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Adult attachment, dependence, self-criticism and depression: a test of a mediational model

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ABSTRACT

The purpose of this study was to investigate whether dependence and self-criticism are two mediators between attachment anxiety and avoidance and depression. Participants were 424 undergraduate students at a large Midwestern university. Data was analyzed using structural equation modeling. Results indicated that the relationship between attachment anxiety and depression was fully mediated by dependence and self-criticism while the relationship between attachment avoidance and depression was partially mediated by dependence and self-criticism. Moreover, about 49% of the variance in dependence was explained by attachment anxiety and attachment avoidance, 27% of the variance in self-criticism was explained by attachment anxiety and attachment avoidance, and 47% of the variance in depression was explained by attachment avoidance, dependence, and self-criticism in the final structural model. These results provide valuable information for working with college students with higher levels of attachment anxiety to decrease their depression through managing their levels of dependence and self-criticism.

CHAPTER ONE: INTRODUCTION

Counseling research has been able to effectively utilize attachment theory (Bowlby, 1969) to help in understanding many areas of psychological health such as psychological distress or depression (Wei, Heppner, & Mallinckrodt, 2003; Lopez, Mauricio, & Gormley, 2002), conflict resolution in romantic relationships (Shi, 2003), communication styles (Feeney, Noller, & Callan, 1994) and psychotherapy processes (Mallinckrodt, 2000). Recent work by Brennan, Clark, and Shaver (1998) has conceptualized attachment theory into two relatively orthogonal dimensions, anxiety and avoidance. Attachment anxiety is related to interpersonal dependence and fear of abandonment while attachment avoidance is related to a fear of intimacy and an avoidance of close relationships.

According to attachment theory, an individual with attachment anxiety generally received care as a child that was inconsistent in meeting his or her needs. As a result of this inconsistent response pattern, a coping strategy emerges in which the child exaggerates his or her needs in order to ensure enough attention from caregivers to meet his or her basic needs. This pattern of hyperactivation has been supported in the literature. For example, Main and Solomon (1986) noted that with increasing dependence on the caregiver, the child became more successful at drawing the attention of the parent. Kobak and Sceery (1988) reported that individuals with attachment anxiety recalled their continued efforts to ensure parental support as children. These early findings provide evidence of interpersonal dependence or fears of abandonment as being characteristic of attachment anxiety.

Attachment avoidance, on the other hand, is generally associated with experiencing a rejecting or unresponsive caregiver early in life. These children learn that during times of distress it is not helpful to look toward the caregiver as a source of support and in turn a coping strategy develops that maintains distance from the caregiver in order to minimize further letdown. Even very early research in attachment theory was able to find consistent evidence that individuals with attachment avoidance (labeled dismissive in children)

experienced high levels of rejection as children, especially during times of distress when receiving support would be most imperative (Ainsworth, Blehar, Waters, & Wall, 1978). In addition, Kobak and Sceery (1988) reported that these individuals recalled memories of considerable rejection and a lack of love from their parents. Masking of emotions therefore appears to serve as a protective factor for attachment avoidance, as it allows the child to remain in proximity to the caregiver without risking further rejection by the caregiver (Bowlby, 1980).

In addition, Bowlby (1969, 1980) argues that early relationship quality with caregivers also impacts later social relationships by creating an internal set of beliefs regarding the self and others. These beliefs can be conceptualized as internal working models that allow individuals to understand interpersonal events and to shape future interpersonal transactions (Sperling & Berman, 1994). More specifically, the core of attachment theory revolves around the development of an internal working model of both the self and others. Attachment anxiety is believed to be an expression of a negative internal working model of the self. Conversely, attachment avoidance is believed to be an expression of a negative internal working model of others (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Bowlby, 1973, 1979; Pietromonaco & Feldman Barrett, 2000).

Attachment and Depression

Attachment theory provides a framework to understand the development of depression. In the attachment literature, researchers have been interested in understanding how attachment impacts an individuals psychosocial functioning; specifically how attachment is related to depression (e.g., Kobak & Sceery, 1988). Early work examining the relationship between adult attachment anxiety and avoidance and depression did consistently find a positive association (e.g., Armsden, McCauley, Greenberg, Burke, & Mitchell, 1990; Kobak & Sceery, 1988; Kobak, Sudler, & Gamble, 1991). As noted by Roberts, Gotlib, and Kassel (1996), this early work, however, did not adequately explore or understand the

mechanism behind this relationship. As a result of continued interest in this area, a growing body of fruitful research has developed that helps us to further understand the relationship between attachment anxiety and avoidance with depression.

Consequently, empirical research has not only consistently demonstrated links between parental or adult attachment and depression but has also begun to explain the mechanisms behind this relationship. Regarding the parent-child relationship, more recent research has examined the association between parental behavior and depression using mediators related to personality styles. For example, Ens, Cox, and Larsen (2000) reported that the relationship between father's overprotection and depression, in men, was mediated by the personality factors of perfectionism and concerns over making mistakes. Furthermore, the relationship between lack of care in mothers and depression, in women, was mediated by the personality factors of self-criticism, perfectionism, and concerns over making mistakes. In terms of adult attachment, mediators such as maladaptive perfectionism and ineffective coping (Wei, Heppner, Russell, & Young, 2006), social self-efficacy and self-disclosure (Wei, Russell, & Zakalik, 2005), or low self-esteem and dysfunctional attitudes (Roberts et al., 1996) have been examined to help explain the mechanism or psychological processes behind the association between adult attachment anxiety or avoidance and depression.

Moreover, other investigators have looked for distinct mediators for different attachment dimensions. For example, Wei, Mallinckrodt, Larson, and Zakalik (2005) reported that both the capacity for self-reinforcement and the need for reassurance from others partially mediated the relationship between attachment anxiety and depression. Conversely, only the capacity for self-reinforcement (but not need for reassurance from others) fully mediated the link between attachment avoidance and depression. These differential findings further indicate the importance of examining distinct mediators for understanding the different pathways to depression for individuals with differing attachment dimensions (i.e., anxiety vs. avoidance). Not only can mediators help clarify the mechanism

through which attachment anxiety or avoidance is related to depression but these mediators (e.g., increasing the capacity of self-reinforcement) can also serve as an intervention tool for mental health professionals to help decrease levels of depression for individuals with attachment anxiety and avoidance. In the present study, I am interested in continuing this line of research by examining a different set of distinct mediators (i.e., dependence and self-criticism) for the link between attachment (i.e., anxiety and avoidance) and depression.

Attachment, Dependence, and Self-Criticism

Dependence and self-criticism have been conceptualized as factors, which are related to differential early childhood experiences (Blatt, 1974; Blatt & Homann, 1992). Dependence is seen as a preoccupation with interpersonal relationships and excessive worry related to being uncared for and unloved, often at the expense of developing an individuated or autonomous sense of self. Dependent individuals have reported experiencing abandonment as children, seeing their parents as cold or having failed to provide the basic love and acceptance they needed (Blatt & Homann). Self-criticism, on the other hand, is defined as a disregard for the development of meaningful interpersonal relationships while instead focusing on excessive self-evaluation, high personal standards, as well as concerns about maintaining individuation and a strong desire to maintain a high sense of self-worth. While under stress, such as when an achievement goal could not be reached, these individuals may become highly self-critical and experience feelings of failure, worthlessness or guilt (Blatt, 2004). Self-critical individuals tend to report that they were prevented from becoming autonomous and developing a competent sense of self. They experienced their parents as restrictive, controlling, and rejecting (Blatt & Homann).

Beck (1983) proposed two factors, termed sociotropy and autonomy, which are similar to Blatt's (1974) dependence and self-criticism. A sociotropic individual is comparable to Blatt's construct of dependence (Ouimette & Klein, 1993; Blatt & Maroudas, 1992), and is characterized by an intense need for close interpersonal relationships. The

construct of autonomy, on the other hand, parallels Blatt's construct of self-criticism and is characterized by undue pressure on the self in achievement related domains (Mendelson, Robins, & Johnson, 2002). As noted by Murphy and Bates (1997) Beck conceptualized that autonomy includes two aspects: "perfectionism and self-criticism one the one hand, and independence, self-reliance and avoidance of intimacy on the other. Both aspects involve excessive striving for achievement and concerns about achievement failure, but perfectionism/self-criticism apparently involves a negative self-concept, which is not necessarily inherent in independence/self-reliance" (p. 836). The distinction between the two sides of the self-critical coin are especially important in this context as autonomy and independence may not be highly related to depression while the aspects of perfectionism and self-criticism may create a vulnerability to depression. For brevity, the constructs will be referred to as dependence (sociotropy) and self-criticism (autonomy) throughout this proposal.

Empirical research has provided evidence that indicates individuals with these dependent and self-critical tendencies may have a propensity to focus their daily energies on concepts related to concerns that are highly connected to their theorized styles. For example, Mongrain and Zuroff (1995) asked participants to report on personal strivings, which were defined as "the things you are typically trying to do in your everyday behaviour" (p. 349). Dependence was related to a greater number of interpersonal strivings as well as fewer achievement and independence/autonomy related strivings. Similarly, self-criticism was related to fewer interpersonal goals and a greater number of self-preservation strivings. Additionally, self-critical participants who also obtained low dependence scores reported greater numbers of achievement related goals. These findings are consistent with the conceptualization of the two constructs and provide support for their distinction as well as their relationship to personal styles.

Similar to depression, Bowbly's (e.g. 1969, 1973, 1980) attachment theory provides a theoretical framework through which to understand the development of dependent and self-critical tendencies. As described earlier, individuals with different attachment orientations are theorized to have different internal working models of the self and others. Individuals with attachment anxiety are likely to have a negative internal working model of self, where one does not feel worthy of care and attention. As a result, the individual becomes more likely to fear abandonment and show dependent behaviors in order to help ensure adequate care is received. Therefore, attachment anxiety is likely to contribute the development of a dependent (e.g., excessive need for closeness) and/or a self-critical personal style (e.g., negative internal working model of self), as described by Blatt (1974) and Beck (1983). Empirically, Murphy and Bates (1997) and Zuroff and Fitzpatrick (1995) indicated a positive and moderate association between attachment anxiety and dependence as well as self-criticism.

Individuals with attachment avoidance, on the other hand, are conceptualized to have a negative internal working model of others and to fear or avoid interpersonal closeness and may demonstrate compulsive self-reliance in order to avoid rejection form others (Pietromonaco & Feldman Barrett, 2000). They not only emphasize self-reliance (Fraley, Davis, & Shaver, 1998) but also drive themselves to be perfect to avoid others' rejection (e.g., if I am perfect, no one can hurt me) and to manage their hidden sense of imperfections (Wei, Mallinckdrodt, Russell, & Abraham, 2004). Reports indicated a consistent correlation between attachment avoidance and self-criticism (Murphy & Bates, 1997). However, the empirical association between attachment avoidance and dependence is mixed, with Murphy and Bates indicating a non-significant association for these two variables while Zuroff and Fitzpatrick (1995) reported a weak negative association between attachment avoidance and dependence ($r = -.28$ to $-.17$). It seems that there is a need for further research in order to clarify this association. In terms of the association between attachment avoidance and self-

criticism (defined as perfectionism and self-criticism one the one hand, and self-reliance and avoidance of intimacy on the other), previous studies indicated a positive association between these two variables (Murphy & Bates; Zuroff & Fitzpatrick). From the previous literature, it was expected that there would be a positive association between attachment avoidance and self-criticism.

Attachment, Dependence, Self-Criticism, and Depression

Empirical studies examining the relationship between the constructs of dependence and self-criticism and depression (e.g., Beck Depression Inventory or Zung Depression Scale) have generally found that both self-criticism and dependence are strongly associated with depression (Riley & McCranie, 1990; Smith, O'Keeffe, & Jenkins, 1988, Luthar & Blatt, 1993). Similar results have been reported using both the Depressive Experience Questionnaire (Blatt, D'afflitti, & Quinlan, 1976) which was formulated by Blatt and colleagues to measure dependence and self-criticism (e.g. Riley & McCranie; Smith, O'Keefe, & Jenkins; Luthar & Blatt) as well as studies utilizing the Personal Style Inventory II (Robins, Ladd, Welkowitz, & Blaney, 1994) which was developed to measure sociotropy (i.e. dependence) and autonomy (i.e. self-criticism), based on Beck's (1983) depression theory. Moreover, Murphy and Bates (1997) assessed attachment (i.e., anxiety and avoidance), dependence, self-criticism, and depression simultaneously. They found that dependence was positively associated with attachment anxiety but not related to attachment avoidance while self-criticism was found to be related to both attachment anxiety and attachment avoidance. Both dependence and self-criticism were positively related with depression. However, they failed to examine a more complex model (e.g., mediation model) beyond the direct associations among these variables. It should be noted however, that the non-significant relationship between attachment avoidance and dependence reported by Murphy and Bates differs from the negative relationship between these variables reported by Zuroff and Fitzpatrick (1995).

In conclusion, it can be seen that there have been significant associations found among attachment, dependence, self-criticism, and depression. However, I could not locate any published studies beyond these direct relationships to examine whether dependence or self-critical tendencies are two mediators between attachment anxiety or attachment avoidance and depression. From the previous review, it is likely that attachment anxiety would be positively related to dependence and self-criticism. Also, it is likely that attachment avoidance would be positively associated with self-criticism. However, the association between attachment avoidance and dependence is inconsistent in the literature. As discussed earlier, this association has been reported as non-significant in the Murphy and Bates study (1997) or negative in the Zuroff and Fitzpatrick study (1995). However, based on attachment theory, those with attachment avoidance tend to have a negative working model of others and avoid depending on others, it is reasonable to expect, and hypothesize for, a negative association between these variables. Finally, both dependence and self-criticism will be positively associated with depression. Therefore, there are four hypotheses in the present study: (a) attachment anxiety would be significantly and positively correlated to dependence and to self-criticism after controlling for the attachment avoidance dimension; (b) dependence and self-criticism would be significant mediators of the link between attachment anxiety and depressive symptoms; (c) attachment avoidance would be significantly and positively correlated to self-criticism and significantly, negatively, related to dependence; (d) self-criticism and dependence would be significant mediators of the link between attachment avoidance and depressive symptoms (see Figure 1).

CHAPTER TWO: LITERATURE REVIEW

The literature review to follow will first explore the history of attachment theory as well as its basic concepts and grounding theory. Then, a rationale for the chosen attachment measure will be given, along with a brief overview of the development of different attachment measures. Next, the concept of depression will be discussed as it relates to attachment theory. Following will be a brief discussion of the available measures for the construct of depression paired with a rationale for the chosen depression measures. Subsequently, the dimensions of dependence and self-criticism will be discussed as they relate to depression. Again, a justification for the chosen measures of these constructs will be given. Finally, this chapter will conclude with a discussion of how the variables in this study, attachment (i.e., anxiety and avoidance), personal style (i.e., dependence and self-criticism), and depression have been previously been linked in the literature as well as an explanation for how these variables will be linked in a more complex mediation model in the present study.

Attachment Theory

Attachment theory was developed as a means for understanding personality development and psychopathology (Bowlby, 1969). Bowlby contended that attachment relationships were formed and maintained, in part due to a evolved biological system, whose function is to increase the likelihood that the infant (or individual) will receive protection, comfort and social learning opportunities from the caregiver. It is theorized that through repeated interactions consisting of attachment behaviors from the infant (e.g. crying, clinging, smiling, or developing a preference for caregivers) and responses from the caregiver (e.g. nursing, soothing, ignoring), infants begin to develop an internal working model of both the self and others. These internal working models can be described as a set of expectations relating to the infant's ability and worthiness of eliciting care and comfort (self) and also related to the infant's belief that others will respond in a regular and consistent

manner (others). These internal working models may also serve as a means of processing or excluding information.

In order to assess this theory, a laboratory condition was developed to observe the parent-infant interactions, termed the Strange Situation (Ainsworth et al., 1978). Using a procedure similar to one of Harlow's (1961) experiments with infant monkeys, Ainsworth et al. attempted to elicit attachment behaviors by putting the human infant through a series of increasing stressful events. Infants were observed in a room filled with toys with their parent, alone, and with a stranger. Exploratory behaviors were recorded, as well as comfort seeking behaviors, upon the parent's return to the room. The behavior patterns that emerged allowed Ainsworth et al. to classify infants into one of three categories, secure, anxious-ambivalent, or avoidant.

Secure infants are generally believed to have the most beneficial type of attachment wherein the infant is able to utilize the parent as a secure base for exploration and the parent is described as responsive, available, and sensitive the needs of the infant. In the Strange Situation this is often seen with the infant demonstrating a capacity for both individual exploration of the environment while returning to the parent for comfort, which occurs readily. Anxious-ambivalent attachment, on the other hand, is generally related to high emotionality in the infant when attempting to obtain comfort or support from the caregiver and the infant is often hesitant to explore the environment in the Strange Situation – instead is seen clinging or remaining near the parent. Upon the parent's return in the Strange Situation, the infant is often difficult to soothe. The parent is often described as overly intrusive or unavailable to the child. Finally, avoidant attachment is generally related to the infant appearing uninterested in the parent, often exploring the room without making contact or acknowledgement and avoiding the parent upon return. These parents are characterized as being rejecting, aloof and uncomfortable with bodily contact such that even if the child

attempted to receive soothing or care, these attempts would likely be in vain. Thus the infant quickly learned that rejection is inevitable and avoidance serves as a protective factor.

Attachment has been defined as an important and inextricable part of human functioning "from the cradle to the grave" (Bowlby, 1979). Bowlby's (1969, 1973, 1979) attachment theory asserts that overtime, early attachment relationships are internalized and become a prototype for later interpersonal functioning, even away from the primary caregiver. This internalization is theorized to occur through the development of internal working models of the self and others (Bowlby). Recent evidence on the long-term impact of attachment relationships seems to support this early notion. For example, longitudinal studies have predicted both later personality and social behavior in children based on their attachment classification in infancy (LaFreniere & Sroufe, 1985; Elicker, Englund, & Sroufe, 1992; Grossmann & Grossmann, 1991). For example, LaFreniere and Sroufe reported that children with secure attachment during infancy demonstrated emotional warmth, social maturity and peer popularity during preschool while those classified as anxious-ambivalent during infancy were lowest in peer status. In addition to studies demonstrating continuity between attachment in infancy and childhood outcomes, research on adult attachment has illustrated the importance of attachment relationships in later life. Hazan and Shaver (1994) argued that attachment styles carry over into adult interpersonal interactions such as with romantic partners. These new adult relationships are believed to function in ways that impact the individual's emotional well-being and adaptation in important ways as the primary caregiver from early life becomes less important.

Adult Attachment Measurement

The measurement of adult attachment is based on empirical evidence that adult attachment styles persist into adulthood and thus is no longer seen as only functioning in relationships with caregivers but also in other important interpersonal relationships (e.g., Feeney, 1999; Hazan & Shaver, 1994). Following the theory of Bowlby and Ainsworth, the

Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985) was developed to measure adults recollection of attachment to his or her own parent in order to test the theory that the child's attachment, as measured in the Strange Situation would be similar to that of the parent. The authors found support for this theory whereby children who were classified as secure tended to have parents who were classified as secure, based on the AAI. The authors were able to find further support for this theory with similar results being found for the attachment styles of anxious and avoidant.

From here, Hazan and Shaver (1987) went on to develop an independent measure of adult attachment, one of the first of its kind. This measure assessed adult attachment through case vignettes describing the attachment types, the same used in Ainsworth's Strange Situation. Participants were asked to rate which vignette was most like them in romantic relationships, as the authors had theorized that adult romantic relationships were, in fact, a type of attachment relationship. As mentioned above, later evidence has been presented indicating that childhood attachment does persist into adulthood and various interpersonal relationships (e.g., Feeney, 1999; Hazan & Shaver, 1994).

To this point, measures of adult attachment contained those categories originally developed by Ainsworth (secure, anxious and avoidant). The addition of a fourth category by Bartholomew (1990) provided for more differentiation between those classified as avoidant. Bartholomew made this addition after pointing out a discrepancy in the way the first two measures defined avoidant attachment and was able to do this through the conceptualization of attachment as two-dimensional. The AAI conceptualized avoidance as a denial of experienced distress while Hazan and Shaver (1987) measured avoidance in terms of reported distress in relation to being close with other people. Bartholomew further justified this change by theorizing that attachment could be measured in terms of the individuals' view of the self and others as either positive or negative, a postulate of attachment theory, which would yield four differentially defined attachment classifications (see Figure 2). The view of

the self is dichotomized at either positive or negative and encompasses the individual's view of him or herself as being worthy of love and support or being not worthy of this from others; the view of others is also dichotomized as positive and negative and encompasses the individuals view of others being either trustworthy and responsive (positive) or rejecting and unreliable (negative).

More recently, Brennan et al. (1998) conducted a study utilizing 323 items from 60 measures claiming to assess constructs of attachment, encompassing all known attachment measures at that time. These measures were administered to over 1,000 college students and the results were factor analyzed. The results of this massive study indicated that, indeed, there were two underlying dimensions that related to attachment anxiety and attachment avoidance. From this data, Brennan et al. developed a 36-item self-report measure of attachment, called the Experiences in Close Relationship Scale (ECR). This measure places individuals on each of the two relatively orthogonal dimensions, attachment anxiety and avoidance. This measure was chosen as the measure of adult attachment for this study due to its comprehensive nature (e.g., developed from all extant adult attachment measures) and strong psychometric properties.

Attachment and Depression

Early studies examining the relationship between attachment styles and depression indicated a consistent positive correlation between both attachment anxiety and avoidance with depression (e.g., Armsden et al., 1990; Kobak & Sceery, 1988; Kobak et al., 1991). These early findings provided researchers a new foundation on which to build the depression literature. These studies, however, only provided evidence of a positive direct association and lacked a thorough investigation of the mechanisms behind this direct relationship, as noted by Roberts et al. (1996). Additionally, the indication that attachment styles are difficult to change in therapy (Mallinckrodt, 2000) left a need for more complex research on attachment

and depression, whereby mediating variables, which are more easily addressed in therapy, could be identified.

Some very interesting and promising models of mediation have been developed to better explain and better inform clinicians about the relationship between attachment and depression. For example, perceived coping (defined as perceived ability to problem solve and make progress when dealing with problems) was found to fully and partially mediate the relationship between attachment anxiety and avoidance with psychological distress, respectively (Wei et al., 2003). These authors argued for further research to identify other variables that may fully mediate the relationship between attachment avoidance and psychological distress, as their results indicated this relationship was more complex than of the relationship seen between attachment anxiety and depression.

Additionally, Mallinckrodt and Wei (2005) found the relationship of both attachment anxiety and attachment avoidance with psychological distress to be mediated by both social self-efficacy and emotional awareness. Other mediators such as basic needs satisfaction (Wei, Shaffer, Young, & Zakalik, 2005) and maladaptive perfectionism (Wei et al., 2006; Wei et al., 2004) have been identified as mediators for the relationship of attachment (i.e., anxiety or avoidance) and depression.

Other attempts at identifying mediating variables have searched not only for those variables which may mediate the relationship between both attachment dimensions and depression but also those variables which may differentially mediate the relationships of attachment anxiety and avoidance with depression. For example, Wei, Mallinckrodt, et al. (2005) identified two differential mediators, the need for reassurance from others and the capacity for self-reinforcement. A compelling argument for the differentiation of the two variables for mediating different paths between attachment (i.e., anxiety or avoidance) and depression was provided. Their hypotheses were supported in that the need for reassurance from others was found to mediate only the relationship between attachment anxiety and

depression while the capacity for self-reinforcement was found to mediate the paths between both attachment dimensions (i.e., anxiety and avoidance) and depression. Another study (Wei, Vogel, Ku, & Zakalik, 2005) found differential paths of mediation for the variables of emotional reactivity (mediated attachment anxiety and depression) and emotional cutoff (mediated attachment avoidance and depression). Moreover, a longitudinal study, Wei, Russell, et al. (2005) also found distinct mediators for the different attachment dimensions and depression. They found that social self-efficacy (but not discomfort for disclosing distress feelings) mediated the relationship between attachment anxiety and loneliness as well as future depression. However, discomfort for disclosing feelings of distress (but not social self-efficacy) mediated the relationship between attachment avoidance and loneliness as well as future depression. These findings provide more evidence that the relationship between attachment anxiety and avoidance with depression is complex and in need of further exploration.

Measurement of Depression

In order to assess the concept of depression, it is important to consider who the participants are (i.e., clinical or non-clinical samples) in the study. In this case, we are attempting to assess depressive symptoms in a college student population. For this purpose there are currently many measures available, some of which are more applicable to a college population than others. I will outline the details of a number of these measures below.

Much of the literature relating depression to the variables of self-criticism and dependence has utilized the Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988) as the measure of depressive symptoms (e.g., Bieling & Alden, 2001; Mendelson et al., 2002; Sato & McCann, 2000; Shahar, Joiner, Zuroff, & Blatt, 2004). The BDI is a 21-item inventory, which was developed to assess the severity of depressive symptoms in a clinical population. Each item is a symptom commonly reported by those people with clinical depression. Respondents are asked to rate each item on a Likert-type scale ranging from 0 to

3 with higher scores indicating a higher level of severity. Respondents are asked to reflect on how they felt during the past week. None of the items on the BDI are reversed scored. The BDI was one of the first measures of depression and is still highly used and respected in today's literature. For the purposes of this study, however, the BDI will not be used for measuring depression, as other, more recent measures seem to provide a better fit. The main reason for this lack of fit is that while the BDI has been used in a non-clinical population and retains a high level of internal consistency (Beck et al., 1988), the measure was developed for a clinical population. Therefore, locating a measure more appropriate for a college student population is needed. In addition, a host of other studies have utilized the BDI when assessing the relationship between self-criticism and dependence with depression (e.g., Bieling & Alden; Mendelson et al.; Sato & McCann; Shahar et al.). This provides for the possibility that the results of these studies are specific only to depression as measured by the BDI. Assessing the relation between the variables self-criticism and dependence to other depression measures will provide more robust evidence of this relationship.

The first measure of depression chosen for this study is the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D is a measure of depression developed utilizing previous depression measures such as the BDI and the MMPI-D (Dahlstrom & Welsh, 1960), and the RDS (Raskin, Schulterbrandt, Reatig, & McKeon, 1969). This scale was developed as a research tool to assess depressive symptomology in the general population, which is similar to the college population being utilized in this study. The instrument consists of 20 items scored on a Likert-type scale ranging from 0-3 based on how the respondent felt over the past week. Higher scores indicate a higher level of depression. Four items included in this scale are reversed scored in order to break the response set and assess the absence of positive affect. The CES-D has been correlated in the .80 ranges with the BDI (Santor, Zuroff, Ramsay, Cervantes, & Palacios, 1995; Weissman, Prusoff, & Newberry, 1975). Additionally, the CES-D has been utilized

previously in studies similar in focus and population as the current study (e.g., Wei, Mallinckrodt, et al., 2005; Wei, Shaffer, et al., 2005; Wei, Heppner, et al., 2006). For these reasons, it appears the CES-D is a good fit for the first measure of depression for this study.

The second measure of depression chosen for this study is the Self-Rating Depression Scale (SDS; Zung, 1965). The SDS was designed to measure the psychological components, such as pervasive affect and the physiological components of depression. The scale consists of 20 items, scored on a sliding scale from (1) some of a little of the time to (4) most or all of the time. Ten of the items are reversed scored, a valuable contribution to the current study in order to more fully break up the response set of the participants. Higher scores are more indicative of higher severity of depressive symptoms. This scale has been shown to be capable of distinguishing between depressed and non-depressed groups as well as convergent validity with the BDI. The brevity of the scale, presence of reverse scored items and strong psychometric properties make a valuable contribution to the measurement of depression in this study.

The third measure of depression chosen for this study is the Depressive Anxiety and Stress Scales-Depression subscale Short-Form (DASS-D; Lovibond & Lovibond, 1995). The DASS-D short version utilizes a subset of items from the full version of the DASS-D. Antony, Bieling, Cox, Enns, and Swinson (1998) reported high internal consistency correlations for the DASS-D at .94. Additionally, they reported the short version showed benefits over the longer version in that it included fewer items and a cleaner factor structure. This measure was chosen for its briefness and strong psychometric properties.

Attachment, Dependence, and Self-Criticism

Blatt (1974) proposed a model relating to the development of two fundamental characteristics within the individuals relating to the individuals interaction with others and the self. The first development line, anaclitic, is related to the capacity to establish mature and mutually satisfying interpersonal relationships while the second line is termed

introjective and relates to the development of a positive, realistic self-identity. When disrupted, these fundamental lines are theorized to relate to a vulnerability to depression. The terms used to describe these depressive vulnerabilities vary from the original, parallel constructs in that anaclitic is referred to as dependence while introjective is referred to as self-criticism. Moreover, sociotropy and autonomy are similar factors; described by Beck's (1983) depression theory. A sociotropic individual is similar to Blatt's (1974) construct of dependence (Blatt & Maroudas, 1992; Ouimette & Klein, 1993), and is characterized by an intense need for close interpersonal relationships. The construct of autonomy, on the other hand, is similar to Blatt's (1974) construct of self-criticism and is characterized by undue pressure on the self in achievement related domains (Mendelson, Robins, & Johnson, 2002), a need for independence, avoidance of interpersonal relationships, and perfectionism/self-criticism (Murphy & Bates, 1997). As previously mentioned, the constructs will be referred to as dependence and self-criticism throughout this study.

More specifically, dependent individuals are theorized to be vulnerable to depression, as a result of their tendency to give up or sacrifice the development of an autonomous sense of self in the pursuit of interpersonal relationships. This preoccupation has its foundation in worries or fears of being abandoned or of being uncared for or unloved (Blatt, 1974). Self-criticism, on the other hand, is theorized to have a vulnerability towards depression due to the disregard for the development of meaningful interpersonal relationships paired with an excessive focus on self-evaluation, high personal standards, as well as being overly concerned with self-worth. This concern may manifest itself as perfectionism, feelings of worthlessness, guilt or even self-loathing (Blatt, 2004; Murphy & Bates, 1997) especially during times of perceived failure. Blatt & Zuroff (1992) noted that some of these overly critical individuals may be in chronic fear of disappointing those who are important to them and thus losing their approval. In some ways, parts of the definition of this style seem

contradictory in that self-critical individuals may both avoid interpersonal relationships yet place high value on maintaining approval from others.

One of the basic tenants of this model is that differential childhood experiences influence the development of these maladaptive tendencies (Blatt, 1974; Blatt & Homann, 1992). For example, Blatt and Homann found that dependent individuals often reported memories of being abandoned as children and had perceptions that their parents did not fulfill their needs for love and acceptance. These findings provide a basis to begin understanding the types of experiences that may be related to the development of intense fears of being abandoned or left unloved. Similarly, these authors reported that self-critical individuals reported memories of their parents as restrictive, controlling and rejecting to a point where the individuals felt it was preventing them from becoming an autonomous individual.

Theoretically, Bowbly's (1969, 1973, 1980) attachment theory provides a framework through which to conceptualize the development of dependent and self-critical tendencies. As described earlier, individuals with different attachment dimensions have different internal working model of self and others. Attachment anxiety is related to an internal working model of the self as negative and is related to feeling unworthy of love and fears of abandonment. Attachment avoidance, on the other hand, is related to an internal working model of others as negative and is related to sensing others as untrustworthy and being uncomfortable with closeness to others (Bartholomew, 1990). These negative internal working models have been related to depression in a number of studies (e.g., Armsden et al., 1990; Kobak & Sceery, 1988; Kobak et al., 1991). In a similar vein, Blatt's theory proposes two types of experiences that lead to depression, the loss or disruption of interpersonal relationships (esp. for dependence) or the disruption of an individuals sense of autonomy or self-worth through events such as failure (esp. for self-critics; Blatt & Maroudas, 1992).

Additionally, Besser and Priel (2005) clarified that these two sets of constructs (i.e., attachment anxiety and attachment avoidance vs. dependence and self-criticism) are in fact

distinct. These authors recapped that the constructs of attachment anxiety and attachment avoidance are related to negative feelings about the self in relation to others while dependence and self-criticism are a specific way of thinking and feeling about the self. More broadly put attachment may be thought of as an evolutionary model, which develops early in life while dependence and self-criticism are characteristics that develop over the life span.

These similarities in definition and outcome have led researchers to hypothesize that insecure attachment plays a role in the development of these two types of tendencies, dependence and self-criticism (Blatt & Homann, 1992). Demonstrated links between insecure attachment and both dependence and self-criticism have been reported (Reis & Grenyer, 2002; Zuroff & Fitzpatrick, 1995). For example, pervasive negative parental representations have been reported by those high in self-criticism while those high in dependence reported unfavorable parental representations only during hostile situations (Mongrain, 1998), possibly at times of great need. Also, self-criticism is related to self-reports of parental demands for obedience paired with low warmth (Koestner, Zuroff, & Powers, 1991). Additionally, Zuroff and Fitzpatrick reported associations between dependence and attachment anxiety as well as between self-criticism and attachment avoidance and attachment anxiety. Finally, Blatt and Homann concluded that the link between the vulnerabilities of dependence and self-criticism and insecure attachment is one of inextricable complexity when reviewing available data on the parents of individuals with these vulnerabilities.

Measurement of Dependence and Self-Criticism

A number of measures currently exist which attempt to measure the constructs of self-criticism and dependence. While these measures were designed to measure the constructs from either Beck's (1983) model or Blatt's (1974) model, the theories from which the measures developed are similar and thus can be used somewhat interchangeably. Scales used to measure the constructs were developed independently and are not simply mirror

images of one another. In addition, the original measure used to assess Beck's model has undergone a number of revisions (Clark & Beck, 1991; Robins, Ladd, Welkowitz, Blaney, Kutcher, & Diaz, 1994), while Blatt's measure has remained consistent over time, with changes only being suggested for the scoring procedures (e.g., Welkowitz, Lish, & Bond, 1985; Santor, Zuroff & Fielding, 1997).

From Blatt's model came the development of the Depressive Experiences Questionnaire (DEQ; Blatt, D'Affitti, & Quinlan, 1976). This is a 66-item measure containing three subscales including Self-criticism, Dependence and Efficacy. The first two scales measure the theorized constructs of Self-criticism and Dependence as define by Blatt et al. while the third scale, Efficacy, is a general measure of well-being relating to strength, resilience and confidence. The DEQ was originally developed to assess differences in experienced depression as Blatt et al. viewed depression as neither one-dimensional nor as a dichotomy between depressed and nondepressed states. The DEQ was an attempt to quantify the characterlogical differences in individuals with differing depressive subtypes, namely, dependence and self-criticism. Since its development, the DEQ scales of self-criticism and dependence have consistently been positively correlated to traditional measures of depression such as the Beck and Zung Depression Inventories (Blatt, Quinlan, Chevron, McDonald, & Zuroff, 1982; Luthar & Blatt, 1993; Riley & McCranie, 1990; Smith et al., 1988). The DEQ was chosen as the first measure for the dimensions of dependence and self-criticism for this study.

As mentioned previously, the DEQ has undergone a number of revisions to the scoring procedures in attempts to maintain orthogonality between the scales of Dependence and Self-criticism while improving the ease and interpretation of scores. The original DEQ (Blatt et al. 1976) was scored utilizing factor derived scaled scores that were weighted from a large college sample, most of whom (75%) were women. Revisions, therefore have attempted to utilize unit weighted items as means for improvement (Bagby, Parker, Joffe, &

Buis, 1994; Viglione, Lovette, & Gottlieb, 1995; Welkowitz et al., 1985), however many of these revisions have failed to maintain the high degree of orthogonality seen between the original scoring of the two scales (Santor et al. 1997). In response to the need for a scoring procedure that both improves interpretation and ease of scoring while maintaining orthogonality, Santor et al. successfully developed the McGill scoring procedure, which meets both of these needs. The McGill version of the scoring procedure reduces the number of items to 30 per scale, maintains orthogonality (rs = .03 men, .06 women) in a college student sample. Due to the McGill scoring procedures reduced length, improvements in the ease of scoring, using a more gender balanced normative sample and maintenance of reliability for both dependence (α = .65 men, .72 women) and self-criticism (α = .78 men, .76 women) this version of the DEQ was chosen.

Originally, Beck and colleagues developed the Sociotropy-Autonomy Scale (SAS; Beck, Epstein, Harrison, & Emery, 1983) in order to assess the characteristics associated with each tendency type. The SAS was a 60-item measure with 30 of the items relating to Sociotropy and 30 to Autonomy. Since the development of the SAS, it has gone through a number of revisions (i.e., Clark & Beck, 1991; Robins et al., 1994). These revisions were made in an attempt to increase the reliability and validity of the measure. Two of the major revisions included a basic revision of the SAS, keeping intact the original name and the development of a new measure, the Personal Styles Inventory-II (PSI-II; Robins et al., 1994). Due to the availability of these revised measures, the original SAS will not be utilized in the current study.

The second measure was chosen to assess the dimensions of dependence and self-criticism is the PSI-II. It consists of 24 items measuring Sociotropy (dependence) through the three subscales of Concern for Others, Dependency and Pleasing Others and 24 items measuring Autonomy (self-criticism) through the subscales of Perfectionism/Self-criticism, Need for Control and Defensive Separation. This measure was chosen due to its high

reliability for both Sociotropy (α = .90) and Autonomy (α = .87) (Robins et al.). However, for the current study only the subscales of Dependency (dependence) and Perfectionism/Self-Criticism (self-criticism) would be utilized, as these scales seem most relevant to the latent variables being measured.

Attachment, Dependence, Self-Criticism, and Depression

To date, only one study was available which measured the association between all sets of variables considered in this study (attachment, personal style, and depression) but did so for the direct associations between each variable only (Murphy & Bates, 1997). These authors reported that attachment anxiety was significantly, positively associated with dependence and self-criticism. Furthermore, attachment avoidance was found to be significantly and positively associated with self-criticism. Both dependence and self-criticism were significantly and positively associated with depression. The results of this study are promising in examining the direct associations, however this study did not test the mediation effects. As a result, we do not know the full extent to which these variables are related to one another. Therefore, the primary goal of this study is to assess these relationships in a more complex model (e.g., mediation model).

In conclusion, it can be seen that significant associations have been demonstrated for attachment (i.e., anxiety and avoidance), personal style (i.e., dependence and self-criticism), and depression. However, I could not locate any published studies beyond these direct relationships to examine whether the dependence or self-criticism tendencies are two mediators between attachment anxiety or avoidance and depression. It is likely that attachment avoidance will be positively associated with self-criticism (but not dependence) and attachment anxiety will be positively association with dependence (but not self-criticism). Additionally, both dependence and self-criticism will be positively associated with depression. Therefore, there are four hypotheses in the present study: (a) attachment anxiety would be significantly and positively correlated to dependence and to self-criticism after

controlling for the attachment avoidance dimension; (b) dependence and self-criticism would be significant mediators of the link between attachment anxiety and depressive symptoms; (c) attachment avoidance would be significantly and positively correlated to self-criticism and significantly, negatively, related to dependence; (d) self-criticism and dependence would be significant mediators of the link between attachment avoidance and depressive symptoms (see Figure 1).

CHAPTER THREE: METHODS

Participants

Comrey and Lee (1992) recommended at least 300 participants are needed when using structural equation modeling. For this study a final sample of 424 participants was utilized with age ranges for participants was between 18 and 32 (M = 19.45, SD = 1.88). The percentages of ethnic minority participants were closely related to the ethnic makeup of Iowa State University, where the sample was drawn from. The percentages in the present study were as follows: Caucasian 73%, African American 3%, Asian American 3%, Latino/a American 2%, Native American 1%, Multiracial 2%, and International students 2%. An important note for this study is that 14% of participants chose "other" for their racial identity thus it is possible that the actual minority representation is greater than the 13% currently represented in this sample, however it is impossible to know for certain. All participants included in the final sample indicated they are currently in a romantic relationship or were in or had been in a romantic relationship at some point during their lives. At the time of the study, 49.5% of participants were in a committed dating relationship while an additional 1.7% was married; 45.8% of participants were currently single. The remaining participants were divorced (.2%), widowed (.2%) or other (2.6%). A large percentage of participants were classified as freshman (52.3%) or sophomores (22.9%). The remaining students were juniors (18.1%), seniors (6.5%) or other (0.2%). Participants received research credit toward their psychology course grade in exchange for their participation.

Instruments

Attachment. Attachment was assessed using the *Experiences in Close Relationships scale* (ECR; Brennan et al., 1998). This is an adult attachment scale measuring attachment anxiety and attachment avoidance with 36 self-report items. The Anxiety subscale measures fears of abandonment and rejection while the Avoidance subscale measures fear of intimacy and discomfort with closeness or dependence. Each subscale consists of 18 items rated on a

7-point Likert scale ranging from (1) *disagree strongly to* (7) *agree strongly*. The range of possible scores for both the Anxiety and Avoidance subscales are 18 to 126, with higher scores indicating higher attachment anxiety or attachment avoidance. The ECR is a particularly comprehensive measure as it was developed from 14 attachment measures, available at the time, for a total of 60 subscales and 323 items using more than 1,000 participants (Brennan et al.). The Anxiety and Avoidance subscales on the ECR have been found to have coefficient alphas ranging from .91 to .94 (e.g., Brennan et al., 1998; Wei et al., 2004). Coefficient alphas of .91 (Anxiety) and .94 (Avoidance) were found in the current study. Brennan, Shaver, and Clark (2000) found a .70 three-week test-retest reliability for both subscales of the ECR. Construct validity was supported by the positive correlations between attachment anxiety and emotional reactivity and between attachment avoidance and emotional cut-off (Wei, Vogel, et al., 2005).

Dependence and Self-Criticism. The Depressive Experiences Questionnaire (DEQ; Blatt et al., 1976) is a measure used to assess common experiences of those with depression, but does not assess actual depressive symptoms. This scale was used as one measure of dependence and self-criticism. The DEQ is a 66-item measure using a 7-point Likert-type scale from (1) *strongly disagree* to (7) *strongly agree*. The DEQ yields three stable factors, Dependence, Self-criticism, and Efficacy. A sample item of dependence is "I often think about the danger of losing someone close to me" and a sample item of self-criticism is, "I often feel guilty". The DEQ has undergone a number of revisions to the scoring procedure since its development in 1976 (Bagby et al., 1994; Santor et al., 1997; Viglione et al., 1995; Welkowitz et al., 1985); thus a number of different scoring procedures were available. For this study, the McGill Revision (Santor et al.) was utilized as it reduced the complexity of scoring by using unit weightings rather than the original factor weighting (Santor et al.) while maintaining the scale behavior and construct validity. Using a manual provided by Zuroff (personal communication; December 5, 2005) for the McGill scoring procedure, Dependence

and Self-criticism scores were derived using the statistical software program, SPSS. Higher scores indicate a higher level of each factor. Adequate reliability has been reported for the McGill scales with coefficient alphas of .65 to .72 and .78 to .76 for Dependence and Self-criticism, respectively (Santor et al.). Construct validity of the McGill DEQ has been demonstrated through positive correlations between the original subscales of Dependence and Self-criticism for men and women respectively with the new measures of Dependence (McGill) (r = .98 and r = .97) and Self-criticism (McGill) (r = .97 and r = .98), respectively (Santor et al.). For the current study reliabilities were somewhat higher with coefficient alphas at.79 and .81 for Dependence and Self-criticism, respectively.

The PSI-II (Robins et al. 1994) is a 48-item instrument used to measure sociotropy (dependence) and autonomy (self-criticism) in relation to depression; it was used as the second measure of dependence and self-criticism. Sociotropy is defined by the authors as social dependency, the investment in positive interpersonal relationships and consists of three subscales, Concern About What Others Think, Dependency, and Pleasing Others. While Autonomy is defined as the person's investment in increasing his or her own independence and consists of Perfectionism/Self-criticism, Need for Control, and Defensive Separation. Each scale contains 24 items scored on a Likert scale ranging from (1) *strongly disagree* to (6) *strongly agree*. Scores range from 24 to 144 with higher scores indicating a higher level of that construct. For the present study, only the Dependency and Perfectionism/Self-criticism subscales would be utilized for the latent construct of Dependency and Self-Criticism, as these are most related to current study's interest. The internal consistencies for Dependency and Perfectionism/Self-criticism have not been reported, to this author's knowledge, in the published literature. However, the scales from which these subscales are derived (i.e. Sociotropy, Autonomy) demonstrate excellent internal consistency with alphas reported at .90 and .87, respectively (Robins et al. 1994). In addition, the full measure correlated in the expected direction with an Index of Clinical Features (Robins & Luten)

demonstrating construct validity, as well as with depression (Ouimette & Klein, 1993). Both Dependency and Perfectionism/Self-criticism showed adequate reliability in the current study (α = .70).

Depression. The Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977) will be used as one measure of depression. This is a 20-item scale that uses a four-point Likert scale to assess the frequency of depressive symptoms. The scale for each item is as follows: (0) *rarely or none of the time (less than 1 day)* to (3) *most or all of the time (5-7 days).* The scores range from 0 to 60 with higher total scores indicating more frequent depressive symptoms. Radloff reported a coefficient alpha of .85 while Wei, Shaffer, et al. (2005) reported a coefficient alpha of .92 for this measure. The coefficient alpha in the current study was .81. A positive correlation (r = .86) between the CES-D and the Beck Depression Inventory demonstrates convergent validity (Santor et al., 1995).

The Self-Rating Depression Scale (SDS; Zung, 1965) will be used as a second measure of depression. This is a 20-item scale that uses a 4-point scale ranging from (1) *some or a little of the time* to (4) *most or all of the time*. The scale was developed to examine three aspects of depression: pervasive affect, physiological concomitants and psychological concomitants. Half of the items are worded in a positive manner and the others in a negative manner. The range of possible raw scores is from 20 to 80, with higher scores indicating greater depression. Wei, Shaffer, et al. (2005) reported a coefficient alpha of .85 for this measure; a similar alpha level was found in this study (α = .84). Zung reported convergent validity through correlations to other established measures of depression such as the Beck Depression Inventory.

The Depression Anxiety and Stress Scales-Depression Scale Short-Form (DASS-D; Lovinbond & Lovibond, 1995) is a 7-item measure used to assess primary depressive symptoms. Respondents are asked to rate each symptom in regards to their symptom severity over the previous week from (0) *did not apply to me at all* to (3) *applied to me very much, or*

most of the time. Total scores range from 0 to 21 with higher scores indicating higher depression severity. Excellent internal consistency has been demonstrated with a coefficient alpha of .96 reported for the depression subscale (Lovibond & Lovibond) though in the current study the alpha was somewhat lower ($\alpha = .86$). In addition, a test-retest reliability of .71 was reported over a 2-week period (Lovibond & Lovibond). The DASS-D has demonstrated convergent validity through positive correlations with the Beck Depression Inventory (Antony et al., 1998).

Creation of the Measured Variables for the Latent Variables

The ECR scale is a comprehensive scale including all available attachment scales. Therefore, in order to create the latent variables for attachment anxiety and attachment avoidance, I followed the recommendations of Russell, Kahn, Spoth, and Altmaier (1998) to create three parcels for each of the latent variables. Exploratory factor analysis was first conducted for the Anxiety subscale by using the maximum-likelihood method with one single factor extraction. The magnitude of the factor loadings were ranked ordered from highest to lowest and successively assigned triads of items to each of the three parcels from the highest to lowest loadings. This procedure helps ensure an average loading weight for each parcel as equal as possible across three parcels. Then, each of three sets of item parcels were summed together for the three measured variables (observed variables or indicators) for the latent variable of attachment anxiety. The same procedure was used to create three parcels for the latent variable of attachment avoidance.

In addition, the Dependence subscale of the DEQ and the Dependence subscale of the PSI were used as two measured variables for the dependence latent variable. Similarly, the Self-Criticism subscale of the DEQ and the Perfectionism/Self-Criticism subscale of the PSI were used for the self-criticism latent variable. Finally, three measured variables (i.e., CES-D, SDS, and DASS-D-short form) were used for the latent variable of depression.

Procedure

Participant data was collected from Iowa State University's psychology research pool. Participants completed all questionnaires at one time point and received extra credit for their psychology course in exchange for their participation. Before the start of data collection, participants were given an informed consent document indicating the nature of the study and their rights as research participants (see Appendix A). Participants were informed that the purpose of this study was to gain a better understanding of the associations among relationship patterns, personal styles, and mood. Additionally, they were informed that the data collection should take no longer than 50 minutes. Then, they completed the questionnaires, including demographic information (e.g., age, gender, race/ethnicity, year in school and relationship status), the ECR, DEQ, PSI, SDS, CES-D, and DASS-D-short form (see Appendix B). In order to control for order effects, two forms were designed for data collection. Specifically, the order of the scales for one survey form was DASS-D, SDS, PSI, ECR, DEQ, and CES-D while on the other form the order of the scales was ECR, DEQ, CES-D, DASS-D, SDS, and PSI. In addition, two validity check items (e.g., *Please leave this item blank, do not fill in a number*; *Please mark number 9 for this item*) were added to the questionnaire to help ensure participants were following instructions. Participation was voluntary and participants were free to skip any questions or quit the study at any time without repercussion. Data was collected in groups of no more than forty-five participants at one time and were administered by trained undergraduate research assistants. Participants completed all measures using a pencil and Scantron bubble sheet to record their responses to individual items. In order to ensure confidentiality, participants were not asked to put their name or any identifying information on the survey used in this study; any information accidentally placed on study materials was removed by the primary investigator before data analysis. Each questionnaire response was assigned an arbitrary identification number for the purpose of creating a data file. Participants were guaranteed anonymity of □uestionnaire responses and confidentiality of data. After participants completed the survey, they were

thanked for their participation and given a debriefing form (see Appendix C) to provide the researcher's contact information and as well as inform them that free counseling services are available to ISU students at the Student Counseling Service if they experience discomfort or if they have any concerns regarding the experiment.

CHAPTER FOUR: RESULTS

Descriptive Statistics and Preliminary Analyses

Means, standard deviations, and zero-order correlations for the two attachment dimensions (i.e. anxiety and avoidance) and the 13 measured variables (i.e., three anxiety parcels, three avoidance parcels, two dependency variables, two self-critical variables, and three depression variables) are shown in Table 1. Most measured variables demonstrated a statistically significant correlation with the other measured variables. A noted exception to this is the correlation between the dependency and self-critical subscales of the DEQ; these were non-significant (r = -.09) indicating the scales are orthogonal. Additionally, the correlation between the two measures of attachment, while statically significant was low (r = .09), again demonstrating an orthogonal relationship.

A series of *t*-tests were computed to determine if there were order effects among the nine main measured variables (i.e., attachment anxiety, attachment avoidance, three dependence variables, two self-criticism variables and two depression variables). No significant results were found, *t*s (422) = -.31 to1.75, *p*s > .05, indicating that there is no significant difference due to the ordering of the main variables within the two questionnaires types. Therefore, the data from both questionnaire forms were combined for the following analyses.

Next, two MANOVAs were used to examine whether there were significant differences between the nine main variables (i.e., attachment anxiety and avoidance, two dependence variables, two self-criticism variables, and thee depression variables) and two demographic variables (i.e., ethnicity and gender). The results indicated significant differences among different ethnic groups (F [7, 416] = 1.39, p = .02) and between female and male students (F[1, 420] = 11.82, p < .001). Follow-up ANOVAs were conducted to examine which variables' means were different among different ethnic groups. A Bonferroni correction was used to adjust for Type 1 error (i.e., p < 05/9 = .006). The results showed no

variable was different among the different ethnic groups (all *p*s > .05)[1]. The same procedure was used to examine which variables' means were different between female and male students. The results showed statistically significant differences for the PSI dependency scale (male $M = 25.96$; female $M = 29.41$), and the DEQ Dependency scale (male $M = 124.71$; female $M = 138.24$). Because most scales had no differences across different ethnic groups or between female and male students, the data were combined across ethnicity and gender into one data set.

In order to see if the data met the underlying assumption of normality, the data were examined for normality. The results indicated that the data were not normal, $\chi^2 (2, N = 424) = 313.35$, $p < .001$. Therefore, the Satorra-Bentler (1988) scaled chi-square was reported to adjust for the non-normality of the data. Also, the corrected scaled chi-square difference test (Satorra & Bentler, 2001) was used to compare the nested model.

Measurement Model

Anderson and Gerbing (1988) suggested a two-step process for the analysis of structural equation models by first testing the model with confirmatory factor analysis in order to determine the goodness of fit of the measurement model and then secondly testing the structural model. The maximum-likelihood method in LISERL 8.54 was used for the measurement model. Three fit indices were used as suggested by Hu and Bentler (1999) in order to assess the goodness-of-fit for the model: the comparative fit index (CFI; values equal to or greater than .95 indicate an adequate goodness-of-fit to the data), the root-mean-square error approximation (RMSEA; values of .06 or less indicate an adequate fit), and the standardized root-mean-square residual (SRMR; values of .08 or less indicate an adequate fit).

The initial test of the measurement model resulted in a good fit to the data, standard $\chi^2 (56, N = 424) = 221.06$, $p < .001$, scaled $\chi^2 (56, N = 424) = 178.73$, $p = .001$, CFI = .97, RMSEA = .07 (90% confidence interval [CI]: .06; .08), SRMR = .07. All of the factor

loadings were statistically significant ($p < .001$, see Table 2). This implies that all variables were operationalized adequately through their respective indicators. All correlations between the independent latent variables (i.e. attachment anxiety and attachment avoidance), the mediator latent variables (i.e. dependence and self-criticism), and the dependent latent variable (i.e. depression) were statistically significant except for the correlation between dependence and self-criticism ($r = .01$) ($p < .01$; see Table 3). Therefore, the latent variables in the measurement model were used to test the structural model.

Structural Model

The hypothetical structural model (i.e., the partially mediated model, see Model A in Table 4) was tested using the maximum likelihood method in the LISREL 8.54 program (see Figure 1). The results showed a good fit to the data, standard χ^2 (56, $N = 424$) = 221.06, $p < .001$, scaled χ^2 (56, $N = 424$) = 178.73, $p < .001$, CFI = .97, RMSEA = .07 (90% confidence interval [CI]: .06; .08), SRMR = .07. Moreover, in order to examine whether the model is fully or partially mediated by these two mediators, three alternative models were produced and comparisons were conducted. The first alternative model (see Model B in Table 4) constrains the direct paths from attachment anxiety to depression and from attachment avoidance to depression to zero (i.e., the fully mediated model for attachment anxiety and avoidance). When Model A and Model B were compared, the significant result, $\Delta \chi^2$ (2, $N = 424$) = 6.81, $p < .05$, indicated that Model A with these two direct paths is a better model than Model B without direct paths. This indicates that at least one of the constrained paths from Model A is adding significantly to the model, therefore Model A was chosen to be a better model, however it is not clear from this analysis if both paths or just one path is adding significantly to the model. Therefore, comparisons with the other two alternative models were conducted to determine which one of or both of the direct paths contributed significantly to the model. The second alternative model (see Model C in Table 4) constrains the direct path from attachment avoidance to depression to zero (i.e., partially mediated

model for attachment anxiety but fully mediated model for attachment avoidance). The significant result, $\Delta \chi^2 (1, N = 424) = 4.57$, $p < .05$, implies that the direct path from attachment avoidance to depression contributes significantly to the model. Because of the significant direct path, it implies that Model A (i.e., with this direct path from attachment avoidance to depression) is a better model than Model C without this direct path. Finally, the third alternative model (see Model D in Table 4) constrains the direct path from attachment anxiety to depression to zero (i.e., fully mediated model for attachment anxiety but partially mediated model for attachment avoidance). The non-significant result, $\Delta \chi^2 (1, N = 424) = 2.99$, $p > .05$, revealed that the direct path from attachment anxiety to depression did not contribute significantly to the model. Based on the rules of parsimony, Model D (i.e., without the direct path from attachment anxiety to depression) is a better model than Model A without this direct path. Therefore, Model D (see Figure 3) was used in the bootstrap method for examining the significance of indirect effects.

Testing the Significant Levels of Indirect Effects

Shrout and Bolger (2002) suggested a bootstrap procedure for testing the levels of indirect effects by developing an empirical specification of the sample distribution. Using this procedure does not require the sampling distribution to be symmetrical (Efron & Tibshirani, 1993). This bootstrap procedure was utilized in this study in order to test for the statistical significance of indirect effects.

In following with the procedure set forth by Shrout and Bolger (2002) 1,000 samples were first created from the original data set (n = 424) by random sampling with replacement. The structural model was run by utilizing this new sample to yield 1,000 estimations of each coefficient path. Next, an estimate of indirect effects was computed by multiplying the path coefficients (a) from the independent latent variables (i.e., attachment avoidance or attachment anxiety) to the mediator latent variables (i.e., dependence or self-criticism) and then (b) from the mediator latent variables to the dependent latent variable (i.e., depression).

The 95% confidence interval (CI) was used to examine the significant levels of indirect effect estimates. If the 95% CI does not include zero, the indirect effect is considered significant at the .05 level (Shrout & Bolger). The first two rows of the results in Table 5 showed that the first mediation hypotheses were confirmed. As expected, the indirect effect of attachment anxiety on depression through dependence was significant as was the indirect effect of attachment anxiety on depression through self-criticism. Moreover, as can be seen in the last two rows of the results in Table 5, these results also partially supported the second mediation hypotheses. As expected, the indirect effect of attachment avoidance on depression through self-criticism was significant. However, the indirect effect of attachment avoidance on depression through dependence was also found to be significant. Finally, it is important to note that 49% of the variance in dependence was explained by attachment anxiety and attachment avoidance, 27% of the variance in self-criticism was explained by attachment anxiety and attachment avoidance, and 47% of the variance in depression was explained by attachment avoidance, dependence, and self-criticism in the final structural model (see Figure 3).

CHAPTER FIVE: DISCUSSION

Overall, the current results generally support the expected mediation effects demonstrating dependence and self-criticism were significant mediators between attachment anxiety or avoidance and depression. For the first mediator of dependence, the results supported the prediction that dependence would mediate the association between attachment anxiety and depression. Specifically, as expected, the results showed that attachment anxiety was positively correlated to dependence, which is similar to the previous results in the literature (Murphy & Bates, 1997; Reis & Grenyer, 2002; Zuroff & Fitzpatrick, 1995). In attachment theory, the feature of attachment anxiety is the desire of interpersonal closeness and the fear of interpersonal rejection or abandonment (Brennan et al., 1998) as well as a negative internal working model of the self. Therefore, these individuals tend to develop a dependent tendency in order to ensure others' availability and receive enough attention. In the literature related to dependence, Blatt and Homann (1992) also described that dependent individuals often reported being abandoned as children or reported their parent failed to provide the love and acceptance they needed. Mongrain and Zuroff (1995) further reported that dependent individuals tended to focus more of their daily energies on interpersonal goals such as searching for closeness. Those individuals who exhibit these preoccupations may be at greater risk for depression as other areas of functioning are overlooked or as limited satisfaction with these goals is ever achieved; thus the individual is continually frustrated regarding the major focus of their life, have few resources to fall back on, which increases their susceptibility to depression.

To recall from the previous literature review, the association between attachment avoidance and dependence is mixed. Murphy and Bates (1997) indicated a non-significant association for these two variables but Zuroff and Fitzpatrick (1995) reported a weak negative association between attachment avoidance and dependence ($r = -.28$ to $-.17$). Even though dependence was not hypothesized as a mediator between attachment avoidance and

depression, the current results actually supported a significant mediation effect. However, the dynamic of how it is related to depression is different between those with attachment anxiety and those with attachment avoidance. Those with attachment anxiety tend to have the dependent tendency, which in turn increases their vulnerability to depression. However, those with attachment avoidance are actually able to prevent depression by avoiding dependence. This result is consistent with attachment theory. Those with attachment avoidance tend to have a negative internal working model of others (Pietromonaco et al., 2000). Perhaps, as a child, they have learned that others are untrustworthy and as a result they have learned to rely on themselves instead of depending on others in order to prevent hurt or disappointment (Fraley et al., 1998). This result not only confirms the theoretical perspective that avoidance may at times be protective, at least by self-report, but this result also clarifies previously mixed findings in the literature by providing a significant negative association between attachment avoidance and dependence.

For the second mediator of self-criticism, the finding that self-criticism functions as a mediator between attachment anxiety and depression was expected, and yet in many ways a complex relationship to describe. Attachment anxiety is generally related to the desire for close interpersonal relationships, in contrast self-criticism is in part, characterized by a withdrawal from or disinterest in interpersonal relationships (Beck, 1983). These specific aspects of the described dimensions seem to be at odds with each other, however other aspects of self-criticism need to be considered in order to see the full picture. On the one hand, self-criticism includes components of independence, self-reliance, and avoidance of interpersonal intimacy. On the other hand, self-criticism involves a feature of needing approval (Zuroff & Fitzpatrick, 1995) and a negative self-concept (Murphy & Bates, 1997). Zuroff and Fitzpatrick (1995) indicated that those with a self-critical tendency are afraid of being criticized, judged, and humiliated but badly want others' respect, approval, and admiration. As described earlier, attachment anxiety is generally characterized by a need for

approval and a negative internal working model of the self (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Bowlby, 1973, 1979; Pietromonaco et al., 2000). It is in these areas of needing approval and a negative view of the self that seem to be connecting in the relationship seen between attachment anxiety, self-criticism and depression. This positive relationship has been seen in previous research such as that completed by Murphy and Bates (1997).

In addition, the results also supported the hypothesis that the relationship between attachment avoidance and depression is partially mediated by self-criticism. Specifically, attachment avoidance was positively correlated to self-criticism, which is consistent with the previous results (Reis & Grenyer, 2002; Zuroff & Fitzpatrick, 1995). Theoretically, this result appears to be consistent with the literature related to attachment avoidance and self-criticism. Attachment avoidance is theorized to develop as a result of rejecting or unresponsive caregiving in early life (Bowlby, 1980). Therefore, these individuals tend to develop a negative internal working model of others and compulsive self-reliance. Self-criticism may serve as a mechanism through which to persist while striving for achievement or the state of being perfect may be seen as protective in that it may help prevent rejection from others or assists in hiding their sense of being a failure. Unfortunately, self-criticism is likely to increase vulnerability for depression (Murphy & Bates, 1997). Similarly, self-criticism is theorized in the corresponding literature to develop from restrictive, controlling or rejecting parents (Blatt & Homann, 1992). Those with higher tendencies for self-criticism are more likely to "engage in constant and harsh self-scrutiny and evaluation and have a chronic fear of being disapproved and criticized, and of losing the approval and acceptance of significant others" (Blatt & Zuroff, 1992, p. 528). Taken together, it seems that self-criticism (e.g., I am not good enough) is a survival tool for responding to rejecting or unresponsive caregivers by managing the underlying motivation and desire for acceptance or

approval (e.g., If I am good enough, others will accept me). However, those with attachment avoidance appear to pay the price of depression through their self-criticism.

It is important to note that the path from attachment anxiety to depression was fully mediated by the variables of dependence and self-criticism while the path from attachment avoidance to depression was only partially mediated by dependence and self-criticism. These results imply that the relationship between attachment avoidance and depression is more complicated than these variables can account for. Other variables unrelated to dependence and self-criticism might be important factors (e.g., perceived social support) contributing to depression for those with attachment avoidance. One possible variable to investigate is perceived social support. Theoretically, those with attachment avoidance tend to have a negative working model of others (e.g., others won't be available to help me). Maybe, increasing external available resources (e.g., perceived social support) is as important as the internal resources (e.g., avoiding dependence and self-criticism) for these students. If we can provide social support for these students and increase their sense of social support availability, it may decrease the likelihood of developing depression. Vogel and Wei (2005) indicated that attachment avoidance was negatively associated with perceived social support; while perceived social support was negatively related to depression (Barnett & Gotlebb, 1988).

Future Research

In addition to exploring the other mediator for attachment avoidance, Beck (1983) and Blatt (1974) both argued that attachment dimensions are related to the development of dependence and self-criticism, however at the time of this writing, no known research has been published demonstrating this relationship longitudinally. The results of this study further provide evidence of a relationship, but only at one time point. Therefore, future longitudinal research could examine the change over time and attempt to establish stability of this relationship across time. Future research could also investigate types of interventions that

may be useful for individuals struggling with depression as a result of a dependent or self-critical style. One possible intervention idea is to have individuals keep a daily log of their levels of self-criticism, dependence and feelings of depression. Because the college student population often is able to respond to a greater level of awareness of the problem, this self-monitoring may be enough to help foster change in both personal styles and subsequently depression over time. For those whom this monitoring is not enough, the additional information gained from this type of study may assist in the development of more specifically targeted intervention.

Limitations

Despite support for the majority of the hypotheses in this study, there are some important limitations to keep in mind when interpreting the results. The mean age of this adult sample was relatively young (19.45) as it was taken from an undergraduate college population. In addition, the ethnic makeup of the university that the sample was drawn from has put limitations on the diversity of the sample. The majority of the sample was Caucasian (73%); this possibly reduces the generalizability of the results. Previous findings have indicated that attachment dimensions manifest in different ways on negative mood (i.e., depression and anxiety) across ethnic groups within the United States (Wei, Russell, Mallinckrodt, & Zakalik, 2004). While these factors may limit generalizability of the findings, it should be noted that these variables (i.e. dependence and self-criticism) might be especially prevalent in a college student population. College students are in a transition period in their life where previous social support systems have been altered and a new, highly competitive environment has been entered. Those with attachment anxiety are likely to activate their dependent style to ensure adequate support or attention is received during transitional periods (e.g., the first time away from home; friendships being altered) common to the college experience. However, those with attachment avoidance may activate their avoidance of dependence in order to avoid disappointment when new friendships are needed

(e.g. upon moving into the dorm; as established friends graduate). In the same vein, the self-criticism tendency (e.g., strive to be perfect to maintain good standing) is likely to be activated for individuals with attachment anxiety and avoidance when they realize the competition in college is high and automatic success is not guaranteed.

Clinical implications

The results from this study provide valuable information for working with college students with higher levels of attachment anxiety to decrease their depression through managing their levels of dependence and self-criticism. For example, individuals with a dependent tendency might present fears of abandonment and issues of trust in interpersonal relationships as a primary concern in therapy (Blatt, 2004). Therapists may first help the student to become more aware of this tendency (e.g. high need for interpersonal closeness) and how it relates to attachment anxiety (e.g. fears of abandonment). Second, therapists may work with students to explore both the negative outcomes of this tendency (e.g. depression) and the positive underlying purpose (e.g. intimacy needs) and to normalize this experience. Third, therapists can work with students to help them use internal (e.g., depending on self or self-reassurance) or external (e.g., building stable interpersonal relationship) resources to get their needs met. This may be especially important for those high in dependence as often their moods may be dependent on the reactions of others as the self is unable to be regulated through self-care. Through the therapeutic relationship, therapists may provide a corrected emotional experience and facilitate a working through process of the fear of abandonment and develop effective negotiation strategies (e.g., self-empowerment or directly letting others know their needs) to deal with the dependent tendency.

In the same vein, in order to manage self-criticism, therapists can first increase students' awareness of how the quality of attachment (e.g., fear of rejection) may work through self-criticism (e.g., striving to be perfect) to increase depression. Second, therapists may help student's exploration of the positive motivations or psychological needs (e.g.,

others will accept me if I am perfect) as well as negative consequences (e.g., depression) of self-criticism. Third, therapists can help them find alternative strategies (e.g., self-acceptance or self-soothing) to meet their needs instead of using the harmful strategies of self-criticism. Finally, therapists can use a two-chair technique to help them dialogue internally with both their critical voice and their nurturing voice. This dialogue may help students realize they no longer wish to hurt themselves with this critical voice and may learn to recognize it and shut it off.

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FOOTNOTES

[1] Due to the small sample size of the individual minority groups, and additional analyses were conducted which combined all minority groups into one larger group. This combined minority group was then compared with the Caucasian group for all main measures by using ANOVAs. The results from additional ANOVAs indicated no differences were found between combined minority group and Caucasian group among these main variables (*p*s > .10).

Table 1

Means, Standard Deviations, and Correlations Among Two Attachment Dimensions and 13 Observed Variables

	M	SD	B	1	2	3	4	5	6	7	8	9	10	11	12	13
A. Anxiety	65.28	18.25	.09*	.93**	.93**	.93**	.14**	.09	.10*	.42**	.56**	.46**	.39**	.39**	.34**	.32**
B. Avoidance	48.65	18.59	--	.07	.14**	.05	.87**	.96**	.96**	-.24**	-.18**	.27**	.07	.26**	.17**	.18**
1. Anxiety 1	21.62	6.39		--	.81**	.80**	.12**	.07	.09	.40**	.51**	.44**	.36**	.38**	.32**	.30**
2. Anxiety 2	21.14	6.47			--	.80**	.19**	.14**	.14**	.33**	.46**	.46**	.36**	.36**	.30**	.28**
3. Anxiety 3	22.52	6.72				--	.10*	.04	.06	.45**	.56*	.40**	.36**	.36**	.33**	.30**
4. Avoid 1	17.86	4.88					--	.84**	.80**	-.23**	-.15**	.29**	.10*	.24**	.18**	.19**
5. Avoid 2	16.38	6.57						--	.87**	-.25**	-.17**	.27**	.09	.22**	.16**	.17**
6. Avoid 3	16.67	6.54							--	-.20**	-.14**	.27**	.09	.27**	.19**	.19**
7. DEQ-D	132.47	17.05								--	.66**	-.09	.26**	.21**	.15**	.16**
8. PSI-D	27.86	5.61									--	.13**	.39**	.23**	.19**	.20**
9. DEQ-SC	114.71	17.15										--	.56**	.55**	.52**	.51**
10. PSI-SC	15.10	3.62											--	.32**	.31**	.31**
11. SDS	36.38	8.15												--	.72**	.66**
12. CES-D	18.32	5.32													--	.75**
13. DASS-D	10.15	3.42														--

Note. $N = 424$. Anxiety 1, 2, 3 = three parcels from the Anxiety subscale of Experiences in Close Relationships Scale; Avoid 1, 2, 3 = three parcels from the Avoidance subscale of the Experiences in Close Relationships Scale; DEQ-D = Dependence subscale from the Depressive Experiences Questionnaire; PSI-D = Dependence subscale from the Personal Styles Inventory II; DEQ-SC = Self-criticism subscale from the Depressive Experiences Questionnaire; PSI-SC = Self-criticism subscale from the Personal Styles Inventory II; SDS = Self-Rating Depression Scale; CES-D = Center for Epidemiologic Studies – Depressed Mood Scale; DASS-D = Depression subscale from the Depression, Anxiety, and Stress Scale. Higher scores on the Anxiety 1, 2, 3, and Avoid 1, 2, 3 indicate higher levels of attachment anxiety and avoidance. Higher scores on the DEQ-D and the PSI-D indicate higher levels of dependence. Higher scores on the DEQ-SC and the PSI-SC indicate higher levels of self-criticism. Higher scores on the SDS, CES-D, and DASS-D indicate higher levels of depression.

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

Table 2

Factor Loadings for the Measurement Model

Measure and variable	Unstandardized factor loading	*SE*	*Z*	Standardized factor loading
Attachment anxiety				
Anxiety parcel 1	5.76	.24	23.88	.90***
Anxiety parcel 2	5.79	.24	24.52	.90***
Anxiety parcel 3	6.00	.23	26.66	.89***
Attachment avoidance				
Avoidance parcel 1	4.18	.15	27.07	.88***
Avoidance parcel 2	6.05	.22	28.02	.95***
Avoidance parcel 3	5.82	.22	26.52	.91***
Dependence				
DEQ-D	13.93	.80	17.43	.81***
PSI-D	4.43	.26	17.35	.80***
Self-criticism				
DEQ-SC	17.08	.57	29.88	1.00***
PSI-SC	2.00	.17	12.00	.56***
Depression				
SDS	6.65	.34	19.74	.82***
CES-D	4.60	.25	18.74	.87***
DASS-D	2.77	.19	14.57	.83***

Note. N=424. Anxiety 1, 2, 3 = three parcels from the Anxiety subscale of Experiences in Close Relationships Scale; Avoid 1, 2, 3 = three parcels from the Avoidance subscale of the Experiences in Close Relationships Scale; DEQ-D = Dependence subscale from the

Depressive Experiences Questionnaire; PSI-D = Dependence subscale from the Personal Styles Inventory II; DEQ-SC = Self-criticism subscale from the Depressive Experiences Questionnaire; PSI-SC = Self-criticism subscale from the Personal Styles Inventory II; SDS = Self-Rating Depression Scale; CES-D = Center for Epidemiologic Studies – Depressed Mood Scale; DASS-D = Depression subscale from the Depression, Anxiety, and Stress Scale.

*** $p < .001$

Table 3

Correlations Among Latent Variables for the Measurement Model

Latent variable	1	2	3	4	5
1. Attachment anxiety	--	.13**	.61***	.47***	.42***
2. Attachment avoidance		--	-.26***	.28***	.24***
3. Dependence			--	.01	.27***
4. Self-criticism				--	.61***
5. Depression					--

Note. $N = 424$

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

Table 4

Structural Paths, Chi-Square, and Fit Indices Among Different Models

Path coefficients and fit indices	Model A	Model B	Model C	Model D
Attachment anxiety → dependence	.66***	.66***	.66***	.65***
Attachment avoidance → dependence	-.35***	-.33***	-.33***	-.35***
Attachment anxiety → self-criticism	.44***	.44***	.44***	.44***
Attachment avoidance → self-criticism	.23***	.23***	.23***	.23***
Dependence → depression	.39***	.24***	.25***	.28***
Self-criticism → depression	.62***	.60***	.61***	.56***
Attachment anxiety → depression	-.13	--	-.02	--
Attachment avoidance → depression	.18***	--	--	.15**
Standard χ^2	221.06	233.93	233.85	223.69
Scaled χ^2	178.73	185.76	184.98	181.27
df	56	58	57	57
CFI	.97	.96	.96	.97
RMSEA	.07	.07	.07	.07
CI for RMSEA	.06, .08	.06, .08	.06, .08	.06, .08
SRMR	.07	.08	.08	.07
Δ corrected scaled χ^2 (df)		A vs. B	A vs. C	A vs. D
		6.81(2)*	4.57(1)*	2.99(2)

Note. $N = 424$. Boldface type represents best model; dashes indicate that the paths were constrained to zero. Model A = the hypothesized structural model (see Figure 1) in which every structural path was estimated; Model B = the direct paths from attachment anxiety and attachment avoidance to depression were constrained to zero; Model C = the direct path from attachment anxiety to depression was constrained to zero; Model D (the best fit model, see

Figure 3) = the direct path from attachment anxiety to depression was constrained to zero. CFI = comparative fit index; RMSEA = root-mean-square error of approximation; CI = confidence interval; SRMR = standardized root-mean-square residual.

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

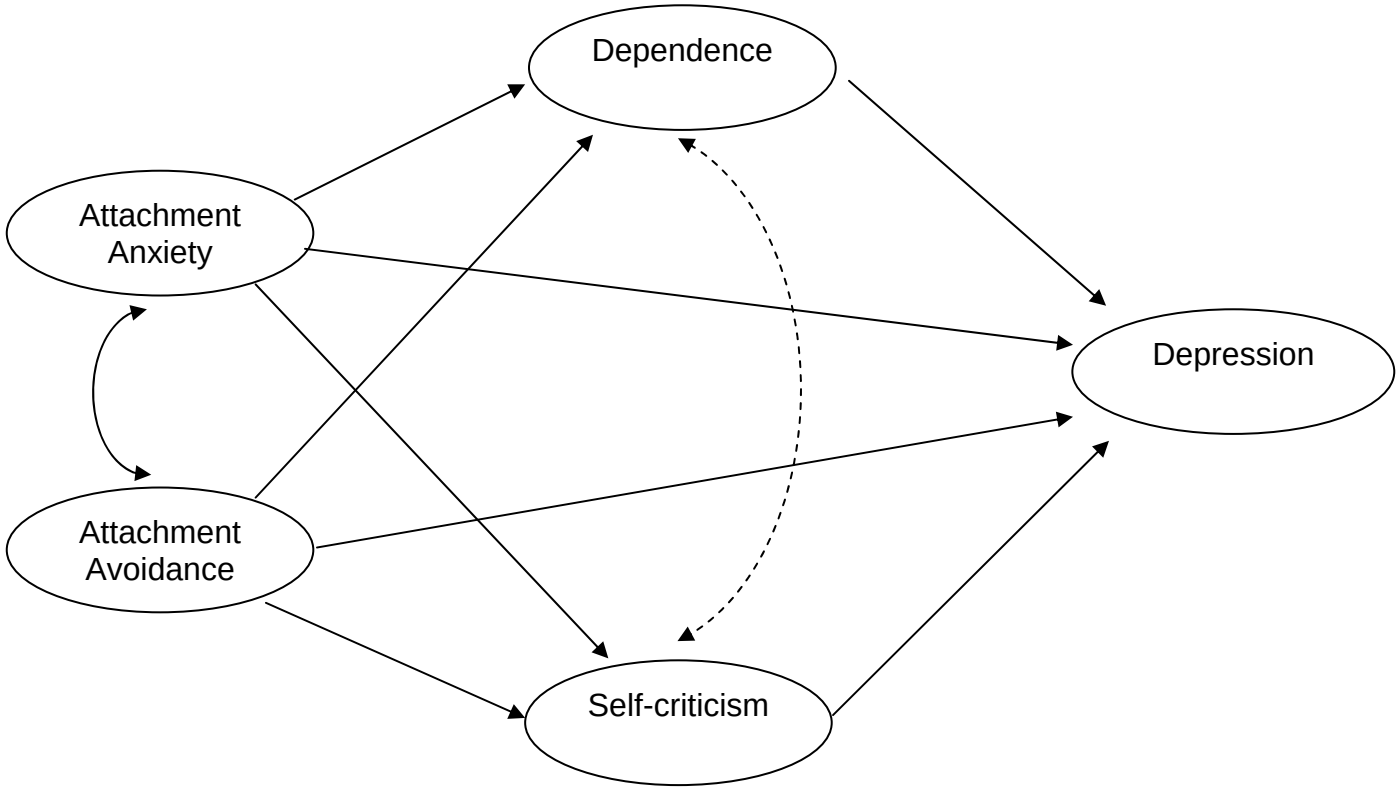
Table 5

Bootstrap Analyses of the Magnitude and Statistical Significance of Indirect Effects

Independent Variable	Mediator Variable	Dependent Variable	β Standardized Indirect Effect	***B*** Mean Indirect Effect	SE of Mean	95% CI Mean Indirect Effect (Lower and Upper)
Attachment Anxiety→	Dependence→	Depression	(.65) x (.28) = .18	0.2120	0.00109	.14, .28
Attachment Anxiety→	Self-criticism→	Depression	(.44) x (.56) = .25	0.2849	0.00117	.21, .36
Attachment Avoidance→	Dependence→	Depression	(-.35) x (.28) = -.10	-0.1576	0.00110	-.23, -.10
Attachment Avoidance→	Self-criticism→	Depression	(.23) x (.56) = .13	0.2030	0.00136	.13, .29

Note. $N = 424$. Confidence intervals which do not contain zero are statistically significant at the $p < .05$ level. All paths were statistically significant at this level.

Figure 1: *Hypothetical Model*

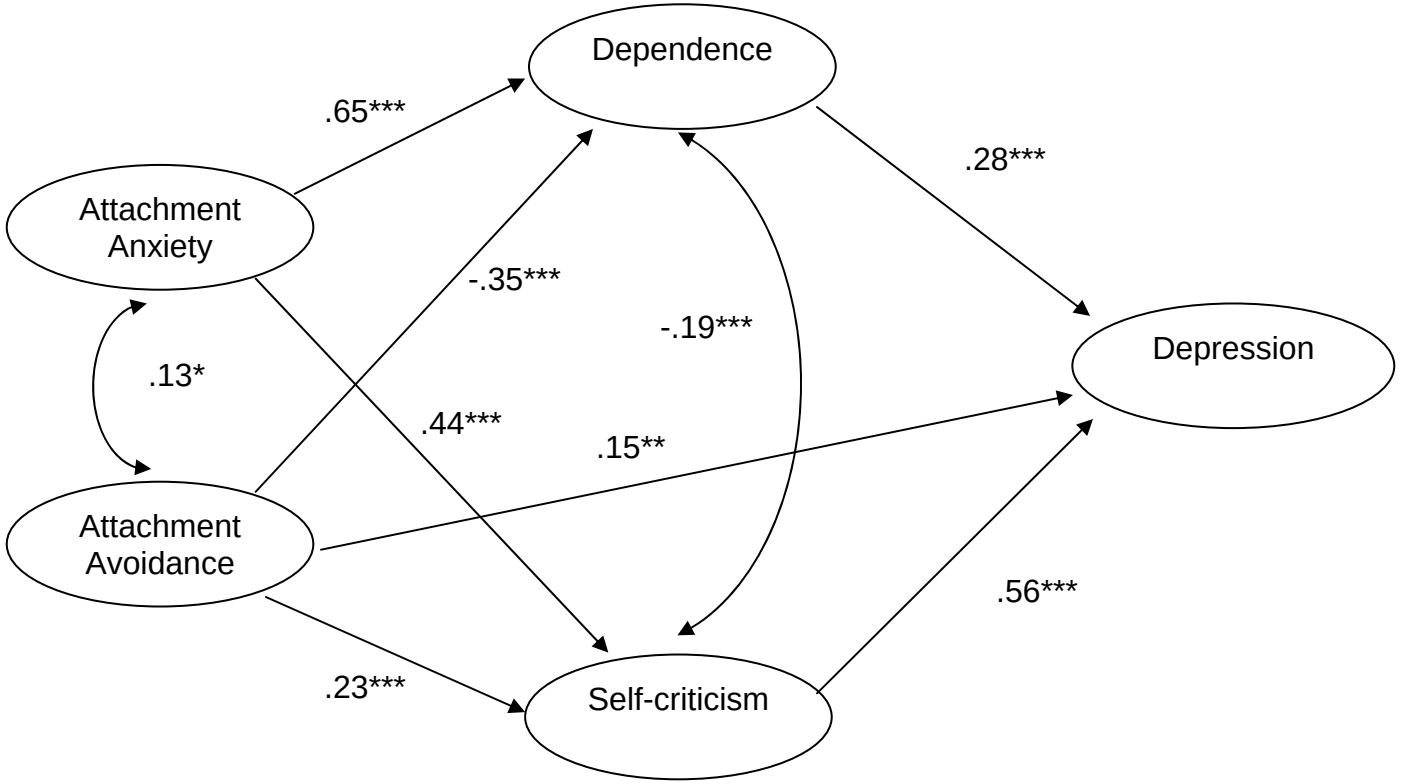


Note: Dashed lines indicate non-significant paths.

Figure 2: *Bartholomew's (1990) Four-category Diagram*

		Model of the Self (Dependence)	
		Positive (Low)	Negative (High)
Model of Other (Avoidance)	Positive (Low)	Secure Comfortable with intimacy and autonomy	Preoccupied Preoccupied with relationships
	Negative (High)	Dismissing Dismissing of intimacy, counterdependent	Fearful Fearful of intimacy Socially avoidant

Figure 3: *Final Mediational Model*



Note: N = 424. *$p < .05$, **$p < .01$, *** $p < .001$

APPENDIX A: INFORMED CONSENT DOCUMENT

Title of Study: Relationships, Personality, and Mood
Investigators: Amy Cantazaro (Principle Investigator), Dr. Meifen Wei, Kelly Yu-Hsin Liao, Tsui-Feng Wu, Lauren Slater, Hima Reddy, Abigail Root, Celeste Marie Kruger, Julia Keleher, Daniel Utterbuck, Lynn Sando, KimAnh Tran, and Alison Ranker

This is a research study. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time. You must be 18 years old to participate in this study.

INTRODUCTION
The purpose of this study is to gain a better understanding of the relationships among relationship patterns, personality, and mood. You are being invited to participate in this study because you are a potential member of the psychology department's research participation pool.

DESCRIPTION OF PROCEDURES
Participation in this research is completely voluntary. If you agree to participate in this study, your participation will last for 50 minutes or less. During the study you may expect to complete a number of surveys about your interpersonal relationship patterns, personality, and mood. You may skip any question that you do not wish to answer or that makes you feel uncomfortable, without receiving any penalty.

RISKS, BENEFITS, COSTS, AND COMPENSATION
While participating in this study you may experience the following risks: some mild personal discomfort when you respond to personal questions related to interpersonal relationship patterns, personality, and mood. If you decide to participate in this study there will be no direct benefit for you. It is hoped that the information gained in this study will benefit society by providing valuable information regarding interpersonal relationship patterns, personality, and mood. If you decide to participate in this study, you will receive 1 research credit. You will not have any costs from participating in this study. You will not be monetarily compensated for participating in this study.

PARTICIPANT RIGHTS
Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide not to participate in the study or leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled.

CONFIDENTIALITY
Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, federal government regulatory agencies and the Institutional Review Board (a committee that

reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information.

To ensure confidentiality to the extent permitted by law, the following measures will be taken. Only the primary investigator and faculty supervisor will have access to the data. The data will be stored on the primary investigator's computer with password protected computer files.

QUESTIONS OR PROBLEMS
You are encouraged to ask questions at any time during this study. For further information about the study contact Amy Cantazaro, 515-294-8126, cantazar@iastate.edu or Dr. Meifen Wei, (515) 294-7534, wei@iastate.edu. If you have any questions about the rights of research subjects or research-related injury, please contact Ginny Austin Eason, IRB Administrator, 1138 Pearson Hall, (515) 294-4566, austingr@iastate.edu or Diane Ament, Director, Office of Research Assurances, 1138 Pearson Hall, (515) 294-3115, dament@iastate.edu
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SUBJECT SIGNATURE
Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the signed and dated written informed consent prior to your participation in the study.

Subject's Name (printed)

(Subject's Signature) (Date)

INVESTIGATOR STATEMENT

I certify that the participant has been given adequate time to read and learn about the study and all of their questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

(Signature of Person Obtaining Informed Consent) (Date)

APPENDIX B: MEASURES

Close Relationships, Personality and Mood

1. Age: _____ The first digit of your age
2. Age: _____ The second digit of your age
   (For example: If you are 19, you should but a 1 in line #1 and a 9 in line #2)
3. Gender: 1 = Male
2 = female

4. Ethnic Identification that Best Describes You:
   1 = Caucasian/White
   2 = African American
   3 = Asian American
   4 = Latino/a American
   5 = Native American
   6 = Multi-racial American
   7 = international student
   8 = Other

5. Year in College
   1 = freshman
   2 = sophomore
   3 = junior
   4 = senior
   5 =graduate
   6 = other

6. Relationship Status:
   1 = single
   2 = in a committed relationship
   3 = married
   4 = divorced
   5 = separated
   6 = widowed
   7 = other

Experiences in Close Relationship Inventory (ECR)

The full ECR scale can be located in the following reference:

Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment theory and close relationships* (pp.46-76). New York: Guilford.

DEQ- Depressive Experiences Questionnaire

Listed below are a number of statements concerning personal characteristics and traits. Read each item and decide whether you agree or disagree and to what extent. If you strongly agree, circle7; if you strongly disagree, circle 1; The midpoint, if you are neutral or undecided, is 4.

1	2	3	4	5	6	7
Strongly disagree	……	……..	Neutral or Undecided	……	……	Strongly Agree

7. I set my personal goals and standards as high as possible.
8. Without support from others who are close to me, I would be helpless.
9. I tend to be satisfied with my current plans and goals, rather than striving for higher goals.

10. Sometimes I feel very big, and other times I feel very small.
11. When I am closely involved with someone, I never feel jealous.
12. I urgently need things that only other people can provide.
13. I often find that I don't live up to my own standards or ideals.
14. I feel I am always making full use of my potential abilities.
15. The lack of permanence in human relationships doesn't bother me.
16. If I fail to live up to expectations, I feel unworthy.
17. Many times I feel helpless.
18. I seldom worry about being criticized for things I have said or done.
19. There is a considerable difference between how I am now and how I would like to be.
20. I enjoy sharp competition with others.
21. I feel I have many responsibilities that I must meet.
22. There are times when I feel "empty" inside.
23. I tend not to be satisfied with what I have.
24. I don't care whether or not I live up to what other people expect of me.
25. I become frightened when I feel alone.
26. I would feel like I'd be losing an important part of myself if I lost a very close friend.
27. People will accept me no matter how many mistakes I have made.
28. I have difficulty breaking off a relationship that is making me unhappy.
29. I often think about the danger of losing someone who is close to me.
30. Other people have high expectations of me.
31. When I am with others, I tend to devalue or "undersell" myself.
32. I am not very concerned with how other people respond to me.
33. No matter how close a relationship between two people is, there is always a large amount of uncertainty and conflict.
34. I am very sensitive to others for signs of rejection.
35. It's important for my family that I succeed.

36. Often, I feel I have disappointed others.
37. If someone makes me angry, I let him (her) know how I feel.
38. I constantly try, and very often go out of my way, to please or help people I am close to.
39. I have many inner resources (abilities, strengths).
40. I find it very difficult to say "No" to the requests of friends.
41. I never really feel secure in a close relationship.
42. The way I feel about myself frequently varies: there are times when I feel extremely good abut myself and other times when I see only the bad in me and feel like a total failure.
43. Often, I feel threatened by change.
44. Even if the person who is closest to me were to leave, I could still "go it alone."
45. One must continually work to gain love from another person: that is, love has to be earned.
46. I am very sensitive to the effects my words or actions have on the feelings of other people.
47. I often blame myself for things I have done or said to someone.
48. I am a very independent person.
49. I often feel guilty.
50. I think of myself as a very complex person, one who has "many sides."
51. I worry a lot about offending or hurting someone who is close to me.
52. Anger frightens me.
53. It is not "who you are," but "what you have accomplished" that counts.
54. I feel good about myself whether I succeed or fail.
55. I can easily put my own feelings and problems aside, and devote my complete attention to the feelings and problems of someone else.
56. If someone I cared about became angry with me, I would feel threatened that he (she) might leave me.
57. I feel comfortable when I am given important responsibilities.
58. After a fight with a friend, I must make amends as soon as possible.
59. I have a difficult time accepting weaknesses in myself.
60. It is more important that I enjoy my work than it is for me to have my work approved.
61. After an argument, I feel very lonely.
62. In my relationships with others, I am very concerned about what they can give to me.
63. I rarely think about my family.
64. Very frequently, my feelings toward someone close to me vary: there are times when I feel completely angry and other times when I feel all-loving towards that person.
65. What I do and say has a very strong impact on those around me.
66. I sometimes feel that I am "special."
67. I grew up in an extremely close family.
68. I am very satisfied with myself and my accomplishments.
69. I want many things from someone I am close to.
70. I tend to be very critical of myself.
71. Being alone doesn't bother me at all.
72. I very frequently compare myself to standards or goals.

Center for Epidemiologic Studies-Depressed Mood Scale (CES-D)

Using the scale below, indicate the number which best describes how often you felt or behaved this way – DURING THE PAST WEEK.

1	2	3	4
Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of the time (3-4 days)	Most or all of the time (5-7 days)

DURING THE PAST WEEK:
73. I was bothered by things that usually don't bother me.
74. I did not feel like eating; my appetite was poor.
75. I felt that I could not shake off the blues even with help from my family or friends.
76. I felt that I was just as good as other people.
77. I had trouble keeping my mind on what I was doing.
78. I felt depressed.
79. I felt that everything I did was an effort.
80. I felt hopeful about the future.
81. I thought my life had been a failure.
82. I felt fearful.
83. My sleep was restless.
84. I was happy.
85. I talked less than usual.
86. I felt lonely.
87.People were unfriendly.
88. I enjoyed life.
89. I had crying spells.
90. I felt sad.
91. I felt that people disliked me.
92. I could not get "going."

Depression, Anxiety, and Stress Scale—short form--Depression Subscales

Please read each statement and mark number 1, 2, 3, or 4, which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

1	2	3	4
Did not apply to me at all	Applied to me to some degree, or some of the time	Applied to me to a considerable degree, or a good part of the time	Applied to me very much, or most of the time

93. I couldn't seem to experience any positive feeling at all.
94. I felt that I had nothing to look forward to.
95. I felt I wasn't worth much as a person.
96. I felt downhearted and blue.
97. I was unable to become enthusiastic about anything.
98. I felt that life was meaningless.
99. I found it difficult to work up the initiative to do things.

Self-Rating Depression Scale (SDS)

Below are twenty statements. Please rate each using the following scale:

1	2	3	4
Some or a little of the time	Some of the time	Good part of the time	Most or all of the time

100. I feel down-hearted, blue, and sad.
101. Morning is when I feel the best.
102. I have crying spells or feel like it.
103. I have trouble sleeping through the night.
104. I eat as much as I used to.
105. I enjoy looking at, talking to, and being with attractive women/men.
106. I notice that I am losing weight.
107. I have trouble with constipation.
108. My heart beats faster than usual.
109. I get tired for no reason.
110. My mind is as clear as it used to be.
111. I find it easy to do the things I used to.
112. I am restless and can't keep still.
113. I feel hopeful about the future.
114. I am more irritable than usual.
115. I find it easy to make decisions.
116. I feel that I am useful and needed.
117. My life is pretty full.
118. I feel that others would be better off if I were dead.
119. I still enjoy the things I used to do.

Personal Styles Inventory II

Here are a number of statements about personal characteristics. Please read each one carefully and indicate whether you agree or disagree, and to what extent, by circling a number.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

120. I often put other people's needs before my own.
121. I tend to keep other people at a distance.
122. I find it difficult to be separated from people I love.
123. I am easily bothered by other people making demands of me.
124. I am very sensitive to the effects I have on the feelings of other people.
125. I don't like relying on others for help.
126. I am very sensitive to criticism by others.
127. It bothers me when I feel that I am only average and ordinary.
128. I worry a lot about hurting or offending other people.
129. When I'm feeling blue, I don't like to be offered sympathy.
130. It is hard for me to break off a relationship even if it is making me unhappy.
131. In relationships, people are often too demanding of one another.
132. I am easily persuaded by others.
133. I usually view my performance as either a complete success or a complete failure.
134. I try to please other people too much.
135. I don't like people to invade my privacy.
136. I find it difficult if I have to be alone all day.
137. It is hard for me to take instructions from people who have authority over me.
138. I often feel responsible for solving other people's problems.
139. I often handle big decisions without telling anyone else about them.
140. It is very hard for me to get over the feeling of loss when a relationship has ended.
141. It is hard for me to have someone dependent on me.
142. It is very important to me to be liked or admired by others.
143. I feel badly about myself when I am not actively accomplishing things.
144. I feel I have to be nice to other people.
145. It is hard for me to express admiration or affection.
146. I like to be certain that there is somebody close I can contact in case something unpleasant
147. It is difficult for me to make a long-term commitment to a relationship.
148. I am too apologetic to other people.
149. It is hard for me to open up and talk about my feelings and other personal things.
150. I am very concerned with how people react to me.
151. I have a hard time forgiving myself when I feel I haven't worked up to my potential.
152. I get very uncomfortable when I'm not sure whether or not someone likes me.
153. When making a big decision, I usually feel that advice from others is intrusive.
154. It is hard for me to say "no" to other people's requests.
155. I resent it when people try to direct my behavior or activities.
156. I become upset when something happens to me and there's nobody around to talk to.
157. Personal questions from others usually feel like an invasion of my privacy.
158. I am most comfortable when I know my behavior is what others expect of me.
159. I am very upset when other people or circumstances interfere with my plans.

160. I often let people take advantage of me.
161. I rarely trust the advice of others when making a big decision.
162. I become very upset when a friend breaks a date or forgets to call me as planned.
163. I become upset more than most people I know when limits are placed on my personal independence and freedom.
164. I judge myself based on how I think others feel about me.
165. I become upset when others try to influence my thinking on a problem.
166. It is hard for me to let people know when I am angry with them.
167. I feel controlled when others have a say in my plans.

APPENDIX C: DEBRIEFING FORM

Thank you very much for your participation in this study. The purpose of the study is to identify whether people with different relationship patterns react differently to their mood due to different personality styles. It is possible that some participants may have experienced mild discomfort from reflecting on questions related to relationship patterns. If you experienced any discomfort, please feel free to contact Amy Cantazaro, cantazar@iastate.edu, or Dr. Meifen Wei, (515) 294-7534, wei@iastate.edu, W214 Lagomarcino Hall, or the Student Counseling Service, 2223 Student Service Building, 3rd Floor, 294-5056. Free counseling is available at the Student Counseling Service for all ISU students. If you have any questions about the rights of research subjects, please contact Ginny Austin Eason, IRB Administrator, 1138 Pearson Hall, (515) 294-4566, austingr@iastate.edu or Diane Ament, Director, Office of Research Assurances, 1138 Pearson Hall, (515) 294-3115, dament@iastate.edu.