



The reliability and validity of the Infant Behavior Questionnaire-Revised

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ABSTRACT

The reliability and validity of the Infant Behavior Questionnaire-Revised was examined in a sample of 6-month-old infants and their parents. One hundred and fifteen mothers and 79 fathers completed the IBQ-R and a measure of depression and 98 infants participated in a laboratory assessment of temperament. Internal consistency reliability was adequate for all 14 IBQ-R subscales for both mothers and fathers and inter-rater reliability of mother and father reports was demonstrated for 11 of 14 subscales. Convergent validity was established between observed fear and mother reported fear and father reported approach. Parent depression and infant gender were examined as moderators of the concordance between parent reported and observed temperament. As predicted, concordance was higher when parents reported low versus high symptoms of depression. Infant gender did not alter concordance.

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Since Thomas, Chess, and Birch's (1968) seminal work on infant temperament, interest in the measurement of temperament has increased steadily. Evidence that infant temperament predicts parental well-being and parenting behavior (Crockenberg & Leerkes, 2003; Paulussen-Hoogbeem, Stams, Hermanns, & Peetsma, 2007) as well as subsequent child adjustment (Calkins & Degnan, 2006; Rothbart & Bates, 1998) underscores the importance of measuring temperament effectively. Infant temperament is frequently studied using parent reports, yet the validity and reliability of parent reports has been a topic of much debate in the infancy literature (Rothbart & Bates). Many have raised concerns that parents' reports can be biased (Forman et al., 2003; Vaughn, Bradley, Joffe, Seifer, & Barglow, 1987), whereas others have argued that parents' reports are comprised of objective components (child's actual behaviors) more than subjective components (parents' perceptions and biases; Bates, 1980). In this study, we examine the reliability and validity of the Infant Behavior Questionnaire-Revised (IBQ-R; Gartstein & Rothbart, 2003) in a sample of 6-month-old infants and their parents. Specifically, we investigate internal consistency reliability for mother and father reports, inter-rater reliability between mother and father reports, and convergent validity of the IBQ-R with observed indices of temperament. Finally, we investigate the possibility that parental depression and infant gender moderate the convergence of parent reports and observed indices of temperament.

The Infant Behavior Questionnaire (IBQ) was originally developed in 1981 by Mary Rothbart as a parent-report measure of infant temperament. Recently, Gartstein and Rothbart (2003) revised the measure to reflect findings from contemporary research pertaining to infant temperament. Rather than capturing a broad infant trait such as difficulty, the IBQ-R measures specific dimensions of temperament. The IBQ-R is composed of 14 subscales including approach, vocal reactivity, high pleasure, smile and laughter, activity level, perceptual sensitivity, sadness, distress to limitations, fear, falling reactivity, low pleasure, cuddliness, duration of orienting, and soothability. Parents are asked to report on specific infant behaviors during

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specific events in the last two weeks (e.g. when introduced to an unfamiliar adult, how often did the baby cling to a parent), using a 7-point Likert scale with response options that range from never (1) to always (7), as well as does not apply if the event did not occur within the time span of interest. The IBQ-R differs from the original IBQ in that it includes eight new subscales: approach, vocal reactivity, high pleasure, perceptual sensitivity, sadness, falling reactivity, low pleasure, and cuddliness. Additionally, the original IBQ subscales were refined in light of recent research on temperament. For example, advances made in the measurement of temperament in childhood (Rothbart, Ahadi, Hershey, & Fisher, 2001) informed the revision of the original IBQ.

1. Reliability of the IBQ-R

Internal reliability and inter-rater reliability of the IBQ-R have been previously investigated by Gartstein and Rothbart (2003). Although internal reliability was at acceptable levels for all 14 IBQ-R subscales ranging from .70 to .90 for parents whose children were between the ages of 3 and 9 months, these values were not reported separately for mothers and fathers. Thus, it is important to demonstrate the scale has similar properties for both mothers and fathers given each are frequently asked to rate their infant's temperament. Because of the small sample of secondary caregivers in Gartstein and Rothbart's study ($n = 26$), inter-rater reliability for many of the IBQ-R subscales was relatively low with only six subscales having significant correlations between mother and father reports. Further, their sample of secondary caregivers included both fathers (58%) and other unspecified secondary caregivers. Assuming other secondary caregivers observe children in different contexts than parents (e.g., in childcare settings with multiple adults and children), we anticipate that inter-rater reliability will be higher when both respondents are parents.

2. Validity of the IBQ-R

Although convergent validity of the IBQ-R and observed indices of temperament has not yet been examined, Gartstein and Rothbart (2003) investigated discriminant validity of the IBQ-R by considering correlations between IBQ-R subscales and found some evidence for the independence of each. Convergent validity of prior versions of the IBQ (Rothbart, 1981) with observed indices of temperament has been demonstrated; however associations have been relatively modest (Forman et al., 2003). Further, parent and other child characteristics have been found to alter the concordance between those variables as discussed below (Forman et al., 2003; Gill & Link, 2000; Leerkes & Crockenberg, 2003).

3. Parent reports of temperament and parent characteristics

Parent reports of infant temperament may be influenced by parent characteristics, particularly in high risk samples. Prior research has demonstrated that in normative samples, observer and father ratings of temperament explain more variance in maternal reports of temperament than maternal characteristics (Bates & Bayles, 1984), suggesting maternal reports are a valid measure of temperament. However, in high-risk samples, maternal characteristics have been found to be more predictive of maternal reports of temperament than observed infant behavior (Sameroff, Seifer, & Elias, 1982) suggesting that some mothers may be less accurate in their reports of temperament than other mothers. Consistent with this view, concordance between maternal reports and observed indices of temperament have been found to be higher when mothers report less stress and hostility and when they have daughters (Gill & Link, 2000), when they report having their emotional needs met in childhood (Leerkes & Crockenberg, 2003), and when they exhibit low depressive symptoms (Forman et al., 2003; Leerkes & Crockenberg). In this study, we expand upon prior research by examining moderating effects of parent depression and infant gender on the concordance between both maternal and *paternal* reports of temperament and observed indices of temperament.

Previous research has demonstrated that depressed mothers have more difficulty distinguishing between their infants' cries and tend to rate their infants as more difficult than less depressed women (Donovan, Leavitt, & Walsh, 1998; Mebert, 1991; Schuetze & Zeskind, 2001). Similar studies have found that fathers who were more depressed tended to rate their infants as fussier and more difficult (Atella, DiPietro, Smith, & St. James-Roberts, 2003; Dave, Nazareth, Sherr, & Senior, 2005). These findings are consistent with the view that depressed parents may misinterpret infant signals because of a preoccupation with their own negative feelings and because of the pattern of attributions that characterize depression. Depressed parents may also ignore infant distress if it arouses feelings of anxiety and hopelessness. Both processes may undermine the accuracy of parents' reports of temperament.

Gender biases held by parents may also influence their reports of infant temperament. Mothers have been found to rate their sons higher on frustration than daughters even when there is no difference in observed measures of emotionality (Diener & Bradshaw, 2002; Polak, Henderson, & Fox, 2002), a finding which is consistent with the view that children's gender influences parents' perceptions of temperament. Specifically, parents may over-rate anger in their sons and under-rate anger in their daughters given our society's view that men are more likely to express anger than women (Plant, Hyde, Keitner, & Devine, 2000). Providing support for this view, Gill and Link (2000) found that concordance between maternal reports and observed indices of frustration was higher for girls than boys. Likewise, parents may underrate fear in boys given evidence that it is less socially acceptable for boys to express fear than girls (Brody & Carter, 1982). Finally, given evidence that fathers are more likely to engage their children in a gender-typed manner (Antill, 1987; Siegal, 1987), and that boys who stray from

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