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Kinship Center Attachment Questionnaire

Development of a Caregiver-Completed Attachment Measure for Children Younger Than 6 Years

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The Kinship Center Attachment Questionnaire (KCAQ) is a newly developed screening instrument completed by the caregiver and appropriate for use with children younger than 6 years. The KCAQ is different from other attachment instruments because it is a time-efficient, quantitative measure of child attachment that is capable of tracking change in attachment over time versus the taxonomic measurements of traditional attachment instruments. The current study describes the development of the KCAQ, presents nonclinical and clinical data gathered with the instrument, and provides evidence for the sound psychometric properties of its scores.

Keywords: *attachment; measurement; adoption; test development*

In the United States, many of the young children who enter the overburdened social service system are born with complications attributed to in utero drug exposure, often with multiple siblings and parents who are unable to care for them. There are also children who have suffered neglect, abuse, death of a parent, or other tragedies that create the need for permanent families that can parent these children with special needs. Unfortunately and far too often, the joyous placement of these children in adop-

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tive homes is followed by difficult periods of adjustment, which can end with a “disrupted placement” and the return of the child to the social service system, triggering another round of multiple placements in foster families or group homes and the repeated search for a permanent family. The human cost for the children is incalculable; the financial cost for foster care is high (for a review, see Evan B. Donaldson Adoption Institute, 1997). In addition to the obvious need for a host of preventive and treatment measures targeted at reducing drug abuse and child abuse and encouraging family planning and responsible parenting, there is a critical need for comprehensive clinical services to assist foster and adopted children and their families (Burns et al., 2004).

Mental health services are often continued after children are placed in foster and adoptive families as part of a coordinated program that may include other health and social services. The need for a comprehensive and coordinated program is supported by data that show that when parents of high-risk children receive parenting and family support for children from birth through age 5, cognitive and behavioral outcomes are improved (Kumpfer & Alvarado, 2003). Families often need specialized training and skills to effectively parent children with *special needs*, a catch-all term that is deliberately vague so that it can encompass a wide range of mental and physical health problems and their precursors. Cultural competency and sensitivity are core values in the delivery of clinical services because the families come from a wide variety of cultural backgrounds in which family cohesion and the behaviors that support socioemotional development of children may take different forms. To determine whether the children are forming an attachment to a caregiver, there needs to be a measure of attachment that validly assesses the construct and is sensitive enough to detect changes over time in ways that consider cultural differences among families (Celano & Kaslow, 2000).

Attachment to a Permanent Family

The idea that children need and deserve permanent families is based on a large theoretical and research literature showing that connectedness to a family is important for the adaptive functioning and individuation of children (Kenny & Donaldson, 1991). Bowlby (1969, 1973) presented a model of the attachment process by which mother and infant bonds develop. Bowlby (1980) believed that children with a secure attachment to their mother (or other primary caregiver) were able to develop a solid repertoire of coping skills, including the ability to regulate their own emotional behavior. He maintained that the socioemotional attachment of an infant to his or her mother was important for the infant’s survival and that the type of attachment that a child formed with his or her primary caregiver could be inferred from the behaviors of young children when they were stressed by being left with strangers in unfamiliar settings. Based on these theoretical underpinnings, children’s reactions when their primary caregiver left them in strange situations and then returned after a short time interval were categorized into a typology of attachment.

The ability to determine whether young children established the kind of strong emotional bonds that support their healthy emotional development requires an attachment measure that yields valid, reliable scores and is appropriate for the population

being measured. After a review of the existing measures of infant and young child attachment to a caregiver, we recognized the need to develop a new type of attachment measure that could be used to chart the development of attachment for children who are in the process of making an adjustment to a new family.

Existing Measures of Attachment

Given the extensive body of research suggesting that there is a causal association between child attachment and child outcomes, such as patterns of friendship (DeMulder, Denham, Schmidt, & Mitchell, 2000), social and cognitive development (Stams, Jaffer, & van Ijzendoorn, 2002), and the child's understanding of emotional responses (Laible & Thompson, 1998), several instruments have been developed to assess child attachment. The most frequently used methods of measurement are behavioral observations of children and caregiver-completed questionnaires. The preponderance of studies, however, has used either of two behavioral observation instruments, the Ainsworth's Strange Situation (Ainsworth, Blehar, Waters, & Wall, 1978; Ainsworth & Wittig, 1969) or the Attachment Q-Set (Waters, 1987; Waters & Deane, 1985).

The Strange Situation is an analog observational tool that places the child in various stressful situations to determine the child's responses to the stressors (e.g., separation from parent). The instrument is most often administered in a laboratory so that the setting is unfamiliar to the child (i.e., a stressor). The laboratory setting also allows for unobtrusive observation/recording of the child's responses. There are a series of analog situations in which the child is either left alone, left with a stranger, or is (re)united with his or her caregiver. The series takes 24 minutes to complete, during which time the child's response is videotaped so that it can be scored at a later time according to a widely used coding scheme. Based on the behavioral coding, the child is classified into one of four categories: securely attached, avoidant, ambivalent, or disorganized. Children whose behaviors do not fit into one of the categories are given an unclassified code. One significant limitation to the Strange Situation is that it is designed to be administered in a laboratory setting. The unnaturalness of the laboratory setting can have an effect on the behavior of both the child and caregiver. To minimize these reactive effects, researchers suggest measuring child attachment in multiple settings at multiple points in time to gain a more accurate picture of the attachment relationship between caregiver and child.

The Attachment Q-Set (AQS) addresses some of the problems raised by critics of the Strange Situation measure by going into the home (or in a public setting) and observing caregiver-child interactions in a natural environment. Based on an observation of the child, an observer sorts the AQS's 90 descriptors (i.e., specific behaviors within a specified context) into a predetermined number of piles (often nine). The piles range from descriptors that are not at all characteristic of the child to those that are very characteristic of the child. The sort (i.e., distribution of the 90 cards) is then correlated with a prototype sort that represents the "most secure" preschool-aged child. The more positively correlated the distributions are, the more securely attached

the child. It is recommended that the target child be observed on 2 or 3 occasions, each observation lasting 2.5 to 3 hours. The use of multiple raters is also suggested as a way to minimize observer bias. Of note, raters must be trained to correctly sort the descriptors and retrained to avoid observer drift.

Behavioral observations of children are costly, time-consuming, dependent on the skills of the observer, and impractical for use in typical clinical assessment situations. Caregiver and self-report instruments offer a more efficient means by which to measure child attachment. An example of a caregiver-completed questionnaire is the Randolph Attachment Disorder Questionnaire (RADQ; Randolph, 1997). The RADQ is a 30-item instrument suitable for use with children between 5 and 18 years old. Each item is scored on a 5-point Likert-type scale, with a higher total score signifying more attachment difficulty. An example of a youth-report attachment questionnaire is the Security Scale (Kerns, Klepac, & Cole, 1996), which is appropriate for use with children between the ages of 8 and 14 years. The 15-item questionnaire asks the child to first select which of the two options better describes him or her and then to state how descriptive the statement is of him or her. The final score represents the degree of secure child attachment.

Caregiver and self-report instruments of child attachment have two notable limitations. First, they have undergone limited psychometric scrutiny. Second, the instruments currently available are appropriate for use only with older children (i.e., 5 years or older). According to Bowlby (1969), attachment develops from infancy. Hence, identifying attachment difficulties early on may be even more critical for young children (i.e., 5 years or younger) than for older children for the following suggested reasons. First, young children have had less time to develop patterns of behavior that are resistant to change. Second, if attachment difficulties are remedied early on, children have more experiences with secure attachment and healthy relationships that, in turn, influence their future relationships. Finally, by examining attachment in young children, we can better understand how normal attachment develops from an early age.

Kinship Center Attachment Questionnaire

For newly adopted children, the traditional child attachment instruments may lead to invalid inferences because they assume child attachment is present and so seek only to describe the type of child attachment present (e.g., secure attachment, anxious-avoidant). Children seen at foster and adoption placement agencies, such as Kinship Center, where this scale was developed, are not attached to their caregivers because they have recently been placed in the home. A more appropriate instrument for this population would be one that measures change in child attachment over time. The Kinship Center Attachment Questionnaire (KCAQ) was developed to fill this need.

Child health care providers, such as those at Kinship Center, need an instrument that can provide a quantitative measure of the extent to which a child is attached to a caregiver so that change over time can be charted. For practical reasons, it should be quick and easy to administer, behaviorally based, appropriate for use with children younger than 6 years, standardized, normed, and psychometrically sound. The pur-

pose of the current study was to develop such an instrument. Ultimately, the instrument will be used to screen for attachment difficulties, identifying those children who warrant further assessment in regard to attachment.

Development of the screening instrument occurred over three studies. The first study focused on the development of the questionnaire itself based on test theory, a comprehensive review of the child attachment literature, and expert review and feedback. The second and third studies focused on the administration of the attachment questionnaire to both a clinical and nonclinical population. Within- and between-group comparisons were made based on various demographic characteristics, caregiver work status, and the relationship between the total score on the attachment questionnaire and other diagnostic and developmental data for the clinical population.

Study 1

Method

The original list of KCAQ items was derived from the following sources: (a) interviews with experts in the field of child attachment, (b) a literature review of the latest theories and empirical studies related to child attachment, and (c) the RADQ (Randolph, 1997), a caregiver-completed instrument that assesses child attachment difficulties in children 5 to 18 years of age.

Item wording and scale selection were guided by test theory. For example, all items asked about the presence/absence of a single behavior. Item content reflected behaviors associated with healthy attachment (e.g., "My child plays well with other children") and behaviors associated with attachment difficulty (e.g., "If things don't go his/her way, my child gets very upset"). A 7-point Likert-type scale was used, with items being rated from 0 (*never/rarely*) to 6 (*almost always*).

Experts in the area of child attachment then were asked to review 37 items generated using the criteria described above. Expert feedback was obtained to examine the content validity of the KCAQ items. To ensure that experts were from all regions of the United States and represented varied perspectives on child attachment, three different methods of recruitment were used. First, an e-mail briefly explaining the project was sent to listservs of various American Psychological Association divisions whose focus was child mental health. The e-mail asked experts in the area of child attachment to review the KCAQ. Four responses resulted from this method of recruitment.

A second method by which experts were recruited was from a Web site that listed the board members of a nonprofit organization, the Association for Treatment and Training of Children, specializing in child attachment. Of the 18 board members solicited to participate, 12 agreed to review the questionnaire. The third method of recruitment was snowball sampling, which began with child attachment experts identified by Kinship Center staff who were not directly affiliated with the Kinship program. This recruitment method yielded the names of 5 additional experts. Overall, 23 experts in child attachment were solicited directly, 16 experts agreed to participate, and 13 returned their review of the items.

A packet of material was mailed to each expert who agreed to participate. The packet included a cover letter and an expert reviewer form. The cover letter instructed the expert to rate each item on the following dimensions: (a) the degree to which the item was relevant to and representative of the construct of child attachment (i.e., content validity), (b) the age appropriateness of each item, and (c) how well the item was written from the caregiver's point of view (i.e., caregiver comprehension). As the KCAQ is a caregiver-completed instrument, it was important to consider how clearly the items were worded for nonspecialists. Both content validity and caregiver comprehension were rated on a 5-point scale (1 = *needs work* to 5 = *excellent*). Experts were provided space to make additional comments on each item.

The KCAQ was translated into Spanish by first having a native Spanish speaker with high English-language fluency translate the questionnaire into Spanish. A second native Spanish speaker with high English-language fluency then translated the Spanish version of the questionnaire into English. The two English versions were then compared to ensure that their item content was comparable. Any points of disagreement in the translation of a word or phrase were discussed between the two translators until both individuals agreed on a conceptually sound translation of the word/phrase. A third or even fourth translator was involved if agreement could not be reached, and the group worked toward a mutually agreed-on translation that preserved the original meaning of the targeted word/phrase.

Results

Overall, most items on the KCAQ received a rating of 3 (i.e., a rating of *good*) or better for both content validity and caregiver comprehension (*SDs* ranged from .65 to 1.70). Eighteen of the 37 items had an average item relevance score of 3 or more (i.e., a rating of *good* or better), 7 of which had an average score of 4.0 or more (i.e., a rating of *great* or better). The results suggest that the item content was relevant to and representative of critical concepts in the child attachment literature.

For caregiver comprehension, 20 of the items had an average score of 3 or more, 5 of which had an average score of 4.0 or more. Thus, according to these experts, the caregivers asked to complete the instrument would understand the wording of most items. Many of the items that received a high score on one scale (content or comprehension) also received a high score on the other. Fourteen items received an average score of 3 on both scales, 4 items had an average score of 3 or 4 on either scale, and 4 items received an average score of 4 on both scales.

The results above, along with statistical findings (e.g., factor analysis, the results of which are presented below), were used to determine which items to delete or change for the next version of the KCAQ. After items were selected, it was necessary to collect nonclinical data from diverse families and to determine whether caregivers would have difficulty completing the questionnaire and whether attachment scores would vary as a function of ethnicity or other family variables such as the work status of caregivers.

Study 2

Method

Participants

Three hundred sixty-two primary caregivers living in Southern California completed the KCAQ. Male and female children whose caregiver completed the KCAQ were nearly equal in number (50.5% males). The average age of the child was 3.82 ($SD = 0.92$) years. The children in the sample were predominantly Hispanic (41.5%) and Caucasian (38.3%), followed by mixed race/ethnicity (6.8%), African American (4.2%), Asian ancestry (4.2%), and other (3.9%). The caregiver who completed the questionnaire was most often the mother (91.0%), with fathers (5.2%) and grandmothers (1.0%) making up the remaining respondents. Of note, percentages do not total 100 because of missing data or because the respondent marked more than one relationship to the child. The majority of caregivers were the biological parent (90.4%) of the child. On average, caregivers reported spending 7.68 ($SD = 3.43$) hours with their child on a typical weekday and 12.29 ($SD = 2.95$) hours on a typical weekend/holiday.

The majority of primary caregivers was employed full-time (69.1%) and, on average, worked 39.31 hours per week ($SD = 13.9$). Most households were dual-earning households (45.6%), followed by single-parent households (32.3%) and dual-caregiver households with a single income (6.1%).

Procedures

Participants were recruited from a random selection of early education centers (EEC), preschools, and elementary schools from the Los Angeles and Orange County, California, areas. Children attending EECs range in age from infant to 5 years, 11 months. Schools in the Los Angeles and Orange County areas were selected because their ethnic make up was expected to be comparable to the ethnic make up of the child population seen at Kinship Center. Los Angeles schools and EECs were identified using the county's Department of Education Web site. Orange County elementary schools were identified using the county's Department of Education Web site as well as a Web site for preschools, child care, and day care services in the Orange County area (www.ockidsdirectory.com/orange/preschools).

The school principal or EEC director was first contacted via mail. The mailed packet included a cover letter describing the study, a copy of the approval letter from the research committee for Los Angeles County (for Los Angeles schools and EECs only), and all materials that would be distributed to the parents of their students. Within a week of receiving the packet, the principal or director was contacted by phone to see if there were any questions/concerns that could be addressed at that time. If the principal or director agreed to participate, the requested number of English- and Spanish-language parent packets was mailed to the school. The EEC director was

asked to distribute the packets to all students. Principals were asked to distribute packets to all their kindergarten students through the kindergarten teachers.

Each parent packet included the following: a cover letter briefly explaining the study, the KCAQ, a demographic questionnaire, and a self-addressed, prestamped envelope in which participants could return the questionnaires. The demographic questionnaire asked for information related to the child as well as caregiver work information. In addition, caregivers were asked to report the average number of hours each adult in the household spent with the child on a typical weekday and weekend.

Approximately 3,000 packets were distributed to the targeted schools, yielding a response rate of about 12%. This response rate may be artificially depressed, however, because of the method by which participants were recruited for this study, which makes it unclear how many packets were successfully distributed to the teachers, the number of packets successfully distributed to each teacher's students, or the number of packets that were successfully carried home.

Results

Several participants were dropped from the analysis for the following reasons: child for which KCAQ was completed was 6 or more years of age (20), child's age was not reported (6), 10 or more items were left unanswered (24), and the KCAQ total score was greater than three standard deviations from the sample mean (1). After applying these criteria, 311 analyzable questionnaires remained.

All positively phrased items were reverse scored so that a low score (e.g., a caregiver responds 1 = *never/rarely* to the item "My child understands what is said to him/her") reflected more attachment difficulty. One item (Item 2, "While sucking or swallowing, my child looks me in the eye") was dropped from all analyses because 40% of the participants did not respond to the item. Most of the missing data was a result of the item's being applicable to a narrow age range and thus was not descriptive of many children. Missing values for the remaining 36 items were replaced using SPSS Linear Trend RMV. All consequent analyses were based on these 36 items.

Factor Structure

Principal components analysis (PCA) with varimax rotation was performed through SPSS FACTOR on 36 items constructed to measure child attachment as reported by 311 caregivers. Because of the exploratory nature of the factor analysis, the initial factor analysis used eigenvalues of 1.0 or more as a cutoff (Tabachnick & Fidell, 2001). The criteria yielded an 11-factor solution that captured 58.6% of the variance. Additional factor solutions, based on the scree plot of the initial solution, were tested to see if there was a more parsimonious factor structure that described the data (Tabachnick & Fidell, 2001).

First, a seven-factor solution was tested that explained 45.5% of the variance. There were still a number of factors that had three or fewer items with high item factor structure coefficients, so a four-factor solution was tested. The four factors explained 33.8% of the variance and more items with high item factor structure coefficients on a

single factor. The last factor structure tested was a two-factor structure that accounted for 23.8% of the variance. Although items had higher item factor structure coefficients on one or the other factor, communalities for 24 of the 36 items were less than .300, a conservative cutoff point for communalities, and every item except one was less than .400 (Tabachnick & Fidell, 2001). Communalities for the four-factor solution were notably better (12 items less than .300, with the majority of communalities between .400 and .500), whereas most item factor structure coefficients remained high on only one factor. Based on these results, a four-factor solution using PCA with varimax rotation seemed to best capture the data variance.

A PCA with oblimin rotation ($\delta = 0$) was performed to see if by allowing the factors to correlate, the factor structure coefficients would improve. As the KCAQ was intended to measure the construct of child attachment, it is reasonable to expect factors within the construct to correlate. The factor correlations were found to be small ($r = -.161$ to $.156$), and so the PCA with oblimin rotation did not notably improve model fit. The minimal improvement can be explained by the low correlation between the factors. As factors correlate less and less, the results of a PCA with varimax rotation compared to a PCA with oblimin rotation converge. Overall, the results suggest that the data can be adequately fit by orthogonal factors.

Parallel Analysis

A parallel analysis (Horn, 1965) was conducted as another way to determine the optimal number of factors to extract. In parallel analysis, factors are determined by obtaining the average eigenvalue derived from multiple factor analyses run on randomly generated data (replicating the data found in the original data set). These average eigenvalues are then compared to those of the sample population. Only those factors whose eigenvalues are greater than the random data sample eigenvalues are extracted.

Using the Monte Carlo PCA for Parallel Analysis program by Watkins (2000), the parallel analysis results suggested a five-factor solution, although the fifth factor was on the cusp of being retained. When a forced five-factor solution was examined, the fit of the model improved minimally compared to the four-factor solution (e.g., negligible improvements in communalities, factor structure coefficients, and explained variance). Given the results of the parallel analysis (with the fifth factor on the cusp of the cutoff point), the solution suggested by the scree plot analysis, the meaningfulness of the dimension, and its parsimony, a four-factor solution was selected.

Item Selection

The factor analysis, in addition to the findings from the content analysis, informed the decision as to which items to retain or delete. Based on iterative factor analyses, items were deleted that did not have high item factor structure coefficients (i.e., $>.300$) on one factor or had equal item factor structure coefficients on two or more factors (Tabachnick & Fidell, 2001). Such items do not discriminate well between concepts represented by the orthogonal factors. Based on these findings and expert feedback,

the following items were deleted: 1R, 2R, 5, 6R, 9, 14, 15R, 17, 18R, 19, 22, 23R, 24, 27R, 30, 31, and 34 (items with an "R" were reverse scored). The final four-factor structure explained 44.0% (see Table 1) of interitem variance with the following labels suggested for the factors: Positive Adjustment/Development (Factor I); Negative Behavior (Factor II); Emotional Reactivity (Factor III); and Distancing From Caregiver Support (Factor IV). The KCAQ total score in the following analyses was based on the sum of all retained items.

Reliability

In addition to its factor structure, the scores' reliability was investigated. The alpha coefficient was .75. The deletion of any one item from the scale would not have resulted in a notable improvement in alpha. The corrected item-total correlations were all statistically significant at the .01 level, with the exception of Item 26 ("My child hoards food or has other unusual eating habits"), which was statistically significant at the .05 level. Alpha coefficients were also calculated for each of the KCAQ factors (see Table 1) and found to be below acceptable levels (Nunnally & Bernstein, 1994). The low subscale reliabilities suggest that the subscales require further revision and that it is likely inappropriate to interpret individual scale scores, but rather the KCAQ total score is more appropriate for use and interpretation.

Demographic and Work Information Comparisons

Gender and age. There was no significant difference in KCAQ total score based on gender. Because of sample size limitations, KCAQ total score comparisons were possible between children aged 3, 4, and 5 only. There was a statistically significant difference based on age, $F(2, 281) = 5.15, p < .01$. The overall age difference appears to be slight based on $\omega^2 = .10$. Post hoc testing, using Scheffé, suggested that the statistically significant difference in KCAQ total scores was between 3- and 4-year-olds, with caregivers of 3-year-olds (mean KCAQ total score = 25.3, $SD = 10.7$) reporting more attachment difficulties than caregivers of 4-year-olds (mean KCAQ total score = 20.2, $SD = 10.6$). The effect size of age on KCAQ total score was moderate (Cohen's $d = .42$).

Time spent with child. Time spent with the child on a typical weekday or weekend and the number of adults in the household did not correlate statistically significantly with KCAQ, so no additional analyses were conducted. Interestingly, though, a statistically significant difference in KCAQ total scores was found based on the work status of dual-income households (i.e., both caregivers working full-time versus one caregiver working part-time and the other working full-time). Households reporting one part-time and one full-time caregiver (mean KCAQ total score = 19.9, $SD = 11.4$) had a lower KCAQ total score than those households reporting both caregivers being employed full-time (mean KCAQ total score = 23.9, $SD = 10.5$), $t(136) = -2.12, p < .05$. Based on the effect size (Cohen's $d = .37$), having a household with two full-time

Table 1
Rotated Factor Structure Coefficients for Revised Kinship Center Attachment Questionnaire Items
Principal Components Analysis With Varimax Rotation

Item	Factor				Communality (h^2)
	I	II	III	IV	
My child plays well with other children (37R)	.687	.057	.182	-.029	.509
My child talks as well as other children of the same age (20R)	.638	.043	-.074	.140	.434
My child understands what is said to him or her (8R)	.621	.112	-.007	.224	.449
My child has an easy time making friends (32R)	.612	-.163	.071	.082	.413
My child learns from his or her mistakes and stops a behavior when that behavior results in a negative consequence (10R)	.595	.133	.255	-.160	.463
My child is kind and gentle with animals (12R)	.563	.216	-.117	.078	.383
My child steals things and doesn't seem to feel bad about his or her behavior (33)	.008	.607	.083	.145	.396
My child seems overly interested in fire, gore, and blood (35)	.006	.601	.016	.072	.367
My child destroys or breaks things that belong to others (29)	.094	.575	.346	.005	.459
My child destroys or breaks his or her own things (28)	.259	.571	.231	.040	.449
My child teases, hurts, or is cruel to other children (25)	.012	.479	.202	-.024	.271
My child hoards food or has other unusual eating habits (e.g., eats paper, raw flour, packaged mixes, feces, etc.) (26)	.050	.473	-.146	.001	.247
If things don't go his or her way, my child gets very upset (4)	.156	.091	.696	-.174	.547
My child does not like being separated from me except on his/her terms (13)	-.055	.077	.658	.216	.488
My child is excessively clingy (3)	.067	.037	.643	.143	.440
My child is excessively whiny (16)	.011	.181	.618	.161	.440
My child has told others that I abuse him or her even though I never have (36)	-.125	.268	.089	.683	.561
When my child is upset, he or she does not allow familiar adults to comfort him or her but will go to strangers for comfort (21)	.072	.329	-.051	.652	.541
When my child gets hurt, he or she refuses to let anyone comfort him or her (7)	.246	-.117	.240	.612	.506
When my child is in pain, he or she doesn't show it (11)	.232	-.141	.144	.588	.440
Internal consistency (alpha coefficient)	.69	.63	.65	.56	

Note: $N = 311$. Values in bold indicate the highest absolute factor structure coefficients for each variable. Variables have been arranged in descending order of factor structure coefficients for ease of interpretation. R = reverse-scored item.

caregivers versus one full-time and one part-time caregiver has a moderate impact on KCAQ total score. No other work status combinations could be examined because of sample size limitations.

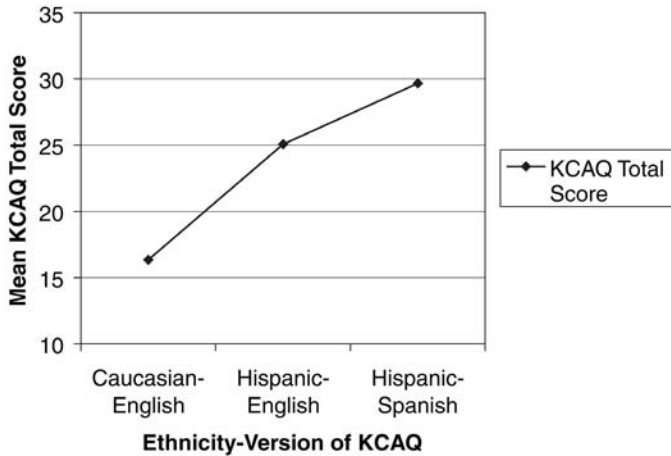
Ethnicity and language. Only two ethnic groups, Caucasian and Hispanic, had a large enough sample size for group comparisons. There was a statistically significant difference in total scores, $t(246) = -8.91, p < .001$, with Caucasian caregivers (mean KCAQ total score = 16.4, $SD = 7.9$) reporting significantly fewer attachment difficulties than Hispanic caregivers (mean KCAQ total score = 27.6, $SD = 11.5$). The effect size (Cohen's $d = 1.13$) further suggested a strong relationship between ethnicity and KCAQ total score. One possible reason for this difference in total score based on ethnicity could be the greater variance in KCAQ total scores for Hispanic versus Caucasian caregivers. Another possible reason for the difference could be due to the version of the KCAQ completed by the caregiver. Even though the KCAQ items were separately translated and back-translated by two individuals who were highly fluent in both English and Spanish, there may have been subtle differences between the two versions that resulted in the difference in scores between the Caucasians and Hispanics. A secondary analysis of only children identified as Hispanic was conducted to investigate this possibility.

Of the 122 Hispanic children, 38 of their caregivers completed the English version of the KCAQ and 84 completed the Spanish version. There was no difference between these two groups in the child's age or gender, the number of adults in the household, or time spent with the child. There was a statistically significant difference in KCAQ total scores between caregivers of Hispanic children who completed the Spanish versus English version of the KCAQ. Caregivers completing the Spanish version had a higher average KCAQ total score (KCAQ total score = 29.7; $SD = 11.01$) than did those who completed the English version (KCAQ total score = 25.1; $SD = 12.0$), $t(120) = -2.071, p < .05$. Cohen's d was found to be .40, suggesting a moderate effect size of version completed on KCAQ total score.

To see if language of the questionnaire could predict KCAQ total score beyond ethnicity, a regression was conducted. The results found language to be a statistically significant predictor of the KCAQ total score beyond ethnicity ($R^2 = .013, p = .049$), although the actual effect of the questionnaire's language may be slight. Overall, the results suggest that the version of the questionnaire may affect the KCAQ total score, with those taking the Spanish version having a higher score (i.e., reported more attachment difficulties) than those who take the English version. Version differences should continue to be examined as more data are collected to better understand if these differences are meaningful.

A final post hoc analysis was conducted comparing Caucasians, Hispanics who completed the English version of the KCAQ, and Hispanics who completed the Spanish version of the KCAQ. The hypothesis was that culture may affect the resulting KCAQ total score, with caregivers who are more acculturated reporting fewer attachment difficulties. The three groups represent varying levels of acculturation, with His-

Figure 1
Differences in Kinship Center Attachment Questionnaire (KCAQ)
Total Scores by Ethnicity and Version of KCAQ



panics who completed the English version potentially being less acculturated than Caucasians but more acculturated than Hispanics who completed the Spanish version.

A statistically significant difference, $F(2, 235) = 46.64, p < .001$, was found among the groups. The effect of acculturation on KCAQ total score appears to be moderately strong ($\omega^2 = .66$). There was also a statistically significant linear trend, $F(1, 236) = 91.68, p < .001$ (see Figure 1), with Hispanics completing the Spanish version having the highest score (mean KCAQ total score = 29.7, $SD = 11.0$), followed by Hispanics completing the English version (mean KCAQ total score = 25.1, $SD = 12.0$) and Caucasians (mean KCAQ total score = 16.3, $SD = 7.9$). Post hoc analysis based on Scheffé found a significant difference between the Caucasian group and both the Hispanic-English and Hispanic-Spanish groups (Cohen's $d = .92$ and 1.36, respectively). Of note, caution is necessary in interpreting these results because of the unequal n s (Caucasian $n = 116$, Hispanic-English $n = 38$, Hispanic-Spanish $n = 84$). With unequal n s, violations of homogeneity of variance are more likely to compromise the statistical soundness of the results, especially when the smaller n has greater variance, although the conservative nature of the Scheffé post hoc test minimizes the impact of unequal n s and heterogeneity of variance (Tabachnick & Fidell, 2001).

Discussion

The KCAQ total scores were found to have acceptable reliability (alpha coefficient = .75) and item-total correlations. The factor structure of the questionnaire was also explored. Several factor structures were tested, and the best-fitting solution appeared to be a four-factor structure that explained 44.0% of the variance. The fol-

lowing labels are suggested for the factors, although other descriptors are possible: Factor I = Positive Adjustment/Development (six items), Factor II = Negative Behavior (six items), Factor III = Emotional Reactivity (four items), and Factor IV = Distancing From Caregiver Support (four items). These labels are easy to understand and can provide a starting point for discussions among clinicians, parents, and researchers who are concerned with child attachment.

Of note, analysis of the subscales' reliability did not support the interpretation of individual subscales. These findings suggest that interpretation should be at the level of KCAQ total score. Additional revisions need to be made before the subscales can be individually interpreted in any meaningful way.

Having gathered data from a nonclinical sample, expert feedback, and initial statistical support for the psychometric soundness of its scores, the next step was to administer the KCAQ to a clinical sample. Children seen at Kinship Center have a special circumstance because they often are placed in new homes in which caregiver-child attachment must develop. The lack of an attachment history with the caregiver and the need to develop such a relationship was the impetus for developing the KCAQ, as the instrument is meant to track change in child attachment over time. In Study 3, KCAQ data were collected from a clinical sample.

Study 3

Method

Participants

One hundred twenty-five primary caregivers whose children were receiving services from two sister programs within Kinship Center, a nonprofit organization in Southern California, completed the KCAQ. The KCAQ was part of a standard battery of instruments completed for all clients receiving services at either program. To qualify for programmatic services, the child must meet the following criteria: (a) the child must qualify for MediCal (i.e., Medicare) and (b) the child must be in foster care, in the process of being adopted, or have been adopted. Using criteria applied in Study 2, 2 participants were deleted because more than 25% of items were unanswered (i.e., more than five items).

The majority of children whose caregiver completed the KCAQ were male (60.8%). The average age of the child was 3.3 years ($SD = 1.3$). The children were primarily Hispanic (47.2%) and Caucasian (41.6%), followed by African American (6.4%), Asian ancestry (1.6%), and other (3.2%). The majority of caregivers were the child's foster parent (46.4%) or adoptive parent (26.4%). A large proportion of the clinical sample was diagnosed with reactive attachment disorder (16.8%); disorder of infancy, childhood, or adolescence (15.2%); or posttraumatic stress disorder (13.6%). The large percentage of children who received a deferred diagnosis or no diagnosis (28.8%) was expected because one of the programs screens for developmental difficulties. Children who are not experiencing difficulties severe enough to

warrant a *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; American Psychiatric Association, 1994) diagnosis when the screening occurs are ineligible to receive further services.

On average, caregivers reported spending 9.6 hours ($SD = 4.3$) the child on the typical weekday and 13.0 hours ($SD = 2.9$) with the child on the typical weekend or holiday. The majority of caregivers was either homemakers (42.4%) or employed full-time (41.6%). Most households (63.2%) had two adults currently living with the child. Just less than 10% of households reported a single caregiver. Of the households that had two caregivers (76.8%), about a third (35.2%) reported a single income and another third (31.2%) reported a dual income.

Results

The underlying factor structure of the clinical data was explored by forcing a four-factor solution based on the structure derived in Study 2. All missing values were replaced using SPSS Linear Trend RMV. All consequent factor analyses and reliability analyses were based on the final 20 KCAQ items based on the results of Study 2.

Factor Structure

PCA with varimax rotation was performed through SPSS FACTOR on the 20 items constructed to measure child attachment as reported by 125 caregivers. A four-factor structure was tested based on the results from Study 1, the purpose of which was to examine the similarities/differences between the factor structure of the nonclinical sample and that of the clinical sample. The four-factor solution explained 44.1% of the variance and was somewhat comparable to the nonclinical sample factor structure. The most overlap is seen in Factors I, II, and III (Positive Adjustment/Development, Emotional Reactivity, and Distancing From Caregiver, respectively), in which the same factor structure coefficient pattern was seen for both groups, with the exception of one item from each scale having a higher factor structure coefficient on a different factor. Less overlap was seen for Factor II (Negative Behavior), in which half of the factor items followed the same factor structure coefficient pattern as the nonclinical sample and the other half of the items clustered onto a different factor.

Reliability

The reliability of the scale was investigated for the clinical sample, with a resulting alpha coefficient of .74. The deletion of any one item from the scale did not result in a notable improvement in alpha. Item-total correlations were all statistically significant at the .01 level with the exception of Items 9 and 35, which correlated statistically significantly at the .05 level, and Items 6 and 36, which did not correlate statistically significantly with the total score.

The subscale reliability was also examined and ranged from .50 to .52, with the exception of Factor I, which had an alpha coefficient for .72. As discussed earlier, the findings suggest that the subscales need additional revision before being interpreted

individually and that current use of the KCAQ should be limited to interpretation of its total score only.

Demographic and Work Information Comparisons

There were no statistically significant differences in KCAQ total score based on gender or ethnicity. There was a statistically significant difference in KCAQ total score based on age, with older children scoring higher on the KCAQ ($R^2 = .068$; $p < .01$). Further examination found that there was a statistically significant linear trend, $F(1, 118) = 4.39$, $p < .05$, with KCAQ total score increasing with age. This finding must be interpreted cautiously as age may not explain the association between reported attachment difficulty and age. Rather, other variables that are not included in this study may explain this relationship, such as the possibility that older children may have been placed in their current home at a later age and so are experiencing more attachment difficulties because of their placement history.

Time spent with the child on a typical weekend and the number of adults in the household did not correlate statistically significantly with KCAQ, although there was a small positive association between KCAQ total score and the number of adults in the household ($r = -.17$). The negative correlation suggests that reported attachment difficulties decrease as the number of adults in the household increases.

Time spent with the child on a typical weekday was statistically significantly associated with KCAQ total score ($r = .24$; $p < .05$). The findings suggest that adults who reported spending more time with their children during the weekday somewhat tended to report more attachment difficulties. The nature of the clinical sample makes a direct interpretation of these data difficult because it is possible that caregivers spend more time with children with more attachment difficulties, and it is not the amount of time spent with the child that causes more difficulties.

In contrast to the nonclinical sample, the clinical sample was found to have a nonstatistically significant difference in KCAQ total scores based on single- versus dual-income and single- versus dual-caregiver households. No other work status combinations could be examined because of sample size limitations. Findings regarding ethnicity and language of the KCAQ are not reported for the clinical sample because there were insufficient data regarding the language of the KCAQ.

Psychometric Properties

Discriminative validity: Comparison between nonclinical and clinical samples. There was a statistically significant difference, $t(434) = -7.42$, $p < .001$, in KCAQ total scores based on group membership (i.e., nonclinical sample vs. clinic sample). As expected, children in the nonclinical sample (mean KCAQ total score = 22.2, $SD = 11.4$) were reported to have fewer attachment difficulties when compared to children in the clinical sample (mean KCAQ total score = 31.8, $SD = 14.0$). There was a strong effect of group membership on KCAQ total score (Cohen's $d = .79$). These findings suggest that the KCAQ can discriminate between children referred for mental health services and children from a nonclinical sample.

Table 2
Comparison of Kinship Center
Attachment Questionnaire Total Score Over Time

Administration Time	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>t</i>	Cohen's <i>d</i>
First versus last				130	1.373	0.24
First	36.12	13.9	66			
Last	32.76	14.3	66			
Intake versus discharge				32	1.456	0.51
Intake	34.10	14.9	17			
Discharge	27.12	12.9	17			
Intake versus 6 months				82	1.306	0.29
Intake	35.80	12.7	42			
6 months	32.00	13.9	42			

Monitoring change over time. As the KCAQ was administered as part of a battery of assessment instruments intended to track change over time (i.e., intake, every 6 months, discharge), longitudinal data were collected for a subsample of the clinic population. Data were available to make the following longitudinal comparisons: first versus last administration (administrations separated by at least 6 months), intake versus discharge administration, and intake versus 6-month administration. Overall, KCAQ total score decreased over time (see Table 2). The effect size for both first versus last administration (Cohen's $d = .24$) and intake versus 6-month administration ($d = .29$) was small but in the expected direction. A moderate effect size ($d = .51$) was found when comparing intake versus discharge administration times. At Time 1, the average KCAQ total score was 34.1 ($SD = 14.9$) compared to the average total score of 27.1 ($SD = 12.9$) at Time 2. The difference in mean scores is large enough to be of practical significance. Overall, caregivers reported fewer attachment difficulties over time.

Convergent validity. The KCAQ total score was correlated with scales from the Child Behavior Checklist for children 1 year, 6 months, to 5 years, 11 months (C15; Achenbach & Rescorla, 2000). The C15 is a widely used, behaviorally based instrument whose psychometric properties have been examined extensively. It consists of 100 items; seven syndrome scales including Emotionally Reactive, Anxious/Depressed, Somatic Complaints, Withdrawn, Sleep Problems, Attention Problems, and Aggressive Problems; and three "grouping" scales (i.e., Internalizing Problems, Externalizing Problems, Total Problems) derived by summing select syndrome scale scores. Behaviors described by each scale's items are said to occur in a cluster (i.e., syndrome) if/when the child is experiencing difficulty in the target area.

To avoid redundancy, correlations are reported for all syndrome scales and the Total Problem scale. The KCAQ total score was found to have a moderate positive correlation with the following scales: Emotional Problems, Anxious/Depressed, Somatic Problems, and Attention Problems (see Table 3). The KCAQ total score was found to have a moderate to strong correlation with the Aggression Problems and Total Prob-

Table 3
Correlation Between Kinship Center Attachment Questionnaire (KCAQ)
Total Score and Child Behavior Checklist 1.5-5 Scales (*n* = 106)

Profile Scale	KCAQ Total Score
Emotional Problems	.45
Anxious/Depressed	.46
Somatic Problems	.42
Withdrawn	.31
Sleep Problems	.22
Attention Problems	.45
Aggression Problems	.59
Total Problems	.57

lems scales. The Withdrawn scale correlated positively as well with the KCAQ total score, although the correlation was weak to moderate. The weakest correlation was found between the Sleep Problems scale and the KCAQ total score. Overall, the results suggest that there is a shared construct between the KCAQ and most scales of the C15.

Discussion

The purpose of the current study was to develop a caregiver-completed instrument that quantifies child attachment, suitable for use with children up to 6 years of age. The KCAQ, with 20 items along a 7-point Likert-type scale, was developed based on a comprehensive review of the child attachment literature, expert feedback, and the RADQ (Randolph, 1997). The results of the expert review guided the final item selection for the KCAQ.

Based on the nonclinical data, there were no significant gender-based differences in reported child attachment difficulty, but there were significant age-based differences in which caregivers of 3-year-old children reported significantly more attachment difficulties than did caregivers of 4-year-olds. A possible explanation for this difference may be that 3-year-old children naturally display the targeted behaviors more often than 4- and 5-year-olds because of their level of physical (e.g., proficiency in small motor activities) and social development (e.g., clinginess, whininess). It is also possible that the age difference is an anomaly and that the current age difference reflects the instability of the mean total score for 3-year-olds.

Reported child attachment difficulties were also associated with ethnicity, with caregivers of Caucasian children reporting significantly fewer attachment difficulties than caregivers of Hispanic children. This ethnic difference is partially explained by the version of the questionnaire (i.e., English vs. Spanish), as the questionnaire version significantly predicted the total score, even after controlling for ethnicity. Although the questionnaire was translated and back-translated by two independent

translators, it is possible that subtle word differences inflate the resulting total score associated with the Spanish version of the KCAQ versus the English version. Further investigation is needed to better understand this version difference.

Although the version of the questionnaire may explain part of the ethnic difference, it does not account for the majority of the ethnic differences in reported child attachment difficulties. Caregivers of Caucasian children were found to report the fewest attachment difficulties, followed by caregivers of Hispanics who completed the English version of the KCAQ, followed by caregivers of Hispanic children who completed the Spanish version. These findings suggest a possible association between reported child attachment difficulties and acculturation, with reported child attachment difficulties decreasing with increasing acculturation, or alternatively, the concept of child attachment was defined from a Caucasian perspective. For example, many of the KCAQ items ask about how the child behaves in reference to other children his or her age and other behaviors whose frequency depends on the caregiver's definition of *often* or *occasionally*. The American and Hispanic cultures likely have some differing expectations of their children, and so their KCAQ scores may reflect these differences. In general, Hispanic families are more sociocentric as compared to the individualistic tendencies of Caucasian families, which may mean that children's attachment to their caregivers will differ for Hispanic and Caucasian families (Posada et al., 2002). Additional data must be gathered before speculating further about the effect of ethnicity on reported child attachment.

When examining the relationship between child attachment and time spent with the child, no relationship was found between attachment and time the caregiver reported spending with the child on a typical weekday or weekend. In this study, caregivers were asked how much time they spend with their child without specification as to *how* the time was spent. Some caregivers may be with a child all day but spend little time interacting with the child (e.g., playing, reading, talking), whereas other caregivers may spend 2 hours with a child on a typical weekday but are constantly interacting with the child during that time. The child in the second scenario may likely have a greater attachment to the caregiver than the child in the first scenario, although a quantitative measurement of time spent together would not reflect this relationship. Because of the item phrasing used in the current study, the subtlety in time spent with the child may have escaped measurement, resulting in the nonsignificant association between child attachment and time spent with the child.

An unexpected finding was a small negative association between reported attachment difficulties and the number of adults in the household. The findings suggest that reported attachment difficulties decrease as the number of adults in the household increases. One possible explanation for this finding is that with a larger number of adults/caregivers in the household, the nurturing style of any one adult is more likely to match with the child's temperament and so forth. However, more data must be gathered before speculating further about the possible relationship between attachment and number of adults in the household.

The relationship between household work status and child attachment was also examined. Households that reported having one full-time and one part-time working

adult reported significantly fewer attachment difficulties than did dual-income households in which both adults worked full-time. These findings suggest that full-time employment of both caregivers may affect child attachment, although work status is also a complicated variable. In a study of mothers' work status and child attachment that was conducted in Australia, researchers found that mothers who were more committed to their work and less anxious about nonfamilial child care returned to work earlier than did other mothers and had more securely attached children (as measured by the Strange Situation scale; Harrison & Ungerer, 2002). Given the complexity of variables that affect child attachment, more data must be collected to investigate reported attachment difficulties to replicate the findings reported here.

As for the psychometric properties of the KCAQ, the results suggest that its scores are psychometrically sound. The KCAQ scores were found to have an acceptable alpha coefficient (.75) for exploratory purposes, and the instrument consisted of four factors, named Positive Adjustment/Development, Negative Behavior, Emotional Reactivity, and Distancing From Caregiver Support. The KCAQ was able to discriminate between children from the nonclinical versus clinical sample (i.e., discriminative validity of the KCAQ score). The KCAQ score also was sensitive enough to track change in child attachment over time, showing a decrease in reported child attachment difficulties with effect sizes ranging from small to moderate. Such findings were expected due to the mental health services the child received between administrations and the additional time placed with his or her family. Finally, the findings support the convergent validity of the KCAQ scores based on its correlation with several of the syndrome and grouping scales of the Child Behavior Checklist 1.5-5 (C15). The correlations, however, were not so high as to suggest that the KCAQ is measuring constructs identical to those measured by the C15 (i.e., incremental validity of the KCAQ scores).

There are several limitations to the current study. First, the clustering of the reverse-scored items on Factor I may suggest a method effect. On closer examination, though, the item content for the reverse-scored items reflect behaviors that are typical for children to display (e.g., making friends), whereas the non-reverse-scored items reflect behaviors that are atypical for children to display (e.g., seeking comfort from strangers). Taken together, Factor I clustering may be more an outcome of shared construct variance versus similar item construction.

A second limitation is that the predominant ethnicities represented were Caucasian and Hispanic. The current findings may not generalize to other ethnic groups such as African Americans or Asians, although we note here that the alternative measures of child attachment were not separately normed for ethnicity or other cultural factors. Future research samples need to be more representative of the greater child population.

In the same vein, a larger and more representative nonclinical sample needs to be assessed by independent investigators before the KCAQ can be used as a standard by which other young children can be compared. Expanding the nonclinical population would have at least two benefits: (a) it would allow for examination of other potential group differences (e.g., age, ethnic differences, geographically based differences, rural vs. urban, differences in socioeconomic status), and (b) administrators of the

KCAQ would have a normative sample that they could be more confident in using as a reference point for their particular client population. As with any new instrument, the KCAQ needs further psychometric evaluation. Data collection efforts are currently under way in an effort to continue the psychometric evaluation of KCAQ scores.

Finally, limited work and demographic information were gathered on the caregiver. The majority of the questions asked concerned the child's demographic information (e.g., age, gender). Little information regarding the caregiver was asked to increase the number of caregivers who would respond to the KCAQ (e.g., socioeconomic status, educational level, stress-related work-family conflict). Variables such as caregiver educational level or stress resulting from work-family conflict may affect the resulting KCAQ total score. Future research should investigate how such factors affect caregiver responses.

In conclusion, the KCAQ promises to be an efficient screening instrument that validly measures attachment in children younger than 6 years and can be administered at repeated intervals to show changes in attachment over time, thus filling a gap in child attachment assessment instruments. The KCAQ is quick, easy to use, and can supplement clinical judgment by gathering data about the caregiver's perspective of the caregiver-child relationship. Future research should advance the current study's effort to evaluate the psychometric soundness of KCAQ scores and establish an extensive normative sample in an effort to better understand child attachment and identify child attachment difficulties in this young population.

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