

Running Head: PCIA-II PSYCHOMETRIC PROPERTIES

Psychometric Properties of the  
Parent-Child Interaction Assessment-II  
Richard Holigrocki  
University of Indianapolis  
August 21, 2008

This manuscript is in preparation. Please request the latest version from  
Dr. Holigrocki (rholigrocki@uindy.edu) and until it has been published, cite as:

Holigrocki, R. (2008). *Psychometric properties of the Parent-Child Interaction  
Assessment-II (PCIA-II)*. Manuscript in preparation. University of Indianapolis, IN.

Psychometric Properties of the  
Parent Child Interaction Assessment-II (PCIA-II)

The Parent-Child Interaction Assessment-II (PCIA-II; Holigrocki, Kaminski, & Frieswyk, 1999, 2002) is a structured observation task that presents to parents and children a series of story stems related to a zoo trip. The parent-child dyad creates a story using a standard set of toy people, animals, and blocks. Transcripts and videorecordings of the interactions have been analyzed by clinicians and researchers using both qualitative and quantitative methods. The purpose of this document is to describe the psychometrics of the coding systems employed with the instrument.

*Qualitative Method*

The PCIA-II provides rich qualitative data about the parent, child, and their interaction during play. Qualitative analyses of individual cases have provided the empirical bases of several published articles (e.g., Holigrocki, Kaminski, & Frieswyk, 1999; Holigrocki & Kaminski, 2003; Holigrocki & Raches, 2006; Holigrocki & Hudson Crain, 2006). Researchers employ a structural analytic approach to draw inferences from videotapes and transcripts; and themes are generated and clustered into meaningful sets. Taken together, these case studies illustrate the utility of the PCIA-II as a measure of parent-child functioning and provide support for the validity of the measure through its convergence with rating scale and free response findings.

*Quantitative Method*

PCIA-II codes have been developed for child and parent constructs. The standard protocol for establishing reliability and validity has been to utilize several samples. The samples are used for rater training, establishing interrater reliability with blind raters, and testing hypotheses regarding validity. Depending upon the behavioral code, either intraclass coefficients (ICC), kappa, or percent agreement have been used to assess reliability. Concurrent validity is evidenced through correlations in predicted directions between PCIA-II codes and other measures and by known-groups validity (comparing results obtained from relevant samples).

When planning to code PCIA-II scenarios, note that the fifteen PCIA-II story stems are designed to pull or activate various behaviors in the parents and children. Hence, certain parent or child behaviors can be expected to be more frequent in some scenarios compared with others. When selecting scenarios for raters to code, one should have a rationale for including or excluding scenarios based upon the samples chosen and hypotheses tested. Further, longer time intervals will be necessary if coding infrequently occurring behaviors. Unlike a rating scale measure where reliability is determined in part by item-to-total correlations and split-half correlations, considerable variability is expected from one PCIA-II scenario to another. The issues pertinent to PCIA-II reliability are more similar to assessing the reliability of a TAT coding system than that of a rating scale measure (whereby much score variation is expected between TAT cards). Interrater reliability, instead of other types of reliability, is of primary importance for the PCIA-II; and psychometrics are being measured for the coding system rather than the PCIA-II itself.

The data coded by raters can be video excerpts, transcripts, or both. The typical coding method employed that lends itself to good interrater reliability involves coding videorecordings for the presence or absence of a construct in a set time interval (10 to 30 seconds depending upon the construct). Researchers using the PCIA-II may find that

coding specific events or transactional event sequences are better suited to their purposes than are the interval methods employed thus far. Bakeman and Quera (1995) offer good guidance in this direction.

Some researchers have been applying previously developed coding systems to the PCIA-II. Before doing so researchers should note the similarities and differences of the PCIA-II to the activity that was being assessed by the coding system under consideration. Most importantly, the PCIA-II is a parent and school-age child story stem task, the implication being that the PCIA-II pulls for dyadic imaginative play. Coding systems designed either for assessing parent-infant interaction or story stem activities including only the child, will need considerable adaptation. Current efforts in this direction have involved Burch's (2008) adaptation of the Granot and Mayseless (2001) version of the Attachment Doll Story Completion Task (ADSCT, Bretherton, Ridgeway, & Cassidy, 1990) and Bohr's (2005) PCIA-II adaptation of the Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE; Bronfman, Parsons, & Lyons-Ruth, 2004).

What follows is a summary of the reliability and validity of several behavioral codes. The child variables are presented followed by the parent variables.

#### *Child Codes*

Child aggression (Kaminski, Warren, & Kallstrom-Fuqua, et al., 2006). Child aggression refers to aggressive acts that occur in play with the parent that are directed toward self or other harm. Raters code for the presence or absence of aggression in either a 30-second or 10-second interval, depending upon the study. Interrater reliability is in the excellent range across three separate studies: Raches (2004) reported ICC = .82 overall, with aggression toward self ICC = .68 and aggression toward others ICC = .85; Nance (2008) reported kappa = .75; and Warren (2003) reported 94% interexaminer agreement. In comparisons of the codes obtained from diverse samples, Raches (2004) reported that children with conduct problems engaged in more aggressive acts than children without conduct problems (Cohen's  $d = .41$ ). She also recommended using the PCIA-II with specific scenarios and, limited to these scenarios, significant correlations in the expected directions were shown with the CBCL/6-18 Externalizing scale ( $r = .48, p < .05$ ) and the Affect Tone dimension of the Social Cognition and Object Relations Scale (SCORS-AT; Westen, 1990) ( $r = -.58, p < .05$ ). Nance (2008) found that children of depressed mothers were more aggressive than children of nondepressed mothers ( $d = .70$ ). Warren (2003) reported that children with ADHD displayed more aggression than children without ADHD ( $d = .45$ ).

Child compliance and noncompliance (Holigrocki, et al., 2002). Several methods have been used to code child compliance. In the method employed by Raches (2004) and Au Young and Holigrocki (2004), raters examined transcripts for each incident of a parental suggestion or command. Raters then coded the child's responses to the parent's statements as complying or not complying. Instead of coding PCIA-II transcripts, Burchfield (2008) rated videorecordings for the presence or absence of noncompliance observed during each 10-second interval. Interrater reliability was excellent for this code with child compliance ICC = .92 and noncompliance ICC = .80 (Raches 2004), child compliance ICC = .91 and noncompliance ICC = .99 (Au Young & Holigrocki, 2004); and noncompliance kappa = .80 (Burchfield, 2008). In comparisons of the codes obtained from diverse samples, Raches (2004) reported that children with conduct problems

refused to comply with parent directives more frequently than did children without conduct problems ( $d = 1.04$ ) and compliance was also in the expected direction ( $d = -.82$ ). Compliance was also correlated in the expected direction with CBCL/6-18 externalizing scales and the SCORS-AT (Westen, 1991), suggesting compliance is associated with limited externalizing problems and more benevolent internal representations. A sample of children in Hong Kong were found to show greater compliance and less noncompliance than European-American children,  $d$ s = .92 and -.45, respectively (Au Young & Holigrocki, 2004). Burchfield (2008) reported that children of depressed parents were more noncompliant than children of nondepressed parents ( $d = 1.32$ ).

**Child withdrawal.** Raters have coded for the presence or absence of a child's verbal communication to his or her mother during 10-second intervals (Burchfield, 2008). Interrater reliability was high ( $\kappa = .75$ ) and the mean scores of children of depressed mothers were higher than scores from children of nondepressed mothers across scenarios ( $d = .38$ ).

**Child negative affect/internalizing.** Negative affect involves the child's display or report of internalizing emotions (i.e., sadness, depression, or anxiety). Raters code for the presence or absence of negative affect in 30-second intervals. Interrater reliability was good ( $\kappa = .74$ ) and the mean scores of children of depressed mothers were higher than nondepressed mothers across scenarios ( $d = .75$ ) (Burchfield, 2008).

**Child attachment.** Burch (2008) classified children as secure or insecure based upon a coding scheme adapted from the Granot & Mayseless (2001) version of the Attachment Doll Story Completion Task (ADSCT, Bretherton, Ridgeway, & Cassidy, 1990). Raters classify children's behavior on PCIA-II scenarios into the four major attachment prototypes: secure, avoidant, ambivalent, and disorganized. The PCIA-II videorecordings are rated and classified according to several story dimensions: child's use of emotional expression, child's relationship with the caregiver, depiction of events giving rise to attachment behavior, and narrative structure of child's story. Interrater reliability for the secure versus insecure attachment classifications was good ( $\kappa = .69$ ). A priori validity for the attachment categories was not established; instead, the researcher, blind to the PCIA-II categorization, categorized subjects into secure and insecure groups based upon profiles of rating-scale scores. Although the correlation between the rating-scale attachment classification and PCIA-II classification was low ( $\kappa = .22$ , level of agreement 61%), preliminary support for the PCIA-II secure and insecure classification was provided from two other sources. First, insecure children compared with the secure children engaged in more externalizing ( $d = .64$ ) and internalizing behaviors ( $d = .42$ ). The parents of the insecure children compared with the parents of the secure children were less likely to foster their children's power and independence ( $d = -.70$ ), had parenting practices more similar to identified child abusers ( $d = .46$ ), had high parenting stress ( $d = .47$ ), and were more likely to deny their own childhood difficulties ( $d = .45$ ). Second, a discriminant analysis was performed to assess the contribution of variables to the secure versus insecure categorization. The variable with the largest canonical structure coefficient was the parents not fostering the children's power and independence (total structure coefficient = .48). Other important predictor variables include children's externalizing problems (coefficient = -.44), parents' distress (coefficient = -.35), parents' unhappiness (coefficient = -.32), children's internalizing

problems (coefficient =  $-.30$ ), and parents' denial of their childhood difficulties (coefficient =  $-.30$ ).

#### *Parent Codes*

**Parental attunement:** Several variations of parental attunement measures have been developed. The most recent is the Global Assessment of Parental Attunement (GAPA; Kaminski, Warren, & Austin, et al., 2006) that involves having raters code videorecordings for the presence or absence of attunement or misattunement that occurs across the following five domains: physical relatedness, verbal relatedness, emotional synchrony, attentiveness, and promotion of initiative. Ratings for each of these ten variables occur every 15-seconds. Interrater reliability has been demonstrated across multiple pairs of raters, ranging from kappa =  $.60$  to  $1.0$  (Austin, 2007). The convergent and divergent validity of GAPA was tested by Austin (2007) utilizing a series of self-report and observational measures as well as a variable with no expected correlations (child age). Not all correlations reached significance; however, those that were significant were in the expected direction. For example, physical misattunement was negatively correlated with the PARQ child report of parental warmth ( $r = -.34, p < .05$ ) and positively correlated with the PARQ parent's report of parental aggression/hostility ( $r = .31, p < .05$ ) and observed Parent Physical Nurturance on the PCIA-II ( $r = .37, p < .01$ ). Parents deemed to be at higher risk for continuing a cycle of abuse (as determined by elevations on CTQ and CAPI) scored significantly higher on all misattunement scores than parents deemed to be at less risk (no elevations on CTQ and CAPI). Further, parental emotional misattunement was a stronger predictor of child abuse potential than was self-reported parental empathy.

**Parental disengagement/verbal withdrawal.** Raters have coded for the presence or absence of mother's verbal communication to her child during 10-second intervals (Nance, 2008). Interrater reliability was high (kappa =  $.78$ ) and the mean scores of depressed mothers were higher than nondepressed mothers across all coded scenarios, with the largest differences occurring in the PCIA-II High Rock, Tunnel, Lost Child and Stranger scenarios ( $d = .45, .52, .72$  and  $.65$ , respectively).

**Parents' positive and negative personal comments about the child (PPC and NPC;** Kaminski, Warren, & Kallstrom-Fuqua, et al., 2006). These codes are given for the parent's praise or criticism of the child and the frequency of each is tallied over each scenario. Interexaminer agreement for the PPC and NPC is good with a report of 71% and 86% agreement, respectively (Kaminski, Jones, et al., 2004). Validity of these codes have been demonstrated in two studies. Kaminski, Klinger, and colleagues (2004) coded for PPC and NPC in a study of maternal body dissatisfaction. Mothers with high body dissatisfaction (BD) gave low levels of PPC to their daughters (correlation of BD with PPC =  $-.60, p < .01$ ) but not their sons (correlation of BD with PPC =  $.01, p = NS$ ). Negative personal comments were not significantly related to maternal body dissatisfaction in parent's relationships to boys or girls. In another study, Kaminski, Jones, and colleagues (2004) contrasted the parent-child interaction of boys with ADHD with comorbid conduct problems to parents of boys with ADHD without comorbid conduct problems. Mothers of ADHD+CP boys displayed more NPC toward their sons than did mothers of ADHD boys ( $d = 1.15$ ) but PPC did not differ. The researchers used an aggregate variable of PPC-NPC to calculate Positive Parental Verbal Responsiveness

(PPVR). Mothers of ADHD+CP boys displayed less PPVR toward their sons than did mothers of ADHD boys ( $d = -1.42$ ).

Parental positive and negative affective expression (PA and NA; Kaminski, Warren, & Kallstrom-Fuqua, et al., 2006). These codes are given when a parent verbally expresses an affect state that is positive (e.g., happy, glad, excited, etc.) or negative (e.g., angry, worried, anxious, jealous, etc.). The frequency of affect expression is tallied separately for positive or negative affect for each scenario. Kaminski, Klinger, and colleagues (2004) in a study of maternal body dissatisfaction coded for PA and NA. Mothers with high body dissatisfaction expressed low levels of PA and NA to their daughters (correlation of BD with PA =  $-.69, p < .01$ ; BD with NA =  $-.47, p < .01$ ) but not their sons (correlation of BD with PA =  $-.09, p = NS$ ; BD with NA =  $.26, p = NS$ ).

Negative affect, parent control and disruption of play (DP, PC, NA; Holigrocki & Louria, 2005). Negative affect is coded for any 10" interval when a parent displays anger (e.g., shouting, banging table), anxiety (e.g., rapid speech, fidgety behavior), or sadness (e.g., flat affect, tearful). Parent control is coded for any 10" interval when a parent engages in any of the following behaviors: setting limits, punishing, frightening, aggressing, criticizing, or commanding. Disruption of play is measured by the frequency of intervals with the co-occurrence of NA and PC. Intraclass coefficients averaged across two scenarios were in the excellent range ICC = .88. In a community sample, NA, PC, and DP were positively correlated with the parental depression, parental anxiety, parenting stress, and children's externalizing problems. Correlations with child internalizing problems were not significant (Holigrocki & Louria, 2005).

#### *Summary*

The interrater reliability of PCIA-II codes are in the good to excellent range when judged by the kappa and intraclass correlation standards for interexaminer agreement. Cicchetti's (1994) guidelines consider the clinical significance of reliability coefficients between .60 and .74 as good and between .75 and 1.00 as excellent. The PCIA-II codes have demonstrated concurrent validity, correlating in the expected direction with other measures. The codes have also demonstrated known-groups validity, distinguishing between nonclinical groups and relevant samples of children with conduct problems, children with ADHD, children of depressed parents, depressed parents, and parents at risk of child abuse.

*References*

- Austin, A. (2007). *Parental empathy and attunement as related to the intergenerational transmission of child abuse*. Unpublished doctoral dissertation, University of North Texas, Texas.
- Au Young, D. & Holigrocki, R. J. (2004, July). *Observations of Chinese and American parent-child interaction*. Poster presented at the American Psychological Association Annual Convention, Honolulu, HI.
- Bakeman, R. & Quera, V. (1995). *Analyzing interaction*. Boston: Cambridge University Press.
- Bohr, Y. (2005). Infant Mental Health Programs: Experimenting with innovative models. *Infant Mental Health Journal*, 26(5), 407-422
- Bretherton, I., Ridgeway, D., & Cassidy, J. (1990b). Assessing the internal working models of the attachment relationship: An attachment story completion task for 3 year-olds. In M.T. Greenberg, D. Cicchetti, & E.M. Cummings (Eds.), *Attachment in the preschool years: Theory, research, and intervention* (pp. 273-308). Chicago: University of Chicago Press.
- Bronfman, E., Parsons, E., & Lyons-Ruth, K. (2004). *Atypical Maternal Behavior Instrument for Assessment and Classification (AMBIANCE): Manual for coding disrupted affective communication* (2<sup>nd</sup> ed.). Unpublished manual, Harvard University Medical School.
- Burch, S. (2008). *Assessing attachment in mother-child dyads using the Parent-Child Interaction Assessment-II*. Unpublished doctoral dissertation, University of Indianapolis, Indiana.
- Burchfield, J. (2008). *Direct Observation of School Age Children with Depressed and Nondepressed Mothers*. Unpublished doctoral dissertation, University of Indianapolis, Indiana
- Cicchetti, D. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*, 6(4), 284-290.
- Granot, D., & Mayseless, O. (2001). Attachment security and adjustment to school in middle childhood. *International Journal of Behavioral Development*, 25(6), 530-541.
- Holigrocki, R. J., Frieswyk, S. H, Fantz, C. M., Kaminski, P. L., Nance, D., Burchfield, J., Burch, S., Settles, L. Raches, C. Taylor, J. (2002). *Parent-Child Interaction Transcript Coding System*. Unpublished manuscript, University of Indianapolis. Last five co-authors listed alphabetically.
- Holigrocki, R. J. & Hudson-Crain, R. (2004). Victim-victimizer relational dynamics as maintained by representational, defensive, and neurobiological functioning. *Bulletin of the Menninger Clinic*, 68(3), 197-212.
- Holigrocki, R. J., & Kaminski, P. L. (2002). A structural and microanalytic exploration of parent-child relational psychopathology. *Constructivism in the Human Sciences*, 7, 111-123.
- Holigrocki, R. J, Kaminski, P. L., & Frieswyk, S. H. (1999). Introduction to the Parent-Child Interaction Assessment. *Bulletin of the Menninger Clinic*, 63(3), 413-428. [
- Holigrocki, R. J., Kaminski, P. L. & Frieswyk S. H. (2002a). *PCIA-II: Parent-Child Interaction Assessment Version II*. Unpublished manuscript, University of Indianapolis. (Update of PCIA Tech. Rep. No. 99-1046. Topeka, KS: Child and Family Center, The Menninger Clinic.)

- Holigrocki, R. J. & Louria, S. (2005). *Parent-based affective-behavioral relational dynamics*. Poster presented at the American Psychological Association Annual Convention, Washington, DC.
- Holigrocki, R. J. & Raches, C. M. (2006). Sequelae of child sexual abuse: A child and parent assessment. *Journal of Personality Assessment*, 86(2), 131-141.
- Kaminski, P. L., Jones, H., & Harshaw, A.A. (2004, July). *Parental warmth's relationship to conduct problems in ADHD boys*. Poster presented at the American Psychological Association Annual Convention, Honolulu, HI.
- Kaminski, P. L., Klinger, K., & Oxta, T. (2004, November). *Maternal body dissatisfaction and its relationship to parenting behavior*. Poster presented at the Texas Psychological Association Annual Convention, San Antonio, TX.
- Kaminski, P. L., Warren, M. A., Austin, A. A., Jooste, J., Casto, L., Holigrocki, R. J., & Frieswyk, S. H. (2006). Global Assessment of Parental Attunement (GAPA): A multi-dimensional coding system for use with caregiver-child interactions, Version 2.1. Available from the first author: Department of Psychology, P. O. Box 311280, University of North Texas, Denton, TX 76203-1280 or [patricia.kaminski@unt.edu](mailto:patricia.kaminski@unt.edu).
- Kaminski, P. L., Warren, M. A., Kallstrom-Fuqua, A. C., Durrant, S. L., Tassin, C. L., Holigrocki, R. J., Tureau, C. S., Morse, M. G. K., Dobbs, K. L., Barton, K. A., Collins, M. K., Jacobs, T. M., Anton, K. M., & Casto, L. N. (2006). Observational Coding System for Parent-Child Interactions, Version 2.8. Available from the first author: Department of Psychology, P. O. Box 311280, University of North Texas, Denton, TX 76203-1280 or [patricia.kaminski@unt.edu](mailto:patricia.kaminski@unt.edu).
- Nance, D. (2008). *Depressed and nondepressed mothers' intrusive and disengaged interactions with their school-aged children during a direct observation play task*. Unpublished doctoral dissertation, University of Indianapolis, Indiana.
- Raches, C. M. (2004). *Children with disruptive behavior disorders: Representations and behaviors with parents*. Unpublished doctoral dissertation, University of Indianapolis, Indiana.
- Warren, S. (2003). *Parent-child Interactions with ADHD children: Parental empathy as a predictor of child adjustment*. Unpublished doctoral dissertation, University of North Texas, Texas.
- Westen, D. (1990). *Social Cognition and Object Relations Scale (SCORS): Manual for coding TAT data*. University of Michigan.

*Appendix*  
*Exploratory Codes*

These following codes await further application and tests of their efficacy.

Parent physical nurturance (PPN; Kaminski, Warren, & Kallstrom-Fuqua, et al., 2006). This code assesses the extent to which the parent offers or demonstrates physical affection for the child or the child's toy figure. The frequency of physical nurturance is tallied over each scenario.

Parental role-reversal (PRR; Kaminski, Warren, & Kallstrom-Fuqua, et al., 2006). This code assesses the extent to which the parent emphasizes his or her own needs over the child's needs. Examples of this involve the parent's self-focus, dependence on the child, and reliance on the child for companionship. The frequency of parental role reversal is tallied over each scenario.

Physical control/punishment (PCP; Kaminski, Warren, & Kallstrom-Fuqua, et al., 2006). This code assesses the use or threat of physical punishment as well as the use of physical contact to obtain compliance from the child. The frequency of physical control and punishment is tallied separately for each scenario.

Interpersonal danger (ID; Kaminski, Warren, & Kallstrom-Fuqua, et al., 2006). This code is used to assess the frequency by which parents communicate that someone or something is dangerous or unsafe. The frequency of interpersonal danger is tallied over each scenario.

Parental inconsistency (PI; Kaminski, Warren, & Kallstrom-Fuqua, et al., 2006). This code assesses for the lack of parental consistency and is suggestive of poor limit setting skills. The frequency of parental inconsistency is tallied for each scenario.