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Comparing Two Attachment Classification Methods Applied to Preschool Strange Situations

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Abstract

This study compared two methods for classifying preschool-age children's behavior in the Strange Situation procedure, the MacArthur (MAC) and the Preschool Assessment of Attachment (PAA), to determine whether they operationalized converging or diverging approaches to attachment theory. Strange Situations of 306 randomly selected 3-year-old children and their mothers in the NICHD Study of Early Child Care and Youth Development were classified with the MAC and PAA. The methods showed 50% agreement. A block of seven demographic, child and family predictors was unrelated to MAC classifications, but accounted for 19% of the variance in PAA classifications. The MAC and PAA each had associations with some child outcomes in grades 1-5 (ages 6-10) totalling 5% and 12% of the variance respectively, but some of the MAC associations were counter to the hypothesis. The MAC and PAA were sufficiently different to reflect both different classificatory methods and different theoretical understandings of attachment. Results are discussed in terms of limitations of the sample and measures available to compare the two methods, and clinical implications.

Keywords

attachment; child behaviour; maternal depression; maternal sensitivity; preschool children; problems

Attachment is a central guiding theory of development that, for three decades, has informed much basic and applied work. Its power has rested on the strong correlates of the Ainsworth infant Strange Situation classifications: secure (Type B), avoidant (Type A), resistant/ambivalent (Type C) (Ainsworth, 1979), and disorganized/disoriented (Type D) (Main & Solomon, 1990), with an array of antecedents and sequelae. Many concepts in attachment theory have been embraced by clinicians, but the methods of attachment research have been more difficult to integrate into practice. As Slade (2007) noted, 'clinicians have found it challenging to locate the vitality and clinical utility of attachment classification, as this notion - absolutely central to much of attachment research - is seen as reducing and oversimplifying complex mental phenomena' (p. 227). This issue is amplified by theoretical differences in our understanding of how attachment develops beyond infancy and how to assess it in older children (Thompson & Raikes, 2003; Rutter, Kreppner & Sonuga-Barke, 2009). Two lines of thinking concerning attachment after infancy have developed,

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challenging attachment theorists to consider whether these reflect diverging theories of attachment. Each model has developed assessments of attachment that are similar in that both use the Strange Situation procedure with preschool-aged children and different in (a) whose behavior is assessed, (b) what behavior is assessed, and (c) what meaning is made of children's insecure patterns of behavior.

The assessments of attachment in preschool-aged children are the one developed by Cassidy, Marvin and the MacArthur Working Group on Attachment (MAC; Cassidy, Marvin, & the MacArthur Attachment Working Group, 1992) and the Preschool Assessment of Attachment (PAA; Crittenden, 1992). At the risk of oversimplifying a diverse and dynamic field of inquiry, for purposes of this study the corresponding arms of the field, quite heterogeneous in itself, are the 'ABC-D' model (e.g. Cassidy & Shaver, 2008; Main & Solomon, 1990; Spieker & Booth, 1988; van Ijzendoorn, 1995; Weinfeld, Whaley, & Egeland, 2004) and the Dynamic-Maturational Model (DMM) of attachment and adaptation (Crittenden, 1985, 1992, 1994, 1995, 2008).

Both the MAC and PAA are based on Ainsworth's thinking and procedures (Ainsworth, Blehar, Waters, & Wall, 1978). Ainsworth's central contributions were (1) the identification of three (ABC) patterns and eight subpatterns of attachment; (2) the creation of the Strange Situation to assess attachment; and (3) linking early maternal behavior to 1 year-olds' pattern of attachment. The classificatory process, as carried out by Ainsworth herself, involved detailed narrative notes of what mothers and infants did in the Strange Situation, which were condensed into six dyadic rating scales of which four were commonly used for classification. The scales were dyadic in that each point described both mother and infant behavior.

This study compares the MAC and PAA on both predictors of attachment classification at 36 months and correlates in the school years using a randomly selected sample of 306 of the 1150 Strange Situations conducted in the NICHD Study of Early Child Care and Youth Development (NICHD SECCYD) when the children were 36 months old, classified twice, once using the MAC and separately using the PAA. These data offer a unique opportunity to (1) compare the two classificatory methods on predictor variables from infancy, classification at 15 and 36 months, and outcome variables in grades 1-6 (ages 6-11); and (2) consider the theoretical implications of any differences that might be found.

This topic is important for those who wish to assess attachment in preschool-aged children and, therefore, must choose which assessment to use, for those who wish to examine attachment in even older children who must decide which theoretical approach to use, and for developmentalists and clinicians in general who must decide whether attachment remains an important issue in children's lives after infancy.

Differences in theory and methods

A decade ago, Solomon and George (1999) reviewed the findings from both methods and noted that the low rate of agreement between them 'exemplifies the serious lack of consensus about what constitutes secure behavior in the preschool years, and the corresponding lack of fundamental descriptive data on parents and children at this age' (p. 299). George and Solomon were not able to expand their review and comparison of the two methods in the second edition of their chapter (Solomon & George, 2008) due to space limitations. However, newer findings continue to suggest that the MAC and PAA methods classify children differently, although the correlates and sequelae of these differences have not been adequately studied. (See the Appendix for a detailed review of studies using these methods.)

ABC-D theory and the MacArthur Method

The ABC-D approach to expanding attachment theory was based on detailed observation of the Strange Situations of Main's Berkeley sample of infants from middle and upper middle class families, as well as other samples of varying risk due to low income and family stress, provided by interested researchers. Infants who displayed anomalous behaviors or behavior that did not fit the ABC categories were identified. After careful study, most were classified in a category which was labelled 'disorganized/disoriented' (Main & Solomon, 1990). Disorganized/disoriented infants appeared to have no consistent strategy for managing attachment distress; they display contradictory behaviors suggesting that the parent is simultaneously a threat and a source of comfort. This thinking informed a multiuniversity, collaborative project (funded by the John D. and Catherine T. MacArthur Foundation Network on the Transition from Infancy to Early Childhood, 1983-1986) to adapt the classificatory procedures for 6 year-olds (Main & Cassidy, 1988) to the Strange Situation for 3-5 year-olds. Most, but not all, of the samples on which the MAC was developed were middle class and low risk. The preschool ABC categories and subcategories closely followed the infant method. In place of the infant D/disorganized/disoriented category, the MAC had four subcategories: D/controlling caregiving, D/controlling punitive, D/controlling general, and D/insecure-other. Two rating scales - tapping avoidance and overall security - were used. Continuity of attachment classification was expected from infancy to age 6 and beyond, even to adulthood. This method was recently extensively reviewed (Solomon & George, 2008), and assumes continuity or lawful discontinuity from infancy.

DMM theory and the Preschool Assessment of Attachment Method

Crittenden (1983) expanded the ABC model by adding an organized A/C classification. A/C referred to infants who used both the Type A and Type C strategies. Despite Crittenden's assertion that A/C is atypical but organized, the A/C classification has since been considered a type of disorganization by researchers working in the ABC-D model (van Ijzendoorn, 1995). Crittenden's model evolved into the Dynamic-Maturational Model (DMM) of attachment and adaptation. The DMM produced the Preschool Assessment of Attachment (PAA) which, like the A/C pattern, was derived to fit concurrent evidence of attachment, specifically child strategies for maximizing safety and comfort in highly stressed families.

Crittenden developed the PAA after finding that the MAC, applied to a small sample of maltreated and adequately reared low-income children, classified many maltreated children as MAC B secure, and some adequately reared children as MAC D (controlling/insecure other) (Crittenden, Claussen, & Kozłowska, 2007). These findings lead to reconsideration of how to classify preschool-aged children and the development of an alternate method. Core features of the PAA reflected Crittenden's evolving DMM theory (Crittenden, 2008) (see Figure 1). Emphasis was on adaptation to current circumstances. Continuity was neither hypothesized nor maximized in the development of the PAA. Danger and the failure to comfort children exposed to danger were seen as central to organizing the self-protective behavior that characterized both the B and the non B classifications.

An expansion within Type A (which already had Ainsworth's two subclassifications, A1 and A2) was delineated. Two subclassifications were added: A3, compulsive caregiving, in which children acted as caregivers to their depressed or incompetent parents, and A4, in which children were excessively obedient to demanding and hostile caregivers. Because mothers of Type A3-4 children were dangerous or not protective, children in those subclassifications were expected to be more at risk than insecure A1-A2 children. Individuals using a Type A3-4 strategy are expected to minimize distress, even to the point of displaying false positive affect. They would be predicted to be high on internalizing

behavior, low on externalizing behavior, and both at risk for depression and also unlikely to report depressive symptoms.

Type C at preschool age was thought to have organized in a more sophisticated way than in infancy, based on maturation tied to the preoperational shift (Crittenden, 1992). The Type C strategy involved splitting mixed feelings of anger, fear, and desire for comfort, exaggerating some displays while inhibiting others and alternating the exaggeration and inhibition contingent upon the caregiver's behavior. Because this coercive strategy is ideally suited to inconsistent parents, because parents who were sensitive with an infant are not automatically also sensitive to the developmental needs of an older child, and because nonverbal communication functions more effectively than language in the third year of life, many children are expected to shift from an infant B or A classification to a preschool Type C. The lower-risk insecure C1 and C2 classifications reflected threatening and disarming behavior, respectively. The higher-risk C3 and C4 strategies use even more exaggerated displays of aggressive and feigned helpless behavior, respectively. The alternating use of the various C displays creates a vice-like coercive strategy based on nonverbal communication that brings the attention of unpredictable parents under children's intuitive operant control. Individuals using a Type C strategy were expected to exaggerate distress, even to the point of feigning it. Type C individuals would be expected to be highly aroused (and thus unlikely to be depressed), but conversely more likely to report the negative symptoms associated with depression. The expectations regarding internalizing and externalizing are more complex. Odd number Type Cs (C1, C3) would internalize fear and desire for comfort and externalize anger whereas even numbered Type Cs would do the reverse. Type C coercion was expected to maximize parental response under conditions of unpredictability, complexity, and ambiguity.

In addition, there were other atypical insecure categories including A/C, anxious depression (Dp), and insecure other (IO, i.e. organizations that did not fit in the PAA). These are clustered as very high risk (R).

In summary, the MAC and PAA reveal many similarities and classify similar kinds of behavior. If they are essentially the same approach, then in direct comparisons in the current study they should show substantial overlap in the application of the Ainsworth-based A1-A2, B, C1-C2 classifications. Further, the MAC D controlling-caregiving would converge with the PAA A3, compulsive caregiving, the MAC D controlling-punitive would converge with the PAA C3, coercive-aggressive, and the MAC D controlling general would converge with the PAA A/C. Finally, the MAC D/insecure-other and the remaining PAA classifications, A4, C4, Dp, and IO would also correspond for the most part. If these relations are not substantiated, then the methods could be considered conceptually and functionally different, and understanding how they related to a range of predictors and outcomes would be important to researchers and clinicians interested in selecting and applying one of these methods in their work

Questions

We posed four major questions. First, are the MAC and PAA different classificatory methods? Based on prior studies, we expected that they would classify children differently. Second, what are the associations between attachment classifications in infancy and those in the preschool years? ABC-D theory predicted continuity whereas DMM theory predicted both a substantial increase in Type C and also assignment of the most endangered children to A3-4, C3-4, and R (combined A/C, Dp, IO). Third, do early demographic risk, maternal sensitivity, and maternal depressive symptoms, averaged over the first three years of life, show different patterns of association with attachment classifications in the two preschool

methods? We expected that both methods would be related to maternal sensitivity and demographic variables indicative of higher social risk, but that the PAA would be more strongly related to maternal depression and child minority ethnicity and gender (Crittenden et al., 2007; NICHD Early Child Care Research Network, 2001). Finally, do attachment classifications in the two preschool methods show different patterns of associations with children's functioning in the school years? Based on the literature (see Appendix), we expected some associations with both methods.

Method

Participants

Participants in this study were 306 children in the NICHD SECCYD whose Strange Situation attachment assessments at 36 months were randomly selected to be coded according to the two different preschool-age attachment classificatory methods. The NICHD sample has been described in numerous publications (see NICHD Early Child Care Research Network, 2005); it was selected to be a low risk, normative American sample.

Overview of data collection

Data for this report were collected by highly trained staff at 10 sites across the United States from the time the child was 1 month of age through sixth grade (age 11). When the child was 1, 6, 15, 24, and 36 months of age, basic demographic information about the child and family was gathered and mothers completed questionnaires during a home visit. Data were gathered in the laboratory and in the home on mothers' psychological functioning and on mother-child interaction when children were 6, 15, 24, and 36 months, and in 1, 3, and 5 (ages 6, 8 and 10). Teachers completed questionnaires on children's behavioral functioning and their perceived relationship with the child in the spring of each year of grades 1 through 5. Children reported on their own depressive symptoms in grades 5 and 6 (ages 10 and 11). The outcome variables we selected were observer ratings of mother-child interaction, teacher reports, and child self-report measures.

Overview of measures

We first present the methods for classifying child attachment at 15 and 36 months. We then discuss the antecedent demographic and family variables that we used to predict to attachment classification. Finally, we describe the teacher and child reports and observation ratings that we used as outcome correlates of 36-month attachment classification.

Attachment

15 months—The Strange Situation (Ainsworth et al., 1978) was conducted in the 15-month laboratory visit (see NICHD Early Child Care Research Network, 1997 for a full description of the procedures at 15 months). Attachment behavior was categorized as secure (B) or insecure (A C D U; Ainsworth et al., 1978; Main & Solomon, 1990). Across coding pairs, before conferencing, agreement for the four-category ABCD classifications was 82% ($k = .70$).

36 months—A modified Strange Situation procedure was used to assess attachment at 36 months. The modification eliminated the stranger reunion, and the second separation was 5 minutes, rather than 3. The child's behavior during the assessment was classified according to two methods.

MacArthur (MAC)—Three coders were trained and certified by Jude Cassidy to code using the method developed by the MacArthur Working Group on Attachment (MAC;

Cassidy et al., 1992). The MacArthur coding method classifies preschoolers as secure (B) or insecure (A, C, and D). There were six subclassifications of Type B, and two each of Types A and C. The D classification included controlling punitive, controlling caregiving, controlling general, and insecure-other subclassifications. All coders passed the minimum 75% agreement at the level of ABCD classifications with Dr Cassidy on a set of 21 test tapes. Reliability was calculated based on 320 cases. Disagreements were discussed and a consensus classification was assigned. Inter-coder agreement (before conferencing) on the 4-category ABC-D classifications was 77% ($k = .50, p < .001$).

Preschool Assessment of Attachment (PAA)—Three coders were trained and certified by Patricia Crittenden to code using the PAA method (Crittenden, 1992). For the major analyses in this article, and for purposes of calculation inter-rater agreement, there were six groups of the classifications. In order from low risk to high risk these were B, C1-C2, A1-A2, C3-4, A3-4, and R (A/C, Dp, IO). All coders passed the minimum 75% agreement at the six-level B, C1-C2, A1-A2, C3-4, A3-4, and R (A/C, Dp, IO) classifications with Dr. Crittenden on a set of 20 test tapes. All tapes were coded by two coders, and disagreements were resolved by consensus. Agreement, before conferencing, on six categories was 59% ($k = .45, p < .001$).

Family and child predictors

Demographic characteristics—These included mothers' *education* (in years), the *child's sex* (1 = male) and *race and ethnicity* (1 = non White), *partner* in the home (1 = mother reported living with partner at every interview), and family *income-to-needs ratio* averaged between 1 and 36 months.

Maternal depressive symptoms—At 6, 15, 24, and 36 months mothers completed the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), a self-report measure that assesses depressive symptomology in the general population. Scores were averaged.

Maternal sensitivity—Mother-child interactions were videotaped in semistructured 15-minute observations at 6, 15, 24, and 36 months. At 6, 15, and 24 months, composite maternal sensitivity scores were computed as the sums of 4-point ratings of three maternal behaviors: sensitivity to nondistress, positive regard for child, and reflected intrusiveness. At 36 months, composite maternal sensitivity was the sum of 7-point ratings of supportive presence, respect for the child's autonomy, and reflected hostility. An overall composite maternal sensitivity variable was computed as the mean of these scores from 6 to 36 months. Brief observations such as these have shown moderate associations with attachment in meta-analyses (DeWolff & van Ijzendoorn, 1997; Nievar & Becker, 2007).

Dyadic and child outcomes

Child and dyadic outcomes combined data from grades 1 through 5 by taking a mean of each year's composite scales for corresponding outcomes.

Observations of affective mutuality—A rating of the mother-child dyad's affective mutuality was based on videotaped observations of mildly stressful, semistructured interactions at grades 1, 3 and 5. The outcome measure was a 7-point rating of the dyad adapted from Egeland and Hiester (1995). This scale assesses the level of positive, warm emotion exchanged and reciprocated between parent and child. There is an emphasis on the child having a sense that the parent has his/her own best interest in mind, while both individuals share a genuine concern and positive regard for one another.

Behavior problems—Teachers completed the *Teacher Report Form* (TRF; Achenbach, 1991) each year from grades 1 through 5. T-scores from the two broadband scales of the TRF, *Internalizing Problems* (e.g. too fearful and anxious) and *Externalizing Problems* (acting out, noncompliance) were used.

Child report of depressive symptoms—In Grades 5 and 6, children completed the 10-item form of the Children's Depression Inventory (CDI; Kovacs, 1992) tapping negative mood, low self-esteem, and anhedonia.

Results

Data analysis plan

Three types of analyses were conducted. First, the associations of the 4-category MAC ABC-D and the 6-category PAA with each other and with the infant 4-category ABC-D classification were examined with cross-classification tables. In order from low to high risk, the MAC and infant classifications were B, C, A, and D; the PAA categories were B, C1-C2, A1-A2, C3-4, A3-4, and R (A/C, Dp, IO). Next, multinomial regressions were used to predict membership in the 4-category MAC and 6-category PAA classifications. The predictor variables included income-to-needs ratio, maternal education, mother has stable partner, child non White, child male, maternal depressive symptoms, and maternal sensitivity. Each predictor was included in an individual model, and then all predictors were included in a single multivariate model. The final set of analyses used one-way ANOVA to determine whether there were associations between MAC or PAA preschool attachment classifications and the selected outcome measures in the school years: mother-child affective mutuality, teacher-rated internalizing and externalizing behavior problems, and child report of depressive symptoms. Descriptive statistics for all predictor and outcome variables by MAC and PAA classifications are presented in Tables 4 and 5, respectively.

Are the MAC and PAA different classificatory methods?

The two preschool classificatory methods were significantly associated, $\chi^2(15) = 157.3, p < .001$. The results of the 4×6 -category cross-classification are reported in Table 1. Numbers are bolded when the observed frequency for that cell was significantly greater than expected (type) or less than expected (anti-type) according to binomial probabilities. Overall, the methods classified children similarly in 50% of cases. It is notable that even at the level of secure/insecure, the two methods do not agree for about one-third of the cases in a predominately low risk sample.

What are the associations between attachment classifications in infancy and preschool?

The results of the cross-classification of infant ABC-D and the preschool MAC and PAA methods are presented in Tables 2 and 3. Numbers are bolded when the observed frequency for that cell was significantly different from expected. Both methods showed significant but low levels of associations with infancy classifications, $\chi^2(9) = 18.9, p < .05$ for the MAC and $\chi^2(15) = 33.5, p < .01$ for the PAA. In the PAA, classifications were unlikely to shift dramatically, as in from C to A (although the A to C shift was at chance levels), or from B to R, whereas for the MAC those more extreme shifts were at chance levels. Similarly, both methods tended to identify the same infants in the highest risk groups, MAC D and PAA R. However, among the highest risk groups (infant D, MAC D, and PAA R), there was continuity from infancy to preschool only for the PAA.

Do family and child predictors show different associations with the two preschool methods?

Income—There was a trend for the MAC B group to report higher incomes than the MAC C group, $\chi^2(3) = 6.7, p = .08$, accounting for 2% of the variance. Income did not predict to PAA classifications.

Education—Mothers of children classified as MAC Type B reported more education than mothers of children classified as Type C, and marginally more than mothers of children classified as Types A and D, $\chi^2(3) = 8.6, p = .04$, accounting for 3% of the variance. Mothers of children classified as PAA Type B reported more education than mothers of children in all of the other classifications, $\chi^2(5) = 16.5, p = .006$, accounting for 5% of the variance.

Partnered—Partner status did not predict to MAC classifications. Mothers of PAA Type B children were more often consistently partnered compared to mothers of children with Type R classifications, $\chi^2(5) = 13.4, p = .02$, accounting for 4% of the variance.

Child non White—There was no association of child non White status with MAC classifications. Children classified as PAA Type B were more likely to be white compared to all other insecure groups except for A3-4 (all of whom were White), $\chi^2(5) = 11.1, p = .05$, accounting for 5% of the variance.

Child male—There was no association of child gender with MAC classifications. Children classified as PAA Type B were more likely to be male compared to children classified as C1-C2, $\chi^2(5) = 14.1, p = .02$, accounting for 5% of the variance.

Maternal depressive symptoms—A multinomial regression predicting attachment classifications from maternal depressive symptoms showed no prediction to MAC classifications. There was a trend for the 6-category PAA method, $\chi^2(5) = 9.8, p = .08$. Depressive symptoms predicted to the C1-C2 and A1-A2 versus B comparisons and marginally for the R and A3-4 versus B comparisons, accounting for a total of 3% of the variance. In all comparisons, mothers of Type B children reported fewer depressive symptoms than mothers of other children.

Maternal sensitivity—A multinomial regression predicting attachment classifications from maternal sensitivity showed no prediction to MAC classifications. The model was significant for the 6-category PAA method, $\chi^2(5) = 14.5, p = .01$. Sensitivity predicted B versus R, C3-4, and A1-A2 classification, accounting for a total of 5% of the variance.

Summary of antecedent correlates—Overall, demographic risk predicted both the MAC and PAA, although in different ways. Only PAA classifications were predicted by self-reported depressive symptoms and maternal sensitivity in the first three years. The multivariate multinomial regression, using the seven predictor variables detailed earlier, was not significant for the MAC. This block was significant for the PAA, $\chi^2(35) = 63.5, p = .002$, accounting for 19% of the variance.

Do the two preschool methods show different associations with school-age outcomes?

Observation of dyadic affective mutuality—There was an association between MAC classification and averaged ratings of observed affective mutuality in grades 1, 3, and 5, $F(3, 256) = 4.28, p < .01$. The effect size r^2 was .05. Children with preschool B or D classifications were later observed to have greater mutuality three to seven years later than

children with preschool C classifications. There was a trend of an association between the PAA classifications and mutuality, $F(5, 256) = 1.952, p < .10, r^2 = .04$. Children who had been classified in the B and C1-C2 groups at 3 years of age had greater observed mutuality than children who had been in the C3-4 group.

Behavior problems—There was no association between either the MAC or the PAA classifications and teacher report of child externalizing symptoms grades 1-5, or between MAC classifications and teacher report of child internalizing symptoms grades 1-5. There was an association between the 6-category PAA classification and teacher report of child internalizing symptoms, $F(5, 265) = 4.35, p < .001, r^2 = .08$. Children whose preschool behavior in the Strange Situation had been classified A3-4 were rated by teachers as more internalizing than children whose behavior had been classified in categories B, C1-C2, and C3-4.

Child-reported depressive symptoms—There was a trend of an association between MAC classification and child report of depressive symptoms grades 5-6, $F(3, 258) = 2.53, p < .10, r^2 = .03$. Children with preschool MAC B classifications later reported *more* depressive symptoms than children who had been classified preschool MAC A or C. There was no association between the PAA classifications and child report of depressive symptoms.

Summary of child outcomes—The two methods showed different patterns of significant associations. On only two outcomes did one method clearly differentiate an atypical insecure group from the secure group: for the PAA, the observation of affective mutuality showed an expected B versus C3-4 difference and the teacher report of child internalizing symptoms showed an expected A3-4 versus B difference. For both methods, the presumably lowest and highest risk groups, specifically MAC B vs. D and PAA B vs. C3-4, were not differentiated for teacher report of externalizing problems, and MAC B versus D and PAA B versus A3-4 and R were not differentiated for child report of depressive symptoms.

Discussion

Are the MAC and PAA different classificatory methods?

One way to compare the MAC and PAA is by comparing four groups for each sample: A1-A2, B, C1-C2, and D (MAC) or Types A3-4, C3-4, and R (PAA). At this four-category level, the two methods agreed at 48.7%. Although this is certainly better than chance, supporting their common grounding in Bowlby and Ainsworth, the two methods differed in 1 out of 3 classifications at the level of secure/insecure, supporting that they are different. The MAC identified many fewer children as Types A1-A2 and C1-C2 as compared to the PAA, and many more as Type B. In addition, the methods did not identify the same children as being in the highest risk categories, even when these categories would have seemed to share some features, as in PAA A3 compulsive-caregiving with MAC D/Controlling-caregiving or MAC D/Controlling punitive with PAA C3 aggressive. This finding also supports that they are different methods.

What are the associations between attachment classifications in infancy and preschool?

There were method differences in preschool distributions of the patterns as compared to infancy. The MAC is based on continuity from infancy and assumes a similar distribution of ABCD classifications. However, there were significantly fewer As, more Cs, and marginally fewer Bs in the preschool MAC ABC-D distributions compared to a meta-analysis involving 306 typically developing children from four studies (van Ijzendoorn, Goldberg,

Kroonenberg, & Frenkel, 1992), and Individual continuity from infancy to preschool was modest (46%). Overall, the MAC distribution reflected high proportions of B, moderate proportions of D/controlling, low proportions of C1-C2, and a near absence of A1-A2.

In contrast, the PAA distribution at 36 months was roughly normal across the six categories with a decrease in the proportion of Type B to 35% and an increase in Type C as compared to infancy. This fits the DMM hypothesis of maturation-based changes in the distributions with, specifically, a hefty increase in Type C and a roughly even distribution among the ABC types (inclusive of Type A3-4 and Type C3-4). This finding was previously reported for American and German children (Fagot & Pears, 1996; Rauh, Ziegenhain, Müller, & Wijnroks, 2000). The match from infancy ABC-D to the preschool PAA (31%) was less than for the preschool MAC, but continuity is not a defining feature of DMM strategies compared to adaptation in the present. Moreover, because DMM theory does not postulate a disorganized category in infancy, the PAA would not be expected to match an infant ABC-D distribution well.

Do family and child predictors show different associations with the two preschool methods?

Demographic predictors—The proportion of MAC secure classifications has been shown to be somewhat lower for lower income families and for those with lower maternal education (NICHD Early Child Care Research Network, 2001), and our findings agree. The PAA was similarly, but somewhat more strongly, related to all of the demographic variables except income in ways that have been shown in other studies. The finding for minority status has been reported previously by Crittenden, Lang, Claussen, and Partridge (2000) who suggested that strategies that employ inhibition of the display of anger may result from parenting strategies intended to keep children safe in a historical context of racism and discrimination. Girls were more often Type C than boys. The latter finding has been explained by DMM theory as an interaction of maturation, culture, and attachment whereby the coercive strategies in the preschool years involve alternately inhibiting and displaying anger, with children using the even numbered Type C substrategies (C2 disarming and C4 feigned helplessness) primarily inhibiting anger (Crittenden, 2000) which girls begin practicing in the preschool years (Portegal & Archer, 2004). As a result of cultural disapproval of outright displays of anger and aggression as girls grow older, some girls who were Type B in infancy reorganize in toddlerhood as anger-inhibiting in a socially reinforced, feminine way, that is, Type C2, disarming (Crittenden, 2000). In this study, the behavior of 22.4% of the girls was classified into the disarming C2 strategy, compared to the behavior of 11.9% of the boys. All other insecure categories were gender-balanced. Currently, the extant evidence is that there are no sex differences in attachment in infancy (van Ijzendoorn, 2000) and a recent meta-analysis failed to find systematic and method-independent gender differences in middle or late childhood attachments (Bakermans-Kranenburg & van Ijzendoorn, 2009). However, the preschool period was not included in this study and the data were based on the ABC-D method. Consequently, sex differences of the kind hypothesized by the DMM and found here require further study.

Maternal depression—Both the ABC-D and DMM models predict that mothers of Type B children would be the least likely to be depressed. In addition, the DMM predicts that mothers of Type R and A3-4 children would be the most likely to be depressed. There was no prediction from maternal depressive symptoms to the MAC ABC-D classifications, but the PAA showed a trend in the differentiation of maternal symptoms of depression associated with all of the insecure types except C3-4 versus the Type B. The mothers of children classified as Types A1-A2 and C1-C2 (significantly) and Types R and A3-4 (marginally) reported higher depressive symptoms than mothers of children in the Type B

classification. Overall, the generalizability of these findings is limited by the small sample sizes in the R and A3-4 groups and sole use of a brief self-report screening measure of depression. Future studies should employ more powerful tools applied to clinical samples.

Maternal sensitivity—Both methods predict that Type B mothers would be the most sensitive. This prediction was not supported for the MAC, although a modest association has been found for the full NICHD SECCYD sample (NICHD Early Child Care Research Network, 2001), which had more power to detect a small effect. The mothers of PAA Type B preschoolers had the highest sensitivity ratings as expected, but the differences were not significantly different from Types A3-4 or C1-C2. The especially unexpected finding is of no difference in observed maternal sensitivity between Type B and Type A3-4. DMM theory predicts a substantial difference, with the expectation that mothers of Type A3-4 children are both insensitive and show false positive affect. It is possible that the sensitivity coding system did not accurately identify maternal false positive affect as insensitive behavior. Recoding of the interactions with the CARE-Index (Crittenden, 1979), which codes brief play interactions with specific attention to both mothers' and children's false positive affect, could clarify the finding. Future validity studies would do well to compare the methods using other theoretically important predictors such as parental attachment representations (van Ijzendoorn, 1995) and secure base provision (Cassidy et al., 2005).

Multivariate model—Interestingly, the multivariate model modestly predicted classifications for the PAA, but not for the MAC. This suggests that classifications in the PAA are more reflective of cumulative risk in an ecological perspective. As risk factors accumulate, the probability of a PAA secure classification decreases, even if any single risk factor is not a particularly strong predictor. This finding is consistent with considerable empirical work on infant attachment (Belsky & Fearon, 2008), and as such provides some support for the validity of the PAA method, even given the relatively low risks associated with this sample overall.

Do the two preschool methods show different associations with school-age outcomes?

Observed affective mutuality in grades 1, 3, and 5—In both methods Type B dyads were expected to be rated highest on observed mutuality and D or R the lowest. MAC Types B and D children had higher ratings of observed mutuality compared to Type C. It is interesting that there were no significant differences between MAC Types B and D on mutuality, as Type D is considered most insecure and at risk. For the PAA there was a trend effect for the children classified as the higher risk Type C3-4 to show less dyadic mutuality with mothers than the lower-risk Type C1-C2 and secure Type B groups. This differentiation within the C groups and between B and C3-4 would be predicted by the DMM. However, both methods were weak in predicting affective mutuality, arguably the outcome construct that should have been most closely related to preschool attachment. Again, it is possible that risk dyads presented false mutuality well in the school years.

Teacher's report of child behavior problems—There were no effects for either method on teacher report of child externalizing problems. There are at least two reasons for the lack of findings. First, associations between preschool insecurity and externalizing problems have been found in high risk and clinical samples for both methods (Chisholm, 1998; Greenberg, Speltz, DeKlyen, & Endriga, 1991), but the present sample was a normative group with relatively few at-risk children. Second, these other studies were examining concurrent associations with preschool attachment, and our analyses were longitudinal. For teacher report of child internalizing problems, there was no effect for the MAC but the effect was significant for the PAA, identifying the very small group of compulsive Type A3-4 children as the most internalizing and significantly differentiating

them from Type B and Types C1-4, as expected. However, the numbers were small and this result requires replication and expansion. Specifically, analyses that would enable us to understand the multiple transactional processes that occur between the preschool attachment and functioning in the school years with peers and teachers are needed.

Child-reported depression in grades 5-6—Only a brief, self-report measure of depressive symptoms for this nonclinical sample was available for this study. Security was expected to be protective against children's report of depression for both methods, although there is no research base that specifically addresses this prediction (DeKlyen & Greenberg, 2008). The MAC had a significant effect; however, it was counter to the hypothesis: Children classified as Type B reported *more* symptoms of depression than children classified as Types A or C. It should be noted that all but three of the 306 children in this sample reported non-clinical levels of depressive symptoms on this brief, 10-item measure. Thus perhaps MAC Type B secure children are just more honest or are more able to access and admit to occasional sad feelings.

Given that PAA Type A children were expected to experience elevated depression, but not to report it and Type C children were not expected to experience depression, the lack of association for the PAA is explainable given the self-report measure used in this study. Were depression to be formally diagnosed by psychiatric procedures in a higher risk sample, perhaps the results might have been different for both the MAC and the PAA.

Conclusions and limitations

This study compares two approaches to attachment classificatory methods for preschool-aged children. Each is associated with a different theoretical perspective. The MAC is associated with the identification of disorganized/disoriented attachment behavior in infancy, and continuity of attachment strategies into adulthood and across generations. There have been a number of meta-analyses that support this general view (Fraley, 2002; Madigan et al., 2006; van Ijzendoorn, Schuengel, & Bakermans-Kranenburg (1999). Others have noted that the many complex factors affect continuity (Sroufe & Jacobvitz, 1989). The MAC approach was built on the infant and 6-year-old methods with mostly normative samples. We have labeled this perspective ABC-D, but it is more a classification methodology than a fully developed theory. The PAA operationalization of the Dynamic-Maturational Model (DMM) of attachment and adaptation has its roots in studies of threatening environments and child maltreatment. The DMM is an evolving, but comprehensive, lifespan developmental theory of attachment and adaptation.

The MAC and PAA yield different results and, as a consequence, generate questions for future research. A major limitation is that the variables and design available for this study had been selected to examine the effects of early child care experience within a relatively normative, US sample of children from birth to early adolescence. Many of the questions being addressed through this dataset, including those in this study, are better suited to samples that include a substantial proportion of at risk cases.

Overall, we did not find associations between the MAC and observed maternal sensitivity or reported maternal depression. These constructs, especially sensitivity, are often validating predictors of measures of attachment (De Wolff & van Ijzendoorn, 1997; van Ijzendoorn et al., 1992), but an important caveat is that our measure did not assess sensitivity when the child's attachment system was likely to be activated. The proportion of MAC Type B children is comparable to meta-analytic results, but other aspects of the distribution, specifically the small number of children classified as Type A, are not. It is possible that some children's false positive affect and compliant behavior may not have been identified by

the MAC coding guidelines as evidence of Type A insecurity, as in the PAA, or that MAC coders did not identify the behavior as meeting criteria for Type D controlling behavior in the version of the MAC that these coders trained on.

Compared to the PAA, the MAC seems to regard attachment as a temporally stable, intra-personal construct whereas the PAA treats it as dynamic and dyadic and, therefore, not open to assessment without information about the attachment figure's behavior and affect as the child is being observed. Careful viewing of the mothers, as required by the PAA, might have revealed discrepancies between mother and child behavior and affect that would affect coding decisions.

As a final illustration of differences between the two methods where similarity was expected, of the 15 children classified as D/controlling-caregiving in the MAC, only one was classified as Type A3, compulsive caregiving, in the PAA. Of the 21 children classified as Type C3, coercive aggressive in the PAA, only 5 were classified as D/controlling punitive on the MAC. If the methods were identifying the same child strategies but applying different labels, as might be wondered simply given the brief descriptors for these subclassifications, there should have been a greater overlap between these similarly labeled constructs.

Both the PAA and MAC classifications were associated with some outcomes in the school years in line with their theories. However, there were missing findings for both methods. Specifically, there were no findings for externalizing behavior, although there were children with elevated externalizing scores in the sample. In the future, measures of externalizing and internalizing should specify which affects (e.g. anger, fear) are internalized and externalized and samples of children should be designed to draw sufficient numbers of children using Type C3 and C4 strategies, that is, those more likely to demonstrate an association at clinical levels. In addition, children classified as Type A3-4 and their mothers would be expected to be depressed more often than other children and mothers, but testing this would require independent diagnosis and not self report.

An important limitation for this report is that although MAC coder reliability was fair, PAA coder reliability was poor. There is no posthoc way to improve poor coder reliability. It is also important to note that the same three coders did the infant, MAC, and PAA codings, although these were done years apart and for over 1000 children. If anything, this cross-training might have resulted in (1) our finding more congruence between the methods than actually exists and (2) a bias toward thinking in 'D' terms that lowered reliability on the third method learned, the PAA.

Finally, these analyses were based on a subsample of participants in the NICHD Study of Early Child Care and Youth Development. Both the MAC and PAA codings were completed over 10 years ago, and it is possible that each method has continued to evolve to the extent that the current comparison is only partially relevant. Our results suggest, however, that future comparison of these methods is warranted so that the field can understand the origins and implications of their differences for the theoretical, empirical and clinical advancement of attachment research.

Clinical applications and directions for future research

It can be difficult to compare similar procedures that reflect underlying differences in theory. Issues as simple as how to label groups crop up. In ABC-D studies, children are categorized as Types A, B, C, or D and are expected to display continuity of attachment from infancy across the lifespan and even across generations. In DMM terminology, children use one of many A, B, or C strategies and are expected to change strategy when

circumstances favor a different solution to the problem of being safe and comfortable and maturation makes more sophisticated solutions possible.

This simple comparison goes beyond the empirical data that we offer to suggest a change of mindset that we think can assist clinicians to reduce the suffering of endangered children and their families. But the most crucial point-- the role of exposure to danger in organizing mental and behavioral processes-- cannot be tested directly in this sample that lacks data regarding danger. To test this crucial hypothesis, we need both a sample that varies widely in (1) exposure to danger and (2) parental protection and comfort and also assessments that measure these constructs. We hope that future research will address these issues.

Nevertheless, our results can guide clinicians to reflect on the meaning of attachment and its function and patterns after infancy, and to question specifically whether insecure attachment is inherently undesirable or whether, on the contrary, it reflects endangered children's efforts to elicit protection and comfort under harsh conditions. These are issues that the field has been urged to address for some time (e.g. Rutter et al., 2009; Thompson & Raikes, 2003). Further, we agree with these theorists that attachment might better be construed as an ongoing developmental and transactional interpersonal process than as a relatively enduring intrapersonal state or bond defined largely in the first year of life. Finding children, especially threatened children, to be sturdy, competent and in active interaction with their context, even in difficult circumstances, suggests the possibility for children and their parents to adapt in ways that would promote survival and enhance adaptation. If this conceptualization is accurate, then treatment need only nudge development in more adaptive directions.

In addition, studies such as this challenge the appropriateness of lumping the majority of troubled children into one disorganized or disordered category and then implementing strong interventions directed at breaking or disrupting such attachments and creating secure attachment. Of course we can teach children to inhibit anger and fear and the troublesome behavior that these feelings motivate and to accept parents' authority and affectionate touch, but do we want to do that? Would doing that generate security? Children using a compulsive Type A strategy have already discovered for themselves that these processes make living with some parents safer. Do clinicians want to encourage that form of adaptation or do we want to help such parents to understand their children better and respond to them more empathically? That is, can we build on what children already know how to do to stay safe? Finally, DMM theory suggests that Types A and C are psychological opposites, each with several variants. If that is accurate, then individuals using different strategies may need different sorts of intervention.

These questions exceed the power of our data to inform treatment, but they suggest evidence-based hypotheses that can be tested in applied clinical studies. Such studies would define the groups of interest not by symptoms, diagnoses, or problem behavior, but rather by children's and parents' self-protective strategies. The treatments offered would first address and attempt to reduce the danger to which family members, both children and their parents, were exposed. Then treatment would be directed to (1) increasing individuals' repertoire of strategies, particularly by accessing the psychological and behavioral processes absent in the existing strategies and (2) restricting the use of specific strategies to those contexts in which they were most adaptive. Further, individuals using A and C strategies would receive different treatments and parents and children would be seen as inextricably tied together such that both must change for there to be beneficial change.

Put another way, DMM theory focuses on (1) the array of ways that humans can act so as to reduce danger and increase comfort and (2) the ultimate connectedness of parents and their

children. In so doing, it respects the strength, competence and flexibility of all humans and suggests the importance of clinicians' sensitivity to individual differences in psychological and behavioral organization and of their differential responsiveness to these organizations.

Appendix

Review of studies using MAC and PAA

Findings derived from studies using the MAC

In 11 studies that used the MAC with middle-class, low-risk populations, children classified as Type B showed more positive affect (Berlin, Cassidy, & Belsky, 1995; NICHD Early Child Care Research Network, 2001) and better emotional regulation (Booth, Rose-Krasnor, McKinnon, & Rubin, 1994; Moss, Rousseau, Parent, St-Lauren & Saintonge, 1998) than children classified as Types A and C. Their mothers were more positive, sensitive, and less authoritarian (Barnett, Kidwell, & Leung, 1998; DeMulder & Radke-Yarrow 1991; NICHD Early Child Care Research Network, 2001; Stevenson-Hinde & Shouldice, 1995) than mothers of insecurely attached children. Interactions between mothers and their preschoolers was smoother and more positive for secure dyads, and D/controlling dyads showed the poorest coordination, enjoyment, and communication of all groups (Moss, Bureau, Cyr, Mongeau, & St. Laurent, 2004). D/controlling children had more behavior problems (Moss et al., 1998) and mothers of Type A and D/controlling children reported low stress whereas mothers of Type C children reported high stress (Moss, et al., 1998; Stevenson-Hinde & Shouldice, 1995). In the full SECCYD sample, continuity for the B and D classifications was at chance levels, and moderately significant for A and C (NICHD Early Child Care Research Network, 2001).

Five studies that applied the MAC to highly stressed samples had somewhat inconsistent findings. In four of the studies, risk was associated with insecurity (Cicchetti & Barnett, 1991; Manassis et al., 1994; Marcovitch et al., 1997), but in all more than a quarter of risk children were classified as secure (Type B) and, in one (Seifer et al., 2004), risk children were primarily secure. In addition, there were few group differences, even as a secure/insecure dichotomy, on behavior problems, histories of deprivation, parenting stress, or maternal depression (Marcovitch et al., 1997). Individual children from risk groups can certainly be secure, but the probability of insecurity is higher in clinical or stressed samples (van Ijzendoorn, Goldberg, Kroonenberg, & Frenkel, 1992). This was clearly the result in one study of clinically depressed mothers (Toth, Rogosch, Manly, & Cicchetti, 2006)

Findings derived from studies using the PAA

The PAA has been used in 10 studies, almost exclusively with samples that included stressed families. Children classified as Type B had the highest developmental quotient (Crittenden et al, 2007), more adaptive behavior, and the best conflict resolution skills (Zach, 2000); their mothers were the most emotionally responsive (Teti & Gelfand, 1997). Type A/C children had the lowest DQ and most troubled behavior whereas Type C children had the most agitated, acting-out behavior in both normative samples (Crittenden et al., 2007; DeVito & Hopkins, 2001; Fagot & Pears, 1996) and at risk samples (Vondra, Shaw, Swearingen, Cohen, & Owens, 1999, 2001) and poorest conflict resolution skills (Zach, 2000). In a group of children adopted from Romanian orphanages, children classified in the PAA typical lower-risk ABC classifications (i.e. A1-A2, B, C1-C2) had more advantaged demographic and history variables (e.g. prior deprivation, socio-economic status); child behavior and development, for example IQ, positive emotions displayed by children towards their mothers, internalizing and externalizing behavior, and indiscriminant friendliness than the higher-risk atypical classifications (i.e. A3-4, A3-4, A/C, Dp and IO; Chisholm, 1998).

In addition, maternal behavior and state (e.g. parenting stress, social support, depression, emotional and verbal responsiveness to children; Head, 1997; Vondra et al., 1999, 2001; Ziegenhain, Müeller, & Rauh, 1996) were associated with atypical PAA classifications.

Other studies also indicated that there were differences between typical and atypical classifications within the Type A and C classifications such that children classified as A1–2 and C1–2 had experienced less danger than those classified as A3–4, C3–4, A/C and IO. Type C (i.e. coercion) was associated with twin status (Moilanen, Kunelius, Tirkkonen, & Crittenden, 2000), agitation, and acting out, the latter two being more prominent in children classified as C3 as opposed to C1–2 (Fagot & Pears, 1996; Hans, Bernstein, & Sims, 2000). Both A3–4 and C3–4 children displayed agitation and hyperactivity whereas only C3 children displayed conduct problems. Compulsive compliance (A4) was associated with strong rejection and harsh punishment (Jacobsen & Miller, 1998; Lippe & Crittenden, 2000). Further, children of depressed mothers were more often classified as A/C, Dp, and IO, and showed worse functioning overall than other children (Teti & Gelfand, 1997). Finally, in the only published comparison of MAC and PAA classifications, there was only 38% agreement between MAC and PAA classifications in a sample of maltreated and adequately reared low income children (Crittenden et al., 2007).

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Figure 1. A Dynamic-Maturational Model of Patterns of Attachment in the Preschool Years

Table 1
15-Month Infant ABC-D by Preschool MAC Strange Situation Classifications

Observed Expected Infant	MAC Classifications				
	A	B	C	D (Controlling, IO)	Total %
A	3 1.2	12 14.0	6 3.5	2 4.2	23 7.8%
B	11 9.4	105 105.3	24 26.50	33 31.8	173 58.8%
C	0 1.7	22 18.9	8 4.7	<i>I</i> 5.7 .022	31 10.5%
D	2 3.6	40 40.8	7 10.2	18 12.3	67 22.8%
Total %	16 5.4%	179 60.9%	45 15.3%	54 18.4%	294

Notes: Anti-type: Infant 'C' and MAC 'D' (Controlling or Insecure-Other) at 36 months.

Table 2
15-Month Infant ABC-D by Preschool PAA Strange Situation Classifications

Observed	Expected	Binomial probability	PAA Classifications						
			A1-2	A3-4	B	C1-2	C3-4	R (AC, IO, Dep)	Total %
A			5 3.4	1 .6	7 8.4	5 6.6	4 3.6	2 1.3	24 8.1%
B			28 24.7	3 4.7	59 60.5	55 48.2	25 26.5	4 9.4 .04	174 58.8%
C			0 .012	0 .8	14 10.8	9 8.6	8 4.7	0 1.7	31 10.5%
D			9 9.5	4 1.8	23 23.3	13 18.6	8 10.2	10 3.6 .004	67 22.6%
Total %			42 14.2%	8 2.7%	103 34.8%	82 27.7%	45 15.2%	16 5.4%	296

Notes: Anti-types: Infant 'B' and PAA 'R'; Infant 'C' and PAA 'A1-2'
Types: Infant 'D' and PAA 'R'

Table 3

MAC by PAA Strange Situation Classifications at 36 Months

Observed Expected Binomial probability			PAA						
MAC			A1-2	A3-4	B	C1-2	C3-4	AC, IO, Dep	Total %
A			12 2.2 .000	0 .4	1 5.6 .024	1 4.5	0 2.5	2 .8	16 5.3%
B			24 24.8	3 4.8	93 64.2 .000	46 52.1	11 28.4 .000	7 9.7	184 60.5%
C			0 6.5 .001	0 1.3	5 16.7 .001	19 13.6	23 7.4 .000	1 2.5	48 15.8%
D/Controlling/IO			5 7.6	5 1.5 .017	7 19.5 .001	20 15.8	13 8.7	6 2.9	56 18.4%
Total %			41 13.5%	8 2.5%	106 34.9%	8 28.3%	47 15.5%	16 5.3%	304

Notes: Four cells were 'types:' PAA 'A1-2' and MAC 'A'; PAA 'A3-4' and MAC 'B'; PAA 'B' and MAC 'C'; PAA 'C3-4' and MAC 'C'; PAA 'A3-4' and MAC 'D'.
Five cells were 'anti-types:' PAA 'A1-2' and MAC 'C'; PAA 'B' and MAC 'A'; 'C' and MAC 'D'; PAA 'C3-4' and MAC 'B'

Table 4
Descriptive Statistics for demographic and maternal predictors and child outcomes of MAC ABC-D Classification

	Classification									
	A		B		C		D			
Predictors	n	M or %	SD	n	M or %	SD	n	M or %	SD	
Demographic Variables										
Income 6-36 m	15	3.5 (2.4)		184	3.7 (2.8)		46	2.9 (1.8)	54	4.2 (3.4)
Maternal ed	16	13.8 (2.5)		184	14.9 (2.2)		48	14.1 (2.3)	56	14.3 (2.3)
Partnered 6-36 m	16	94 %		184	84 %		48	77 %	56	77 %
Child minority	16	06 %		184	10 %		48	17 %	56	16 %
Child male	16	63 %		184	56 %		48	50 %	56	39 %
Mother Variables										
Sensitivity	16	3.1 (.6)		184	3.4 (.5)		47	3.3 (.6)	56	3.2 (.6)
Depression	16	7.7 (5.9)		184	8.7 (7.1)		48	9.1 (5.7)	56	9.6 (6.7)
Child outcomes										
Externalizing	12	47.1 (7.8)		164	50.3 (6.4)		44	50.5 (8.0)	49	50.5 (7.2)
Internalizing	12	54.0 (5.4)		164	49.5 (6.1)		44	49.4 (6.2)	49	49.7 (7.3)
Teacher closeness	12	32.2 (4.6)		164	33.1 (3.5)		44	32.4 (3.8)	49	32.3 (3.8)
Depression	12	.5 (.5)		162	1.4 (1.8)		39	.78 (1.1)	49	1.17 (1.7)
Affective mutuality	11	5.2 (.7)		163	5.3 (.7)		41	4.9 (.9)	45	5.4 (.8)
IQ	12	97.3 (16.8)		158	108.8 (12.7)		38	103.7 (16.0)	47	106.0 (14.8)

Table 5
Descriptive Statistics for demographic and maternal predictors and child outcomes of PAA 6-category classification

	Classification																	
	A1-2			A3-4			B			C1-2			C3-4			R		
	N	M	or % SD	N	M	or % SD	N	M	or % SD	N	M	or % SD	N	M	or % SD	N	M	or %
Predictors																		
	Demographic Variables																	
Income 6-36	40	3.3 (2.3)		8	4.3 (5.3)		106	3.9 (2.9)		85	3.6 (2.9)		44	3.6 (2.5)		16	2.9(2.4)	
Maternal ed	43	14.0 (2.2)		8	13.5 (2.1)		106	15.2 (2.3)		86	14.5 (2.2)		47	14.3 (2.3)		16	13.6(3.2)	
Partnered all	41	79%		8	75%		106	88%		85	81%		47	89%		16	50%	
Child minority	43	19%		8	0%		106	6%		85	13%		47	19%		16	19%	
Child male	41	53%		8	50%		106	64%		85	37%		47	51%		16	50%	
	Mother Variables																	
Sensitivity	41	3.1 (.5)		8	3.3 (.7)		106	3.4 (.5)		85	3.3 (.5)		47	3.12 (.7)		16	3.0 (.8)	
Depression	43	9.8 (7.4)		8	11.6 (7.3)		106	7.5 (6.1)		86	9.9 (7.2)		47	8.5 (5.5)		16	10.2 (8.0)	
Child outcomes																		
Externalizing	38	49.1 (6.8)		8	51.9 (6.0)		94	49.7 (6.6)		75	51.3 (6.7)		43	51.3 (8.3)		13	52.8 (10.2)	
Internalizing	38	51.6 (6.0)		8	57.1 (9.5)		94	49.2 (5.8)		75	48.4 (5.8)		43	49.2 (5.9)		13	52.1 (9.0)	6
Closeness	38	31.8 (3.7)		8	31.1 (3.7)		94	33.2 (3.4)		75	33.3 (3.4)		43	31.7 (3.9)		13	34.4 (4.1)	
Depression	36	1.3 (1.7)		8	2.1 (2.8)		94	1.2 (1.6)		68	1.3 (1.8)		45	1.1 (1.2)		13	.62 (1.1)	
Mutuality	37	5.3 (.5)	8	5.3 (.9)		93	5.3 (.8)	71	5.3 (.8)		71	5.3 (.8)		42	4.9 (1.0)	11	5.1 (.8)	
IQ	36	105.5 (15.6)		8	101.6 (15.8)		90	109.2 (13.7)		68	107.1 (11.8)		42	105.6 (15.8)		13	101.0 (15.0)	