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# Assessing Adult Attachment Using the Dynamic Maturation Model: Exploring a Novel Measure

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Assessing Adult Attachment Using the Dynamic Maturational Model:

Exploring a Novel Measure

by

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Presented to the Faculty of the

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George Fox University

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September 28th, 2016

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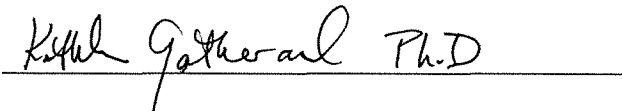
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**Abstract**

The Adult Attachment Interview (AAI) is perhaps the most widely used and best-known assessment tool for assessing adult attachment. Several methods for scoring and coding the AAI exist; the Dynamic Maturation Model of Attachment and Adaptation (DMM) offers one theoretical perspective that accounts for the dynamic nature of attachment in high-risk populations, and incorporates contemporary information processing theory (Crittenden, 2015a). Despite the AAI's empirical and clinical power, its utilization in both clinical and research practice is time consuming and costly. Conversely, most self-report questionnaires are readily accessible, cost effective, and time efficient. Nevertheless, there has been concern regarding the psychometric properties of self-report attachment measures, as well as their divergence in theoretical basis from the AAI. The Dynamic Maturation Model Relationship Questionnaire (DMM-RQ) is a brief, categorical self-report measure that was created from the actual discourse of DMM-AAI transcripts; it offers a potential solution to these issues (Crittenden, 1998). The

present study examined the relationship between participants' DMM-AAI classifications and responses on the DMM-RQ in hopes of generating a more economical method of assessing adult attachment rooted in both the DMM and AAI tradition.

A group of 210 adults living in the U.K. completed both the DMM-AAI and the DMM-RQ. Preliminary data analyses suggested that statements on the DMM-RQ are related to DMM-AAI classifications, but not as originally thought (Pace, Crittenden, Bufford, & Smith, 2015). Thus new hypotheses regarding the relationship between the DMM-AAI and DMM-RQ were generated and tested using binomial logistic regression. Results found a significant relationship between statements on the DMM-RQ and DMM-AAI classifications, but the DMM-RQ showed little practical power in predicting DMM-AAI classifications. The current DMM-RQ did not provide assessment of adult attachment that is consistent with the DMM-AAI. It is proposed that the complex DMM-RQ statements be transformed into individual items rated on a seven-point continuum from *strongly disagree* to *strongly agree*. In this way, much more information about participant's attachment styles could be gathered while allowing for independent observations and use of parametric statistics; perhaps the DMM-RQ's predictive power could be enhanced.

Keywords: Attachment, Adult Attachment Interview, Dynamic Maturational Model, Relationship Questionnaire, Personality Assessment, & Developmental Psychology

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## **Chapter 1**

### **Introduction**

Attachment theory offers a comprehensive theoretical framework from which we can understand the origins, development, dysfunction, and repair of human relationships and relational behavior. Since its inception, attachment theory has generated an extraordinary amount of interest and research. Much of this research has been in the area of infant caregiver attachment; however, there has also been a great deal of interest in adult attachment, specifically in the area of assessment and measurement (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). While an exhaustive review of attachment theory and the history of assessing adult attachment is beyond the scope of the present study, a brief review will be presented for the purposes of orienting readers to the current investigation.

#### **The Roots of Attachment Theory**

Bowlby (1958, 1982/1969) originally described the phenomenon of attachment as a behavioral system that comes about as the result of evolution. As a behavioral system, attachment was designed by natural selection to gain and maintain proximity between infants and their caregivers, or *attachment figures* (Cassidy, 2008). Bowlby theorized that through maintaining proximity to their caregiver(s), infants gained a significant evolutionary advantage, as they were protected from harm. Bowlby's theory differed from other prominent developmental theories of the time (e.g., drive-based psychoanalytic theory) as he believed that attachment was not simply a secondary product of more primitive drives but rather a primary

drive in and of itself (Bowlby, 1988). Likewise, Bowlby's method of investigation for examining the origins of psychopathology strayed from the psychoanalytic method of investigation that was prominent at that time, as Bowlby adopted an ethological perspective more consistent with other natural sciences. This method entailed studying children and examining how pathology came to exist in a prospective manner, rather than investigating the nature of psychopathology through reconstruction of an adult's childhood from memories, as was common practice in psychoanalysis (Bowlby, 1982/1969, 1984, 1988).

Another of Bowlby's contributions was his emphasis on the importance of mental representations, or internal working models (Cassidy, 2008). These internal cognitive processes refer to children's ability to form expectations regarding whether their caregivers will be present, absent, or inconsistently present when needed based on their past experiences with caregivers (Bowlby, 1982/1969). Likewise, internal working models provide a set of rules for what information, both cognitive and affective, is safe to express and acknowledge to one's self and one's attachment figure(s) (Bowlby, 1988). In other words, the concept of internal working models describes how parents' actions and ways of constructing reality can come to shape their children's internal cognitive processes. Bowlby felt that experience with their *attachment figure(s)* is central to human functioning, not only in infancy and childhood, but throughout the life-span (Bowlby, 1980). Bowlby conceptualized early attachment experiences as setting a *pathway*, which, while influential in regards to one's personality development, is also subject to alteration (Bowlby, 1973).

Mary Ainsworth, who worked alongside John Bowlby, greatly expanded attachment theory through both her own theoretical contributions and her empirical work within attachment

theory. Arguably, Ainsworth's most notable contributions to attachment theory came in the form of her study of individual differences in attachment through the implementation of the Strange Situation experiment with 11-month-old infants. In a laboratory setting, Ainsworth and her colleagues observed the process of separation and reunion between mothers and their infants with intermittent exposure to a stranger (Ainsworth & Bell, 1970; Ainsworth, Blehar, Waters, & Wall, 1978; Stayton & Ainsworth, 1973). Ainsworth's observations from the Strange Situation led to her description of three attachment classifications derived from infant mother observation: Type A, Type B, and Type C, which were subsequently labeled respectively as *avoidant*, *secure*, and *ambivalent* by others (for infancy only). Infants classified as Type B in the Strange Situation displayed distress when separated from their mother, but were easily reassured and soothed upon reunion. Conversely, Infants classified as Type A, showed little to no distress or excitement when separated from their mothers or when later reunited. Finally, infants in Ainsworth's third classification, Type C, displayed a pattern of distress when separated from their mothers and then a fluctuation between seeking closeness from the mother and rejection of the mother upon reunion (Ainsworth et al., 1978).

Through her work with the strange situation, Ainsworth concluded that the quality of communication between infant and mother was an essential factor that differentiated between Type B infant mother dyads and Type A and C (*avoidant & ambivalent*) dyads (Wallin, 2007). For example, Type B infants have been shown to have attuned mothers (Main, 1995), thus it is reasonable for them to expect an empathic loving response from their mother. This may allow Type B infants to express a range of affect and cognition that accurately represents their internal state with knowledge that their caregivers will respond in an empathic fashion. Conversely, Type

A and Type C infants may have mothers who are not attuned to their needs, or are so only inconsistently, thus they adapt their methods of communicating to what will provide them with the most safety given their caregiver's method of communication.

### **The Dynamic Maturational Model of Attachment and Adaptation (DMM)**

Attachment in early childhood has been heavily explored both theoretically and empirically in the early attachment literature; however, as Bowlby (1973) stated, attachment is a developmental *pathway* that unfolds across the life-span, not a set trajectory formed in infancy. This *pathway* is certainly not free of obstacles and alterations, thus one of the most significant augmentations to attachment theory comes in the form of the Dynamic Maturational Model of Attachment and Adaptation, or DMM (Crittenden, 1999, 2002, 2006, 2015a, 2015b, 2015c, 2015d; Crittenden & Dallos, 2009).

The DMM posits that attachment is a process by which individuals develop predictable ways of processing information based on both exposures to danger, and the process of life-long developmental maturation (Crittenden, 1999, 2000). As individuals progress in age and psychosocial development, new dangers and developmental tasks are encountered. These new dangers and tasks require the individual to adapt their method of information processing in order to generate new strategies for both self-protection and the assurance of reproductive availability (Crittenden, 1999, 2000, 2015a, 2015b, 2015c, 2015d). In this way the DMM extends the theoretical reach of attachment theory beyond infancy and early childhood, offering testable hypotheses about the attachment process across the life-span. As such, the DMM holds close to Bowlby's (1973) concept of attachment as a developmental *pathway*.

In addition to extending the developmental reach of attachment theory, the DMM provides language for considering attachment strategies in terms of information processing. Specifically, the DMM identifies the most basic forms of information processing as: Cognitive information, affective information, and although not explicit in the DMM's classification system, somatic information (Crittenden, 2000, 2015a, 2015b, 2015c, 2015d). As a result of development, one can come to rely preferentially on a mode of information processing: cognition, or affect. Biased information processing may occur involving selective attention to one or two of these processing strategies. Alternatively, one may use all sources of information in a balanced and accurate manner.

The DMM also considers the degree to which incoming information is distorted or transformed (e.g., accurate information processing). According to the DMM, information can be distorted in ways that either heighten or diminish an individual's expectation or perception of danger as a means of self-preservation. With this in mind, attachment as information processing can most basically be visualized as a coordinated plane, consisting of a horizontal dimension, defined by the type of information utilized, cognition (A) or affect (C), and a vertical dimension consisting of the degree to which the incoming information is transformed or distorted (see Figure 1). This formulation results in four basic attachment strategies rooted in developmentally-formed patterns of information processing: reliance on cognition (A), reliance on affect (C), an integrated and accurate use of both cognition and affect (B), and an integrated but distorted use of both cognition and affect (A/C).

In DMM notation, an individual's basic attachment strategy is represented by both a letter and a number (e.g., A1, B2, C5, or A6/C7). Within A and C patterns, low numbers (1, 2, etc.)

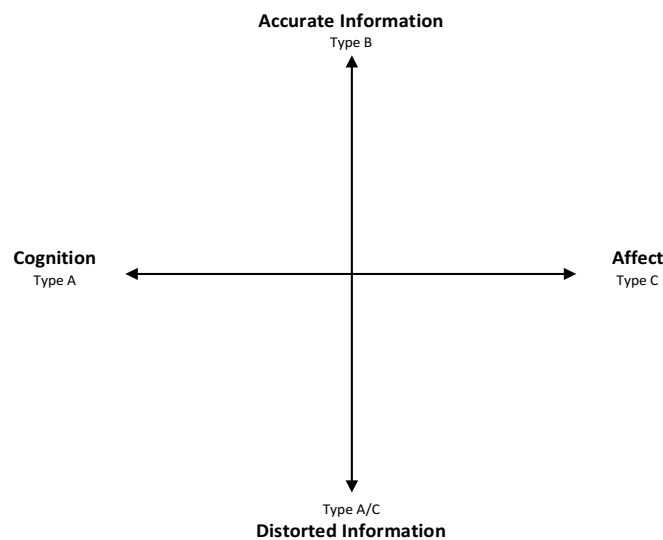


Figure 1. Information Processing Coordinate Plane

*Note:* The horizontal dimension represents the degree to which an individual relies on one source of information (e.g., cognition & affect), while underutilizing or omitting other information. The vertical dimension represents the degree to which the information utilized by an individual is accurate (true to reality) or distorted.

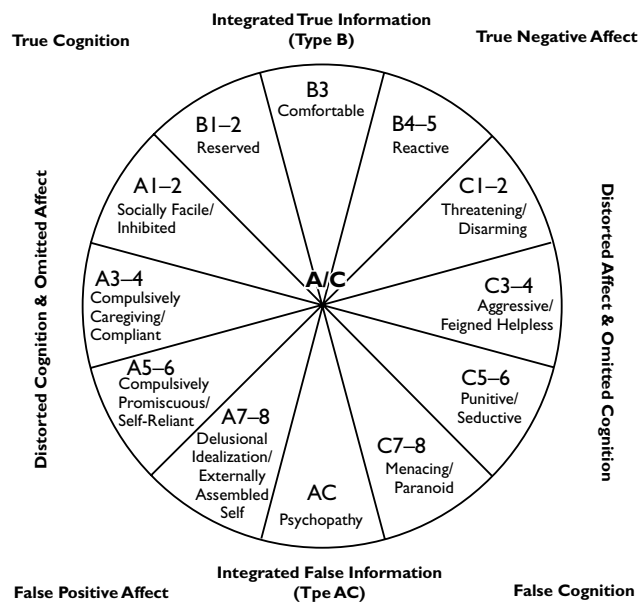


Figure 2. DMM Attachment Strategy Wheel

*Note:* Visual representation of DMM attachment strategies. Originally printed in Crittenden & Dallos, 2009. Reprinted with permission.



signify less distortion of information, while high numbers (7, 8, etc.) signify higher level of distortion and omission of other forms of information (Crittenden, 2000, 2015a, 2015c; Crittenden & Landini, 2011). As for B patterns, B1-2 represents a tendency towards a reliance on cognition, B3 indicates a true balance of information used, and B3-4 represents a tendency towards greater use of affect. Finally, letters and numbers in Type A/C notation represent the patterns of integrated, but distorted cognition (A) and affect (C) that are used in an alternating fashion. Additionally, the DMM has developed useful operationalized descriptions of common patterns of attachment behavior associated with reliance on and omission of certain types of information (see Figure 2, Crittenden & Dallos, 2009). In this way the DMM expands on the Ainsworth model of attachment by offering a multidimensional model that simultaneously considers both the kinds of information utilized and the degree of accuracy or distortion with which it is used.

### **Assessing Adult Attachment: Significance and Process**

Clearly, attachment theory has expanded both theoretically and empirically since its inception. However, despite being originally conceived of as a theory of psychopathology (Mikulincer & Shaver, 2007), the clinical application of attachment theory has often lagged behind its advancement as a developmental and social theory. Nevertheless, there is a growing interest in applying attachment theory clinically, and there is considerable evidence linking disruptions in attachment to psychopathology in both childhood and adulthood (DeKlyen & Greenberg, 2008; Dozier, Stovall-McClough, & Albus, 2008). Correspondingly, recent findings suggest that understanding a patient's attachment strategies may be essential to the therapeutic

process (Håvås, Svarthberg, Ulvenes, & Jurist, 2015; Mikulincer, Shaver, & Berant, 2013; Woodhouse, Schlosser, Crook, Ligiéro, & Gelso, 2003).

Given our growing knowledge of attachment's impact on mental health and mental health treatment, the ability to assess patterns and quality of attachment is essential. However, assessing attachment, especially in adulthood, has proven to be a challenging task. Since the early 1980s multiple theoretical models for assessing adult attachment have come into existence. The current methods of assessing adult attachment are primarily rooted in two different sub-disciplines of psychology: developmental psychology and social psychology (Crowell, Treboux, & Waters, 1999).

Within both the traditions of developmental and social psychology, multiple methods exist for assessing attachment. However, in the tradition of developmental psychology, primarily one assessment tool has been used when examining adult attachment, the Adult Attachment Interview (AAI). Conversely, the field of social psychology has generated numerous self-report measures designed to assess adult attachment, making the choice as to which measure to use a difficult one.

### **The AAI: Main & Goldwyn's Method (M&G-AAI)**

Ainsworth's Strange Situation, which was born out of observational methods utilized in ethology and developmental psychology, was the first standardized method for the assessment of attachment (Ravitz et al., 2010). Although it was designed to assess attachment in children, the observational methodology and follow up studies of the Strange Situation greatly influenced the development of the first assessment tool designed to examine adult attachment, the Adult Attachment Interview (AAI; Hesse, 2008; Main, Kaplan, & Cassidy, 1985). As a semi-structured

interview, the AAI is designed to assess an individual's attachment style through analyzing the unconscious content of a person's discourse during the AAI procedure. Composed of 20 questions, the interview utilizes a pre-structured format where the order of questions, and the follow-up probes used are prescribed. Both the questions themselves, and the manner in which the questions are asked, are designed to activate a person's *attachment system* and to bring forward implicit strategies for managing affect and attention (Hesse, 2008). The participant's responses to the items on the AAI are recorded, transcribed verbatim (including errors), and then analyzed using a specific interpretation method developed by Main and Goldwyn that examines the pattern of responding in an individual's AAI transcript (Main & Goldwyn, 1998). The original scoring system for AAI both expands on Ainsworth's original classification system and remains true to the Type A, Type B, and Type C classification taxonomy initially developed by Ainsworth (Hesse, 2008).

Main and Goldwyn's method of interpreting the AAI (M&G-AAI) has been widely used in the field of adult attachment both clinically and empirically since its creation. As a result, there are a number of empirical studies on the relationship between the M&G-AAI and topics ranging from infant attachment, to distinguishing between clinical and non-clinical populations (see Hesse, 2008). Over all, findings suggest that the M&G-AAI displays adequate psychometric properties. Specifically, the M&G-AAI's validity as measured by the correspondence between parental AAI classifications and infant Strange Situation classifications of their child's attachment status, has been shown to be moderate ( $\kappa = .44$ , Crowell, Fraley, & Shaver, 2008). Likewise, data linking parental AAI responses to infant Strange Situation classifications suggests that the overall coherence of parent AAI transcripts (a signifier of security) is

moderately correlated with infant security ( $r = .48$  for mothers,  $r = .53$  for fathers, Hesse, 2008). Additionally, a lack of attachment security, as measured by the M&G-AAI, has shown correspondence to important clinical syndromes such as depression (Bakermans-Kranenburg, & Van IJzendoorn, 2009), PTSD (Kanninen, Punamäki, & Qouta, 2003), personality disorders (Fonagy et al., 1996), and even psychotic disorders (Tyrrell, Dozier, Teague, & Fallot, 1999).

### **Potential Problems with the M&G-AAI**

Despite its wide-spread usage and evidence for its validity as a measure of attachment, concerns exist regarding the M&G-AAI. Specifically, mother's attachment classifications, as measured by the M&G-AAI, have been shown to account for only a small portion of the variance involved in their child's Strange Situation attachment classification (approximately 22%, see Crittenden & Landini, 2011). Likewise, much of the research with the M&G-AAI has been conducted on low-risk individuals and families, calling into question the clinical utility and contextual relevance of empirical results (van IJzendoorn, 1995). Factors such as these are especially concerning when one considers evidence that attachment is far less stable across generations in high-risk families (Crittenden, Partridge, & Clausen, 1991). Likewise, it has been suggested that the M&G-AAI system may not account for many of the dynamic factors influencing attachment across the life-span, especially in high-risk populations, as the M&G-AAI system is based on Ainsworth's infant classification system, which was developed on a low-risk population (Crittenden & Landini, 2011).

### **Applying the DMM to the AAI: The DMM-AAI**

Given the concerns regarding the utility of the M&G-AAI, the consideration of a new approach to the AAI may be warranted. Applying DMM theory to the AAI potentially addresses

some of the concerns that have been raised regarding the M&G-AAI method. Specifically, DMM offers a perspective that accounts for the dynamic nature of attachment, as it considers the dangers and stressors faced by high-risk families to be essential in understanding the formation of one's attachment strategies (Crittenden, 1999, 2000, 2015a, 2015b, 2015c, 2015d; Crittenden & Landini, 2011; Crittenden et al., 1991). In this way, applying DMM theory to the AAI may address concerns regarding the M&G-AAI's practical utility with high-risk and clinical populations. Additionally, the DMM-AAI incorporates findings from contemporary cognitive science, neuroscience, and information processing theory that may offer a more up-to-date perspective on mental processes (Crittenden & Landini, 2011).

Crittenden and Landini (2011) stated that coding AAIs from the DMM perspective depends on four major sources of information: History of life events, patterns of discourse and memory systems utilized, transformations of information, and discrepancies among memory systems (Crittenden & Landini, 2011). Salient factors regarding personal history, memory systems utilized, and discourse markers found in AAI transcripts are indicative of DMM typologies and sub-patterns (i.e., Type B1-B5, Type A1-A8, & Type C1-C8).

Just as with M&G-AAI, the DMM approach to interpreting the AAI examines unconscious content in a person's AAI discourse. However, as previously noted, the DMM-AAI provides an expanded classification system for AAI profiles that is rooted in the DMM model of attachment and adaptation. This means that specific attention is given to the way a person describes exposures to danger in childhood, how they were or were not comforted/protected by caregivers, strategies that the person uses and has used to manage exposures to perceived or real danger (e.g., reliance on cognition, heightening or minimizing affect, etc.), the memory systems a person

draws on to recall such information (e.g., procedural, episodic, semantic, imaged, somatic), and the integration/coherence of a person's narrative (see Crittenden & Landini, 2011). Through examining these dimensions in AAI transcripts, a person's core strategy for processing and transforming incoming information is discerned.

The DMM-AAI, while relatively new, appears to display strong psychometric properties (for a full review of DMM-AAI psychometric support see Crittenden & Landini, 2011). In a study regarding the transmission of attachment from grandparents and parents to their children, attachment styles of grandmothers and mothers, as measured by the DMM-AAI, displayed correspondence with their child's attachment strategy ( $r^2 = .42$ , Hautamäki, Hautamäki, Neuvonen, Maliniemi-Piispanen, 2010). There is also evidence that DMM-AAI attachment classifications have distinct and related neurocorrelates, as demonstrated by fMRI data gathered on mothers viewing pictures of their own infants as well as unfamiliar infants (Strathearn, Fonagy, Amico, & Montague, 2009). Additionally, dysfunctional strategies in informational and attachment processing as measured by the DMM-AAI have shown to be strongly correlated with clinical syndromes such as eating disorders (Ringer & Crittenden, 2007), trauma related disorders (Crittenden & Heller, 2008, as cited in Crittenden & Landini, 2011), personality disorders (Crittenden & Newman, 2010), depression (Gullestad, 2003), and ADHD (Dallos & Smart, 2011).

### **Challenges in Using the AAI: The Alternative of Self-Report Measures**

While applying DMM principles to AAI discourse analysis may serve as needed theoretical expansion and psychometric enhancement, an issue that remains unaddressed by the DMM-AAI, or any AAI coding method, is the complex and time-consuming processes of learning to

administer, transcribe, and code AAI transcripts (Crittenden, personal communication, 2015).

Training in either the DMM-AAI or the M&G-AAI takes weeks of closely supervised work with a trainer, followed by subsequent reliability training (Crittenden, personal communication, 2015; Hesse, 2008). Additionally, administering and coding the AAI in practice takes hours of work, often making its use for research and clinical purposes impractical. Barriers such as these have contributed to the development and proliferation of the primary alternative to the AAI, self-report measures of attachment.

### **Self-Report Measures**

Differing from the AAI and the developmental psychology tradition of attachment assessment, the adult attachment self-report methodology has its roots primarily in the tradition of social psychology. Despite the common umbrella of social psychology, the self-report methodology of adult attachment assessment contains significant internal theoretical divergence. This divergence is represented by the existence of a few self-report measures with a theoretical basis related to Ainsworth's original conception of attachment (Bartholomew & Horowitz, 1991; Hazan & Shaver, 1987), and with many others relying on a related, but ultimately different theoretical basis, as there is divergence from the original, observational, developmentally rooted tradition of Ainsworth's ABC model of attachment (Crowell et al., 2008).

Evidence suggests that most widely used adult attachment self-reports demonstrate some level of reliability and validity (Crowell et al., 2008, Mikulincer & Shaver, 2007; see Table 1). Hazan and Shaver's (1987) measure represents the first attempt at assessing adult attachment via self report; however, its brief, forced choice, categorical nature led to poor reliability (test-retest:  $r = .40$ , Mikulincer & Shaver, 2007), and low validity (Ravitz et al., 2007). Since the Hazan and

Shaver (1987) measure, more self-report assessments that are longer and based on a Likert-Scale reporting system have been developed. Many of these measures demonstrate good reliability (Chronbach's  $\alpha$  ranging from .69 to .90) and medium to high validity ratings (Ravitz et al., 2007). However, despite this increase in strength and number of self-report based measures of adult attachment, there still are a host of concerns regarding these measures.

### **Issues with Current Self-Report Measures**

Despite their practical utility, just as with the AAI, self-report measures of adult attachment are not without their limitations and concerns. Perhaps the chief concern regarding self-report measures is that evidence suggests that the M&G-AAI and self-report measures do not assess the same attachment constructs (Crowell, Treboux, & Waters, 1999). In a meta-analytic review of AAI and self-report comparison studies, correlations between equivalent attachment constructs purportedly measured by both the AAI and self-report measures displayed small correlations ( $r = .09$ , Roisman et al., 2007). This raises questions about what self-report measures of adult attachment are measuring. An additional psychometric issue of note for self-report measures of adult attachment is face-validity (Crittenden, personal communication, 2015). As individuals' attachment representations are thought to operate on an unconscious level, conscious reflections on their attachment strategies may not be representative of their implicit (or unconscious) attachment strategies (Crowell, Fraley, & Shaver, 2008). Finally, as previously discussed, most self-reports measures abandon Ainsworth's model of attachment altogether; measures created by Hazan and Shaver (1987) and Bartholomew and Horowitz (1990) are two of the few to preserve Ainsworth's tripartite attachment classification system (Crowell, Fraley, & Shaver, 2008).



Table 1

*Self-Report Measures of Attachment & Their Psychometric Properties*

Measure	Author	Type of Measure	Number of Items	Reliability (Mikulincer & Shaver, 2007)	Validity (Ravitz et al. 2010)	Average Reported Convergence With M&G-AAI (Roisman et al., 2007)
Adult Attachment Styles	Hazan & Shaver (1987)	Categorical	3	Test-Retest: $r = .40$	Low	.00
Adult Attachment Questionnaire (AAQ)	Simpson, Rholes, and Philips (1996)	Likert-Scale	13	Cronbach's alpha ranging from .70 to .76	High	.13 (men), -.05 (women)
Adult Attachment Scale (AAS)	Collins & Read (1990) & Collins (1996) - Revised	Likert-Scale	18	Internal Consistency = .85 Cronbach's = .69 to .75	High	AAS = .26
Relationship Questionnaire (RQ)	Bartholomew & Horowitz (1991)	Categorical	4	Kapa = .35 Test-Retest: $r = .50$	Medium	.08 & .25
Relationship Styles Questionnaire (RSQ)	Griffin & Bartholomew (1994)	Likert-Scale	30	No Data Found	Medium	-.04
Experience in Close Relationships (ECR)	Brennan et al. (1998)	Likert-Scale	36	Cronbach's above .90	Strong	.13 & .02

*Note:* Table 1 displays a list of self-report measures of attachment, their psychometric properties, and the amount of shared variance between them and the M&G-AAI. Reliability data was obtained from Mikulincer & Shaver (2007). Validity information was obtained from Ravitz et al. (2010). Validity ratings ranging from low to high are based on Ravitz's (2010) ratings of validity. A low rating corresponds to the measure having only convergent validity with another self-report measure, medium corresponds to having convergent, discriminant, and predictive validity, and high validity corresponds to the same qualities as medium, but with "excellent" performance. Finally, data on each measures shared variance with the M&G-AAI was obtained from Roisman et al. (2007).

It appears that while self-report measures of adult attachment solve the issues of practical utility, questions regarding their construct validity and face validity create additional concerns. With this in mind, there appears to be a gap in our ability to assess adult attachment efficiently and accurately. As such, exploration of new measures and methods is warranted.

### **Utility of the DMM-AAI: The DMM-Relationship Questionnaire (DMM-RQ)**

One potential solution to the issues raised regarding both AAI and self-report methods of assessment is the Dynamic Maturation Model Relationship Questionnaire (DMM-RQ, Crittenden, 1998). The DMM-RQ is a unique, brief, categorical, self-report measure created with the intent of tapping into individuals' attitudes and understanding of themselves in relationships to others. In a similar fashion to other attachment self-report measures, namely the Adult Attachment Styles measure (Hazan & Shaver, 1987) and the Relationship Questionnaire (Bartholomew & Horowitz, 1991), the DMM-RQ is a forced choice, single-response measure that consists of 8 forced-choice alternatives. The DMM-RQ's uniqueness comes from the fact that it is associated with positively worded patterns of discourse (e.g., statements about attachment relationships) which are derived from common statements found in DMM-AAI transcripts. In this way, individual alternatives on the DMM-RQ are designed to match the style of discourse associated with specific DMM sub-patterns (e.g., A1-2, A3-4, A5-6, B, C1-2, C4/6, and C3/5) (Crittenden, personal communication, 2015). Thus, the DMM-RQ encapsulates both the content and structure of the language of individuals whose AAIs were assigned to different classifications. Due to this manner of construction, the DMM-RQ potentially avoids the face-validity and construct validity concerns associated with other self-report assessments.

It is worth noting that during the process of DMM-RQ data collection the DMM classification system was expanded to include Type A7-8 strategies and Type C7-8 strategies. As a result, there are no statements on the DMM-RQ designed to assess these two typologies. It is likely that these strategies will be captured by DMM-RQ statements that assess similar distortions of information within both Type A and Type C strategies respectively (e.g., A5-6, C3/5, & C4/6).

### **Present Investigation: Relationship between the DMM-AAI and RQ**

Previous studies comparing similar self-report measures with the M&G-AAI have found they show little relationship with the AAI (Crowell et al., 1999). As for the DMM-RQ, its relation to the DMM-AAI has been investigated only in a preliminary fashion (Pace, Crittenden, Bufford, & Smith, 2015). Results from this investigation suggested that a relation exists between the two instruments. However, the relation between specific DMM-RQ statements and DMM-AAI code-types did not appear to match what was initially predicted (see Table 2), nor was the relationship between any individual DMM-RQ statements and DMM-AAI classification sub-types strong. It was thought that statements designed to represent the content and structure of the discourse belonging to a specific DMM-AAI code-type cluster would correlate with that same code-type cluster. However, results suggested that this is not the case (Pace et al., 2015). As such, new hypotheses and a new examination of the relation between DMM-AAI DMM-RQ are warranted.

Using the same archival dataset, the ability of DMM-RQ statements to effectively predict DMM-AAI classifications will be further examined. While Pace et al. (2015) excluded 6 participants for responding to more than one DMM-RQ statement, these participants will be

included in the present investigation. Likewise, endorsing multiple statements on the DMM-RQ will be examined as an additional independent variable.

Table 2

*Spearman Correlations Between DMM-AAI Classifications and DMM-RQ Items*

	Type A5-6	Type A3-4	Type A1-2	Type B	Type C1-2	Type C4/6	Type C3/5	Type A/C (8)	Total RQ (N)
RQ 1	<b>.003</b> (2)	-.112 (0)	-.055 (0)	-.028 (1)	-.070 (0)	.107 (2)	.005 (1)	.227* (2)	(8)
RQ 2	-.011 (9)	<b>.057</b> (8)	-.063 (1)	.069 (8)	.064 (4)	-.013 (4)	-.074 (3)	-.079 (1)	(38)
RQ 3	.056 (9)	.071 (7)	<b>.353*</b> (6)	-.055 (4)	-.024 (2)	-.187* (0)	-.141 (1)	.019 (2)	(31)
RQ 4	-.153 (2)	.008 (4)	-.097 (0)	<b>.327*</b> (10)	.241* (5)	-.151 (0)	-.157 (0)	-.020 (1)	(22)
RQ 5	.081 (8)	-.163 (1)	-.104 (0)	-.157 (1)	<b>-.133</b> (0)	.129 (5)	.286* (8)	.047 (2)	(25)
RQ 6	.022 (2)	.237* (4)	-.051 (0)	-.102 (0)	-.065 (0)	<b>-.081</b> (0)	.017 (1)	-.056 (0)	(7)
RQ 7	—	—	—	—	—	—	—	—	(0)
RQ 8	.004 (3)	-.073 (1)	-.069 (0)	-.136 (0)	-.087 (0)	.293* (5)	.123 (3)	<b>-.074</b> (0)	(12)
Total DMM -AAI (N)	(7)	(25)	(35)	(24)	(11)	(16)	(17)	(8)	(143)

*Note.* Table 2 represents Spearman correlations between individual DMM-RQ statements and attachment classification clusters on the DMM-AAI. Numbers in parentheses represent the number of cases in each cell (e.g., the number of participants who endorsed an RQ statement and were classified in that corresponding DMM-AAI cluster). Significant findings are represented in the following fashion: \* =  $p < .05$  (Used with permission from Pace, Crittenden, Bufford, and Smith, 2015).

As the DMM-RQ was designed so that individual statements on the DMM-RQ (e.g., RQ statements 1-8) would be predicative of specific DMM-AAI code type clusters, the data will first analyzed in this fashion. However, initial data analysis demonstrated that relations between statements on the DMM-RQ and specific DMM-AAI code type clusters was small (Pace et al., 2015, see Table 2); thus, the ability of individual DMM-RQ statements to predict DMM-AAI classification on a broader level will be tested here (e.g., Type A, Type B, Type C, Type A/C). Preliminary results also indicated that more than one DMM-RQ statement may be predicative of broad DMM-AAI attachment classifications (Pace et al., 2015, see Table 2). Thus, the ability of multiple DMM-RQ statements that demonstrate a preliminary relation to broad DMM-AAI classifications will also be examined. The following hypotheses were constructed based on the relations between DMM-RQ statements and DMM-AAI classifications found in preliminary analysis.

1. Type A (cognition oriented) attachment strategies will be predicted by endorsement of both RQ 3 and 6
2. Type B (balanced/secure) attachment strategies will be predicted by endorsement of RQ 4
3. Type C (affect oriented) attachment strategies will be predicted by endorsement of both RQ 5 and RQ 8
4. Type A/C (mixed use of distorted affect and cognition) attachment strategies will be predicted by endorsement of RQ 1, and the number of statements responded to, with more statements endorsed being predictive of Type A/C classification.

## **Chapter 2**

### **Methods**

#### **Participants**

The sample for the present study consisted of 212 adults from the United Kingdom. A total of 2 participants were excluded from analysis due to incomplete DMM-AAI results. Of the remaining 210 participants, 206 reported their age, yielding a mean age of 42.1 years old ( $SD = 13.23$ ). Among participants, 121 (57.6%) described themselves as female, and 89 (42.4%) described themselves as male. The racial and ethnic identity of participants was largely homogeneous; 192 (91.4%) of participants identified as white, 7 (3.3%) identified as “other”, and 11 participants (5.2%) did not disclose a racial or ethnic identity.

In regards to marital status, most participants identified themselves as either single or married; 48.6% of participants were married, 33.8% reported being single, 16.6% reported being either separated or divorced, and 2 participants (1%) did not report a marital status. As for socio-economic-status (SES), most participants identified themselves as either middle-class or lower-class; 58.1% reported being lower-class, 30.0% identified themselves as middle-class, 4.3% reported being upper-class, 3.3% reported living in poverty, and 4.3% of participants (9 individuals) did not identify their SES. Finally, in regards to history of mental health treatment, a majority of participants reported having no history of mental health treatment; 61.4% reported no history of treatment, 19% reported currently being in treatment, 16.7% reported previously being in treatment, 0.5% (1 individual) reported involvement with child protective services, and 0.5% (1 individual) was incarcerated at the time of assessment.

Participants were chosen based on convenience sampling, as the administrators of both the DMM-AAI and DMM-RQ were mental health professionals receiving training on the DMM-AAI. Each course member administered the DMM-AAI and the DMM-RQ to three willing participants, one in a clinical setting and two in non-clinical settings. The use of data collected by these AAI administrators qualifies as archival data and its use without identifying information was approved by the British government (U.K. Department of Health, 2011).

### **Procedure**

AAI administrators were given instruction and supervision from Patricia Crittenden on how to administer, score, and code the DMM-AAI. In addition to administering the DMM-AAI, administrators gathered demographic information (age, gender, marital status, number of children, SES, ethnicity, work status, and immigration status), and mental health history information (history of treatment, and any diagnosed mental health conditions). At this time, participants were also administered the DMM-RQ. Data were collected in this manner over the course of 8 years (1997 to 2005) in the United Kingdom.

### **Method of Analysis**

The primary focus of data analysis was on the ability of the DMM-RQ to predict participant's classifications on the DMM-AAI. In order to accomplish this type of analysis, the statistical method of binomial logistic regression was used. Binomial logistic regression allowed for the exploration of the strength of the DMM-RQ to predict attachment classification (Agresti, 2002; Leard Statistics, 2015). This statistical technique provides a level of categorical data analysis which offers more practical information than the initial examination of the correlative relation between the DMM-RQ and DMM-AAI. Through using binomial logistic regression,



information such as the predictive power of individual statements on the DMM-RQ, and the amount of variance accounted for in the resulting predictive models were examined.

### Chapter 3

#### Results

##### **Predicting DMM-AAI Attachment Classification Using a Single Predictor Statement**

The first step in exploring the DMM-RQ as a predictor of attachment as measured by the DMM-AAI was to assess the predictive value of the individual DMM-RQ statements. This was accomplished by means of binomial logistic regression.

Beginning with the DMM-RQ's ability to predict Type A classification, results suggest that utilizing DMM-RQ statement 3 as a predictor of Type A classification produces a statistically significant prediction model,  $\chi^2 = 6.28$ ,  $p < .05$ . The variables included in the model, DMM-RQ statement 3 and a statistical constant, accounted for 4% of the variance in a DMM-AAI Type A classification (Nagelkerke's  $R^2 = .04$ ). The model accurately predicted Type A classification 60.5% of the time. Sensitivity was 35.9%, positive predictive value was 42.1%, specificity was 79.7%, and negative predictive value was 61.4%. Within the regression equation produced, DMM-RQ 3 demonstrated a trivial odds-ratio of 0.46 (see Table 3).

As for the DMM-RQ's ability to predict Type B classification, results from a binomial logistic regression including only DMM-RQ statement 4 as a predictive independent variable, produced a statistically significant predictive model,  $\chi^2 = 11.01$ ,  $p < .001$ . Variables included in the prediction model, DMM-RQ statement 4 and a statistical constant, accounted for 9 % of the variance in DMM-AAI Type B classification (Nagelkerke's  $R^2 = .09$ ). The model accurately predicted Type B classification (or the lack thereof in this case) 82.9% of time. Sensitivity of the

model was 0%, specificity was 100%, positive predictive value was 0%, and negative predictive value was 82.9%. DMM-RQ statement 4 demonstrated a small odds-ratio of 0.28 (see Table 3)

Results for the predication of Type C classification using the endorsement of DMM-RQ statement 8 as a predictor, produced a statistically significant model,  $\chi^2 = 13.69$ ,  $p < .001$ . The total variance accounted for by the variables included in this prediction model, DMM-RQ statement 8 and a statistical constant, accounted for 9% of the variance in a Type C classification (Nagelkerke's  $R^2 = .09$ ). While the model accurately predicted Type C classification 74.3% of the time, it demonstrated low sensitivity (25%), with a positive prediction value of 37.5%. Specificity for the model was 94%, with a negative predictive value of 75.8%. Within the regression equation produced, the variable of DMM-RQ 8 endorsement produced a very small odds-ratio (0.19), while the statistical constant held an odds-ratio of 1.67 (see Table 3).

For the final broad classification of Type A/C, results from a binomial logistic regression produced a statistically insignificant prediction model,  $\chi^2 = 0.046$ ,  $p = 0.83$ . Likewise, the total variance in Type A/C classification accounted for by the variables of DMM-RQ 1 endorsement and a statistical constant was 0% (Nagelkerke's  $R^2 = 0.00$ ). The regression model produced accurately predicted 88.6% of Type A/C classification. However, the sensitivity was 0%, with a positive predictive value of 0%. Specificity was 100%, with a negative predictive value of 88.6%. Finally, both the variable of DMM-RQ 1 and the statistical constant produced small odds-ratio values, 1.18 and 0.11 respectively (see Table 3).

Table 3

Binomial Logistic Regression Predictions of DMM-AAI Categories Using Single DMM-RQ Statements															
RQ Variable	B	SE	Wald	df	p	Odds Ratio	Odds Ratio 95% CI		Model $\chi^2$	Model p	Variance ( $R^2$ )	1	2	3	4
							Low	High							
Type A (Cognition) Using DMM-RQ Statement 3															
Constant	0.32	0.27	1.41	1	0.24	1.38									
Statement 4	-0.78	0.32	6.18	1	0.01	0.46	0.25	0.85	6.28	< .05	0.04	35.9	42.1	79.7	61.4
Type B (Balanced) Using DMM-RQ Statement 4															
Constant	-.75	0.29	6.82	1	0.01	0.47									
Statement 3	-1.28	0.38	11.23	1	0.00	0.28	0.13	0.59	11.01	< .05	0.09	0	0	100	82.9
Type C (Affect) Using DMM-RQ Statement 8															
Constant	0.51	0.42	1.47	1	0.23	1.67									
Statement 8	-1.65	0.46	13.19	1	0.00	0.19	0.78	0.47	13.69	< .001	0.09	25.0	37.5	94.0	75.8
Type A/C (Alternating Strategy) Using DMM-RQ Statement 1															
Constant	-2.20	0.75	8.70	1	0.03	0.11									
Statement 1	0.16	0.78	0.04	1	0.83	1.18	0.26	5.43	0.05	0.83	0.00	0	0	100	88.6

*Note:* The above table contains the prediction models for the four broad DMM-AAI classifications using the single most highly correlated DMM-RQ statement for each classification as a predictor.

**Predicting DMM-AAI Classification Using Multiple Predictor Statements**

As using single DMM-RQ statements to predict broad DMM-AAI classification produced negligible results, the ability of multiple DMM-RQ statements to accomplish this same task was tested. With the exception of Type B prediction, the decision as to which DMM-RQ statements to include as predictors of each broad DMM-AAI type was determined by including only those statements with an observed statistically significant relation to DMM-AAI classifications (see Table 2). In regards to the prediction of Type B classification, all DMM-RQ statements, save statement 7, were included in the binomial logistic regression. This was done so as to examine the overall ability of the DMM-RQ to distinguish between secure and insecure attachment. Additionally, the number of DMM-RQ statements responded to was included as a predictor variable, so as to better understand the significance of multiple responding on the DMM-RQ.

For the prediction of Type A classification, a statistically significant predication model was generated,  $\chi^2 = 19.12, p < .001$ . The variables included in the regression equation, DMM-RQ 3, DMM-RQ 6, and the number of statements endorsed, accounted for 11.7% of the variance in Type A classification (Nagelkerke's  $R^2 = 0.117$ ); 62.9% of participants were correctly classified by the prediction model. Sensitivity of the model was 41.3%, with a positive predictive value of 38.7%. Specificity was observed to be 79.7%, with a negative predictive value of 63.5%. After a Bonferroni correction ( $p = .016$ ) DMM-RQ statement 3 and the number of statements endorsed were found to contribute to the prediction model in a statistically significant fashion ( $p = .016$ ). However, the variables DMM-RQ 3, and the number of statements endorsed displayed small odds-ratio values of 0.36, and 0.58 respectively (see Table 5).

The prediction of Type B classification was examined next. Results from a binomial logistic regression produced a statistically significant prediction model,  $\chi^2 = 15.76$ ,  $p < .05$ . With DMM-RQ statements 1-6, 8, and the number of statements endorsed included as predictor variables, 12% of the variance in Type B classification was accounted for (Nagelkerke's  $R^2 = 0.12$ ). The model was shown to correctly classify 82.9% of participants. Sensitivity was 0%, positive predictive value was 0, specificity was 100%, and negative predictive value was 82.9%. After using a Bonferroni correction to adjust the threshold for statistical significance given the number of variables included in the regression ( $p = .006$ ), no variables were found to contribute in a statistically significant fashion. However, DMM-RQ 6 and 8, while not achieving statistical significance, yielded moderate to large odds-ratios of 2.15 and 4.58 respectively (see Table 4).

The prediction model for Type C classification generated through binomial logistic regression was found to be statistically significant,  $\chi^2 = 23.58$ ,  $p < .001$ . The variables of DMM-RQ statements 4, 5, 8, and the number of statements endorsed, accounted for 15.2% of the variance in Type C classification (Nagelkerke's  $R^2 = 0.152$ ). Using this prediction model, 73.3% of participants were correctly classified. Sensitivity was 21.7%, the positive predictive value was 37.5%, specificity was 94%, and the negative predictive value was 75%. Following a Bonferroni correction ( $p = .013$ ), DMM-RQ statement 8 was found to contribute to the prediction model in a statistically significant fashion (Wald = 10.75,  $p < .001$ ); however, the odds-ratio associated with statement 8 was small (OR = 0.21). While not found to contribute to the prediction model in a significant fashion, DMM-RQ statement 4 and the statistical constant generated odds-ratio values of 1.47 and 3.12 respectively (see Table 6).

Table 4

*Type A (Cognition) Classification Using Multiple DMM-RQ Statements*

RQ Variable	B	SE	Wald	df	p	Odds Ratio	Odds Ratio 95% CI Low High	Model $\chi^2$	Model p	Variance ( $R^2$ )	1	2	3	4
Constant	2.39	0.83	8.34	1	0.00	10.95								
Mult. Resp.	-0.55	0.22	6.63	1	0.01	0.58	0.58 0.88							
Statement 3	-1.03	0.34	9.09	1	0.00	0.36	0.38 0.88							
Statement 6	-1.18	0.62	3.71	1	0.05	0.31	0.09 1.02							
								19.12	< .001	0.12	41.3	38.7	79.7	63.5

Table 5

*Type B (Balanced) Classification Using Multiple DMM-RQ Statements*

RQ Variable	B	SE	Wald	df	p	Odds Ratio	Odds Ratio 95% CI Low High	Model $\chi^2$	Model p	Variance ( $R^2$ )	1	2	3	4
Constant	-3.34	2.13	2.46	1	0.12	0.04								
Mult. Resp.	0.10	0.15	0.01	1	0.95	1.01	0.76 1.35							
Statement 1	-1.28	0.38	11.23	1	0.00	0.28	0.13 0.59							
Statement 2	0.09	0.43	0.04	1	0.84	1.09	0.47 2.54							
Statement 3	0.30	0.46	0.43	1	0.52	1.35	0.55 3.30							
Statement 4	-1.11	0.41	7.40	1	0.01	0.33	0.15 0.73							
Statement 5	0.53	0.62	0.73	1	0.39	1.70	0.51 5.72							
Statement 6	0.76	1.10	0.48	1	0.49	2.15	0.25 18.4							
Statement 8	1.52	1.07	2.01	1	0.16	4.58	0.56 37.5							
								15.76	< .05	0.12	0	0	100	82.9

Note: The above tables contain the prediction model for Type A & Type B DMM-AAI classification using multiple DMM-RQ statements and multiple responding as predictors. The columns labeled 1 through 4 correspond to sensitivity, specificity, and positive/negative predictive values: 1 = Sensitivity, 2 = Pos. Predictive Value, 3 = Specificity, and 4 = Neg. Predictive Value.

Finally, results regarding the prediction of Type A/C classification using DMM-RQ 1 and the number of statements endorsed was found to be a statistically significant model,  $\chi^2 = 16.86$ ,  $p < .001$ . The variables of DMM-RQ statement 1 and the number of statements endorsed accounted for 15.2% of the variance in Type A/C classification. Type A/C individuals were correctly classified 89.5%. Sensitivity was 16.7%, positive predictive value was 16.7%, specificity was 98.9%, and the negative predictive value was 90.2%. Following a Bonferroni correction ( $p = .025$ ), the variable of number of statements endorsed was found to contribute to the prediction model in a statistically significant fashion (Wald = 14.42,  $p < .001$ ). DMM-RQ statement 1 and the variable of the number of statements endorsed generated odds-ratio values of 1.33 and 1.68 respectively (see Table 7).

Overall, adding multiple predictors (e.g., more DMM-RQ statements and multiple responding) led to a strengthening of the prediction models produced. This was seen primarily in the increased amount of variance accounted for in Type A, Type B, Type C, and Type A/C prediction models. Likewise, individual predictor variables included in these multiple predictor models demonstrated stronger predictive power, as evidenced by higher odds-ratio values.



Table 6

*Type C (Affect) Classification Using Multiple DMM-RQ Statements*

RQ Variable	B	SE	Wald	df	p	Odds Ratio	Odds Ratio 95% CI Low High	Model $\chi^2$	Model p	Variance ( $R^2$ )	1	2	3	4
Constant	1.14	0.78	2.14	1	0.14	3.12								
Mult. Resp.	-0.16	0.17	0.93	1	0.34	0.85	0.65 3.33							
Statement 4	0.38	0.42	0.84	1	0.36	1.47	0.65 3.33							
Statement 5	-0.99	0.38	6.63	1	0.10	0.37	0.18 0.79							
Statement 8	-1.55	0.47	10.75	1	0.00	0.21	0.08 0.54							
								23.58	< .001	0.15	21.7	42.9	94.0	75.0

Table 7

*Type A/C (Alternating Strategy) Classification Using Multiple DMM-RQ Statements*

RQ Variable	B	SE	Wald	df	p	Odds Ratio	Odds Ratio 95% CI Low High	Model $\chi^2$	Model p	Variance ( $R^2$ )	1	2	3	4
Constant	-3.26	0.81	16.12	1	0.00	0.04								
Mult. Resp.	0.52	0.14	14.42	1	0.00	1.68	1.28 2.18							
Statement 1	0.28	0.79	0.13	1	0.72	1.33	0.28 6.28							
								16.86	< .001	0.15	16.7	33.3	98.9	90.2

*Note.* The above tables contain the prediction model for Type C & Type A/C DMM-AAI classification using multiple DMM-RQ statements and multiple responding as predictors. The columns labeled 1 through 4 correspond to sensitivity, specificity, and positive/negative predictive values: 1 = Sensitivity, 2 = Pos. Predictive Value, 3 = Specificity, and 4 = Neg. Predictive Value.

## **Chapter 4**

### **Discussion**

The purpose of the present investigation was to examine the ability of a new self-report measure's ability to accurately assess adult attachment. The new self-report measure in question, the DMM-RQ, possesses unique characteristics rooted in the Dynamic Maturational Model of Attachment, and was constructed using actual discourse from AAI transcripts. It was believed that statements on the DMM-RQ, constructed with wording based on common ways of responding on the DMM-AAI, would provide a simplified and more efficient means of assessment. Preliminary findings suggested that patterns of participant endorsement of DMM-RQ statements did not match DMM-AAI classifications in the manner originally theorized; however, a relation between the endorsement of specific statements on the DMM-RQ and DMM-AAI classifications was found (Pace et al., 2015). Utilizing binomial logistic regression, the ability of these statements to predict broad DMM-AAI classifications (e.g., Type A, Type B, etc.) was tested.

At the most basic level, the DMM-RQ's ability to distinguish between balanced (secure) and imbalanced (insecure) attachment strategies was observed to be less than ideal. The prediction models tested in this investigation, while statistically significant, accounted for a small amount of variance in Type B classification, with  $R^2$  values ranging from .09 to .12. This finding suggests that the DMM-RQ is largely equivalent in predictive power to other self-report measures of attachment, as these measures have produced effect-size values ranging from -.05 to

.26 in similar studies (Roisman et al., 2007; See Table 1). Likewise, only two predictor variables, DMM-RQ statement 6 and 8, were observed to have any notable amount of predictive power (odds-ratio values) when predicting Type B classification on the DMM-AAI.

Regarding the prediction attachment classifications outside of Type B (secure/balanced) classification using the DMM-RQ, the DMM-RQ demonstrated only weak predictive characteristics. Although nearly all prediction models generated were statistically significant, the  $R^2$  values for both single and multiple DMM-RQ variable models ranged from .00 to .15, suggesting that the DMM-RQ only accounted for a trivial to marginal amount of variance in Type A, Type C, and Type A/C classification. Likewise, odds-ratio values, as well as specificity and sensitivity statistics, were poor, suggesting that the DMM-RQ possesses little practical significance in predicting DMM-AAI classification.

Overall, the findings from this investigation were largely consistent with those from other studies comparing self-report measures to the AAI (Crowell et al., 1999; Roisman et al., 2007). While it was originally thought that the DMM-RQ may be better able to assess adult attachment in a manner consistent with the AAI, given its method of construction, this appears not to be the case.

Several limitations exist within the present study, some of which may have contributed to the finding that only a small amount of variance is shared between the DMM-RQ and the DMM-AAI. First, like other self-report measures, the DMM-RQ may be unable to tap into the unconscious process being measured by the AAI, as a result of psychometric concerns such as social desirability and face validity. Thus, the DMM-RQ could be measuring something entirely different than the DMM-AAI. Such concerns regarding the ability of self-report measures of

attachment to assess unconscious attachment phenomenon, have been voiced by individuals within the developmental tradition of attachment assessment (Crowell et al., 2008; Crowell et al., 1999). Results from this investigation appear to be at least potentially consistent with this criticism.

Second, the manner in which the DMM-RQ was constructed may contribute to its lack of ability to accurately predict DMM-AAI classification. Modeled after the Hazan & Shaver (1987) measure, the DMM-RQ is a forced choice measure which requires the individual to read eight statements regarding their relational patterns and chose the one statement that best describes them. In addition to being a challenging undertaking for the participant, this task of self-categorization violates the psychometric principle of independence of observation (Laerd Statistics, 2015), as response to each DMM-RQ statement is necessarily dependent upon responses to all of the other statements. As a result, when a statement on the DMM-RQ is endorsed, it is never endorsed in isolation from other statements on the measure. Thus, any decision regarding endorsement of a statement on the DMM-RQ is related to all other statements on the DMM-RQ. This violation of the assumption of statistical independence is cause for concern not only on a practical level, but on a statistical level, as most parametric and non-parametric statistics assume independence of observation when examining data from a measure such as the DMM-RQ. This factor alone may have adversely affected the predictive power of the DMM-RQ.

Third, an additional concern regarding the construction of the DMM-RQ exists, specifically the brevity of the measure as a whole, and the complexity of the statements included in the measure. With the presence of only eight statements, and participants being instructed to

endorse only one statement, the statistical power of the DMM-RQ is severely limited. In effect, it is a single item scale. This limitation may be directly represented by the small amount of variance shared between the DMM-RQ and DMM-AAI classifications, and the finding that few statements demonstrated any level of practical predictive power. Likewise, each statement on the DMM-RQ, in actuality, contains multiple statements regarding relationships. As a result, it is unclear to which statement(s) a participant may be responding to. This further complicates interpretation and any statistical analysis.

Fourth, a lack of standardization across administrations of the DMM-RQ was a limitation within this investigation. As noted previously, some participants endorsed only one DMM-RQ statements, while others endorsed multiple statements. The presence of two differing manners in completing the DMM-RQ task due to a lack of assessment standardization, may have impacted the results in this investigation. However, as the analysis of multiple responding suggests, it may also provide evidence supporting the need to independently appraise responses to the eight DMM-RQ choices.

Finally, a distinct lack of ethnic and cultural diversity was present in the sample of participants utilized in this investigation. Although the intent of the present study was the validation of a psychometric instrument, the lack of cultural diversity in this investigation is cause for concern.

Despite the limitations discussed above, findings from this investigation do have implications not only for the DMM-RQ itself, but potentially for other self-report measures of attachment. As previously stated, findings indicate that the DMM-RQ was found to be a poor predictor of attachment classification on the DMM-AAI. This suggests that the DMM-RQ is

either unable to accurately assess adult attachment, or that it is measuring a phenomenon entirely different from what the DMM-AAI measures. In either case, in its current form the DMM-RQ is at best an inaccurate tool for assessing adult attachment in the same manner that the DMM-AAI does. These findings, and the findings of multiple other studies comparing the AAI to self-report measures of attachment, seem to imply that the process of assessment occurring in either the M&G-AAI or the DMM-AAI is not accurately replicated by a self-report measure. However, it may be that further development of self-report measures of attachment may yet prove useful.

The DMM-RQ is one of the few self-report measures of attachment that is intentionally rooted in AAI discourse. It may be that test construction and psychometric concerns are more to blame for its poor predictive power than an actual lack of an ability to predict DMM-AAI classification. In fact, it was observed that when more DMM-RQ statements were included as predictors of a particular attachment classification, the variance accounted for by the model and the predictive power of the variables included improved. This suggests that increasing the number of statements on the DMM-RQ would likely improve its predictive power; thus, adding additional statements to the DMM-RQ is advised.

An additional improvement that may be made upon the DMM-RQ is to alter the fashion in which individuals respond to each statement on the measure. Rather than endorsing only one statement, participants could be instructed to respond to each statement on a 1 to 7 Likert continuum representing how much they feel each statement characterizes them. This change would likely address multiple areas of concern. First, it would eliminate the issues of multiple-choice and interdependent responding and make the task of self-classification easier for the participant. Second, it would allow for the use of parametric statistics for analysis and eliminate

the issue of a lack of independence of observation. Finally, requiring participants to respond to every statement in a Likert continuum fashion is more consistent with the concept of attachment classification as a continuous phenomenon as opposed to a categorical description.

Given the implications and recommended alterations discussed above, further development and evaluation of the DMM-RQ may be warranted. As noted above, increasing the number of statements and utilizing a Likert-style response form will likely improve the DMM-RQ's psychometric qualities. Thus, a revised version of the DMM-RQ is proposed. This version of the DMM-RQ is a Likert-scale measure that utilizes the original DMM-RQ items; however, each original statement is spliced into the component statements within each original item. Thus, the DMM-RQ Likert-scale (DMM-RQ-L) contains a total of 41 items which participants will be asked to respond to on a 1 to 7 Likert continuum. It is recommended that both reliability and validity testing be conducted on this new measure, with hopes of testing the ability of the DMM-RQ-L in predicting DMM-AAI classifications. Additionally, it is recommended that the specific and standardized administration procedures be developed for the DMM-RQ-L to ensure that each participant approaches the task of the DMM-RQ-L in the same manner. Finally, any further research conducted using the DMM-RQ or the DMM-RQ-L would benefit from being conducted with a less homogeneous sample so as to increase the generalizability of any findings.

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## Appendix A

### Relationship Questionnaire

Patricia McKinsey Crittenden

Which of the following best describes your experience in love relationships with other people? One response is preferred, but, if more than one answer is necessary to describe your relationships, please rank your responses from #1 (best fitting) to higher numbers that fit less well.

1. \_\_\_\_ I have friends and acquaintances, but love relationships are often disappointing.  
I prefer not to depend on others and am often more comfortable alone.
2. \_\_\_\_ Love takes work. You have to understand the other person's perspective and try to meet their needs. I think I'm pretty good at this and able to work my relationships out.
3. \_\_\_\_ Relationships can give great pleasure and can be smooth and satisfying. Others find me dependable and seek my company. Relationships really haven't been a problem.
4. \_\_\_\_ I find it relatively easy to get close to others and am usually comfortable depending upon them and having them depend on me. I don't often worry about being rejected or about someone getting close to me.
5. \_\_\_\_ Sometimes I get uncomfortable being too close to others because you can't always trust them, so you shouldn't depend on them too much. I get nervous if someone gets too close, or if they want me to be more intimate than I want, or if they want too much from me.
6. \_\_\_\_ I really want to be close to someone, but other people always seem to stay distant. They don't want to get as close as I want. I often worry that my partner doesn't really love me or want to stay with me because I think I value them more than they value me. Sometimes I think other people are just scared of love.
7. \_\_\_\_ I haven't really found the right person, but I don't care because it's them who will miss out. Lots of people just don't know how to be really loving. I've tried, but people just don't appreciate a really faithful partner; they just want to play games.
8. \_\_\_\_ Relationships have been really difficult for me and I've been hurt a lot. It's hard, but I keep trying because I know the right person is there for me and I will find them someday.

Crittenden, 1998. Based on Hazan & Shaver, 1987.

**Relationship Questionnaire – Likert Scale (DMM-RQ-L)**

Patricia McKinsey Crittenden

For each of the following items indicate the degree to which you agree on a continuum from Strongly Disagree = 1 to Strongly Agree = 7.

1. \_\_\_ I have friends and acquaintances,
2. \_\_\_ I find love relationships are often disappointing.
3. \_\_\_ I prefer not to depend on others
4. \_\_\_ I am often more comfortable alone.
  
5. \_\_\_ Love takes work.
6. \_\_\_ Love requires you to understand the other person's perspective
7. \_\_\_ I try to meet the needs of others.
8. \_\_\_ I think I'm pretty good at understanding other's perspectives
9. \_\_\_ I am able to work my relationships out.
  
10. \_\_\_ Relationships can give great pleasure
11. \_\_\_ Relationships can be smooth and satisfying.
12. \_\_\_ Others find me dependable and seek my company.
13. \_\_\_ Relationships really haven't been a problem for me.
  
14. \_\_\_ I find it relatively easy to get close to others
15. \_\_\_ I am usually comfortable depending upon others
16. \_\_\_ I am uneasy having others depend on me.
17. \_\_\_ I don't often worry about being rejected
18. \_\_\_ I am generally comfortable allowing someone to get close to me.
  
19. \_\_\_ Sometimes I get uncomfortable being too close to others
20. \_\_\_ I can't always trust others,
21. \_\_\_ I shouldn't depend on others too much.
22. \_\_\_ I get nervous if someone gets too close,
23. \_\_\_ I become anxious when others want me to be more intimate than I want,
24. \_\_\_ I dislike it when others want too much from me.
  
25. \_\_\_ I really want to be close to someone, but
26. \_\_\_ Other people always seem to stay distant.
27. \_\_\_ Others don't want to get as close as I want.



- 28. \_\_\_ I often worry that my partner doesn't really love me
- 29. \_\_\_ Sometimes I think my partner does not want to stay with me
- 30. \_\_\_ I think I value others more than they value me.
- 31. \_\_\_ Sometimes I think other people are just scared of love.
  
- 32. \_\_\_ I haven't really found the right person,
- 33. \_\_\_ I don't care if I find the right person because it's them who will miss out.
- 34. \_\_\_ Lots of people just don't know how to be really loving.
- 35. \_\_\_ I've tried, but people just don't appreciate a really faithful partner;
- 36. \_\_\_ I often think others just want to play games.
  
- 37. \_\_\_ Relationships have been really difficult for me
- 38. \_\_\_ I've been hurt a lot by others
- 39. \_\_\_ Relationships are hard, but I keep trying
- 40. \_\_\_ I know the right person is there for me
- 41. \_\_\_ I believe I will find the right person someday.

**Appendix B****Curriculum Vitae****Albert Pace**

George Fox University  
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 303-524-5578  
 apace13@georgefox.edu

**Education**

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<b>PsyD Clinical Psychology</b>	George Fox University (APA Accredited) 2018 (expected)
<b>MA Clinical Psychology</b>	George Fox University (APA Accredited) 2015
<b>BS Psychology</b>	Colorado State University 2012

*Dissertation Title:* Assessing Adult Attachment Using the Dynamic Maturation Model:  
 Exploring a Novel Measure - Defended Sept. 28th, 2016

**Current Clinical Practice**

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**Therapist & Psychometrician | Rural Child & Adolescent Psychological Services**  
**(July 2016 - Current)**

- School-Based Mental Health
- As a therapist and psychometrician for Rural Child & Adolescent Psychological Services (RCAPS) I provide psychological services, including therapy, psychological assessment, and systemic intervention, to children & adolescents in multiple rural school settings (K-12).
- Supervisor: Elizabeth Hamilton Ph.D.

**Psychiatric Crisis Consultant | George Fox Univ. Crisis & Consultation Team**  
**(May 2015 - Current)**

- Integrated Emergency Medical Setting
- As a Psychiatric Crisis Consultant for the Crisis and Consultation Team, I provide on-call emergency mental health risk evaluation to the hospitals of Yamhill County Oregon (Providence Newberg Medical Center & Willamette Valley Medical Center).
- The risk evaluation services I provide consist of evaluation of suicidal ideation, homicidal ideation, psychosis, drug/alcohol intoxication, and discerning the necessity for psychiatric hospitalization.
- Supervisors: Mary Peterson Ph.D., Bill Buhrow Psy.D., and Joel Gregor Psy.D.

**Previous Clinical Experience**

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**Therapist | Pacific University Student Counseling Center (August 2015 - June 2016)**

- University Counseling Center
- As a therapist at Pacific University's Student Counseling Center, I provided individual psychotherapy to both undergraduate and graduate students enrolled at Pacific University.
- Additionally, I provided crisis consultation as well as screening for both learning disabilities and ADHD.
- Supervisor: Sandra Doan PsyD

**Therapist | George Fox University | Behavioral Health Clinic (September 2014 - August 2015)**

- Community Mental Health Clinic
- As a therapist at the BHC, I provided low-cost (sliding scale) individual therapy, couples therapy, family therapy, and both personality and cognitive assessment.
- Additionally, I provided urgent mental health services to patients who are referred by the local hospital's (Providence Newberg & Willamette Valley) emergency department.
- Supervisor: Joel Gregor Psy.D. and Kevin Lee M.A.

**Pre-Practicum Therapist | George Fox University (Spring 2014)**

- University Counseling
- As a pre-practicum therapist, I conducted individual therapy with two undergraduate patients for ten sessions.
- Supervisor: Carlos Taloyo Ph.D. & Chloe Ackerman M.A.

**Facilitator & Supervisor | Depression Management, Providence Newberg Medical Group (Fall 2013 & 2014)**

- Outpatient Medical
- As a Depression Management facilitator, I provided psychoeducation to patients regarding depression and its known causes, as well as strategies to allay the effects of depression.
- Additionally, I helped facilitate a therapeutic group consisting of the members of the depression management program.
- I returned the following fall as a supervisor, at which time I provided weekly process oriented supervision to facilitators who were new to the depression management program.
- Supervisor: Tammy Rogers M.D.

**Supervision Experience**

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**4th Year Supervisor | George Fox University (2016 - Present)**

- As a 4th year supervisor, I provided weekly supplemental supervision and oversight to a 2nd-year practicum student working in a school-based mental health setting.

**Cognitive & Intellectual Assessment T.A. | George Fox University (Fall 2015)**

- As a teaching assistant for the cognitive and intellectual assessment course at George Fox University, I provided supervision to students learning the WAIS-IV, WISC-V, WIAT-III, & WRAML-2.

**Teaching Experience**

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**Current**

- **Adjunct Professor | George Fox University, Dept. of Counseling (Spring 2016 - Current)**
  - Courses Taught: GCP 587, Interpersonal Neurobiology and Psychopharmacology
- **Graduate Assistant | George Fox University, Dept. of Clinical Psychology (Summer 2015 - Current)**
  - Courses: Psychodynamic Psychotherapy, Cognitive and Intellectual Assessment, Learning, Cognition, & Emotion, and Statistics.

**Past**

- **Guest Lecturer on Mental Health & Religion | George Fox University, Dept. of Psychology (Fall 2013)**
  - Course: PSY 440, Psychology of Religion - Kelly Chang, Ph.D.
- **Undergraduate Assistant | Colorado State University, Dept. of Psychology (Spring 2012)**
  - Course: PSY 320 Abnormal Psychology - Michale Steger, Ph.D.

**Publications & Professional Presentations**

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**Dissertation**

Pace, A. (2016). *Assessing adult attachment using the Dynamic Maturational Model: Exploring a novel measure*. Dissertation successfully defended on September 28th, 2016.

**Ongoing Projects**

Captari, L., Pace, A., Neal, D., McDermott, H., Hansen, M., Guevara C. (2017). *From the couch to the community: Exploring diverse and culturally relevant applications of psychoanalysis*. Panel presentation submitted for presentation at the American Psychological Association Division 39 annual conference, New York, NY, April 2017

### Peer Reviewed Presentations, Posters, & Symposia

- Shirley, M.A., Fisk, B., Pace, A., Gathercoal, K., Peterson, M., Buhrow, B. (2016). *Health self-efficacy varies as a function of attachment styles*. Poster presented at the Oregon Psychological Association annual conference, Portland OR, May 2016.
- Custer, M., Pace, A., Thurston, N., Dwivedi, K., Fowler, S. (2016). *Psychoanalysis, science, and graduate student identity: A discussion regarding competing demands for psychoanalytic doctoral students*. Symposium presented at the American Psychological Association Division 39 annual conference, Atlanta GA, April 2016
- Pace, A., Song, C., Haskell, N., & Bufford, R. (2016). *Learning psychodynamically: Film, psychoanalysis, and learning psychodynamic theory*. Poster presented at the American Psychological Association Division 39 annual conference, Atlanta GA, April 2016.
- Pace, A., Crittenden, P.M., Bufford, R., & Smith, C. (2015). *Exploring the relation between the DMM-Relationship Questionnaire and the DMM-Adult Attachment Interview*. Poster present at the International Association for the Study of Attachment (IASA) annual conference, Miami FL, November 2015.
- Bufford, R.K., Pace, A., Copeland, B. (2015). *Sexual Development and Dysfunction: A Christian Integrative Perspective Employing the SIT/SPA Model*. Paper presented at CAPS annual conference in Denver CO, April 2015.

### Honors, Awards, and Grants

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#### Scholar | Division 39 (Psychoanalysis) of The American Psychological Association

- The Scholar award is an annual award given to graduate students and early career psychologists who demonstrate interest and promise as psychoanalytic practitioners. Scholars are provided mentorship from a senior psychoanalyst, are given a stipend to travel to Division 39's annual conference, and are offered resources in furthering their psychoanalytic education.

#### Unrestricted Travel Grant | Psi Chi (International Honors Society in Psychology)

- Travel grant awarded to fund the completion and presentation of Pace, Crittenden, Bufford, and Smith's (2015) study on a new measure for assessing adult attachment at the International Association for the Study of Attachment (IASA) in Miami, FL.

#### George Fox University | Special Academic Commendation

- Award for outstanding academic, clinical, and professional contributions to George Fox University's Psy.D. program.

### Professional Memberships

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<b>American Psychological Association</b>	Student Affiliate since 2014
<b>American Psychological Association Division 39 (Psychoanalysis)</b>	Student Affiliate since 2014
<b>Society for the Exploration of Psychoanalysis &amp; Theology (SEPT Local Oregon Chapter)</b>	Member since 2014
<b>Psi Chi (International Honor Society in Psychology)</b>	Member since 2011

### Additional Professional Positions & Experience

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#### APA Division 39 (Psychoanalysis) Graduate Student Committee Member

- Develop and coordinate events to address the concerns and needs of graduate students interested in Division 39 and Psychoanalysis.
- <http://www.apadivisions.org/division-39/leadership/committees/grad-students/index.aspx>

#### Division 39 Events Hosted

- Pace, A., Haskell, N., Song, C. (2015). *Psychoanalysis & Film*. Symposium held at George Fox University.

### Additional Professional Training & Education

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- **APA, Division 39 (Psychoanalysis) – Annual Conference (2016)**
  - *Psychoanalytic Case Study with EEG, MMPI-2, and Rorschach Outcome Data:* Nancy Nancy Thurston Psy.D., Robert Gordon Ph.D., Marie Hoffman Ph.D.
  - *The Synergy Between Research and Clinical Technique in Transference Focused Therapy:* Berry Stern Ph.D., Eric Fertuck Ph.D., Kenneth Levy Ph.D.
  - *Workshop for Graduate Students* - Nancy McWilliams Ph.D.
- **International Association for the Study of Attachment - Annual Conference (2015)**
  - *Constructive Memory & Imagining the Future* - Daniel Schacter Ph.D.
  - *Metallization, Reflective Functioning, & Treatment* - Peter Fonagy Ph.D.
- **Attachment, Neurodevelopment, and Psychopathology – University of Washington (2015)**
  - Introductory Course on the Dynamic Maturational Model of Attachment and Psychopathology – Patricia Crittenden Ph.D.
- **Evidence Based Treatments for PTSD in Veteran Populations: Clinical and Integrative Perspectives – George Fox University Clinical Colloquium (2014)**
  - David Beil-Adaskin Psy.D

- **Northwest Psychological Assessment Conference – George Fox University (2014)**
  - *WISC-V Overview & Demonstration* - Patrick Moran Ph.D.
  - *Woodcock-Johnson-IV* - Stephanie Rodriguez M.A.
  - *Assessing Therapeutic Outcome (ORS, SRS)* - Carlos Taloyo Ph.D.