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Assessing Change in Attachment Security of Adolescents at Residential Therapeutic Programs

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ASSESSING CHANGE IN ATTACHMENT SECURITY OF ADOLESCENTS AT RESIDENTIAL THERAPEUTIC PROGRAMS

Laura Santa Thum, Ph.D.

Western Michigan University, 2016

Adolescents with significant, persistent behavioral and mental health problems are increasingly being treated in private residential treatment programs (RTPs). Recent research at such programs shows that adolescents' symptoms improve over the course of treatment and that such positive results persist up to a year post discharge. This study attempts to address what is occurring below the symptom level by exploring if attachment security increases as symptoms improve over the course of treatment in private RTPs. The level of attachment security was assessed along the dimensions of attachment avoidance and anxiety as a general construct and according to specific relationships (with mother, father, & therapist). Overall level of symptoms was also assessed. 146 adolescents from four private RTPs participated in the first round of data collection. Those adolescents were then assessed on three more occasions over the span of nine months. The overall number of participants declined over time due to adolescents completing their respective programs.

Using data from the first assessment, between group differences in attachment security were found between adolescents early in their treatment and those late in their treatment. Post-hoc analyses revealed that adolescents in the late stage group had lower scores on general attachment anxiety than those in the early stage group. Similar

differences were found between groups with attachment anxiety in regards to mother. With therapist, attachment avoidance was significantly lower for adolescents later in treatment. Growth curve modeling explored how attachment security changed within-subjects over the nine-month study. For all variables of interest, the linear growth model provided the best fit, indicating that attachment avoidance and anxiety decreased over time in a linear manner. Symptom level declined over time as well. As a predictor, symptom level did not predict the overall growth trajectory of general attachment security but had an effect on the initial scores of both attachment dimensions. Symptom as a predictor also predicted the initial intercept and growth over time for attachment anxiety in regards to mother. Overall findings indicate that attachment security increased over time for adolescents in private residential treatment. This change was paralleled by a decrease in overall symptom level.

ASSESSING CHANGE IN ATTACHMENT SECURITY IN ADOLESCENTS AT
RESIDENTIAL THERAPEUTIC PROGRAMS

by

Laura Santa Thum

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CHAPTER I

LITERATURE REVIEW

Effective treatment modalities for adolescents with significant behavioral, mental health, and academic problems are often elusive as such a population can be resistant to help and the problems that require treatment are complex. Traditional outpatient therapy typically offers too little service in terms of number of sessions and ability to provide a depth of support to affect much change, particularly with resistant youth (Burns, Hoagwood, & Maultsby, 1998; Harpaz-Rotem, Leslie, & Rosenheck, 2004). If an adolescent is welcoming of treatment, many managed-care clinics struggle to offer the needed number of sessions and types of services to support healthy, lasting change. The same is true for most inpatient psychiatric settings, which today are reserved for the most acute and emergent needs, even for severely disturbed adolescents. As psychiatric hospitalization stays become briefer due to third party funding, the treatment offered does little more than provide crisis management and medication stabilization (Behrens, Santa, & Gass, 2010; Pottick, McAlpine, & Andelman, 2000). Difficulties with these traditional treatment modalities suggest that alternative ways of treating psychopathology in adolescence should be explored.

Residential treatment is an alternative form of treating adolescent mental health and behavioral problems that provides an intensity of care and a depth and breadth of services that other treatment modalities do not. Most adolescents placed in residential settings have tried other forms of treatment with little benefit and thus require more restrictive settings (Burns et al., 1998; Russell, 2007). Similar to inpatient psychiatric hospitals, residential treatment programs (RTPs) provide 24-hour, out of home care;

however, the treatment environment at RTPs is less restrictive than hospitals and the services offered are for a longer term (Behrens et al., 2010; Bettmann & Jaspersen, 2009). Youth are placed in RTPs for a variety of reasons related to severe and chronic behavioral, academic, and mental health problems. RTPs are diverse in treatment approach and structure, ranging from locked facilities treating severely disturbed adolescents who need considerable containment, but who do not require hospitalization, to relatively open, campus settings that treat a broad range of mental health and behavioral problems (Behrens et al., 2010). Most programs create a mixture of behavioral modifications and emotionally-oriented, therapeutic interventions with the concept of the “milieu” as central to treatment where every aspect of daily life is designed to help adolescents’ emotional and behavioral functioning (Moses, 2000; Small, Kennedy, & Bender, 1991).

The majority of outcome research assessing RTPs has been conducted on public facilities (Bettmann & Jaspersen, 2009; Hair, 2005). Such research (Curry, 1991; Epstein, 2004; Hair, 2005) indicates that most of adolescents improve over the course of treatment but that recidivism rates are high, and success after treatment often has more to do with the environment to which the teenager returns rather than the effects of treatment itself. In contrast, other research (Connor, Miller, Cuningham, & Melloni, 2002) has found that students do worse over the course of treatment. The high rate of recidivism, as well as the research finding that some adolescents become worse as a result of treatment (Connor et al., 2002), has led funding agencies to question the utility of such treatment and has led the federal government to try and set laws restricting such programs (H.R. 3126, 2011).

Most of the studies that have reported negative results and have led to the scrutiny of residential treatment have been based on outcomes of publicly funded RTPs. Public RTPs were developed in the mid-20th century to serve youth referred by the court system, child protective services, and other public entities (Behrens & Satterfield, 2011). Such programs continue to operate in the majority of states across the country and are funded by the state and county. Due to the funding source, public RTPs typically serve youth from within a specific state. The majority of youth served in public RTPs are males (about 80%) from low socioeconomic backgrounds and who are ethnically diverse. In addition, many of the adolescents in public RTPs have had multiple out of home placements, such as in foster homes, psychiatric hospitals, and juvenile detention centers prior to admission into the residential program (Behrens & Satterfield, 2011).

In contrast, private RTPs began in the late 1980s and early 1990s with the most growth in number of programs occurring after 2000 (Young & Gass, 2011). Such programs were designed for adolescents who have not been helped by outpatient services or short-term psychiatric hospitalizations and who were sent to treatment by family sources instead of state or county officials (Behrens et al., 2010). Private RTPs are funded by the parents and thus serve youth from predominately high socioeconomic status (SES) backgrounds (Behrens & Satterfield, 2011; Young & Gass, 2011). The majority of such students are White, and males account for about 60% of the population (Young & Gass, 2011). Similar to public programs, private RTPs are found throughout the United States. Unlike public programs that house adolescents from one particular state, private RTPs typically draw adolescents from throughout the country and are thus made up of youth from diverse geographic backgrounds.

In contrast to outcome research on public programs, recent research conducted on private RTPs has shown that students improve over the course of treatment, and such improvements remain post discharge (Behrens & Satterfield, 2007, 2011; Tucker, Zelov, & Young, 2011). Behrens and Satterfield (2007, 2011) assessed 1,027 adolescents and their parents/guardians at nine private RTPs using scales that assessed functioning within the family, academic functioning, and behavioral and emotional symptoms. Assessments were given at admission, discharge, and six and 12 months after discharge. According to both adolescents and parents, scores on all scales showed significant improvements from admission to discharge. Furthermore, such changes persisted over the course of 12 months post-discharge, with only a slight “dip” in all scales by the 12th month (Behrens & Satterfield, 2007, 2011). Similarly, Tucker et al. (2011) assessed 983 adolescents in 11 private programs using the Youth Outcome Questionnaire (Ridge, Warren, Burlingame, Wells, & Tumblin, 2009), a standard assessment tool that measures a variety of behavioral and emotional problems. Average total scores on functioning improved significantly over the course of treatment with scores at onset in the clinically elevated range and at termination in the non-clinical range. These changes persisted 12 months after discharge (Tucker et al., 2011). Thus, such studies indicate that the majority of adolescents in private RTPs improve over the course of treatment and that such improvements persist after treatment is completed.

Research tracking changes in emotional, interpersonal, and behavioral symptoms of youth in private RTPs is useful in exploring changes as a result of residential treatment, as well as useful in determining the effectiveness of such treatment; however, the developmental change that may occur as a result of such long-term treatment is

missed when only assessing symptoms. An assessment of this developmental change might help to provide a more accurate representation of successful treatment outcome. Mordock (1988) is an advocate of this position and states that “developmental advancement” should be the most important measure of adolescent progress rather than simply symptom reduction. Assessing what is occurring below the symptom level may provide a better understanding of what is contributing to the lasting changes adolescents experience as a result of treatment at private RTPs.

Examining attachment security and its potential increase over the course of treatment may be one way to assess what is contributing to positive changes in adolescents at private RTPs. The level of one’s attachment security may underlie and influence a broad range of characteristics and behaviors, including many of the symptoms and behaviors that result in an adolescent needing residential treatment (Kobak, 1999; Rice, 1990). Sroufe, Egeland, Carlson, and Collins (2005) note the importance of taking a “developmental view” of disturbance wherein attachment security is described as an “organizational construct” for how person and environment variables interact to produce outcome (p. 240). Youth in public residential placements and youth who have been hospitalized have been found to be substantially more insecurely attached than their non-placement peers (Confalonieri, Traficante, & Viali, 2009; Mersham, 2002, Rosenstein & Horowitz, 1996). Similar findings of attachment insecurity are also likely in adolescents at private RTPs as they have many of the same behavioral and emotional symptoms at intake as do adolescents in public programs and hospitals. As adolescents progress through treatment and experience a decrease in the symptoms and behaviors that resulted in placement, the assumption is a fundamental change in personality and development is

occurring that is promoting this reduction of symptoms and leading to lasting changes (Santa, 2007). Bowlby (1988) emphasizes the potential of such personality development if one is surrounded by “favourable influence,” (p. 136). Such an influence can likely be found in the environments typical of most private RTPs where there is appropriate structure, a positive peer culture, and effective therapy.

In the remainder of this review, I will focus on the utility of attachment security as an outcome measure for adolescents in private RTPs. I first briefly review attachment theory in general, as well as the attachment system in childhood and adolescence and how attachment security relates to functioning at these stages. I then explore how attachment security is measured and assessed in adolescence. Next, I review the research on how attachment security may change over time as well as recent research on attachment security and therapeutic outcome. Finally, I explore the role of residential treatment as an appropriate setting for tracking change in attachment security given that such settings may provide the appropriate components allowing for a positive shift in attachment security.

Overview of Attachment Theory

Bowlby’s (1969/1982, 1988) theory of attachment focuses on the quality of the infant-caregiver relationship in the first years of life and how this quality influences personality development and the formation of future relationships. His theory is based on the premise that infants’ ties to their primary care providers are developed from an innate drive for proximity. Such proximity to a care provider increases one’s likelihood for survival and also creates the template to establish intimate emotional bonds (Bowlby, 1969/1982, 1988). This theory of development was in contrast to the leading theory of

child development at that time, drive theory, which stated that the reason a child develops a close tie to his or her mother was because she meets his or her physiological needs (Bowlby, 1969/1982). It also was in contrast to Freud's theory of psychosexual development that had the libido as the driving force spurring behavior and development.

In creating his theory of personality development, Bowlby (1969/1982, 1988) drew from a broad range of fields including psychoanalytic object-relations theory, evolutionary biology, ethology, and cognitive psychology. He incorporated his knowledge of these diverse fields with his understanding of studies about both animal and human infants in typical and atypical care to develop the basics of attachment theory. His theory has since been strengthened by a large body of research that continues to flourish today. In the remainder of this section, I will outline the basic concepts of Bowlby's theory of attachment, the research that resulted from his theory illustrating fundamental patterns in attachment behaviors, and how such patterns, that begin in infancy, contribute to later personality development through adolescence.

According to Bowlby (1988), care-seeking and caregiving, the two components in a reciprocal relationship, are basic and innate components of human nature. From birth infants actively engage in care-seeking activities that evoke care giving responses from primary care providers (e.g., crying, orienting to care provider, calming when held, etc.) (Bowlby, 1969/1982). These behaviors become organized between three to six months of age into what Bowlby terms "attachment behavior"—behaviors that result in attaining or maintaining proximity to the attachment figure (Bowlby, 1969/1982, 1988). Ainsworth (1964), in her study of African infants at home with their care providers, elaborated upon the concept of attachment behaviors and devised a more thorough list of attachment

behaviors from her observations of babies in their first six to 12 months of life. She noted that over the course of six months infants will develop a complex series of behaviors with their attachment figures such as differential crying (e.g., crying when held by others and stopping when held by caregiver), differential smiling and vocalizing (e.g., smiling and vocalizing more readily and frequently with primary caregiver), visual tracking of primary caregiver, distress when he or she leaves, following the care provider, using this figure as secure base from which to explore, clinging to primary care provider when afraid, and lifting arms in greeting after absence.

These attachment behaviors become organized through interactions with the primary care provider based on how he or she meets the infant's needs for care and proximity. Of particular importance to this organization is the sensitivity of the primary care provider in responding to the infant's signals, and the amount, and kind of interaction that he or she initiates (Bowlby, 1969/1982; Ainsworth, 1969). Bowlby (1969/1982) notes that a mother's sensitivity to the baby's signals, her timing of interventions, if such interventions are in harmony with the baby's rhythms, the amount of contact she initiates, the level of enjoyment they have in each other's company, and if the child's social initiatives lead to predictable results all influence the formation of the attachment system. Thus, there is a reciprocity between both infant and care-provider that creates and maintains the attachment behavior and the attachment system—a baby's characteristics, motivated by a drive for care and proximity, influences how a caretaker will respond, and in turn, the caretaker's responses, which are influenced by his or her personality, history of close relationships, and culture, strongly shape how the attachment behavior develops in the infant (Bowlby 1969/1982). The result is an attachment system,

specific to that infant that is necessary for survival and serves to shape personality development (Bowlby, 1969/1982).

Ainsworth, Blehar, Waters, and Wall (1978) added to Bowlby's (1969/1982) theory of an attachment system by conceptualizing the notion of the caregiver as a secure base who acts as a haven of security from which the child can then explore the surrounding environment and return to if distressed. Ainsworth's initial work was observing mother and infants in Uganda and then in middle class samples in the U.S. Based upon patterns and behaviors she noticed between both infant and mother in these samples, she and her colleagues (Ainsworth et al., 1978) created an experimental protocol, the strange situation, which operationalizes the infant/care-provider attachment system. Through this experiment they found that there are patterned behaviors to how infants use their caregivers as a secure base and from this, delineated three distinct styles of infant attachment to the primary caregiver: secure, anxious-ambivalent, and anxious-avoidant.

Infants who exhibit secure attachment have internalized their primary caregiver(s) as sensitively responsive to their signals of distress and thus, can depend on the caregiver for comfort in times of stress. Ainsworth et al. (1978) found that these secure babies were quickly soothed by close contact with their mother when distressed and, once soothed, were easily able to engage in and explore the surrounding environment. In contrast, infants with anxious-ambivalent attachment styles were quick to react negatively when their mother departed, were slower to be soothed on her return, and ambivalent in their responses to mother's return by being both clingy and at the same time holding back in frustration. They also had little exploratory behavior in the new environment. These

mothers were less responsive to their child's signals of distress and were less predictable with their maternal responses (e.g., they had poor timing, or responded with inconsistent emotion). Infants who were categorized as anxious-avoidant in the strange situation studies seemed to show great independence in exploratory behavior, exhibited little distress when their mother briefly left the room, and ignored her when she returned. These infants, although seemingly not bothered by their mother's absence, showed similar increases in heart rate and other indices of anxiety/arousal as the other children when their mother departed the room. This level of arousal, unlike the other children, did not dissipate on the mother's return. The mothers of these infants were found to be rejecting of their child's desire for connection, seemed to dislike close contact with their child, and were frequently irritated or angry with their babies (Ainsworth et al., 1979). Main and Solomon (1986) elaborated on Ainsworth's model and introduced a fourth attachment category termed disorganized/disoriented. Infants with this style of insecure attachment exhibited typical insecure attachment strategies; however, such strategies were marked by lapses that involved displays of intense fear, freezing, and disorientation. These infants either had a history of trauma or had mothers with a history of trauma who were disorganized and disoriented in their own attachment behaviors. Main and Solomon suggest that these mothers were often perceived as unpredictable and frightening to their infants.

By the end of the first year of life, when language is beginning to develop, the relationship experiences with the primary care providers begin to be internalized and produce the attachment patterns described above. Attachment theorists (Bowlby, 1969/1982, 1988; Bretherton & Munholland, 2008; Cobb & Davila, 2009) posit that this

internalization of the primary caregiving relationship results in Internal Working Models (IWMs), which are representational models of what to expect from others, how to think about oneself, and how to interact with others to get one's needs met. Such models are then used to predict the social world and organize responses to it. In this way, attachment style and level of attachment security becomes a stable, organizing feature of individuals' personalities and leads to habitual patterns of response and expectation in future close relationships (Cobb & Davila, 2009). These early attachment experiences and the resulting internal working models provide the initial basis of personality development. In the absence of significant corrective experience these initial internal working models are thought to be resistant to change as one ages, operating at an unconscious level, to influence experiences and outcome in future relationships; a notion that is supported by longitudinal studies indicating that attachment security remains fairly consistent over time (Sroufe et al., 2005; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; Weinfield, Sroufe, & Egeland, 2000).

The Attachment System After Infancy

Bowlby (1969/1982) notes that the attachment system and attachment behavior are not solely the realm of infancy and that they persist, in some form, throughout the lifespan as a central organizing feature of the personality. In his book, *Attachment*, he writes that “although usually less aroused, we see [attachment behavior] also in adolescents and adults of both sexes whenever they are anxious or under stress” (p. 3, 1969/1982). Since his and others' early work exploring infant development, much of the research has focused on child and adult attachment behavior. In this next section, I will describe the attachment system in both childhood and adolescence and summarize

research exploring potential influences of early attachment experiences on later social and psychological functioning, paying particular attention to adolescence as it directly relates to the focus of this research.

Attachment and Childhood

The attachment system created in infancy broadens as the infant develops. Preschool and school-age children continue to operate within the attachment system; however, such behaviors shift to match the cognitive, behavioral, and social maturation that occurs for children during the preadolescent years. As the child progresses through childhood, attachment behavior activates in times of stress, but the behavior shifts from a need for physical proximity and contact with the primary caregiver to a focus on the availability of this attachment figure (Marvin & Britner, 2008). Such a shift in how the primary attachment figure is used reflects the normative development that occurs in childhood in terms of increasing autonomy and individuation from the primary attachment figure (Mahler, Pine, & Bergman, 1973), a focus on establishing peer relationships and relationships with other adults (e.g., teachers, coaches, pastors, etc.), and increasing emotional maturity.

Another feature of the attachment system after the first year of life is how it broadens to incorporate other attachment figures. Bowlby (1969/1982) notes that typically toddlers and children have principal attachment figures but that others can also become attachment figures who are arranged subordinately under the identified principal care provider. Bowlby (1969/1982) describes this as a hierarchy of attachment relationships that begins to develop shortly after infancy and continues throughout the life. He hypothesizes that such a hierarchy could incorporate other members of the child's

family, preschool and elementary teachers, or any other close person. These attachment figures are not treated equivalently—the child shows a clear discrimination between the figures in the hierarchy with ultimately the primary attachment figure sought after to mediate extreme distress.

In addition to a broadening and differentiating of the attachment system that occurs in childhood, researchers have found that there are differences in a broad range of functioning between children who were assessed as secure versus insecure as infants in their attachment organization. Ainsworth et al. (1979) and Sroufe (2005) summarize a number of longitudinal studies that tracked how infants, assessed in the strange situation experiment, fared as children in terms of psychosocial, behavioral, and cognitive development. Such studies found that the children who were classified as secure in infancy were more likely to be positively outgoing, cooperative with peers and other adults, more competent in their exploratory behaviors, and tended to receive higher scores on developmental tests than children who were classified as insecure in infancy (Ainsworth et al., 1979; Sroufe, 2005). In contrast, children who were classified as insecurely attached as infants were more easily frustrated, over-reliant on their care provider, more incompetent in problem solving, more deficient in exploratory behaviors and cooperativeness, and struggled more with inappropriate aggression than those children who were classified as secure as infants (Ainsworth et al., 1979; Sroufe, 2005). Such findings suggest that there is a relationship between early relational experiences with primary care providers, the internal working models that result, and later functioning in childhood in a variety of realms, with children who generally do more poorly on a variety of measures tending to have been classified as insecurely attached in infancy.

Attachment and Adolescence

The expansion of the attachment system and drive for autonomy that begins in childhood continues in adolescence with achieving independence from primary attachment figures a critical goal (Cretzmeyer, 2003). In general, this developmental period is one of great stress and change in all areas of functioning (emotional, social, physical, and cognitively). The attachment system is no different, with adolescence marked as a key transitional period. The transition begins in early adolescence, where there is a shift away from dependency on primary attachment figures. The shift continues into late adolescence, where one eventually can function independently of one's parents, begins to establish lifelong attachment bonds with a partner, and even potentially becomes an attachment figure to one's own child (Allen, 2008). Despite shifts in importance and primacy, Bowlby (1969/1982) notes that for a majority of adolescents, their attachment to parents or other attachment figures persists throughout this stage. Developing a new balance between attachment behaviors towards primary caregivers and the ever-growing exploratory and autonomy needs of this developmental period is critical (Allen, 2008). Adolescents' abilities to establish a healthy balance between the individuation process while maintaining a connection with their parents is crucial for adaptive functioning at this stage (Cretzmeyer, 2003). This balance is characteristic of youth with a secure attachment style.

The drive for individuation and the shifting of attachment relationships is spurred by the cognitive changes that take place during adolescence. The stage of formal operational thinking occurs during this stage of development allowing for abstract thought and metacognition (Piaget, 1977). This shift in cognitive ability allows for the

development of “states of mind” regarding attachment experiences leading to the construction of a more general, integrated idea of such experiences (Main et al., 1985). Being able to reflect back upon and reevaluate attachment relationships with parents also allows for potentially modifying how one thinks about past and current attachment experiences and to reconstruct, to some degree, one’s own state of mind regarding attachment (Allen, 2008). To effectively reflect on and achieve a more objective understanding of their attachment experiences, adolescents must be able to gain emotional distance from their parents. Allen (2008) claims that this distance may be crucial in allowing adolescents to potentially resolve attachment difficulties and to then form more secure relationships in the future. The shift in cognitive abilities, combined with the emotional drive for autonomy, highlights how the stage of adolescence may be a critical period for altering and changing the course of internal working models of attachment experiences.

With the cognitive and autonomy changes in adolescence described above also comes an increasing ability for adolescents to communicate their internal states. The quality of this communication with others also influences attachment relationships at this time as well as the drive for autonomy. The ability to communicate truthfully and fully with parents about important topics, coupled with the parents’ ability to allow the adolescent to maintain the relationship with their child while letting him or her gain autonomy, is critical to supporting a secure attachment organization (Allen, 2008). Allen (2008) notes that a “robust” marker of insecurity of attachment during adolescence is the difficulty a teen has in communicating his or her internal states accurately to close others. Securely attached adolescents and young adults are likely to continue to use their parents

as a secure base; however, instead of clambering up into their laps for safety and comfort as they did as infants, they are more likely to meet their needs for proximity and safety through communicating their emotions and/or by mentally reflecting on the relationship to regain equilibrium. The shift in importance to communication in meeting attachment needs, coupled with the cognitive shifts that take place towards metacognition, again highlight how this stage of development is a critical period in the attachment system, where there may be greater opportunity for changes in security to take place, either in a positive or negative direction.

Similar to the research described earlier that noted a relationship between attachment security in infancy and functioning in childhood, relationships have been found between secure and insecure attachment organizations and behavioral, emotional, and interpersonal characteristics in adolescence. Because of these relationships, attachment theory is critical to understanding both normal and pathological development in adolescents. In a review of the longitudinal studies from the Minnesota Study of Risk and Adaption from Birth to Adulthood, Sroufe et al. (2005) found significant positive associations between a secure attachment style in infancy with characteristics in adolescence, such as self-esteem, positive affect, resiliency, and social competence. Studies assessing attachment security only in adolescence, rather than longitudinally, have also found positive associations between secure attachment and the management of conflicts with others, assertiveness, social competence, self-esteem, sense of identity, ease of managing transitions, and emotional adjustment (Kobak, 1999; Rice, 1990). In contrast, insecurely attached adolescents were found to be more anxious, immature, impulsive, sensitive to failure, overly dependent in relationships, hostile to authority,

angry, and/or withdrawn than those with greater attachment security (Mackey, 2005; Rice, 1990). These researchers suggest that a secure attachment organization in adolescence and the resultant internal working model provide a strong basis for emotional, relational, and behavioral success in adolescence.

In addition to the relationship between attachment security and emotional and social adjustment in nonclinical samples of adolescents, attachment style or level of attachment security has also been linked to later psychopathology in adolescence. In their longitudinal studies, Sroufe et al. (2005) found that infants rated as avoidantly attached were more likely to develop early-onset antisocial behavior in adolescence than those associated with the other attachment styles. Furthermore, infants rated as ambivalently attached in infancy had a higher incidence of anxiety disorders later in life than those who were securely attached. They also found that infants who were classified as disorganized in their attachment style had a greater incidence of dissociative symptoms in late adolescence when compared to those classified with other attachment styles (Sroufe et al., 2005). In adolescents who have required inpatient treatment, ambivalent styles of attachment were most closely linked to internalizing problems such as depression and anxiety, or personality disorders such as obsessive-compulsive, histrionic or borderline than other attachment styles (Allen, 2008; Rosenstein & Horowitz, 1996). Adolescents in inpatient treatment classified as having avoidant attachment styles had a greater rate of delinquency and externalizing behaviors such as conduct problems and substance abuse, as well as narcissistic or antisocial personality disorder (Allen, 2008; Rosenstein & Horowitz, 1996). Such results point to the potential relationship between insecure

attachment and mental and social health problems during adolescence, particularly among adolescents requiring intensive forms of treatment.

Although attachment researchers note a strong link between insecure attachment organizations and negative outcomes, authors of such research (Sroufe, 2005; Sroufe et al., 2005) note that insecure attachment should not be viewed as pathological or necessarily as the cause of psychopathology. Instead, insecure attachment organizations might be better understood as creating potential risk factors for later psychological, social, and/or behavioral disturbances. In turn, Sroufe (2005) notes that a history of secure attachment is not a guarantee for current and future healthy functioning but rather likely serves as a protective factor. Thus, the strong link between early attachment insecurity and later behavioral, emotional, and/or psychological disturbance in adolescence suggests that attachment insecurity could be a risk factor underlying the symptoms of many adolescents requiring residential treatment. This notion, coupled with the understanding that adolescence is a period where the attachment system may be most open to change due to the cognitive and emotional changes that occur, points to the importance of exploring what is occurring in attachment security for youth with significant emotional and behavioral disorders.

Measuring Attachment Security After Infancy

Exploring what is occurring in the attachment system during adolescence requires that attachment security is appropriately measured. There are a number of methods to assess attachment security and such ways differ depending on the participant's developmental stage and on what the researcher wants to measure. For example, most assessments of attachment style in infancy involve the use of the strange situation

protocol, a behavioral experiment that activates the infant's attachment behavioral system (Ainsworth et al., 1979; Bowlby, 1988). In contrast, assessing attachment security of adolescents and adults focuses on their memories of early attachment experiences and on their current perceptions of close relationships (Levy & Kelly, 2010). Such measures are either interview based or self-report surveys. In this section, I will review these two ways of measuring attachment security after childhood. I will also explore how assessing security in adulthood using self-report measures compares to strategies utilized in adolescent studies, highlighting what is needed in adolescent research to more adequately assess security and potential changes in security that may take place at this stage. Lastly, I will review more recent research illustrating how measuring both general and relationship-specific attachment security is important in gaining a fuller understanding of the attachment system.

The most robust attachment interview used with adults and adolescents is the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1984). The AAI was developed to classify adult attachment styles into categories that parallel the attachment classifications Ainsworth et al. (1979) identified in infancy. The AAI is a semi-structured interview that consists of questions about the adult's memories of childhood experiences with attachment figures. The focus is on what Main et al. (1985) term the "level of representation" of attachment (e.g., internal working models), rather than direct, measurable attachment behaviors. The AAI is recorded, transcribed, and coded using a system that scores both the content of the interview as well as various qualities of the interviewee's answers such as coherence, consistency, and emotional organization (Mikulincer & Shaver, 2007). In this way the dynamics of the internal working models of

attachment relationships, or states of mind regarding early relationship experiences, are indirectly revealed by how an individual speaks about childhood relationships (Bartholomew & Shaver, 1998). The AAI has become the gold standard in terms of assessing attachment in adulthood and adolescence because of its reliability and validity; however, due to the length of time to administer, to transcribe, to code, and due to the necessary training that one must undergo that is a lengthy and costly endeavor, it has been impractical to use for many researchers (Brennan, Clark, & Shaver, 1998, Levy & Kelly, 2009).

To counter some of the difficulties with using the AAI, researchers have developed a large number of self-report measures to assess attachment security in adolescents and adults, some of which are categorical measures intended to somewhat align with the AAI categories and others that focus on specific constructs related to attachment such as trust or separation protest (Brennan et al., 1998). Self-report measures of attachment typically assess one's perceptions of and feelings about attachment relationships and thus are conscious evaluations of either past or current experiences in close relationships (Bartholomew & Shaver, 1998). Self-report measures are relatively quick and easy to administer, require little training to use, and are cost effective, with many having strong reliability and validity. Criticisms of such measures are that they are subject to response biases and that they rely on an individual's ability to accurately and honestly record their perceptions (Brennan et al., 1998). Moreover, many self-report measures are only moderately correlated with the AAI indicating that the two methods of assessment capture different, albeit related domains of attachment security (Bartholomew & Shaver, 1998). The domain of focus for the AAI is early child and parent relationships

where attachment is conceptualized by the internal working models that are revealed indirectly by the way a person talks about these early relationships. In contrast, the domain of focus for self-report measures is on current thoughts of general or specific relationships, with attachment conceptualized as feelings and behaviors in close relationships of which the person is currently aware and can describe directly. Such differences in how attachment is conceptualized make comparing results between the two assessment methods problematic at best. Furthermore, the growing interest in attachment research has sparked an increase in the number of self-report attachment scales resulting in a confusing array of measures available to researchers (Brennan et al., 1998).

In an effort to reduce this confusion, Brennan et al. (1998) incorporated most of the existing self-report measures of attachment and created a pool of 323 items that assess 60 named attachment-related constructs. From this they factor-analyzed the 60 subscale scores and found two independent factors of Avoidance and Anxiety indicating that the majority of self-report attachment measures, although created to assess styles of attachment or dimensions of various attachment constructs, tap into these two same underlying dimensions. Those who score low on both Avoidance and Anxiety are described as secure; likely having had a history of experiences where their attachment figures were reliably available and supportive (Mikulincer & Shaver, 2007). Higher scores on either dimension, or on both dimensions, are reflective of attachment insecurity (Mikulincer, Shaver, & Berant, 2013). Such insecurity results from a relational history with primary attachment figures where proximity seeking, a primary attachment strategy used by infants to gain a sense of security, is not effective. Other strategies, called secondary attachment behaviors, are developed to regulate affect and are reflective of

either attachment anxiety or attachment avoidance (Mikulincer & Shaver, 2007). Attachment related anxiety describes one's insecurity about an attachment figure's availability and responsiveness; a worry that one's close other will not be available when needed. Attachment related avoidance highlights an avoidance of intimacy, discomfort with closeness, and valuing self-reliance; a general distrust of close others with a desire to be behaviorally independent and emotionally distant (Brennan et al., 2008; Fraley & Phillips, 2009; Mikulincer & Shaver, 2007). Such findings support earlier models by Bartholomew (1990) and Bartholomew and Horowitz (1991) that shows a clear two dimensional model of attachment security. From their factor analysis Brennan et al. (1998) created a 36-item scale, the Experiences in Close Relationships scale (ECR), which assesses the two dimensions of attachment avoidance and attachment anxiety. The ECR has since become the most commonly used self-report measure of adult attachment (Fraley & Phillips, 2009) as there is growing consensus in the attachment research community supporting measuring attachment along these two dimensions (Obegi & Berant, 2009).

Measuring attachment security along the dimensions of anxiety and avoidance differs from self-report, interview, and behavioral assessments that attempt to categorize individuals into different attachment styles or types (e.g. anxious-avoidant, anxious-ambivalent, etc.). A dimensional approach allows for a more nuanced perspective of measuring attachment security as one can be placed along a continuum rather than labelled as a discrete type, ignoring within group differences (Fraley & Phillips, 2009). Fraley and Waller (1998) posit that reliance on a typology model of attachment security does not capture the natural structure of attachment security, which they found to be “a

quantitatively distributed variable on which people differ in degree rather than in kind” (p. 108). They therefore recommend using a dimensional measure when assessing attachment security. Assessing attachment security in this way rather than categorically also allows assessment of continuity and change, leading to a better understanding of experiences that may impact attachment security (Fraley & Phillips, 2009).

Although using the ECR, which assesses the underlying dimensions of attachment avoidance and attachment anxiety, is recommended when using self-report attachment measures for adults, many of the self-report attachment scales used for adolescents specifically are not designed to determine one’s location along these dimensions or to align with attachment security categories (Mikulincer & Shaver, 2007). For example, the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenburg, 1987), a fairly common self-report scale used with adolescents, measures the degree of mutual trust with caregivers and peers, the quality of communication, and the degree of anger and alienation. Armsden and Greenburg (1987) cite these three constructs as important in understanding an adolescent’s internal working model of attachment figures. In addition to the IPPA there are many other self-report measures of adolescent attachment security all of which purport to assess different and important facets of attachment security (For a review, see Lopez & Grover, 1993; Mikulincer & Shaver, 2007). The large number of self-report measures utilized in the adolescent attachment literature makes comparisons across research difficult as well as confusing to determine which instrument to use when planning a study.

Utilizing a more standard measure, such as the ECR, that assesses attachment security along two dimensions would benefit the adolescent attachment literature as

comparisons can be made from adolescence into adulthood and subtle changes in attachment security can be tracked. Very little research in the literature uses the ECR with truly adolescent populations (i.e., ages 13 to 18 instead of undergraduates in college). Researchers who have explored assessing attachment security along the dimensions of avoidance and anxiety have utilized shorter and/or revised forms of the original ECR (Nilsson, Holmquist, & Jonson, 2011; Wilkinson, 2011). Nilsson et al. (2011) modified the ECR by asking their adolescent sample (mean age of 16.7 years) to answer items related to the person to whom he or she feels closest. They found a clear factor structure supporting the two dimensional conceptualization in this age group. Wilkinson (2011) utilized the ECR-R-GSF, a revised, general short form of the ECR with an adolescent population (mean age was 17 years). It was shortened from 18 items per scale to 10 and the wording was changed to reflect general rather than romantic attachment to a significant other. Wilkinson's results supported a two factor model of attachment avoidance and anxiety in this population and again in a younger population (mean age of 15.6 years) when assessing general, rather than romantic, attachment in this age group. Such results, although limited, indicate that further exploring the utility of the ECR with adolescent populations is indicative.

General and Relationship-Specific Attachment Orientations

Adult and adolescent measures of attachment typically assess one's general, or global attachment orientation and/or security, with researchers assuming that attachment security is the same across a variety of relationship domains. Some researchers (LaGuardia, Ryan, Couchman, & Deci, 2000; Overall, Fletcher, & Friesen, 2003; Pierce & Lydon, 2001) however, have increasingly found a high degree of variability in

attachment security across relationship domains and that such variability is related to, yet distinct from, what is found when attachment is measured as a global construct. Overall et al. (2003) found that individuals have both relationship-specific and global working models of attachment and that such models are hierarchically arranged with relationship-specific attachment orientations nested underneath the more overarching global attachment orientation. Researchers (Janzen, Fitzpatrick, & Drapeau, 2008; Overall et al., 2003; Pierce & Lydon, 2001) hypothesize that global attachment orientations are based upon early relationship experiences with primary attachment figures and that these orientations become activated in new relationships informing the formation of relationship-specific attachment orientations. These newer attachment relationships, however, may be more flexible and open to change. Such change can occur when one experiences information that does not align with one's global model of close relationships.

Because of such findings, researchers in this area of study advocate incorporating both general attachment and relationship-specific attachment measures to obtain a more complete picture of attachment security (Fraley, Heffernan, Vicary, & Brumbaugh, 2011; LaGuardia et al., 2000; Pierce & Lydon, 2001). Fraley et al. (2011) note that people can be undifferentiated or highly differentiated in their attachment orientations across relationships and that incorporating measures assessing relationship-specific attachment security captures this level of differentiation. Furthermore, researchers (Janzen et al., 2008; Sauer, Anderson, Gormley, Richmond, & Preacco, 2010) have found that in the psychotherapy setting, relationship-specific attachment orientations to the therapist, are open to and flexible to change and impact therapy outcome along specific domains in

ways that general attachment orientations do not. Differences noted in such research between global and relationship-specific attachment orientations as well as findings indicating that the two are correlated but not redundant make assessing both constructs important when measuring attachment security.

Change in Attachment Security Over Time

Researchers utilizing both interview and self-report measures of attachment security have found that attachment security remains relatively stable over the lifespan; however, Bowlby (1988) notes that attachment security can change under certain circumstances, such as major life transitions or a traumatic event and research supports this. In this section, I describe the longitudinal research supporting Bowlby's hypothesis of change as well as explore research tracking how attachment security changes over the course of therapy in general and in adolescents in residential treatment specifically.

A number of longitudinal studies have looked at the stability of attachment security (Main, Hesse, & Kaplan, 2005; Waters, Merrick, Treboux, Crowell, & Albershein, 2000; Weinfield, Sroufe, & Egeland, 2000). Although the majority of such work finds attachment security generally stable over time, there were important findings related to the subsets of the samples that did change over time. Main et al. (2005) found that participants who had different attachment styles when assessed at infancy with the strange situation and again in adulthood with the AAI experienced a traumatic event (e.g., death of a parent, ongoing fatal illness of a parent) at three times the rate of those whose attachment styles remained the same. In their exploration of attachment change from infancy to late adolescence in a "high-risk" sample, Weinfield et al. (2000) found that by age 19 most of the individuals in the sample had changed from a secure attachment style

as infants to an insecure attachment style as adolescents. The authors noted that in this sample, maternal depression, evidence of child maltreatment, and poor family functioning were critical correlates to the change that occurred in attachment security. In their study exploring attachment stability, Waters et al. (2000) found that the incidence of stressful life events that occurred to participants from infancy to age 18 was related to a change in attachment status from secure to insecure. Stressful life events were defined as (a) loss of a parent, (b) parental divorce, (c) life-threatening illness of parent or child, (d) parental psychiatric disorder, and (e) physical or sexual abuse by a family member. Again, Waters et al. highlight that attachment security can change due to environmental conditions, such as changes in attachment figures, a traumatic event, or the functioning of the family unit.

Results from the longitudinal studies mentioned above also found positive changes in attachment security. Weinfield et al. (2000) identified some adolescents in their sample as securely attached at age 18 with the AAI but who were previously assessed as insecurely attached in infancy. These adolescents were more likely to have experienced better family functioning at age 13 than the adolescents who remained insecure over time. Adolescents in this insecure-secure group also did not experience any form of maltreatment over the course of their childhood. The adolescents who remained classified as insecure had higher scores on the indices of maltreatment. The authors suggest that insecure attachment styles can shift towards greater security due to an environment that is supportive and includes relationships that are positive. Such a finding gives support to further exploration of the impacts a change to a more stable, positive environment can have to the attachment system.

The results of the studies described above that show changes in security in both positive and negative directions are supported by shorter longitudinal studies tracking changes in attachment security and in functioning during adolescence itself (rather than tracking from infancy into adolescence). For example, Allen, McElhaney, Kuperminc, and Jodl (2004) examined the levels of continuity in attachment security and the potential predictors of change in attachment security over a two-year time period in their adolescent sample. They found that overall, the level of attachment security (as measured by the AAI) over the course of two years did not change significantly, supporting research conducted in early childhood that shows good stability in attachment security over a one to two-year period. Their work also supports an earlier study conducted by Zimmerman and Becker-Stoll (2002), using the AAI with a non-clinical sample of adolescents at age 16 and again at age 18 that also found no significant differences in means scores for each AAI dimension over time. However, when Allen et al. explored the relationship between various predictors that were assessed at time one and attachment security at time two they found some significant differences. Three risk factors in particular seemed to predict lower levels of attachment security at time two. These factors were adolescents' reports of depressive symptoms at age 16, adolescents' reports of over-personalized and enmeshed discussions with their mothers, and those that were living in poverty. In contrast, adolescents who did not endorse any of these risk factors at age 16 showed increases in attachment security over the two-year period. Their study illustrates how a variety of relational, intrapsychic, and environmental stressors have a negative relationship to an adolescent's state of mind regarding attachment security. The study also illustrates how in the absence of those stressors, attachment security, measured as a

global construct, can increase. This finding is particularly important in lending support to the idea that a positive change in relationships and/or environment can lead to a positive shift in attachment security at this developmental stage.

Lastly, I found two studies in the literature assessing attachment security longitudinally with adolescents using multiple time points and growth curve modeling to explore change over time (Brenning, Soenens, Braet, & Beyers, 2013; Buist, Dekovic, Meeus, & van Aken, 2002). Growth curve modeling allows for an exploration of change in development over time in a nonlinear way rather than simply exploring pre and post mean level changes, and thus, offers a more complex picture of what is occurring over time (Duncan & Duncan, 2004). Buist et al. (2002) used latent growth curve modeling to explore how the quality of attachment changes over time in a nonclinical sample of adolescents. They were also interested in if there are differences in attachment quality in specific relationships, to mother and to father. Using the IPPA they measured attachment security in five age cohorts of adolescents, three times, with one year intervals between each measurement. They found that in general, adolescents' quality of attachment to both parents decreased over time with differences in perceived quality of attachment to mother and to father. The quality of an adolescent's attachment to his or her mother was significantly higher than to father across all measurement points. Adolescent girls reported higher quality of attachment to both mother and father when compared to boys. They found that the quality of attachment of female adolescents to their mothers significantly declined as adolescents aged, and adolescent males to their mothers declined early on (between ages 11 and 13) with no clear picture of change afterwards. Towards the father, male adolescents showed a steady decline in perceived attachment quality

from age 11 to 17 while adolescent girls showed a steep decrease up to age 15 and then an increase. Their findings highlight how attachment security (in this study defined as “quality”) can change in non-linear ways during the period of adolescence. More importantly, relationship specific patterns emerged with the quality of attachment to parental figures differing depending on the adolescent’s gender and the gender of the attachment figure.

Brenning et al. (2013) used a modified version of the revised ECR, the ECR-R Child, to explore the degree of change in adolescents’ attachment security to their mother, as well as change in symptoms of depression over a three-year period. The adolescents were between the ages of 12 and 15 and they were assessed three times at yearly intervals. Using growth curve modeling they found that both attachment dimensions (Avoidance and Anxiety), as well as depressive symptoms, increased over time. Of importance, they found small mean level increases in attachment anxiety and avoidance, indicating that adolescents experienced their relationship with their mothers as increasingly insecure in this developmental period. The authors note, however, that there were significant differences between subjects in this study, with some participants showing increases in insecure attachment, others showing no change, and others having a decrease in insecurity.

The adolescents in the two studies described above were from middle income, intact family systems that likely did not experience the type of stressors that have been linked with attachment security change over time in the longer longitudinal studies described previously. Moreover, such results seem to show evidence of changes that occur at this developmental period that are normative for this stage. What is unclear is

what patterns would emerge using a clinical sample with a history of family discord, mental health problems, and/or other stressors.

In summary, the longitudinal studies summarized in this section all describe changes that occur in attachment security. Although the underlying IWMs influencing attachment security are generally resistant to change, there seems to be both a normative change that takes place specifically in adolescence, as well as changes in security that are related to other variables such as the quality of the environment, the quality and stability of close relationships, and experiencing certain negative (or positive) events. Such conclusions are tentative at best. More research is needed exploring what occurs to attachment security specifically during adolescence and what variables are related to potential change.

Change in Attachment Security as a Result of Treatment

Changes in attachment security over time due to life transitions or to other factors in the environment indicate that internal working models can shift. This relationship supports the idea of exploring how therapy, which provides a client with a supportive environment and relationship, can influence and potentially change attachment security. In fact, Bowlby (1988) postulates that effective therapy can increase security and identifies five “therapeutic tasks” to use when working with individuals. The first task is for the therapist to provide a “secure base” from which the individual can explore both current and past experiences. Such a base typifies a good therapeutic alliance. Second, the therapist assists clients in exploring their expectations of self and others in relationships and the effects of unconscious bias on relationships. Third, the relationship between the client and therapist is examined as such bias often manifests in the therapeutic

relationship itself. The last two tasks involve examining whether current expectations and beliefs may be a product of childhood events and their effect on current relationships (Bowlby, 1988).

The central concept of working with a client as outlined above is that current psychopathology stems from insecure IWMs formed in early childhood that are maladaptive when applied to current relationships (Cobb & Davila, 2004). Thus, a goal of therapy is to explore and revise these insecure and inadequate models within the realm of a trusting therapeutic relationship and to replace them with more secure IWMs (Cobb & Davila, 2004). Just as the development of psychopathology takes time, effective therapy targeted on revising insecure internal working models is a time intensive endeavor, particularly when using the tasks outlined above (Sroufe et al., 2005). Therefore, treatment of emotional and behavioral problems in adolescence from an attachment perspective is one that takes time and involves creating a secure attachment experience in which an individual feels accurately mirrored by a therapist, and perhaps by peers, in a long-term setting that allows the time and experience to create an adaptive and accurate IWM.

Researchers have recently begun exploring if and how therapy alters IWMs towards higher levels of security (Levy et al., 2006; Maxwell & Potter, 2009; Tasca, Balfour, Ritchie, & Bissada, 2007; Travis, Binder, Bliwise, & Horne-Moyer, 2001). Travis et al. (2001) found that none of the male and female adults participating in their study had a secure attachment style, as measured by an attachment interview, at the beginning of treatment. After 25 sessions of time-limited dynamic psychotherapy, 24% of the sample had changed to a secure attachment style. Thirty-four percent of their sample

retained the same insecure attachment style post-treatment, with the remaining participants changing to a different style of insecure attachment. It is important to note that in their study, none of the clients had secure attachment styles prior to treatment. Similarly, Levy et al. (2006) found an increase in security in adult females with borderline personality disorder after one year of psychotherapy treatment with about 4% having secure attachment at the beginning of treatment and 32% at the end of treatment. Tasca et al. (2007) found a significant decrease in attachment anxiety and avoidance over the course of a 16-week group therapy experience for adult women with binge eating disorder. Furthermore, changes to greater attachment security mirrored positive changes in binge eating behaviors. In a follow up study, Maxwell, Tasca, Ritchie, Balfour, and Bissada (2014) found similar results in attachment security and symptoms over the course of treatment and that such decreases in attachment anxiety and attachment avoidance persisted at 12-months post-treatment. Participants also reported significant decreases in interpersonal problems. Wesselmann and Potter (2009) examined how attachment status, as measured by the AAI, changed over the course 10-15 EMDR sessions occurring in the span of 12 months. They found that all the participants in the study shifted towards more secure attachment statuses (e.g., from “dismissive” to “earned secure”) when measured by the AAI at 12 months. This particular exploration was a case study of only three individuals and thus, would need to be replicated with a larger number of participants for more generalizable results. Lastly, Lawson, Barnes, Madkins, and Francios-Lamonte (2006) found that males charged with domestic violence showed a significant increase in secure attachment over the course of 17 weeks of integrated cognitive-behavioral/psychodynamic group treatment as well as a decrease in violent behaviors.

Results from these studies indicate that change in attachment security through therapy is possible and that changes in security parallel changes in symptoms. These studies also illustrate how a specific technique or orientation in counseling is not necessary for change to occur but rather point to the importance of the necessary ingredients outlined by Bowlby (1988) described above. Tracking change in attachment security over the course of treatment is a relatively new field of empirical research and has thus far only narrowly focused on specific populations of adults and/or specific treatment modalities. Because of this focus, such work may not be generalizable to adolescent populations in general and to clinical populations of adolescents in residential treatment specifically. More research exploring how attachment informed treatment can influence attachment changes at this developmental period is needed.

Residential Treatment and Change in Attachment

Attachment informed therapy is not a clinical orientation in itself, but rather involves a range of treatment modalities and is focused on a variety of tasks, such as restructuring cognitions associated with IWMs and emotional, behavioral and interpersonal change (Bowlby, 1988). The treatment environment of many private RTPs for adolescents provides many of the same necessary ingredients for attachment as a therapeutic modality. Typically, residents are assigned a primary therapist and placed on a team with other residents where individual and group therapies occur. Bowlby (1988) noted that adolescents may form parent surrogates, who serve as an appropriate secure base from which to explore, providing the adolescents with the opportunity for increased social competence and stability. Such a relationship may alter the adolescent's sense of security. The primary therapist or other close staff member at an RTP can fill this role as

they are providing in-depth clinical services to the adolescent over a number of months to years and in a variety of settings; they often play the role of the parent. In the context of this relationship the adolescent is then faced with challenges in all aspects of functioning as the treatment setting provides structured interventions socially, behaviorally, and academically. The goal of such treatment is to work on developing the personalities of adolescents so that they are better able to manage stress, deal more effectively with others, and ultimately feel more secure about themselves in relationships (Santa, 2007). Such an outcome resembles the definition of a securely attached individual.

There has been little published research on the potential for change in attachment security over the course of therapy in general and a dearth of studies exploring such change over the course of residential treatment specifically despite the appropriateness of the environment for addressing such a phenomenon. Bettmann and Tucker (2011) assessed changes in adolescents' perceptions of attachment relationships over the course of a 7-week wilderness treatment experience. Participants were 96 male and female adolescents whose parents were placed them in wilderness treatment. The majority (90%) of the sample was White and the mean age was 16. Attachment was measured with three different self-report attachment scales, all assessing unique aspects of attachment security. The findings were mixed, with some indicating an increase in attachment security for some dimensions of attachment, such as a perceived increase in emotional connection with parents, and other findings showing a decrease in attachment security for other dimensions, such as a sense for the caregiver's availability, sensitivity, and responsiveness to their emotional needs. The authors suggest that such results may be reflective of the treatment environment itself where adolescents are learning about

themselves and their families through therapy, and thus, may be growing more aware of potential dysfunctional elements of their relationships. This increased awareness of the negative aspects of their family history and current relationships with parents may then negatively influence their perceived attachment to them.

A limitation of Bettmann and Tucker's (2011) study is that attachment security was assessed using a number of measures, none of which assess attachment along the preferred dimensions of anxiety and avoidance. Also, the duration of treatment under study, seven weeks, was relatively short, and only one program was assessed. Seven weeks is likely too short of a time for IWMs and attachment security to change significantly; such changes likely require more time, and engagement in intensive treatment. Some authors note that such change could take years (Sroufe et al., 2005). Longer forms of residential treatment, such as treatment typical of private RTPs that provide nine months to two years of treatment, might provide the time, experience, and context for residents to work through and change their maladaptive early attachment experiences by experiencing and incorporating new attachment relationships with significant staff and/or peers. Such a conjecture seems appropriate given the positive shifts in attachment security that occurred with outpatient clients undergoing therapy for up to one year as described in the prior section (Levy et al., 2006; Tasca et al., 2007; Travis et al., 2001).

Two unpublished dissertations have explored attachment security in adolescents at RTPs over a longer period of time than the seven-week study just described (Bettman & Tucker, 2011); however, both studies were completed at public RTPs rather than private. Merscham (2002) examined the relationship of attachment security to change in

clinical symptoms and adaptive skills of 31 adolescents over the course of three months in a public residential treatment program. The sample was racially diverse and consisted of both males and females who were placed in treatment by the court system. Attachment style was assessed using a categorical measure that grouped respondents into one of four attachment styles (i.e., secure, dismissing, preoccupied, and fearful). Merscham found that a majority of the adolescents in the sample were rated as one of the three insecure attachment styles at the onset of treatment and there was a non-significant increase in insecure attachment styles when assessed again at three months. Participants also showed no improvements in symptoms over the course of three months. Again, time is a limitation of this study as three months is a relatively short duration of assessment making significant differences across time difficult to detect. Attachment was also assessed using a categorical measure, which makes discerning potential subtle shifts in attachment security more difficult than when using a continuous measure of attachment security along the dimensions of avoidance and anxiety.

Sanders (2003) tracked changes in a number of variables, including attachment security, over the course of nine months in 76 male adolescents at a publically funded program in Canada. The majority of the males in this sample were placed by the judicial system (75%) and all were over the age of 12. Attachment security was measured with the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979), a self-report measure with two scales, Parental Care and Parental Overprotection. High scores on the Parental Care scale and low scores on the Parental Overprotective scale indicate optimal security with parental figures. Over the course of nine months, adolescents' scores on the two PBI scales moved toward significantly greater security (e.g., increase in scores on the

Care scale and decrease in scores on the Overprotection scale). Although significant positive changes were found in attachment security, adolescents did not improve in mental health symptoms. This lack of change in symptoms despite a positive shift in attachment security is in contrast to findings from numerous studies in outpatient and inpatient samples (Allen, 2008; Rice, 1990; Sroufe et al., 2005) showing a relationship between increased levels of security and fewer negative mental health and behavioral symptoms. This lack of change in symptoms over the course of treatment, however, is similar to outcome research in public RTPs that has found no change in such symptoms over time (Conner et al., 2002; Curry, 1991; Epstein, 2004;). Again, these results are in contrast to research conducted in private RTPs that show a decrease in such symptoms over time (Behrens & Satterfield, 2012; Russell, 2003). The research on attachment security change over the course of residential treatment in general, and in private RTPs specifically, is limited with unclear results. Additional research in this area is warranted to help clarify what is occurring over time with adolescents participating in privately funded RTPs.

Conclusion

Future research on attachment security and the potential for change over the course of residential treatment is an important area of study as it may help to clarify one of the agents of change in residential treatment and help explain further what is occurring below the symptom level. Attachment insecurity is significantly related to a broad range of social, emotional, and behavioral problems in adolescence (e.g., Allen, 2008; Mackey, 2005; Rice, 1990; Sroufe et al., 2005). Instead of simply focusing on specific behavioral symptoms (e.g., academic success, conduct problems, self-esteem) of adolescents

requiring residential treatment, a focus on attachment security/insecurity and movement towards increased security, that in turn creates a more adaptive internal working model, may provide a way to assess long term positive growth in personality.

Criticisms of RTPs as a treatment modality for adolescents are that there is no standard form of treatment, no uniform definition of successful outcome, and no standard way of measuring adolescents' progress (Hair, 2005). Until the past decade, few private RTPs were even assessing outcomes (Behrens et al, 2010). A variety of factors influence development and contribute to the pathological symptoms expressed by adolescents in RTPs, and a variety of factors contribute to the positive change seen in youth who successfully complete such programs. Attachment security is a likely correlate of these factors given the link researchers have found between such symptoms and attachment security. The potential change of attachment security over the course of treatment might help to explain why symptom change occurs and perseveres over time in adolescents at private RTPs.

Research exploring outcomes in private RTPs is limited; however, findings from such research (Behrens & Satterfield, 2012; Gass & Petree, 2014; Russell, 2003; Tucker, Zelov, & Young, 2011) consistently indicate that the levels of symptoms decrease significantly over the course of treatment. Such symptoms have all been correlated to insecure attachment (Allen, 2008; Sroufe et al., 2005). Therefore, insecure attachment may underlie the presenting issues and diagnoses of adolescents in RTPs. As attachment security improves over the course of treatment, the expectation is that symptoms will improve as well. The few studies (Bettmann & Tucker, 2011; Merscham, 2002; Sanders, 2003) exploring this expectation have failed to produce consistent results. This lack of

consistency may be due to a small sample sizes, the examination of only one program, the use of public programs, the assessment of a short period of time (e.g., three months or less), and assessing attachment security categorically instead of in a dimensional way where changes in attachment security would be difficult to detect. Such work could be improved by using a number of private RTPs that would capture a larger sample size and would have longer treatment time (i.e., nine months to two years), which might allow attachment security to develop more fully and ultimately have a positive effect on the internal sense of self. Measuring attachment security as a continuous variable along the dimensions of attachment avoidance and anxiety may also better capture if and what kind of changes take place over the course of treatment. In turn, assessing attachment security as both a global construct and in relationship-specific ways would also add a depth of understanding regarding what is changing in the attachment system. Assessing a larger number of adolescents from multiple private RTPs may provide a clearer picture of the role of attachment security in promoting long-term relief of emotional, educational, and relational dysfunction.

Purpose of the Current Study

The purpose of the current study is to explore whether attachment security changes over the course of long-term private residential treatment (i.e., nine months or more). The research conducted in residential treatment programs regarding attachment is mixed (Bettmann & Tucker, 2011; Merscham, 2002; Sanders, 2003), lacks depth in terms of number of programs studied (Merscham, 2002; Sanders, 2003), and the length of time assessed (Bettmann & Tucker, 2011). The current study obtains data from four different private adolescent RTPs and tracks changes in attachment security over the course of

treatment for nine months. Using multiple programs provides access to a larger number of participants, as well as provides the opportunity to make within and between program comparisons. I also measure adolescent attachment security in relationships in general as well as in specific relationships to determine if there are differences that occur in nuanced ways over the course of treatment. Attachment security is measured along the dimensions of avoidance and anxiety as recommended by adult attachment researchers.

Five research questions guide my study. First, do adolescents who have recently started treatment show greater insecurity of attachment in general, as measured by higher scores on the dimensions of avoidance and anxiety, than those adolescents who have been in the programs longer? The hypothesis associated with the question is that adolescents who are earlier in their treatment program (the first third of their respective treatment program) have greater attachment insecurity than adolescents who are further along in the programs (the last third of their program). My second research question is do adolescents who are earlier in their treatment program have greater insecurity of attachment in specific relationships (e.g., to mother, to father, and to therapist) than those adolescents who have been in programs longer? The associated hypothesis is that adolescents who are earlier in their treatment have greater insecurity of attachment to all relationship targets than those who are later in their programs. My third research question is do adolescents who are earlier in their program have greater symptom severity than adolescents who are further along in their programs? The associated hypothesis is that adolescents earlier in their treatment programs have more negative behavioral and emotional symptoms than adolescents further along in their programs. My fourth research question is does attachment security in general change over the course of nine months in treatment and are

such changes associated with positive changes in symptoms? The associated hypothesis is that attachment security in general increases over the course of nine months of treatment and that symptoms improve. My fifth research question is does attachment security to specific relationship targets change over the course of nine months of treatment and are such changes associated with positive changes in symptoms? The associated hypothesis is that attachment security to specific relationship targets increases over the course of nine months of treatment and that symptoms improve.

CHAPTER II

METHOD

Participants

A nonrandom sample of 137 participants from four RTPs participated in the first data collection. From this initial group of 137, 97 completed testing at Time 2, 76 at Time 3, and 67 at Time 4, nine months later. The demographics of the initial sample were similar to the demographics of adolescents at private RTPs reported in the studies of Behrens and Satterfield (2012) and Young and Gass (2010). 52% of the Time 1 participants were male, 47% were female, and one identified as gender “fluid.” Participants ranged in age from 13 to 19 ($M = 16.68$, $SD = 1.25$) and from grade eight to the first year of college ($M = 10.98$, $SD = 1.09$). The majority of participants ($n = 103$, 75%) identified as coming from households with an income of over \$100,000, although 21% were unable to provide an answer to this question. Approximately 83% of participants at Time One identified as Caucasian. Additionally, 10% identified as being adopted, 18% reported experiencing divorce in the family system, 50% reported experiencing some form of trauma prior to being placed in residential treatment, and over half (53%) reported experiencing a separation from their family of origin (e.g., inpatient treatment, prior residential treatment, boarding school, living with other family members, etc.) prior to their current placement. Approximately 42% reported both parents as their primary care provider in childhood, while 27% identified their mother as their primary care provider, 4% father, 9% nanny, and 17% some combination thereof (e.g., mother & nanny, grandparent & father, etc.).

Residential Therapeutic Programs

Four private RTPs, located in the Western United States, participated in this study. Each program is licensed and a member of the National Association of Therapeutic Schools and Programs (NATSAP). The participating RTPs vary in size, the type of services, length of stay, and treatment philosophy; however, they also have similar components such as provision of individual, family, and group therapy, academic services, and level system that students progress through as they improve. Program 1 is an all-male program located in a suburban setting with about 40 students and an average length of stay of 10 to 12 months. Program 2 is a co-educational institution of about 100 students located in a remote, rural setting, with an average length of stay of 18 months. Program 3 is an all-female program of about 60 students located in a suburban setting with an average length of stay of 10 to 12 months. Program 4 is an all-female program of about 20 students located in a remote, rural setting, with an average length of stay of 16 months. Approximately 62% of the total participants in Time 1 were from Program 2, 13% from Program 1, 13% from Program 3, and 11% from Program 4.

Measures

Three measures were used in the study: (a) The Experiences in Close Relationships questionnaire (ECR; Brennan et al, 1998), (b) The Experiences in Close Relationships—Relationship Structures questionnaire (ECR-RS; Fraley, Heffernan, Vicary, & Brumbaugh, 2011) and (b) the Youth Outcome Questionnaire Self Report (YOQ-SR; Ridge, Warren, Burlingame, Wells, & Tumblin, 2009). Age, gender, race, grade, SES, diagnoses at admission, and date of admission was recorded on a general demographics form (see Appendix A).

Experiences in Close Relationships Scale

The ECR (Brennan et al., 1998) is a 36-item, self-report scale (see Appendix B), which consists of two 18-item subscales, anxiety and avoidance. Items are scored on a 7-point Likert scale ranging from “Disagree Strongly” to “Agree Strongly.” High scores on the anxiety scale indicate insecurity about attachment figure availability and responsiveness while high scores on the avoidance scale indicate a discomfort with closeness and valuing self-reliance. Low scores on both scales indicate greater security of attachment. The ECR was originally developed to measure adult romantic attachment; however, the wording of the items and the instructions can be altered to assess one’s general attachment security in relationships (Mikulincer & Shaver, 2007). This has become a standard way of assessing attachment avoidance and anxiety as a general construct. Such instructions for assessing attachment security in close relationships in general was used for this study (see Appendix B).

Brennan et al. (1998) found the scale to have high internal consistency (alpha of .94 on the avoidance scale and .91 on the anxiety scale) and similar results have been found in hundreds of studies since (as summarized in Mikulincer & Shaver, 2007). Angelo et al. (2005) report test-retest reliability over the course of one month to be .82 and .79 for the anxiety and avoidance scales respectively. The ECR demonstrates good convergent validity with scores on the avoidance scale correlating highly with other established scales that measure avoidance and discomfort with closeness, and scores on the anxiety scale correlating highly with established scales measuring anxiety, preoccupation with attachment, jealousy, and fear of rejection (see Brennan et al, 1998 for review). The two scales are almost uncorrelated ($r = .11$) indicating that the measures

capture two separate, underlying dimensions of adult attachment. In the current study, the internal consistency for Time 1 scores on the anxiety and avoidance scales were .91 and .93 respectively. The inter-correlation between the two was $r = .35$, suggesting that for this sample, the two scales are more correlated and thus, less distinct, than in previous studies.

The Experiences in Close Relationships—Relationship Structures Questionnaire

The ECR-RS (Fraley et al., 2011) is a 9-item self-report questionnaire (see Appendix C) derived from the original ECR that is designed to measure levels of attachment security along the dimensions of anxiety and avoidance in specific target relationships rather than relationships in general. The same 9-items can be used to assess attachment security with respect to various attachment figures in one's life. For the purpose of this study, attachment security was assessed in terms of attachment to mother (or mother-figure), to father (or father-figure), and to therapist. The ECR-RS measures the two primary dimensions of attachment anxiety and attachment avoidance. The anxiety dimension assesses anxiety regarding the availability and responsiveness of the particular attachment figure. The avoidance dimension assesses the degree of discomfort with opening up to others and depending on others (Fraley et al., 2011). Respondents are asked to rate items according to a 7-point likert scale ranging from "strongly disagree" to "strongly agree." Items one through six on the scale assess attachment anxiety. Items seven through nine assess attachment avoidance. Scores on those items are averaged to determine a score for anxiety and a score for avoidance with respect to each target relationship.

Internal reliability estimates for the ECR-RS are high ranging from alphas of .85 to .92 in Fraley et al's (2011) study with four relationship targets (mother, father, friend, partner). Test-retest reliability estimates (e.g., over 30 days) for parental domains was .80 and .65 for romantic relationships. In their study exploring the appropriateness of using the ECR-RS with 15 to 18 year-olds, Donbaek and Elklit (2014) found similar high internal reliability estimates across relationship targets for both avoidance ($r > .81$) and anxiety ($r > .86$). Through exploratory factor analysis they also found that two factors emerged, termed anxiety and avoidance, which accounted for over 62% of the cumulative variance in each domain. These results are similar to results by Fraley et al's (2011) validation study with adults. Furthermore, the ECR-RS showed good convergent and discriminant validity when compared to the Relationships Questionnaire (RQ; Bartholomew & Horowitz, 1991) in this adolescent sample. In the current study the internal reliability estimates for the attachment anxiety and avoidance scales on the three relationship targets ranged from .83 to .93.

The Youth Outcome Questionnaire Self-Report

The YOQ-SR (Ridge et al., 2009) is a self-report measure of treatment progress for adolescents ages 12 to 18 (see Appendix D). The YOQ-SR is comprised of 64 items with six subscales designed to assess several behavioral domains of children and adolescents experiencing behavioral difficulties: Intrapersonal distress (18 items), somatic complaints (8 items), interpersonal relations (10 items), social problems (8 items), behavioral dysfunction (11 items), and critical items (9 items). The intrapersonal distress subscale assesses emotional distress, including anxiety, depression, and hopelessness. The somatic complaints subscale assesses somatic distress, including

headaches, dizziness, stomachaches, nausea, and pain or weakness in joints. The interpersonal relations subscale assesses the child's relationship with parents, other adults, and peers as well as attitude towards others, interactions with friends, aggressiveness, arguing, and defiance. The social problems subscale assesses delinquent and/or aggressive behaviors, substance use and other problematic behaviors that are socially related. The behavioral dysfunction subscale assesses change in a child's ability to organize tasks, complete assignments, concentrate, and other symptoms related to ADHD. The critical items subscale assesses symptoms often found in youth receiving inpatient services, such as paranoid ideation, hallucinations, mania, and suicidal feelings. Items are rated on a 5-point scale ranging from "never" to "almost always." Items scores are added up, taking into account reverse scored items, with higher scores on the subscales indicating a greater severity of perceived functioning (Ridge et al., 2009). Seven scores are computed, six sub-scale scores and one total scale score.

The YOQ-SR has moderate to high internal consistency with alpha coefficients of the scores on the various subscales, ranging from .71 to .91, and .95 for the total score (Ridge, et al., 2009). In the current study the alpha coefficients for the Time 1 scores ranged from .77 to .92 on the subscales, and it was .82 for the total score. The overall test-retest reliability is high, with a total score correlation of .89, and correlations for the subscales ranging from .68 to .86 with a mean test-retest interval of 27 days (Ridge et al., 2009). The YOQ-SR has good concurrent validity when compared with the Child Behavior Checklist Self Report (Achenbach, 1991), a well-established, longer measure of emotional and behavioral functioning in adolescence, with a correlation coefficient of .83

when comparing the total scores from both measures (Ridge et al., 2009). There is no published information regarding the factor structure of the YOQ-SR.

Procedures

Following institutional review board approval (see Appendix E), a number of NATSAP-affiliated programs were contacted by the student author to inquire about interest in participating in this research. Programs that were contacted were based on location (i.e., within the western United States and a 6-8 hour driving distance of the student author), average length of stay for residents in the program as nine months or more, type of program (e.g., therapeutic boarding school instead of inpatient hospitals or wilderness programs), and age of students served (for the purposes of this research just adolescents, ages 13 to 19, were of interest). Of the programs contacted, four met the above criteria and expressed interest in participating. Parental consent (see Appendix F) was obtained in one of two ways. The first was in person. I arranged a time to visit each program at a point when parents would be on campus, such as for a parent workshop. I then introduced the study and asked for consent when the largest number of parents were grouped together (e.g., at the first large group meeting of the workshop, or during lunch). If the parents were not in attendance, or if they did not return a consent form, an email was sent out by a representative from each program with the consent form attached. Parents were asked to read the form and then email me or the program representative directly with their consent. If parental consent was given, then those adolescents were given an assent form (see Appendix G) to review and sign to participate in the study.

Data collection dates were established at a time that was convenient for each program and typically within a month of obtaining parental consent. The remaining data

collection points were then scheduled every three months from that date. Participants were given a test packet that contained the ECR, the ECR-RS, and the Y-OQ-SR. A demographic form was also included at the first data collection. The surveys were presented in a random sequence to avoid confounds from an ordering effect. The packet took approximately 20 minutes for participants to complete. Participants completed the survey in small groups in either their study hall period or during afternoon/evening programming with the student investigator present. All participants were assessed at Time 1. Those students were then assessed again at Time 2, Time 3, and Time 4. Some of the students in the Time 1 sample graduated prior to the completion of the study, thereby accounting for the smaller sample sizes as the study progressed. For the between-subjects analyses described below, Time 1 participants were divided into early, middle, and late stages of treatment based upon the average length of stay for each program.

Research Design and Analyses

Research questions one through three were addressed with a between-subjects design using an ANOVA and MANOVAs. Questions four and five explore changes over time in both attachment security (general and relationship-specific) and emotional and behavioral functioning. These questions were addressed by using growth curve modeling to determine if and how both attachment constructs (anxiety and avoidance) change over time with respect to changes over time in emotional and behavioral functioning.

Research Question 1

Do adolescents who are earlier in their treatment program have greater insecurity of general attachment than those adolescents who have been in the programs longer?

Hypothesis 1

Adolescents who are earlier in their treatment program have greater general attachment insecurity than adolescents who are further along in their program. This hypothesis is informed by researchers who have found that adolescents in inpatient treatment have higher rates of insecure attachment (Confalonieri et al., 2009; Rosenstein & Horowitz, 1996) and by researchers showing a relationship between clinical treatment and positive changes in attachment security (Levy et al., 2006; Maxwell & Potter, 2009; Tasca et al., 2007; Travis et al., 2001). The independent variable for this question is time in the program with students clustered into early, middle, and late treatment groups. The dependent variables are level of attachment avoidance and attachment anxiety. I conducted a one-way MANOVA to determine if there are differences between the three groups in the linear combination of Attachment Avoidance and Anxiety.

Research Question 2

Do adolescents who are earlier in their treatment program have greater insecurity of attachment in specific relationships—to mother, to father, and to therapist--than those adolescents who have been in the programs longer?

Hypothesis 2

Adolescents who are earlier in their treatment program have greater attachment insecurity across all relationship domains than adolescents who are further along in their program. This hypothesis is informed by researchers showing that adolescent attachment security to parents changes over time (Brenning et al., 2013; Buist et al., 2002) and that clinical treatment, as cited above, may improve such security. The independent variable for this question is time in the program. Again, participants were grouped into early,

middle, and late treatment groups. The dependent variables were level of avoidance and anxiety as measured by the ECR-RS in the following separate relationships: mother, father, and therapist. One-way MANOVAs were conducted for each relationship domain.

Research Question 3

Do adolescents who are earlier in their treatment program have higher scores on the YOQ-SR than adolescent who have been in the program longer?

Hypothesis 3

Adolescents who are earlier in their treatment have higher scores on the YOQ-SR than adolescents who are further along in their respective treatment programs. This hypothesis is informed by past research conducted at private RTPs where students' symptoms, using this same measure, decrease over time (Tucker et al., 2011; Zelov, Tucker, & Javorski, 2013). The independent variable is time in program with participants being grouped into early, middle, and late treatment groups. The dependent variable is overall score on the YOQ-SR. A one-way ANOVA was conducted to determine if there are differences in emotional and behavioral functioning between groups.

Research Question 4

Does adolescents' general attachment security change over the course of nine months at a private residential program? If so, are such changes associated with changes in the YOQ-SR?

Hypothesis 4

Attachment security, as measured by the avoidance and anxiety scales on the ECR, increases over the course of treatment (reflective of a decrease in scores on the ECR scales). Such an increase is associated with a decrease in scores on the YOQ-SR.

This hypothesis is informed by the large body of literature that has established a relationship between attachment security and a broad range of social and emotional functioning (for a review, see Allen, 2008) as well as research showing positive changes in attachment security over the course of treatment (Levy et al., 2006, Maxwell & Potter, 2009; Tasca et al., 2007; Travis et al., 2001). Attachment anxiety and avoidance, as well as level of symptoms was assessed at four points in time. Growth curve modeling was used to explore changes over time and the relationship between the variables.

Research Question 5

Does adolescents' attachment security with respect to specific relationships (e.g., mother, father, & therapist) improve over the course of nine months in treatment? If so, are such changes associated with changes in the YOQ-SR?

Hypothesis 5

Attachment security to mother, to father, and to therapist, as measured by the ECR-RS, increases in all three relationship domains over the course of nine months. Such an increase is associated with a decrease in scores on the YOQ-SR. This hypothesis is exploratory and based upon the idea that treatment should be influencing and improving these relationship domains, with improvement also occurring specifically in the attachment system. I used growth curve modeling to explore changes over time and the relationship between the variables.

CHAPTER III

RESULTS

In this chapter I review the results of the study. First, I describe how the data were screened, including managing missing data. Second, I describe the preliminary analyses exploring differences between dependent variables in regards to demographic variables as well as inter-correlations among the variables. I then report the descriptive statistics including the means and standard deviations of the variables at each time point. Lastly, I present the statistical analyses associated with each of the study research question and hypotheses.

Data Screening

I explored the accuracy of the data entry by examining frequency tables for all the variables at each time point. Data points that were improbable (e.g., outside the range of the respective likert scale for the variable) were highlighted and corrected using the original responses from the participants. A number of participants failed to complete one or more of the surveys resulting in missing data for that variable(s) of interest. At times, this failure to complete a survey was random and seemed related to the participants not realizing there were back-sides to each of the surveys administered. In this instance, the participants' scores for the respective variable were unable to be calculated resulting in them not having scores for that survey at that respective time. Two participants at Time 1 failed to complete the back-side of the ECR and one failed to complete the YOQ-SR. At Time 2, one participant failed to complete the ECR. At Time 4, one participant failed to complete the ECR. Three participants did not complete the ECR-RS with the father/father-figure relationship target. This was consistent each time that these

participants completed this measure suggesting that they did not have someone for that category. A number of missing values were found across a range of participants on the YOQ-SR for all time periods. I followed the guidelines put forth by Wells, Burlingame, and Rose (2003) for managing missing items. They recommend replacing the missing value with the mean of that particular subscale. They recommend doing this only if up to two values are missing for a subscale. In the current study, no more than two items were missing in those that failed to complete each item for each subscale.

Preliminary Analyses

To determine if there were differences in scores on the dependent variables and gender, I conducted a series of independent samples t-tests using the Time 1 data. There were no significant differences found between gender and scores on the any of the dependent measures (i.e., ECR, ECR-RS, YOQ-SR). To determine if there were differences between age of the participants and scores on the dependent variables, I completed pearson product-moment correlations between age and the outcome variables at Time 1. There were no significant correlations between age and attachment avoidance and anxiety, in general or in regards to specific relationships, or between age and total symptoms. To determine if there were differences in scores between the four programs and the dependent measures, I conducted a series of one-way ANOVAs using the Time 1 data. Again, no significant differences were found between scores on the ECR, ECR-RS, and YOQ-SR and participants' program.

I explored the relationship between the various dependent variables at Time 1 by using Pearson Product-moment Correlations. The relationships are presented in Table 1. Table 1 illustrates that the two subscales of the ECR, Anxiety and Avoidance, have a

medium correlation. This result differs from the low correlation ($r = .11$) Brennan, Clark, and Shaver (1998) found when developing this scale. The medium correlation found in the current study also differs from research using modified versions of the ECR on adolescent populations. Correlations from these studies (Brenning et al., 2013; Nilsson et al., 2011) were very high ($r = .64$ and $.69$ respectively). Such differences indicate that the two scales of avoidance and anxiety may be more correlated in adolescent populations.

Table 1

Pearson Product-moment Correlations Between Measures

Variable	1	2	3	4	5	6	7	8	9
1. Anxiety	--								
2. Avoidance	.35**	--							
3. Mom Anx	.32**	.46**	--						
4. Mom Avoid	.22*	.55**	.49**	--					
5. Dad Anx	.33**	.42**	.69**	.26**	--				
6. Dad Avoid	.19*	.47**	.39**	.47**	.50**	--			
7. Therapist Anx	.39**	.44**	.40**	.29**	.50**	.29**	--		
8. Therapist Avoid	.07	.39**	.20*	.32**	.20*	.38**	.43**	--	
9. YOQ-SR	.63**	.59**	.44**	.38**	.34**	.34**	.47**	.33**	--

Note: **Correlation is significant at the 0.01 level (two-tailed). *Correlation is significant at the 0.05 level (two-tailed); Anxiety = ECR Attachment Anxiety; Avoidance = ECR Attachment Avoidance; Mom Anx = ECR-RS Mother Attachment Anxiety; Mom Avoid = ECR-RS Mother Attachment Avoidance; Dad Anx = ECR-RS Father Attachment Anxiety; Dad Avoid = ECR-RS Father Attachment Avoidance; Ther Anx = ECR-RS Therapist Attachment Anxiety; Ther Avoid = ECR-RS Therapist Attachment Avoidance.

For the between group analyses, I conducted assumption testing to assess for normality, univariate and multivariate outliers (when appropriate), and homogeneity of variance-covariance. Normality testing included evaluating the significance of the Kolmogorov-Smirnoff test and by examining the histogram for each outcome variable. When normality was violated with significant skewness and/or kurtosis, I then transformed the variables by performing first log transformation, then square root transformation, and lastly, reciprocal transformation to determine if such transformations improved the distribution of scores. I assessed for univariate outliers by transforming the

outcome variables into z-scores and then looking for extreme scores greater than an absolute value of 3.29 (as recommended by Tabachnick & Fidell, 2013). For the multivariate analyses, I calculated Mahalanobis distances to detect multivariate outliers. I assessed for homogeneity of variance by using Levene's test. I completed assumption testing for the longitudinal data used in the growth curve modeling as well. I assessed the normality of all outcome variables at all time points as well as evaluated for univariate outliers in the manner described above. I managed the effects of potential multicollinearity, as well as increased the ease of interpretation, by centering predictor variables.

Descriptive Statistics

The mean scores and standard deviations for all scales used at all four data collection points are presented in Table 2. The mean scores for the ECR at Time 1 were 3.88 for attachment anxiety and 3.31 for attachment avoidance. Although I was unable to find literature citing mean scores using the ECR with a clinical sample of adolescents, Nilsson et al. (2011) reported mean scores of 2.60 for attachment anxiety and 3.20 for attachment avoidance in a nonclinical sample of Swedish high school students. Brenning and colleagues (2013), using a modified version of the revised ECR (the ECR-Revised Child; Brenning, Soennen, Braet, & Bosmans, 2011), reported mean attachment anxiety scores between 2.02 and 2.33 and attachment avoidance scores between 2.47 and 3.17 in their sample of nonclinical adolescents. The higher scores in the current study's sample, made up of a clinical sample of adolescents in therapeutic programs, are thus expected. Similarly, I was unable to find literature using the ECR-RS with a clinical sample of adolescents. Donbaek and Elkilit (2014) utilized this measure with a non-clinical sample

of adolescents and found that, using parents as a single relationship target, that the average score for Avoidance was 2.64 and for Anxiety was 1.42. In the current study the mean scores for the mother and father relationship targets were higher (see Table 2) which is to be expected from a clinical sample of youth.

Table 2

Descriptive Statistics for all Scales at Each Time

Variable	Time 1			Time 2			Time 3			Time 4		
	N	M	SD	N	M	SD	N	M	SD	N	M	SD
Anxiety	136	3.88	1.13	96	3.40	1.16	76	3.42	1.16	66	3.44	1.20
Avoidance	136	3.31	1.15	96	3.75	1.17	76	3.20	1.12	66	3.05	1.05
Mom Anx	138	1.87	1.27	97	1.78	1.26	76	1.60	1.09	67	1.51	0.97
MomAvoid	138	3.13	1.45	97	2.90	1.33	76	2.73	1.29	67	2.56	1.26
DadAnx	136	2.05	1.56	94	1.95	1.46	73	1.67	1.15	64	1.60	1.06
DadAvoid	136	3.48	1.67	94	3.16	1.46	73	2.99	1.11	64	2.70	1.17
TherAnx	138	2.05	1.22	97	2.78	1.43	76	1.82	1.10	67	1.80	1.05
TherAvoid	138	2.10	1.11	97	2.17	1.23	76	1.84	0.97	67	1.84	0.78
YOQ-SR	135	45.53	33.54	97	42.64	33.32	74	32.89	29.01	66	27.03	29.10

Note: Anxiety = ECR Attachment Anxiety; Avoidance = ECR Attachment Avoidance; Mom Anx = ECR-RS Mother Attachment Anxiety; Mom Avoid = ECR-RS Mother Attachment Anxiety; Dad Anx = ECR-RS Father Attachment Anxiety; Dad Avoid = ECR-RS Father Attachment Avoidance; Ther Anx = ECR-RS Therapist Attachment Anxiety; Ther Avoid = ECR-RS Therapist Attachment Avoidance.

The mean score for the YOQ at Time One was 45.5. When broken down into stages of the program at Time 1, the mean for the early in treatment group was 53.6 and for the late in treatment group, 37.0 (see Table 3 for mean scores for all scales according to stage in program at Time 1). These means are somewhat similar to studies done on adolescent samples in private residential programs. Zelov et al. (2013) reported an average admission YOQ-SR score of 82.5 and a discharge score of 35.0, while Tucker et al. (2011), reported an admission score of 89.4 and discharge score of 40.0. The adolescents in the current sample were not measured immediately upon admission, which would necessarily result in overall lower YOQ-SR scores at Time 1 as the survey asks to endorse behaviors one has engaged in in the past seven days. Some of those items (e.g.,

“I cut classes or skip school altogether,” and “I use alcohol or drugs”) would likely not be an option once in treatment, thereby resulting in lower initial scores obtained in this sample.

Table 3

Descriptive Statistics for Time 1 Data by Stage in Program

Variable	Stage								
	1			2			3		
	N	M	SD	N	M	SD	N	M	SD
Anxiety	44	4.10	1.23	32	4.22	1.22	60	3.54	0.91
Avoidance	44	3.51	1.19	32	3.50	1.14	60	3.05	1.10
Mom Anx	44	1.94	1.27	34	2.29	1.62	60	1.57	0.99
Mom Avoid	44	3.41	1.54	34	3.31	1.42	60	2.84	1.37
Dad Anx	43	2.23	1.63	34	2.43	1.94	59	1.70	1.17
Dad Avoid	43	3.89	1.54	34	3.54	1.85	59	3.13	1.59
Ther Anx	44	2.14	1.20	34	2.22	1.54	60	1.89	1.02
Ther Avoid	44	2.52	1.23	34	1.98	1.17	60	1.88	0.89
YOQ-SR	44	53.59	36.87	34	49.32	38.50	58	36.47	25.45

Note: Anxiety = ECR Attachment Anxiety; Avoidance = ECR Attachment Avoidance; Mom Anx = ECR-RS Mother Attachment Anxiety; Mom Avoid = ECR-RS Mother Attachment Avoidance; Dad Anx = ECR-RS Father Attachment Anxiety; Dad Avoid = ECR-RS Father Attachment Avoidance; Ther Anx = ECR-RS Therapist Attachment Anxiety; Ther Avoid = ECR-RS Therapist Attachment Avoidance.

Main Analyses

Between-Subjects Design

To explore differences between those early in treatment and those later in treatment, I used a between-subjects design. Questions 1 through 3, using the Time 1 data, looked at these between group difference. Again, participants were divided into early, middle, and late treatment groups. This was based on the average length of stay for each program as that varied from program to program.

Research question 1. Do adolescents who are earlier in their treatment program have greater levels of attachment anxiety and attachment avoidance, as measured by the ECR, than those adolescents who have been in the programs longer? The associated null

hypothesis is that there is no difference in attachment security, along the dimensions of attachment avoidance and anxiety, between adolescents earlier in treatment compared to those later in treatment.

To answer this question, I conducted a one-way between-groups MANOVA with ECR Avoidance and ECR Anxiety as the dependent variables and with stage in program (early-1, middle-2, late-3) as the independent variable. Preliminary assumption testing, to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, found no violations. There was a statistically significant difference between stage in program on the combined dependent variables, $F(4, 264) = 3.03, p = .018$; Wilks' Lambda = .91, partial eta squared = .04. When I considered results of the dependent variables, the only difference to reach statistical significance, using a Bonferroni adjusted alpha level of .025, was attachment anxiety, $F(2, 133) = 5.29, p = .006$, partial eta squared = .074. I conducted a one-way ANOVA with post-hoc tests in order to determine where the significant differences were in attachment anxiety and stage in program. Using Tukey post hoc analyses, I found statistically significant differences between stage 1 ($M = 4.10, SD = 1.23$) and stage 3 ($M = 3.54, SD = .912$) ($p = .031$), and stage 2 ($M = 4.22, SD = 1.22$) and stage 3 ($p = .015$), indicating that adolescents later in their treatment programs have less attachment anxiety than their peers who are earlier in treatment. Therefore, the null hypothesis was rejected.

Research question 2. Do adolescents who are earlier in their treatment program have greater insecurity of attachment to specific relationship—to mother, to father, and to therapist—than those adolescents who have been in the programs longer? The null hypothesis associated with this questions is that there is no difference in attachment

security to these relationships, as measured by attachment avoidance and anxiety, between adolescents early in treatment compared to those later in treatment.

To answer this question, I conducted a series of one-way between groups MANOVAs with ECR-RS Avoidance and ECR-RS Anxiety as the dependent variables, and stage in program (early-1, middle-2, late-3) as the independent variable. I conducted separate analyses for each specific relationship.

Relationship: Mother or mother-figure. I completed a one-way between-groups MANOVA with ECR-RS avoidance and ECR-RS anxiety to mother as the dependent variables, and stage in program as the independent variable. I conducted preliminary assumption testing to assess for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity. The assumption of normality was violated with both dependent variables, however this is quite common in larger samples (e.g., 30+) (Pallant, 2010) and transforming the distribution did not improve the distribution. No cases were found to have univariate outliers by examining if there were extreme z-scores. The test for multivariate normality, using Mahalanobis distances, indicated that there was one multivariate outlier that exceeded the critical value; however, because there was only one, and the score was not too high, I decided to leave this data point in the analysis (Pallant, 2010).

There was a statistically significant difference between stage in program on the combined dependent variables, $F(2, 262) = 2.54, p = .04$, Pillai's Trace = .074, partial eta squared = .032. Pillai's Trace statistic was chosen in this analysis as it is a more robust measure that can tolerate violations of assumptions. When I considered the results of the dependent variables separately, the only difference to reach statistical significance, using

a Bonferroni adjusted alpha level of .025, was attachment anxiety, $F(2, 132) = 3.99, p = .02$, partial eta squared = .057. I then conducted a one-way ANOVA with attachment anxiety as the dependent variable and the three levels of stage in program as the independent variable. Tukey's tests confirmed significant differences in scores on the ECR-RS attachment anxiety with mother for adolescents in the middle of their program ($M = 2.34$) and adolescents later in their program ($M = 1.57$). Indicating that adolescents in the middle stage of their treatment program have higher levels of attachment anxiety to their mother or mother-figure than those adolescents in the latter part of their treatment. Again, the null hypothesis was rejected.

Relationship: Father or father-figure. I conducted a one-way between-groups multivariate analysis of variance with ECR-RS Avoidance and ECR-RS Anxiety with father as the dependent variables, and stage in program as the independent variable. Preliminary assumption testing assessing for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity found violations in normality for both univariate dependent variables with significant positive skews. Again, transforming the distribution did not improve normality and thus, I retained the untransformed data. No cases had univariate outliers by examining whether there were extreme z-scores (i.e., greater than the absolute value of 3.29). There were no multivariate outliers and the dependent variables were moderately correlated ($r = .50$). The assumption of homogeneity of variance-covariance matrices was also not violated. I found no statistically significant differences between the stage in program and the combined dependent variables using either the Wilks' Lambda or Pillai's Trace statistic. No significant between-subject effects indicate that there were no differences between

adolescents early in their program and late in the program regarding attachment security to their father. Thus, the current results fail to reject the null hypothesis.

Relationship: Therapist. I conducted a one-way between-groups multivariate analysis of variance with ECR-RS Avoidance and ECR-RS Anxiety with therapist as the dependent variables, and stage in program as the independent variable. Preliminary assumption testing was completed to assess for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity. The assumption of normality was violated for both univariate dependent measures. Transforming the distribution did not improve normality. No cases were found to have univariate outliers by examining whether there were extreme z-scores and the two dependent measures were moderately correlated ($r = .43$). Using Pillai's Trace statistic there were statistically significant differences between stage in program on the combined dependent variables, $F(4, 264) = 3.022, p = .018$, Pillai's Trace = .088, eta squared = .044. When I considered the results of the dependent variables separately, the only difference to reach statistical significance, using a Bonferroni adjusted alpha level of .025, was attachment avoidance, $F(2, 132) = 4.966, p = .008$, partial eta squared = .070. I conducted a one-way ANOVA with Avoidance as the dependent variable and the three levels of stage in program as the independent variable with post-hoc testing to determine where the significant differences lie. Tukey's tests confirmed significant differences in scores on the ECR-RS Avoidance with therapist as the target for adolescents in the early stage of their program ($M = 2.52$) and adolescents in stage three of their program ($M = 1.88$). Indicating that adolescents earlier in their program had statistically significantly

higher levels of attachment avoidance than those who were near the end of their treatment programs. Thus, I rejected the null hypothesis.

Research question 3. Do adolescents who are earlier in their treatment program have higher scores on the YOQ-SR, indicating greater impairment, than adolescent who have been in the program longer? The associated null hypothesis is that there are no differences in scores on the YOQ-SR between groups.

To determine if there was a statistically significant difference among the three treatment stages (i.e., early, middle, late) in YOQ-SR scores, I conducted a one-way between groups analysis of variance (ANOVA). Prior to this I completed preliminary assumption testing to assess for normality, univariate outliers, and homogeneity of variance. The assumption of normality was violated however again, this is quite common in larger samples and observation of the histogram revealed a fairly normal distribution. The assumption of homogeneity of variance was also violated. No cases were found to have univariate outliers by examining whether there were extreme z-scores. Results revealed that there was a statistically significant difference in mean YOQ-SR scores among the three stages of treatment, $F(2, 132) = 3.44, p = .035$. Post-hoc comparisons with Tukey's statistic indicated that significant differences existed between adolescents early in treatment ($M = 53.59$) and those late in treatment ($M = 37.04$) $p = .04$. Such results indicate that those early in their treatment programs had statistically significantly higher scores on this symptom checklist than adolescents in the latter stage of their treatment programs. Thus, the null hypothesis was rejected.

Within-Subject Design

I used growth curve modeling to answer the research questions (Questions 4 & 5) that assessed change over time, in general attachment security, in attachment security to specific relationship, and in symptoms. I did this in a series of steps as outlined by Shek and Ma (2011) to determine the most parsimonious model for each variable that explains the most amount of variance. The first step is to perform an unconditional mean model, a baseline model that examines individual variation in the outcome variable without regard to time. If this model is not significant, then there is no evidence of longitudinal change and further modeling is not indicated. The unconditional mean model also provides a value for the intraclass correlation (ICC). If this value is low (under 0.25), then more traditional methods of estimating fixed effects should be used (Shek & Ma, 2011). If the ICC value is 0.25 or above, then growth curve modeling is appropriate. If this criterion is met, the next step is to complete an unconditional linear growth curve model using the respective dependent variable. This is the baseline growth curve model that examines individual variation of growth rates within and between participants. If there are significant inter-individual differences in the trajectory change over time, then further model testing should be performed by adding one or two higher order polynomials (e.g., quadratic, cubic, etc.), where the acceleration or deceleration of growth over time can be assessed. A quadratic term is the model that was tested in this study because only four time points were assessed. The intercept and linear slope were allowed to vary across individuals. The -2 log likelihood (-2LL), a likelihood ratio test/deviance test, was used to select the best model. In general, the smaller the values for this test, the better the model fit (Shek & Ma, 2011). Lastly, I entered the total YOQ score as a predictor to the most

parsimonious unconditional model to determine if doing so provided a better fit. I also added other predictors such as program, gender, and predictors related to potential disruptions to attachment security such as a history of trauma, divorce, and adoption to determine what, if any, effects they have on change over time for the dependent variables.

Prior to modeling the data, I removed all participants who completed assessments at Time 1 who did not participate in any other assessment time. Only individuals who participated in one or more assessment points after Time 1 were of interest in this longitudinal portion of the study. The descriptive statistics for each assessment period for this sample are seen in Table 4. For the modeling, I centered the variable Time so that Time 1 changed to zero (and thus Time changed from 1, 2, 3, 4 to 0, 1, 2, 3) allowing the intercept to take on a more meaningful zero value (Shek & Ma, 2011). I assessed the normality of all outcome variables for each time point. General attachment avoidance and anxiety were normally distributed at all times points except time three for attachment anxiety. Almost all of the outcome variables at all times for the relationship to mother, father, and therapist violated the assumption of normality, with most of them having significant positive skews to the distribution. The potential influence of multicollinearity was mitigated by centering the YOQ scores as a predictor.

Research question 4. Does adolescents' general attachment security, as measured by attachment avoidance and attachment anxiety, change over the course of nine months at a private residential program? If so, are such changes associated with changes in the Y-OQ-SR? The associated null hypothesis is that general attachment avoidance and anxiety

Table 4

Descriptive Statistics for all Variables Over Time

Variable	Time											
	0			1			2			3		
	N	M	SD	N	M	SD	N	M	SD	N	M	SD
Anxiety	98	3.93	1.19	96	3.75	1.17	76	3.43	1.16	66	3.44	1.20
Avoidance	98	3.42	1.18	96	3.40	1.16	76	3.20	1.12	66	3.06	1.05
Mom Anx	97	1.99	1.42	97	1.78	1.26	76	1.50	1.09	67	1.51	0.97
Mom Avoid	97	3.13	1.41	97	2.90	1.33	76	2.73	1.30	67	2.57	1.26
Dad Anx	95	2.18	1.66	94	1.95	1.46	73	1.67	1.16	64	1.60	1.06
Dad Avoid	95	3.55	1.62	94	3.16	1.46	73	2.99	1.11	64	2.70	1.17
Ther Anx	97	2.11	1.33	97	2.28	1.44	76	1.82	1.10	67	1.80	1.05
Ther Avoid	97	2.14	1.19	97	2.17	1.23	76	1.83	0.97	67	1.84	0.78
YOQ-SR	97	47.76	35.15	97	42.64	33.32	75	32.51	29.01	66	27.03	29.10

Note: Anxiety = ECR Attachment Anxiety; Avoidance = ECR Attachment Avoidance; Mom Anx = ECR-RS Mother Attachment Anxiety; Mom Avoid = ECR-RS Mother Attachment Anxiety; Dad Anx = ECR-RS Father Attachment Anxiety; Dad Avoid = ECR-RS Father Attachment Avoidance; Ther Anx = ECR-RS Therapist Attachment Anxiety; Ther Avoid = ECR-RS Therapist Attachment Avoidance.

does not change over time and that there is no association with changes in symptoms over time.

Attachment avoidance: Unconditional mean model (UMM). Results from the unconditional mean model using attachment avoidance as the outcome variable indicate that the grand mean of attachment avoidance was 3.28 ($SE = 0.10$). The Intraclass Correlation (ICC) was $.775 / (.775 + .526) = .60$, suggesting that 60% of the total variance in attachment avoidance was due to inter-individual differences. Because this is well above 0.25, further growth curve modeling is appropriate. In addition, the within-individual variation ($\beta = .53$) was significant indicating there is substantial variation of individual scores around the mean. This suggests that adding time-varying predictors to the model may help improve the model (Cilleseen & Borch, 2006). Table 5 depicts the results from this and following models with this variable.

Attachment avoidance: Unconditional linear growth model (ULGM). In this model I added Time as an effect to determine individual growth rates. For this model

there was a significant linear decrease in attachment avoidance ($\beta = -0.16, SE = .05, p < .00$). The mean estimated initial status of avoidance was 3.46 and the linear growth rate was -0.16. Both values were significant, indicating that the initial status and linear growth rate were not constant over time (see Table 5). Specifically, there was a significant linear decrease in attachment avoidance over time indicating that attachment avoidance decreased 0.16 of a unit for every three months (the time interval between assessment points). The residual variance within subjects was $b = 0.36$. Although this was improved over the unconditional mean model, it still has significant variation, indicating that other time-varying predictors, in addition to Time, should be added to the model. The significant covariance for the random intercept and the linear slope also implies that these two values vary significantly between participants, indicating that Level 2 predictors, time-invariant predictors should be added. There was also a significant covariance between the intercept and slope with a negative correlation ($\beta = -0.16, SE = .06, p = .001$) suggesting that adolescents with higher attachment avoidance scores had slower linear decreases in this variable, while adolescents with lower initial scores had faster decreases in linear growth over time. The fit statistic for this model ($-2LL = 880.25$) was smaller and significantly different from the unconditional mean model, indicating that it is a better fit (see Table 5). Because this model points to inter-individual differences in growth trajectories over time, a quadratic term should be explored to determine if this would better fit the data.

Table 5

Growth Curve Models with Attachment Avoidance

	UMM	ULGM	CLGM
Attachment Avoidance			
<i>Fixed Effects</i>			
Intercept	3.278* (.101)	3.46* (.116)	3.315* (.106)
Time		-.157* (.045)	-.035 (.040)
YOQ			-.018* (.003)
YOQ x Time			-.000 (.002)
<i>Random Effects</i>			
Within Person-Level 1	.526* (.097)	.358* (.041)	.277* (.033)
Between—Level 2			
In Initial Status	.775* (.133)	1.087* (.194)	.887* (.158)
In Rate of Change		.093* (.030)	.049* (.020)
Covariance		-.163* (.063)	-.046 (.045)
Fit Statistic			
-2LL	914.24	880.251*	801.93*

Note: * $p < .05$, Standard errors are between parentheses. UMM = Unconditional Mean Model; ULGM = Unconditional Linear Growth Model; CLGM = Conditional Linear Growth Model.

Attachment avoidance: Quadratic growth curve model. A quadratic model adds a squared time effect to the above model. To add this effect I created a new variable, Time Squared. The results were non-significant when Time Squared was added to the model. Furthermore, the -2LL associated with this model (879.5) was not significantly different from the value obtained in the prior model (-2LL = 880.25). Thus, adding the quadratic term did not improve the fit of the data and the prior, unconditional linear growth model was retained.

Attachment avoidance: Conditional linear growth model (CLGM). I then added YOQ-SR as a level one, time-variant predictor to determine if symptom level and change over time predicts the growth trajectory of attachment avoidance. Before entering it as a predictor, I conducted separate modeling for total YOQ-SR scores to explore how

symptoms changed over time apart from the attachment variables. Similar to the results above, the most parsimonious model was the linear growth model rather than the quadratic. The slope of -6.95 ($SE = 3.5, p = .00$) was statistically significant indicating that severity of symptoms decreased over time. The random error terms were all significant indicating that the intercept, slope, and the interaction between the two have significant variability between participants. Similar to the model for attachment avoidance, those who initially scored higher on the YOQ-SR had a slower linear decrease over time than students who initially scored lower.

To use YOQ-SR scores as a predictor for change in attachment avoidance over time, I treated YOQ-SR as a time-variant level one predictor. The recommendation in the literature is to center predictors of this kind by either group-mean centering or mean-centering to facilitate interpretation of the results (Khan, 2011; Singer & Willet, 2004). For this instance, within-person mean centering was most appropriate as there was no other level 2 variable added to provide a grouping measure. To do this, I calculated the mean for the YOQ-SR scores for each individual. I then subtracted that mean from the individual's YOQ-SR score for that particular assessment time. The difference between the two is the new value for the centered variable for that person at that time. Each participant then has new values for YOQ-SR for every time they were assessed. This value is a deviance score, with positive or negative value, from the mean for that individual.

When the centered YOQ-SR variable is added as a predictor, the unconditional linear growth model becomes a conditional linear growth model. A significant effect for the centered YOQ-SR predictor was found ($\beta = -.018, SE = .003, p < .05$) on the initial

status of attachment avoidance, indicating that a higher value on YOQ-SR centered is associated with lower initial scores on attachment avoidance (see Table 5). There was no effect for the interaction between YOQ-SR and attachment avoidance, indicating that symptoms do not predict linear change in attachment avoidance over time. The within-individual and between-individual variability, while reduced in this model, continued to be significant indicating that a high degree of variability in scores within and between individuals remains. Lastly, the fit statistic for this model ($-2LL = 801.93$) was significantly smaller than the prior fit for the unconditional linear growth model ($-2LL = 880.25$) indicating that the addition of the predictor improved the fit of the model.

As adding predictors to a model can make interpretation more difficult, Cillessen and Borch (2006) recommend using prototypical plots to plot out the effect and interaction of predictors. Prototypical plots graph the trajectory of a dependent variable for selected values of the predictors. To do this, the full equation that results from the estimated model is written out and then values of the predictor are substituted to calculate predicted scores. They recommend first plotting the mean of the predictor, and then plotting the mean plus one standard deviation and then the mean minus one standard deviation to represent high, medium, and low values of the predictor. Figure 1 is the plot for the linear model for attachment avoidance with the centered YOQ-SR variable as a predictor. The plot illustrates how negative deviations from the mean symptom score have a higher intercept score on the attachment variable and vice versa for positive deviations from the predictor.

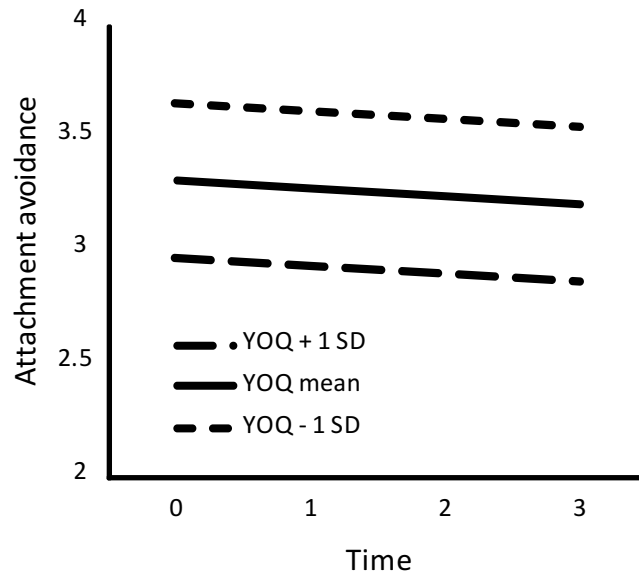


Figure 1. Prototypical plot of attachment avoidance with within-person mean-centered YOQ-SR as a predictor over time.

Attachment anxiety: Unconditional mean model. The grand mean of attachment anxiety was 3.66 ($SE = 0.10$). The ICC was $.757 / (.757 + .659) = .53$, suggesting that 53% of the total variance in attachment anxiety is due to inter-individual differences. Because this is well above 0.25, further growth curve modeling is appropriate. In addition, the within-in individual variation ($\beta = .66$) was significant, indicating there is substantial variation in individual scores around the mean. This indicates that adding time-varying predictors to the model may help improve the model (Cilleseen & Borch, 2006). See Table 6 for all models tested with this variable.

Attachment anxiety: Unconditional linear growth model. For this model both the intercept and slope were statistically significant. The mean estimate of the initial status was 3.92 ($SE = .12, p = .00$) and the linear growth rate was -0.21 ($SE = .05, p = .00$). Such results indicate that there is a decrease in attachment anxiety over time. The random error terms associated with the intercept and slope were also significant indicating

between-participant variability in the intercept, slope, and the interaction between the two, suggesting that adding level two, time-invariant predictors could improve the model. The correlation between the intercept and the linear growth parameter was negative ($\beta = -0.21$, $SE = .07$, $p < .003$), indicating that adolescents with higher initial scores on attachment anxiety had a slower linear decrease in scores over time while those who scored lower, had a faster decrease over time. The fit statistic for this model ($-2LL = 918.47$) was significantly smaller than the prior fit for the unconditional mean model meaning it is a better fit (See Table 6). Because this model illustrates that there are inter-individual differences in growth trajectories over time, I explored using a quadratic term to determine if this would better fit the data.

Table 6

Growth Curve Models with Attachment Anxiety

Attachment Anxiety	UMM	ULM	CLM
<i>Fixed Effects</i>			
Intercept	3.657* (.098)	3.921* (.121)	3.804* (.116)
Time		-.210* (.050)	-.107* (.046)
YOQ			-.012* (.003)
YOQ x Time			-.003 (.001)
<i>Random Effects</i>			
Within Person-Level 1	.659* (.137)	.387* (.044)	.312* (.036)
Between—Level 2			
In Initial Status	.757* (.137)	1.167* (.208)	1.063* (.187)
In Rate of Change		.127* (.034)	.085* (.025)
Covariance		-.209*(.070)	-.126* (.056)
Fit Statistic			
-2LL	970.009	918.479*	852.045*

Note: * $p < .05$, Standard errors are between parentheses. UMM = Unconditional Mean Model; ULGM = Unconditional Linear Growth Model; CLGM = Conditional Linear Growth Model.

Attachment anxiety: Quadratic growth curve model. Adding the variable Time Squared to the model produced non-significant results. Furthermore, the -2LL associated with this model (917.67) had a non-significant influence on the value obtained from the prior model (-2LL = 918.47). Thus, adding the quadratic term did not improve the fit of the data and the prior, unconditional linear model was retained.

Attachment anxiety: Conditional linear model. When the centered YOQ-SR variable was added as a predictor, a significant effect was found ($\beta = -.012$, $SE = .003$, $p < .05$) on the initial status of attachment anxiety, indicating that higher values on the centered YOQ-SR variable are associated with lower initial scores on attachment anxiety (see Figure 2). There was no effect for the interaction between YOQ-SR and attachment anxiety, which suggests that symptoms do not predict linear change in attachment anxiety over time. The within-individual and between-individual variability, while reduced in this model, continue to be significant, indicating that there remains a high degree of variability in scores within and between-individuals. Lastly, the fit statistic for this model (-2LL = 852.05) was significantly smaller than the prior fit for the unconditional linear growth model indicating that the addition of the predictor improved the fit of the model.

Other predictors. After exploring the possible effects of symptom level as a predictor, other time-invariant predictors were explored to determine if they predicted change in general attachment avoidance and/or anxiety. First, gender was added as a predictor in the unconditional linear model for both attachment avoidance and anxiety. Adding gender to the linear model did not improve the fit as there were no significant findings in the intercept, slope, or interaction for either attachment avoidance or

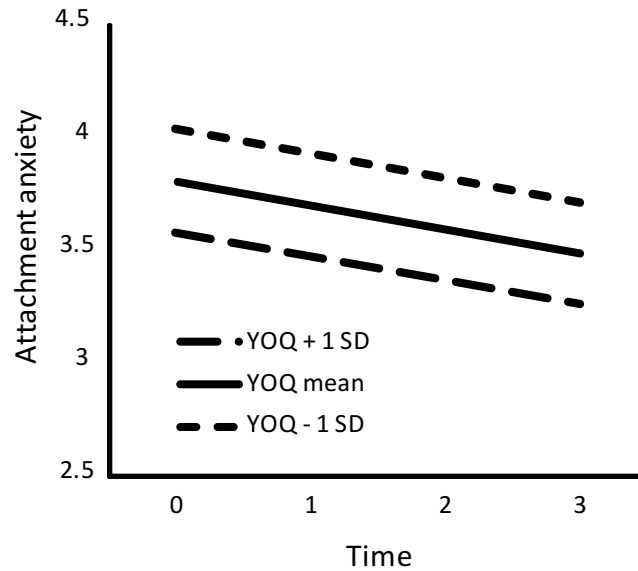


Figure 2. Prototypical plot of attachment anxiety with within-person mean-centered YOQ-SR as a predictor over time.

attachment anxiety. Thus, gender did not predict the change trajectory of either dependent variable. I found similar results when history of divorce and history of adoption were added separately as predictors to the linear model. Indicating that experiencing a divorce in the family of origin, or being adopted, did not influence the change in attachment avoidance and anxiety in general, or in specific relationships, over time in treatment.

I then examined the effect of program as a predictor in an exploratory manner given that the number of participants between groups was unbalanced, with one program having the majority of participants and the others having relatively few of the sample. To look at the effect of program, I created three “dummy” variables from the original categorical variable comprising the four participating programs. I coded the program with the largest number of participants (program 2) as the baseline group against which all others were compared. This program took on the value of zero for all of the dummy variables. The other programs took on the value of one for their respective variable (e.g.,

program X was given the value of 1 for the “Program X” dummy variable, while the three remaining programs took the value of 0 for that variable; program X then took on the value of 0 for the other dummy variables.). In this way, each dummy variable for each program (except for the baseline program) was added to the unconditional linear model to see if that particular program’s rate and trajectory of change on the dependent variable differed when compared to the others.

When this was done, only Program 3 had significant values when compared to the remaining programs, indicating that Programs 1, 2, and 4 did not differ significantly in their change trajectories. When added to the model for attachment avoidance, Program 3 was significant for Time ($\beta = -.11, SE = .05, p = .018$), program ($\beta = .87, SE = .35, p = .014$) and the interaction ($\beta = -.40, SE = .13, p = .004$). These results indicate that Program 3 was a significant predictor of linear growth as well as associated with the initial status of attachment avoidance. Furthermore, the prototypical plot shows that Program 3 had a faster decreasing rate of change than the other programs (See Figure 3). When Program 3 was added as a predictor in the model for attachment anxiety, there was a significant effect for Time ($\beta = -.17, SE = .05, p = .001$) and for Time and Program ($\beta = -.33, SE = .15, p = .03$). Therefore, program 3 was a significant predictor of linear growth in attachment anxiety but it was not associated with the initial status of that value. Furthermore, the linear slope shows a faster decreasing rate of change in attachment anxiety for Program 3 than the other programs in the study (see Figure 4).

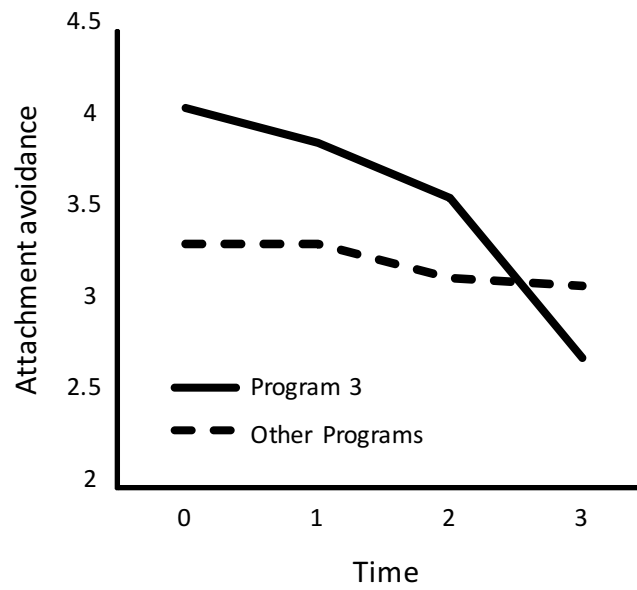


Figure 3. Program as a predictor for change in attachment avoidance.

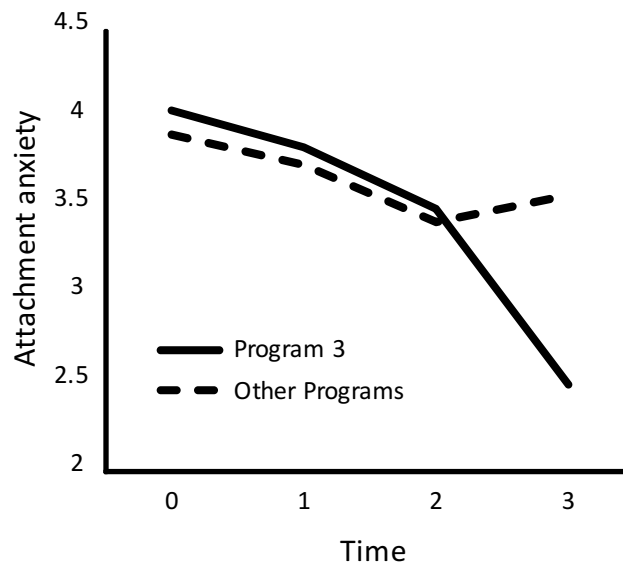


Figure 4. Program as a predictor for change in attachment anxiety.

Lastly, I examined the effect of a history of trauma as a predictor into the unconditional linear model, again, in an exploratory manner as participants simply checked “yes” or “no” on the demographic form if they experienced a traumatic event rather than completing a self-report scale assessing trauma. About half (49%) of the participants at Time 0 in the longitudinal sample endorsed this item. Participants’ experiences of trauma did not have a significant main effect or interaction with time for attachment avoidance in general. For attachment anxiety, however, there was a significant interaction for time and trauma ($\beta = -.20$, $SE = .10$, $p = .05$) with those who endorsed having a history of trauma having a greater decrease in attachment anxiety over time (see Figure 5). The addition of trauma as a predictor also improved the fit of the model with a fit statistic of 875.97, compared to 918.48 in the unconditional linear model.

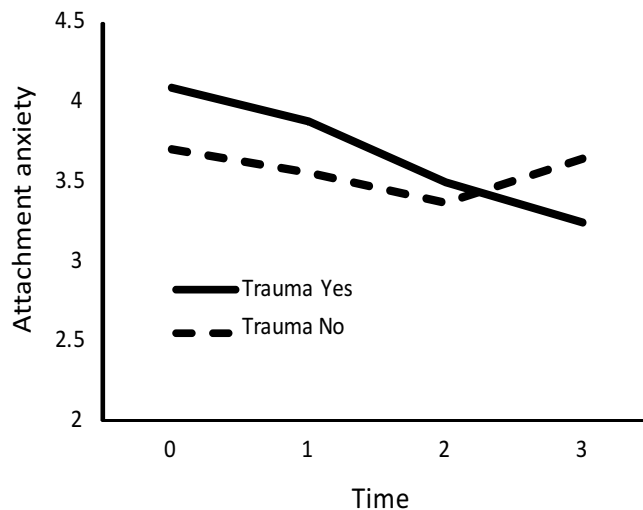


Figure 5. Attachment anxiety and history of trauma.

Research question 5. Does adolescents' attachment security with respect to specific relationships (i.e., mother, father, & therapist) improve over the course of nine months in treatment? If so, are such changes associated with changes in the YOQ-SR? The associated null hypothesis is that attachment security with respect to these relationships does not change over time in treatment and there are no associations to changes in overall symptom level.

Similar to the modeling done above, I conducted a step-by-step analysis to determine the most parsimonious model for the dimensions of attachment avoidance and attachment anxiety. For all relationship targets and variables, the first unconditional mean model was significant with ICC's well above the recommended 0.25 for growth curve modeling. Furthermore, all of the unconditional linear growth models provided the best fit when compared with the quadratic growth curve models and show a decrease in the attachment variables over time. Thus, attachment security increased for each relationship target over time. The separate models for relationship targets with each attachment dimension continued to have a significant variability both within and between subjects. Such variability indicates that other time-variant and time-invariant predictors could be added to improve the fit. See Tables 7, 8, and 9 for the complete models for each relationship.

I then added the centered YOQ-SR variable as a time-varying predictor to each model for both attachment dimensions with all relationship targets. The addition of this predictor produced a better fitting model as illustrated by the improved fit statistics (see Tables 7 – 9) for all outcome variables except for attachment anxiety with Father/Father-figure. For this dimension and relationship target, the predictor did not make a significant

improvement to the model fit and thus, the unconditional linear growth model was retained. Attachment anxiety with Mother/Mother-figure was also the only variable that had an interaction between Time and the centered YOQ-SR predictor, suggesting that YOQ-SR had an effect on the intercept as well as the growth trajectory of attachment anxiety to mother over time. A prototypical plot of this model (see figure 6) shows that higher YOQ-SR scores from one's average at Time 0 relate to lower scores on attachment anxiety to mother and then a slight increase in anxiety over time. Negative deviations from the mean result in higher attachment anxiety intercept scores and a decrease in attachment anxiety over time at a steeper rate than mean YOQ-SR scores.

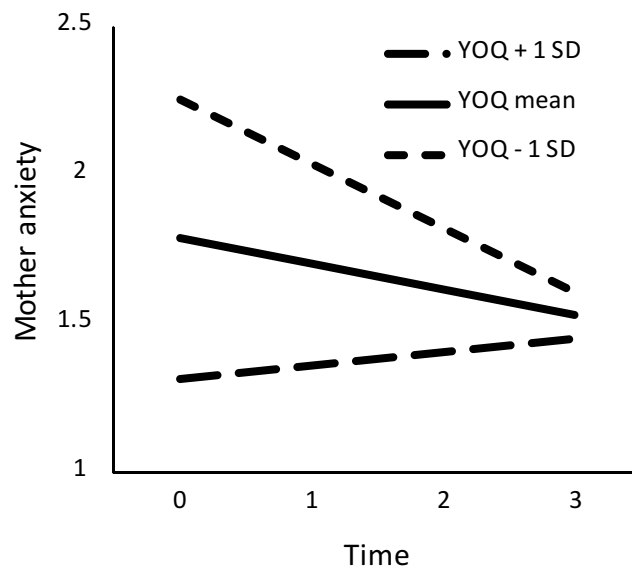


Figure 6. Prototypical plot of attachment anxiety to mother with YOQ-SR as a predictor of change over time.

Table 7

Growth Curve Models: Mother/Mother-figure

	UMM	ULGM	CLGM
<i>Mother: Attachment Avoidance</i>			
<i>Fixed Effects</i>			
Intercept	2.85*(.107)	3.15*(.131)	3.029*(.131)
Time		-.240*(.055)	-.141*(.055)
YOQ			-.016*(.004)
YOQ x Time			.000(.002)
<i>Random Effects</i>			
Within Person-Level 1	.882*(.081)	.598*(.068)	.547*(.062)
Between—Level 2			
In Initial Status	.911*(.169)	1.279*(.249)	1.228*(.237)
In Rate of Change		.122*(.043)	.094*(.037)
Covariance		-.183(.056)	-.142(.077)
Fit Statistic			
-2LL	1062.497	1025.234*	988.738*
<i>Fixed Effects</i>			
Intercept	1.720*(.094)	1.954*(.127)	1.785*(.124)
Time		-.178*(.053)	-.085(.053)
YOQ			-.025*(.004)
YOQ x Time			.007*(.002)
<i>Random Effects</i>			
Within Person-Level 1	.892*(.082)	.684*(.078)	.616*(.070)
Between—Level 2			
In Initial Status		1.090*(.231)	.988*(.210)
In Rate of Change		.092*(.041)	.066*(.033)
Covariance		-.217*(.081)	-.158*(.069)
Fit Statistic			
-2LL	1036.571	1010.889*	970.036*

Note: * $p < .05$, Standard errors are between parentheses. UMM = Unconditional Mean Model; ULGM = Unconditional Linear Growth Model; CLGM = Conditional Linear Growth Model.

Table 8

Growth Curve Models: Father/Father-figure

	UMM	ULGM	CLGM
<i>Father: Attachment Avoidance</i>			
<i>Fixed Effects</i>			
Intercept	3.123*(.116)	3.518*(.156)	3.342*(.150)
Time		-.308*(.058)	-.189*(.055)
YOQ			-.020*(.004)
YOQ x Time			.002 (.002)
<i>Random Effects</i>			
Within Person-Level 1	1.003*(.095)	.612*(.073)	.590*(.070)
Between—Level 2			
In Initial Status	1.010*(.195)	1.934*(.347)	1.681*(.311)
In Rate of Change		.144*(.050)	.081*(.040)
Covariance		-.400*(.113)	-.278*(.094)
Fit Statistic			
-2LL	1069.047	1006.374*	967.60*
<i>Father: Attachment Anxiety</i>			
<i>Fixed Effects</i>			
Intercept	1.884*(.108)	2.174*(.158)	
Time		-.219(.063)	
YOQ			
YOQ x Time			
<i>Random Effects</i>			
Within Person-Level 1	1.196*(.112)	.847*(.104)	
Between—Level 2			
In Initial Status	.778*(.169)	1.188*(.366)	
In Rate of Change		.154*(.058)	
Covariance		-.454*(.127)	
Fit Statistic			
-2LL	1095.257	1055.455*	NS

Note: * $p < .05$, Standard errors are between parentheses. UMM = Unconditional Mean Model; ULGM = Unconditional Linear Growth Model; CLGM = Conditional Linear Growth Model.

Table 9

Growth Curve Models: Therapist

	UMM	ULGM	CLGM
<i>Therapist: Attachment Avoidance</i>			
<i>Fixed Effects</i>			
Intercept	2.021*(.088)	2.19*(.121)	2.106*(.121)
Time		-.132*(.045)	-.054 (.042)
YOQ			-.012*(.004)
YOQ x Time			-.001(.002)
<i>Random Effects</i>			
Within Person-Level 1	.640*(.059)	.512*(.061)	.483*(.058)
Between—Level 2			
In Initial Status	.580*(.114)	1.079*(.216)	1.040*(.212)
In Rate of Change		.065*(.031)	.028(.028)
Covariance		-.221*(.071)	-.170*(.066)
Fit Statistic			
-2LL	944.396	917.854*	878.807*
<i>Therapist: Attachment Anxiety</i>			
<i>Fixed Effects</i>			
Intercept	2.054*(.098)	2.223*(.135)	2.075*(.131)
Time		-.130*(.057)	-.024(.055)
YOQ			-.016*(.005)
YOQ x Time			.001(.003)
<i>Random Effects</i>			
Within Person-Level 1	.954*(.088)	.751*(.089)	.754*(.089)
Between—Level 2			
In Initial Status	.678*(.142)	1.267*(.276)	1.058*(.249)
In Rate of Change		.109*(.048)	.047(.040)
Covariance		-.271*(.098)	-.154(.084)
Fit Statistic			
-2LL	1061.454	1043.419	1014.551

Note: * $p < .05$, Standard errors are between parentheses. UMM = Unconditional Mean Model; ULGM = Unconditional Linear Growth Model; CLGM = Conditional Linear Growth Model.

I then added other predictors (i.e., history of trauma, divorce, and adoption) to each relationship specific outcome variable. History of divorce had no significant effects on any of the variables. Similarly, history of adoption as a predictor did not significantly influence the initial intercept or the growth rate over time for any of the variables. Adding a history of trauma as a predictor produced a number of significant effects. First, there was a main effect for trauma and attachment anxiety to mother ($\beta = .60, SE = .25, p = .02$) and to father ($\beta = .95, SE = .31, p = .003$) with participants who endorsed having a history of trauma having higher initial scores on attachment anxiety to mother and/or father and higher scores over time (Figures 7 & 8). Adding trauma as a predictor to attachment avoidance to father produced both a significant main effect ($\beta = .89, SE = .31, p = .005$) and a significant interaction ($\beta = -.38, SE = .11, p = .001$) with participants who endorsed having a history of trauma having higher initial scores of attachment avoidance to father and a steeper decline in scores over time (Figure 9). In regards to therapist and attachment avoidance, a significant interaction was found between time and history of trauma ($\beta = -.22, SE = .09, p = .02$) with participants who endorsed a history of trauma having a steeper decline in attachment avoidance over time than those who did not have such a history (see Figure 10). A significant main effect ($\beta = .51, SE = .25, p = .05$) and interaction ($\beta = -.27, SE = .11, p = .02$) was found when trauma was added as a predictor to attachment anxiety to therapist with participants who endorsed a history of trauma having significantly higher scores of attachment anxiety to therapist initially and a steeper decline in attachment anxiety to therapist over time than those who did not have such a history (Figure 11). For all outcome variables, except for attachment avoidance to mother, adding trauma as a predictor improved the fit statistics of the models.

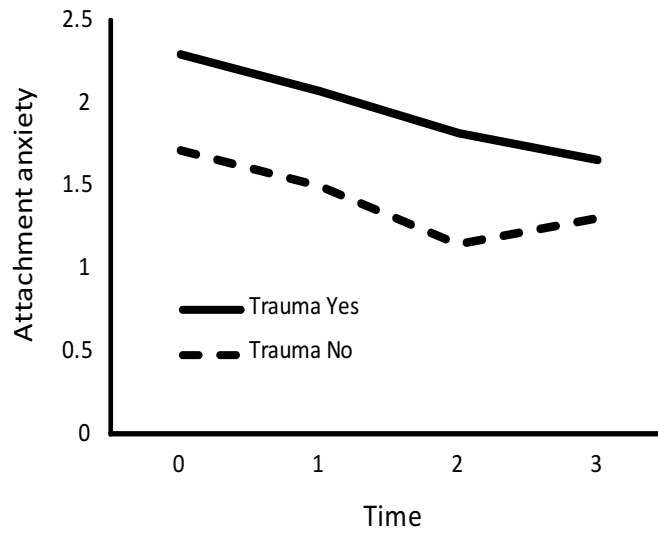


Figure 7. Attachment anxiety to mother and history of trauma.

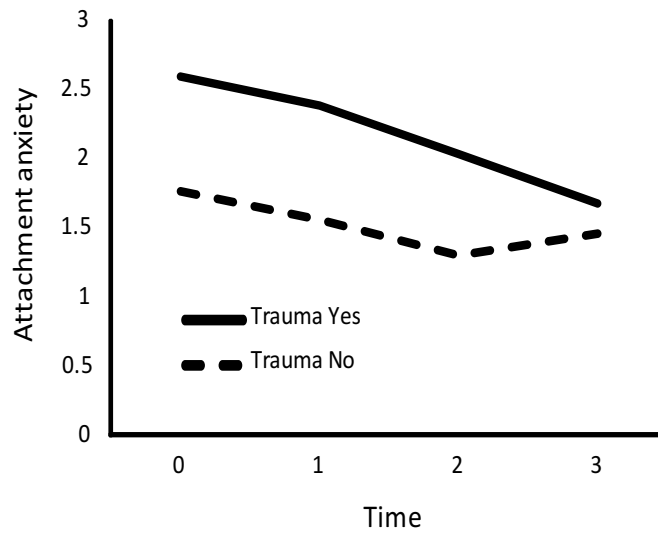


Figure 8. Attachment anxiety to father and history of trauma.

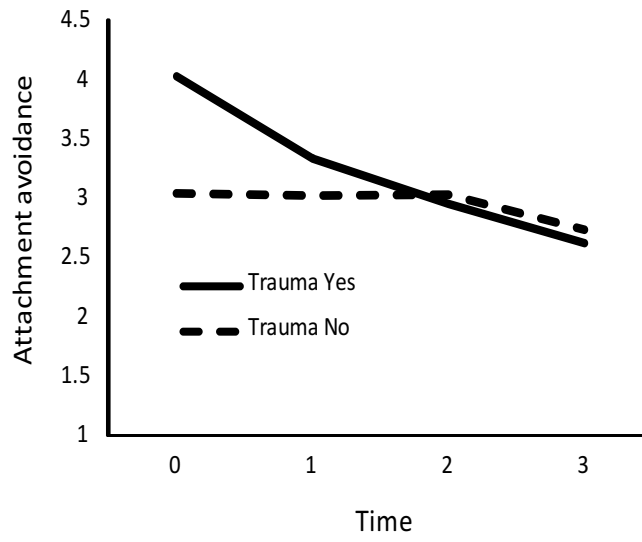


Figure 9. Attachment avoidance to father and trauma.

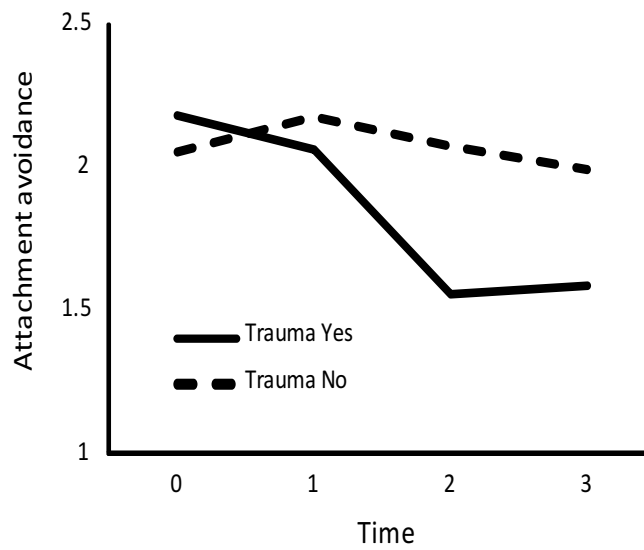


Figure 10. Attachment avoidance to therapist and history of trauma.

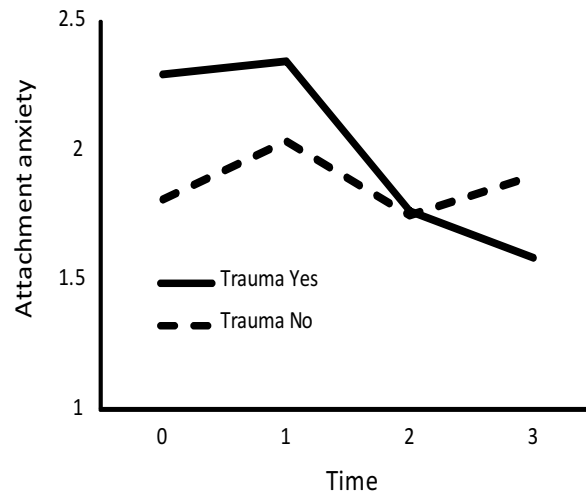


Figure 11. Attachment anxiety to therapist and history of trauma.

Summary of Findings

Overall, there were statistically significant results in both the between-group and within-subject analyses. The between group findings show that adolescents who are later in their respective treatment programs have lower scores on the combined variable of general attachment anxiety and avoidance, with post-hoc tests showing that adolescents later in treatment have lower scores of attachment anxiety. Differences between groups were also found when assessing attachment security with respect to relationship targets. With respect to mother, attachment anxiety was significantly higher in the middle stage treatment group when compared to the late stage treatment group. With respect to therapist, attachment avoidance was significantly lower for the later in the treatment group than for the early in treatment group.

Results from the longitudinal analyses offer further support and greater clarity to the results from the between-subjects analyses conducted at Time one. The longitudinal results also show changes over time for variables that did not have differences in the

between-subjects analyses. Using a stepwise approach to determine the best model for exploring change over time, I found that the conditional linear growth model best fit the data for all outcome variables prior to the addition of predictors. Overall, participants experienced a decrease in all variables of interest over time. This indicates that general attachment security, attachment security in specific relationships, and overall level of symptoms decreased over time. Thus, the null hypothesis was rejected for all hypotheses of interest. Adding symptom as a time-varying predictor helped improve the fit of the models for all outcome variables except attachment anxiety with respect to father. For attachment anxiety to father the linear growth model without a predictor provided the best fit. Adding history of trauma as a predictor in an exploratory manner also improved the fit of the models with participants who endorsed a history of trauma generally having higher initial scores of attachment insecurity, both in general and in specific relationships, and showing a greater decrease in attachment avoidance and anxiety over time.

CHAPTER IV

DISCUSSION

In this chapter, I will explore the implications of the results presented in chapter three. First, I will review the major findings associated with each research question. Within the review of the research findings, I will explore possible explanations of these findings and how they relate to the current literature. Next, I will discuss the theoretical and research implications of this study. Lastly, I will address limitations of the study. Throughout the discussion, I will provide ideas and suggestions for future research.

Research Findings

The primary purpose of this study was to explore the stability and change in attachment security for adolescents who have been placed in private residential therapeutic programs due to a history of severe mental, emotional, academic, and interpersonal conflict. Past researchers have demonstrated a significant relationship between such struggles and insecure attachment (Allen, 2008; Kobak, 1999; Sroufe, 2005). Evidence of such a relationship, in conjunction with more recent research conducted at private RTPs showing that overall level of symptoms improves over time (Behrens & Satterfield, 2007, 2011; Tucker et al., 2011), suggest that attachment security may also be influenced over the course of treatment. My primary goal in this study was to add to the recent literature conducted at private RTPs to explore if and how attachment security was changing over time with respect to symptoms. I also wanted to explore the effects of treatment and how treatment is related to changes in attachment security.

Differences in General Attachment Security Between Groups and Over Time

My first hypothesis was that there is a difference in general attachment security between adolescents at different stages of treatment (i.e., early, middle, & late). Specifically, I hypothesized that adolescents earlier in their treatment have greater attachment insecurity than those adolescents later in their treatment. This hypothesis was supported as I found a statistically significant difference between stages in treatment and attachment anxiety, with participants who were earlier in treatment having higher levels of attachment anxiety than those later in their programs. A reduction on this attachment dimension suggests that adolescents who are later in treatment have less attachment anxiety regarding the availability and responsiveness of close others, and thus, a greater degree of attachment security.

The differences found between groups in global attachment security were supported by similar changes when participants were assessed over time. I hypothesized that there is a decrease over time in general attachment avoidance and anxiety. This hypothesis was supported by the growth curve modeling results. I first found that the unconditional linear growth model provided the best fit prior to adding predictors. This model indicates both dimensions of attachment, avoidance and anxiety, declined in a linear fashion. Such a decline suggests an increase in attachment security overall. Movement towards increased security on both dimensions indicates that the participating adolescents may have felt less discomfort with closeness, a greater capacity to be emotionally vulnerable in relationships and to trust others, and had less anxiety and preoccupation about being abandoned or rejected by close others (Brennan et al., 1998; Mikulincer & Shaver, 2003). Importantly, differences occurred over time for both

dimensions of attachment security utilizing this method of analysis to track change over time. Such results add clarity and power to the picture first presented from the between-subjects results.

Adding further clarity was that both models had significant covariance terms indicating that rates of change in attachment security differed between participants. For example, those who had lower initial scores on either attachment dimension had a steeper decrease in those scores over time, suggesting that participants who started out as more secure also increased in security more rapidly. Those who were less secure on either attachment avoidance or anxiety, experienced less change over time. Such a finding indicates that attachment insecurity may be more difficult to influence and change towards greater security, and that attachment security, once in place, can increase more easily. This result is in contrast to Pinguart, Feusner and Ahnert's (2012) meta-analytic findings that securely attached individuals were more likely to maintain their attachment patterns while insecurely attached individuals had less stability in their patterns over time. However, their review was not focused on adolescents, and it included studies using categorical rather than dimensional measures of attachment security making it difficult to discern more nuanced changes in attachment security. Moreover, the studies in their analyses did not use growth curve modeling to explore change, which helps to more fully describe changes occurring between and within subjects.

Although the linear component of the growth curve model accounts for a significant proportion of variability, it is important to note that there remained large variability in intra-individual scores at time one, and variability in participants' growth trajectories over time, which indicates participants began the study with a diverse range

of attachment scores and the rate and direction of change differed considerably from individual to individual. Thus, some participants experienced larger decreases in attachment avoidance and/or anxiety, others experienced small to no differences, while some even experienced an increase on these dimensions. This high degree of variability among participants over time makes fitting a growth trajectory model difficult and thus, the current linear model may not adequately capture the complete story of the data. Improving the fit may require a larger sample and more frequent assessment of the attachment variables (e.g., conduct assessments every month versus every three months for the duration of the study) that might better capture the accelerating and decelerating change trajectories that likely took place within individuals over time.

Differences in Attachment Security Between Groups and Over Time with Respect to Specific Relationships

The participants' attachment security in specific relationships was assessed to explore what occurs over time in regards to attachment avoidance and anxiety in relation to mother, father and to therapist while engaged in an intensive therapeutic program. Researchers (Fraley et al., 2011; LaGuardia et al., 2000; Pierce & Lydon, 2001) emphasize the importance of including relationship-specific dimensions of attachment security as such dimensions are often different from general attachment security and can offer a more complete picture of the attachment system. Mother and father were included as specific relationships in this study as each participating program has a strong family component. That is, adolescents and their parents engage in at least weekly family therapy, typically via phone or video-conferencing, and parents are required to participate in regular, on-campus parent workshops and in-person family counseling. Thus, changes in the relationship between the adolescent and parent is expected. The adolescents'

primary therapists were also included to explore potential changes in attachment security that would occur in this relationship. The associated hypothesis is that attachment security to therapist would increase as the therapeutic relationship developed and deepened over the course of treatment.

Attachment security to mother and father. I hypothesized that for both mother and father relationship targets, adolescents later in treatment would have more attachment security than those early in treatment. My hypothesis was partially supported by the results. With mother as the specific relationship, a statistically significant effect was found between stages in treatment with a significant decrease in attachment anxiety for adolescents later in treatment compared to those in the middle treatment group. Thus, participants later in treatment were less preoccupied and anxious about the responsiveness and availability of their mother to meet their emotional needs than participants who were in the middle of their treatment programs. This result is somewhat surprising given that no significant differences were found between early in treatment and late in treatment. This suggests that participants who were in the middle of treatment had more attachment anxiety with respect to mother than those who were earlier in treatment.

Although no other study has used the ECR-RS to track changes over time with adolescents undergoing treatment, Bettmann and Tucker (2011) found somewhat similar increases in attachment insecurity over time in a sample of adolescents at a wilderness treatment program using three different attachment measures. In their study they found that over seven weeks of treatment, adolescents became less confident in the availability, sensitivity, and responsiveness of their parents. Such qualities seem to relate to the dimension of attachment anxiety assessed by the ECR-RS in the current study, and thus,

align with the increase in attachment anxiety found in adolescents in the middle of their treatment programs. Bettmann and Tucker (2011) posit that such increases may be related to the effects of treatment in that treatment can create a new awareness of potentially negative dynamics and of unmet needs in close relationships. With this awareness may come an increase in insecurity before such feelings and thoughts are worked through. This may also be occurring for students at the middle stage of their treatment in the current study, where attachment insecurity may be intensifying before improving. Unlike Bettmann and Tucker's (2011) findings where the aforementioned changes occurred in regards to both parents, in the current study, no significant differences were found between groups on either dimension of security with father as the relationship target.

In contrast, results from the more powerful within-subject growth curve modeling show that for both parental relationships, attachment avoidance and anxiety decreased, in a linear manner over time, indicating that attachment security to both parents increased as students progressed through the program. Again, decreases on the dimensions of anxiety and avoidance suggest an increased capacity to trust, feel close with, and be interdependent with their parents. This increase in overall attachment security is in contrast to previous research conducted on non-clinical samples of adolescents. Brenning et al. (2013) showed over the course of three years, an average intra-individual increase in scores on a modified version of the ECR, the ECR-R-Child, with mother as the target, meaning that adolescents' attachment security to mother decreased over time. They hypothesize that this change reflects a normative part of development that occurs during adolescence where the developmental task is separating and individuating from primary care-providers. They posit that such a task may temporarily bring up feelings of loss and

separation or a desire for more independence reflected in the increase of attachment anxiety and avoidance. Similarly, Buist et al. (2002), using the IPPA rather than a two dimensional framework, found a similar decline in adolescents' attachment security to both mother and father from ages 11 to 17. They also suggest that this decrease in attachment security to parents over the course of adolescence is the normative trend for this stage. In contrast, Doyle et al. (2009), using a categorical measure of security (i.e., a measure of attachment style such as secure, preoccupied, disorganized, etc.), found that self-reported attachment style to mother and father did not change over time. The participants in the current study did not have the theorized normative trend towards greater attachment insecurity with parents as found by Brenning et al. and Buist et al., nor did it show overwhelming stability as found by Doyle et al.

A possible explanation for the increase in attachment security illustrated in this study could be related to the effects of treatment. As described previously, all the participating programs have strong family therapy and parent education components. Such an emphasis may create an increased capacity for the adolescent to trust, depend on, and open up to their parents, thereby impacting how he or she perceives his or her parents. Further research is needed exploring these potentially subtle differences in how attachment security towards parents changes during this stage of development in general and, in particular, with clinical samples of adolescents participating in some form of intensive treatment. Such research could help clarify the relationship between treatment and changes to the attachment system in these relational domains.

Attachment security to therapist. Attachment security to therapist was also assessed to determine if there were differences in attachment security with this

relationship between stages in the programs and over time. In all participating RTPs resident adolescents are assigned to a primary therapist. This therapist is typically in charge of the adolescent's treatment plan throughout the course of his or her stay. In this manner, the therapist provides individual therapy, group therapy, family counseling and parent education, and they determine when the adolescent is ready to return home. They may also engage in experiential activities and recreational opportunities with the adolescent. Therefore, it seems that adolescents in such programs could form relationships to their therapist in ways that could be similar to a primary attachment figure. With this in mind, I hypothesized that attachment security in relation to the adolescent's primary therapist, would be greater for adolescents later in treatment, and that it would improve over time in the longitudinal sample. A significant between group difference was found with further analyses revealing that attachment avoidance to therapist was higher for those early in treatment versus later in treatment. This suggests that the adolescents' level of trust and willingness to be vulnerable with their therapists was related to how far along they were in their treatment, with students later in treatment evidencing more capacity to be open, vulnerable, and interdependent with their therapist.

Over time, both attachment avoidance and anxiety to therapist declined, indicating that attachment security to therapist improved over the course of treatment. Furthermore, overall attachment to therapist scores were very low (i.e., mean scores for both attachment and avoidance were under 2.50 for all times and stages) indicating that adolescents participating in this study had fairly secure attachment to their therapists regardless of their stage in treatment. This may speak to the amount of therapy such

adolescents have received in the past, prior to admission to their respective RTPs, as well as to the immediate and ongoing counseling they receive when they arrive.

I was unable to find any studies that utilized the ECR-RS with adolescents that included the relationship with the therapist as an attachment figure. However, other researchers have used measures with adult samples that specifically explored a client's attachment to therapist and how that attachment impacted therapy outcome (Mallinckrodt & Jeong, 2015; Sauer et al., 2010; Wiseman & Tishby, 2014). For example, Wiseman and Tishby tracked adult clients' attachment to therapist, using the Client Attachment to Therapist Scale (CATS; Mallinckrodt, Gantt, & Coble, 1995), and level of symptoms in therapy, three times over the course of one year of psychodynamic psychotherapy. While the scores on the subscales of the CATS did not change significantly over time, they found differences in outcome depending on how clients scored on their levels of security, avoidance, and preoccupation in regards to therapist, with clients having high avoidance to therapist having the least improvement. Similarly, Sauer et al. (2010) found that secure attachment to therapist, as assessed by the CATS, was predictive of a decrease in client distress over time. Such findings indicate a secure attachment to therapist is related to more positive treatment outcome. The current study yields a similar finding in that attachment security to therapist improves over time, as well as overall symptoms improving over time. The data of course do not establish a causal relationship, but they do support previous findings. Further research using the ECR-RS with therapist as an attachment figure and with adolescent samples would be helpful in extending this research.

Similar to the models exploring change in general attachment security dimensions, the models for all relationship targets on both dimensions of attachment anxiety and avoidance had significant variability, both in initial scores and in the slope of change over time. Brenning et al. (2013) found similar variability in growth trajectories of attachment security to mother-figures over time. Again, such variability suggests the current models do not fully account for changes occurring in treatment over time and point to the inherent variability that likely occurs between and within individuals, particularly at this developmental stage. A more complete model could be obtained with a larger sample size, more assessment points, a longer study duration, and the addition of predictors that relate to attachment security. However, variability in the model may remain due to the dynamic nature of this stage of development.

Differences and Changes in Symptoms Between Groups Over Time

Lastly, I hypothesized that there would be a difference in reported symptoms between participants early in their treatment versus later in their treatment, with the latter group reporting fewer symptoms. I derived this hypothesis from researchers who used the same outcome measure with adolescents in similar private RTPs, and who found that symptoms reduced over time while the participant was in treatment (Tucker et al., 2011). This hypothesis was supported with statistically significant lower symptom scores for adolescents later in treatment when compared to those early in treatment; meaning that adolescents further along in their respective treatment programs reported fewer negative behavioral, interpersonal, and emotional symptoms than those early in the programs.

My hypothesis was that as participants progressed through treatment, their reported number of negative symptoms would decrease over time. The results from the

growth curve modeling supported this hypothesis with an overall linear decrease in symptoms over time. Specifically, the participants assessed longitudinally had a mean initial score on the YOQ-SR of 47.76, which decreased to 27.03 at the end of nine months. The initial mean is similar to the cutoff score of 47 that delineates clinical and non-clinical adolescent populations, as outlined by Wells et al. (2003). Furthermore, the difference in the mean level changes that occurred over time is greater than the 18-point difference necessary for clinically significant change, as outlined by Wells and colleagues. Thus, the decrease in symptoms in the current study indicates that participating adolescents had a significant reduction in symptoms, and that such a reduction was clinically meaningful as they improved to scores well below the clinical cut off score. Such results are supported by the research conducted at private RTPs using the same or similar assessment of symptom measure (Behrens & Satterfield, 2007, 2011; Tucker et al., 2011). Specifically, Tucker et al. (2011) found that upon admission, participants in their sample had an average YOQ-SR score of 89. This decreased to 40 when adolescents were discharged. They found a greater decrease in symptoms over the course of treatment than in the current study; however, participants in that study completed the YOQ-SR measure at admission and again at discharge capturing their complete treatment program. Differences between symptoms at the beginning and end of treatment may have been more substantial had participants in this study been assessed immediately upon arrival to their respective RTP, and then followed throughout the course of their program.

Influence of Predictors

Symptoms. The overall level of symptoms was added as a time-variant predictor to each linear model in order to determine if symptoms influenced the dimensions of attachment security. For each variable except attachment anxiety with respect to father, adding symptom level as a predictor improved the fit of the model and thus, helped to explain residual variance. For the variables in which the fit was improved by adding this predictor, the effect of symptom was significant but the interaction between time and symptom was not. This means that the individual mean-centered symptom score was predictive for the initial value of attachment avoidance and anxiety but it did not influence the trajectory of change in the attachment variable over time with it and the predictor both decreasing in a parallel, linear manner. For each model the direction of the effect was negative, indicating that at the initial assessment, symptom scores that deviated from the mean for that individual were negatively correlated to the initial status of the attachment variable. Thus, a decrease from the mean symptom score for an individual was associated with a higher attachment avoidance and anxiety score. Furthermore, a higher deviance from the mean, and thus, an increase in symptoms for that individual, is associated with lower insecurity on both attachment avoidance and anxiety. Such a result does not align with attachment theorists (Allen, 2008; Sroufe et al., 2005) who show a relationship between greater attachment security and improved functioning.

The only variable where there was a significant effect for the interaction between symptom and time was for attachment anxiety in regards to mother. This indicates that symptom level predicted change in the initial value of attachment anxiety, and that it also

influenced changes over time. For example, at Time 1, if the individual's scores on the YOQ-SR deviated negatively from his or her mean score across time (i.e., his or her score was less than his or her mean) then he or she had a higher initial attachment anxiety score. The symptom score then mediated the amount of change over time with these individuals having a steeper decrease in attachment anxiety. The opposite was true for participants who had initial positive deviances from their mean YOQ-SR score across time. In this case, if one had a higher score than one's mean at Time 1, then he or she had a lower attachment anxiety score and over time this score gradually increased. Scores for the symptom variable that deviated less from the mean had a steady decline over time. Therefore, the level of, and change in attachment anxiety towards mother was influenced by their level of symptoms. Specifically, participants with higher deviances in symptom scores had lower initial attachment anxiety to mother but had less change and an increase in attachment anxiety. Those with lower deviances in symptom scores had higher initial attachment anxiety scores but decreased more quickly, suggesting that symptom and attachment anxiety, at least in this relationship domain, were related.

Program. For exploratory purposes I added Program as a time-invariant, level 2 predictor to the model to determine if there were any differences on any of the key variables in change over time between programs. This was exploratory as there was a distinct imbalance in the number of participants in each program over time, with one program having the majority of participants. In addition to this imbalance, all programs except one had less than 10 participants at the last assessment time. Although there is no clear rule of thumb to determine the appropriate number of participants for adequate power, Scherbaum and Ferreter (2009) cite recommendations of sample sizes of at least

30 for level 2 categorical predictors. Thus, the current study lacked the appropriate sample size to make conclusions from adding this predictor to the model.

When program was added to the attachment avoidance and anxiety models, only Program 3, was found to be a significant predictor of these dimensions for both the initial intercept and for change over time. Program 3 participants had higher scores for both attachment anxiety and avoidance initially, and these scores decreased more quickly over time when compared to other programs. This could be due to differences in the adolescents admitted to this program as they may have more severe mental, emotional, and relational problems. It could also be related to differences in program and in the therapeutic milieu. Such conjectures are purely speculative and warrant further exploration. Although this program showed a significantly steeper decrease in both attachment security dimensions when compared to the other programs, this predictor explained very little of the overall variance in the model and thus did not improve overall model fit. Again, due to the very small sample size of this program and due to the imbalance across groups in sample size, strong conclusions should not be made from these findings. However, future research utilizing a similar design would benefit from an increased sample size from each program in order to explore program effects.

Gender. Gender was also added as a level 2, time-invariant predictor. No significant effects for the intercept or interaction were found indicating that gender did not account for differences in growth trajectories over time in attachment security. This was in contrast to the gender differences that Buist et al. (2002) found between adolescent males and females in regards to attachment security specific to mother and father relationships.

History of trauma. For exploratory purposes I added trauma as a level 2, time-invariant predictor to the linear models to assess how adolescents experience of trauma may or may not influence change in attachment security over the course of treatment. On the demographic form that participants completed at the first assessment, participants were asked if they had experienced a traumatic event. They then were asked to list the trauma. There was a wide variety in the kinds of trauma experienced with examples being a history of molestation, experience of neglect, a parent's mental health problems, or a victim of bullying. They were then divided into two groups based upon if they endorsed such a history or not. Although exploring the influence of trauma was not specific to the research questions of this study, Bowlby's (1969/1982) initial theory about early relational experiences and subsequent research has found a positive relationship between the experience of trauma, particularly in early childhood and with primary attachment relationships, and insecurity of attachment (Main et al., 2005; Sroufe et al., 2005; Waters et al., 2000). As a predictor, this variable had various significant effects in the current study, particularly when attachment security was assessed in specific relationships. First, for attachment security in general, there was an interaction between a history of trauma and time. Those who endorsed a history of trauma had a greater decrease in attachment anxiety over time than those who did not. For those who did not have trauma in their history, their attachment anxiety scores remained relatively unchanged over time. Such a result suggests that for those with a history of trauma, time in treatment positively influenced their attachment anxiety, differently than for those who did not have such a history.

In regards to specific relationships, history of trauma produced a significant main effect for attachment anxiety to mother and attachment anxiety to father with those who endorsed having a history of trauma having higher scores of attachment anxiety in both relationship domains. Their scores remained higher than those who did not have such a history, although both groups experienced a decrease over time. Adding trauma to the model with attachment avoidance to father produced both a significant main effect and interaction with those endorsing a history of trauma having higher initial attachment avoidance scores and then have a steeper decrease in such scores over time. Again, such results indicate how a history of trauma and time in treatment positively interact to produce more significant increases over time on this dimension of attachment security to father.

In regards to therapist as the relationship domain, trauma and time had a significant interaction for both attachment avoidance and anxiety, as well as a main effect for attachment anxiety to therapist. For both dimensions of attachment security, those who endorsed having a history of trauma had a steeper decrease on attachment avoidance and anxiety to therapist over time than those who did not have that history. This suggests that those adolescents with a trauma history may have had greater attachment insecurity to their therapists initially, but that this improved significantly over time to a level that was more secure than those with no such history. Again, for those with no history of trauma, their level of attachment security to therapist remained fairly stable over time.

Of note is that history of trauma as a predictor in this study was exploratory as it was only assessed by a simple yes/no question. As it produced significant effects for almost all outcome variables, future research should assess trauma history in a more

detailed and intentional manner to then determine how it relates to change in attachment security over time.

History of divorce and adoption. The predictors of parental divorce, and if the participant was adopted, did not have significant effects for any of the outcome variables. Both predictors were added as exploratory predictors, in much the same manner as a history of trauma, as the occurrence of divorce and a history of adoption have been related to attachment security (Brennan & Shaver, 1993, Carranza, Kilmann, & Vendemia, 2009; Feeney, Passmore, & Peterson, 2007; van den Dries, Femmie, van IJzendoorn, & Bakermans-Kranenburg, 2009, Waters et al., 2000) and seemed theoretically appropriate to add to the models. Although no significant effects were found, such predictors should be explored in future research as the number of participants endorsing such variables was small (i.e., 12 participants who endorsed being adopted and 14 who endorsed experiencing the divorce of their parents). A larger number is needed in growth curve modeling for appropriate power and interpretation of effects.

Implications

The results of this study have implications for research on the stability and change of attachment security, as well as to adolescent populations specifically. The results also have implications to the literature exploring the relationship between attachment security and treatment by exploring a clinical adolescent population in residential treatment. While it adds to the attachment literature in these ways, it is also an addition to the small but growing body of research focusing on processes and outcomes in private residential programs for adolescents. These extensions have implications for future research and treatment.

Attachment Change and Stability

First, the current study shows that adolescents' general security, measured on the dimensions of attachment avoidance and anxiety, changed over the course of treatment. Such a finding adds to the literature regarding the stability of attachment security and the factors related to changes in that security. As stated previously, the current state of the literature offers conflicting views regarding the stability of attachment security over time. Some authors (Allen et al., 2004; Fraley, 2002; Main et al., 2005; Piquart, Feussner, & Ahnert 2013, Waters et al., 2000; Weinfield et al., 2000; Zimmerman & Becker-Stoll, 2002) indicate a moderate stability over time, and others show that attachment security changes (Brenning et al., 2013; Buist et al., 2002; Davila & Cobb, 2004). The current study's findings offer support to the theory that attachment security can change over time. More importantly, it points to a relationship between clinical treatment and positive change in attachment security.

In addition to the potential influence of treatment, the change in attachment security that occurred for participants in this study could be due, in part, to how change was analyzed. This study used growth curve modeling to track longitudinal changes. This method of exploring stability and change is different from previous studies that assessed change in attachment over time focused on between group mean differences, often with just two time points and sometimes using different assessment measures for each time (e.g., using the Strange Situation for infant participants and then the AAI 18 or more years later). Fraley and Brumbaugh (2004) cite the importance of assessing change over time with more than two assessment points to clarify the dynamics of change. Growth curve modeling assists in this endeavor by tracking both intra-individual and inter-

individual changes over time, with the potential of capturing any non-linear change that would be lost in more traditional analyses (Cilleseen & Borch, 2006; Shek & Ma, 2011). Although growth curve modeling offers more capability, particularly for detecting non-linear changes over time, in the present study most of the detected changes were in fact best described by a simple linear model. Again, the addition of more assessment times and extending the length of the study may allow for the detection of any non-linear changes over time.

Adding additional predictors to the model may also help clarify the direction and pattern of change over time. For example, in the current study trauma as a predictor was added in an exploratory manner to see how a history of trauma, as reported by the adolescents, related to change in attachment security over time. Doing so helped explain a portion of the variability in the linear models in ways that aligned with theory (Bowlby 1969/1982). Future research should explore the relationship that was found between a history of trauma and change in attachment security over time in treatment in a more detailed manner to better understand this relationship. For example, exploring what kind(s) of trauma relate to attachment security. Similarly, adding in the occurrence of specific relational events as predictors, such as a break up with a partner, a fight with a parent, or establishing a new peer relationship, would help to describe how such events may influence the attachment system. Longitudinal designs with added predictors such as these could help determine if these relational events cause lasting or temporary changes to one's attachment structure. Future longitudinal research should use this method of assessing change to help better our understanding how attachment security changes and what may impact or relate to that change.

Although the current study found a linear decrease in attachment insecurity on all attachment variables and attachment dimensions, the questions arises as to whether the amount of change is clinically or theoretically significant. For example, the mean change in attachment avoidance from Time 1 to Time 4 in the longitudinal sample was 3.42 to 3.06 (i.e., approximately 1/3 of a standard deviation). Although this was a statistically significant decrease on this dimension, it is unclear if this is a clinically meaningful change. In their adolescent longitudinal study, Brenning et al. (2013) also found small mean difference changes over time using their modified version of the ECR. To my awareness, little has been written about what is meaningful change in attachment security and more specifically, what is a meaningful difference on the dimensions of attachment avoidance or anxiety as measured by the ECR. More research using the ECR to track change over time would be helpful in providing data about how much change is clinically important.

Measuring Attachment Security in Adolescence

The changes found in both general and relationship specific attachment security for this adolescent population support using the ECR with adolescent populations. Very few studies have used this measure with adolescents; and thus, very little is known about the two dimensional framework for attachment security within the adolescent population. As this study illustrates, using the ECR and ECR-RS would facilitate greater understanding of adolescent attachment security change and stability. This would also allow for increased power in detecting change in longitudinal studies that span adolescence into adulthood, as the same measure could be used rather than drawing inferences by comparing results from different measures (Pinquart et al., 2012). Thus,

using the ECR, or Brenning et al.'s (2011) modified ECR for children and early adolescents, and then continuing to assess attachment security with the standard ECR when the subjects enter late adolescence and adulthood would facilitate the interpretation and understanding of the results. To encourage this use, further validation of the ECR with adolescents (ages 13 to 18) is needed.

In addition to supporting the use of the ECR with adolescents, the study further extends the literature in assessing attachment by measuring both general attachment security and security in specific relationships. Unlike the ECR, where I was unable to find studies using it with a traditional adolescent sample (ages 13 to 18), Donbaek and Elklit (2014) found that the ECR-RS had good construct validity in an adolescent sample (ages 15 to 18). Through exploratory factor analysis they also found a clear two dimensional model across relationship domains. Similar to the findings of the current study, Donbaek and Elklit (2014) also found a significant positive skew and violations of normality on both dimensions for their sample. Such a skew indicates that the majority of their participants had secure attachments to their parents. This was somewhat surprising given that this was a clinical population of adolescents. This may speak to the relatively privileged background of this sample resulting in an overall stability not typical of other clinical populations.

Future research is needed using this scale with adolescents. As just described, for this sample and with others there was a positive skew in scores. The measure may need to be reformulated to better differentiate scores on the secure end of both dimensions. Furthermore, this is a short scale with only 3 of the 9 items comprising the subscale for attachment avoidance. Such a small number of items is a limitation to the scale and may

relate to why such a small degree of differentiation was found in scores on this scale. Future research should incorporate a longer scale, such as the ECR with instructions specific to a certain relationship (i.e., relationship to mother or to father) in order to better capture the dimensions of attachment avoidance and anxiety in specific relationships.

Although this was not statistically confirmed, a visual inspection of the mean values for general attachment avoidance and anxiety, and for the specific relationships shows that except for attachment avoidance to mother and father, scores for the relational targets were lower than the global dimensions. This discrepancy supports other researchers (LaGuardia, Ryan, Couchman, & Deci, 2000; Overall, Fletcher, & Friesen, 2003; Pierce & Lydon, 2001) who found that relationship-specific attachment security and/or style was related to but different from attachment security in a more global or general sense. The growing body of research exploring both general and relationship-specific attachment security offers a more complete picture of the attachment system. It also further supports Bowlby's (1969/1982) notion of an attachment system "hierarchy" where different attachment relationships can be created with individuals to whom one is close and where some are more valued, or further up on the hierarchy, than others. Further research should be conducted to obtain a more complete picture of the attachment system hierarchy that measures both general and relationship-specific attachment security. Studies should also see if changes made at the relational level then predict more global changes or vice versa.

Potential Implications for Counseling Psychology

The change in attachment security found in the current study has potential implications for the field of counseling psychology. The increase in attachment security

indicates the role of treatment may be related to the outcome of this study, as previous findings show that attachment security, particularly to parents, decreases for adolescents in the absence of treatment. Participants in this study were engaged in an intensive form of therapeutic treatment with the goal of addressing and changing behavioral, emotional, relational, and academic functioning. Although causal conclusions cannot be made regarding the findings of this research, there does seem to be a relationship between the increase in attachment security, decrease in symptoms, and the role of treatment. This seemed most evident when history of trauma was added as an exploratory predictor to the growth curve models. The relationship between treatment over time and a history of trauma seemed to have the most positive changes in attachment security suggesting that those with a history of trauma responded better to treatment in regards to attachment security.

The current study offers further support to the literature regarding changes in attachment security tracked over the course of mental health treatment (e.g., individual counseling, group therapy, etc.). Researchers from these studies found that attachment security and/or attachment orientations of adults changed over the course of specific treatments (Levy et al., 2006; Maxwell & Potter, 2009; Tasca et al., 2007; Travis et al., 2001). Thus, in contrast to the research of Brenning et al. (2013) and Buist et al. (2002), who found a decrease in attachment security to parental targets during adolescence, the current study found that with treatment, attachment security in general and towards parents, can increase. The changes in attachment security, support Bowlby's (1988) ideas of the potential power of the therapeutic relationship and therapy in general to affect change in the attachment system. The current study expands understanding of this system

by tracking how participating in ongoing treatment and in an ongoing relationship with a therapist relates to changes towards greater security.

Residential Therapeutic Treatment for Adolescents

Lastly, the current study has implications for the outcome literature on adolescent residential treatment in general and more specifically, to the growing body of literature on adolescents at private RTPs. Similar to other outcome studies conducted at private RTPs (Behrens & Satterfield, 2007, 2011; Tucker et al., 2011), this study finds that symptoms reduce and students improve over the course of treatment. The present study also finds that attachment security also improves with treatment. Adding the dimension of attachment security to an evaluation of overall outcome adds a depth of understanding in terms of what is occurring over time during treatment. Such changes in one's internal representations of self and other may be facilitated by the dramatic change in environment and by the intense treatment received in these types of programs where the focus is engendering increased capacity for maturity, pro-social functioning, and an increased capacity to tolerate distress. The results from this study add further support to the efficacy of such treatment for this group of adolescents.

Further research should be conducted at similar private RTPs to add support to the current findings. Again, assessing the students throughout their treatment stay and not just the nine months of this study, would offer a more complete picture of what is changing over time for adolescents in these programs. Future research assessing attachment security and symptoms should also be conducted at public RTPs as research conducted at such settings is less clear about the effectiveness of treatment compared to

private RTP research. Research comparing the two would be helpful to determine what factors may or may not be related to positive changes in treatment.

Limitations

There are a number of limitations to the current study. First, as mentioned previously, participants were not assessed as they entered their respective programs. Ideally participants should be measured first at admission, to obtain a clearer picture of their baseline, pre-treatment functioning. They should then be tracked throughout their program at more frequent intervals, again at discharge, and ideally, at post-discharge; similar to the designs used by Behrens and Satterfield (2007, 2011) and Tucker et al. (2011). Such a design would likely better capture the change occurring over the course of treatment. More frequent assessment, and for a longer period of time, would improve the growth curve modeling by estimating the change parameters more accurately and thus improving the reliability of the growth parameters (Shek & Ma, 2011). An even more helpful approach to tracking change would be to assess students once they enter their first form of residential treatment, not just at their current placement. As Bettman and Tucker (2011) illustrate in their study, adolescents' attachment security began to shift while in the seven-week wilderness program, prior to many of those participants' placement at a longer-term program. Because most adolescents at private RTPs often come from such programs, they have already begun much of the work of treatment and may have already experienced a reduction in symptoms and changed on the dimensions of attachment security. This exposure to intensive treatment prior to admission to an RTP may explain why, in the current study, attachment anxiety and avoidance, particularly in specific relationships, were fairly secure, even at the first assessment time.

Another limitation of this study is that only self-report surveys were used to assess attachment security. Self-report assessment methods rely on participants honestly and accurately reflecting on their experiences and thoughts. Such a method can be influenced by social desirability, response bias, and inattention and/or lack of care in completing the survey by the participant. Thus, this method of assessing attachment security may result in biased and/or distorted findings. A number of authors have cited the benefit of using multiple methods of assessing attachment (e.g., interviews with, and behavioral assessments of the participants, and having close others complete surveys) in order to provide a more complete picture of this complex construct (Bartholomew & Shaver, 1998; Shaver & Mikulincer, 2004). This is supported by researchers who note that self-report and interview methods of assessing attachment capture different, but related aspects of attachment security (Bartholomew & Shaver, 1998). Thus, future research exploring attachment security of adolescents in RTPs should include a variety of ways to assess attachment security, including both self-report and interview methods. Such research should also incorporate data from other sources such as parents, peers, staff and/or therapists at the RTP. These others sources would likely provide important information to help illustrate what is occurring over time for youth in these programs. Similarly, incorporating both quantitative and qualitative ways of assessing change would be useful. This study was focused on a quantitative analysis of change. However, incorporating a mixed design using journal entries, interviews, and/or behavioral observations would offer a level of depth to understanding change that simply focusing on one design does not.

The number of participants in this study was also a limitation. Although a fairly large sample size was available at time one, this number decreased significantly over time due to participants completing their programs. Also, there was a marked imbalance in the number of participants from each program with Program 2 having the majority of participants. This made comparing differences in growth trajectories of attachment security between programs problematic and not advisable.

Lastly, because the participants in this study were residents of private residential therapeutic programs, the results from this study may not be generalizable to the adolescent population in general, to adolescents receiving outpatient therapy, or to adolescents in residential programs that differ from the programs in this study. Furthermore, the vast majority of the adolescents in the current study were Caucasian and from families with high socioeconomic status, again limiting the generalizability of these results. More research should explore change in attachment security and functioning in adolescents across these various domains and with more diverse populations of adolescents.

Conclusions

The majority of my findings, particularly with the longitudinal data, show that attachment security increased for adolescents, both as a general construct and with respect to parents and to therapist. Furthermore, such changes in attachment security paralleled a reduction in behavioral and emotional symptoms. This relationship is significant as it illustrates that attachment security can change over time, and that such change is related to changes in functioning and behavior. Importantly, the current findings point to the significant relationship between attachment change and clinical

treatment. This has important implications for the practice of counseling psychology as it emphasizes how effective treatment likely influences the attachment system, thereby potentially imparting lasting positive change. The findings also add a new level of support to the benefits of residential treatment in influencing change in adolescents with severe and persistent mental, emotional, behavioral, and academic problems.

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Appendix A
Demographic Form

Demographic Form

Name: _____ **Code:** _____

Date of Admission: _____

Primary reason for Admission:

Age: _____ **Gender:** _____ **Race/ethnicity:** _____

Physical Disability: _____ **Grade in school:** _____

Primary Language spoken: _____

Parental income (circle one): under \$100,000/year over \$100,000/year

Where are you from? Home town/State: _____

Members of current family: _____

Developmental history: (check all that apply)

Y N

_____ Adopted. If yes, at what age? _____

_____ Parents divorced. If yes, how old were you? _____

_____ Trauma (e.g. loss of parent, abuse, neglect, etc.); if yes, describe here: _____

Have you ever had to live away from your parents before this most recent placement?
For example, foster care, extended hospitalizations, residential drug treatment, etc.

If yes, describe: _____

Who took care of you the most during your childhood? (e.g. mother, father, both, relative, nanny) _____

Appendix B

Experiences in Close Relationships Scale (ECR)

Experiences in Close Relationships Scale (ECR)

The following statements concern how you generally feel in close relationships (e.g., with close friends or family members). Respond to each statement by indicating how much you agree or disagree with it. Write the number in the space provided, using the following rating scale:

1 (Strongly Disagree), 2(Disagree), 3 (Disagree Slightly), 4 (Neutral/Mixed), 5 (Agree Slightly), 6 (Agree), 7 (Agree Strongly).

- ___ 1. I prefer to not show others how I feel deep down.
- ___ 2. I worry about being rejected or abandoned.
- ___ 3. I am very comfortable being close to other people.
- ___ 4. I worry a lot about my relationships.
- ___ 5. Just when someone starts to get close to me I find myself pulling away.
- ___ 6. I often worry that other people don't care about me as much as I care about them.
- ___ 7. I get uncomfortable when someone wants to be close with me.
- ___ 8. I worry a fair amount about losing my close relationship partners.
- ___ 9. I don't feel comfortable opening up to others.
- ___ 10. I often wish that other people's feelings for me were as strong as my feelings for them.
- ___ 11. I want to get close to others, but I keep pulling back.
- ___ 12. I want to get very close to others, and this sometimes scares them away.
- ___ 13. I am nervous when another person gets too close to me.
- ___ 14. I worry about being alone.
- ___ 15. I feel comfortable sharing my private thoughts and feelings with others.
- ___ 16. My desire to be very close sometimes scares people away.
- ___ 17. I try to avoid getting too close to others.
- ___ 18. I need a lot of reassurance that other people really care about me.
- ___ 19. I find it relatively easy to get close to others.
- ___ 20. Sometimes I feel that I try to force others to show more feeling, more commitment to our relationship than they otherwise would.

- ___ 21. I find it difficult to allow myself to depend on other people.
- ___ 22. I do not often worry about being abandoned.
- ___ 23. I prefer not to be too close to other people.
- ___ 24. If I can't get other people to show interest in me, I get upset or angry.
- ___ 25. I tell close others just about everything.
- ___ 26. I find that other people don't want to be as close as I would like.
- ___ 27. I usually discuss my problems and concerns with close others.
- ___ 28. When other people with whom I am close are not around, I feel somewhat anxious and insecure.
- ___ 29. I feel comfortable depending on others.
- ___ 30. I get frustrated when my close relationship partners are not around as much as I would like.
- ___ 31. I don't mind asking close others for comfort, advice, or help.
- ___ 32. I get frustrated if close others are not available when I need them.
- ___ 33. It helps to turn to close others in times of need.
- ___ 34. When other people disapprove of me, I feel really bad about myself.
- ___ 35. I turn to close relationship partners for many things, including comfort and reassurance.
- ___ 36. I resent it when close others spend time away from me.

Appendix C

Experiences in Close Relationships—Relationship Structures

Experiences in Close Relationships—Relationship Structures

This questionnaire is designed to assess the way in which you think about important people in your life. You'll be asked to answer questions about your mother, father, and your therapist.

*Please answer the following questions **about your mother or mother-like figure**. Respond to each statement by indicating how much you agree or disagree with it. Write the number in the space provided, using the following rating scale:*

Disagree Strongly *Neutral/Mixed* *Agree Strongly*
 1 2 3 4 5 6 7

- _____ 1. It helps to turn to this person in times of need.
- _____ 2. I usually discuss my problems and concerns with this person.
- _____ 3. I talk things over with this person.
- _____ 4. I find it easy to depend on this person.
- _____ 5. I don't feel comfortable opening up to this person.
- _____ 6. I prefer not to show this person how I feel deep down.
- _____ 7. I often worry that this person doesn't really care for me.
- _____ 8. I'm afraid that this person may abandon me.
- _____ 9. I worry that this person won't care about me as much as I care about him or her.

*Please answer the following questions **about your father or father-like figure**. Respond to each statement by indicating how much you agree or disagree with it. Write the number in the space provided, using the following rating scale:*

Disagree Strongly *Neutral/Mixed* *Agree Strongly*
 1 2 3 4 5 6 7

- _____ 1. It helps to turn to this person in times of need.
- _____ 2. I usually discuss my problems and concerns with this person.
- _____ 3. I talk things over with this person.

- _____ 4. I find it easy to depend on this person.
- _____ 5. I don't feel comfortable opening up to this person.
- _____ 6. I prefer not to show this person how I feel deep down.
- _____ 7. I often worry that this person doesn't really care for me.
- _____ 8. I'm afraid that this person may abandon me.
- _____ 9. I worry that this person won't care about me as much as I care about him.

*Please answer the following questions **about your program therapist/counselor**. Respond to each statement by indicating how much you agree or disagree with it. Write the number in the space provided, using the following rating scale:*

<i>Disagree Strongly</i>		<i>Neutral/Mixed</i>		<i>Agree Strongly</i>
1	2	3	4	5
		6		7

- _____ 1. It helps to turn to this person in times of need.
- _____ 2. I usually discuss my problems and concerns with this person.
- _____ 3. I talk things over with this person.
- _____ 4. I find it easy to depend on this person.
- _____ 5. I don't feel comfortable opening up to this person.
- _____ 6. I prefer not to show this person how I feel deep down.
- _____ 7. I often worry that this person doesn't really care for me.
- _____ 8. I'm afraid that this person may abandon me.
- _____ 9. I worry that this person won't care about me as much as I care about him or her.

Appendix D

Youth Outcome Questionnaire—Self-Report-2

Due to copyright law, the YOQ-SR could not be reprinted for this document. To find more information related to the measure, please go to: www.oqmeasures.com.

Appendix E

Human Institutional Review Board Approval Letter

WESTERN MICHIGAN UNIVERSITY



Human Subjects Institutional Review Board

Date: December 22, 2014

To: Eric Sauer, Principal Investigator
Laura Thum, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair 

Re: HSIRB Project Number 14-12-07

This letter will serve as confirmation that your research project titled "Assessing Change in Attachment Security of Adolescents in Residential Therapeutic Programs" has been **approved** under the **expedited** category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note: This research may **only** be conducted exactly in the form it was approved. You must seek specific board approval for any changes in this project (e.g., ***you must request a post approval change to enroll subjects beyond the number stated in your application under "Number of subjects you want to complete the study."*** Failure to obtain approval for changes will result in a protocol deviation. In addition, if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

Reapproval of the project is required if it extends beyond the termination date stated below.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: December 21, 2015

251 W. Walwood Hall, Kalamazoo, MI 49008-5456
PHONE: (269) 387-8293 FAX: (269) 387-8276

Appendix F
Parental Consent Form

Western Michigan University

Department of Counseling and Counselor Education

Principal Investigator: Dr. Eric Sauer

Student Investigator: Laura Santa Thum

Title of Study: *Assessing Change in Attachment Security of Adolescents in Residential Therapeutic Programs*

Your child has been invited to participate in a research project titled "*Assessing Change in Attachment Security of Adolescents in Residential Therapeutic Programs.*" This project will serve as Laura Santa Thum's dissertation for the requirements of her Ph.D. This consent document will explain the purpose of the research project and will go over all of the time commitments, the procedures used in the study, and the risks and benefits of participating in this research project. Please read this consent form carefully and completely and please ask any questions if you need more clarification.

What are we trying to find out in this study?

The purpose of this study is to see what changes adolescents experience over the course of residential treatment. A primary focus will be on their perceptions of themselves and of close relationships, as well as the symptoms that resulted in their initial placement.

Who can participate in this study?

Any adolescent who is currently a resident of this program will be asked to participate.

Where will this study take place?

Data collection will be conducted on-site at a time and place that is convenient for your son or daughter and for the program.

What is the time commitment for participating in this study?

The time commitment for this study will be between 20 to 30 minutes at each data collection point. They will be asked to complete the same surveys every other month for nine months or until your child is discharged if this occurs before the nine months are over. There will be a total of five data collection points. If your child participates in all five data collection points, he or she will spend a total of 100 to 150 minutes participating.

What will your child be asked to do if he or she chooses to participate in this study?

Your child will be asked to complete one demographic/history form during the initial session as well as three self-report surveys. Your child will then complete those three surveys at each of the remaining data collection points.

What information is being measured during the study?

Your child will be asked to complete three self-report measures--one that measures a range of emotional, behavioral, and social symptoms, and two that measure how one experiences and feels in close relationships (e.g. to parents, peers, therapists, etc.).

What are the risks of participating in this study and how will these risks be minimized?

The risks of participating in this study are minimal. Your child's responses on the surveys, as well as his or her participation in this research, have no impact or influence on their current treatment program. Individual answers will not be shared with staff at the program. One anticipated risk with participating in this study is that your child's ordinary schedule for the day may be disrupted with data collection. They also may experience some boredom or frustration with having to complete the same surveys on multiple occasions. Additionally, some of the questions on the survey may bring up some emotional discomfort. Strategies will be used to lessen such discomfort by facilitating the completion of the forms in a way that is as convenient as possible and by encouraging your child to reach out to his or her therapeutic staff to process his or her feelings.

What are the benefits of participating in this study?

A potential benefit of participating in this study is that your son or daughter may gain greater insight into their close relationships and into their own thoughts about themselves. They may also gain insight into how they are making positive changes over the course of treatment.

Are there any costs associated with participating in this study?

There will be no costs associated with participating in this study.

Is there any compensation for participating in this study?

Your child will not be compensated for participating in this study.

Who will have access to the information collected during this study?

Only the Principal Investigator and the Student Investigator will have access to the raw data collected from this study. All participants will be given a code number and their names will be removed from any data. The summarized results of this study will be presented in the Student Investigator's dissertation as well as be presented at a conference or published in an academic journal. The summarized, de-identified data may also be presented to the participating programs to assist in program analysis.

What if you want your child to stop participating in this study?

You may withdraw your son or daughter from this study at any time without any negative consequences to their treatment program.

Should you have any questions prior to or during the study, you can contact the primary investigator, Dr. Eric Sauer at (616) 771-4171 or at eric.sauer@wmich.edu. You may also contact

the Chair, Human Subjects Institutional Review Board at 269-387-8293 or the Vice President for Research at 269-387-8298 if questions arise during the course of the study.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.

Your signature below indicates that you, as parent or guardian, can and do give your permission for _____ (child's name) to participate in the research described above.

Signature

Date

Appendix G
Participant Assent Form

Western Michigan University

Department of Counseling and Counselor Education

Principal Investigator: Dr. Eric Sauer
Student Investigator: Laura Santa Thum
Title of Study: *Assessing Change in Attachment Security of Adolescents in Residential Therapeutic Programs*

You are invited to be in a research project titled "*Assessing Change in Attachment Security of Adolescents in Residential Therapeutic Programs.*" This project will serve as Laura Santa Thum's dissertation for the requirements of her Ph.D. This consent document will explain the purpose of the research project and will go over all of the time commitments, the procedures used in the study, and the risks and benefits of participating in this research project. Please read this consent form carefully and completely and please ask any questions if you need more clarification.

What are we trying to find out in this study?

The purpose of this study is to see what changes you experience over the course of residential treatment. A primary focus will be on your thoughts and feelings about yourself and your close relationships, as well as how you are doing emotionally, behaviorally, and socially while in this program.

Who can participate in this study?

All residents of your program have been invited to participate.

Where will this study take place?

Data collection will be conducted on-site at a time and place that is convenient for you and for the program.

What is the time commitment for participating in this study?

The time commitment for this study will be 30 minutes each time you take the surveys. You will be asked to complete the same surveys three, six, and nine months later or until you are discharged, if this occurs before the nine months are over. There will be a total of four data collection points. If you participate in all four data collection points, you will spend a total of 120 minutes participating

What will you be asked to do if you choose to participate in this study?

You will be asked to complete a brief form asking general questions about you and then asked to complete three surveys. You will then be asked to complete the three surveys three more times over the course of 9 months, or until you are discharged, whichever comes first.

What information is being measured during the study?

You will be asked to complete three self-report measures--one that measures a range of emotional, behavioral, and social symptoms, and two that measure how you experience and feel in close relationships (e.g. to parents, peers, therapists, etc.).

What are the risks or costs of participating in this study and how will these risks be minimized?

The risks of participating in this study are minimal. Your responses on the surveys, as well as your participation in this research, will not influence your current treatment program. Your specific answers and results on the surveys will not be shared with staff at your program or with your parents. Because of the nature of residential treatment and programming, some staff will unfortunately know that you are participating in this study only because you will be asked to take time away from your program to complete the surveys. Again, they will not see the surveys or your answers. Similarly, due to participating in this study your ordinary daily schedule may be disrupted to complete the surveys. You may also experience boredom and/or frustration at having to complete the same surveys multiple times. Additionally, some of the questions on the surveys may cause some emotional discomfort. Strategies will be used to lessen such discomfort by facilitating the completion of the forms in a way that is as convenient as possible and by encouraging you to reach out to your therapeutic staff to process your feelings.

What are the benefits of participating in this study?

A potential benefit of participating in this study is that you may gain greater insight into your close relationships and about yourself. You may also see how you are making positive changes over the course of treatment.

Is there any compensation for participating in this study?

You will not be compensated for participating in this study.

Who will have access to the information collected during this study?

Only the Principal Investigator and the Student Investigator will have access to the data collected from this study. Your name will be removed from any data and replaced with a numerical code. The summarized results of this study will be presented in the Student Investigator's dissertation as well as presented at a conference or published in an academic journal.

What if you want to stop participating in this study?

You can choose to stop participating in the study at anytime for any reason. You will not suffer any prejudice or penalty by your decision to stop your participation. You will experience NO consequences if you choose to withdraw from this study.

If you have any questions or concerns about this study, you may contact either Dr. Eric Sauer at (616) 771-4171 or Laura Santa Thum at (406) 219-2263.

This consent document has been approved for use for one year by the Human Subjects Institutional Review Board (HSIRB) as indicated by the stamped date and signature of the board

chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.

Your signature below indicates that you agree to participate in the research described above.

Print Name here

Signature

Date