ABSTRACT

Correspondence between Caregiver Relationship-Specific Attachment Representations
and Child Attachment Representations in Adoptive Dyads

Grace E. Dean, Psy.D.

Mentor: Helen E. Benedict, Ph.D.

This study investigated the relationship between child-specific caregiver attachment representations as measured by the Working Model of the Child Interview (WMCI) and child attachment representations as measured by the Story Stem Attachment Profile (SSAP), using a sample of adopted and foster children in Central Texas. Participants ranged in age from three to nine years and were referred to the study by community mental health providers, private adoption agencies, and the Texas Department of Family and Protective Services (DFPS). The attachment literature suggests that attachment security can be transmitted from one generation to the next in both biologically related and adopted dyads. Thus, it was hypothesized that child attachment representations as measured by the SSAP would correspond to caregiver attachment representations using the WMCI. Analyses were conducted using both the broad SSAP attachment classifications of Secure, Insecure, Disorganized, and Defensive Avoidant, as well as individual story themes subsumed under these categories. While the study did not find evidence to support correspondence between SSAP classification and WMCI classification, exploratory analyses using logistic regression obtained significant results

on a thematic level. Children who were able to acknowledge adult distress in their stories were more likely to have a caregiver who was classified as having a secure attachment on the WMCI, whereas children who disengaged from the story-telling task and/or incorporated bizarre or atypical material in their stories were more likely to have caregivers who were classified as insecurely attached on the WMCI. Furthermore, children who were referred to the study by the Texas DFPS were less likely to have a caregiver who was classified as securely attached to them as compared to children referred from other sources. Younger age and increased length of time in current placement were associated with greater likelihood of having a clinically significant low Security score on the SSAP. Given the sample size limitations of the current study, further research will need to be conducted in order to replicate the results of the exploratory analyses and further characterize the relationship between child attachment representations, caregiver child-specific attachment representations, and relevant demographic factors.

Correspondence between Caregiver Relationship-Specific Attachment Representations
and Child Attachment Representations in Adoptive Dyads

by

Grace E. Dean, B.A., M.S.

A Dissertation

Approved by the Department of Psychology and Neuroscience

_____
Jaime L. Diaz-Granados, Ph.D., Chairperson

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Approved by the Dissertation Committee

_____
Helen E. Benedict, Ph.D., Chairperson

_____
Gary R. Brooks, Ph.D.

_____
Jim H. Patton, Ph.D.

_____
Wade C. Rowatt, Ph.D.

_____
Terrill F. Saxon, Ph.D.

Accepted by the Graduate School
August 2010

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J. Larry Lyon, Ph.D., Dean

Page bearing signatures is kept on file in the Graduate School.

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CHAPTER ONE

Introduction

According to the U.S. Department of Health and Human Services, about 118,000 to 127,000 children are adopted annually in the U.S., and about 40% of these children are adopted from public welfare agencies (U.S. Department of Health and Human Services, 2004). The 2000 U.S. Census estimated that there are 2.1 million adopted children in the U.S. and that they represent about 8% of the total population of children (Kreider, 2003).

Research on adoption outcomes indicates that adoption can be a very effective intervention for these children and may lead to significant improvements in both physical and mental health (Borders, Penny, Portnoy, 2000; van IJzendoorn & Juffer, 2006). However, adoption is far from an easy solution for the children and families involved. Adopted children tend to have significantly higher rates of mental health problems and are more likely to seek mental health services (Borders, et al., 2000; Brodzinsky, 1993; Meltzer, Gatward, Goodman, & Ford, 2003). Furthermore, about seven to 25% of adoptions are disrupted after placement prior to legal adoption and about 1 to 10% dissolve after being legally finalized, resulting in the child's return to foster care (Barth, Berry, Yoshikami, Goodfield, & Carson, 1988; U.S. HHS, 2004).

Thus, there is an increasing need to develop better methods of assessing the needs of these children in order to provide their adoptive parents with a more comprehensive understanding of their adoptive/foster children's needs and how those needs may change over time. Such assessments would allow parents to understand how their adoptive

children's previous experience influences their current experiences and would allow

adoptive parents to maintain realistic expectations for the child and their relationship, all

of which are crucial to stability of the placement (Barth & Berry, 1991; Barth, et al.,

1988; Johnson & Fein, 1991).

One of the major areas of assessment relevant to this population is attachment

security (Johnson & Fein, 1991). The presence of a secure attachment relationship

between the child and his or her primary caregiver has been found to be a major predictor

of positive outcomes in both biological and adoptive caregiver-child dyads. Secure

attachment representations have been linked to improved peer relationships, increased

prosocial behaviors, increased self-confidence, better emotional regulation in the

classroom, and more constructive coping in childhood and adolescence, even after

controlling for the effects of child temperament (Cassidy, 1988; Dykas, Ziv, & Cassidy,

2008; Elicker, Englund, & Sroufe, 1992; Kerns, Abraham, Schlegelmilch, & Morgan,

2007; Matas, Arend, and Sroufe, 1978; Sroufe, Fox, & Pancake, 1983; Waters, Wippman,

& Soufre, 1979). Studies have also shown that secure/autonomous adolescents were less

likely than insecure/dismissing adolescents to be perceived by their peers as aggressive,

shy-withdrawn, and victimized (Dykas, Ziv, & Cassidy, 2008). A longitudinal study

conducted on internationally adopted children from infancy to age seven concluded that

higher attachment security and maternal sensitivity is a significant predictor of better

social and cognitive development, whereas attachment disorganization and infant

temperament interact to result in lower cognitive development and decreased ability to

adjust adaptively to stress and environmental changes (Stams, Juffer, & van IJzendoorn,

2002).

Attachment Theory

According to attachment theory, when infants feel threatened, they are biologically programmed to engage in attachment behaviors focused on increasing proximity to their primary caregiver (Bowlby, 1969, 1973, 1980). Over time and through repeated interactions, the child develops a mental representation, or internal working model, of his or her caregiver and the caregiver's ability to be available, attuned to the child's needs, and capable of meeting those needs (Bowlby, 1973; Bretherton, 1985; George & Solomon, 1999; Main, et al., 1985; Marvin & Britner, 1999). These mental representations in turn inform the child's future expectations, interpretations, and behavioral responses with regards to that caregiver and form the basis of the child's attachment relationship with his or her caregiver. Thus, caregivers who demonstrate the ability to be consistently available and responsive to their child's needs promote the development of a secure attachment relationship with their child. Defensive, distancing, and dismissive caregiving styles tend to promote avoidant attachment relationships. Caregiving styles characterized by fluctuations between excessive closeness and inattentiveness to the child's needs tend to result in ambivalent attachment relationships. Disorganized attachment relationships tend to result when caregivers are so helpless and dysregulated that they have abdicated care of their child. Often children with disorganized attachments have a history of experiencing their caregivers as rejecting, frightening or threatening (Main & Solomon, 1990; Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999; Solomon & George, 1999b). While a few studies have found significant associations between infant-father attachment and infant-mother attachment (e.g. Fox, Kimmerly, & Schaefer, 1991; Steele, Steele, & Fonagy, 1996), the majority of

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the research suggests that attachment security is caregiver specific and independent of the child's attachment security with other caregivers (Braungart-Rieker, Garwood, Powers, & Wang, 2001; Fonagy, Steele, Moran, Steele, & Higgit, 1993; Grossmann & Grossman, 1981; Grossmann, Grossmann, Huber, & Wartner, 1981; Lamb, 1977; Main & Weston, 1981; van Ijzendoorn & De Wolff, 1997). Interestingly, Schoppe-Sullivan, et al. (2006) found that mother-child and father-child attachment tend to be similar for daughters, but not for sons.

Intergenerational Transmission of Attachment

Research on attachment within biologically related parent-child dyads has consistently demonstrated a high level of concordance between the security of the parent's attachment representations and the child's attachment security (e.g. Gloger-Tippelt, Gomille, Koenig, & Vetter, 2002; Main, et al. 1985). Assessment of parent attachment representations during pregnancy has also been found to be predictive of the child's attachment measured at ages ranging from 3 months to 15 months (Benoit & Parker, 1994; Fonagy, et al., 1993; Fonagy, Steele, & Steele, 1991; van IJzendoorn, 1995; Ward & Carlson, 1995). This concordance in attachment has been found to be relatively stable in children up to 6 years of age in a low-risk sample without significant stressors (Gloger-Tippelt, et al., 2002). Furthermore, intergenerational transmission of attachment has also been demonstrated with a three-generation study in which grandmothers' attachment categorization was significantly related to both the attachment categorization of their adult daughters and the attachment security of their grandchildren (Benoit & Parker, 1994). A majority of the research on intergenerational transmission has been conducted on mother-child dyads. The few studies that included father-dyads found that

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the correspondence between father attachment representations and child attachment security, while still significant, is weaker than it is for mother-child dyads (Steele, et al., 1996; van Ijzendoorn, 1995). The means by which attachment security is transmitted across generations continues to be an area of ongoing debate. Current research suggests that parental sensitivity plays a role in the transmission of parental representations to their children (Braungart-Rieker, et al., 2001; Crowell & Feldman, 1988; Haft & Slade, 1989; Pederson, Gleason, Moran, & Bento, 1998; Slade, Belsky, Aber & Phelps,1999). However, a meta-analysis conducted by van IJzendoorn (1995) suggests that that most of the impact of parental representations on child representations is mediated by factors other than parental sensitivity. Thus, there still remains a great deal to be investigated regarding the factors involved in the transmissions of attachment-related representations from parent to child.

Factors Affecting Attachment Stability

Child attachment has been thought to be a relatively stable construct throughout early childhood (Bowlby, 1980; Main, et al., 1985). Indeed, studies have found that within the normal population of middle-class samples without significant stressors, infant attachment classification is stable from 12 months to up to 6 years of age and is predictive of attachment classification at 6 years of age (Gloger-Tippelt, et al., 2002; Main & Cassidy, 1988; Main & Weston, 1981; Owen, Easterbrooks, Chase-Lansdale, & Goldberg, 1984; Sroufe & Waters, 1977; Vaughn, Egeland, Sroufe, & Waters, 1979; Waters, 1978; Waters, Rodrigues, & Ridgeway, 1998). Notwithstanding, it should be noted that stability of attachment has also been shown to be vulnerable to significant life changes and stressors, including maternal depression, maternal anxiety, maternal living

situation, parenting daily hassles, child maltreatment, family functioning during

adolescence, and environmental factors related to lower socioeconomic status (Aber,

Belsky, Slade, & Crnic, 1999; Belksy, Campbell, Cohen, & Moore, 1996; Egeland &

Farber, 1984; Thompson, Lamb, & Estes, 1982; Vaughn, et al., 1979; Vondra,

Hommerding, & Shaw, 1999; Vondra, Shaw, Swearingen, Cohen, & Owens, 2001;

Weinfield, Sroufe, & Egeland, 2000). Thus, while attachment can be conceived of as a

relatively stable construct over time, it is somewhat adaptable and susceptible to major

life changes, particularly those that affect the caregiver's availability and attunement.

<center>*Measurement of Attachment*</center>

Behavioral Observation.

The most frequently used method of assessing security within the caregiver-child

relationship is the Strange Situation Procedure (SSP; Ainsworth, Blehar, Waters, & Wall,

1978; Sroufe & Waters, 1977). This measure was the impetus for research aimed at

identifying the distinct patterns of attachment-related behaviors engaged in by different

infant-caregiver dyads and resulted in the categorizations of these patterns into secure,

insecure-ambivalent, insecure-avoidant, and disorganized (Ainsworth et al., 1978; Main

& Solomon, 1990). These categorizations are based on distinct constellations of infant

behavior in response to a sequence of separations and reunions that occur over the course

of about a half hour. Since its development, this instrument has been extensively

validated and remains a gold standard of measurement of attachment in infants and young

toddlers (Ainsworth et al., 1978; Grossmann, et al., 1981; Lyons-Ruth, Repacholi,

McLeo, & Silva, 1991; Main & Cassidy, 1988; Main & Weston, 1981; Shaw, Owens,

Vondra, Keenan & Winslow, 1996; Vaughn & Waters, 1990; Waters, et al., 1979).

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However, the Strange Situation reaches its limit at around 20 months of age due to the development of cognitive capabilities and coping strategies that allow the child to tolerate separation and thus experience it as less of a threat to their safety and their relationship with their caregiver (Marvin & Britner, 1999; Solomon & George, 1999a). An important part of this development is the growing capability to form mental representations (Bretherton, 1985; Nelson, 1999). These mental representations are akin to Bowlby's internal working models in that they are thought to result from repeated experiences and serve to allow the child to organize learned information and predict future behavior and events based on these representations (Bowlby, 1980; Bretherton, 1985; Main, et al., 1985; Nelson, 1999). Thus, the direction of research on attachment assessment began to shift away from behavioral observation and towards the measurement of attachment-related mental representations (Main, et al., 1985)

Adult Interview

The move towards assessment of the cognitive representations behind attachment security was pioneered with the development of the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1984, 1985, 1996; Main & Goldwyn, 1984, 1998). The AAI is a semi-structured interview in which participants are asked to reflect upon their past experience with their own caregivers and how it has influenced their development. Interestingly, it was found that higher attachment security was related not to more positive childhood experiences, but rather to more coherent and consistent narratives about their experience, regardless of whether that experience was positive or negative (for a review, see Hesse, 1999). The classification system developed by Main and Goldwyn (1984, 1998) discriminates between "secure/autonomous," "dismissing,"

"preoccupied," and "unresolved/disorganized" and has repeatedly been found to correspond to infants classified as "secure," "avoidant," "resistant or ambivalent," and "disorganized/disoriented" respectively, as assessed by the SSP (Hesse, 1999; Main & Hesse, 1990; Steele, et al., 1996; van IJzendoorn, 1995; Ward & Carlson, 1995; Zeanah, Benoit, Barton, Regan, 1993).

However, as previously discussed, child attachment has been found to be relationship specific and independent of their relationships with other caregivers (Fonagy, et al., 1993). As a result, Zeanah and colleagues developed the Working Model of the Child Interview (WMCI), which is a semi-structured interview that parallels the structure and scoring of the AAI (Zeanah, Benoit, Barton, & Hirshberg, 1996). However, while the AAI is designed to elicit the adult's overall attachment style based on their previous experiences with past caregivers, the WMCI assesses the caregiver's current attachment relationship with a particular child by inquiring specifically into the caregiver's observations and experiences related to that child and their relationship. As in the AAI, the interview is scored based on the way the caregiver talks about his or her child and his or her relationship with the child, rather than the content of the narrative. Each interview is assigned an overall classification of "balanced," "disengaged," or "distorted." Interviews with balanced representations are told in a coherent and consistent manner with perceptions of the child and the relationship that are both flexible and detailed. Disengaged narratives are characterized by a lack of emotional investment in the child and tend to be overly generalized, intellectualized, and rigid. Narratives with distorted representations tend to confusing, disorganized, and internally inconsistent. Previous research using the WMCI has found that maternal WMCI classifications of balanced,

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disengaged, and distorted correspond to child SSP classifications of secure, avoidant, and ambivalent, respectively (Zeanah, Benoit, Hirshberg, Barton, & Regan, 1994). Furthermore, WMCI classifications obtained during the third trimester of pregnancy were found to be predictive of child Strange Situation classification one year later and were stable over that year (Benoit, Parker, & Zeanah, 1997). Caregiver classifications of distorted and disengaged were also found to be more common among parents of infants with clinical disorders than matched nonclinical controls (Benoit, Zeanah, Parker, Nicholson, & Coolbear, 1997). Maternal representations based on WMCI classification have found to be predominately stable over time with changes in representation being related to depression, relationship status, income, and maternal abuse status (Theran, Levendosky, Bogat, & Huth-Bocks, 2005).

Narrative Assessment

With regards to the measurement of child attachment representations, there remains the issue of how to measure attachment-related mental representations in children over the age of 2, which is the upper age limit of the SSP. A majority of the assessment instruments currently used with this population and age range are based on parent and school observations of the child's behavior and their interpretations of that behavior. Play-based narrative assessments are unique in their ability to assess the child's representations and internal working models directly. Furthermore, these assessments allow for both verbal and nonverbal communication, which may facilitate the expression of both verbally and nonverbally encoded memories.

Play has long been used clinically as a means of communicating with young children about their world in a medium that is more developmentally appropriate and less

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threatening than direct questioning or interview. However, the use of play in assessment and clinical intervention tends to vary widely among clinicians and settings. Consequently, over the last few decades, researchers have worked on developing a standard set of play-based narrative assessments to facilitate research into the communication of child representations and expectations through play. These narrative assessments typically involve first presenting the child with pictures or enacting a situation with dolls and then requesting that the child tell a story about the pictures or about what happens next in the enacted situation. Currently, the most widely used narrative assessment tool is the MacArthur Story Stem Battery (MSSB) (Bretherton & Oppenheim, 2003; Bretherton, Oppenheim, Buschbaum, & Emde, 1990) which was derived from a combination of the Attachment Story Completion Task (ASCT) (Bretherton, Prentiss & Ridgeway, 1990; Bretherton, Ridgeway, & Cassidy, 1990) and a set of story completion tasks used by Buschbaum and Emde (1990). This assessment involves the use of a standard set of family dolls (mother, father, older sibling, younger sibling, friend) and a few simple props which are used to tell the beginning of the story, or a "story stem," that culminates with some sort of moral or relational dilemma. The child is then instructed to "show me and tell me what happens next" and the child's verbal and nonverbal responses are then transcribed and coded according to one of the various established coding methods that are available (Hodges, Steele, Hillman, & Henderson, 2003; Robinson & Mantz-Simmons, 2003; Robinson, Mantz-Simmons, Macfie, & the MacArthur Narrative Working Group, 1992; Warren, 2003a). The resulting transcripts provide a wealth of information about both the child's experiences and their expectations for themselves, others, and their environment.

As previously mentioned, a number of coding systems are currently available, including the MacArthur Narrative Coding System (MNCS) and the Narrative Emotional Coding (NEC) system (Robinson & Mantz-Simmons, 2003; Robinson, et al., 1992; Warren, 2003a). For the current study, we selected the Story Stem Assessment Profile (SSAP) and its accompanying coding system (see Appendix A for a summary of the story stems used in this battery). The SSAP combines eight story stems from the MSSB with five additional stems, coined the "Little Pig stems," that were designed to evoke story responses related to the child's attachment-related expectations regarding parent-child relationships and whether parents would respond appropriately to children's needs (Hodges, Steele, Hillman, & Henderson, 1998; Hodges, Steele, Hillman, & Henderson, 2003). This battery is particularly useful for the purposes of this proposed study because it was designed by researchers involved in the Thomas Coram Adoption Project in London to study attachment in infant-placed and late-placed adopted children.

Narrative Assessment and Attachment

The MSSB was initially used with middle-class White, pre-school aged children, but has since been translated and used in research with a diversity of populations, including young children in Israel, Switzerland, Germany, Korea, and Finland. Test-retest reliability of narrative assessments has demonstrated stability in content variables related to attachment classification and parental representations, as well as process variables (Scriptedness and Elaboration) over 1 month, 1 year, and 17 month intervals (Cassidy, 1988; Oppenheim, Emde, & Warren, 1997; Waters, et al., 1998). In addition, story stem themes have been found to be significantly related to a number of measures related to emotional adjustment, social behavior, and attachment security (Belden, Sullivan, &

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Luby, 2007; Holmberg, Robinson, Corbitt-Price, & Wiener, 2007; Hubbs-Tait, et al., 1996; Kerns, et al., 2007; Oppenheim, Nir, Warren, & Emde, 1997; Woolgar, Steele, Steele, Yabsley, & Fonagy, 2001).

Of particular interest is the relationship between these story-stem themes and security of attachment. Notably, the MSSB shares a number of similarities with the AAI and the WMCI in that both are semi-structured interviews that require the participant to provide an "emotionally balanced and coherent story that may be seen to represent a resolution to frequently occurring dilemmas in routine family life" (Steele, et al. 2003, p. 188). Furthermore, both are evaluated through the recording of responses and subsequent coding by trained raters.

Given these similarities, it is perhaps not surprising that secure and insecure children and adults share narrative similarities. Children classified as having as secure attachment with their primary caregiver tend to tell stories that openly address issues, are longer, are more elaborate and coherent, and result in resolutions that are positive or benign (Bretherton, Prentiss, et al., 1990; Bretherton, Ridgeway, et al., 1990; Greenberg, DeKlyen, Speltz, & Endriga, 1997; Solomon, George, De Jong, 1995; Waters, et al., 1998). Children classified as having insecure attachments are more likely than children with secure attachments to avoid the core conflict of the story, deny difficulties, produce odd/incoherent responses, and/or demonstrate unusual or violent endings (Bretherton, Prentiss, et al., 1990; Bretherton, Ridgeway, et al., 1990; Cassidy, 1988; Warren, 2003b). More specifically, children with an avoidant attachment relationship to their primary caregiver are more likely to deny difficulties and the importance of the parent-child relationship (Cassidy, 1988; Green, Stanley, Smith, & Goldwyn, 2000; Solomon, et al.,

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1995; Warren, 2003b). Ambivalently attached children are more likely to tell stories that involve frequent digressions and excessive attention to insignificant details (Green, et al., 2000; Solomon, et al., 1995; Warren, 2003b;). Children with a disorganized attachment relationship to their primary caregiver tend to tell stories that are either very constricted or are characterized by uncontrolled and unresolvable danger, depending on whether they have a punitive or caring orientation toward their primary caregiver (Cassidy, 1988; Green, et al., 2000; Solomon, et al., 1995)

Attachment-related thematic differences in story content have also been demonstrated. Themes that are common among securely attached children include pleasurable or realistic portrayals of domestic life, portrayals of children as valuable, trustworthy, and capable of realistically coping with problems, and portrayals of adults as caring and capable of both setting appropriate limits and providing safety, comfort, and protection (Cassidy, 1988; Hodges, Steele, Hillman, & Henderson, 2003; Hodges, Steele, Hillman, Henderson, & Kaniuk, 2005). Themes associated with insecure attachment include aggression, portrayals of adults or children as injured or dead, portrayals of adults as unaware of children's needs or actively rejecting, and situations in which objects or characters are "thrown away" (Greenberg, et al., 1997; Hodges, et al., 2005). Children with avoidant attachments are more likely to exclude adults from the relationship and conflict resolution and portray children as isolated and rejected (Cassidy, 1988; Green, et al., 2000; Warren, 2003b). Children classified as ambivalent are more likely to tell stories with hostile and violent behavior and in which children direct anger towards adults (Cassidy, 1988; Green, et al., 2000; Warren, 2003b). Disorganized children tend to have themes involving abrupt character shifts from being bad to good and/or vice versa

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and child behaviors that are violent, hostile, negative, parentified, disorganized, or bizarre (Cassidy, 1988; Hodges, et al., 2005; Solomon, et al., 1995; Warren, 2003b)

Attachment in Adoptive Dyads

Both research and clinical observation indicate that the development of a secure attachment between the adopted child and their caregiver contributes significantly to the success of the adoptive placement (Barth & Berry, 1991; Dance & Rushton, 2005; Hopkins, 2000; Johnson & Fein, 1991; Lanyado, 2003; McCarty & Waterman, 1999; Stams, et al., 2002; Watson, 1997). However, the data regarding the prevalence of attachment security in adoptive dyads are mixed. Singer, Brodzinsky, Ramsay, Steir, and Waters (1985) found higher incidence of attachment insecurity in different-race adoptive dyads compared to nonadoptive mother-child dyads, but no difference in attachment security between same-race adoptive and nonadoptive mother-child dyads. Dozier, Stovall, Albus, and Bates (2001) found that their sample of foster infants had a higher proportion of disorganized attachment than normal samples. The few studies that have been done on attachment in adults who were adopted seem to suggest that adults who were adopted are less likely to have a secure attachment and more likely to have a insecure attachment than their peers or other age-matched adults (Borders, et al., 2000; Feeney, Passmore, Peterson, 2007). Thus, we still know very little about attachment security in adoptive dyads and much less about how it develops and changes over time.

Not unrelated is the question of the extent to which adoptive caregivers are capable of changing already present internal working models of attachment in their adopted children, particularly in the case of late-placed adoptions. It appears that noticeable differences in attachment security are already evidenced relatively soon after

placement. Steele et al. (2003) found noticeable difference in attachment-related story themes in their sample of 4 to 8-year-old adopted children within 3 months of their placement. Another study of 12-24 month old foster infants found that after 3 months in their new placement, the foster infants demonstrated attachment security consistent with their foster mother's attachment-related mental representations, in spite of previous experiences of abuse, neglect, and the disruption of earlier caregiving relationships (Dozier, et al., 2001). However, the influence of the new placement on attachment security also appears to be influenced by the attachment security of the adoptive caregiver. Adoptive parent pre-placement attachment security classifications were found to be related to their level of attachment to their adopted child 3 months into the placement (Steele, et al., 2007). Infants whose foster mother had insecure attachment representations were more likely to have disorganized attachments than infants whose foster mother had secure attachment representations (Dozier, et al., 2001). In addition, parental despair/lack of satisfaction was found to mediate and moderate the influence of maternal attachment representations on the level of aggressive themes exhibited by the child during a story stem task (Steele, et al., 2007).

Furthermore, as discussed previously in the case of biologically related dyads, attachment within the caregiver-child relationship is the result of the interaction between both caregiver mental representations and child mental representations. The need for assessment of both caregiver and child mental representations is all the more important in the case of adoptive dyads since the adopted child lacks the shared history and heritable components that are present in the case of biologically related dyads. In fact, adopted

children are much more likely to enter their new adoptive relationship with a history of maltreatment and neglect (Steele, et al., 2007).

Narrative Assessment of Adoption and Foster Care Populations

To date, little research has been conducted on the mental representations of adopted children. One major exception is the Thomas Coram Adoption Project, which is a longitudinal study of children adopted from residential and foster care (Hodges, Steele, Hillman, Henderson, & Kaniuk, 2003; Hodges, et al., 2005). Researchers involved in this project looked at changes in attachment representations in infancy-placed and late-placed children, using the SSAP, as well as the relationship between adoptive parent attachment security (as measured by the AAI) and SSAP themes. For the infancy-placed children, the mean age of placement was 3.73 months. The mean placement age for the late-placed group was 6 years and 1 month, and all the children in this group had a history of some form of abuse and often multiple forms of abuse.

Upon initial assessment, the late-placed children were more likely to avoid the story task, show higher levels of extreme aggression, incorporate bizarre and unrelated material, and portray adults as aggressive, rejecting, and unaware of children's needs (Hodges, Steele, Hillman, Henderson, & Kaniuk, 2003). They were less likely to show adults helping children and adults showing children affection. In contrast, the infancy-placed children were less avoidant of the story stem conflicts, demonstrated more themes of realistic mastery, and engaged in more coherent narratives. Assessments conducted one year later found that avoidance behaviors and magical/omnipotent responses decreased in the late-placed groups compared to their responses the previous year (Hodges, Steele, Hillman, Henderson, & Kaniuk, 2003). Portrayals of adults helping

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children and being aware of their needs increased, as did portrayals of limit setting. Subjects showed more instances of children helping children and demonstrating realistic mastery than they did the previous year. Notably, there were no significant changes in levels of catastrophic fantasy, bizarre-atypical responses, and extreme aggression.

After 2 years in their placement, children in both groups continued to demonstrate significant increases in story stem themes related to attachment security; however, the number of story features related to insecure attachment remained relatively stable (Hodges, et al., 2005). Similarly, the sub-group of late-placed children showed significant decreases in defensiveness and avoidance, but consistently demonstrated a relatively stable level of disorganization representations. Again, these children showed increased themes related to adults providing help, appropriate limit setting, and emotional comfort and affection, as well as increases in portrayals of children helping other children, realistic/positive domestic life, and children capable of coping realistically with difficulties. Further exploration of the data indicated that those children who had themes of insecurity and disorganization that remained high or increased over time were the children who had both parents that rated insecure on the AAI prior to the adoptive placement (Steele, et al., 2008). For the rest of the children, of whom the majority had at least one adoptive parent with a secure AAI, the number of insecure and disorganized themes declined at 2-year follow-up (Steele, et al., 2008). Thus, the presence of at least one securely attached parent (either mother or father) made it significantly less likely that the adopted child would express themes of disorganization and insecurity. Conversely, children who had both parents rated as insecure on the AAI were significantly more likely to express themes of disorganization in their narratives (Steele, et al., 2008).

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Analysis of parent attachment security and child story themes found that children whose adoptive mothers were classified as insecure on the AAI were significantly more likely to express themes of catastrophic fantasies, child aggression, adult aggression, throwing out or throwing away, bizarre or atypical content, child injured or dead, and adult injured or dead on the SSAP (Steele, Hodges, Kaniuk, Hillman, & Henderson, 2003; Steele, Steele, et al., 2003). Children whose mothers were classified as unresolved were significantly more likely to express themes of parent appearing childlike, adult aggression, and throwing out or throwing away. They were significantly less likely to include themes of realistic mastery and sibling or peer helps (Steele, Steele, et al., 2003). Currently, the researchers at the Anna Freud Centre in London are working on building a set of norms for each the themes and construct scores derived from the SSAP based on both a community sample and a sample of children with a history of maltreatment. Their means for the construct scores of Insecure, Secure, Disorganized, and Disengaged are presented in Figures 1-4 of the results section of this manuscript.

Altogether, these results suggest that the positive and stable experiences and relationships that the child develops post-adoption are successful in establishing and bolstering positive internal working models and expectations; however, they also indicate that the negative internal working models developed prior to adoption also persist, resulting in a competition between the two sets of internal working models rather than a replacement of one by another. Changes in child negative mental representations appear to be influenced by the caregiver's level of security with regards to their own attachment-related mental representations. However, it is notable that the caregiver attachment representations assessed by the Thomas Coram Adoption Project are the caregiver's

overall attachment style based on previous attachment experiences as measured by the AAI. There remains the question of how the caregiver's attachment representations surrounding a particular adopted child might be related to that child's attachment representations, especially given that attachment security may be caregiver-specific.

Overview of Current Study

This current study examined the relationship between a caregiver's attachment representations regarding a specific child and that adopted/foster child's attachment representations. In order to further explore this relationship, caregivers were administered the WMCI interview, which was then coded for Balanced, Distorted, or Disengaged attachment in their relationship to a particular adopted/foster child. Child participants were administered the SSAP, which was then coded for themes pertaining to the attachment constructs of Security, Insecurity, Disorganization, and Defensive Avoidance. The caregiver-child dyads were then grouped based on their WMCI code and the children's SSAP scores analyzed for unique variations corresponding to their caregiver's WMCI categorization. It was hypothesized that caregiver WMCI categorization would correspond to SSAP thematic representations in the following manner:

1. Children whose relationship with their caregiver falls within the Balanced category based on the WMCI will score higher on SSAP representations of Security than children whose relationship with their caregiver falls in either the Disengaged or Distorted WMCI categories.

2. Children whose relationship with their caregiver falls within the insecure attachment categories of Disengaged and Distorted on the WMCI will score higher on SSAP representations of Insecurity than children whose relationship with their caregiver falls in the Balanced category of the WMCI.

3. Children whose relationship with their caregiver falls within the Distorted category of the WMCI will score higher on SSAP representations of

Disorganization than children whose relationship with their caregiver falls in the Balanced or Disengaged categories of the WMCI.

4. Children whose relationship with their caregiver falls within the Disengaged category of the WMCI will score higher on SSAP representations of Defensive Avoidance than children whose relationship with their caregiver falls in the Balanced or Distorted categories of the WMCI.

CHAPTER TWO

Methods

Participants

Caregiver-child dyads were recruited through contacts within the community of Central Texas mental health providers, the Texas Department of Family and Protective Services (DFPS), and Central Texas adoption agencies. Of the 49 caregiver-child dyads who participated in the study, four were excluded because of technical problems with the video equipment and four were excluded because the child did not complete more than six of the thirteen story stems. Thus, final sample consisted of 34 caregivers who had a total of 41 children placed with them. Of the 34 caregivers, 29 were foster/adoptive mothers and five were foster/adopted fathers. Fifteen of the 41 children had a sibling who also participated in the study. Forty-six percent of the children were referred from DFPS, while the remaining 54% were referred from community mental health providers. Forty-nine percent of the children were adopted and 51% were in foster homes. The children ranged in age from 3 to 9 years (mean = 5.71, SD = 2.03). Thirty-nine percent of the sample of children was female. Fifty-three percent of the sample was Caucasian, 22% were African American, 12% were Hispanic, and 12% were considered bi- or multi-racial. At the time of the study, the amount of time the children had lived with their current caregiver ranged from 7 to 87 months (mean = 30.98, SD = 21.51). Twenty-nine percent were identified by their caregiver has having a psychiatric diagnosis and 90% had a history of trauma.

Measures

Working Model of the Child Interview (WMCI)

The WMCI is a semi-structured interview that takes approximately one hour to complete and is designed to elicit the caregiver's perceptions and mental representations regarding a specific child and their relationship with that child. Through the course of the interview, the caregiver develops a narrative describing from birth to adulthood their past experiences of their child, their impressions of how their relationship influences the child and vice versa, and their hopes and expectations for their child in the future. Caregivers are asked for specific episodic memories that illustrate their perceptions of the child and their relationship, with richer, more consistent, more coherent and more detailed narratives indicating a greater level of "balance" in their representations of their child. The interview was videotaped and then coded by a qualified rater who had been trained at Tulane University under the supervision of Drs. Charles Zeanah and Anna Smyke, and had reached satisfactory reliability (80% accuracy on twenty WMCI tapes). Each interview was assigned an overall classification of "balanced," "distorted," or "disengaged" based on the caregiver's representations of their adoptive/foster child.

Story Stem Assessment Profile (SSAP)

Each child participating in the study was administered the Story Stem Assessment Profile (SSAP), which combines five "Little Pig" stems designed for use with the foster and adoptive populations with eight story stems from the MacArthur Story Stem Battery (MSSB). This assessment was designed for use with children between the ages of 4 and 8; however, other versions of the MSSB have been used with children as young as 27

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months and as old as 11 years (Kerns, et al., 2007; Poehlmann, 2005; Steele, et al., 2007).

A standard set of basic props were used for the story, including a standard set of dolls

representing the father, mother, older child, younger child, and older child's friend. The

doll set was matched to the child's ethnicity and the child dolls were matched to the

child's gender. The assessment began with a "practice" story stem that introduced the

participant to the task and the instructions to "show and tell" what the characters in the

story are "saying, doing, and feeling." The practice story incorporated a standard set of

prompts to encourage the child to tell the story verbally and nonverbally and to

incorporate dialogue, actions, and feelings. After the child demonstrated these aspects in

the practice story, the remainder of the battery was administered in a standard order

beginning with the five Little Pig Stems. After each story stem, the child was instructed

to "show me and tell me what happens next." The assessments were videotaped and

transcribed for verbal and nonverbal communication. These transcripts were then coded

according to the rating manual developed by Hodges, Steele, Hillman, and Henderson

(2002) for 32 themes related to the overarching constructs of Security, Insecurity,

Disorganization, and Defensive Avoidance (see Appendix B for themes subsumed under

these categories). For each story, each theme was rated on a 3-point scale, with 0

indicating "not present," 1 indicating "limited/moderate" present, and 2 indicating

"definitely present." Previous studies have demonstrated good levels of interrater

reliability (Hodges, Steele, Hillman, & Henderson, 2003; Hodges, Steele, Hillman,

Henderson, & Kaniuk, 2003). The interviews were scored by a qualified rater who

underwent training at the Anna Freud Centre in London and was certified for coding by

attaining 87% inter-rater reliability with a team of expert raters at the Anna Freud Centre.

Each child received a theme score for each the 32 themes, which was calculated by summing the scores for that theme across the thirteen stories and dividing by the number of completed stories. Construct scores pertaining to Security, Insecurity, Disorganization, and Defensive Avoidance were then calculated for each child by summing the theme scores pertaining to that particular construct.

Procedure

Study evaluations were conducted at the Baylor University Psychology Clinic. Caregivers were given the option of participating in one three-hour or two ninety-minute sessions. One hour was devoted to reviewing and obtaining informed consent and administration of the WMCI with the participating caregiver. A second hour was dedicated to administration of the SSAP with the child. The remaining time involved the administration of other assessments and the completion of questionnaires that were not included in this study. All of the tests were administered by trained interviewers and administrators. Once the assessment was completed, written feedback was provided within two weeks.

CHAPTER THREE

Results

Means and standard deviations prior to transformation for each construct of the

SSAP are reported in Table 1.

Table 1. *Means and standard deviations for SSAP prior to transformation for entire sample*

Scale	M	SD
Security	2.43	1.39
Insecurity	1.28	0.92
Disorganization	1.11	1.04
Defensive Avoidance	1.20	0.79

Hodges & Hillman (2009) reported means for these constructs both in a community

sample of 95 children and a maltreated sample of 63 children, ages 4-6 and 6-8. For the

purposes of comparison, the sample in this study was likewise divided into child

participants ages 3-5 ($n = 21$) and child participants ages 6-9 ($n = 20$) and their means

reported separately in Tables 2 and 3.

Table 2. *Means and standard deviations for SSAP prior to transformation for 3-5 year olds*

Scale	M	SD
Security	1.61	0.95
Insecurity	1.34	0.76
Disorganization	1.37	0.85
Defensive Avoidance	1.60	0.79

Table 3. *Means and standard deviations for SSAP prior to transformation for 6-9 year olds*

Scale	*M*	*SD*
Security	3.29	1.26
Insecurity	1.21	1.08
Disorganization	0.83	1.16
Defensive Avoidance	0.79	0.56

The mean construct scores for Security in this study were lower than the means reported by Hodges & Hillmann (2009) for both their community and maltreated sample (Figure 1).
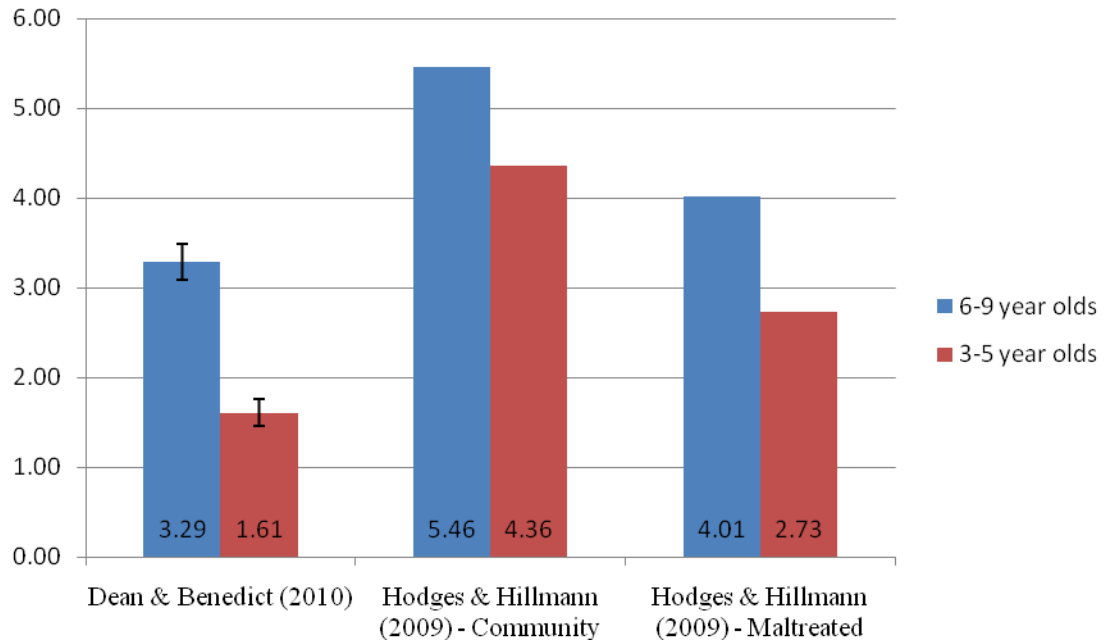
Figure 1. Comparison of SSAP Secure Construct Score with Hodges & Hillmann (2009) normative samples.

On the Insecurity construct, the means were higher than the means for their community sample, but lower than the means for their maltreated sample (Figure 2).
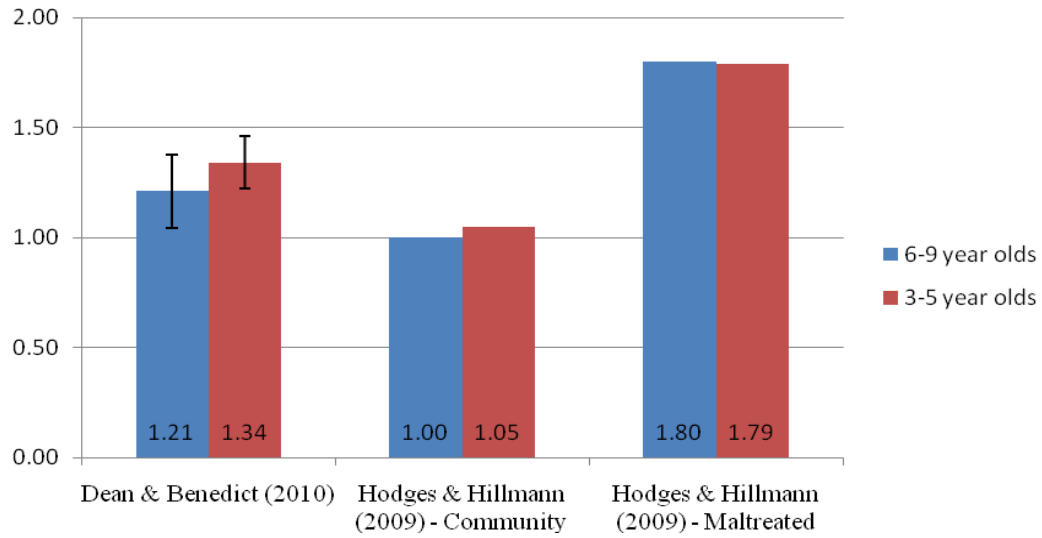
Figure 2. Comparison of SSAP Insecure Construct Score with Hodges & Hillmann (2009) normative samples.

With regards to the Disorganized construct, the means for this sample were likewise higher than scores for their community sample, but somewhat lower than the means for their maltreated sample (Figure 3).
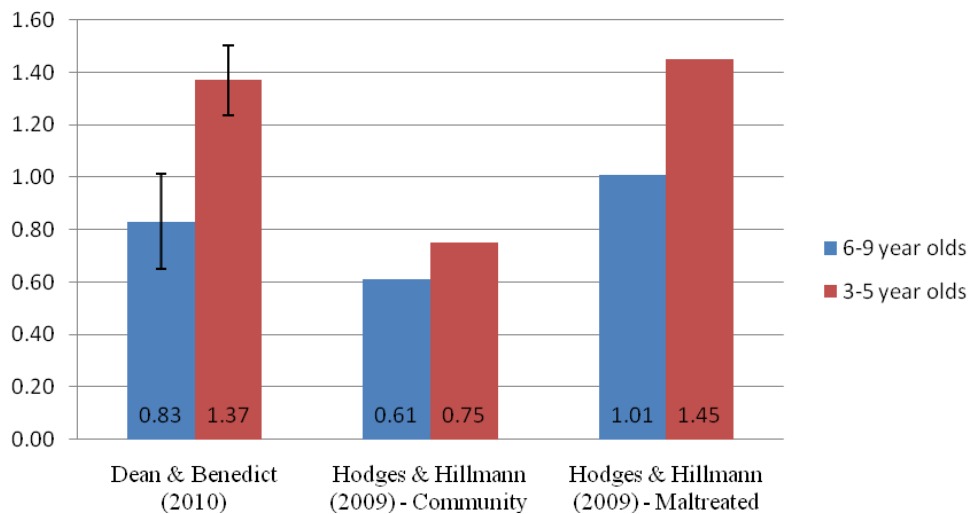
Figure 3. Comparison of SSAP Disorganized Construct Score with Hodges & Hillmann (2009) normative samples.

For the Defensive Avoidance construct, the sample means were again higher than the means for their community sample, but lower than their maltreated sample means (Figure 4).
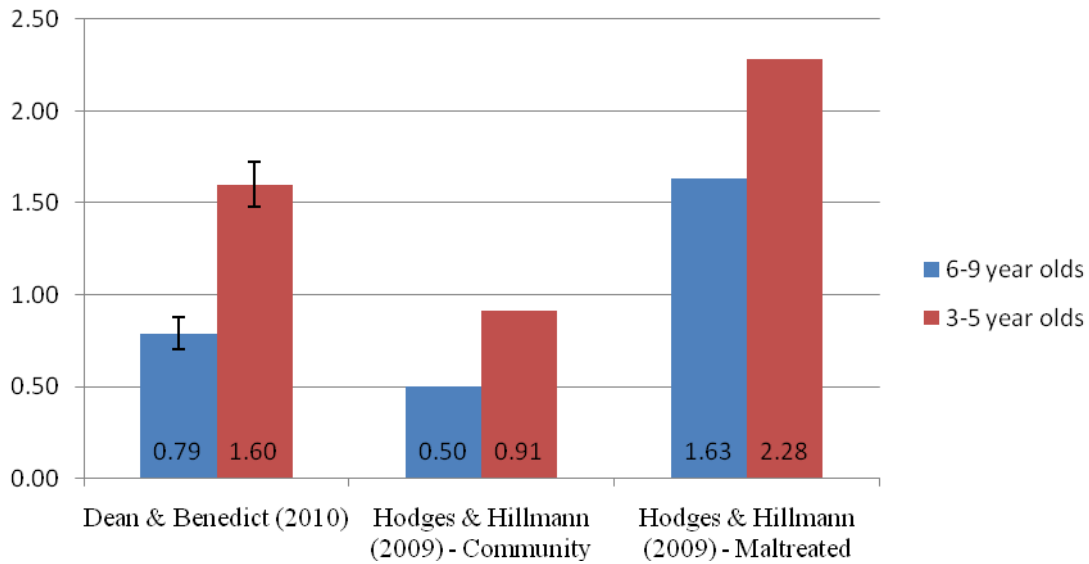
Figure 4. Comparison of SSAP Defensive Avoidant Construct Score with Hodges & Hillmann (2009) normative samples.

For this study, the Cronbach's alphas for the Security, Insecurity, Disorganization, and Defensive Avoidance were .75, .71, .73 and .46, respectively. With the exception of the very low Defensive Avoidance alpha, these results are consistent with previous findings by Steele et al. (2008) who reported alphas of .72 for the Disorganization construct and .78 for the Insecurity construct.

Of the 41 caregivers who participated in the study, 26.8% were categorized as Distorted, 12.2% were categorized as Disengaged, and 61.0% were categorized as Balanced on the WMCI (Figure 5). When divided by Insecure and Secure classifications on the WMCI, this comes out to 61% classified as secure and 39% classified as Insecure.
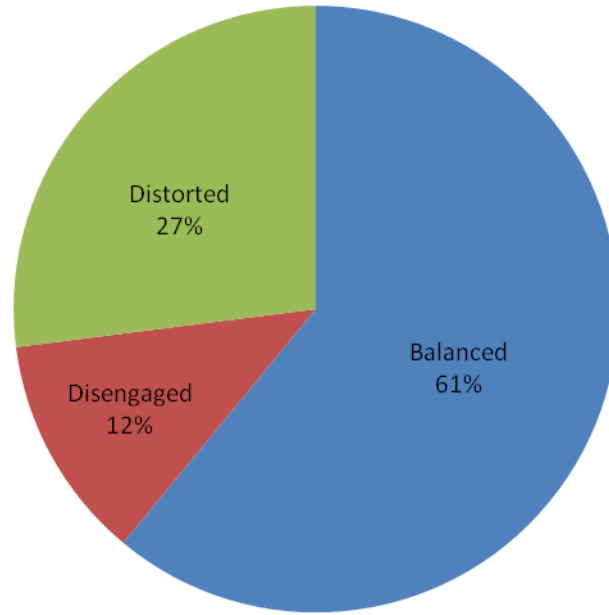
Figure 5. Percent of caregivers in this sample classified as Distorted, Disengaged, and Balanced.

Transformations

Analysis of the frequency distributions of the story stem theme scores indicated that the vast majority of the variables were not normally distributed. Since normality is an assumption of parametric statistics and increases the robustness of statistical analyses, a series of transformations were employed using SPSS 17.0 in order to produce construct variables that were as normally distributed as possible. Square root, logarithmic, and inverse transformations were performed on all of the theme scores. Because of the preponderance of 0 scores (0 = not present) in the data, logarithmic and inverse transformations were conducted using $Y' = \log_{10}(Y+1)$ and $Y' = 1/(Y+1)$ respectively. The transformed data were then examined for normality and the transformation that produced the most normal distribution was selected for each variable to be used in the calculation of the transformed construct variable. The construct score thus consisted of

the sum of the most normal transformations of the theme scores subsumed in the construct. For the most part, the most effective transformations were the square root transformations. Appendix C shows a graphic comparison of the frequency distributions for the untransformed construct scores and the transformed construct scores.

Homogeneity of Variance and Normality

In order to identify whether the samples in this study met assumptions of homogeneity of variance, the Levene test for homogeneity of variance was conducted with the transformed SSAP constructs grouped by WMCI category (Secure, Disengaged, or Distorted), using JMP 8.0.1. The Levene test indicated that when grouped by caregiver WMCI score, the child's SSAP constructs of Insecurity ($F = 0.01$, $p = .99$), Security ($F = 0.77$, $p = .47$), and Disorganization ($F = 0.26$, $p = .77$) did not meet statistical significance for inequality of variance, suggesting that assumptions of homogeneity of variance were met for these groups. However, the Levene test indicated that the Defensive Avoidance construct was statistically significant for unequal variance ($F = 3.86$, $p = .03$), indicating the variance in scores on Defensive Avoidance between the individuals who categorized as Secure, Disengaged, or Distorted on the WMCI was not equal. However, this test is sensitive to departures from normality, albeit less sensitive than Bartlett's test. Thus, a statistically significant result on the Levene test may also be an indicator that the scores on the Defensive Avoidance construct come from a non-normal distribution. Either way, this result suggests that lack of significance on parametric analyses on the Defensive Avoidance construct may be due to lack of normality or unequal variance and that other tests that are more robust to violations of these assumptions should be used.

Analysis of Variance

One-way between subjects ANOVAs were conducted using SPSS 17.0 to compare the relationship between caregiver WMCI attachment style (Balanced, Disengaged, Distorted), and the number of Secure, Insecure, Defensive Avoidant, and Disorganized themes expressed by their child on the SSAP. No significant differences were detected among the mean number of Secure, Insecure, Defensive Avoidant, or Disorganized themes expressed by children on the SSAP based on their caregiver's WMCI categorization (Tables 4-7).

Table 4. *Analysis of Variance for Insecure Construct*

Source	*SS*	*df*	*MS*	*F*	*p*	*η*
Between Groups	0.52	2	0.26	0.281	.757	.015
Within Groups	35.48	38	0.93			
Total	36.00	40				

Table 5. *Analysis of Variance for Secure Construct*

Source	*SS*	*df*	*MS*	*F*	*p*	*η*
Between Groups	4.05	2	2.02	2.14	.131	.101
Within Groups	35.90	38	0.94			
Total	39.95	40				

Table 6. *Analysis of Variance for Defensive Avoidance Construct*

Source	SS	df	MS	F	p	η
Between Groups	0.40	2	0.20	0.31	.736	.016
Within Groups	24.74	38	0.65			
Total	25.14	40				

Table 7. *Analysis of Variance for Disorganized Construct*

Source	SS	df	MS	F	p	η
Between Groups	1.51	2	0.75	0.72	.495	.036
Within Groups	39.96	38	1.05			
Total	41.47	40				

Because of concerns regarding lack of normality, the Kruskal-Wallace test was also used to analyze the data using JMP 8.0.1. No significant differences were found in any of the four SSAP construct score across the three WMCI categories (Table 8).

Table 8. *Kruskal-Wallis Tests for Differences in SSAP Construct Score between Balanced, Distorted, and Disengaged WMCI categories.*

SSAP Construct	χ^2	df	p
Insecure	0.64	2	.724
Secure	0.68	2	.710
Disorganized	1.56	2	.459
Defensive Avoidant	0.22	2	.895

Exploratory Data Analysis and Logistic Regression

Because of concerns regarding inadequate sample size, the three WMCI groups were collapsed into a Secure group and an Insecure group based on WMCI attachment style (Balanced vs. Disengaged or Distorted). Independent t-tests were then conducted using SPSS 17.0 to examine differences between the two groups on the 32 themes that compose the four construct scores. The only statistically significant difference detected was that children whose caregivers had a secure attachment style were more likely to acknowledge adult distress in their stories ($t = -1.96$, $p = .057$, $\eta^2 = .09$).

Further exploration of the relationship between thematic variables was conducted using binary logistic regression to assess the impact of child story stem themes on the likelihood that their caregiver had a secure attachment based on the WMCI interview. Logistic regression is a statistical technique particularly suited to the limitations of these data because it does not require predictor variables to be normally distributed, linearly related, or have equal variances. Using logistic regression, story themes and demographic variables could be analyzed individually or in combination to identify significant predictors of WMCI attachment security.

Analysis of the logistic regression results were conducted using SAS 9.2 and SPSS 17.0 software. Decisions regarding inclusion and exclusion from the model were based on the log likelihood ratio test with a *p*-value of .15 required for entry into the model and a *p*-value of .20 required for removal of the variable from the model. These cut-offs for inclusion and exclusion were based on recommendations made by Hosmer & Lemeshow (2000).

Secure, Insecure, Disorganized and Defensive Avoidance SSAP construct scores were used independently as predictors of caregiver secure attachment based on the WMCI interview. The only construct score that was found to be a significant predictor of caregiver security was the SSAP Secure construct score, Wald $\chi^2 = 3.19$, $p = .07$ (Table 9).

Table 9. *Logistic Regression Using SSAP Secure Construct to Predict Caregiver Attachment Security*

Variable	B	SE	Wald χ^2	df	p	OR	90% CI for OR	
							LL	UL
SSAP Secure Construct Score	0.66	0.36	3.19	1	.074	1.88	0.94	3.77
Constant	-1.15	0.94	1.50	1	.220			

The odds ratio for this variable was 1.88, indicating that for each unit increase in the child's SSAP Secure construct score, the child was 1.88 times more likely to have a caregiver who is securely attached to them. This model explained between 8.2% (Cox and Snell R^2) and 11.1% (Nagelkerke R^2) of the variance in caregiver attachment security and correctly identified 61.0% of the cases. The predicted probabilities that the caregiver was classified as secure on the WMCI are plotted in Figure 6 along with 95% confidence intervals on these probabilities.

For subsequent analyses, the construct scores were dichotomized into "clinically significant" and "not clinically significant" scores based on whether the child's Insecure, Disorganized, or Defensive Avoidant construct score was higher than 90% of the subjects in the Hodges & Hillmann (2009)'s community sample described above. In the case of the Secure construct score, clinically significant was defined as scoring lower than 90%
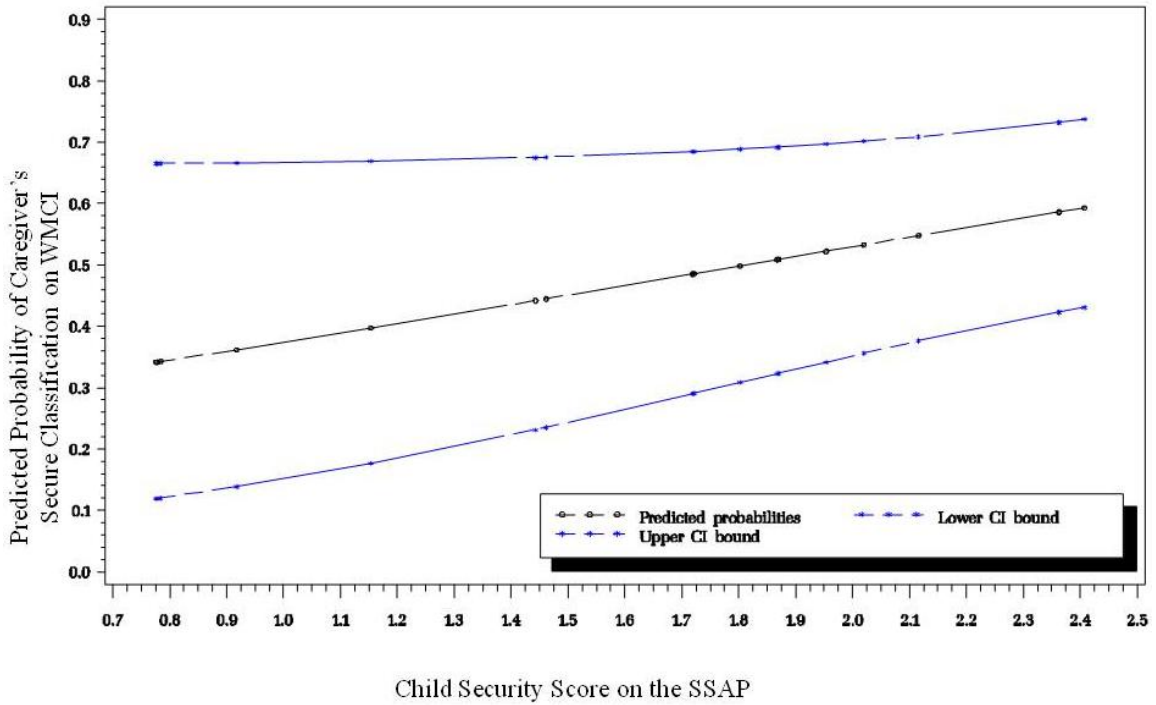
Figure 6. Predicted Probabilities Using SSAP Secure Construct to Predict Caregiver Attachment Security

of the subjects in Hodges & Hillman (2009)'s community sample. The thematic variables were transformed into binary values with 0 indicating absence of that theme in all thirteen stories and 1 indicating presence of the theme in any of the thirteen stories. The thematic variables were then grouped based on membership in the constructs of Secure, Insecure, Disorganized, and Defensive Avoidant. These four sets of variables used in four separate logistic regression models to predict caregiver attachment security based on the WMCI. Contingency analyses were conducted using JMP 8.0.1 to calculate the expected cell frequencies for all pairs of discrete variables and identify variables that had fewer than five members in a cell when crossed with WMCI security (see Appendix E for a sample contingency table). Variable pairs that contained frequencies less than five were excluded in order to preserve the power of the analysis and increase the

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likelihood of obtaining valid results (Hosmer & Lemeshow, 2000; Tabachnick & Fidell, 1996). A list of the variables excluded from logistic regression analyses is contained in Appendix F. For the remaining variables, forward stepwise logistic regression was used to select significant variables for inclusion in the logistic regression model.

None of the thematic variables that compose the Insecure SSAP construct were found to be statistically significant predictors of caregiver security on the WMCI. Of the thematic variables related to the Secure construct, Acknowledgment of Adult Distress was the only statistically significant predictor, Wald $\chi^2 = 4.00$, $p = .045$ (Table 10).

Table 10. *Logistic Regression Using Secure Thematic Variables to Predict Caregiver Attachment Security*

Variable	B	SE	Wald χ^2	df	p	OR	90% CI for OR	
							LL	UL
Acknowledgment of Adult Distress	1.36	0.68	4.00	1	.045	3.91	1.28	12.00
Constant	-0.20	0.45	0.20	1	.655			

The odds ratio for this variable was 3.91, indicating that children who acknowledged adult distress in one or more of their stories were 3.9 times more likely to have a caregiver who is securely attached to them. This model explained between 9.9% (Cox and Snell R^2) and 13.4% (Nagelkerke R^2) of the variance in caregiver attachment security and correctly identified 65.9% of the cases. The predicted probabilities that the caregiver was classified as secure on the WMCI are plotted in Figure 7 along with 95% confidence intervals on these probabilities.

When the defensive avoidant thematic variables were used as predictors of caregiver attachment security, Disengagement was the only variable that was identified
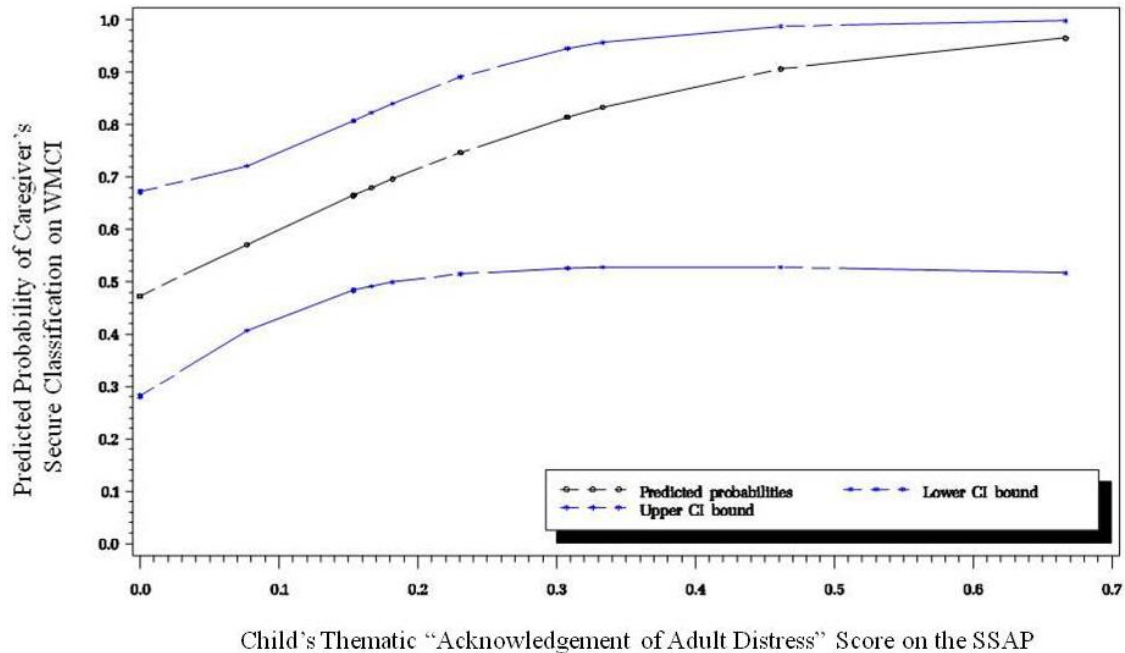
Figure 7. Predicted Probabilities Using Acknowledgment of Adult Distress Theme to Predict Caregiver Attachment Security

as statistically significant, Wald $\chi^2 = 5.01$, $p = .025$ (Table 11).

Table 11. *Logistic Regression Using Defensive Avoidant Thematic Variables to Predict Caregiver Attachment Security*

Variable	B	SE	Wald χ^2	df	p	OR	90% CI for OR	
							LL	UL
Disengagement	-1.54	0.69	5.01	1	.025	0.21	0.07	0.66
Constant	1.22	0.51	5.79	1	.016			

The odds ratio of 0.21 was less than 1, indicating that children who disengaged from the story-telling process were 0.21 times less likely to have a caregiver who is securely attached to them, or alternatively were 4.67 times more likely to have a caregiver that is insecurely attached to them. This model explained between 12.3% (Cox and Snell R^2) and 16.7% (Nagelkerke R^2) of the variance in caregiver attachment security

and correctly identified 68.3% of the cases. Figure 8 shows the predicted probabilities that the caregiver was classified as secure on the WMCI based on the child's Disengagement score on the SSAP along with the 95% confidence intervals of these probabilities.
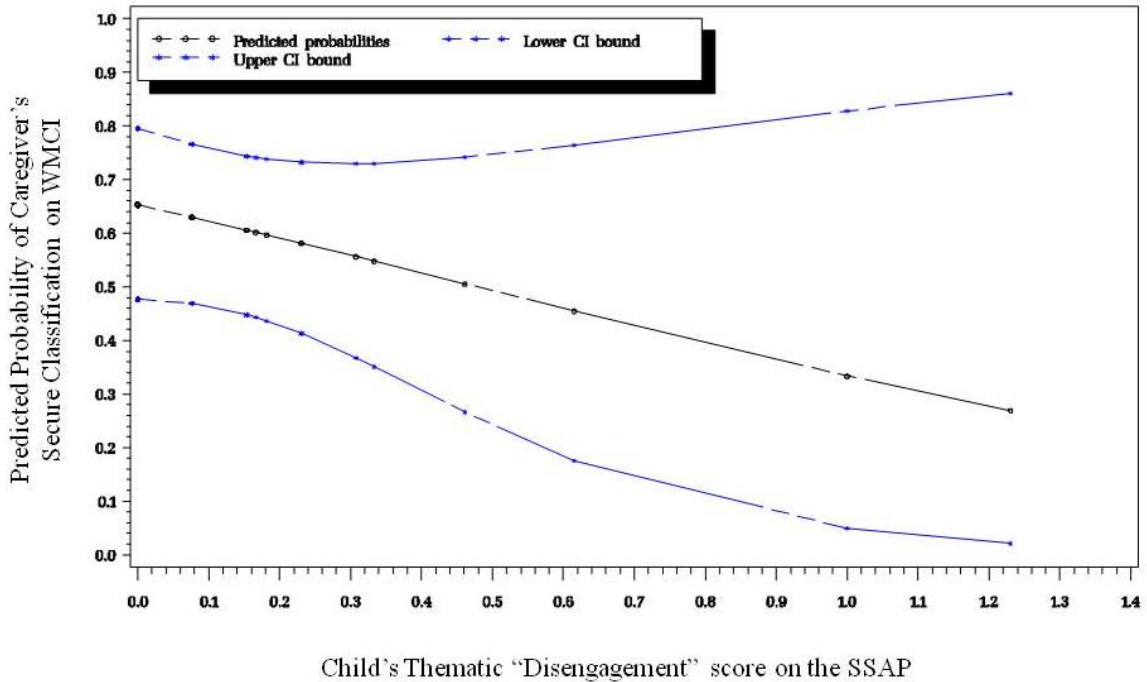
Figure 8. Predicted Probabilities Using Disengagement Theme to Predict Caregiver Attachment Security

Among the disorganized thematic variables used to predict caregiver attachment security, the only variable that contributed significantly to the model was the Bizarre/Atypical Material theme, Wald $\chi^2 = 5.01$, $p = .025$ (Table 12).

The odds ratio of 0.08 was less than 1, indicating that children who included bizarre or atypical material in their stories were 0.08 times less likely to have a caregiver who is securely attached to them, or alternatively were 12.82 times more likely to have a caregiver that is insecurely attached to them. This model explained between 7.7% (Cox

Table 12. *Logistic Regression Using Disorganized Thematic Variables to Predict*

Caregiver Attachment Security

Variable	*B*	*SE*	Wald χ^2	*df*	*p*	*OR*	95% CI for *OR*	
							LL	*UL*
Bizarre/Atypical Material	-1.19	0.68	3.12	1	.078	0.30	0.08	1.14
Constant	1.10	0.52	4.53	1	.033	3.00		

and Snell R^2) and 10.4 % (Nagelkerke R^2) of the variance in caregiver attachment

security and correctly identified 63.4% of the cases. Figure 9 shows the predicted

probabilities that the caregiver was classified as secure on the WMCI based on the child's

Bizarre/Atypical Material score on the SSAP along with the 95% confidence intervals of

these probabilities.
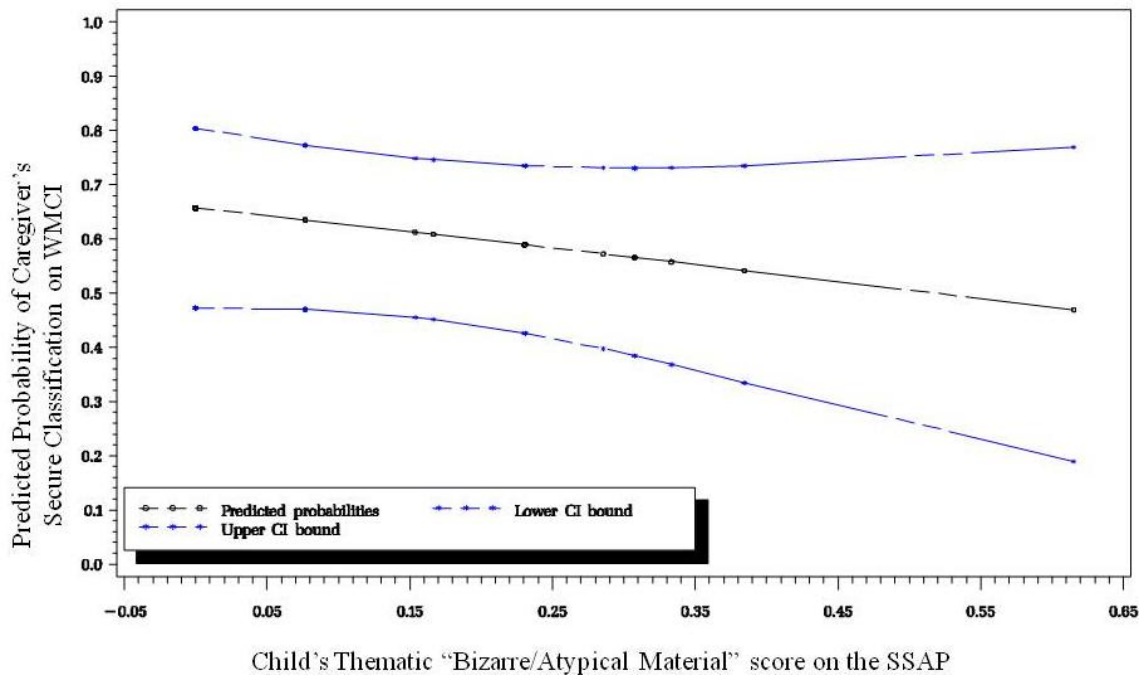
Figure 9. Predicted Probabilities Using Bizarre/Atypical Material Theme to Predict
Caregiver Attachment Security

The impact of demographic variables on caregiver attachment security and child attachment related story themes was also explored using forward stepwise logistic regression. As previously described combinations of categorical variables that resulted in cells containing less than five observations were excluded from the analysis. The variables excluded from the following analyses are also listed in Appendix F.

Age, gender, number of months in the child had been in the care of the current caregiver, whether they were an adopted or foster child, and whether the child was referred from the Texas Department of Family and Protective Services (DFPS) were used as predictors of caregiver attachment security in a forward stepwise logistic regression. Again, decisions regarding inclusion and exclusion from the model were based on the log likelihood ratio test with a *p*-value of .15 required for entry into the model and a *p*-value of .20 required for removal of the variable from the model. The only variable that remained in the model after the analysis was whether the child had been referred to the study from the Texas DFPS, Wald $\chi^2 = 5.01$, $p = .025$ (Table 13).

Table 13. *Logistic Regression Using Demographic Variables to Predict Caregiver Attachment Security*

Variable	B	SE	Wald χ^2	df	p	OR	95% CI for *OR*	
							LL	UL
DFPS referral	-1.54	0.69	5.01	1	.025	0.21	0.05	0.82
Constant	1.22	0.51	5.79	1	.016	3.40		

The odds ratio of 0.21 was less than 1, indicating that children who were referred to the study from the Texas DFPS were 0.21 times less likely to have a caregiver who was securely attached to them (or 4.67 times more likely to have a caregiver who was insecurely attached to them). This model explained between 12.3% (Cox and Snell R^2)

and 16.7% (Nagelkerke R^2) of the variance in caregiver attachment security and correctly

identified 68.3% of the cases. The predicted probabilities that the caregiver was

classified as secure on the WMCI based on whether the dyad was referred by the Texas

DFPS is shown in Figure 10 along with the 95% confidence intervals for these

probabilities.

Notably, t-tests conducted to examine demographic differences between children

who were referred by the Texas DFPS and those referred by other sources found that

children referred by the Texas DFPS were significantly younger (t = 2.737, p = .0009)

and had been in their current placement for less time (t = 4.129, p < .001). Figures 11

and 12 show the difference in average age and length of time in placement between

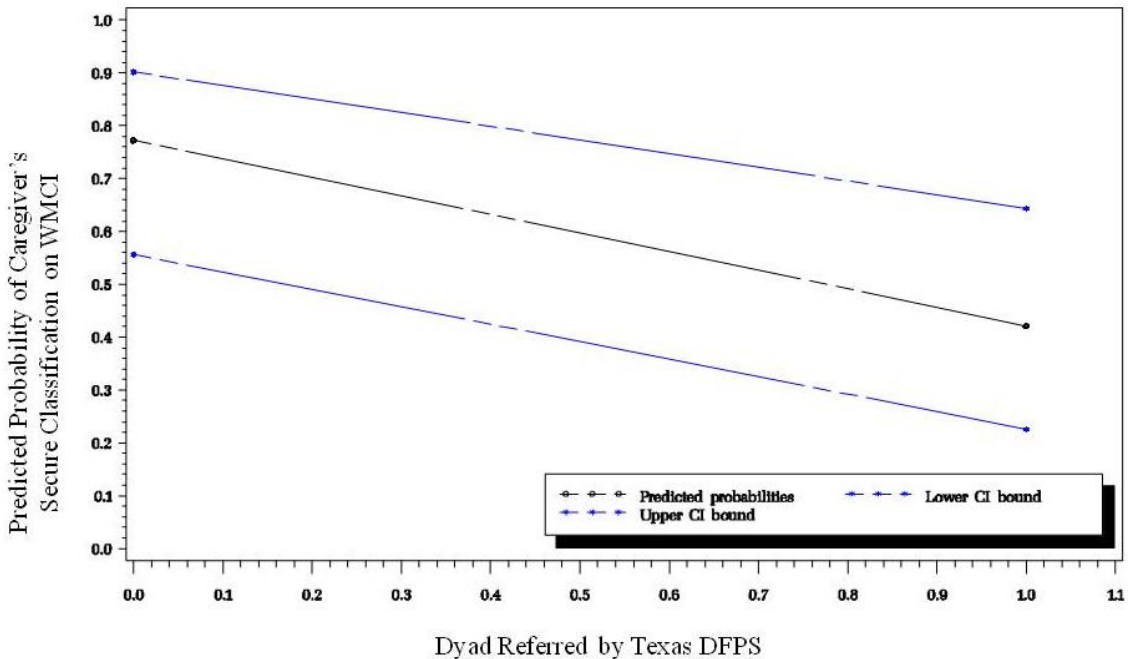children who were and were not referred by the Texas DFPS.

Figure 10. Predicted Probabilities Using Referral by DFPS to Predict Caregiver
Attachment Security
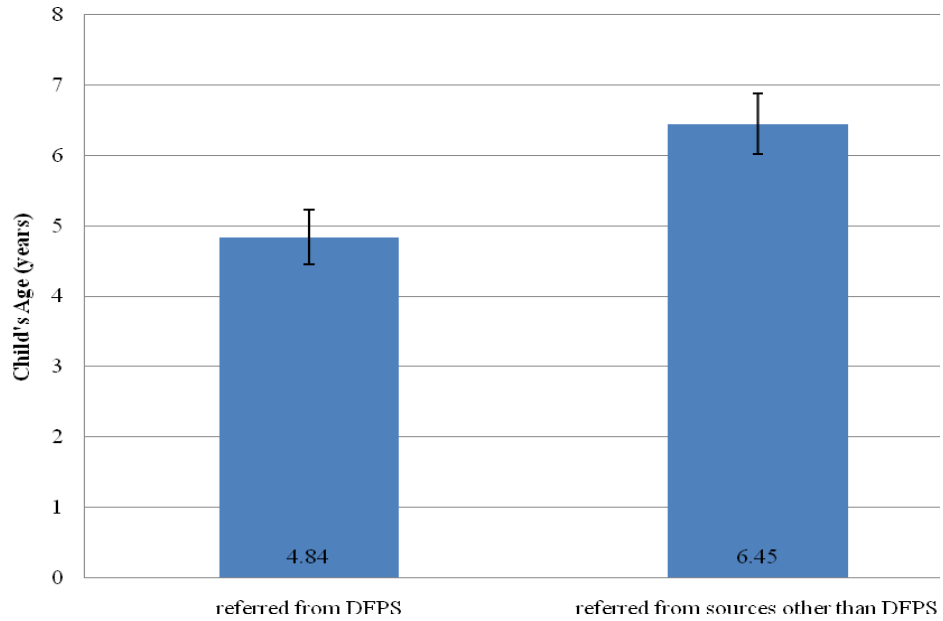
Figure 11. Average age of children referred by DFPS and those referred by other sources.
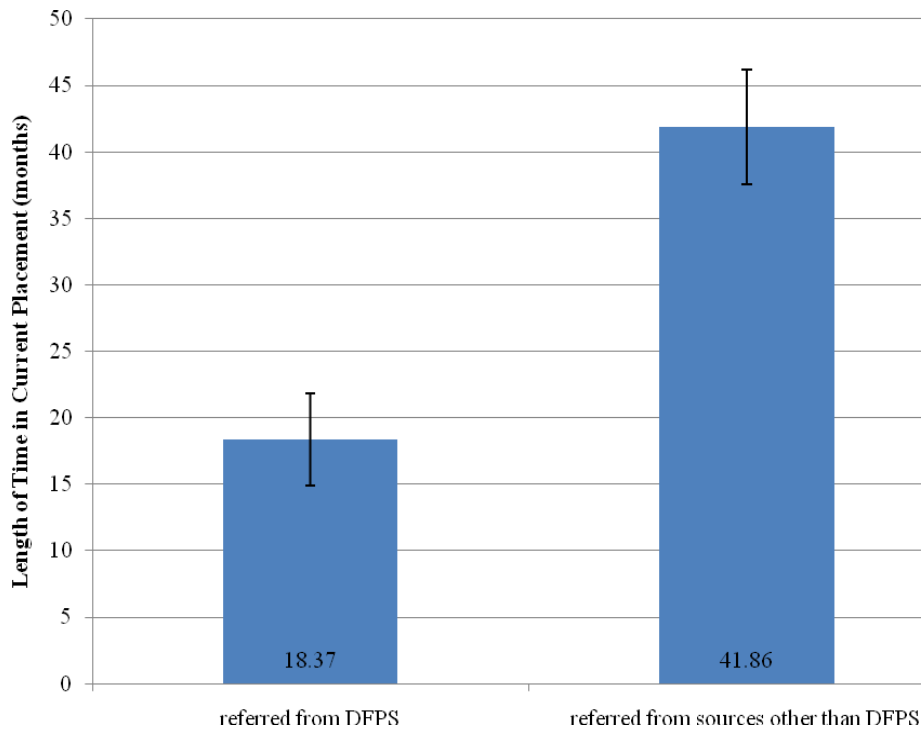
Figure 12. Comparison of average number of months in current placement between children referred by DFPS and those referred from other sources.

Demographic variables were also used to predict clinically significant Secure, Insecure, Defensive Avoidant, and Disorganized construct scores on the SSAP in four separate logistic regression models, using the same procedures described above. Variables excluded based on inadequate sample size are included in Appendix F. The model containing age of the child and the number of months the child had been in the care of their adoptive or foster caregiver were found to be predictive of a clinically significant Secure score on the SSAP, $\chi^2 = 7.72$, $p = .023$. The model as a whole explained between 17.2% (Cox and Snell R^2) and 25.6% (Nagelkerke R^2) of the variance in caregiver attachment security and correctly identified 78.0% of the cases. The results of the analysis of individual variables included in the model are shown in Table 14.

Table 14. *Logistic Regression Using Demographic Variables to Predict Clinically Significant SSAP Secure Score*

Variable	B	SE	Wald χ^2	df	p	OR	95% CI for OR	
							LL	UL
Age	-0.50	0.22	5.16	1	.023	.60	.39	.93
Months in care	0.04	0.02	3.44	1	.064	1.05	1.00	1.10
Constant	2.88	1.31	4.84	1	.028	17.77		

The odds ratio of 0.60 for age of the child was less than 1, indicating that the odds of the child having a clinically significant Security score on the SSAP decreased by a factor of 0.60 for each year age increases, controlling for other factors in the model. The odds ratio for number of months in care was 1.05, indicating that that the child was 1.05 times more likely to have a clinically significant Security score for each additional month that the child was in the care of his/her current caregiver, controlling for all other factors in the model. Figure 13 shows the predicted probabilities that the child had a clinically

significant SSAP Security score based on age along with the 95% confidence intervals of these probabilities.
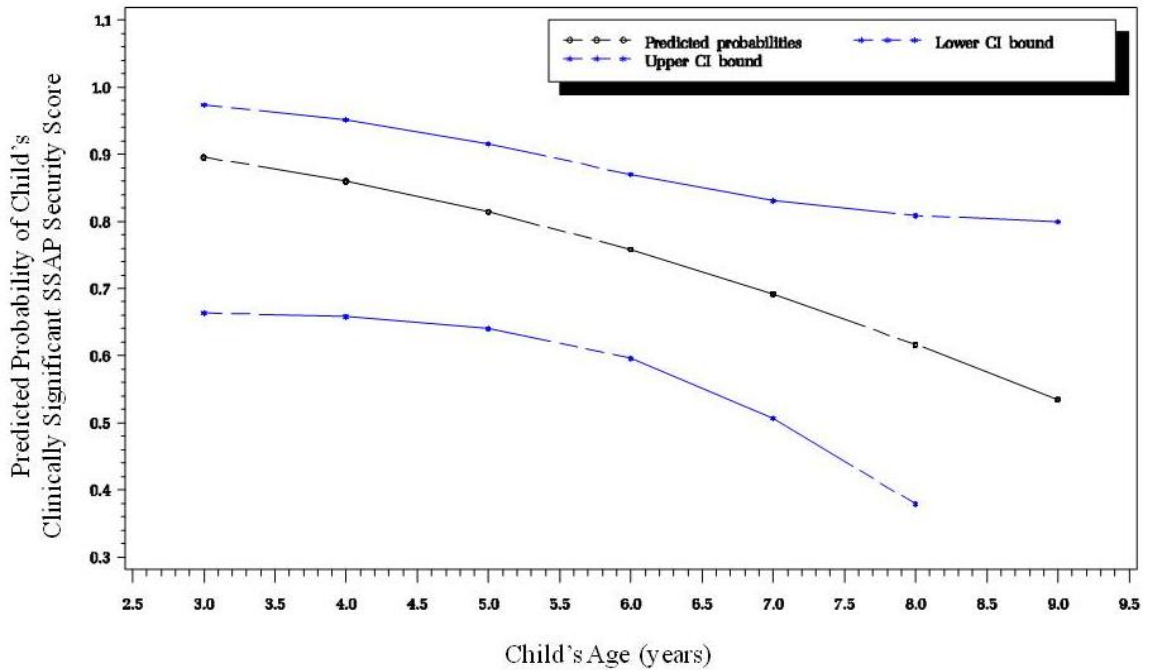
Figure 13. Predicted Probabilities Using Age to Predict Clinically Significant SSAP Secure Score

Figure 14 shows the predicted probabilities that the child had a clinically significant SSAP Security score based on the number of months the child was in the care of its current caregiver. Significant results were not found for models predicting clinically significant Insecure, Disorganized, or Defensive Avoidant scores on the SSAP.

Power Analysis

In order to examine the impact of sample size and power on this study's ability to detect any effects that may have been present, G*Power 3.1 was used to conduct retrospective, prospective, and post-hoc power analyses. The partial eta squared values for the SSAP construct scores of Security, Insecurity, Defensive Avoidance , and Disorganization were .001, .101, .001, and .027 respectively. Using the strongest partial eta squared obtained
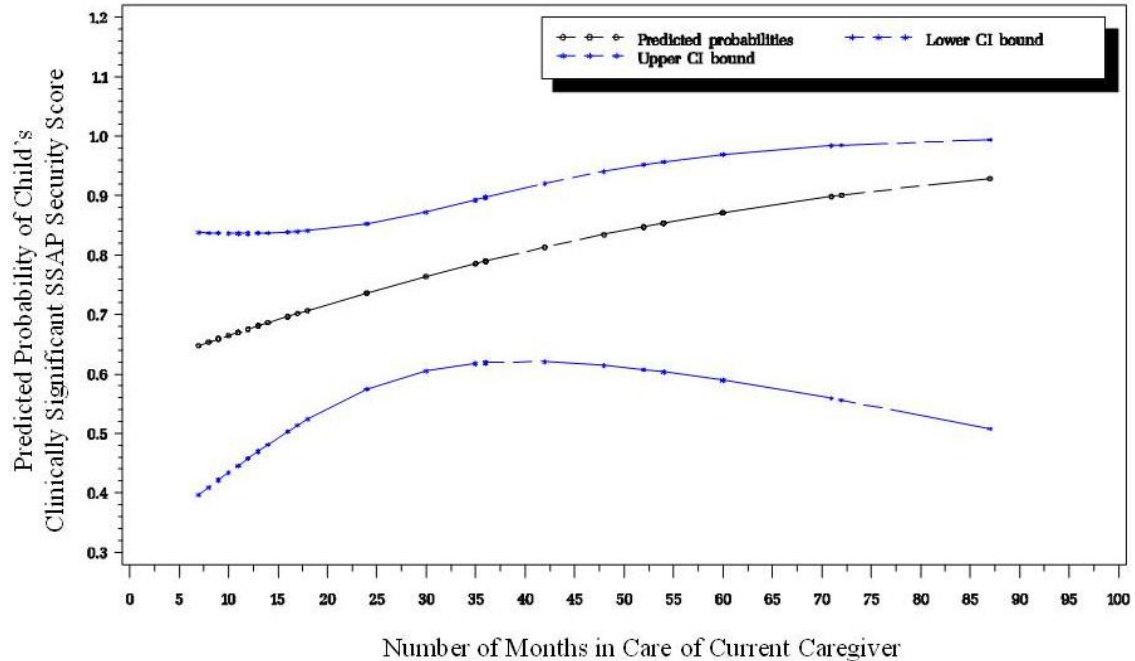
Figure 14. Predicted Probabilities Using Number of Months in Care to Predict Clinically Significant SSAP Secure Score

in this study (.101 for the Secure construct) as a best case scenario for effect size, G*Power was used to calculate the corresponding effect size (*f*) of .34 and conduct retrospective power analyses. Based on the analyses conducted, a sample size of 90 would have been required to detect an effect size of .34 given an α of .05 and a desired power of .80. Given our sample size of 41, an α of .05 and a desired power of .80, the smallest effect size we would have been able to detect was .50. The post-hoc power analysis indicated that the current study achieved a power of .44 based on an effect size of .34, a sample size of 41, and an α of .05.

Missing Data due to No Engagement

One potential problem with the scoring system used for the SSAP is that theme scores and construct scores are calculated using only the scores for the stories the child

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completed. If a child refuses to respond to a story stem and or is otherwise unable to tell

a story in response to a story stem, it is scored as a 2 on thematic variable of No

Engagement and the subsequent scores are rated as a 9 (i.e. not applicable). Thus, that

story is not included in the calculation of any other thematic scores besides the No

Engagement theme. However, the No Engagement theme is included in the Defensive

Avoidance construct, suggesting that a score for that theme is indicative of a child that

may be more defensive, avoidant, or insecurely attached than a child who was able to

come up with a response to the story. Theoretically, this scoring process could affect the

results in that children who are more defensive and avoidant are more likely to have

missing data for the remaining themes.

In order to explore this issue, the sample was divided into the seven participants

who had a No Engagement score on at least one story and the 34 participants who did not

have any scores on the No Engagement theme. Independent samples t-tests were then

used to identify differences in SSAP construct scores based on the presence or absence of

a No Engagement thematic score. There was no significant differences in Security ($t =$

0.28, $p = .778$), Insecurity ($t = 0.26$, $p = .797$), or Disorganization ($t = 0.60$, $p = .549$)

based on the presence or absence of a No Engagement thematic score. Participants who

did have a No Engagement score had significantly higher scores on the Defensive

Avoidance construct ($t = -3.68$, $p = .001$); however, this is to be expected given that No

Engagement is one of the eight themes that compose the Defensive Avoidance construct.

Potential Confounding Factors

Independent samples t-tests indicate that there were no significant differences in

any of the construct scores between groups based on gender, presence or absence of a

psychiatric diagnosis, presence or absence of a trauma history, referral from DFPS, or

whether they were adopted or foster children (Table 15).

Table 15. *T-tests on Potential Confounding Variables*

Variable	Security	Insecurity	Disorganization	Defensive Avoidance
Gender	$t = 1.13$ $p = .267$	$t = -0.03$ $p = .977$	$t = -1.06$ $p = .294$	$t = 0.20$ $p = .842$
Presence of Psychiatric Diagnosis	$t = 0.10$ $p = .924$	$t = 0.35$ $p = .725$	$t = 0.98$ $p = .331$	$t = 0.47$ $p = .643$
Presence of Trauma History	$t = -0.43$ $p = .666$	$t = 0.80$ $p = .427$	$t = 0.28$ $p = .779$	$t = -.41$ $p = .681$
Referral from DFPS	$t = 1.10$ $p = .278$	$t = 0.99$ $p = .329$	$t = -0.39$ $p = .696$	$t = -0.47$ $p = .644$
Adopted vs. Foster	$t = 0.35$ $p = .726$	$t = -0.81$ $p = .423$	$t = -0.04$ $p = .970$	$t = 0.50$ $p = .617$

However, there were significant correlations between age of the child and number

of months they had lived in their current placement, their Security score on the SSAP,

and their Defensive Avoidance score on the SSAP. The older the children were, the more

likely they were to have been in their current placement longer ($r = .38$, $p = .015$), have

expressed security related themes on the SSAP ($r = .52$, $p = .001$), and have fewer

defensive avoidance themes on the SSAP ($r = -4.27$, $p = .005$). Moreover, there was also

a significant relationship between length of time in current placement and Insecurity

score on the SSAP. Children who had been in their current placement longer were more

likely to express themes related to insecurity on the SSAP ($r = .43$, $p = .005$). There were

no significant correlations between WMCI dimensional score and age, length of time in

current placement, or SSAP construct score.

CHAPTER FOUR

Discussion

Sample Size Issues

Initial analysis of the frequency distribution of the SSAP construct scores and their component thematic scores raised issues of normality, so transformations were conducted in order to improve the likelihood of obtaining interpretable results. However, significant differences in SSAP construct scores among the Balanced, Distorted, and Disengaged groups of caregivers were not identified using either analysis of variance or the Kruskal-Wallis test, even though the Levene test indicated all the constructs except for the Defensive Avoidant Construct met assumptions for homogeneity of variance. The results of the power analysis suggests that it is likely that with a sample size of 41, and α of .05 and a desired power of .80, the smallest effect size that could be detected would have been a very large effect size of .50. Thus, aside from any issues of normality and homogeneity of variance, the small number of subjects obtained was very likely insufficient to detect a small, medium, or even somewhat large difference between the group means. It is possible that interpretable results would have been obtained, had it been possible to obtain the sample size of 90 recommended by the power analysis.

Demographic Considerations

In comparison to the normative scores provided by Hodges & Hillmann (2009), the sample used in this study demonstrated more maladaptive attachment construct scores than the community sample, as would be expected given that 90.2% had experienced a

traumatic event based on current caregiver report. It should be noted that the severity and chronicity of the traumatic events experienced in our sample was frequently unknown to the current caregivers of the adopted and foster children in our sample and thus not reported. Of the dyads that participated in our study, 46.3% were referred by the Texas Department of Family and Protective Services (DFPS) as part of their foster-to-adopt program and had been removed from the care of their biological parents due to evidence of neglect and/or abuse. These children were significantly younger and had been in their current placement for less time than children referred from other sources. They were also 4.67 times less likely to have a caregiver who was securely attached to them. This significant difference in caregiver attachment security may be explained by the briefer duration of placement or the possibility that a fewer proportion of these foster/adoption placements were pre-planned, particularly since a number of these caregivers were family members who were notified by DFPS upon disruption of the child's relationship with their biological parents and were given the option to adopt the child rather than let the child enter the foster system.

The results also indicated a relationship between the child's age and the security of their attachment representations. As age increased, the number of secure themes increased and the number of defensive avoidant themes decreased. Furthermore, the older the child was, the less likely they were to have a clinically significant low Security score on the SSAP. Thus, in our sample, increased age appeared to be related to increased attachment security and a greater ability to engage in attachment related tasks without resorting to avoidance maneuvers. However, it is also possible that this relationship may be a result of age-related increases in verbal ability and a better

understanding of what a "good" ending ought to be, regardless of what the child's actually experience has been. It may be that younger children are less able to "fake good" in a testing environment and that the ability of the SSAP to accurately measure the child's actual attachment representations becomes limited once the child reaches a certain age and attains certain cognitive capabilities. Further study would be required to ascertain the impact of age on attachment security as measured by story-telling tasks.

It is also interesting to note that children who had been in their current placement longer were more likely to express insecure themes in their stories and more likely to have a clinically significant low Security score. However, the results also indicate that although length of time in current placement increased with age, increased age was related to increased security and decreased defensive avoidance. In addition, age and length of time in current placement was also related to whether the child had been referred to our study through DFPS. Hodges, et al. (2005) found that in their sample of adopted children, the initially low secure attachment representations tended to increase over time, while certain insecure attachment representations tended to remain high over the two year assessment period. Furthermore, they noted that children who were four to six years old at the time of placement had more changes in their attachment representations than children who were six to eight years old at the time of placement. Altogether, the results of the current study suggest that complex inter-relationships exist between age, length of time in placement, and the circumstances surrounding the adoption and that further research will be required to characterize and explain these inter-relationships.

SSAP Security Construct as a Predictor of WMCI Attachment Security

Consistent with the study hypotheses, caregiver WMCI Security was significantly related to the child's SSAP Security score. Children who had higher SSAP Security scores were more likely to have a caregiver whose WMCI interview was classified as secure. This finding is consistent with previous research that has found a strong relationship between attachment security across generations, even in adopted families (e.g. Gloger-Tippelt, et al., 2002, Dozier, et al., 2001; Steele, et al., 2007). Because this result was not found using ANOVA and nonparametric analyses, it will be important to see if this finding can be replicated in future studies that better address the problems of inadequate sample size and power. The other hypotheses suggesting that the SSAP constructs of Insecurity, Disorganization, and Defensive Avoidance would be related to WMCI Insecurity were not supported by the data in this study, although individual SSAP themes did demonstrate a significant relationship to WMCI Security.

Individual SSAP Themes as Predictors of WMCI Attachment Security

Analyses were also conducted in order to identify relationships between particular SSAP themes and whether the caregiver was categorized as Secure (Balanced) or Insecure (Distorted or Disengaged) on the WMCI. Both t-tests and logistic regression analyses indicate that children who acknowledged adult distress in at least one of the 13 story stems were significantly more likely to have a caregiver who was classified as securely attached to them. This is consistent with Hodges, et al. (2005)'s findings that acknowledgement of adult distress was a marker of increased attachment security in adopted children over the two year assessment period and was less frequently expressed by children with a history of maltreatment. Moreover, the assessment of attachment in

adults and children is based on theory and evidence that suggest that adults and children

who are able to produce the narratives that are emotionally rich and detailed are more

likely to have a secure attachment relationships with their caregivers (Bretherton, et al.,

1990; Cassidy, 1988; Waters, Rodrigues, & Ridgeway, 1998; Oppenheim, et al., 1997).

Thus, a child's ability to acknowledge negative feelings expressed by adults may suggest

that the child has the capacity to tolerate and accept a wider range of emotions (both

positive and negative) as a result of having a secure relationship with their caregiver in

which negative emotions and conflict do not result in overwhelming and catastrophic

consequences.

Of the themes related to insecure attachment, disengagement and bizarre/atypical

content were the only themes that emerged as significant predictors of caregiver

attachment. A child who initially engaged with the story stem task, but then stopped

participating was 4.67 times more likely to have a caregiver who was categorized as

either Disengaged or Distorted on the WMCI. Similarly, children who had at least one

incident of bizarre or atypical content in their stories were 12.82 times more likely to

have a caregiver that classified as insecurely attached to them. These findings are

consistent with research conducted by Hodges, et al. (2003) using the SSAP that found

that adopted children with a history of maltreatment were more likely to avoid the story-

telling task or include bizarre and atypical responses. Moreover, Steele, Steele, et al.

(2003) found that bizarre or atypical responses were more prevalent in the stories of

adopted children who were placed with insecure mothers.

Previous research on story-telling tasks suggests that the prototypical secure script

typically involves some acknowledgement of the conflict, realistic resolution of the

conflict, and a return to normality and that adherence to this script is related to child

attachment security (Bretherton, et al., 1990; Cassidy, 1988; Waters, Rodrigues, &

Ridgeway, 1998). Alternatively, avoidance of the story-telling task and the presence of

disorganized and inconsistent story elements have been used by researchers as criteria for

coding a story response as insecure (Bretherton, et al., 1990; Waters et al., 1998). Based

on their studies of children with disorganized attachment styles, Solomon & George

(1999) conclude that 1) attempts to avoid awareness of attachment triggers, 2)

dysregulated behaviors, feelings, and thoughts that are uncontrolled and inconsistent with

the context, or 3) a combination or the first two responses is symptomatic of disorganized

children's inability to integrate attachment-related feelings, behaviors, and thoughts. It is

interesting to note that the two themes that were significantly linked to insecure caregiver

attachment in the current study correspond to these two response patterns. Thus, taken

together with research indicating intergenerational concordance of attachment security,

the results from this study are consistent with previous research and suggest that

disengagement and bizarre/atypical content may be particularly salient story features for

children with insecure or disorganized attachment and who have caregivers with

corresponding attachment styles.

Areas for Future Research

Although individual attachment-related themes were identified as potential links

between child attachment representations and caregiver child-specific attachment

representations, this study did not find evidence to support concordance between broader

classifications of child attachment security based on the SSAP and caregiver

classification on the WMCI. Given the limitations of this study, it would be interesting to

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replicate the study with a sample large enough to identify statistically significant differences in child attachment representations based on the caregiver's attachment to that child, should they exist. Such replication would also be necessary to validate the significance of the individual themes identified in the exploratory analyses conducted in this study. In addition, the researchers involved in the Thomas Coram Project in London have made progress in establishing the community and clinical norms used as a basis of comparison for the sample used in this study; however, these norms would be more robust if they included larger sample sizes and were replicated in other communities and clinical settings. Such an achievement would be valuable in providing a reliable tool for assessing and characterizing attachment representations in children ages 3-9 years old.

Moreover, should the link between caregiver attachment and child attachment continue to be supported by the literature, it will then be up to future researchers to further characterize the mechanism by which attachment is transmitted, particularly in the case of adopted and foster relationships in which there is no biological component and late-placed adoptions are a frequent occurrence.

APPENDICES

APPENDIX A

SSAP Story Stem Summaries

Little Pig Stems

1. Crying Outside – The family is in the living room together. The older child leaves to go around to the back of the house where he starts crying.

2. Little Pig – The little pig leaves the other pigs to take a long walk past the cows, past the lions, past the crocodile, and past the camels. S/he finds that he is lost and does not know how to go back home.

3. Stamping Elephant – The family is having a picnic and all the animals are there, including a large elephant. Sometimes the elephant gets fierce and starts stamping, which scares the children and the animals.

4. Picture from School – The older child draws a picture s/he is proud while s/he is at school. The child brings the picture home after school to his family who are all in the living room when s/he gets home.

5. Bikes – The older child and his friend ride their bikes really fast after the older child's mother warned them to be careful. The older child falls off his bike.

MSSB Stems

6. Spilt Juice – The family is sitting at the table drinking juice. The older child reaches across the table for more juice and spills the juice all over the florr.

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7. Mom's Headache – Mom and the older child are watching TV. Mom expresses that she has a headache and asks the child to do something quietly while she turns off the TV and lies down. The child's friend comes to the child's house and tries to convince the child to watch a TV show at the child's house

8. Three's a Crowd – The older child and his/her friend are playing with the friend's ball. The youngest child asks if she can play. The friend threatens to stop being the older child's friend if s/he lets the younger child play.

9. Burnt Hand – The father and younger child are sitting at the table while the mother cooks dinner. The mother warns the oldest child not to touch the stove. The older child gets impatient, touches the stove, and burns his/her hand.

10. Lost Keys - The older child enters the living room to find his/her parents arguing about who lost the keys.

11. Bathroom Shelf – The mother goes next door to return something to the neighbor and warns the children not to touch anything on the bathroom shelf. The younger child cuts his finger and needs one of the band-aids that are kept on the bathroom shelf.

12. Burglar in the Dark – The child is upstairs in his room while the rest of his/her family is downstairs in the living room. The lights go out. Then the child hears a noise and thinks that it is a burglar.

13. Exclusion Story – The parents are talking on the sofa. One of the parents asks the child to go upstairs so they can have some time alone. When the child leaves, the parents kiss.

Themes Subsumed Under Each Construct

Security

- Child Seeks Help

- Siblings/Peers Helping

- Realistic Active Mastery

- Adult Provides Comfort

- Adult Provides Help

- Adult Shows Affection

- Limit Setting

- Coherent Aggression

- Acknowledgement of Distress of Child and Adult

- Pleasurable/Realistic Representations of Domestic Life

Insecurity

- Child Endangered

- Child Injured/Dead

- Excessive Compliance

- Adults Unaware

- Adult Actively Rejects

- Adult Injured/Dead

- Extreme Aggression

- Neutralization

- Throwing Away

Disorganization

- Child Parents/Controls Adults

- Catastrophic Fantasy

- Bizarre/Atypical Material

- Magic/Omnipotence

- Bad/Good Shift

Defensive Avoidance

- No Engagement

- Disengagement

- Initial Aversion

- No Closure

- Premature Foreclosure

- Changes Constraints

- Avoidance of Conflict

- Denial of Distress

APPENDIX C

Comparison of Frequency Distribution of Transformed
and Untransformed Construct Variables

	Untransformed	Transformed
Secure		
Insecure		
Disorganized		
Defensive Avoidant		

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APPENDIX D

Example of Exclusion of a Variable due to Inadequate Representation of all
Combinations of Dependent and Independent Variables

Contingency Analysis of Adult Actively Rejects By WMCI Security

Count Total % Col % Row %	SSAP Theme Absent	SSAP Theme Present	
WMCI insecure	9 21.95 30.00 56.25	7 17.07 63.64 43.75	16 39.02
WMCI secure	21 51.22 70.00 84.00	4* 9.76 36.36 16.00	25 60.98
	30 73.17	11 26.83	41

*This cell has fewer than 5 observations. As a result, the Adult Actively Rejects variable
was excluded from the logistic regression analysis predicting WMCI Security

APPENDIX E

Variables Excluded from Logistic Regression Analysis Due to Insufficient Cell Size

Dependent Variable	Independent Variables Excluded Because of Insufficient Cell Size
WMCI Secure Classification	
	Clinically Significant SSAP Secure Construct Score
	Child Endangered
	Child Injured/Dead
	Adult Actively Rejects
	Adult Injured/Dead
	Throwing Away/Out
	Sibling/Peers Help
	Adult Provides Comfort
	Adult Provides Help
	Limit Setting
	Secure Aggression
	Acknowledgement of Child Distress
	Child Parents/Controls
	Magic/Omnipotence
	No Engagement
	Initial Aversion
	Changing Narrative Constraints
	Avoidance Within Narrative Frame
	Denial Distortion of Affect
	Child's Ethnicity
	Child has Learning Disability, Emotional Disability, or Other Health Impairment
	Child has a Psychological Diagnosis
	Child has a Trauma History
Clinically Significant SSAP Secure Construct Score	
	Child's Ethnicity
	Child has Learning Disability, Emotional Disability, or Other Health Impairment
	Child has a Psychological Diagnosis
	Child has a Trauma History
	Child's Gender
	Dyad was referred by TX DFPS
	Child was Adopted/Foster

Dependent Variable	Independent Variables Excluded Because of Insufficient Cell Size
Clinically Significant SSAP Insecure Construct Score	
	Child's Ethnicity
	Child has Learning Disability, Emotional Disability, or Other Health Impairment
	Child's Gender
	Child has a Psychological Diagnosis
	Child has a Trauma History
Clinically Significant SSAP Defensive Avoidant Construct Score	
	Child's Ethnicity
	Child has Learning Disability, Emotional Disability, or Other Health Impairment
	Child has a Trauma History
	Child has a Psychological Diagnosis
Clinically Significant SSAP Disorganized Construct Score	
	Child's Ethnicity
	Child has Learning Disability, Emotional Disability, or Other Health Impairment
	Child's Gender
	Child has a Psychological Diagnosis
	Child has a Trauma History

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