Can Children Provide Coherent, Stable, and Valid Self-Reports on the Big Five Dimensions? A Longitudinal Study From Ages 5 to 7

Jeffrey R. Measelle
University of Oregon

Oliver P. John
University of California, Berkeley

Jennifer C. Ablow
University of Oregon

Philip A. Cowan and Carolyn P. Cowan
University of California, Berkeley

Research on early childhood personality has been scarce. Self-reports of Big Five personality traits were measured longitudinally with the Berkeley Puppet Interview when children were 5, 6, and 7 years of age. For comparative purposes, Big Five self-reports were collected in a sample of college students. The children's self-reports showed levels of consistency and differentiation that approached those of the college age sample. Children's personality self-reports demonstrated significant correlations across the 1- and 2-year longitudinal intervals. Substantial and increasing convergence was found between children's self-reports of Extraversion, Agreeableness, and Conscientiousness and conceptually relevant behavior ratings provided by mothers, fathers, and teachers. Children's self-reports of Neuroticism were unrelated to adults' reports but did predict sadness and anxious behavior observed in the laboratory. The results provide the beginnings of an account of how the Big Five dimensions begin to be salient and emerge as coherent, stable, and valid self-perceptions in childhood.

Keywords: children, Big Five, self-perception, personality development

Although self-reports of personality traits are widely used to study personality in adulthood, surprisingly little is known about how self-perceptions of personality develop. At what age do we come to hold views of our personality traits that are internally consistent, differentiated, and stable across time and that converge with independent observations of our behavior? To begin to fill in these gaps, the current research focuses on children from ages 5 to 7 years. This age range is an important period of development during which major cognitive and ecological changes have been linked to changes in self-representational capacities. Three central questions guided this work. First, do young children show a coherent sense of their own personality, and if so, when? Second, do young children's self-perceptions of their personality show any stability across time? Finally, do self-perceptions of personality in young children show some degree of external validity so that we might conclude that they could have behavioral implications for their lives?

Structural Issues: Big Five Dimensions in Adolescence and Childhood

Agreement among researchers that personality structure can be defined by a circumscribed set of higher order traits has stimulated

renewed interest in the development of personality during childhood and adolescence (Caspi, 2000; Rothbart, Ahadi, & Evans, 2000; Shiner & Caspi, 2003). Recent work suggests that the personality dimensions known in adulthood as the *Big Five* can be measured reliably and validly in adult reports of children's personality (Caspi & Roberts, 2001; Goldberg, 2001; John, Caspi, Robins, Moffitt, & Stouthamer-Loeber, 1994; Kohnstamm, Halverson, Mervielde & Havill, 1998; Shiner, 1998), in peers' nominations (Mervielde & De Fruyt, 2000), as well as in the self-reports of adolescents and older children (Shiner & Caspi, 2003). In addition to aiding in the construction of a taxonomic system that can be used to define the major dimensions of personality across the life course, the application of one integrative descriptive model to the study of children may help guide research about the emergence and behavioral significance of early personality differences.

Numerous systems have been proposed to organize the myriad of adult personality traits (for a review, see John, 1990). However, increasing evidence indicates that many models of personality share a number of core higher order traits that can account for the covariation among numerous lower order (e.g., more specific) traits (e.g., Goldberg, 1992, 2001; Costa & McCrae, 1994). In particular, the five-factor model, or Big Five structure, of adult personality has emerged as a robust model that provides a parsimonious organization of adult personality (John & Srivastava, 1999; McCrae & Costa, 1999; Roberts & DelVecchio, 2000; Saucier & Goldberg, 1998).

An increasing number of studies that have used parent and teacher reports suggest that the Big Five may also capture individual differences in the behavioral tendencies of children and adolescents (e.g., Digman & Shmelyov, 1996; Graziano & Ward, 1992; Halverson, Kohnstamm, & Martin, 1994; John et al., 1994;

Shiner, 2000; Shiner, Masten, & Tellegen, 2002; Victor, 1994), although questions remain about the exact definition, independence, and stability of some of the five factors during the first 2 decades of life. To illustrate the meaning of the Big Five dimensions both in adulthood and in early adolescence, Table 1 lists prototypical Big Five items from the California Adult Q-set (McCrae, Costa, & Busch, 1986) and from the parent-rated California Child Q-Set (Block & Block, 1980; Caspi et al., 1992). Table 1 also presents examples of self-report Big Five items from the Berkeley Puppet Interview (BPI; Ablow & Measelle, 1993), which were used in the present study. Extraversion (E) and Agreeableness (A) summarize the two major dimensions of interpersonal traits; Conscientiousness (C) primarily describes task and goal-directed behavior and socially prescribed impulse control; Neuroticism (N) contrasts a broad range of negative affects, including anxiety, sadness, irritability, and nervous tension with emotional stability; and Openness (O) describes the breadth, depth, and complexity of an individual's mental and experiential life (John et al., 1994).

Coherence and Differentiation of Early Personality

In her recent reviews of the literature on childhood personality, Shiner (1998; Shiner & Caspi, 2003) concluded that across the studies available so far, the Big Five dimensions of Extraversion, Agreeableness, Conscientiousness, and Neuroticism have been the most robust factors when parents and teachers are asked to report on children's personality traits. The available evidence for the fifth factor, interpreted as Openness by Costa and McCrae (1994) and as Intellect by Goldberg (1990, 1992), has not been as strong as for the other Big Five dimensions, perhaps because it has been defined somewhat differently by Big Five researchers (see De Raad, 1994). Support for the fifth factor may indeed be less robust in some child samples (Shiner & Caspi, 2003), but Goldberg's (2001) reanalysis of Digman's (1990) child-personality data provided strong support for the Big Five model in teacher ratings of child personality. Note, however, that in Digman's data, the fifth factor was defined by traits related to intellectual characteristics, including cognitive ability, imagination, and creativity, in contrast to Costa and McCrae's Openness facets of ideas, fantasy, and to a lesser extent, esthetics. In the present research, we adopted the more intellectual definition of the Openness factor.

Stability of Early Personality

Although the number of studies addressing the psychometric properties of the Big Five in children is still limited, the number of

Table 1
Examples of Big Five Definitions in California Adult Q-Set Items, in Parent-Rated California Child Q-Set Items, and From the Present Study of Child Self-Reported BPI Items

Big Five factor	California Adult Q-Set items	Parent-rated California Child Q-Set items	Child BPI self-report
		Factor definers in	
Extraversion	Talkative	Is shy; has a hard time getting to know people (reversed)	I'm not shy when I meet new people
	Gregarious	Is energetic and full of life	It's easy for me to make new friends
	Behaves assertively	Is fast-paced; moves and reacts to things quickly	If kids are playing, I ask if I can play too
Agreeableness	Warm, compassionate	Is warm and responds with kindness to other people	I don't get mad at kids at school
	Behaves in a giving way	Is helpful and cooperative with others	If someone is mean to me, I don't hit them
	Sympathetic, compassionate	Teases and picks on other kids (reversed)	I don't pick on other kids
Conscientiousness	Able to delay gratification	Is determined in what he does; does not give up easily	When I can't figure something out, I don't give up
	Has a high aspiration level	Has high standards; needs to do well in the things he does	I think it's important to do well in school
	Dependable, responsible	Can be trusted; is reliable and dependable	I try my best in school
Neuroticism	Fluctuating moods	Worries about things for a long time	I'm sad a lot
	Self-defeating	Feels unworthy; has a low opinion of self	I don't like myself
	Basically anxious	Gets nervous if not sure what's going to happen or when not clear what to do	I get nervous when my teacher calls on me
Openness	Values intellectual matters	Is curious and exploring; likes to learn and experience new things	I learn things well
	Has unusual thought processes	Is creative in the way he looks at things; the way he thinks, works, or plays is very creative	I have good ideas
	Is introspective	Is a very smart kid	I'm a smart kid

Note. California Adult Q-Set item examples are abbreviated and paraphrased from McCrae and John's (1992) study. Parent-rated California Child Q-Set item examples are abbreviated and paraphrased from John, Caspi, Robins, Moffitt, and Stouthamer-Loeber's (1994) study. Complete Berkeley Puppet Interview (BPI) items and information about administration and coding can be found at http://darkwing.uoregon.edu/~dslab.

longitudinal studies that have investigated the temporal stability or real-world implications of children's Big Five personality traits is even smaller. In their important meta-analysis of the literature on the stability of personality across the life span, Roberts and DelVecchio (2000) found approximately 26 studies that provided information about the stability of temperament and 33 published studies that reported stability coefficients on at least one construct that could be said to reflect a Big Five dimension in middle childhood. Note that all of these studies relied on reports by teachers, parents, or other adults. Six of the studies examined in Roberts and DelVecchio's meta-analysis used children's self-report to estimate the stability of some personality traits. However, the age range of all of these studies was 6 to 12 years, with few children in the younger range, and mean ages typically approached 10 years of age. We highlight these findings from the excellent Roberts and DelVecchio review, as they illustrate how little is known about personality stability in young children, especially as reported by children themselves.

By combining stability coefficients for personality traits and temperament dimensions and by relying on data from adult informants, Roberts and DelVecchio (2000) were able to estimate temporal stability correlations of .52 for children ages 3 to 6 and .45 for children ages 6 to 12; these were estimated population correlations corrected for unreliability. Thus, in contrast to a purely contextual perspective, which views childhood personality primarily as a function of transient situational influences (Lewis, 2001), the continuity estimates reported by Roberts and DelVecchio are suggestive of some degree of personality stability even during childhood. However, even though corrected for unreliability, these stability estimates are below those for adults (e.g., .70 during midlife; Roberts & DelVecchio, 2000), suggesting that during childhood, personality traits are only beginning to stabilize. Nonetheless, just how much personality stability should be considered normative during childhood remains to be determined.

Relevance of Early Personality

Evidence that children's personality plays an important role in their development and adaptation is promising but rather limited. Some emerging traits, such as emotionality and regulation (Eisenberg, Fabes, Guthrie, & Reiser, 2000), as well as some of the Big Five dimensions (John et al., 1994; Robins, Fraley, Robert, & Trzenniewski, 2001; Shiner, 2000; Shiner et al., 2002), have been shown to predict concurrent and long-term adjustment criteria. For example, parent-reported Extraversion (i.e., outgoing, dominant, and approach-oriented) has been linked to social competence in 10-year-old children and again in early adulthood (Shiner, 2000). Adult ratings of Agreeableness traits (i.e., the tendency to act cooperatively, congenially, and lovingly) have been linked to prosocial classroom behaviors, popularity, and low levels of antisocial conduct (Eisenberg & Fabes, 1998; Graziano, Jensen-Campbell, & Finch, 1997; John et al., 1994; Shiner, 2000). Adult-rated Conscientiousness (i.e., organization and attentional focus) has been linked to school achievement in older children and adolescents (Digman, 1990; John et al., 1994). Mother-rated Neuroticism has been linked to internalizing of problems such as sadness, mood instability, and anxiety among adolescent boys (Robins et al., 2001). Finally, mother-reported imagination and curiosity, both features of Openness, have been linked to labora-

tory observations of enriched play styles in children as young as 4 years old (Taylor, Cartwright, & Carlson, 1993).

In summary, the emerging developmental science of personality has provided some insights into the dimensionality, stability, and validity of Big Five-related dimensions of early personality. At present, however, most of this work on personality development has been conducted with older children and adolescents, and the few studies on children of younger ages have relied primarily on adults as informants to describe children's personality (see Shiner & Caspi, 2003). Research relying solely on child personality ratings by adults has inherent limitations. For example, it has been suggested that the Big Five structures reported in the literature may reflect adults' own personalities (Goldsmith, Losynoya, Bradshaw, & Campos, 1994) or their preconceptions of prototypic childhood characteristics (Miller & Davis, 1992). With few exceptions (Eder, 1990; see Shiner & Caspi, 2003), surprisingly little research has investigated children's perceptions of their own personality characteristics.

One explanation for this gap is the absence of developmentally appropriate methods or approaches to assess children's early views of their own personality traits, particularly for children younger than 8 years of age for whom paper-and-pencil methods tend to be developmentally inappropriate (Byrne, 1996). Consequently, fundamental questions remain about the age at which children come to hold internally consistent and meaningfully distinct conceptions about their personality traits, the stability of these conceptions, and their behavioral relevance and developmental implications.

The Present Research: Young Children's Personality Self-Perceptions on the Big Five Studied Longitudinally

Children's views of their own personality traits should be a topic of study. As children turn 4 years of age and move into the early and then middle years of childhood, there is a marked shift in children's capacity to process and organize complex information in a coherent and useful manner (Cowan, 1978; Harter, 1998; Measelle, Ablow, Cowan, & Cowan, 1998; Sameroff & Haith, 1996). With concrete operations, children begin to conserve quantity, weight, and number despite physical transformations in the appearance of objects. In general, this period coincides with the formation of more elaborated self-representations (Eder & Mangelsdorf, 1997; Harter, 1998). Practically speaking, these cognitive gains enable children to engage in less all-or-none thinking and to see both good and bad characteristics in themselves. In addition, the added capacity to evaluate relative differences leads children to engage in more comparative evaluations of themselves vis-à-vis their peers.

Further, this period of development is marked by a major ecological change for children, namely the transition from home to school. With this transition comes an expansion of children's experiences from ones defined primarily by unstructured interaction within the family (Hartup & van Lieshout, 1995) to those that now emphasize structured interactions with peers and teachers, social comportment, task mastery, and academic achievement (see Cowan, Cowan, Ablow, Kahen-Johnson, & Measelle, 2005). Accordingly, we expect that during this crucial developmental period, internally consistent, stable, and accurate self-representations will begin to emerge.

Obtaining personality data directly from children is also important because the developmental literature demonstrates that adult reports have shown weak convergence (e.g., interjudge agreement among adult informants) for childhood characteristics that involve underlying mood states and affectivity (Achenbach, McConaughy, & Howell, 1987; Hinshaw, Han, Erhardt, & Huber, 1992). Given evidence that young children may well be the best informants about their internal states as well as about behaviors that are expressed inconsistently in different contexts (Ablow et al., 1999; Kraemer et al., 2003), the inclusion of personality self-reports by young children will likely provide unique explanatory and predictive power.

Obtaining Self-Reports From Young Children

The task of eliciting reliable and valid self-reports from young children is complicated by a number of factors, including their limited cognitive abilities, inconsistent levels of engagement with interview or self-report methods, and the effects of response and motivational biases that tend to skew children's reports toward self-characterizations that are often quite positive (Byrne, 1996). Until fairly recently, it was commonly thought that children younger than 8 years of age could not provide psychometrically sound self-reports (see Harter, 1998).

The pioneering work of Eder (1990) provides the earliest and most persuasive evidence that young children can provide reliable self-reports in some trait domains. It was Eder's use of puppets to make contrasting self-related statements that directly influenced the development of the BPI, the instrument used in the present research. In her cross-sectional study of children aged either 3 years, 6 months; 5 years, 6 months; or 7 years, 6 months, Eder measured young children's self-concepts on 10 specific trait scales adapted from Tellegen's (1982) Differential Personality Questionnaire (Achievement, Aggression, Alienation, Harm-Avoidance, Control, Social Closeness, Social Potency, Stress Reaction, Traditionalism, Well-Being). Eder found moderate internal consistency (mean $\alpha = .51$; range $= .30-.69$), and modest 1-month test–retest reliability (mean $r = .39$, range $= -.09-+.72$) that tended to be higher for the older age group. Factor analysis of children's scores on the 10 trait scales produced somewhat different factors, depending on the age group: 3 years, 6 months (Self-Control, General Self-Acceptance, Rejection); 5 years, 6 months (Self-Control, Self-Acceptance via Achievement, Self-Acceptance via Affiliation); or 7 years, 6 months (Emotional Stability, Extraversion, and Fearfulness).

Taken together, the factor analyses suggest that Eder's (1990) trait scales represent a mix of attributes related to the Big Five dimensions of Extraversion, Neuroticism, and Conscientiousness. Although these dimensions did not emerge in the factor analysis, neither did they match the adult dimensions reported by Tellegen (1982). Nonetheless, these data clearly suggest that even in young children, personality self-reports are characterized by more than one dimension. Eder's study did not address the validity of the children's self-reports, and there is no subsequent work that further developed her original procedure as a measure of other self-reported traits. Moreover, the cross-sectional design further limits conclusions about the developmental emergence of the well-understood adult Big Five personality dimensions. Nevertheless, this work was both creative and important in its redress of earlier notions that young children cannot report reliably on their own personality traits.

Eder's (1990) data suggests that in personality self-reports, even young children are able to differentiate up to three factors. Recent research in the self-concept literature also suggests that young children hold multiple differentiated views of themselves. Using a downward adaptation of a self-concept questionnaire, Marsh, Ellis, and Craven (2003) found that 4- to 6-year-old children ($M = 5.0$ years) could describe their competencies in six specific self-concept domains (appearance, math skills, parents, peers, physical skills, and verbal skills). Marsh et al. used first- and second-order confirmatory factor analyses to test and support the notion that young children hold relatively differentiated self-concepts in domains of physical, academic, and social competence. To begin exploration of the validity of these self-concept ratings, Marsh et al. used achievement test scores for children; children's academically related self-conceptions indeed correlated with their achievement test scores, whereas their nonacademic self-concepts were essentially unrelated to their achievement scores.

Eder's (1990), Marsh et al.'s (2003), and most studies of younger children's self-conceptions have been cross-sectional in nature. To shed light on the temporal stability and the emergence of reliability and validity in young children's views of themselves, we now need longitudinal research designs to further our understanding of the development of each of the Big Five dimensions of personality. In addition, little is known about the external correlates of younger children's personality self-reports (see Shiner, 2000; Shiner et al., 2002). Although adult reports of childhood temperament and personality have been linked to adjustment and behavior problems (see reviews by Caspi, 1998; Rothbart & Bates, 1998; Shiner, 1998), the behavioral significance of young children's personality self-perceptions remains to be established.

What Should We Expect From Young Children's Big Five Self-Reports?

The purpose of this prospective, longitudinal study was to examine the psychometric and developmental characteristics of young children's Big Five self-reports at ages 5, 6, and 7. To do so, we used the BPI method (Ablow & Measelle, 1993). The BPI was developed to provide researchers with an open, flexible approach to collecting self-report data from children as young as 4 years of age. One important facet of its flexibility is that the BPI is a method that is not content specific. Prior work with the BPI has demonstrated that it provides a psychometrically sound approach to the assessment of children's self-reports of their clinical symptomatology (Ablow et al., 1999; Arseneault et al., 2003), competencies (Measelle et al., 1998), and close interpersonal relationships (Ablow, 2005; Measelle, 2005). In the present investigation we sought to extend the utility of the BPI further by applying it to the study of young children's capacity to report on their Big Five personality traits. By drawing from the multiple item pools created for the BPI and creating a priori scales for each of the Big Five dimensions, we examined three fundamental questions.

Coherence: Internal consistency, differentiation, and factor structure. First, are young children able to describe themselves in a coherent fashion on age-appropriate analogs of the Big Five dimensions? Specifically, do children 5 through 7 years of age hold internally consistent and meaningfully distinct conceptions of

themselves on the Big Five? Prior research has not addressed the age at which children might be expected to differentiate all five of the Big Five factors known in adulthood, and it is therefore not clear whether all five distinct factors would emerge in young children's self-reports. For example, for the 4 to 7 age range, Harter and Pike (1984) found that four self-concept scales (Cognitive Competence, Physical Competence, Peer Acceptance, Maternal Acceptance) reduced to a two-factor model of Academic Competence and Social Acceptance. Eder's (1990) 10 trait scales formed three factors that differed somewhat across groups of children ages 3 years, 6 months; 5 years, 6 months; or 7 years, 6 months. These studies seem to suggest that the Big Five may not yet characterize the self-conceptions young children hold about their personality traits; however, markers for the full set of Big Five traits were not included in any of these studies, preventing a direct test of this hypothesis. Thus, in the present research, we used confirmatory factor analysis (CFA) to test whether children's ability to differentiate more than one dimension would yield childhood analogs of the adult Big Five dimensions or some similar personality structure with fewer dimensions. Alternatively, personality structure in children's self-reports may be less complex than the adults. Therefore, we conducted comparative fit analyses and tested several models with fewer dimensions, such as two-factor models proposing distinct dimensions of achievement and socioemotional competence (Harter & Pike, 1984) or socialization and agency (Digman, 1997).

Temporal stability. Second, do children's perceptions of their personality demonstrate meaningful levels of stability across time? Here, competing theoretical perspectives predict very different results. Trait theories (e.g., McCrae & Costa, 1991; McCrae et al., 2000) view temporal stability as the sine qua non: Personality is constitutionally based and thus neither evanescent nor particularly susceptible to the effects of a given situation. In contrast, contextualist views (e.g., Lewis, 2001) continue to hold that early personality, in particular, is essentially situation specific and under constant developmental pressure, fluctuating greatly with situational influences and thus unlikely to exhibit temporal stability. At their extreme, neither position can be fully correct. As for children's self-reports of their personality traits, however, the dearth of research with younger children means we do not yet know the age range during which children begin to construct mental representations of their personalities that are stable across time.

External validity. Third, we sought to evaluate the external validity of young children's Big Five self-reports. We compared them with concurrent behavior ratings provided by up to three adult informants, namely the child's mother, father, and teachers. Adult reports of children's behavioral tendencies have been used extensively in the developmental psychopathology literature and have been shown to predict important real-world outcomes for children (Eisenberg et al., 2000); as such, they have been the external validity criterion of choice. Research on the level of agreement among adult informants, however, has consistently revealed low levels of cross-informant agreement (Hinshaw et al., 1992; Kraemer et al., 2003; Stanger & Lewis, 1993), especially when parents and teachers are asked to report on children's internal emotional processes (e.g., depressed mood and anxiety). It may be due to defensive denial on the part of parents or to a lack of access to children's internal experiences, but parents and teachers have become somewhat suspect as valid reporters of children's

moods. For the core features of Neuroticism (e.g., anxious distress or fear; sadness), additional assessments from observers other than parents and teachers would be desirable. Accordingly, we utilized clinically trained observers' ratings of children's sadness and anxiety during a semistressful laboratory session as additional validity criteria.

An age-comparative approach. Finally, we adopted an explicitly age-comparative approach in this research. First, to help us pinpoint when during the preschool to school transition period children's personality self-perceptions begin to emerge and stabilize, we used a longitudinal design, studying the same children at three ages, namely when they were 5, 6, and 7 years old. In particular, this design allowed us to determine whether and when children's self-reports begin to show internal consistency, differentiation, the Big Five factor structure, stability, and external validity during this period of development and transition.

However, we did not expect that even by age 7, children's self-conceptions on our newly derived Big Five scales would be fully developed and show perfect psychometric characteristics. If we found, for example, that the internal consistency of our new Big Five scales was .50 by age 7, how should we evaluate this finding? Is this number high enough to suggest impressive internal consistency at this early age, or is .50 so low as to suggest that children's self-reports show very little coherence? Is the glass half empty or half full? Of course, even in adult samples, internal consistency estimates and other psychometric indicators never reach 1.00. Thus, the only way to evaluate our childhood findings was to collect normative adult comparison data from the type of sample that research on adult personality is most familiar with, namely self-ratings from undergraduate college students, on the same putative Big Five items that were administered to the children. In this way, we could then compare our childhood findings, obtained in a particularly valuable smaller-size longitudinal sample, with a large college sample that would define the developmental endpoint, namely, the level of internal consistency and other psychometric indices to be expected once children have grown up to be young adults.

Method

Participants and Procedures

Child sample. Children were participants in a longitudinal investigation of the transition to school (see Cowan et al., 2005) and were assessed at ages 5, 6, and 7. Approximately 110 two-parent families were followed prospectively as their oldest child made the transition from preschool to kindergarten and first grade. Families had been recruited to join the study through preschools, day-care programs, and local media and were predominantly middle-class residents of the greater San Francisco Bay area. Of the families, 21% were of African American, Hispanic American, or Asian American ethnicity, and the remaining 79% European American.

For the present study, a total of $N = 95$ children, 44 girls and 51 boys, completed the BPI at all 3 years. A subset of 25 served as a screening sample for the purpose of instrument development during the initial year of the study (age 5); their data at age 5 were therefore not included in the present analyses. Thus, self-report data were available for $n = 70$ children at age 5 (age range = 4 years, 5 months to 5 years, 6 months; $M = 4$ years, 11 months; $SD = 4.3$ months) and for $N = 95$ children at both ages 6 (age range = 5 years, 5 months to 6 years, 4 months; $M = 6$ years, 2 months; $SD = 3.9$ months) and 7 (age range = 6 years, 3 months to 7 years, 6 months; $M = 7$ years, 3 months; $SD = 4.6$ months). Although we refer to

the children in the present report as 5-, 6-, and 7-year-olds to reflect their mean age at the time of testing, their corresponding grade levels were prekindergarten, kindergarten, and first grade, respectively.

Children were interviewed in their homes on an annual basis. At the same time, parents completed questionnaire measures to describe their children's behavior and psychosocial functioning. Moreover, at two points (fall and spring) during children's kindergarten year (age 6) and first-grade year (age 7) in school, the children's teachers completed the same questionnaires as the parents. To help maintain confidentiality and to reduce potential bias, teachers completed the same questionnaire on multiple children in their class (including the study child) without knowing which child was participating in the research. Between their sixth and seventh birthdays, children participated in a semistructured laboratory session, which was videotaped.

College sample. For comparative purposes, a sample of 328 college undergraduates completed an age-adjusted version of the BPI items (62% women, 38% men) as a brief personality self-report inventory. On average, the college students were 19.4 years of age (*SD* = 1.7) and were enrolled in a range of lower level psychology courses at a large public institution.

Measures

Young children's personality self-reports. The BPI method (Ablow & Measelle, 1993) was developed to be a flexible, open approach with which to obtain self-report data from 4- to 8-year-old children. The BPI method takes an interactive approach to interviewing children by creating a conversational exchange between "a child and two age-mates" (p. 31). Two identical puppets make opposing statements about themselves (e.g., one puppet says, "I'm not shy when I meet new people" and the other puppet says, "I'm shy when I meet new people") and then invite children to describe themselves (e.g., "How about you?"). Questions are worded in child-appropriate language so that children understand the questions and become unselfconsciously engaged in dialogue with the puppets, thus making it possible to elicit coherent and differentiated responses. Because children always hear one puppet endorse a less desirable trait as self-descriptive, children seem to find it easier to acknowledge their own less positive characteristics. This type of modeling seems to facilitate responding that is less influenced by social desirability, and this modeling avoids paper-and-pencil or direct questioning formats.

Children's free responses are videotaped and then coded on a 7-point scale (1–7) depending on the degree to which the free response parallels one of the item halves. If, for example, a child responds by indicating "I'm not shy when I meet new people" (high Extraversion), this would be scored a 6 because the response directly reflects what one of the puppets said. If the response further amplifies on the original statement (e.g., "I'm *never* shy when I meet new people"), the response would be scored a 7; if it is less emphatic than the original statement (e.g., "I'm not *too* shy when I meet new people"), it would be scored a 5. Responses on the low end of the scale (e.g., 2, "I'm shy when I meet new people") are coded according to the same conventions. If children indicate that both options pertain to them, the response is coded a 4. In general, children's responses during the BPI can be coded easily from videotape. In this study, two coders coded all interviews; agreement among coders was high with 98%, 95%, and 98% agreement for ages 5, 6, and 7, respectively.

The BPI was specifically developed as a versatile approach to obtaining young children's self-reports in multiple domains. Items can be included about a range of issues pertaining to children's perceptions, attitudes, and feelings about themselves, about their school experiences, about relationships with peers and teachers, and about family relationships, tapping a broad range of affective, cognitive, and interpersonal characteristics relevant to children's adaptation in the academic, social, and psychological domains. We developed the items to use with the BPI by adopting a multidimensional approach (Shavelson, Hubner, & Staton, 1976) based on both theory and evidence (Harter, 1998; Harter & Pike, 1984) that young children could provide coherent descriptions of themselves when asked about salient aspects of their lives and experiences in an age appropriate manner.

Construction of Big Five scales for the BPI. During the first year of data collection (age 5), the item pool relevant to personality did not yet include items to measure children's self-perceptions of negative emotional responses, in particular, feelings of sadness and anxiety as well as anger and aggression. On the basis of pilot interviews with 25 children when they were age 5, several of the original items were dropped, new items were added, and a number of wording changes were made to increase children's comprehension. Thus, 49 of the original age-5 items were retained across all three years of the study. The final set of 60 items, however, were administered at both ages 6 and 7, and this item pool provided the foundation for the assessment of children's self-reports on the Big Five in the present study.

Following the expert judgment procedures outlined by John (1990) and John et al. (1994), we assigned BPI items a priori to one of the Big Five domains on the basis of prior research and theory (Goldberg, 1990; John, 1990; McCrae & John, 1992). The first set of item assignments were made by Oliver P. John. To ensure that these rationally developed scales were generalizable, we obtained independent classifications of the preliminary Big Five items from another expert on the Five-Factor Model in adulthood, Robert R. McCrae. Interjudge agreement on the definition of the Big Five in the BPI item set was substantial. Agreement percentages were 90% for Extraversion, 95% for Agreeableness, 100% for Conscientiousness, 100% for Neuroticism, and 90% for Openness, indicating substantial consensus between the two experts. Discrepancies between John and McCrae were as follows: One item classified by John as Extraversion was classified by McCrae as an Agreeableness item, one of John's Agreeableness items was classified by McCrae as a measure of both Agreeableness and Neuroticism, and one of John's Openness items was classified by McCrae as a measure of both Conscientiousness and Openness. These disagreements were resolved by item analysis (i.e., corrected item-total correlations by use of preliminary scales based on the consensual item sets), and each item was scored on only one of the final scales. The Extraversion and Agreeableness scales each consisted of 10 items; Conscientiousness had 9 items, Neuroticism 7, and Openness 5. Examples of BPI items for each of the Big Five dimensions are presented in Table 1. Like the Openness scale on the California Child Q-Set (John et al., 1994; see also Table 1), the items on the fifth BPI scale represent intellect (Goldberg, 1990) and openness to ideas (Costa & McCrae, 1994) more than the other facets of this factor (Saucier, 1992).

Because the age 5 assessment did not yet include items designed to assess children's perceptions of their negative emotionality, the Neuroticism scale could not be scored at this age, and the other four scales were on average two items shorter than at the other two ages. Thus, the Big Five scales used when children were age 5 are referred to as the *short* scales and the more comprehensive scales used at ages 6 and 7 as the *full* scales. However, we also scored the short scales at ages 6 and 7 corresponding to the shorter item pool used at age 5. This allowed us to use equivalently defined construct scales at all three ages when conducting analyses designed to compare age 5 with the other two ages.

Children's behavior rated by adult informants at ages 5, 6, and 7. Mothers, fathers, and teachers completed the Child Adaptive Behavior Inventory (CABI; Cowan & Cowan, 1985), which includes 60 items from Schaefer and Hunters' (1983) Adaptive Behavior Inventory and additional items from the Quay-Peterson Behavior Problem Checklist (O'Donnel & Van Tuinen, 1979) and the Child Behavior Checklist (Achenbach & Edelbrock, 1986) as well as new items written by Cowan and Cowan (1985). The adults rated the CABI items on a 4-point scale that ranged from 1 = *not at all like the child* to 4 = *very much like the child*. Although developed in the context of developmental psychopathology, the CABI includes some scales that are conceptually relevant to the Big Five dimensions. Two CABI scales were selected for each Big Five dimension as criteria to evaluate the external validity of the children's self-reports. These

10 scales contained 3 to 7 items per scale and had alphas that ranged from .69 to .86. For Extraversion, we used Social Skills and Social Isolation (reverse keyed); for Agreeableness, Oppositional Behavior and Antisocial Behavior scales (both reverse keyed); for Conscientiousness, Mastery Orientation and Distractibility (reverse keyed); for Neuroticism, Depression and Anxiety; and for Openness, Creativity and Intelligence.

Whereas parents' ratings were available for all 3 years, teachers rated children only during the school years: in the fall and spring of both their kindergarten year (age 6) and their first-grade year (age 7). The fall and spring ratings within each year were averaged to create an overall teacher composite for that year.

To construct an overall index of child behavior from the three adult informants, we averaged the ratings by the two or three informants for each of the 10 CABI scales, separately at each age. Thus the CABI scores were based on two adult raters at age 5 (mothers and fathers) and three adults at both ages 6 and 7 (mothers, fathers, and the average of fall and spring teacher ratings). As in previous research on parental and teacher ratings of children's behavior (Achenbach et al., 1987), interjudge agreement was moderate (mean pairwise $r = .37$), reflecting the unique perspectives and observational opportunities of the three adult informants. Alphas of the ratings averaged across the three informants were acceptable; across the 10 CABI scales, the mean alpha was .74. As expected, interjudge agreement was lowest for the aspects of internalizing behaviors of depressed mood (mean interjudge $r = .18$) and anxiety (mean $r = .23$), which are key facets of Neuroticism in the Big Five taxonomy (e.g., Costa & McCrae, 1994).[1]

Laboratory observations of children's sad and anxious behavior. Between their 6th and 7th birthdays ($M = 6.4$ years), children participated in a 30–40 min laboratory session with a trained experimenter. During this session, children played and worked on a set of structured activities designed to be moderately more advanced than their cognitive level and thus potentially stressful and frustrating. These activities included a tower task, seriation and conservation tasks, and a storytelling task. Subsequently, two clinically trained observers provided separate ratings of children's sadness and anxiety on 5-point scales ranging from 1 = *no sadness (anxiety) exhibited* to 5 = *sadness (anxiety) displayed consistently*. Agreement among the coders was substantial: 91% for the children's sad behavior and 88% for anxious behavior, respectively.

BPI self-ratings from college students. College students completed a self-report questionnaire version of the BPI items. Because the BPI items had been designed for children, we made some minor phrasing modifications to 7 items that referred to content not appropriate for college students (e.g., "I like schoolwork that is hard" became "I like academic work that is hard" and "Other kids ask me to play with them" became "Others ask me to do things with them"). Following Goldberg's (1990) bipolar Big Five rating format, we presented the students with 7-point bipolar rating scales, coded just as the children's responses were coded and anchored on the two poles by the opposing statements that are made by the two puppets in the children's interview format. Goldberg has found that such bipolar Big Five rating formats show somewhat higher scale intercorrelations than do unipolar rating formats (i.e., when only one adjective or statement is rated), but here the greatest concern was to maintain strict parallelism between the formats we used for the children and for the college students.

Results

Internal Consistency and Differentiation in Children and College Students

Are children's Big Five self-perceptions organized in arbitrary, essentially random ways, or do children begin to show some degree of coherent self-knowledge by the age of 5? For each age, we computed coefficient alpha reliabilities. The alphas for each Big Five scale are shown in Table 2, along with the mean intercorrelations of the items on the scale, which are independent of

scale length and thus permit comparisons across ages and scales using differing numbers of items. Note that because of children's limited attention spans during this age range, the number of BPI items defining each scale had to be kept short. Nonetheless, internal consistency averaged .65 already at age 5 and .69 at both ages 6 and 7. These data suggest that even children as young as 5 years of age were able to describe themselves fairly consistently on the Big Five dimensions on the basis of their responses to the BPI.

These results look impressive for such short scales, but without an explicit adult comparison, we cannot know how high these internal consistency coefficients could have been. That is, how coherent were children' Big Five self-concepts relative to adult standards? Table 2 shows the internal consistency estimates in our sample of college students providing self-reports using the same BPI items. As one would expect, their average alpha (.74) was numerically higher than the children's averages of .65 and .69. However, these means are misleading: For ages 6 and 7, the children's alphas for Agreeableness, Conscientiousness, and Neuroticism were essentially the same as for the college students. The only substantial difference was obtained for Extraversion: Here the college alpha was .82, as compared with .70 for children age 6 and .67 at age 7.[2] In short, Table 2 shows that by the time children are 6 and 7, the coherence of their self-reports on the Big Five dimensions was remarkably similar to that of young adults.

To determine how well 5- to 7-year-olds differentiated among the Big Five personality dimensions in their self-reports, we examined the intercorrelations among the Big Five scales at each age. Correlations that are substantial in size (e.g., .60 or greater) would

---

[1] Is it possible that, given moderate interjudge agreement, the validity of children's personality self-reports might be underestimated given our strategy of simply averaging the behavior ratings provided by mothers, fathers, and teachers? One reviewer suggested the use of an empirically determined weighted-averaging procedure instead: Overall, adult ratings of children's behavior could be derived by use of principal components analysis of the three adult judges; the first principal component in such an analysis would reflect the overlapping variance shared by the different informants. We reanalyzed our data accordingly. Overall, the average validity estimates stayed the same, but many of the correlations in Table 5 either increased or decreased, though the magnitude of change was not significant in any instance. For example, the correlation between children's reports of their Agreeableness and a latent measure of adult ratings of oppositional behavior decreased in size but remained significant, whereas the correlation between children's reports of their Extraversion and a latent measure of adult reports of their social skills increased somewhat. We decided in favor of the unweighted-averaging strategy in Table 5 for two reasons. First, in some behavioral domains, the principal component approach would have preferentially favored mothers' and fathers' ratings at the expense of teachers (given higher concordance among parents), even though the parents may be the less valid data source. For example, research has shown that parents of young school children often lag behind teachers in their capacity to report on children's cognitive characteristics (Measelle et al., 1998). Second, elsewhere (Kraemer et al., 2003) we have demonstrated that different informant aggregation strategies tend to yield similar results unless they control for the effects of context and informant bias on behavior ratings of children.

[2] This finding suggests that, at this early age, the Extraversion domain is not yet as tightly organized as it is in adulthood. Although it needs independent replication, this interpretation is consistent with the finding that facets of Extraversion that are highly correlated in adulthood were only weakly related in children 12 years old (John et al., 1994).

Table 2
Internal Consistencies of Self-Report on the Big Five in the Child Sample at Ages 5, 6, and 7 and in the College Sample at Age 19

		Child sample						College students (Age 19)	
		Age 5[a]		Age 6		Age 7			
Big Five scale	No. of Items	Alpha	$M\ r_{ij}$	Alpha	$M\ r_{ij}$	Alpha	$M\ r_{ij}$	Alpha	$M\ r_{ij}$
Extraversion	10	.64	.20	.70	.22	.67	.21	.82	.31
Agreeableness	10	.65	.20	.68	.20	.71	.19	.70	.19
Conscientiousness	9	.64	.18	.66	.18	.71	.21	.72	.22
Neuroticism	7			.72	.26	.70	.25	.73	.24
Openness	5	.66	.33	.71	.33	.66	.28	.74	.36
M	8	.65	.23	.69	.24	.69	.23	.74	.26

Note. For the child sample, $N = 70$ at age 5, and $N = 95$ at both ages 6 and 7. $N = 328$ college students at age 19. $M\ r_{ij}$ = mean interitem correlation. The means and standard deviations for each of the child Big Five scales are on our Web site at http://darkwing.uoregon.edu/~dslab.
[a] A preliminary and smaller item set was administered at age 5. Neuroticism items were not yet included at this assessment, and the other scales were briefer, with seven items for Extraversion, eight for Agreeableness and Conscientiousness, and four for Openness.

suggest that the children do not yet differentiate well among the five domains. Instead, the mean intercorrelations were below .40 at all three ages. For age 5, the intercorrelations ranged from .22 to .49 and averaged .39; for age 6, they ranged from .21 to .41 and averaged .35; and for age 7, they ranged from .22 to .45 and averaged .34.[3]

How do these intercorrelations compare with those found for college students? The mean of the scale intercorrelations for the 19-year-old sample was .33, virtually identical to the .34 intercorrelation for the 7-year-olds and quite close to .35 for the 6-year-olds and .39 for the 5-year-olds. Taken together, these data suggest that young children's Big Five self-conceptions, as captured by the BPI, are already surprisingly differentiated. At the very least, by ages 6 to 7, young children's self-perceptions on the Big Five demonstrated the level of distinctiveness seen for the same item set in college-age adults.

These findings on internal consistency and differentiation stand in marked contrast to the view that young children are incapable of holding anything more than rather global and undifferentiated views of their own personality characteristics. Moreover, our finding that none of the interscale correlations even reached .50 at any of the three ages is difficult to reconcile with relatively simple, one-dimensional or two-dimensional models of personality self-perceptions in children. To test the structure underlying children's personality self-reports more formally, we conducted a series of CFAs in which we compared competing factor models of increasing differentiation in the child and in the college student data.

Factor Structure in Children and College Students

We used CFA to explicitly test the dimensionality of young children's self-perceptions on the Big Five dimensions. We were particularly interested in evaluating whether the encouraging findings on internal consistency and differentiation would translate into the familiar five-factor structure, or whether, at this young age, children's personality self-concepts were less complex and could be described with a smaller number of factors. Accordingly, we used CFA to test five plausible factor structures, reflecting increasing levels of differentiation. The global self-evaluation model was a one-factor model consistent with the idea that young

children may see themselves on a single, good-to-bad continuum (i.e., all items loading on a single self-evaluative factor). The academic and socioemotional competence model was a two-factor model that postulated two distinct dimensions of self-conception, namely an academic competence factor (Openness and Conscientiousness) and a socioemotional factor (Agreeableness, Extraversion, and low Neuroticism), which would be akin to Harter and Pike's (1984) findings. The socialization and agency model was also a two-factor model representing Digman's (1997) higher order dimensions of traits related to socialization (Agreeableness, Conscientiousness, and low Neuroticism) and traits related to agency and personal growth (Extraversion and Openness). The fourth model tested the five-factor model defined by the adult Big Five dimensions, with the severe constraint that all factor intercorrelations be set to 0. However, extensive evidence in adults has shown that although the Big Five are distinct factors, they do show small to modest intercorrelation estimates (John & Srivastava, 1999). Thus, the fifth model specified the same Big Five model but allowed intercorrelated factors. Because the key interest in these CFAs was the relative fit of the five alternative models, all items were allowed a priori to load on only one factor, and no changes or adjustments were made on the basis of modification indices.

For the college students, we had clear expectations from previous research (e.g., Benet-Martinez & John, 1998; John & Srivastava, 1999): The one- and two-factor models should fit less well than the orthogonal five-factor model, which in turn should fit less well than the five-factor model, allowing factors to be correlated. Not surprisingly, Table 3 shows that this was indeed the case. The one-factor model showed the worst fit, followed by both two-factor models, and then the five-factor orthogonal model. Nested-

---

[3] To compute these averages, all scales were keyed in the socially desirable direction (i.e., Neuroticism reverse-keyed as Emotional Stability). Across all three ages, the correlation between Agreeableness and Conscientiousness was the highest (all three *r*s exceeding .40), consistent with the findings for 12-year-olds from John et al. (1994) and Goldberg's (1990, 1992) work with adults. The full intercorrelation matrices for all ages are available from Jeffrey R. Measelle.

Table 3
Summary of Confirmatory Factor Analyses Comparing Competing Factor Models for Self-Reported Personality in Children and in Adults

Model tested	College students					Children ages 6 and 7 combined				
	χ^2	df	$\Delta\chi^2$	AIC	ΔAIC	χ^2	df	$\Delta\chi^2$	AIC	ΔAIC
1. One factor: Global Self-Evaluation	2757.9	779	795***	46729	775	1753.4	779	198***	12039	118
2. Two factors (Harter): Academic and Socioemotional	2423.7	779	461***	46431	477	1670.4	779	115***	12057	196
3. Two factors (Digman): Socialization and Agency	2751.0	779	788***	46722	476	1770.7	779	215***	12056	195
4. Big Five orthogonal factors	2274.5	779	312***	46246	292	1606.8	779	51***	11992	131
5. Big Five correlated factors	1962.8	769	—	45954	0	1555.5	769	—	11861	0

Note. $N = 95$ at ages 6 and 7 combined. $N = 328$ at age 19. $\Delta\chi^2 =$ difference in fit compared with the predicted model, five correlated factors model. Harter = Harter, 1998; Digman = Digman, 1997. AIC = Akaike's Information Criterion. ΔAIC = the difference between each model's AIC and the minimum AIC value within a set of related models. Here, ΔAIC is therefore each models' AIC minus the AIC from the five correlated factors model, which by definition receives a ΔAIC of 0. See text for details of model specification. Dashes indicate that the Big Five factors correlated model served as the basis of comparison.
*** $p < .001$.

model comparisons showed that the five-factor model with correlated factors ($df = 769$) fit better than did the other three models (all dfs $= 779$), as shown by the significant $\Delta\chi^2$ values in Table 3.

Because the first three models did not differ in degrees of freedom, we also used Akaike's Information Criteria (AIC; Akaike, 1987) and estimated the difference between AIC values (ΔAIC). ΔAIC values that are less than 2 indicate that a particular model is essentially identical to the best fitting model within a set of related models (Burnham & Anderson, 2002); ΔAIC values that exceed 10 suggest no support for the current model relative to the best fitting model. As expected, of the four models, the five-factor model with correlated factors had the smallest AIC for the college students and thus served as the relative standard. Again, the ΔAIC results in Table 3 indicate that of the five college student models, the one-factor model showed the worst fit, followed by the two-factor and five-factor orthogonal models.

What about the factor structure in young children? For age 5, fewer BPI items were available (i.e., no Neuroticism items and shorter scales for the other four factors) on a smaller sample. We therefore did not consider these data appropriate for a CFA. Full Big Five item data were available for the same $N = 95$ children at both ages 6 and 7; to compensate for the relatively small sample size, we combined the data from the two ages, averaging item responses across ages 6 and 7 and submitting these responses to CFA.[4]

We conducted the same model comparisons for the child data as for the college students above. As shown in Table 3, the same basic pattern of results emerged: The five correlated factors model fit the observed data better than did any of the other models. Even in terms of absolute model fit, the child and the adult CFA results for the correlated five-factor solution were similar. For example, the root-mean-square error of approximation, which adjusts for model complexity, was .057 for the children and .066 for the college students, both within acceptable levels of absolute model fit. In short, these findings provide no evidence for simple, undifferentiated factor models even for children as young as age 6 to 7. Instead, the present evidence is most consistent with a differentiated five-dimensional model defined by the same BPI item set in both children and our college-age comparison sample.[5]

Temporal Stability of Children's Self-Reports on the Big Five

Research with adults has shown considerable stability in their personality self-concepts, especially among middle-aged adults for whom trait stability estimates typically range from .60 to .71 across multiple years (Roberts & DelVecchio, 2000). Is there evidence for emerging stability among children as young as 5 and 6 years of age? In other words, do children begin to show the appreciable levels of stability found in adult research, or are their personality self-reports variable from one age of testing to another? Table 4 shows the 1-year stability correlations (from ages 5 to 6 and from 6 to 7) and the 2-year stability correlations (from

___

[4] Model comparisons yielded the same pattern of results when CFAs were conducted separately at ages 6 and 7, but overall levels of fit were lower, as would be expected when item data are somewhat less reliable.

[5] A reviewer suggested additional possible models to test with CFA. One model was a two-factor model, with and without correlated factors representing two dimensions from research on developmental psychopathology, where the Internalizing factor is defined by low Extraversion and high Neuroticism items, and the Extraversion factor by low Agreeableness and low Conscientiousness items; in separate tests of this model, the Openness items were first combined with one factor and then the other. A second model was a three-factor (correlated and uncorrelated) model, with Extraversion, combined Conscientiousness and Openness, and combined Agreeableness and Neuroticism as separate factors. A third model was a four-factor (correlated and uncorrelated) model that combines Conscientiousness and Openness into one factor and left Extraversion, Agreeableness, and Neuroticism as their own factors. None of these alternative CFA models provided a better accounting of the data than did the five-factor (correlated) model discussed above; most important, this finding was obtained in both the adult and the child data.

We also conducted a series of exploratory factor analyses, examining both scree tests and parallel analysis (Zwick & Velicer, 1986), as well as factor loadings. The findings are easily summarized: There was no evidence for less than five factors, and the rotated five-factor solutions were easily identified as the Big Five dimensions; again, this was true in both child and adult data and held even when we analyzed the child data separately at ages 6 and 7. In short, our findings are not consistent with the idea that personality structure in children's self-report at this age range is less complex than in adults.

Table 4

Stability of Children's Personality Self-Report on the Big Five From Ages 5 to 7

	1-year stability		2-year stability
Big Five scale	Ages 5 to 6	Ages 6 to 7	Ages 5 to 7
Extraversion	.57** (.85)	.53** (.77)	.49** (.75)
Agreeableness	.42** (.63)	.59** (.85)	.30** (.44)
Conscientiousness	.42** (.65)	.53** (.77)	.24* (.36)
Neuroticism		.41** (.58)	
Openness	.38** (.56)	.33** (.48)	.21* (.32)
M	.45** (.85)	.49** (.89)	.32** (.49)

Note. Correlations involving age 5 data are based on shorter Big Five scales and a sample of $n = 70$, whereas correlations involving ages 6 and 7 use the full-length scales and a sample of $N = 95$. Coefficients in parentheses have been corrected for unreliability.

$* p < .05.$ $** p < .01.$

ages 5 to 7) for each of the Big Five scales. All stability correlations were significantly different from 0, and this was true at all available time intervals and for all of the Big Five scales. As one would expect, the 1-year stability coefficients (averaging .45 for age 5 to 6 stability and .49 for age 6 to 7) were stronger than were the 2-year estimates (averaging .32). However, the absolute size of these coefficients may be misleading, as they represent lower bound effect estimates because of the imperfect reliability of the scales (see Table 2). We therefore estimated the stability of children's self-reports on the Big Five, corrected for attenuation due to unreliability. Table 4 shows that these corrected stability coefficients averaged .85 for the age 5 to 6 interval and .89 for the 6 to 7 interval; that is, about 70% to 80% of the reliable scale variance was stable over 1 year. The 2-year corrected stability estimate from ages 5 to 7 was .49, suggesting that about 25% of the reliable scale variance at the early age of age 5 remains stable to age 7. On the whole, these data provide evidence that the personality self-

concepts of children as young as 5 or 6 years of age show real and substantial levels of stability. At the same time, we note that these stability estimates, especially those over the 2-year interval, are lower than those found in adulthood.

External Validity: Children's Self-Reports on the Big Five and Behavior Ratings Provided by Adults

We examined the external validity of children's Big Five personality self-reports by relating them to behavior ratings provided by mothers, fathers, and teachers on the CABI. The results of these analyses are presented in Table 5. Given widespread agreement in the developmental literature that there are few, if any, gold-standard criteria with which to evaluate children's behavioral traits (Kraemer et al., 2003), we aggregated the adults' reports so as to improve their reliability. Specifically, our criterion measures included the means of mothers' and fathers' behavior ratings when children were age 5 (teacher data were not available during the preschool period); and for ages 6 and 7, mothers', fathers', and teachers' ratings were averaged at each age.

At age 5, children's self-reports of Agreeableness and Extraversion were already related significantly to the relevant behavior ratings by the adult informants. As expected, 5-year-olds who saw themselves as high on Agreeableness were described by the adults as showing both less oppositional and less antisocial behavior. Similarly, 5-year-olds reporting higher levels of Extraversion were rated by adults both as less socially isolated and as more socially skilled. Thus, even at this young age, children appear to hold valid perceptions of their interpersonal traits as captured by the Big Five dimensions of Agreeableness and Extraversion. For Conscientiousness and Openness, children's self-reports did not yet correlate significantly with the relevant behavior ratings; note, however, that these four correlations were all in the right direction, though small in size, with *r*s ranging from .07 to .17.

At age 6, children's self-reports of Agreeableness and Extraversion were again correlated significantly with the relevant behavior rating, thus replicating the findings from age 5. Moreover, now

Table 5

Correlations of Children's Big Five Self-Report Scales With Behavior Ratings by Adults and With Laboratory Observations of Sadness and Anxiety

Big Five scale	Behavior ratings by adults	Age 5	Age 6	Age 7
Agreeableness	Oppositional behaviors (rev)	−.29**	−.39**	−.35*
	Antisocial behaviors (rev)	−.30**	−.37**	−.36**
Extraversion	Social isolation (rev)	−.23*	−.20*	−.22*
	Social skills	.25*	.26*	.21*
Conscientiousness	Mastery orientation	.13	.38**	.45**
	Distractibility	−.17	−.30**	−.36**
Openness	Creativity	.07	.03	.16
	Intelligence	.13	.16	.27*
Neuroticism	Sadness		.02	.17
	Anxiety		.05	.13
Neuroticism	Sadness in laboratory		.34**	.40**
	Anxiety in laboratory		.29**	.36**

Note. Validity coefficients at age 5 are correlations between self-reports by the children ($n = 70$) and behavior ratings based on the mother–father composite. Validity coefficients at ages 6 and 7 are correlations between children's self-reports ($n = 91$) and ratings based on the three-informant composite (mother, father, teacher). rev = reversed.

$* p < .05.$ $** p < .01.$

that the children were in kindergarten, their self-reports of Conscientiousness were also correlated significantly with the behavior ratings: 6-year-olds who saw themselves as high on this dimension were rated by adults as high in mastery orientation and as less prone to distraction. By the age of 6, then, children manifested valid self-perceptions not only for the interpersonal aspects of their personality but also for Conscientiousness, including adult-rated criterion behaviors reflecting the child's task performance and attentional focus.

By age 7, children's reports of their Agreeableness, Extraversion, and Conscientiousness all continued to show significant levels of association with behavioral ratings by adults, replicating the age 6 findings. Note also the effect sizes of these validity correlations by age 7: Four of the six correlations were .35 or even larger, thus clearly exceeding Mischel's (1968) .30 "barrier" for personality validity coefficients. These effect sizes are even more impressive because they are lower bound estimates, limited by the imperfect reliability of the children's self-reports and interjudge agreement among the three adults informants.

What about Openness? By age 7, children's self-reports on this Big Five dimension showed one significant validity correlation (i.e., with adults' ratings of the children's intelligence) and one trend-level correlation (i.e., with creativity, $r = .16$, $p = .07$). By age 7 then, children who saw themselves as high on Openness were rated as significantly more intelligent by the adults and, to a lesser extent, as more creative.

Overall, the results in Table 5 indicate increasing levels and breadth of convergence between behavior ratings provided by mothers, fathers, and teachers, and children's perceptions of Agreeableness and Extraversion by age 5, Conscientiousness by age 6, and Openness by age 7.

In contrast, children's reports of their Neuroticism did not correlate significantly with adults' ratings of either sadness or anxiety at either age 6 or 7. However, this apparent lack of convergent validity is inconclusive regarding the accuracy of children's self-reports on Neuroticism. On the one hand, young children may have limited access to their own negative feelings, especially if not well anchored behaviorally. Alternatively, it may be parents and teachers who have limited knowledge and awareness of children's anxiety and sadness. Indeed, adult informants tend to show the lowest levels of agreement when reporting on children's internalizing problems (i.e., mean cross-informant pairwise correlations of .13; see Achenbach et al., 1987). Similarly, in the present study, mother, father, and teacher ratings correlated only weakly when rating children's sadness and anxiety, with mean pairwise cross-informant correlations of .18 and .23, respectively. Accordingly, we turned to independent observations of children's socioemotional behavior as an alternate validity criterion.

External Validity for Children's Self-Reports of Neuroticism: Behavior Observations in the Laboratory

While children were between the ages of 6 and 7 years ($M = 6.4$ years), clinically trained observers rated the sadness and anxiety children exhibited during a 40-min laboratory session designed to elicit socioemotional behavior. As shown at the bottom of Table 5, children's self-reports of their Neuroticism at age 6 were significantly related to both sadness and anxiety observed in the laboratory session half a year later when children were age 6 years, 6 months. These correlations were replicated when Neuroticism was self-reported half a year later at age 7, and the correlations for sadness and anxiety exceeded .35 by this age. That is, children who at ages 6 and 7 described themselves as high in Neuroticism were significantly more likely to exhibit sad and anxious behavior while engaged in a series of laboratory tasks. These findings clearly rule out the hypothesis that young children do not have sufficient access to and understanding of their own negative affect. On the contrary, they seem to have more access to, and understanding of, their own negative emotions than do their parents and teachers, and this was already true by the time they were 6 years old.[6]

Discussion

A central aim of this study was to show how the approach taken by the Berkeley Puppet Interview can be used to advance our understanding of personality traits in young children's self-reports. Given that most of the research on children's personality has relied on reports by adult informants, developing promising age-appropriate approaches provides researchers with new means to study the development of personality in childhood. Using the BPI to study young children's Big Five self-reports, what have we learned in the present study?

Coherence and Dimensionality of Young Children's Personality Self-Reports

Data from this study demonstrate that when the BPI method is used, children as young as 5, 6, and 7 years of age are able to describe themselves reliably on the Big Five. Although not quite as internally consistent as the self-reports provided by our comparison sample of college students, the differences were generally small, and by age 6 children's self-reports on Agreeableness, Conscientiousness, and Neuroticism were as consistent as those of college students. Indeed, reliability estimates of the magnitude reported here for children ages 5 to 7 are rarely found in self-reports of children younger than age 12 (see reviews by Byrne, 1996; Harter, 1998). Note also that the alphas in the present study

---

[6] To examine discriminant validity, we estimated the unique ability of each child-reported Big Five scale to predict the hypothesized adult behavior rating. That is, we computed partial correlation coefficients, correlating each Big Five dimension with the two relevant behavior criterion ratings provided by parents and teachers or by trained laboratory observers while partialling out all of the variability attributable to the four other Big Five dimensions. The findings are easily summarized and suggest surprisingly strong evidence for discriminant validity: Of the 21 significant correlations reported in Table 5, 20 remained significant even after partialling, and only 2 of the 21 dropped below the $p < .05$ level. Moreover, even these two cases did not show substantial drops in validity. Specifically, the correlation of child-reported Extraversion with adult-rated social skills dropped only from .26 to .18 at age 6 and from .21 to .16 at age 7 when the discriminant correlations of the other 4 Big Five scales were partialled. In sum, the analyses suggest, just as the scale intercorrelations and factor analyses did, that the Big Five represent fairly distinct dimensions in young children's Big Five self-reports, each uniquely predicating specific behavioral criteria.

all exceeded the .51 results found in Eder's (1990) pioneering work.

Why might these results have been stronger than those in Eder's (1990) research? One possibility would be that our Big Five scales averaged 8 items as compared with the 5-item scales used by Eder. Second, in our attempt to extend Eder's method, we have devoted considerable effort to improving the BPI's age appropriateness and standardization as a self-report instrument. One clear example of this is our determination through several studies (Ablow et al., 1999; Measelle et al., 1998) that the use of a forced-choice response format (i.e., Eder's, 1990, format) constrains the variability in children's responses. As well, standardized BPI training procedures provide interviewers with the tools needed to enable a wide range of children to respond to BPI probes, be it verbally or nonverbally. Third, it may well be that the Big Five structure, with its basis in the natural language of personality, offers intuitively compelling item content that makes it easier for children to quantify their personality characteristics, even at these young ages. In contrast, Eder used the constructs Tellegen (1982) developed for his Differential Personality Questionnaire, some of which are unlikely to apply to young children (e.g., traditionalism, alienation), despite Eder's attempts to render item wording age appropriate. However, as no research to date has examined young children's capacities to self-report on the Big Five, it is difficult to know exactly why our results would be stronger than those of Eder.

Our results also suggest that children's self-reports on the Big Five were relatively distinct, with no interscale correlations reaching .50, even at age 5. Again, the developmental significance of these data can be appreciated when contrasted with the data from our college sample: The mean of the scale intercorrelations at ages 5 (.39), 6 (.35), and 7 (.34) were rather similar in size to the mean (.33) found for the sample of 19-year-old college students.

The coherence and differentiation among children's self-conceptions on the Big Five dimensions were further supported through CFA. The CFA results in the larger college sample provided reassuring evidence for our expert-derived Big Five scales; in the college sample, the BPI items written for the young children defined Big Five factors as we know them in adulthood, suggesting that we were indeed measuring the Big Five with these items. The CFA results for the age 6–7 child data showed the same pattern of results, indicating that the Big Five model provided a better accounting of young children's self-reports on these BPI items than did one or two factor solutions. These analyses were important given initial data (Harter & Pike, 1984) suggesting that young children's self-reports may be limited to a smaller number of self-concept dimensions, such as one dimension ranging from good (or competent) to bad (or incompetent) or two factors that differentiate degrees of academic competence and degrees of social competence. Although we agree with Eder and Mangelsdorf (1997) that young children have yet to develop a full metatheory of self, by the age of 6 and 7 children do appear to be able to report on their personal characteristics in ways that are relatively distinct and mostly consistent with the Big Five structure of personality found in adults.

Our factor analytic results are also novel and important because they offer the first demonstration that young children's self-reports on the Big Five dimensions complement earlier factor analytic results

that were based on parent and teacher reports (Caspi & Roberts, 2001; Goldberg, 2001; John et al., 1994; Kohnstamm et al., 1998). We see this as a crucial step toward ruling out the hypothesis that previous Big Five factor solutions in parent and teacher ratings were obtained simply because adults impose their own personality structures or personality preconceptions onto children.

Stability of Young Children's Personality Self-Reports

Although there is growing interest in the development of personality, a dearth of longitudinal research has left the stability question essentially unanswered at ages younger than 10 (see Shiner & Caspi, 2003). Our results show that children's Big Five self-reports showed significant levels of stability across both 1- and 2-year time periods, and effect sizes were substantial when the stability correlations were corrected for attenuation because of unreliability. Compared with the childhood estimates extracted from the Roberts and DelVecchio (2000) meta-analysis, our results suggest that when reliability corrected estimates are used, young children's self-reports are more stable than these earlier results would have led us to believe.

Results specific to each Big Five dimension were suggestive of a clear developmental pattern. Children's perceptions of their Extraversion exhibited the greatest stability of all Big Five dimensions from age 5 onward. This appears consistent with the idea that most of our earliest experiences in development are interpersonal in nature (Caspi, 2000; Mathiesen & Tambs, 1999); it is likely that the social aspects of children's personalities, namely whether they tend toward social approach or social inhibition (e.g., shyness), become apparent at earlier ages. The children's self-reports of their Agreeableness and Conscientiousness were already stable from age 5 to 6 but stabilized further after age 6. Although a causal explanation awaits more research, the increasing stability in children's perceptions of their own cooperative and prosocial tendencies (i.e., Agreeableness), as well as their views of themselves as goal-directed and capable of socially prescribed impulse control (i.e., Conscientiousness), may relate to experiences during and following the transition to school.

The stability of children's self-conceptions of Neuroticism could only be evaluated from age 6 to 7; across this 1-year period, their self-reports demonstrated a significant, albeit modest, level of stability. The finding of significant stability in this affective domain is noteworthy given that parents, teachers, and society at large place a great deal of emphasis on positive experience and affect during this period of development (Cowan et al., 2005). Finally, children's self-reports of Openness demonstrated limited stability across the period from ages 5 to 7. Because the BPI measure of Openness primarily taps aspects of intellect, it would seem reasonable to infer that these Openness items specify relatively abstract traits about which children are still forming impressions. Alternatively, it may be unrealistic to expect 1-year stability estimates to exceed .40 at this young age given the tremendous amount of information children are receiving and likely internalizing about their cognitive styles and functioning in both home and school settings (Harter, 1998).

To summarize, children's early personality self-reports demonstrated a great deal more temporal stability than has been

previously shown (Roberts & DelVecchio, 2000)[7] or thought possible (see Lewis, 2001). At the same time, our stability estimates over the 2-year period (from ages 5 to 7) show that children's self-perceptions on the Big Five are far less stable than are the personality self-reports of adults (Roberts & DelVecchio, 2000). Thus, with maturation and experience, we should expect children's personality self-representations to stabilize further. Exactly when we should expect children's personality self-representations to achieve an even greater level of stability remains to be determined.

Validity of Young Children's Personality Self-Perceptions

Our final set of findings provides encouraging evidence for the external validity of young children's Big Five self-reports. Similar to the stability results just discussed, evidence of external validity emerged in an orderly developmental pattern. Specifically, children's reports of their Extraversion and Agreeableness converged significantly with behavior ratings provided by adult informants (i.e., a composite of mothers, fathers, and teachers) as early as age 5. By age 6, children's perceptions of their Extraversion and Agreeableness continued to show validity, and Conscientiousness emerged as a third dimension that was related significantly to behavior ratings by adults. By age 7, children's perceptions of their Extraversion, Agreeableness, and Conscientiousness continued, and Openness began to show significant convergence with adults' behavior ratings.

How might we account for this pattern of increasing validity? First, this developmental period is marked by dramatic growth in children's representational capacities (Cowan, 1978; Harter, 1998), which likely facilitates more accurate self-reports. Second, the school as an institution and as a new culture (see Cowan et al., 2005) may have an impact on the salience of specific personal characteristics. That children first develop valid self-conceptions of their interpersonal personality characteristics is consistent with the idea that the preschool period of life is defined largely by social experiences with both adults and peers outside of school (Cowan et al., 2005). Once in kindergarten, children's experiences expand and begin to include more structured activities, so that individual differences in task mastery, sustained attention, and inhibitory control (all central to Big Five Conscientiousness) become more salient to the children (Carlson & Moses, 2001); the increasing validity of their self-reports of their Conscientiousness may thus follow from experience. Beyond kindergarten, the school experience becomes defined in large part by evaluative feedback and grading (Wigfield et al., 1997). This might help explain why children's self-reports of Openness, which include cognitive and intellectual characteristics, did not begin to correlate with adults' ratings of children's intelligence and creativity until age 7.

In the Neuroticism domain, our validity results suggest limitations in mothers', fathers', and teachers' reports of children's negative emotional experiences at this early age. Although the correlations were in the correct direction, adults' ratings of children's sadness and anxiety at ages 6 or 7 failed to relate significantly to children's self-reports on Neuroticism. In con-

trast, children's self-reports both at age 6 and 7 correlated impressively with independent laboratory observations of children's sadness and anxiety at age 6 years, 6 months. These findings illustrate that behavior ratings by adult informants are useful but far from perfect; there is no gold standard that can be used as the ultimate criterion to evaluate the validity of children's self-reports

In sum, we found meaningful, substantial, and replicated convergence (i.e., correlations often exceeding .35) of children's self-reports of Extraversion, Agreeableness, and Conscientiousness with ratings by adults on independently derived and measured behavior scales conceptually relevant to each of the Big Five. Moreover, by age 6, children's self-reports of Neuroticism showed significant validity when compared with laboratory observations. By age 7, children's self-reports of Openness were beginning to show correspondence with adults' behavior ratings. Again, we wish to underscore the developmental nature of this pattern, namely that the validity of children's Big Five self-reports increase systematically across time, rather than fluctuate or slip backward. Finally, as little was known before, this is a powerful first demonstration of the developmental validity of children's Big Five self-reports using criteria from a broad set of behavioral domains. We suggest that the validity of children's personality self-perceptions should not be viewed in all or none terms but rather that validity appears to emerge in an orderly fashion.

Limitations and Future Directions

This research has a number of limitations that need to be addressed in future research. First, the Big Five dimensions were assessed here with a limited number of items (about 8 items per dimension) and were restricted in their coverage of the components or facets (Costa & McCrae, 1994) that make up each of the Big Five. As in John et al. (1994), by far the shortest scale was Openness, which was limited to 5 items tapping intellectual characteristics. As researchers continue to develop the BPI item pool further to measure young children's personality self-representations, the other facets of the Openness domain, such as fantasy, creativity, and artistic interest, need to be examined.

Indeed, in the present study, we analyzed each Big Five dimension as one global score and therefore cannot address the more specific facets that define each Big Five dimension in adulthood. In the future, it will be important to sample more systematically the known lower order personality traits in all five domains.

Second, though developmental in focus, the present data were restricted to three age points. If Big Five self-reports can be collected from children younger than age 5, we may yet discover evidence of even earlier coherence than reported here. For example, given that individual differences in shyness seem to emerge very early, it is possible that children can report

---

[7] We hasten to add again that the Roberts and DelVecchio (2000) meta-analysis was not exclusively focused on personality stability in childhood. In fact, the clear majority of the work reviewed in the review was research conducted with adults.

reliably and validly on their Extraversion already by the age of 4 or even 3.[8]

Third, our longitudinal sample was not large; the findings now need to be replicated in larger, more heterogeneous samples of children, including more participants with less verbal ability and participants from minority backgrounds. In addition, we must be cautious in interpreting the results of our factor analytic procedures given the small sample size.

Finally, our validity findings for Neuroticism show that future research should obtain other laboratory or observational measures to evaluate the validity of all of the Big Five dimensions, not just of Neuroticism. Such data are needed to test whether parents' and teachers' reporting limitations are confined to Neuroticism and would yield important developmental information beyond the present findings. For example, many children these days regularly attend structured preschools where some degree of mastery, sustained attention, and inhibitory control may already be salient to children, though not to their parents. It is possible that laboratory observations of such task-related behaviors may correlate significantly with children's self-reports of Conscientiousness even before age 6. In other words, the finding that children's self-perceptions of their Conscientiousness did not appear to be valid until age 6 in our data does not necessarily reflect limitations in children's self-reports but, analogously to Neuroticism, may have reflected limitations in parents' and teachers' reports prior to age 6.

On the other hand, the strengths of this study are noteworthy and, in several instances, mitigate some of the limitations just noted. First, the use of a developmentally appropriate assessment method was a major strength of this research and likely was the foundation that made possible the findings. Our results suggest that the BPI is a flexible method that can, with the appropriate item pool, enable young children to report on their personality characteristics as defined by the Big Five dimensions. The BPI appears to offer researchers a Big Five measure for this early age and thus may be able to contribute significantly to our understanding of early personality development.

Second, the longitudinal nature of the study provided us with the opportunity to replicate most of our core findings by testing their generalizability over time. Specifically, the estimates of internal consistency, interscale correlations, and validity coefficients were all tested not once but three times, and temporal stability was tested over two different 1-year periods as well as across the whole 2-year period.

Third, our use of an explicitly age-comparative approach enabled us to compare children's personality self-conceptions with those of young adults. By having a sample of college students complete a questionnaire version of the same BPI items, we were better able to evaluate (and appreciate) our child findings. To our own surprise, young children and college students provided self-reports on the Big Five that were remarkably similar in terms of internal consistency, scale differentiation, and factor structure.

Fourth, the validity of young children's self-reports on the Big Five was tested extensively against widely used criterion measures taken from the literature on developmental psychopathology. Children's self-reports were compared with multiple behavior ratings provided by three different adult sources: mothers, fathers, and teachers. Substantial support was found for the validity of children's Big Five self-reports relative to the behavior ratings pro-

vided by these adults who were chosen because of their extensive, firsthand knowledge of the children. The one major exception was the Big Five domain of Neuroticism, for which we found a marked lack of association between children's self-reports and adult-reported sadness and anxiety. However, the additional finding that children's self-reports of Neuroticism showed significant concordance with laboratory observations of sadness and anxious behavior suggests that it may be the parents and teachers, rather than the children, who are the less valid sources of information about children's negative affect.

Finally, the findings from this longitudinal study provide important information about children's developing self-perceptions of their personality traits during a critical period of their lives. The period from 5 to 7 years is widely regarded as one of the dramatic periods of human development (Sameroff & Haith, 1996). Not only do fast-maturing representational abilities underlie children's growing capacities to report reliably and validly on their personality characteristics but ecological transitions also coincide with real behavioral change. The stability and validity data presented in this study are consonant with developmental theory and the research literature from early-to-middle childhood; they provide important information about which dimensions of personality are most salient to children and when children develop self-perceptions of their personalities that are aligned with their actual social and scholastic experiences.

Most generally, then, we submit that the present research cannot conclusively answer the questions raised but will serve, we hope,

---

[8] The validity analyses in Table 5 focused on the three assessments and thus reflect the mean age of the children at each of these times. However, as in any classroom, some children were younger than the average and others older. Thus, we conducted an exploratory analysis, dividing the sample into younger and older subsets at each time point by taking a median split on age. We then recomputed the correlations in Table 5 to see whether we might be able to further discriminate at what point during development children's self-reports of their personality begin to converge with the adult behavior ratings. With only a few exceptions, the pattern of results for the younger and older groups were remarkably similar to those of the full sample presented in Table 5. Specifically, at our first assessment (mean age = 5) the younger cohort (mean age = 4 years, 5 months) and older cohort (mean age = 5 years, 3 months) did not differ systematically in the validity of their self-reports of Extraversion and Agreeableness; they showed similar levels of convergence with the adult behavior ratings, raising the possibility that the validity for Extraversion and Agreeableness emerge by age 4 or even earlier. At the second assessment (age 6), both younger and older children's perceptions of their Extraversion, Agreeableness, and Conscientiousness correlated with the same adult ratings and laboratory measures as in Table 5, though the strength of the associations was slightly stronger for the older subset (mean $r = .35$; mean age = 6 years, 4 months) than for the younger subset (mean $r = .28$; mean age = 5 years, 6 months); this small effect held for all of the eight relevant correlations. Finally, the pattern of association in Table 5 was also consistent across both younger and older subsets at our final assessment (age 7). The one exception involved Openness. Here, the younger subset's (mean age = 6 years, 3 months) perceptions of Openness correlated only .13 with adults' ratings of creativity and .21 with intelligence, whereas these correlations for the older subset (mean age = 7 years, 3 months) were .22 and .34, respectively. This pattern of correlations is consistent with the idea that the validity of children's reports of their Openness barely begins to emerge by age 6 and does not crystallize until an age that corresponds with the end of first grade and the beginning of second.

as an exciting starting point for an important series of next steps. Using similar longitudinal approaches along with an age appropriate method like the BPI, we can turn now to understanding the processes underlying the development of self-conceptions on the Big Five. Now that we know that children can tell us what they are like on the Big Five, we can ask how do children learn who they are?

References

Ablow, J. C. (2005). When parents conflict or disengage: Children's perceptions of parents' marital distress predict adaptation to school. In P. A. Cowan, C. P. Cowan, J. C. Ablow, V. Kahen-Johnson, & J. R. Measelle (Eds.), *Monographs in Parenting: The family context of parenting in children's adaptation to school: Support for early intervention* (pp. 189–208). Mahwah, NJ: Erlbaum.

Ablow, J. C., & Measelle, J. R. (1993). *Berkeley Puppet Interview: Administration and scoring system manuals.* Berkeley, CA: University of California.

Ablow, J. C., Measelle, J. R., Kraemer, H. C., Harrington, R., Luby, J. Smider, N., et al. (1999). The MacArthur Three-City Outcome Study: Evaluating multi-informant measures of young children's symptomatology. *Journal of the American Academy of Child and Adolescent Psychiatry, 38,* 1580–1590.

Achenbach, T. M., & Edelbrock, C. (1986). *Manual for the Child Behavior Checklist and Revised Child Behavior Profile.* Burlington: University of Vermont, Department of Psychiatry.

Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin, 101,* 213–232.

Akaike, H. (1987). Factor analysis and AIC. *Psychometrika, 52,* 317–332.

Arseneault, L., Moffitt, T. E., Caspi, A., Taylor, A., Rijsdijk, F. V., Jaffee, S., et al. (2003). Strong genetic effects on antisocial behavior among 5-year-old children according to mothers, teachers, examiner-observers, and twins' self-reports. *Journal of Child Psychology and Psychiatry, 44,* 832–848.

Benet-Martinez, V., & John, O. P. (1998). Los Cinco Grandes across cultures and ethnic groups: Multitrait-multimethod analyses of the Big Five in Spanish and English. *Journal of Personality and Social Psychology, 75,* 729–750.

Block, J., & Block, J. H. (1980). *The California Child Q-Set.* Palo Alto, CA: Consulting Psychologists Press.

Burnham, K. P., & Anderson, D. R. (2002). *Model selection and multimodel inference: A practical information-theoretic approach* (2nd ed.). New York: Springer.

Byrne, B. M. (1996). *Measuring self-concept across the life span: Issues and instrumentation.* Washington, DC: American Psychological Association.

Carlson, S. M., & Moses, L. J. (2001). Individual differences in inhibitory control and children's theory of mind. *Child Development, 72,* 1032–1053.

Caspi, A. (1998). Personality development across the life course. In W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (5th ed., pp. 311–388). New York: Wiley.

Caspi, A. (2000). The child is the father of the man: Personality continuities from childhood to adulthood. *Journal of Personality and Social Psychology, 78,* 158–172.

Caspi, A., Block, J., Block, J. H., Klopp, B., Lynam, D., Moffitt, T. E., & Stouthamer-Loeber, M. (1992). A "common language" version of the California Child Q-Set for personality assessment. *Psychological Assessment, 4,* 512–523.

Caspi, A., & Roberts, B. R. (2001). Personality development across the life course: The argument for change and continuity. *Psychological Inquiry, 12,* 49–66.

Costa, P. T., & McCrae, R. R. (1994). Set like plaster: Evidence for the stability of adult personality. In T. F. Heatheron & J. L. Weinberger (Eds.), *Can personality change?* (pp. 21–40). Washington, DC: American Psychological Association.

Cowan, P. A. (1978). *Piaget with feeling: Cognitive, social, and emotional development.* New York: Holt, Reinhart, & Winston.

Cowan, P. A., & Cowan, C. P. (1985). *The Child Adaptive Behavior Inventory.* Berkeley: University of California.

Cowan, P. A., Cowan, C. P., Ablow, J. C., Kahen-Johnson, V., & Measelle, J. R. (Eds.). (2005). *Monographs in parenting: The family context of parenting in children's adaptation to school: Support for early intervention.* Mahwah, NJ: Erlbaum.

De Raad, B. (1994). An expedition in search of a fifth universal factor: Key issues in the lexical approach. *European Journal of Personality, 8,* 229–250.

Digman, J. M. (1990). Personality structure: Emergence of the five-factor model. *Annual Review of Psychology, 41,* 417–440.

Digman, J. M. (1997). Higher-order factors of the Big Five. *Journal of Personality and Social Psychology, 73,* 1246–1256.

Digman, J. M., & Shmelyov, A. G. (1996). The structure of temperament and personality in Russian children. *Journal of Personality and Social Psychology, 71,* 341–351.

Eder, R. A. (1990). Uncovering young children's psychological selves: Individual and developmental differences. *Child Development, 61,* 849–863.

Eder, R. A., & Mangelsdorf, S. C. (1997). The emotional basis of early personality development: Implications for the emergent self-concept. In R. Hogan, J. A. Johnson, & S. Briggs (Eds.), *Handbook of personality psychology* (pp. 209–240). San Diego, CA: Academic Press.

Eisenberg, N., & Fabes, R. A. (1998). Prosocial development. In W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (5th ed., pp. 701–778). New York: Wiley.

Eisenberg, N., Fabes, R. A., Guthrie, I. A., & Reiser, M. (2000). Dispositional emotionality and regulation: Their role in predicting quality of social functioning. *Journal of Personality and Social Psychology, 78,* 136–157.

Goldberg, L. R. (1990). An alternative "description of personality": The Big-Five factor structure. *Journal of Personality and Social Psychology, 59,* 1216–1229.

Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment, 4,* 26–42.

Goldberg, L. R. (2001). Analyses of Digman's child-personality data: Derivation of Big Five factor scores from each of six samples. *Journal of Personality, 69,* 709–743.

Goldsmith, H. H. Losynoya, S. H., Bradshaw, D. L., & Campos, J. J. (1994). Genetics of personality: A twin study of the five-factor model and parental offspring analysis. In C. F. Halverson, Jr., G. A. Kohnstamm, & R. P. Martin (Eds.), *The developing structure of temperament and personality from infancy to adulthood* (pp. 241–265). Hillsdale, NJ: Erlbaum.

Graziano, W. G., Jensen-Campbell, L. A., & Finch, J. F. (1997). The self as a mediator between personality and adjustment. *Journal of Personality and Social Psychology, 73,* 392–404.

Graziano, W. G., & Ward, D. (1992). Probing the Big Five in adolescence: Personality and adjustment during a developmental transition. *Journal of Personality, 60,* 425–439.

Halverson, C. F., Kohnstamm, G. A., & Martin, R. P. (Eds.). (1994). *The developing structure of temperament and personality from infancy to adulthood.* Hillsdale, NJ: Erlbaum.

Harter, S. (1998). The development of self-representations. In W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (5th ed., pp. 553–617). New York: Wiley.

Harter, S., & Pike, R. (1984). The pictorial scale of perceived competence and social acceptance for young children. *Child Development, 55,* 1969–1982.

Hartup, W. W., & van Lieshout, C. F. M. (1995). Personality development in social context. *Annual Review of Psychology, 46,* 655–687.

Hinshaw, S. P., Han, S. S., Erhardt, D., & Huber, A. (1992). Internalizing and externalizing behavior problems in preschool children: Correspondence among parent and teacher ratings and behavior observations. *Journal of Clinical Child Psychology, 21,* 143–150.

John, O. P. (1990). The "Big Five" factor taxonomy: Dimensions of personality in the natural language and questionnaires. In L. A. Pervin (Ed.), *Handbook of personality: Theory and research* (pp. 66–100). New York: Guilford Press.

John, O. P., Caspi, A., Robins, R. W., Moffitt, T. E., & Stouthamer-Loeber, M. (1994). The "little five": Exploring the nomological network of the five-factor model of personality in adolescent boys. *Child Development, 65,* 160–178.

John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspective. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102–138). New York: Guilford Press.

Kohnstamm, G. A., Halverson, C. F., Mervielde, I., & Havill, V. (1998). *Parental descriptions of child personality: Developmental antecedents of the Big Five?* Mahwah, NJ: Erlbaum.

Kraemer, H. C., Measelle, J. R., Ablow, J. C., Essex, M. J., Boyce, W. T., & Kupfer, D. J. (2003). A new approach to multiple informants: Mixing and matching context and perspectives. *American Journal of Psychiatry, 160,* 1566–1577.

Lewis, M. (2001). Issues in personality development. *Psychological Inquiry, 12,* 67–83.

Marsh, H. W., Ellis, L. A., & Craven, R. G. (2003). How do preschool children feel about themselves? Unraveling measurement and multidimensional self-concept structure. *Developmental Psychology, 38,* 376–393.

Mathiesen, K. S., & Tambs, K. (1999). The EAS Temperament Questionnaire—Factor structure, age trends, reliability, and stability in a Norwegian sample. *Journal of Child Psychology and Psychiatry, 40,* 431–439.

McCrae, R. R., & Costa, P. T. (1991). The NEO Personality Inventory: Using the five-factor model in counseling. *Journal of Counseling & Development, 69,* 367–372.

McCrae, R. R., & Costa, P. T., (1999). A five-factor theory of personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality theory and research (pp. 139*–153). New York: Guilford Press.

McCrae, R. R., Costa, P. T., & Busch, C. M. (1986). Evaluating comprehensiveness in personality systems: The California Q-Set and the five-factor model. *Journal of Personality, 54,* 430–446.

McCrae, R. R., Costa, P. T., Ostendorf, F., Angleitner, A., Hrebícková, M., & Avia, M. D. (2000). Nature over nurture: Temperament, personality, and life span development. *Journal of Personality and Social Psychology, 78,* 173–186.

McCrae, R. R., & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality, 60,* 175–215.

Measelle, J. R. (2005). Children's self-perceptions as a link between family relationship quality and social adaptation to school. In A. Cowan, C. P. Cowan, J. C. Ablow, V. Kahen-Johnson, J. R. Measelle (Eds.), *Monographs in Parenting: The family context of parenting in children's adaptation to school: Support for early intervention* (pp. 163–188). Mahwah, NJ: Erlbaum.

Measelle, J. R., Ablow, J. C., Cowan, P. A., & Cowan, C. P. (1998). Assessing young children's self-perceptions of their academic, social and emotional lives: An evaluation of the Berkeley Puppet Interview. *Child Development, 69,* 1556–1576.

Mervielde, I, & De Fruyt, F. (2000). The Big Five personality factors as a model for the structure of children's peer nominations. *European Journal of Personality, 14,* 91–106.

Miller, S. A., & Davis, T. L. (1992). Beliefs about children: A comparative study of mothers, teacher, peers, and self. *Child Development, 63,* 1251–1265.

Mischel, W. (1968). *Personality and assessment.* New York: Wiley.

O'Donnell, J. P., & Van Tuinen, M. (1979). Behavior problems of preschool children: Dimensions and congenital correlates. *Journal of Abnormal Child Psychology, 7,* 61–75.

Roberts, B. W., & DelVecchio, W. F. (2000). The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin, 126,* 3–25.

Robins, R. R., Fraley, R. C., Robert, B. W., & Trzenniewski, K. H. (2001). A longitudinal study of personality change in young adulthood. *Journal of Personality, 69,* 617–640.

Rothbart, M. K., Ahadi, S. A., & Evans, D. E. (2000). Temperament and personality: Origins and outcomes. *Journal of Personality and Social Psychology, 78,* 122–135.

Rothbart, M. K., & Bates, J. E. (1998). Temperament. In W. Damon (Series Ed.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (5th ed., pp. 105–176). New York: Wiley.

Sameroff, A. J., & Haith, M. H. (1996). *The five to seven year shift: The age of reason and responsibility.* Chicago: University of Chicago Press.

Saucier, G. (1992). Openness versus intellect: Much ado about nothing? *European Journal of Personality, 6,* 381–386.

Saucier, G., & Goldberg, L. R. (1998). What is beyond the Big Five? *Journal of Personality, 66,* 495–524.

Schaefer, E. S., & Hunter, W. M. (1983). *Mother-infant interaction and maternal psychosocial predictors of kindergarten adaptation.* Paper presented at the biennial meeting of the Society for Research in Child Development, Detroit, MI.

Shavelson, R. J., Hubner, J. J., & Staton, G. C. (1976). Self-concept: Validation of construct interpretations. *Reviews of Educational Research, 46,* 407–441.

Shiner, R. L., (1998). How shall we speak of children's personalities in middle childhood?: A preliminary taxonomy. *Psychological Bulletin, 124,* 308–332.

Shiner, R. L. (2000). Linking childhood personality with adaptation: Evidence for continuity and change across time into late adolescence. *Journal of Personality and Social Psychology, 78,* 310–325.

Shiner, R. L., & Caspi, A. (2003). Personality differences in childhood and adolescence: Measurement, development, and consequences. *Journal of Child Psychology and Psychiatry, 44,* 2–31.

Shiner, R. L., Masten, A. S., & Tellegen, A. (2002). A developmental perspective on personality in emerging adulthood: Childhood antecedents and concurrent adaptation. *Journal of Personality and Social Psychology, 83,* 1165–1177.

Stanger, C., & Lewis, M. (1993) Agreement among parents, teachers, and children on internalizing and externalizing behavior problems. *Journal of Clinical Child Psychology, 22,* 107–115.

Taylor, M., Cartwright, B. S., & Carlson, S. M. (1993). A developmental investigation of children's imaginary companions. *Developmental Psychology, 29,* 276–285.

Tellegen, A. (1982). *Brief manual for the Differential Personality Questionnaire.* Unpublished manuscript, University of Minnesota, Minneapolis.

Victor, J. B. (1994). The five-factor model applied to individual differences

in school behavior. In C. F. Halverson, G. A. Kohnstamm, & R. P. Martin (Eds.), *The developing structure of personality and temperament from infancy to adulthood* (pp. 355–370). Hillsdale, NJ: Erlbaum.

Wigfield, A., Eccles, J. S., Yoon, K. S., Harold, R. D., Abreton, A. J. A., Freedman-Doan, C., & Blumenfeld, P. C. (1997). Change in children's competence beliefs and subjective task values across the elementary school years: A 3-year study. *Journal of Educational Psychology, 89,* 451–469.

Zwick, W. R., & Velicer, W. F. (1986). Comparison of five rules for determining the number of components to retain. *Psychological Bulletin, 99,* 432– 442.

ORDER FORM

Start my 2005 subscription to *Journal of Personality and Social Psychology*! ISSN: 0022-3514

____	$196.00, **APA Member/Affiliate**	_____
____	$401.00, **Individual Nonmember**	_____
____	$1,150.00, **Institution**	_____
	In DC add 5.75% / In MD add 5% sales tax	_____
	Total Amount Enclosed $	_____

Subscription orders must be prepaid. (Subscriptions are on a calendar year basis only.) Allow 4-6 weeks for delivery of the first issue. Call for international subscription rates.

SEND THIS ORDER FORM TO:
American Psychological Association
Subscriptions
750 First Street, NE
Washington, DC 20002-4242

AMERICAN
PSYCHOLOGICAL
ASSOCIATION

Or call **(800) 374-2721**, fax **(202) 336-5568**.
TDD/TTY **(202) 336-6123**.
For subscription information, e-mail:
subscriptions@apa.org

○ **Send me a FREE Sample Issue**
○ **Check enclosed** (make payable to APA)

Charge my: ○ VISA   ○ MasterCard   ○ American Express

Cardholder Name _____

Card No. _____ Exp. Date _____

_____
Signature (Required for Charge)

BILLING ADDRESS:
Street _____
City _____ State _____ Zip _____
Daytime Phone _____
E-mail _____

SHIP TO:
Name _____
Address _____

City _____ State _____ Zip _____
APA Member # _____ *PSPA15*