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Attachment Behavior of Children Adopted Internationally at Six Months Post Adoption

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Abstract

The purpose of this pilot study was to describe attachment behavior in children adopted internationally at 6 months post adoption. Twenty-two children and their adoptive mothers were observed at home for completion of an attachment measure. Mothers also completed a questionnaire on their child's preadoption care. Comparisons of children low and high in attachment security suggested that low secure children showed predominantly ambivalent attachment behavior or that they were still in the process of forming an attachment. Children having foster versus orphanage care prior to adoption differed in quality of preadoption care and in certain attachment behaviors, but not in overall attachment security.

Keywords

attachment; adoption; institutionalization; foster care; quality of care

Introduction

In the first volume of his trilogy on attachment, Bowlby (1969/1982) described three phases in the process of becoming attached to one's caregivers. The first stage, called "pre-attachment," occurs during the first eight weeks of life, when infants orient, signal, and respond to their mothers and other people in much the same way, even though they are capable of discriminating their primary caregivers through olfactory and tactile-kinesthetic cues. In the second phase of "attachment in-the-making," babies direct an expanding repertoire of attachment behaviors to their regular caregivers but typically remain social with everyone, a phase that lasts until a baby is between 6 and 9 months. Then, in the third phase of "clear-cut attachment," children develop strong preferences for their caregivers, organizing their behavior around these preferred figures. Since this phase requires two cognitive skills that develop late in the first year—the ability to distinguish means and ends and to mentally represent the caregiver when absent—true attachment does not occur until sometime between 7 and 12 months. Almost all children, however, have developed an attachment by their first birthday, as long as they have received caregiving that is typical for our species.

More than 20 years later Waters and colleagues (1991) expanded upon these three stages, emphasizing how infants learn to distinguish self and other on the way to clear-cut attachment. But the versions of both Bowlby and Waters share this common feature: Development sets the timetable for clear-cut attachment to emerge. That is, attachment cannot emerge until certain developmental milestones have been achieved, but once these milestones are in place, attachment soon (and inevitably) follows.

While this framework for understanding the development of attachment is sufficient when children begin to attach at birth, it offers little guidance for children adopted internationally for two reasons. First, almost all international adoptees begin the process of attaching to their adoptive parents at a later age. This means adoptees are well on their way—or have

already achieved—the necessary developmental milestones before the process of attachment begins. Second, all adoptees have experienced some form of preadoption care that may influence how quickly an attachment emerges after adoption. To understand the process of attachment in this population, then, researchers need to ask different questions, such as: How much time do children need to interact with their new caregivers before a clear-cut attachment can emerge? And how do a child's previous caregiving experiences affect this timing? Researchers, in other words, need to consider the effect of time separately from that of development when the two are not occurring simultaneously. Such issues, moreover, are not only of theoretical interest but also of importance to adoptive parents and to the clinicians who care for children after adoption.

The purpose of this paper is to add to our knowledge of the emergence of attachment in this population—specifically, adoptees who begin the process of attachment late in the first year or in the second year of life. We will first examine the contributions of attachment theory to these questions and then present related findings of a pilot study with international adoptees.

The Role of Time in the Development of Attachment

Although attachment theory has not addressed the issue of time separately from development in the process of attachment, a look at attachment as a behavioral system—and particularly the cognitive component of that system—makes it clear why time has an important role to play.

Influenced by ethology, Bowlby (1969/1982) conceptualized attachment as a species-specific behavioral system (the attachment behavioral system or ABS) with the following components: activating stimuli, a set goal, and behaviors that help a child achieve this goal. Activating conditions can be external stimuli—such as physical separation from the mother or a lack of responsiveness from her—or internal stimuli, such as discomfort or fear. When such stimuli are encountered, the child initiates attachment behavior in order to reach the set goal of felt security, an internal state in which he is assured of the caregiver's availability to meet his needs. Attachment behaviors cease when the goal is attained, but the system itself never completely shuts down.

An additional component of the ABS—the cognitive component—is described separately because it influences each aspect described above. Typically referred to as an “internal working model,” this component arises from the representations of everyday interactions with a caregiver that, over the first year of life, coalesce into a mental model of their attachment bond (Bretherton & Munholland, 1999). Thus whenever the ABS is activated, the child is not simply reacting to a given stimulus but is actively appraising its level of threat based on this mental model—i.e., on how a caregiver has responded in the past and the likelihood that she will be available to help meet, in a more or less adequate way, his attachment-related needs in the present. This model, in other words, shapes the child's perceptions and expectations of new experiences because he views them through the lens of this shared interactive history. Similarly, when the child initiates attachment behavior, he relies on his mental model to anticipate the caregiver's responses and the behaviors that have elicited the greatest degree of felt security in the past. His behavior, then, is not an isolated response to the current activating stimuli but an organized strategy of behavior that has emerged—initially through trial and error—from the shared history with a caregiver.

While each child's mental model of an attachment bond is unique, research using the Strange Situation—a short, laboratory assessment of attachment—has shown that children's attachment behavior typically falls into one of four strategies or patterns, based on the caregiver's characteristic responses (Ainsworth, Blehar, Waters, & Wall, 1978). In the *secure* pattern, which develops when caregivers have readily responded to a child's

attachment needs, the child seeks out her caregivers, finds their presence comforting, and soon returns to play. But if caregivers are less responsive, one of three insecure patterns develops instead. In the *avoidant pattern*, a child maintains proximity to a caregiver at a distance but avoids direct contact— behaviors that arise when caregivers are generally unavailable to meet attachment needs. In the *ambivalent pattern*, a child signals or seeks out her caregivers but has difficulty being comforted because she is unsure of, and often angry about, her caregivers' inconsistent responses. Finally, in the *disorganized pattern* (Main & Solomon, 1986), the child is unable to develop a consistent strategy, due to the frightening or neglectful behavior of the caregiver (Hesse & Main, 2006). These attachment patterns, then, are further evidence that in clear cut attachment, a child's behavior arises from—and is a reflection of—a shared history with a caregiver.

The Development of Attachment in International Adoptees

In applying this theory to the understanding of attachment in international adoptees, we can see that the first question posed in the introduction—i.e., of how much time international adoptees need to interact with their adoptive parents for an attachment to develop—is really a question about the time needed to construct a mental model of the child-caregiver relationship. Theory suggests that adoptees would need to repeatedly experience the adoptive parent in a variety of situations that elicit the ABS in order to, first, detect the pattern (or lack of pattern) in the parent's responses and, second, determine the best overall strategy for meeting attachment needs. Thus while children may enter this new relationship developmentally ready to process experience in this way, only with enough repetition—i.e., with the creation of a shared history— can the mental model coalesce sufficiently to shape the child's ongoing perceptions and expectations.

At present, most of the studies and meta-analytic literature on attachment in internationally adopted children are of limited help in understanding just how much time may be needed for this mental model to develop (Bartel, 2005; Chisholm, 1998; Chisholm, Carter, Ames, & Morison, 1995; Judge, 2004; Juffer & Rosenboom, 1997; Marcovitch et al., 1997; Millham, 2003; O'Connor, Marvin, Rutter, Olrick, & Britner, 2003; Rutter et al., 2007; van den Dries, Juffer, van IJzendoorn, & Bakermans-Kranenburg, 2009; van IJzendoorn & Juffer, 2006; van Londen, Juffer, & van IJzendoorn, 2007). There are two reasons for these limitations: (1) researchers have asked about the quality of the child's attachment, assuming that a clear-cut attachment has already developed, and (2) children have been in their adoptive homes for varied periods of time, even within samples (from 8 to 48 months), making it difficult to examine how attachment behavior early in the post adoption period may differ from behavior that develops later on. Two recent studies of children adopted from China, however, have begun to address this question, since all children were followed longitudinally and assessed at the same time points post adoption. In the first study (Cohen & Farnia, 2011), children adopted at a mean age of 12.6 months were assessed via maternal report. While their attachment behavior soon after arrival differed significantly from a nonadopted comparison group, attachment trajectories of the two groups were similar at 6 months post adoption and group differences had disappeared entirely by 24 months post adoption. In the second study (Pugliese, Cohen, Farnia, & Lojkasek, 2010), a subsample of the first study was assessed more frequently during the first six months post adoption with a different measure of attachment, again by maternal report. These adoptees were as securely attached as their nonadopted peers by 6 months post adoption. Such findings are an important first step in understanding the process of attachment in international adoptees, but they have two limitations. First, all the adoptees were from China, so it is unclear how much the findings generalize to adoptees from other countries, especially since preadoption care varies widely between sending countries. Second, the assessment of attachment relied on maternal report. A recent meta-analysis of adoptees' attachment security (van den Dries et

al., 2009) found significant differences between adoptees and their non-adopted peers when observational measures were used but no differences when maternal report was the method of assessment. Waters (2000) has noted that “most mothers don’t monitor [attachment behavior] in detail. They focus on safety, needs, and indirect indicators . . . such as affective state, exploration/play, and affective sharing.” Thus observational measures are needed to add to our knowledge of the emergence of attachment in international adoptees.

Preadoption Care and the Development of Attachment

The second question posed above—of how preadoption care affects the timing of a clear-cut attachment—is asking about the influence of past mental models on the development of a new attachment model. More specifically, the question asks: (1) whether the timing of attachment is affected by the need to undo the influence of a previous model while simultaneously constructing a new one, or (2) whether the quality of preadoption care, and the type and number of preadoption placements, affect that timing.

Attachment theory suggests an affirmative answer to these questions. First, theory suggests that adoptees would need additional time to notice the discrepancy between the old and new caregiving situations, given their propensity to view the present through the lens of the past. Adoptees would also need time to experiment with new attachment behaviors, revising and abandoning initial behaviors that do not work well, in order to effectively organize their behavior around a new attachment figure (Bretherton & Munholland, 1999). In other words, adoptees—indeed, all children—may need more time to consolidate a new attachment strategy than to develop one for the first time. Second, theory suggests that the quality of preadoption care could further influence the emergence of attachment. Since children are born predisposed to signal their caregivers and develop a relationship with them, children in low quality care “notice” this lack and, in turn, begin to construct defenses against unmet attachment needs (Bowlby, 1969/1982). Children, for example, may learn to direct attention away from unresponsive caregivers to other aspects of the environment (Main, 1990); then, when they enter the adoptive home, it takes longer to focus on, and arrange their behavior around, the adoptive parent. In a similar way, the type of preadoption care—i.e. whether a child has a primary (foster) caregiver or multiple caregivers—may direct attention toward or away from a caregiver. It seems likely that children from foster care would enter their adoptive home primed to focus on the attachment figure, consider her responses salient, and consolidate behavior around these responses. Children from orphanage care—irrespective of the quality of that care—might need additional time to perceive the environment in such a focused way, given the lack of reinforcement for that behavior in their past mental model. Finally, the number of preadoption placements may affect this timing because children with multiple placements often have less opportunity to develop lasting bonds with their caregivers—i.e., they have less opportunity to develop the shared interaction history described above. Thus when entering the adoptive home, like children from orphanage care, they may need additional time to make the adoptive parent the center of their world.

Further, given the fact that many adoptees experience care that is atypical for our species, these theoretical considerations need to be supplemented with an understanding of the neurobiological effects of suboptimal care and its potential impact on the timing of a new attachment. Much of our understanding of these effects come from studies of the hypothalamic-pituitary-adrenocortical (HPA) axis, a system that plays a central role in the mammalian stress response. While consistent, sensitive care buffers the child’s response to stress (Gunnar, 2006), children in suboptimal care experience chronic stress or even trauma, resulting in up- or down-regulation of the HPA axis (Loman & Gunnar, 2010). Such dysregulation has been reported in a number of studies of previously institutionalized adoptees from a variety of sending countries (Bruce, Kroupina, Parker, & Gunnar, 2000; Gunnar, 2001; Gunnar, Frenn, Wewerka, & Van Ryzin, 2009), especially if neglect was

severe (Kertes, Gunnar, Madsen, & Long, 2008; Wismer Fries, Shirtcliff, & Pollak, 2008). Dysregulation of the HPA axis, in combination with neurotrophic and neurotransmitter changes resulting from neglect and trauma, can affect the developing brain. Neuroimaging studies (Bauer, Hanson, Pierson, Davidson, & Pollak, 2009; Chugani et al., 2001; Eluvathingal et al., 2006) have revealed structural differences in the brains of adoptees suffering severe neglect, including enlargement of the amygdala, a brain structure important for appraising the emotional safety of the environment (Mehta et al., 2009; Tottenham et al., 2009). Such neurochemical and structural changes may influence the development of new attachments by making it more difficult for children to cope with the transition to the adoptive home and to accurately appraise the degree of safety there (van der Kolk, 2003). While the diversity in preadoption care between and even within sending countries means that children fall in different places on the “stress-trauma continuum” (Lieberman & Van Horn, 2008), those who have experienced severe early life stress or trauma are likely to need more time to develop an attachment, given the need to regulate biologic systems while forming an attachment bond.

At present, we have little empirical data to support these theoretical considerations about the effects of preadoption care on the emergence of attachment. Studies that have assessed the type (Pugliese et al., 2010) or quality (Juffer & Rosenboom, 1997; O'Connor et al., 2003; van Londen et al., 2007) of preadoption care on attachment have all reported negative findings. Reports on quality, however, are limited by the paucity of information most parents receive about their child's care and the need to use other indices, such as health or weight at adoption, as the measure of care. Studies of children's attachment to their foster or orphanage caregivers may be of greater relevance, since these studies give insight into the mental models children bring into their adoptive homes. There significant differences have been found, with 50-67% of children in U.S. foster care (Cole, 2005; Ponciano, 2002; Stovall-McClough & Dozier, 2004) exhibiting a secure attachment to their foster mothers, compared to 19-24% of children in Greek (Voria et al., 2003) or Romanian (Zeanah, Smyke, & Koga, 2005) orphanages. While in these studies the quality of care cannot be disentangled from the type of care—and it is not clear whether findings from U.S. foster care can generalize to international adoptees—results do suggest that different types of care may affect the appraisal process after adoption. Clearly more study is needed to adequately assess the effects of preadoption care on attachment, especially when that attachment is first emerging.

To begin addressing these gaps in knowledge, this pilot study aimed to (1) describe attachment security in a diverse group of international adoptees at six months post adoption, (2) identify specific attachment behaviors that differentiate secure versus insecure attachment in international adoptees, and (3) compare the attachment behaviors of children who experienced differences in quality and type of preadoption care, as well as the number of preadoption placements. This study focuses solely on the child's behavior in the dyadic construct of attachment; the mother's contribution to her child's attachment behavior, as well as additional factors affecting this behavior, are reported elsewhere (Niemann & Weiss, 2011).

Method

Participants

The convenience sample consisted of 22 infant-mother dyads living in the greater San Francisco Bay Area (see Table 1). The majority of children were female (73%), and their mean age at adoption was 13 months ($SD=5.35$). Children came from 9 countries (68% from six Asian countries, 14% each from Africa and Central America, and 5% from Russia/Eastern Europe) and had experienced a variety of preadoption care: birth parent care, foster

care, and orphanage care. Mothers were 42 years ($SD=4.77$) on average and 82% were Caucasian. Most (86%) were married or in a partnered relationship. Family income was high, with all families earning over \$75,000 per year and 55% earning more than \$150,000 per year.

Procedures

Participants were recruited from 3 sources: an international adoption clinic, adoption agencies, and adoptive parent group listserves. When the children had been in their adoptive homes for six months, a researcher visited to observe the dyad for 2 hours during their daily routine to acquire data for a measure of the child's attachment, and mothers returned their completed questionnaire on the child's preadoption care.

Human subjects' approval for this study was obtained from the Committee on Human Research at the University of California, San Francisco. Informed consent of the mothers was obtained by phone or email prior to the home visit, with the signed consent returned by mail.

Measures

Attachment Q-Set (AQS)—The AQS (Waters, 1987) assesses the quality of attachment behavior in a natural setting (most often the home) and is valid for children between 1 and 5 years of age. This measure consists of 90 statements describing children's behavior, each written on a separate card. After the researcher observes the child for a minimum of 2 hours the cards are sorted into 9 equal-numbered piles, from those cards most characteristic of the child to those least characteristic. This sort is then compared to an "expert sort" describing a prototypically secure child. The correlation between this prototypical child and the assessed child is the child's security score. The AQS yields a continuous score rather than attachment classifications. However, since the AQS was developed a decade later than the Strange Situation (SS), items include common behaviors classified as secure, avoidant, or ambivalent in the SS. Behaviors shown by disorganized children are not included since this pattern had not yet been identified when the AQS was developed.

In this study, two components were added to the AQS procedure to create a more complete database from which to complete the sort. First, to assess the child's level of distress at separation and behaviour upon reunion, mothers were asked to leave the room for 4-5 minutes, without telling the child that they were going or when they would return. During the separation, the researcher attempted to engage the child in play. Second, mothers filled out a questionnaire consisting of the 90 items in the AQS, rating each item between 1 ("very unlike" the child) and 9 ("most like" the child). This questionnaire was used as additional information when completing the sort for items that could not be observed during the visit (for example: "Child often cries or resists when mother takes him to bed for naps or at night"). Although no pretesting of these components was performed with international adoptees, a similar adaptation of the AQS has been used successfully in previous research (Weiss & St. Jonn-Seed, 2002).

The AQS is considered one of two "gold standards" for assessing attachment security in infancy, with demonstrated construct, criterion-related, and cultural validity (Eiden, Teti, & Corns, 1995; Posada et al., 1995; van IJzendoorn, Vereijken, Bakermans-Kranenburg, & Riksen-Walraven, 2004). Inter-observer reliability for the AQS ranges from .72 to .95 (Solomon & George, 1999; Waters & Deane, 1985). In the current study the range was .73 to .96 ($M=.83$) and sorts were completed within 24 hours of the observation.

Preadoption Care Questionnaire—The Preadoption Care Questionnaire was created for this study. Mothers reported information regarding 3 aspects of their child's history of care: (1) type of preadoption care (the number of days spent in birth parent, foster, and orphanage care); (2) quality of preadoption care (the sum of the mother's responses on a 3-point scale regarding the amount of caregiver interaction, the amount of affection and warmth from caregivers, the amount of physical and mental stimulation, the quality of overall physical care, and the presence of harsh punishment or abuse experienced by the child, with higher scores indicating better quality care); and (3) number of preadoption placements. A placement was defined as a change in the kind or location of care (e.g., moving from birth parent to orphanage care; from one orphanage to another; or from one section of an orphanage to another, if this involved a complete change of caregivers). The alpha for internal consistency of the measure with our sample was .87.

Data Analysis

Analyses were conducted in three steps. First, descriptive statistics and frequencies were calculated to describe the sociodemographic characteristics of the sample, and to check for normality in AQS scores. Second, Pearson correlations were computed to determine the correlation between each child's AQS sort and the expert sort. Third, t-tests were computed to determine significant differences in AQS item scores for the following groups: (1) high and low secure groups (split at the median based on AQS score), (2) foster care and orphanage care groups, based on the child's primary type of preadoption care, and (3) high and low placement groups (split between 1 and ≥ 2 preadoption placements). t-tests were also computed to determine significant differences in the quality of care reported for foster and orphanage care groups and for high and low placement groups. All analyses used an a priori alpha level of .05.

Results

To check for potential confounds, correlations and t-tests were computed to determine if the child's attachment security differed by sociodemographic variables: mother's age, ethnicity, education, marital status, and family income—as well as the child's gender, ethnicity, age at adoption, birth country, and presence of siblings. None of these tests were significant.

Attachment Behavior

AQS scores ranged from .18 to .72 out of a possible score of 1.00, with a mean of .48 ($SD=.16$). To further describe attachment behavior, the sample was split at the median AQS score to create low and high secure groups. Groups were then compared for the insecure items (those ranked one or two in the AQS security sort) and secure items (those ranked eight or nine in the security sort) that most contributed to group differences.

As shown in Table 2, the low/high secure groups differed on one insecure item (with a trend toward significance in two additional items) and on three secure items (with a trend toward significance in three additional items).

Preadoption Care

The mean number of days spent in birth parent care was 54.05 ($SD=107.60$), in foster care 146.57 ($SD=220.27$), and orphanage care 180.33 ($SD=160.34$). Sixty-eight percent ($n=15$) of the sample had 1 placement while 32% ($n=7$) has ≥ 2 placements.

Since all children receiving birth parent care had also received foster or orphanage care—and since most stays in birth parent care were one month or less—the sample was split into a foster care and orphanage care group, depending on the number of days children had spent

in each type of care. The foster care group ($n=9$) spent an average of 350 days in foster care, while the orphanage care group ($n=12$) spent an average of 284 days in institutional care. The sample was also split into high and low placement groups, with children experiencing two or more placements in the high placement group. One child could not be included in either group analysis because this information was unavailable in her records.

Overall, mothers rated their child's care as being above average to good in quality. On a 3-point scale (with 3 as the best care), the mean of the mothers' ratings were as follows: amount of contact with caregivers, 2.7 ($SD = .73$); amount of affection and warmth from caregivers, 2.7 ($SD = .57$); amount of physical and mental stimulation, 2.3 ($SD = .69$); overall physical care, 2.2 ($SD = .80$); and absence of harsh punishment or abuse, 2.9 ($SD = .29$). Three mothers had insufficient information to answer all of the questions for the quality of care score. In the questionnaire with one missing item, the missing value was replaced with the average of the remaining four questions. Questionnaires with two missing items were counted as missing data.

Preadoption care groups did not differ significantly in their total AQS score: $t(19) = -1.374$, $p = .19$ but did differ significantly in their quality of preadoption care: $t(13.599) = -2.109$, $p = .05$, with the foster care group having higher quality care. Preadoption care groups also differed in some AQS items, as shown in Table 3. There was a trend toward significance in two insecure items, while three secure items significantly differentiated groups. On both insecure and secure items, children in foster care scored higher than those in orphanage care. Placement groups did not differ significantly in their total AQS score: $t(20) = 1.12$, $p = .26$ or in their quality of preadoption care score: $t(17.11) = -1.135$, $p = .27$. In addition, there were no significant differences in AQS items between placement groups.

Discussion

Children in this study appeared to be exhibiting comparable—and sometimes greater—attachment security than children assessed with the AQS in other high risk samples. Domestic adoptees in Portugal (Verissimo & Salvaterra, 2006) and Greece (Vorra et al., 2006)—almost all of whom were institutionalized before adoption—provide the best comparison, since the full AQS has not been used to assess international adoptees. The current sample mean of .48 fell between these two European studies, which reported means of .39 and .50, respectively. In both European samples, however, children had been in their adoptive homes an average of about 2.5 years. Since the 6 months experienced by the current sample is a relatively short time, it is possible that secure attachment behavior in this sample might increase over time, if children experience consistent and responsive caregiving. Although the meta-analytic literature has shown less effective catch up in attachment security post adoption than in domains such as IQ, self-esteem, and total behavior problems (van IJzendoorn & Juffer, 2006)—especially when children are adopted at 12 months or later (van den Dries et al., 2009)—these analyses give us no information about the amount of change possible in the early post adoption period. Support for the possibility of continued change in attachment security during this time comes from two sources: the longitudinal study of Chinese adoptees described previously (Cohen & Farnia, 2011) and an intervention study of children entering new foster care placements (Fisher & Kim, 2007), where children in the treatment group continued to show increases in attachment security throughout the first year. Since adoption is a “natural experiment” (Rutter, Pickles, Murray, & Eaves, 2001), the treatment group of foster care children would be the closest comparison group to international adoptees.

Differences Between Low/High Secure Groups

In examining the individual AQS items that most differentiated the high/low secure groups, a fairly consistent picture of the high secure group emerges. Six of the nine items differentiating groups involved physical contact or seeking out the mother. High secure children appear to ask for and enjoy (or be comforted by) physical contact with their adoptive mothers, both in times of low arousal (Items 11, 28, 44, and 53) and high arousal (Items 34 and 88) of the attachment behavioral system (ABS). Further, secure children exhibited behaviors that showed “affective sharing” (Item 14) and empathy (Item 28). In his explanation of AQS items, Waters (1987) remarked that secure children are “virtually the only ones who show [affective sharing] in the Strange Situation,” thus lending further support to the children’s secure rating. Overall, the six items depict children who not only enjoy interacting—and being in close physical contact—with their adoptive mothers, but also children who are emotionally attuned to their caregivers.

The picture that emerges from the low secure group can be interpreted in at least two ways. In the first interpretation, one assumes that low secure children have formed an attachment to their adoptive mothers but are differentiated from their high secure peers by their ambivalent attachment behavior. Both secure and insecure items contribute to this interpretation. Low scores on the four secure items describing physical contact, for example, indicate that these children refrain from physical contact when the ABS is minimally activated. While not in itself ambivalent behavior, Waters (1987) suggests that lack of contact is important because it indicates a child is less likely to seek contact when under stress (Waters, 1987). This is, in fact, exactly what the insecure items show: Items 34 and 88 depict a child who, when upset, signals the mother by crying but does not actively seek her out. These are “passive” behaviors that would be scored “contact resistance” in the Strange Situation and thus contribute to the child’s ambivalent classification (Waters, 1987). Item 54, the third insecure item differentiating groups, fills out the picture still further, depicting a child who expects mother to interfere when she is simply trying to help. Caregivers of ambivalent infants have been described as “relatively unavailable in many contexts” but also “directly interfering with their infants’ exploration” (Cassidy & Berlin, 1994, p. 975). Most likely, the exploration or autonomy of the low secure children in this sample had been repeatedly thwarted in their preadoption care. Finally, the interpretation of ambivalent attachment makes theoretical sense given the children’s preadoption care. In their review of the ambivalent pattern, Cassidy & Berlin (1994) noted that babies who experience neglect (as an extreme form of caregiver unavailability) would be expected to have higher rates of ambivalent attachment and, further, that home observations show mothers of ambivalent infants “‘occupied with routines’” (p. 975). Orphanage care is characterized by both these phenomena: children experience neglect through insufficient staffing, and caregivers are typically occupied with routines to get the job done (Ames, 1990; Zeanah, Smyke, & Settles, 2006). In such situations, it makes sense for babies to up-regulate their attachment system in hopes of receiving a bigger share of the limited caregiving resources. At adoption, children may carry these behaviors—and the internal working model underlying them—into the new attachment relationship with the adoptive mother.

A second interpretation of the findings for low secure children assumes that at least some of these children are still in the process of developing a bond with the adoptive parent and not yet attached. In this interpretation, the child’s lack of initiative in seeking out the mother in times of low and high arousal would not be seen as arising from an insecure working model for four reasons. First, when examining the number of items distinguishing the high/low secure groups, they differ on twice as many secure as insecure items, and the secure items are more highly significant. This suggests that the low secure group scores were more influenced by a lack of secure attachment behavior than by the presence of insecure behaviors. Put differently, although low secure children are less secure than their high secure

peers, they do not appear to have a consolidated insecure attachment and may thus still be in the process of forming an attachment. For example, Item 14 (described above as seen only in secure children in the Strange Situation) is a strong indicator of security but its absence does not indicate insecurity (Waters, 1987). Thus the fact that low secure children scored differently on this item says more about their lack of security than their insecurity. Second, it is noteworthy that Item 71 (“If held in mother’s arms, child stops crying and quickly recovers after being frightened or upset”)—the one item involving physical contact that did not differentiate groups—received the fourth highest p-value ($=.36$) of the top 20 items in the security sort. This suggests that the high/low secure groups did not differ in their ability to be comforted by the mother when she initiated the physical contact. Children classified as ambivalent, in contrast, typically remain distressed after contact. Third, although Pugliese et al. (2010) reported that ambivalent behavior did not change over the first six months post adoption in their Chinese sample, evidence from U.S. foster care indicates that ambivalent behavior may be associated with the transition to a new caregiving situation. When the attachment behavior of newly-placed children was assessed for a full year (Fisher & Kim, 2007), ambivalent behaviors declined in both the treatment and control group over time—the only type of attachment behavior to do so. This suggests that at least some ambivalent behaviors may be transitory, triggered more by the transition than by an insecure working model. Lastly, items differentiating the high/low secure groups cluster around one kind of behavior—that involving physical contact, especially the initiation of contact. Low secure children may have had less physical contact with their preadoption caregivers (if institutionalized) than the high secure group. As a result, it may take longer for them to initiate and enjoy physical contact, and to express it as part of the attachment bond.

In summary, attachment behaviors in the low secure group may reflect either ambivalent attachment or attachment-in-the-making, in which the attachment has developed only to the degree that a child can signal her caregivers when distressed in a passive rather than an active way. Until further studies more fully delineate attachment behavior in the early post adoption period, one interpretation cannot be definitively chosen over the other.

Differences Between Preadoption Care Groups

Neither placement or preadoption care groups differed significantly in their AQS score—thus whether the child experienced 1 or ≥ 2 placements, or foster or orphanage care, did not affect the child’s overall level of attachment security. Preadoption care groups did differ, however, in the quality of care and in the kinds of attachment behavior children exhibited. Like the low/high secure groups described above, foster and orphanage care groups were differentiated more by secure than insecure items, and the secure items showed significant differences while the insecure items showed trends toward significance.

It is noteworthy that two of the three secure items in Table 3 that differentiated the groups (#21 and #36) are the top ranked items in the AQS criterion sort of a prototypically secure child. Commonly called “secure base behaviors,” these items are considered the quintessential attachment behaviors because the child is clearly organizing his behavior around the mother, using her as a base from which to explore while continually keeping track of her whereabouts. Thus while other items ranked highly in the criterion sort—e.g., items describing compliance, being comforted by the mother, and physical contact with the mother—may be used for meeting needs other than attachment, secure base behavior is explicitly enacted to maximize felt security. That children from foster care and higher quality care would demonstrate secure base behavior more quickly after adoption than children in orphanage care makes theoretical sense, given the expected effects of past caregiving on their expectations regarding care. Due to their previous opportunities for sustained interaction with a primary caregiver, children from foster care are more likely to appraise new caregiving situations as ones in which it makes strategic sense to be

continually cognizant of the caregiver and to use this information to inform their behavior. The fact that foster care was found to be of higher quality also makes it more likely that the child's attention would remain focused on the caregiver rather than redirected to other aspects of the environment. Children in orphanage care, in contrast—given their experience with multiple caregivers and high child/caregiver ratios—are more likely to appraise new situations as ones in which this kind of focus, having little effect in the past, makes no strategic sense. Applying a neurobiological lens to these differences provides additional reasons why children from orphanage and lower quality care may take longer to develop secure base behavior. Since these children are more likely to enter their adoptive homes with heightened arousal and a propensity to appraise the environment as threatening, they are also more likely to have difficulty being soothed by a caregiver and to experience a sense of safety in her presence. Only with repeated interactions that defy past expectations can children begin recalibrating neurobiologic systems and use the adoptive parent as a base from which to explore the world.

The remaining secure and insecure items differentiating groups can be interpreted as further support for these views. In the third secure item (#77), children from foster care appeared to more readily understand the adoptive mother's wishes (whether or not they obey). Their past experience may have motivated them to continually monitor the caregiver's behavior, while children from orphanage care may have been less engaged in ongoing interactions with a caregiver. Similarly, in regard to the two insecure items (#65 and #74), children in foster care are more likely to have experienced caregiving environments in which up-regulating their attachment behavior—by getting upset easily or visibly reacting to a caregiver's lack of responsiveness—is noticed and influences the subsequent interaction. Children in orphanage care, in contrast, may have found these same behaviors ineffective. Thus while it is at first surprising that children from foster care exhibit both more secure and insecure attachment behavior, this finding makes sense when these behaviors are considered in light of the past—i.e., that they arise from situations in which children consider it worthwhile to make the caregiver the center of their world.

This discussion, however, raises important issues regarding interpretation of attachment behavior in special populations whose history of attachment is not normative. Group differences in insecure items appear to have a different meaning than they might in more typical populations. To take one example, we have interpreted the fact that foster care children are more likely than orphanage care children to show their upset when changing activities (insecure item #65)—i.e. they receive a higher score for insecurity on this item—as more rather than less attachment security. We have hypothesized that foster care children exhibit this behavior because they expect a response from a caregiver; orphanage children do not exhibit this behavior because they do not expect such a response—not because they are more securely attached. Such measurement issues need further investigation as the AQS is used with international adoptees. Researchers studying this population must pay attention to the picture that emerges from individual items as they relate to the total AQS score and the child's unique caregiving context.

Limitations

This study has a number of limitations. First, this was a convenience sample from the San Francisco Bay Area and may not be representative of the diversity in the population of internationally adopted infant-mother dyads. Second, as a pilot study it is limited by the small sample size, resulting in a lack of power to detect detailed aspects of the children's attachment behavior. Third, the AQS was designed to assess attachment security in children who have already formed an attachment. Since the children in this sample had been in their adoptive homes for only six months, some of the children may still be in the process of

forming an attachment to their adoptive mothers. Further, while the AQS has been used in other at-risk populations, it has not been specifically tested in children adopted internationally, where the effects of less typical caregiving environments before adoption may affect the meaning of a given item and thus its placement in the sort. Finally, disorganized attachment behavior is not reflected in the AQS items, since this pattern was identified after the AQS was developed. Fourth, disturbed or disordered attachment behavior, which has been found in some samples of severely deprived Romanian adoptees (Chisholm et al., 1995; O'Connor et al., 2003; Zeanah et al., 2005) was not assessed. Fifth, parents have limited knowledge of their child's preadoption care, and thus their responses on the Preadoption Care Questionnaire may have unmeasured biases. In addition, there was no psychometric testing of this measure.

Conclusions

This pilot study gives preliminary evidence that children who have been in their adoptive homes for six months may still be in the process of forming an attachment and, further, that some attachment behaviors may have a different meaning when a child's preadoption care is taken into account. Results also indicate that some international adoptees exhibit ambivalent attachment behavior that could result from experiences during preadoption care. To further develop our knowledge of attachment in this population, attachment behavior needs to be assessed longitudinally throughout the first year after adoption in diverse samples of adoptees, to see if and how this behavior continues to develop and if the effects of preadoption care diminish with time. Of particular interest is whether secure behavior continues to increase and ambivalent behavior decrease in the second half of the first year post adoption. This knowledge can be invaluable in better meeting the needs of adoptees who develop a new attachment at an older age and must often overcome the adverse effect of early caregiving models.

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Table 1**Sociodemographic Characteristics of the Sample**

Variable	N	Percentage
Mother's age		
30-34	2	9.1%
35-39	5	22.7%
40-44	7	31.8%
45-49	7	31.8%
>50	1	4.5%
Mother's ethnicity		
Hispanic or Latina	1	4.5%
Asian	3	13.6%
White or Euro American	18	81.8%
Mother's education (highest level)		
College	7	31.8%
Graduate School	11	50.0%
Professional School	4	18.2%
Marital Status		
Single	3	13.6%
Married	18	81.8%
Partnered Relationship	1	4.5%
Family Income		
\$76,000 - 100,000	3	13.6%
\$101,000 - 150,000	7	31.8%
> \$150,000	12	54.5%
Child's Gender		
Girls	16	72.7%
Boys	6	27.7%
Child's Age at Adoption		
6-12 months	13	59.1%
13-18 months	7	31.8%
19-24 months	1	4.5%
25-30 months	1	4.5%
Child's Birth Country		
China	6	27.3%
Vietnam	4	18.2%
Ethiopia	3	13.6%
Guatemala	3	13.6%
Taiwan	2	9.1%
Other	4	18.2%
Child's Siblings (postadoption)		
1 sibling	9	41.0%

Variable	N	Percentage
2-4 siblings	2	9.1%

Table 2**Attachment Security Items Contributing to Low/High Secure Group Differences**

Insecure Items (on which the low secure group scored higher)	
Item #54:	Child acts like he expects mother to interfere with his activities when she is simply trying to help him with something. $t(12.929) = 2.17, p = .05$.
Item #34:	When child is upset about mother leaving him, he sits right where he is and cries. Doesn't go after her. $t(20) = 1.84, p = .08$.
Item #88:	When something upsets the child, he stays where he is and cries. $t(20) = 1.84, p = .08$.
Secure Items (on which the high secure group scored higher)	
Item #11:	Child often hugs or cuddles against mother without her asking or inviting him to do so. $t(13.81) = -2.43, p = .03$.
Item #14:	When a child finds something new to play with, he carries it to mother or shows it to her from across the room. $t(20) = -3.282, p = .004$.
Item #28:	Child enjoys relaxing in mother's lap. $t(15.72) = -2.55, p = .02$.
Item #42:	Child recognizes when mother is upset. Becomes quiet or upset himself. Tries to comfort her; asks what is wrong, etc. $t(20) = -1.82, p = .08$.
Item #44:	Child asks for mother to and enjoys having her hold, hug, and cuddle him. $t(16.122) = -1.86, p = .08$.
Item #53:	Child puts his arms around mother or puts his hand on her shoulder when she picks him up. $t(14.08) = -1.87, p = .08$.

Table 3**Attachment Security Items Contributing to Preadoption Care Group Differences**

Insecure Items (on which the foster care group scored higher)

Item #65: Child is easily upset when mother makes him change from one activity to another (even if the new activity is something the child enjoys). $t(10.025) = -2.091$, $p = .06$.

Item #74: When mother doesn't do what child wants right away, he behaves as if mom were not going to do it at all (fusses, gets angry, walks off to other activities). $t(19) = -1.910$, $p = .07$.

Secure Items (on which the foster care group scored higher)

Item #21: Child keeps track of mother's location when he plays around the house. Calls to her now and then, notices her go from room to room. Notices if she changes activities. $t(13.469) = -2.207$, $p = .05$.

Item #36: Child clearly shows a pattern of using mother as a base from which to explore. Moves out to play, returns or plays near her; moves out to play again, $t(16.228) = -2.213$, $p = .04$.

Item #77: When mother asks child to do something, he readily understands what she wants (may or may not obey). $t(12.515) = -2.268$, $p = .04$.