2. Worker Attachment and Manager Performance Ratings

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Worker Attachment Anxiety	1.68	0.62	(.91)												
2. Worker Attachment Avoidance	2.70	0.78	.43**	(.89)											
Interpersonal Job Performance															
3. Relationship Skills (Manager Rating)	4.20	0.46	-.22*	-.16	(.86)										
4. Managing Conflict (Manager Rating)	4.00	0.53	-.20	-.04	.68**	(.85)									
5. Teamwork/Cooperation (Manager Rating)	4.23	0.59	-.06	-.04	.70**	.67**	(.94)								
6. Communication (Manager Rating)	4.17	0.53	-.23*	.03	.67**	.63**	.53**	(.84)							
7. Motivating Others (Manager Rating)	4.11	0.49	-.18	-.05	.70**	.73**	.68**	.68**	(.82)						
8. Customer Focus (Manager Rating)	4.20	0.61	-.16	.07	.70**	.68**	.77**	.72**	.65**	(.92)					
9. Promotes Change (Manager Rating)	4.07	0.56	-.22*	-.05	.69**	.68**	.79**	.56**	.73**	.75**	(.90)				
Technical Job Performance															
10. Planning/Organizing (Manager Rating)	4.06	0.61	-.24*	-.05	.59**	.60**	.56**	.62**	.72**	.65**	.76**	(.92)			
11. Strategic Management (Manager Rating)	4.05	0.57	-.17	-.05	.59**	.68**	.51**	.65**	.70**	.59**	.63**	.73**	(.92)		
12. Process/Quality Improvement (Manager Rating)	4.05	0.59	-.19	-.05	.64**	.64**	.58**	.62**	.69**	.69**	.76**	.83**	.73**	(.91)	
13. Results Orientation (Manager Rating)	4.23	0.67	-.19	.04	.53**	.60**	.59**	.61**	.67**	.72**	.78**	.81**	.60**	.79**	(.96)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations are below the diagonal. *N* = 81

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

Table G3. Worker Attachment and Coworker Performance Ratings

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Worker Attachment Anxiety	1.68	0.62	(.91)												
2. Worker Attachment Avoidance	2.70	0.78	.40**	(.89)											
Interpersonal Job Performance															
3. Relationship Skills (Coworker Rating)	4.32	0.34	-.05	-.12	(.91)										
4. Managing Conflict (Coworker Rating)	4.14	0.38	-.03	-.17	.83**	(.93)									
5. Teamwork/Cooperation (Coworker Rating)	4.31	0.34	.01	-.02	.83**	.80**	(.95)								
6. Communication (Coworker Rating)	4.27	0.36	-.12	-.07	.79**	.83**	.83**	(.90)							
7. Motivating Others (Coworker Rating)	4.24	0.34	.11	-.08	.80**	.83**	.83**	.79**	(.88)						
8. Customer Focus (Coworker Rating)	4.28	0.35	.03	-.06	.65**	.73**	.80**	.70**	.70**	(.92)					
9. Promotes Change (Coworker Rating)	4.18	0.39	.01	-.08	.73**	.80**	.84**	.83**	.79**	.75**	(.87)				
Technical Job Performance															
10. Planning/Organizing (Coworker Rating)	4.17	0.39	-.05	.02	.57**	.63**	.73**	.72**	.68**	.73**	.74**	(.95)			
11. Strategic Management (Coworker Rating)	4.18	0.41	-.19	-.15	.71**	.71**	.74**	.77**	.68**	.65**	.74**	.73**	(.95)		
12. Process/Quality Improvement (Coworker Rating)	4.24	0.36	-.06	-.02	.63**	.68**	.74**	.77**	.73**	.73**	.83**	.85**	.82**	(.94)	
13. Results Orientation (Coworker Rating)	4.28	0.42	-.13	-.05	.66**	.69**	.79**	.77**	.70**	.80**	.79**	.83**	.73**	.83**	(.96)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations are below the diagonal. *N* = 84

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

Table G4. Interpersonal Performance (360 Degree Ratings)

Critical Skill	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Self Rating																					
1. Relationship Skills (Self-rating)	(.82)																				
2. Managing Conflict (Self-rating)	.70**	(.86)																			
3. Teamwork/Cooperation (Self-rating)	.66**	.72**	(.91)																		
4. Communication (Self-rating)	.60**	.61**	.67**	(.83)																	
5. Motivating Others (Self-rating)	.64**	.70**	.79**	.76**	(.84)																
6. Customer Focus (Self-rating)	.65**	.61**	.57**	.61**	.69**	(.84)															
7. Promotes Change (Self-rating)	.56**	.75**	.68**	.68**	.75**	.64**	(.85)														
Manager Rating																					
8. Relationship Skills (Manager Rating)	.28*	.23*	.22	.09	.17	.16	.30**	(.86)													
9. Managing Conflict (Manager Rating)	.27*	.33**	.28*	.11	.20	.06	.31**	.68**	(.85)												
10. Teamwork/Cooperation (Manager Rating)	.22	.12	.18	.05	.12	.08	.15	.70**	.67**	(.94)											
11. Communication (Manager Rating)	.10	.17	.16	.11	.14	.15	.23*	.67**	.63**	.53**	(.84)										
12. Motivating Others (Manager Rating)	.11	.15	.11	.00	.06	.04	.17	.70**	.73**	.68**	.68**	(.82)									
13. Customer Focus (Manager Rating)	.26*	.13	.20	.13	.19	.22	.19	.70**	.68**	.77**	.72**	.65**	(.92)								
14. Promotes Change (Manager Rating)	.22	.20	.19	.10	.18	.18	.26*	.69**	.68**	.79**	.56**	.73**	.75**	(.90)							
Coworker Rating																					
15. Relationship Skills (Coworker Rating)	.16	.18	.20	.06	.09	.04	.21	.33**	.34**	.35**	.35**	.34**	.31**	.31**	(.91)						
16. Managing Conflict (Coworker Rating)	.12	.15	.22	.09	.09	-.01	.18	.22*	.31**	.35**	.32**	.27*	.27*	.27*	.83**	(.93)					
17. Teamwork/Cooperation (Coworker Rating)	.26*	.25*	.22	.22	.18	.14	.25*	.31**	.33**	.37**	.40**	.30**	.34**	.34**	.83**	.80**	(.95)				
18. Communication (Coworker Rating)	.10	.09	.16	.14	.09	.03	.14	.34**	.33**	.37**	.47**	.37**	.33**	.33**	.79**	.83**	.83**	(.90)			
19. Motivating Others (Coworker Rating)	.12	.06	.07	.08	.01	-.04	.08	.16	.25*	.28*	.28**	.24*	.21	.21	.80**	.83**	.83**	.79**	(.88)		
20. Customer Focus (Coworker Rating)	.18	.12	.17	.12	.14	.14	.15	.20	.26*	.43**	.35**	.28*	.34**	.34**	.65**	.73**	.80**	.70**	.70**	(.92)	
21. Promotes Change (Coworker Rating)	.13	.13	.17	.18	.15	.09	.19	.20	.34**	.34**	.40**	.37**	.42**	.42**	.73**	.80**	.84**	.83**	.79**	.75**	(.87)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations are below the diagonal. $N = 80$

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

Table G5. Technical Performance (360 Degree Ratings)

Critical Skill	1	2	3	4	5	6	7	8	9	10	11	12
Self Rating												
1. Planning/Organizing (Self-rating)	(.92)											
2. Strategic Management (Self-rating)	.62**	(.88)										
3. Process/Quality Improvement (Self-rating)	.80**	.66**	(.84)									
4. Results Orientation (Self-rating)	.79**	.63**	.72**	(.91)								
Manager Rating												
5. Planning/Organizing (Manager Rating)	.41**	.12	.23**	.30**	(.92)							
6. Strategic Management (Manager Rating)	.52**	.31**	.45**	.42**	.73**	(.92)						
7. Process/Quality Improvement (Manager Rating)	.44**	.22*	.37**	.34**	.83**	.73**	(.91)					
8. Results Orientation (Manager Rating)	.37**	.13	.28**	.33**	.81**	.60**	.79**	(.96)				
Coworker Rating												
9. Planning/Organizing (Coworker Rating)	.33**	.19	.24*	.31**	.42**	.40**	.43**	.50**	(.95)			
10. Strategic Management (Coworker Rating)	.24*	.36**	.27*	.22**	.30**	.31**	.35**	.37**	.73**	(.95)		
11. Process/Quality Improvement (Coworker Rating)	.31**	.26*	.26*	.35**	.39**	.37**	.42**	.48**	.85**	.82**	(.94)	
12. Results Orientation (Coworker Rating)	.28**	.20	.24*	.29**	.37**	.32**	.39**	.47**	.83**	.73**	.83**	(.96)

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Correlations are below the diagonal. $N = 80$

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

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