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Traits in Transition: The Structure of Parent-Reported Personality Traits from Early Childhood to Early Adulthood

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Abstract

The present research was conducted to map the hierarchical structure of youths' personality traits, to identify the foundational level of this structure, and to test whether the meanings of some youth personality dimensions shift with age. We addressed these issues by analyzing personality parent reports describing a cross-sectional sample of 16,000 children, adolescents, and young adults (ages 3 to 20). These parent reports were made using a broadband measure of youths' personal characteristics, the common-language California Child Q-Set. Analyses of the full sample and comparisons of 16 age groups supported three main conclusions. First, the hierarchical structure of youths' personality traits both resembles and differs from the adult personality hierarchy in important ways. Second, a set of six dimensions—Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience, and Activity—may constitute the foundational level of the youth personality hierarchy from middle childhood through adolescence. This "Little Six" structure represents a union of the most prominent personality and temperament dimensions. Third, the meanings of some youth personality dimensions (e.g., Activity, Conscientiousness) shift systematically with age. These findings advance our understanding of when and how personality structure develops during the first two decades of life.

Over the past few decades, personality researchers have made considerable progress toward understanding adult personality structure: how individuals' specific habits of thinking, feeling, and behaving cohere into personality traits. For example, it has become clear that personality is structured hierarchically, with broader traits (e.g., negative emotionality) subsuming narrower ones (e.g., anxiety, depression, irritability; Costa & McCrae, 1992b; Markon, Krueger, & Watson, 2005). Moreover, most psychologists now agree that the Big Five trait dimensions—Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience—constitute a uniquely important level of the adult personality hierarchy (Costa & McCrae, 1992a; Goldberg, 1993; John, Naumann, & Soto, 2008).

These points of consensus have helped integrate previous findings and have generated new research demonstrating the importance of adult personality traits (Ozer & Benet-Martínez, 2006). They have also sparked a growing interest in youth personality structure, with the goal of understanding when and how personality structure develops. Recent reviews of this youth literature have highlighted three fundamental questions (Caspi, Roberts, & Shiner, 2005; De Pauw & Mervielde, 2010; Shiner & DeYoung, 2013). First, what is the hierarchical structure of personality traits in childhood and adolescence, as compared with adulthood? Second, what dimensions constitute the foundational level of the youth personality hierarchy—the level that balances descriptive breadth, specificity, and generalizability in a manner similar to the adult Big Five? Third, do the meanings of some personality dimensions—as captured by the more specific traits defining them—shift with age? The present research was conducted to address these three key questions, using data from a large cross-sectional sample.

Hierarchical Personality Structure in Childhood and Adolescence

Many prominent models of adult personality traits can be organized within a single hierarchical structure (Markon et al.,

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2005). Is this structure specific to adulthood, or does it generalize to childhood and adolescence? Two recent studies have shown that youths' personality traits can indeed be organized hierarchically, and have suggested possible similarities and differences between the youth and adult hierarchies (Tackett, Krueger, Iacono, & McGue, 2008; Tackett et al., 2012). Thus, our first major goal was to further investigate the hierarchical structure of youths' personality traits. For each of 14 structural models drawn from previous research, Table 1 lists the major trait dimensions and the developmental period(s) when the model is commonly applied.

The most abstract level possible is that of a single broad dimension. Some researchers have proposed the existence of a General Factor of Personality (GFP), or "Big One" (Musek, 2007), that contrasts the desirable versus undesirable poles of essentially all personality traits. Versions of the GFP have been found using a variety of measures and samples—including some youth samples (Rushton & Irwing, 2008). However, the existence and interpretation of this dimension remain controversial (Danay & Ziegler, 2011).

One step down from the GFP, the Big Two structure (DeYoung, 2006; Digman, 1997) includes the dimensions of Socialization (combining Big Five Agreeableness, Conscientiousness, and low Neuroticism) and Personal Growth (combining Extraversion and Openness to Experience). This structure has been recovered in some youth samples (Digman, 1997), but at least two alternative youth structures are also plausible. First, Block and Block (1980) proposed the dimensions of Ego Control (the general tendency to inhibit vs. express impulses) and Ego Resiliency (the ability to increase or decrease impulse control in response to situational demands). Second, youth behavioral problems tend to cluster along two higher-order dimensions: externalizing problems such as aggression, lying, and impulsiveness, and internalizing problems such as anxiety, depression, and social withdrawal (Achenbach & Edelbrock, 1978; De Clercq, De Fruyt, & Widiger, 2009).

The adult Big Three structure (Eysenck & Eysenck, 1985; Tellegen & Waller, 2008; Watson & Clark, 1993) consists of Positive Emotionality (combining Big Five Extraversion and Openness to Experience), Negative Emotionality (or Neuroticism), and Constraint versus Disinhibition (combining Conscientiousness and Agreeableness). One prominent model of child temperament includes conceptually similar dimensions labeled Surgency, Negative Affectivity, and Effortful Control (Rothbart, Ahadi, Hersey, & Fisher, 2001). Another such model, the EAS temperament model (Buss & Plomin, 1984), includes a (negative) Emotionality dimension but bifurcates Positive Emotionality into Activity (motor activity and energy level) and Sociability (preference for being around others); an earlier version of this model also included an Impulsivity dimension resembling (reversed) Big Three Constraint.

The adult hierarchy's four-dimensional level includes dimensions resembling Big Five Agreeableness, Conscientiousness, and Neuroticism, plus Big Three Positive Emotionality (Markon et al., 2005; Widiger, 1998). However, an integrative review of child temperament theories (Mervielde & Asendorpf, 2000) suggested an alternative youth structure: Extraversion, (negative) Emotionality, Persistence (similar to Conscientiousness), and Activity. This structure captures overlaps between the influential temperament models of Rothbart (Rothbart et al., 2001), Buss and Plomin (1984), and Thomas and Chess (1977; see below).

At the five-dimensional level, youth versions of the Big Five have been found in previous studies of personality parent reports (e.g., Halverson et al., 2003; Mervielde & De Fruyt, 2002; Tackett et al., 2012), teacher reports (e.g., Goldberg, 2001), and self-reports (e.g., Costa, McCrae, & Martin, 2008; Soto, John, Gosling, & Potter, 2008). To our knowledge, no alternative set of five dimensions has been consistently recovered in studies of youth personality structure.

Beyond five dimensions, the most prominent adult models are the six-dimensional HEXACO structure, which distinguishes Honesty/Humility from Agreeableness (Ashton & Lee, 2007), and the Big Seven structure, which adds explicitly evaluative Positive Valence and Negative Valence dimensions to the Big Five (Waller & Zavala, 1993). In contrast, the most influential youth model with more than five dimensions is Thomas and Chess's (1977) nine-dimensional temperament model, which includes Activity, Persistence, Distractibility (vs. concentration), Sensory Threshold (i.e., sensitivity to new stimuli), Approach-Withdrawal (in response to new stimuli), Adaptability (to change), (positive vs. negative) Mood, Intensity (of emotional reactions), and Rhythmicity (of biological functions).

The final model shown in Table 1 represents a union of the most theoretically prominent personality and temperament dimensions. Recent reviews have noted considerable overlap between child temperament models and the adult Big Five (Caspi et al., 2005; De Pauw & Mervielde, 2010; Shiner & DeYoung, 2013). Specifically, temperamental Surgency, Negative Emotionality, and Persistence/Effortful Control resemble Big Five Extraversion, Neuroticism, and Conscientiousness, respectively. Many temperament models also include an Activity dimension, whereas the Big Five structure includes Agreeableness and Openness to Experience. These similarities and differences suggest a possible "Little Six" youth structure: Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience, and Activity.

The Foundational Level of the Youth Personality Hierarchy

Although broader and narrower personality traits can be organized within a common hierarchical structure, traits defined at different levels of abstraction have different advantages and disadvantages (Cronbach & Gleser, 1957; John, Hampson, & Goldberg, 1991). The broader traits residing at higher levels

Table 1 Models of Personality Structure in Childhood and Adulthood

Structure	Ages	Neuroticism	Conscientiousness	Agreeableness	Extraversion	Openness to Exp.	Other
One-dimensional							
Big One (Musek, 2007)	C, A	GFP (–)	GFP	GFP	GFP	GFP	
Two-dimensional							
Big Two (Digman, 1997)	C, A	Socialization	Socialization	Socialization	Personal Growth	Personal Growth	
Block and Block (1980)	C, A	Ego Resiliency (–)	Ego Control, Ego Resiliency	Ego Control, Ego Resiliency	Ego Control (–), Ego Resiliency	Ego Resiliency	
Achenbach and Edelbrock (1978)	C, A	Internalizing	Externalizing (–)	Externalizing (–)	Internalizing (–)		
Three-dimensional							
Big Three (Tellegen & Waller, 2008)	C, A	Neg. Emotionality	Constraint	Constraint	Pos. Emotionality	Pos. Emotionality	
Rothbart et al. (2001)	C	Neg. Affectivity	Effortful Control		Surgency		
EAS (Buss & Plomin, 1984)	I, C, A	Emotionality			Sociability		Activity
Four-dimensional							
Big Four (Widiger, 1998)	A	Neuroticism	Conscientiousness	Agreeableness	Pos. Emotionality	Pos. Emotionality	
Mervielde and Asendorpf (2000)	C	Emotionality	Persistence		Extraversion		Activity
Five-dimensional							
Big Five (Costa & McCrae, 1992b; Goldberg, 1993)	C, A	Neuroticism	Conscientiousness	Agreeableness	Extraversion	Openness to Exp.	
Six or more dimensions							
HEXACO (Ashton & Lee, 2007)	A	Neuroticism	Conscientiousness	Agreeableness	Extraversion	Openness to Exp.	Honesty/Humility
Big Seven (Waller & Zavala, 1993)	A	Neuroticism	Conscientiousness	Agreeableness	Extraversion	Openness to Exp.	Pos. Valence, Neg. Valence
Thomas and Chess (1977)	I	Mood (–), Adaptability (–), Approach-With. (–)	Persistence, Distractibility (–)	Adaptability	Approach-With., Mood		Activity, Intensity, Rhythmicity, Sensory Threshold
Little Six (Shiner & De Young, 2013)	C	Neuroticism	Conscientiousness	Agreeableness	Extraversion	Openness to Exp.	Activity

Note. (–) indicates that a trait dimension is oriented in the opposite direction from the corresponding Big Five dimension. I = infancy; C = childhood A = adulthood; Openness to Exp. = Openness to Experience; GFP = general factor of personality; Neg. Emotionality = negative emotionality; Pos. Emotionality = positive emotionality; Neg. Affectivity = negative affectivity; Pos. Valence = positive valence; Neg. Valence = negative valence; Approach-With. = approach-withdrawal.

have the advantage of greater descriptive bandwidth: Each summarizes a large amount of behavioral information. Conversely, the narrower traits residing at lower levels have greater fidelity: Their specificity allows for finer-grained description.

Moving up or down a personality hierarchy results in tradeoffs between bandwidth and fidelity, as well as generalizability: Structures defined at different levels of abstraction may replicate more or less consistently (Markon et al., 2005). However, these characteristics are not always exchanged evenly. Some traits efficiently summarize a great deal of information (high bandwidth) while still representing substantive behavioral patterns rather than overly abstract (e.g., good–bad) evaluations (high fidelity), and also replicate consistently across samples and measures (high generalizability). Together, such dimensions constitute what we term the "foundational level" of personality structure: the level that optimally balances bandwidth, fidelity, and generalizability, thereby allowing the hierarchy to rest on a stable foundation. The Big Five appear to anchor the adult personality hierarchy in this way (Costa & McCrae, 1992a; Goldberg, 1993). Do they serve the same role in childhood and adolescence, or does the youth hierarchy rest on a different set of dimensions? Our second major goal was to identify the foundational level of the youth personality hierarchy.

On the one hand, the foundational level might be simpler in childhood than adulthood, with fewer than five dimensions. Many new cognitive, emotional, and behavioral competencies develop across childhood and adolescence (e.g., Inhelder & Piaget, 1958; Mischel, Shoda, & Rodriguez, 1989), and these may manifest as new trait dimensions. For example, increases in abstract thinking capacities during early adolescence may lead to the emergence of Openness to Experience (Markey, Markey, & Tinsley, 2004; Shiner, 1998). Supporting the hypothesis of fewer foundational dimensions at younger ages, most child temperament models include only three or four major dimensions (Mervielde & Asendorpf, 2000).

On the other hand, the foundational level might be more complex in childhood than adulthood, with more than five dimensions. Some early-appearing traits may fade in importance with age. For example, Thomas and Chess's (1977) temperament model includes some dimensions, such as Sensory Threshold and Rhythmicity, with no obvious analogues in the adult Big Five. Alternatively, some childhood traits may combine to form broader adult dimensions. For example, the empirical association between activity level and sociability strengthens with age (Eaton, 1994), suggesting that these traits may be distinct in childhood but then gradually merge, eventually producing adult Extraversion.

Supporting the hypothesis of more—rather than fewer—foundational dimensions at younger ages, some studies have recovered additional youth dimensions beyond the Big Five. For example, two studies (John, Caspi, Robins, Moffitt, & Stouthamer-Loeber, 1994; Van Lieshout & Haselager, 1994) using the California Child Q-Set (CCQ; Block & Block, 1980) identified a total of eight dimensions: the Big Five, Irritability (found only by John et al., 1994), Dependency (i.e., emotional overreliance on others; found only by Van Lieshout & Haselager, 1994), and Activity. Another study examined the joint structure of several personality and temperament measures, and found versions of Big Five Extraversion, Agreeableness, and Neuroticism, plus Activity, (perceptual) Sensitivity, and a dimension combining Conscientiousness and Openness (De Pauw, Mervielde, & Van Leeuwen, 2009). These findings, and the discrepancies between them, highlight the need for additional research testing the possibility of youth personality dimensions beyond the Big Five.

Age Differences in the Meanings of Personality Dimensions

Suppose that the foundational structure of youths' personality traits is relatively consistent from childhood through adolescence: Versions of a particular set of foundational dimensions are consistently recognizable across a wide range of ages. Even so, some or all of these dimensions might manifest in different ways during different developmental periods. In other words, a foundational dimension may be defined by different sets of facet traits—specific behavioral, emotional, and cognitive characteristics—in childhood than in adolescence or adulthood. Our final major goal was to test for such shifts in meaning.

Indeed, some researchers have proposed that the Big Five are defined by different facet traits in childhood than in adulthood. For example, Mervielde and De Fruyt (2002) have proposed that the childhood analogue of Agreeableness, which they label Benevolence, includes not only compassion and cooperativeness, but also low irritability (a facet of adult Neuroticism) and low assertiveness (a facet of adult Extraversion). This implies that the meaning of Agreeableness may narrow from childhood to adulthood, whereas the meanings of Neuroticism and Extraversion may expand. Supporting this proposal, some studies of child personality structure have recovered broad versions of Agreeableness that also include irritability and assertiveness content (De Pauw et al., 2009; Tackett et al., 2008, 2012).

Several facet traits, including self-control, achievement motivation, and orderliness, help define Conscientiousness in both childhood and adulthood (Caspi et al., 2005; Costa & McCrae, 1992b; Roberts, Chernyshenko, Stark, & Goldberg, 2005). However, responsibility versus unreliability features more prominently in adult personality models than in youth models, whereas the reverse is true for attentional control versus distractibility (Halverson et al., 2003; Mervielde & De Fruyt, 2002; Rothbart et al., 2001). Thus, responsibility may become more central to Conscientiousness—and attentional control less so—at older ages.

Adult Openness to Experience is defined by intellectual curiosity, creativity, and artistic interests (Costa & McCrae, 1992b; DeYoung, Quilty, & Peterson, 2007). There has been

some controversy about when this dimension first emerges (Markey et al., 2004; Shiner, 1998). One intriguing hypothesis is that it may begin to develop early in life, but due to ongoing cognitive development, its conceptual core may shift from exploration of the physical world in early childhood to intellectual curiosity and imagination by early adolescence (Caspi et al., 2005).

Overview of the Present Research

In sum, the present research was conducted to (a) map the hierarchical structure of youths' personality traits, (b) identify the foundational level of this hierarchy, and (c) test for age differences in the meanings of personality dimensions. We broadly expected that (a) the youth personality hierarchy would both resemble and differ from the adult hierarchy in important ways, (b) the foundational level of this hierarchy would balance bandwidth, fidelity, and generalizability in a manner similar to the adult Big Five, and (c) some foundational dimensions would be defined by different sets of facet traits during different developmental periods. We tested these hypotheses by analyzing personality parent reports describing a large cross-sectional sample of children, adolescents, and young adults.

The present research design had two key features. The first was its sample of 16,000 target children, who ranged in age from 3 to 20 years old. More important than its large total size, this sample included 1,000 children (500 males and 500 females) in each of 16 age groups, which allowed us to precisely track age differences in personality structure across childhood, adolescence, and early adulthood. In contrast, previous studies of youth personality structure have typically examined smaller samples over a narrower age range and included only one or a few distinct age groups. Thus, the present research could test hypotheses about when and how personality structure develops with a valuable combination of precision and breadth.

A second key design feature was the measure used. Most previous studies of youth personality structure have used measures developed to assess a limited number of prespecified dimensions, such as the Big Five or the dimensions of a particular temperament model. Such measures are constructed to maximize the replicability of their intended structure. To achieve this, they necessarily exclude item content that lies between or beyond their intended dimensions. For example, most temperament measures intentionally exclude Agreeableness and Openness to Experience content, whereas many Big Five measures lack Activity content (De Pauw & Mervielde, 2010). Due to such exclusions, studies using instruments with prespecified measurement structures risk overlooking important youth personality dimensions.

To address this issue, the present research employed the common-language California Child Q-Set (CCQ; Block & Block, 1980; Caspi et al., 1992). Drawing on input from parents, researchers, and clinicians, this broadband instrument was developed to provide comprehensive descriptions of youths' personal characteristics rather than to measure a prespecified structure. Its items therefore assess a wide range of behavioral, emotional, and cognitive characteristics. The depth and breadth of the CCQ item pool are illustrated by the fact that, as noted above, two previous studies using this measure have identified a total of eight dimensions, although each study found a somewhat different set (John et al., 1994; Van Lieshout & Haselager, 1994).

METHOD

Participants and Target Children

Participants were adult caregivers who provided personality parent reports describing 16,000 children, adolescents, and young adults between the ages of 3 and 20 years old. We selected this final sample of target children from a larger initial sample of 24,373 in order to balance age and gender.[1] Specifically, we divided the initial sample into 32 subsamples—one for each possible combination of gender and year of age (with ages 18–20 combined). Within each subsample, we then randomly selected 500 children. Thus, our final sample included 1,000 children (500 male and 500 female) in each of 16 age groups: each individual year of age from early childhood (age 3) through late adolescence (age 17), plus a young adult group combining ages 18–20.

In terms of ethnicity, 78% of the target children were described as White/Caucasian, 4% as Black/African American, 4% as Hispanic/Latino, 3% as Asian/Asian American, 1% as Native American/American Indian, 8% as mixed ethnicity, and 2% as another ethnicity. Approximately 83% resided in the United States, 7% in the United Kingdom or Ireland, 6% in Canada, and 4% in Australia or New Zealand. The children's families were also diverse in terms of socioeconomic status: 16% were described as working class, 14% as lower middle class, 45% as middle class, 23% as upper middle class, and 2% as upper class. As in almost all studies of parent report data, most participants (89%) were mothers.

Procedure

Participants anonymously completed an online questionnaire hosted at a noncommercial Web site. Potential participants could hear about the questionnaire in a number of ways, including search engines, links from other Web sites, and word of mouth. After completing the questionnaire, participants received automatically generated, broadly worded feedback about their child's personality, as well as general information about personality research.

Measures

Common-Language California Child Q-Set. All participants completed a version of the common-language CCQ. The

original CCQ (Block & Block, 1980) was developed to allow researchers and clinicians to comprehensively rate the personal characteristics of children and adolescents. Its 100 items are statements that describe behavioral, emotional, cognitive, social, and physical traits. The common-language CCQ (Caspi et al., 1992) revised many of these items using simpler, nontechnical language so that the measure could be used with nonprofessional observers, such as parents with only a basic level of education.

In the present research, we slightly modified a total of 12 CCQ items, replacing specific words or phrases so that they could be applied to young adults as well as children. For example, some items originally referred to the target individual as a "child" or "kid"; we replaced these terms with "person." We also simplified the instrument's response format. The CCQ's original format requires raters to sort its 100 items into nine categories following a fixed distribution. These categories range from the items least characteristic (assigned a rating of 1) to those most characteristic (assigned a rating of 9) of the target child. The purpose of this format is to control for individual differences in response style, especially acquiescent responding: the tendency to consistently rate items high or low, regardless of their content. Rather than sorting items, the present participants rated each item independently on a 9-point scale ranging from 1 (*extremely uncharacteristic*) to 9 (*extremely characteristic*). Prior to analysis, individual differences in acquiescent responding were controlled by centering each participant's set of ratings around their mean score on an acquiescence index. This index included 26 pairs of items with opposite implications for personality, identified using inter-item correlations and judgments of item content (e.g., "77. Feels unworthy; has a low opinion of themself" vs. "88. Is self-confident and sure of themself; makes up their own mind"). Previous research has shown that this procedure effectively controls for individual differences in acquiescence while preserving meaningful personality information (Soto et al., 2008).

Identifying Personality-Focused CCQ Items. As an instrument developed to provide comprehensive personal descriptions, the CCQ includes a few items assessing characteristics other than personality traits, such as physical appearance and social effects (i.e., other people's responses to the target child). Previous research has shown that the inclusion of such content can influence a variable set's multidimensional structure (Saucier, 1997). We therefore conducted a pilot study to identify the subset of CCQ items that would be best suited to examining personality structure. Our goal was to retain as large of an item set as possible while excluding items that did not directly assess behavioral, emotional, or cognitive traits.

Following an approach used in taxonomic research (e.g., Saucier, 1997), 85 student judges classified each CCQ item as primarily assessing (a) a personality trait, (b) an ability or a skill, (c) a social role or relationship, (d) an overt physical characteristic (such as height, weight, or appearance), or (e) a social effect or evaluation (defined as another person's response to the target child, rather than a description of the child's own behavior). Of the 100 items, 94 were classified by most judges ($M = 82\%$; range = 52–99%) as describing a personality trait or ability. The six remaining items were each classified by a clear majority of judges ($M = 78\%$; range = 69–89%) as describing an overt physical characteristic, social effect, or evaluation.[2]

In the present sample of parent reports, analyses of the 94 personality-focused CCQ items, and of all 100 items, produced similar results. However, as expected, including the six physical appearance and social effect items reduced the replicability of multidimensional structures. In the sections below, we therefore present findings for the set of 94 common-language CCQ items that directly assess behavioral, emotional, and cognitive traits.

CCQ Scales. To help interpret the results of the present research, we scored eight a priori CCQ scales. Five were CCQ–Big Five scales previously developed using rational judgments and empirical analyses, and validated using cognitive, academic, behavioral, and mental health outcomes (John et al., 1994). In the present sample, these scales' alpha reliabilities were .81 for Extraversion (9 items), .88 for Agreeableness (13 items), .84 for Conscientiousness (9 items), .84 for Neuroticism (10 items), and .66 for Openness to Experience (7 items); all of these reliabilities were at least as high as the corresponding values reported by John et al. (1994).

Three further scales were scored to represent additional dimensions, beyond the Big Five, found in previous studies using the CCQ (John et al., 1994; Van Lieshout & Haselager, 1994). We scored these from the items that loaded most strongly, in these previous studies, on the corresponding principal components: Activity (four items; e.g., "26. Is physically active. Enjoys playing sports, running, and exercise"), Irritability (five items; e.g., "94. Whines or pouts often"), and Dependency (five items; e.g., "87. Tries to copy and act like the people they admire and look up to").[3] In the present sample, these scales' alpha reliabilities were .75 for both Activity and Irritability, and .17 for Dependency. While certainly noting the Dependency scale's low alpha reliability, we retained it to help compare the present findings with previous results.

Big Five Inventory Marker Scales. After data collection had begun, an abbreviated version of the Big Five Inventory (BFI; John, Donahue, & Kentle, 1991; see John et al., 2008) was added to the online questionnaire, and a subsample of 7,171 participants completed this measure. The BFI items are short phrases designed to assess the core aspects of each Big Five dimension. For the present study, we selected 20 items (four per dimension) that seemed applicable to children and adolescents as well as young adults, and that captured the full scales' breadth of content. In the present sample, these brief scales' alpha reliabilities were .84 for Extraversion, .79 for Agreeableness, .77 for Conscientiousness, .76 for Neuroti-

cism, and .44 for Openness to Experience. Their correlations with the corresponding CCQ–Big Five scales were .79, .81, .76, .73, and .51, indicating good overall convergence between the two measures.

RESULTS

The Hierarchical Structure of Youths' Personality Traits

Our first major goal was to map the overall structure of the youth personality hierarchy. Following previous research on hierarchical structure (e.g., Tackett et al., 2008, 2012), we did this by analyzing our full sample of 16,000 personality parent reports using Goldberg's (2006) "bass-ackwards" method. This method involves conducting a series of principal component analyses. Beginning with one dimension, each subsequent analysis extracts and rotates an additional dimension. The correlations between component scores from adjacent analyses (e.g., between components from the two-dimensional and three-dimensional structures) reveal the hierarchical relations between dimensions at different levels.

We applied this method to the set of 94 personality-focused CCQ items, extracting and rotating up to nine dimensions using the orthogonal varimax criterion. (Analyses using oblique promax rotation yielded similar results.) The results of the one-dimensional through six-dimensional analyses are presented in Figure 1 and Table 2. Figure 1 presents the five items that most clearly defined each component (i.e., the strongest-loading items). It also shows all correlations of at least .30 in strength between components at adjacent hierarchical levels. Table 2 lists each component's

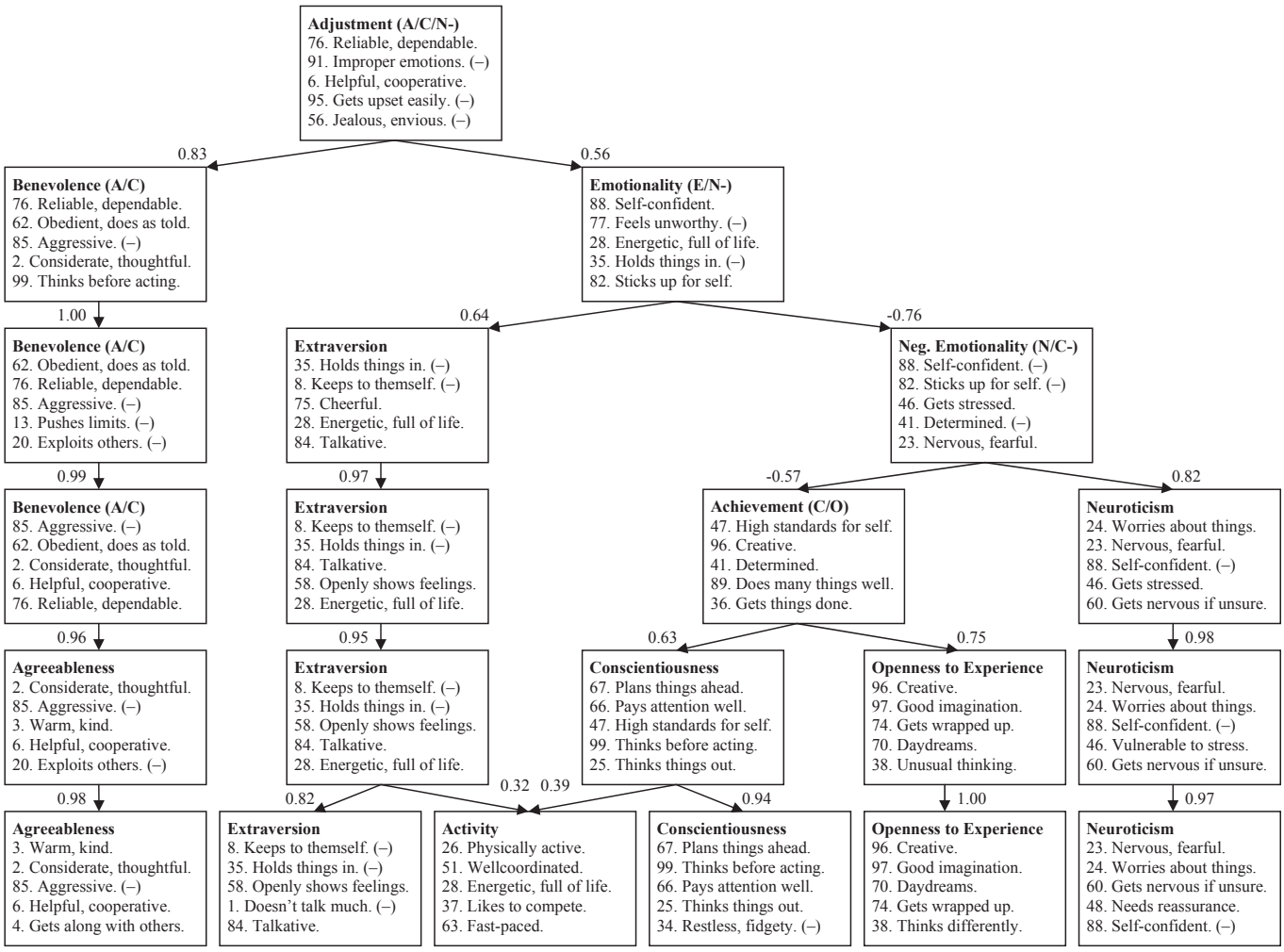

Figure 1 The hierarchical structure of personality parent reports, in the full sample ($N = 16{,}000$). Each rectangle represents a varimax-rotated principal component and provides a descriptive label along with paraphrases of that component's five strongest-loading items. (–) indicates that an item loaded negatively on that component. Capital letters in parentheses signify that a component included content from multiple Big Five dimensions, as indicated by its correlations with the BFI and CCQ scales (see Table 2). Arrows represent correlations of at least .30 in strength between components at adjacent hierarchical levels. E = Extraversion; A = Agreeabeleness; C = Conscientiousness; N = Neuroticism; O = Openness to Experience; Neg. Emotionality = Negative Emotionality.

Table 2 Correlations of Varimax-Rotated Principal Components With the BFI and CCQ Scales, in the Full Sample

		BFI Scale					CCQ Scale							
Component	Items	E	A	C	N	O	E	A	C	N	O	Act.	Irr.	Dep.
One-dimensional structure														
1. Adjustment	94	.17	**.71**	**.56**	**–.62**	.27	.35	**.84**	**.78**	**–.63**	.36	.44	**–.65**	–.30
Two-dimensional structure														
1. Benevolence	44	–.27	**.72**	**.48**	–.37	.21	–.11	**.87**	**.69**	–.22	.23	.09	**–.57**	–.28
2. Emotionality	50	**.67**	.17	.25	**–.53**	.15	**.79**	.21	.37	**–.80**	.31	**.65**	–.30	–.12
Three-dimensional structure														
1. Benevolence	42	–.31	**.71**	**.45**	–.32	.20	–.16	**.86**	**.66**	–.16	.20	.05	**–.54**	–.27
2. Negative Emotionality	31	–.22	.03	**–.43**	**.52**	–.22	–.34	–.01	**–.57**	**.79**	–.31	–.49	**.55**	.30
3. Extraversion	21	**.72**	.37	–.07	–.24	.00	**.82**	.40	–.03	–.32	.14	.43	.12	.13
Four-dimensional structure														
1. Benevolence	41	–.25	**.75**	**.41**	–.34	.16	–.11	**.89**	**.60**	–.16	.16	.06	**–.51**	–.25
2. Neuroticism	19	–.30	–.07	–.25	**.67**	.01	–.32	–.10	–.31	**.89**	.07	–.45	**.59**	.36
3. Extraversion	19	**.72**	.29	–.08	–.10	.05	**.83**	.30	–.04	–.21	.25	.41	.24	.21
4. Achievement	15	–.04	–.07	**.43**	.03	**.42**	.16	–.02	**.61**	–.14	**.66**	.23	–.16	–.02
Five-dimensional structure														
1. Agreeableness	35	–.09	**.81**	.24	–.39	.14	–.01	**.92**	.42	–.19	.18	.08	–.46	–.19
2. Neuroticism	22	–.29	–.07	–.23	**.68**	–.07	–.30	–.08	–.32	**.89**	–.08	–.45	**.62**	.35
3. Extraversion	18	**.70**	.16	.05	–.05	.02	**.87**	.19	.07	–.21	.15	.45	.28	.19
4. Conscientiousness	10	–.30	–.03	**.65**	.06	.12	–.04	.11	**.76**	–.05	.02	.13	–.20	–.20
5. Openness to Experience	9	.03	.06	.04	.02	**.47**	.06	.04	.22	–.03	**.87**	.09	–.10	.12
Six-dimensional structure														
1. Agreeableness	34	.05	**.82**	.16	–.39	.11	.10	**.92**	.34	–.21	.19	.19	–.39	–.12
2. Neuroticism	18	–.24	–.05	–.18	**.68**	–.08	–.24	–.06	–.25	**.87**	–.08	–.27	**.63**	.38
3. Conscientiousness	12	**–.42**	.07	**.62**	–.02	.16	–.18	.21	**.75**	–.05	.03	–.10	–.32	–.29
4. Extraversion	11	**.62**	.08	.05	–.05	.10	**.82**	.09	.06	–.22	.20	.14	.24	.10
5. Activity	10	.23	.02	.30	–.04	–.03	.30	.09	.38	–.19	.05	**.79**	–.02	.10
6. Openness to Experience	9	–.02	.04	.03	.03	**.47**	.00	.02	.20	–.01	**.86**	.02	–.11	.10

Note. $N = 16{,}000$. For correlations with the BFI scales, $N = 7{,}171$. Correlations with magnitudes of at least .40 (with the BFI scales) or .50 (with the CCQ scales) are boldfaced and underlined. All correlations with magnitudes of .03 or greater are statistically significant at the .01 level. BFI = Big Five Inventory; CCQ = California Child Q-Set; Items = number of items with their strongest loading on a component; E = Extraversion; A = Agreeableness; C = Conscientiousness; N = Neuroticism; O = Openness to Experience; Act. = Activity; Irr. = Irritability; Dep. = Dependency.

correlations with (a) the five BFI marker scales and (b) the eight a priori CCQ scales.

One-Dimensional Structure. This single dimension correlated with all of the BFI and CCQ scales, especially Agreeableness, Conscientiousness, low Neuroticism, and low Irritability. Its positive pole was most strongly defined by responsible and cooperative behavior (e.g., "76. Can be trusted; is reliable and dependable"), whereas its negative pole was defined by irritable and antisocial behavior (e.g., "95. Lets little problems get to them and is easily upset. It doesn't take much to get them irritated or mad"). We label this broad dimension Adjustment.

Two-Dimensional Structure. In this structure, Adjustment separated into two subcomponents. The first, labeled Benevolence, correlated strongly with scales assessing Agreeableness, Conscientiousness, and low Irritability. It was primarily defined by responsible, cooperative, and obedient behavior (e.g., "62. Is obedient and does what they are told") versus antagonism (e.g., "85. Is aggressive (for example, picks fights or starts arguments)"). It resembles the broad youth versions of Agreeableness found in some previous studies (Mervielde & De Fruyt, 2002; De Pauw et al., 2009; Tackett et al., 2008, 2012).

The second component, Emotionality, correlated strongly with Extraversion, Activity, and low Neuroticism. Its poles distinguished positive emotions and self-confidence (e.g., "28. Is energetic and full of life") from negative emotions and self-doubt (e.g., "77. Feels unworthy; has a low opinion of themself"). Interestingly, Benevolence and Emotionality resemble reversed, adaptive versions of externalizing and internalizing behavioral problems.

Three-Dimensional Structure. In the transition from two to three dimensions, Emotionality bifurcated into two subcomponents. One of these, Extraversion, correlated strongly with the same-named BFI and CCQ scales. It contrasted sociability and positive emotions (e.g., "84. Is a talkative person; talks a lot") with social and emotional reserve (e.g., "8. Likes to keep their thoughts and feelings to themself"). The second subcomponent, Negative Emotionality, correlated

strongly with Neuroticism and Irritability, as well as low Conscientiousness. Its poles were defined by vulnerability to stress and anxiety (e.g., "46. Tends to go to pieces under stress; gets rattled when things are tough") versus self-confidence and motivation (e.g., "41. Is determined in what they do; does not give up easily").

The Benevolence component was almost perfectly consistent across the two-dimensional and three-dimensional structures. Together, Extraversion, Negative Emotionality, and Benevolence constitute a version of the Big Three structure, although Benevolence includes more Agreeableness content than does prototypical Big Three Constraint.

Four-Dimensional Structure. This structure separated Negative Emotionality into two subcomponents. One, labeled Neuroticism, correlated strongly with the same-named BFI and CCQ scales, and with the CCQ Irritability scale. It contrasted anxiety and stress with self-confidence and emotional stability (e.g., "43. Can bounce back and recover after a stressful or bad experience"). The second subcomponent, labeled Achievement, correlated substantially with Conscientiousness and Openness to Experience. It was defined by motivation, creativity, and ability (e.g., "96. Is creative in the way they look at things; the way they think, work, or play is very creative").

Extraversion and Benevolence were both retained from the three-dimensional structure. The resulting four-dimensional structure loosely resembles the Big Four model of normal and abnormal personality traits. However, the present structure more prominently features Openness to Experience, which combined with motivational aspects of Conscientiousness to define the Achievement dimension.

Five-Dimensional Structure. Two noteworthy changes occurred during the transition to five dimensions. First, Achievement separated into Conscientiousness and Openness to Experience subcomponents, each of which correlated strongly with the same-named BFI and CCQ scales. Conscientiousness was defined by motivation, organization, self-control, and attentional focus (e.g., "67. Plans things ahead; thinks before they do something. 'Looks before they leap' "), whereas Openness was defined by creativity, imagination, and intellectual curiosity (e.g., "97. Likes to dream up fantasies; has a good imagination").

The second noteworthy change was that Benevolence narrowed into a more prototypical Agreeableness component, which was more strongly defined by compassionate and cooperative behavior (e.g., "3. Is a warm person and responds with kindness to other people") than by responsibility and obedience. Compared with Benevolence, it correlated more strongly with the BFI and CCQ Agreeableness scales, and less strongly with Conscientiousness and Irritability. Finally, Extraversion and Neuroticism were retained from the four-dimensional structure. Thus, the five-dimensional structure represents a version of the familiar Big Five.

Six-Dimensional Structure. The shift to six dimensions differed from previous transitions, in that a broader component did not clearly bifurcate into two narrower subcomponents. Although the new component, labeled "Activity," correlated moderately with the previous Extraversion and Conscientiousness components, it correlated much more strongly with the CCQ Activity scale than with any of the Big Five scales. This component was primarily defined by motor activity and energy level (e.g., "26. Is physically active. Enjoys playing sports, running, and exercise") but also included aspects of psychological agency, such as motivation and competitive drive (e.g., "37. Likes to compete; Is always testing and comparing themself to other people").

The emergence of Activity narrowed the Extraversion and Conscientiousness components somewhat. Extraversion was now primarily defined by sociability and talkativeness rather than positive emotions, whereas Conscientiousness was defined by organization and attentional focus rather than motivation. Agreeableness, Neuroticism, and Openness to Experience were all retained from the previous structure. The resulting six-dimensional structure represents the Little Six: Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness, and Activity.

Seven-Dimensional, Eight-Dimensional, and Nine-Dimensional Structures. In the seven-dimensional structure, a narrow Positive Emotions component was defined by energy level, pride, and affection (e.g., "16. Is proud of the things they have done and made"). In the eight-dimensional structure, this dimension disappeared and was replaced by two even narrower components representing Social Immaturity (e.g., "87. Tries to copy and act like the people they admire and look up to") and Emotional Immaturity (e.g., "12. Starts to act immature when facing difficult problems or when under stress [for example, whines or acts out]"). Finally, in the nine-dimensional structure, Social Immaturity separated into two items assessing Submissiveness (e.g., "44. Gives in or backs down when they have a conflict or disagreement with others.") and three items assessing Social Manipulation (e.g., "22. Tries to get others to do things by acting up to them. Acts charming in order to get their way").

We caution against over-interpreting these components, for three reasons. First, they were very narrow in scope: The seven-dimensional through nine-dimensional structures each included components defined by five or fewer items. Second, extracting and rotating additional components did not meaningfully affect the first six dimensions: Component scores from the six-dimensional structure correlated at least .89 with corresponding scores from the nine-dimensional structure. Finally, when we analyzed male and female target children separately ($N = 8{,}000$ per group), the consensus one-dimensional through six-dimensional structures fully replicated in both gender-specific groups, whereas the seven-dimensional through nine-dimensional structures did not. Thus, these structures' additional components appear to

represent narrow item clusters specific to the CCQ, rather than generalizable personality dimensions.

The Foundational Level of the Youth Personality Hierarchy

The overall or consensus hierarchical structure, derived from the full sample and described above, included some trait dimensions with very high descriptive bandwidth (e.g., Adjustment) and others with very high fidelity (e.g., Social Manipulation). Our second major goal was to identify the foundational level of the youth personality hierarchy. We did this by examining the generalizability, across age-specific subsamples, of trait dimensions with different degrees of bandwidth and fidelity.

We began by extracting and rotating one through nine principal components in each of our 16 specific age groups (ages 3 to 18–20). Next, we computed Tucker congruence coefficients to compare the components from each level of the consensus hierarchical structure with the corresponding age-specific components (e.g., comparing the consensus two-dimensional structure with the age-3 two-dimensional structure). Finally, we compared components between adjacent age groups (e.g., between the age-3 and age-4 two-dimensional structures) in order to search for replicable alternatives to the consensus structure. The set of dimensions constituting the foundational level of the youth personality hierarchy should consistently replicate across age groups while balancing bandwidth and fidelity in a manner similar to the adult Big Five.

Congruence coefficients comparing components from the consensus hierarchical structure with the corresponding age-specific components are presented in Table 3. Each coefficient of .85 or greater indicates that a consensus component was replicated in a specific age group (Haven & Ten Berge, 1977). As this table shows, the consensus one-dimensional structure—a single Adjustment component—and two-dimensional structure—Benevolence and Emotionality—replicated in each age group. The consensus three-dimensional structure—Benevolence, Extraversion, and Negative Emotionality—was also highly generalizable. It fully replicated in 14 of the 16 age groups, and the lowest congruence coefficient in any group was .79. Moreover, neither of the alternative

Table 3 Congruence Coefficients Comparing the Consensus Structure, in the Full Sample, With Structures From 16 Age Groups

	Age Group															
Component	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18–20
One-dimensional structure																
1. Adjustment	.98	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99
Two-dimensional structure																
1. Benevolence	.97	.98	.98	.99	.99	1.00	1.00	1.00	1.00	.99	.99	1.00	.99	.99	.99	.99
2. Emotionality	.97	.98	.98	.98	.98	.98	.98	.99	.96	.96	.98	.97	.98	.97	.96	.96
Three-dimensional structure																
1. Benevolence	.96	.98	.99	.99	.99	.98	.99	.98	.99	.99	.99	.99	.99	.99	.98	.99
2. Negative Emotionality	.92	.97	.98	.98	.97	.98	.96	.97	.98	.98	.99	**.81**	.91	.98	.98	.97
3. Extraversion	**.82**	.93	.94	.93	.93	.91	.93	.90	.87	.96	.94	**.79**	.88	.87	.86	.87
Four-dimensional structure																
1. Benevolence	**.81**	.98	.98	.99	.99	.99	.98	.98	.99	1.00	1.00	.99	.99	.99	.99	.99
2. Neuroticism	.97	.97	.98	.99	.98	.96	.99	.99	.97	.99	.96	.98	.98	.97	.99	.97
3. Extraversion	**.11**	.90	.89	.90	.94	.93	.90	.90	.91	.97	.96	.87	.95	.91	.93	.85
4. Achievement	**.79**	**.74**	**.76**	**.77**	.95	.92	**.82**	.87	.96	.98	.89	.97	.95	.95	.95	.91
Five-dimensional structure																
1. Agreeableness	.89	.90	.99	.99	.99	.99	1.00	1.00	1.00	.99	1.00	.99	.99	.99	.99	.99
2. Neuroticism	.97	.98	.98	.99	.98	.98	.99	.97	.99	.98	.99	.97	.98	.99	.99	.99
3. Extraversion	**.84**	.90	**.84**	.92	.95	**.84**	.91	.88	.92	.94	.95	.92	.95	.93	.94	.91
4. Conscientiousness	**.77**	**.80**	.90	.94	.93	.90	.96	.92	.97	**.61**	.98	**.82**	.95	.97	.97	.94
5. Openness to Experience	**.73**	**.84**	**.79**	.86	.89	.94	.91	**.03**	.96	**.83**	.98	**.48**	.96	.92	.95	.93
Six-dimensional structure																
1. Agreeableness	.97	.94	.99	.98	.99	1.00	.99	.99	.99	.99	1.00	.99	.99	.99	.99	.99
2. Neuroticism	.87	.96	.98	.98	.98	.99	.99	.99	.99	.99	.99	.99	.98	.98	.98	.98
3. Conscientiousness	.93	.92	.97	.95	.94	.99	.97	.97	.97	.97	.98	.98	.98	.97	.97	.96
4. Extraversion	.89	.94	.93	.97	.96	.96	.96	.96	.95	.97	.96	.93	.97	.97	.96	.96
5. Activity	**.79**	**.83**	.94	.95	.96	.97	.95	.95	.96	.94	.96	.95	.95	.93	.92	.85
6. Openness to Experience	**.19**	**.77**	**.81**	.92	.93	.96	.95	.96	.96	.98	.98	.94	.97	.92	.95	.91

Note. For each age group, $N = 1{,}000$. All dimensions are varimax-rotated principal components. Congruence coefficients less than .85 are boldfaced and underlined. Each coefficient of .85 or greater indicates the successful replication of a consensus component in a specific age group.

three-dimensional structures (from ages 3 and 14) replicated in any adjacent age groups.

The consensus four-dimensional structure—Benevolence, Extraversion, Neuroticism, and Achievement—began to replicate consistently in middle childhood. It fully replicated in 11 of the 12 groups spanning ages 7 to 18–20; the lone exception was due to a congruence coefficient of .82 for Achievement at age 9. An alternative four-dimensional structure also replicated across ages 5 to 8. It differed from the consensus structure in that its version of Achievement was defined more strongly by Conscientiousness than by Openness to Experience.

The consensus five-dimensional structure—the Big Five—generalized less consistently than previous structures but became more replicable with age. First recovered at age 6, this structure replicated in only five of the nine groups spanning from middle childhood through early adolescence (ages 6 to 14) but then fully replicated in each of the four oldest age groups. Interestingly, an alternative five-dimensional structure replicated across early childhood (ages 3 to 5). Its most striking difference from the consensus structure was that its version of Openness to Experience was defined not only by cognitive characteristics—such as imagination and creativity—but also by motor activity and energy level. This finding suggests that the early-childhood precursor to Openness may manifest through both cognitive curiosity and physical exploration (cf. Caspi et al., 2005; Raine, Reynolds, Venables, & Mednick, 2002).

Surprisingly, beginning in middle childhood, the consensus six-dimensional structure—the Little Six—proved more generalizable than the three-dimensional through five-dimensional structures. In fact, the Little Six fully replicated in each group from ages 6 to 18–20. In contrast, the consensus seven-dimensional through nine-dimensional structures were much less replicable than any previous structure. None of these three structures replicated in more than two age groups, nor did any alternative structure with seven, eight, or nine dimensions replicate across more than two adjacent groups.

Three noteworthy patterns emerged from these results. First, fewer and simpler structures replicated across early childhood (ages 3 to 5) than across later developmental periods, suggesting that personality structure becomes more differentiated from early to middle childhood. Second, the consensus one-dimensional through six-dimensional structures each replicated in most of the 13 groups spanning ages 6 to 18–20, suggesting that the first six levels of the personality hierarchy are quite consistent across these years. Finally, the Little Six structure fully replicated in each of these same 13 groups; Table 4 presents item loadings for this structure in the combined sample of 12,000 target children spanning ages 6 to 20. The generalizability of these dimensions, together with the fact that they balance descriptive bandwidth and fidelity in a manner similar to the adult Big Five, suggests that the Little Six may constitute the foundational level of the youth personality hierarchy from middle childhood through adolescence.

Age Differences in the Meanings of Personality Dimensions

Although versions of the Little Six structure were consistently recognizable from middle childhood through adolescence, some or all of these dimensions might manifest in different ways during different developmental periods. In other words, any particular Little Six dimension might be defined by somewhat different sets of specific behavioral, emotional, and cognitive characteristics at younger versus older ages. Our third major goal was to test for such shifts in meaning.

To do this, we examined age differences in the CCQ items' loadings on the Little Six dimensions from ages 6 to 18–20. First, for each dimension, we regressed each item's set of 13 age-specific component loadings (e.g., the loading of Item 1 on Extraversion at age 6, at age 7, at age 8, etc.) on age. Next, we computed each item's regression-predicted loading on each dimension at ages 6 and 18 (e.g., the predicted loading of Item 1 on Extraversion at these two ages). Finally, for each dimension, we identified all items (a) with a predicted loading of at least .40 in strength at age 6, at age 18, or both, and (b) whose predicted loading increased or decreased by at least one correlation point per year from ages 6 to 18.[4] Such items, listed in Table 5, represent specific traits that helped define a particular Little Six dimension, but that systematically became more central, or more peripheral, to that dimension with age.

The Activity dimension showed the most dramatic shift in meaning. Of the nine items with predicted loadings of .40 or stronger, all but two showed systematic age trends. Their content indicates that, from middle childhood through adolescence, this dimension's meaning shifted away from motor activity and skill (e.g., "26. Is physically active. Enjoys playing sports, running, and exercise") and toward motivation and competitive drive (e.g., "37. Likes to compete; Is always testing and comparing themself to other people"). In other words, Activity became less physical, and more psychological, with age.

The meaning of Conscientiousness also shifted noticeably: Of the 17 items with predicted loadings of .40 or stronger, 11 showed systematic age trends. Most were items assessing social behavior, whose loadings strengthened with age. Their content indicates that, from childhood through adolescence, Conscientiousness was increasingly defined by responsible versus unprincipled social behavior (e.g., "13. Tries to see what and how much they can get away with. Usually pushes limits and tries to stretch the rules"). However, even at age 18, this dimension's strongest-loading items concerned organization and self-control rather than social behavior.

The Agreeableness dimension's meaning shifted more subtly, with five items showing systematically increasing or decreasing loadings. Most notably, items assessing responsibility became less central to Agreeableness with age, as they shifted toward Conscientiousness. Finally, Neuroticism, Extraversion, and Openness to Experience were all defined quite consistently across the age groups. None had more than three

Table 4 Principal Component Loadings for the Little Six Structure, Ages 6 to 20 Combined

	1	2	3	4	5	6
Component 1: Agreeableness						
3. Is a warm person and responds with kindness to other people.	**.76**	–.06	–.04	.18	.06	–.01
2. Is considerate and thoughtful of other people.	**.76**	–.02	.15	.07	.01	.01
85. Is aggressive (for example, picks fights or starts arguments).	**–.72**	–.07	–.20	.04	.01	–.01
6. Is helpful and cooperates with other people.	**.72**	–.12	.20	.07	.13	–.07
4. Gets along well with other people.	**.68**	–.26	–.02	.06	.17	–.10
20. Tries to take advantage of other people.	**–.66**	–.07	–.30	–.04	–.05	–.12
93. Is bossy and likes to dominate other people.	**–.66**	–.06	–.15	.21	.10	–.06
32. Gives, lends, and shares things.	**.65**	–.10	.04	.09	.00	.07
31. Is able to see how others feel; can put him/herself in their place.	**.63**	–.10	.30	.08	–.05	.15
56. Is jealous and envious; wants what other people have.	**–.62**	.26	–.19	.02	.01	–.17
75. Is cheerful.	**.61**	–.27	–.15	.29	.25	.07
62. Is obedient and does what he/she is told.	**.60**	.02	**.45**	–.02	.04	–.08
80. Teases and picks on his/her peers.	**–.59**	–.13	–.19	–.10	–.06	–.14
15. Shows concern about what's right and what's wrong.	**.59**	.03	.39	.17	.07	.05
76. Can be trusted; Is reliable, and dependable.	**.57**	–.12	**.51**	.06	.12	.08
91. Has emotions that don't fit the situation (for example, overreacts).	**–.56**	.25	–.27	–.19	–.17	.05
54. Has unpredictable moods—they change often and quickly.	**–.56**	.30	–.16	–.12	–.12	.05
14. Is eager to please.	**.55**	.20	.10	.18	.20	–.04
57. Exaggerates about things that happen; blows things out of proportion.	**–.54**	.23	–.33	.09	–.09	–.05
61. Tends to be judgmental of the behavior of others.	**–.54**	.10	**–.41**	.03	–.03	–.19
11. Tries to blame other people for things they have done themself.	**–.54**	.14	.14	.02	–.01	–.01
64. Is calm and relaxed; easy-going.	**.53**	–.37	.19	–.16	–.14	.01
90. Is stubborn.	**–.53**	–.01	–.16	–.05	.07	.17
95. Lets little problems get to them. Gets upset, irritated, or mad easily.	**–.53**	**.48**	–.15	.05	–.08	–.06
13. Sees what they can get away with. Pushes limits and stretches rules.	**–.52**	–.05	**–.51**	.01	.03	–.06
55. Worries about not getting their share. Is afraid they won't get enough.	**–.52**	.33	–.16	.02	.01	–.13
9. Makes good and close friendships with other people.	**.49**	–.30	.10	.07	.20	–.01
79. Is suspicious—doesn't really trust other people.	**–.47**	.23	.15	–.32	–.22	.08
65. Wants things right away. Has a hard time waiting for things.	**–.46**	.10	–.31	.10	.12	.00
22. Gets others to do things by playing up to them or acting charming.	**–.46**	–.07	–.35	.10	.06	–.06
29. Is protective of others. Protects people who are close to him/her.	**.46**	–.08	.08	.15	.17	.18
94. Whines or pouts often.	**–.43**	.38	–.30	.21	–.01	–.15
44. Gives in or backs down when they have a conflict or disagreement.	**.41**	.27	.02	–.25	–.17	–.18
10. Has friendships that don't last long; changes friends a lot.	**–.41**	.10	–.24	–.06	–.15	–.11
73. Has a sense of humor—likes to laugh at funny things.	.35	–.15	–.21	.13	.15	.29
Component 2: Neuroticism						
24. Worries about things for a long time.	–.04	**.66**	.18	–.09	–.08	.11
23. Is nervous and fearful.	–.05	**.66**	.06	–.17	–.15	–.02
48. Needs to have people encourage them. Is not very sure of themself.	–.08	**.62**	–.15	–.08	.02	–.04
88. Is self-confident and sure of themself; makes up their own mind.	.12	**–.62**	.22	.21	.22	.18
60. Gets nervous if they're not sure what's going to happen or what to do.	–.03	**.61**	.11	–.10	.00	.01
46. Tends to go to pieces under stress; gets rattled when things are tough.	–.14	**.60**	–.19	–.04	–.15	–.14
78. Has their feelings hurt easily if they are made fun of or criticized.	–.13	**.60**	–.08	.05	–.04	–.04
43. Can bounce back and recover after a stressful or bad experience.	.27	**–.54**	–.01	.10	.18	.09
82. Speaks up and sticks up for him/herself; goes after what he/she wants.	–.18	**–.53**	.11	.34	.18	.17
33. Cries easily.	.04	**.51**	–.13	.25	–.05	–.05
77. Feels unworthy; has a low opinion of him/herself.	–.24	**.50**	–.08	–.30	–.27	.02
72. Often feels guilty; blames themself, even if they don't talk about it.	.14	**.49**	.11	–.13	–.08	.15
39. Freezes up when things are stressful, or keeps doing the same thing.	–.13	**.47**	–.24	–.29	–.12	.02
50. Tends to get sick when things go wrong or when there is a lot of stress.	–.16	**.42**	–.06	–.10	–.16	.04
83. Tries to be independent, do things without help, and not rely on others.	–.03	–.37	.28	–.10	.19	.32
53. Has a hard time making up his/her mind; changes his/her mind a lot.	–.11	.36	–.26	–.13	–.08	.03
45. When under stress, gives up and backs off.	.28	.33	–.10	–.26	–.23	–.21
49. Has specific habits (for example, bites their fingernails or lips).	–.13	.27	–.15	–.19	–.07	.21
Component 3: Conscientiousness						
67. Plans ahead; thinks before doing something. "Looks before they leap."	.27	–.11	**.72**	.03	.08	.05
99. Thinks about their actions before doing or saying something.	**.42**	–.13	**.65**	–.09	–.03	.07
66. Pays attention well and can concentrate on things.	.20	–.22	**.64**	.07	.17	.04

Table 4 *(Cont.)*

	1	2	3	4	5	6
25. Thinks things out and reasons like a very mature person.	.38	–.17	**.60**	.03	.02	.22
47. Has high standards for themself. Needs to do very well at things.	.15	.08	**.52**	.08	.39	.24
34. Is restless and fidgety; has a hard time sitting still.	–.16	.17	**–.51**	–.02	.08	.15
59. Is neat and orderly in the way he/she dresses and acts.	.17	–.06	**.48**	.02	.27	–.09
21. Tries to be the center of attention.	**–.40**	–.02	**–.45**	.34	.19	–.07
12. Acts immature when facing problems or stress (for example, acts out).	–.39	.29	**–.44**	.13	–.02	–.17
36. Finds ways to make things happen and get things done.	.10	–.34	.39	.04	.35	.24
52. Is careful not to get hurt (physically).	.13	.06	.29	–.03	–.02	–.09
87. Tries to copy and act like the people they admire and look up to.	–.09	.19	–.21	.08	.14	–.11
Component 4: Extraversion						
8. Likes to keep their thoughts and feelings to themself.	–.05	–.02	.01	**–.77**	–.07	.00
35. Holds things in. Has a hard time expressing themself; is a bit uptight.	–.17	.23	–.03	**–.73**	–.07	–.02
58. Openly shows the way they feel, whether it's good or bad.	–.07	–.07	–.09	**.70**	.02	–.04
1. Shows their thoughts and feelings, but doesn't talk much about them.	–.05	.00	–.10	**–.59**	.04	–.03
84. Is a talkative person; talks a lot.	.01	–.12	–.36	**.55**	.17	.10
19. Is open and straightforward.	.14	–.32	.14	**.54**	.08	.08
18. Lets their peers know when they are upset or angry. Doesn't hold back.	–.27	–.20	–.11	**.47**	.06	–.01
81. Can talk about unpleasant things that have happened to them.	.09	–.16	.06	**.46**	–.04	.07
98. Is shy; has a hard time getting to know people.	–.01	.34	.30	**–.44**	–.26	.04
7. Likes physical affection (for example, likes to hug; likes to be held).	**.40**	.09	–.18	**.40**	.15	–.06
71. Often asks authority figures for help and advice.	.34	.15	.11	.37	.08	.00
Component 5: Activity						
26. Is physically active. Enjoys playing sports, running, and exercise.	.19	–.14	–.07	.01	**.71**	–.09
51. Is well coordinated (for example, does well in sports).	.11	–.22	.05	–.10	**.62**	–.06
28. Is energetic and full of life.	.32	–.22	–.17	.29	**.60**	.06
37. Likes to compete; is always testing and comparing themself to others.	–.20	–.05	.12	.05	**.58**	.07
63. Is fast-paced; moves and reacts to things quickly.	–.07	–.18	.01	.09	**.50**	.21
89. Is able to do many things well; is skillful.	.17	–.30	.26	.04	**.45**	.31
41. Is determined in what they do; does not give up easily.	.00	–.34	.33	.06	.37	.30
16. Is proud of the things they have done and made.	.28	–.09	.08	.28	.35	.08
17. Acts very masculine (if male) or feminine (if female).	.09	–.14	.01	.11	.33	–.13
Component 6: Openness to Experience						
96. Look at things in a creative way; thinks, works, or plays creatively.	.13	–.06	.04	.12	.04	**.67**
97. Likes to dream up fantasies; Has a good imagination.	.10	.08	–.13	.11	–.13	**.66**
70. Daydreams; often gets lost in thought or a fantasy world.	.02	.19	–.23	–.13	–.31	**.50**
74. Usually gets wrapped up in what they are doing.	.15	–.03	.13	.05	.17	**.48**
38. Has an unusual way of thinking—thinks differently than others would.	–.21	.08	–.07	–.16	–.12	**.48**
40. Is curious and exploring; likes to learn and experience new things.	.25	–.19	.04	.20	.31	**.43**
68. Is a very smart person (even if formal evaluations don't show this).	.02	–.10	.14	–.01	.14	**.41**
69. Has a way with words; can express themself well with words.	.12	–.22	.23	.34	.04	.38
86. Likes to be by him/herself; enjoys doing things alone.	–.05	–.01	.26	–.34	–.27	.35

Note. $N = 12{,}000$ target children between the ages of 6 and 20. Loadings of .40 or greater in strength are boldfaced and underlined. Some items have been paraphrased to conserve space.

items with systematic age trends, nor were there themes to these few items' content. Thus, the meanings of some Little Six dimensions shifted markedly with age, whereas others remained quite consistent.

DISCUSSION

The present research had three main goals: to map the hierarchical structure of youths' personality traits, to identify this hierarchy's foundational level, and to test for age differences in the meanings of personality dimensions. Its findings suggest several key conclusions.

The Hierarchical Structure of Youths' Personality Traits

Youths' personality traits, like those of adults, can be organized hierarchically (see Figure 1). The present findings converge with two previous studies (Tackett et al., 2008, 2012) in demonstrating some noteworthy similarities between the youth and adult personality hierarchies. For example, the youth three-dimensional and five-dimensional structures found in all three studies—using different samples and measures—represent versions of the Big Three and Big Five. However, the present results also suggest some unique features of the youth hierarchy.

Table 5 Items Whose Loadings on the Little Six Dimensions Systematically Increased or Decreased With Age

	Regression-Predicted Loading		
	Age 6	Age 18	Difference in Strength[a]
Activity			
36. Finds ways to make things happen and get things done.	.27	.48	.21
41. Is determined in what they do; does not give up easily.	.29	.50	.21
47. Has high standards for themself. Needs to do very well at things.	.28	.49	.21
37. Likes to compete; is always testing and comparing themself to others.	.51	.64	.13
28. Is energetic and full of life.	.64	.50	–.14
26. Is physically active. Enjoys playing sports, running, and exercise.	.74	.59	–.15
51. Is well coordinated (for example, does well in sports).	.69	.51	–.18
Conscientiousness			
22. Gets others to do things by playing up to them or acting charming.	–.20	–.47	.27
98. Is shy; has a hard time getting to know people.	.19	.41	.22
13. Sees what they can get away with. Pushes limits and stretches rules.	–.38	–.57	.19
62. Is obedient and does what they are told.	.33	.52	.19
11. Tries to blame other people for things they have done themself.	–.29	–.45	.16
21. Tries to be the center of attention.	–.34	–.49	.15
99. Thinks about their actions before doing or saying something.	.54	.69	.15
15. Shows concern about what's right and what's wrong.	.30	.44	.14
76. Can be trusted; is reliable, and dependable.	.42	.55	.13
59. Is neat and orderly in the way they dress and act.	.50	.38	–.12
34. Is restless and fidgety; has a hard time sitting still.	–.57	–.42	–.15
Agreeableness			
61. Tends to be judgmental of the behavior of others.	–.41	–.59	.18
13. Sees what they can get away with. Pushes limits and stretches rules.	–.61	–.49	–.12
44. Gives in or backs down when they have a conflict or disagreement.	.47	.31	–.16
99. Thinks about their actions before doing or saying something.	.53	.36	–.17
62. Is obedient and does what they are told.	.70	.51	–.19
Neuroticism			
39. Freezes up when things are stressful, or keeps doing the same thing.	.39	.52	.13
64. Is calm and relaxed; easy-going.	.31	.44	.13
53. Has a hard time making up their mind; changes their mind a lot.	–.30	–.42	.12
Extraversion			
19. Is open and straightforward.	.62	.46	–.16
Openness to Experience			
74. Usually gets wrapped up in what they are doing.	.55	.40	–.15

Note. [a]Difference in strength is the absolute value of an item's predicted loading at age 18 minus the absolute value of its predicted loading at age 6; therefore, a positive value indicates that an item defined a component more strongly at older ages, whereas a negative value indicates that it defined the component more strongly at younger ages. Some items have been paraphrased to conserve space.

For example, at the two-dimensional level, the present Benevolence and Emotionality dimensions resemble reversed, adaptive versions of externalizing and internalizing behavioral problems (Achenbach & Edelbrock, 1978), rather than the Big Two. Previous research has shown convergence between normal and abnormal personality structure (Krueger et al., 2011; Markon et al., 2005), and the present results suggest an aspect of normal-abnormal convergence that may be especially strong in childhood and adolescence (see also De Clercq et al., 2009).

A second noteworthy difference concerns Openness to Experience. In the adult hierarchy, Openness combines with Extraversion to define a Personal Growth or Positive Emotionality dimension at the two-dimensional through four-dimensional levels (Markon et al., 2005). By contrast, Openness was not central to any dimensions in the present two-dimensional and three-dimensional structures. At the four-dimensional level, aspects of Openness such as creativity, imagination, and intellect combined with Conscientiousness—rather than Extraversion—to define an Achievement dimension. Some previous studies have recovered similar youth dimensions combining Openness and Conscientiousness content (e.g., De Pauw et al., 2009; Mervielde, Buyst, & De Fruyt, 1995; Tackett et al., 2012), further supporting the hypothesis that Openness may play a different role in the youth versus adult personality hierarchies.

A final important difference occurred at the six-dimensional level. In adulthood, Honesty/Humility is arguably the most prominent dimension beyond the Big Five (Ashton & Lee, 2007; but see Waller & Zavala, 1993). Although the CCQ

includes several items assessing straightforward versus deceptive and manipulative behavior, no versions of Honesty/Humility were recovered in the present research. Instead, Activity emerged at the six-dimensional level and persisted when more than six dimensions were extracted. Versions of Activity, but not Honesty/Humility, have been recovered in several previous studies of youth personality structure (e.g., De Pauw et al., 2009; Martin, Wisenbaker, & Huttunen, 1994). Thus, Activity appears to be more prominent in childhood and adolescence than in adulthood (see also Eaton, 1994; Shiner & DeYoung, 2013); the opposite may be true for Honesty/Humility.

The Foundational Level of the Youth Personality Hierarchy

The present findings suggest that, from middle childhood through adolescence, the youth personality hierarchy rests on a foundation of six dimensions: Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness to Experience, and Activity (see Table 4). These "Little Six" resemble the adult Big Five in that they efficiently summarize personality information (high bandwidth) while still representing substantive patterns of behavior rather than overly abstract evaluations (high fidelity). Moreover, the Little Six proved more replicable than the Big Five across childhood and adolescence (high generalizability).

The Little Six are also noteworthy for representing a union of the personality and temperament literatures' most prominent constructs; they therefore provide a descriptive language and structural model that encompasses both domains (Shiner & DeYoung, 2013). A number of researchers have noted conceptual similarities between models of child temperament and adult personality (e.g., Caspi et al., 2005; De Pauw & Mervielde, 2010; Rothbart, 2007). Moreover, previous empirical studies have recovered various subsets of the Little Six (e.g., De Pauw et al., 2009; Goldberg, 2001; Martin et al., 1994; Rothbart et al., 2001; Tackett et al., 2008, 2012). However, the present results provide perhaps the clearest empirical demonstration of the Little Six structure to date.

Interestingly, in the present research, the Big Five structure became more replicable with age and was clearly recovered in each age group during late adolescence and early adulthood (ages 15 to 18–20). In fact, in our oldest group, the Big Five were recovered even more clearly than the Little Six—especially Little Six Activity (see Table 3). Previous developmental studies have also recovered clearer versions of the Big Five at older ages (e.g., Soto et al., 2008; Tackett et al., 2012). Taken together, these findings may signal a shift in the personality hierarchy's foundational level, from the Little Six to the Big Five, during the transition to adulthood.

The present results also have implications for understanding personality structure in early childhood. Only three structures replicated consistently across our youngest age groups (ages 3 to 5): the consensus one-dimensional (Adjustment) and two-dimensional (Benevolence and Emotionality) structures, and an alternative five-dimensional structure that included a dimension combining aspects of Activity and Openness to Experience. This alternative structure suggests that Openness is developmentally rooted in both cognitive and physical exploration (cf. Caspi et al., 2005; Raine et al., 2002). The more general finding that fewer and simpler structures replicated during early childhood suggests that personality structure follows a curvilinear developmental trajectory, becoming more complex from early to middle childhood (as the Little Six emerge), then less complex from adolescence to adulthood (as they merge into the Big Five).

Age Differences in the Meanings of Personality Dimensions

The present results indicate that the meanings of some Little Six dimensions—as represented by the specific behavioral, cognitive, and emotional characteristics defining them—shifted noticeably with age (see Table 5). One such shift concerned Conscientiousness, whose meaning gradually expanded to include responsible versus unprincipled social behavior. This shift parallels content differences between youth versus adult Big Five measures. For example, the widely used NEO Personality Inventory–Revised, developed to describe adults, includes Dutifulness (i.e., responsible fulfillment of social, moral, and work commitments) as a facet of Conscientiousness (Costa & McCrae, 1992b). In contrast, neither of the two most comprehensive youth Big Five measures—the Hierarchical Personality Inventory for Children and the Inventory of Child Individual Differences—includes a similar, socially focused Conscientiousness facet (Halverson et al., 2003; Mervielde & De Fruyt, 2002).

The meaning of Activity shifted even more dramatically. This dimension was primarily defined by motor activity and energy level during middle childhood. However, at older ages its conceptual core expanded to include aspects of psychological agency, such as motivation and competitive drive, whereas purely physical characteristics became somewhat less central. This pattern fits with the facts that (a) many child temperament models define Activity rather narrowly, with a focus on amount and control of motor activity; (b) previous research examining narrative, open-ended responses has found that parents are more likely to describe younger children than older children using terms related to physical activity (Slotboom, Havill, Pavlopoulos, & De Fruyt, 1998); and (c) from childhood to adulthood, high activity level becomes increasingly associated with achievement motivation and assertiveness (Eaton, 1994). Taken together, these findings suggest that Activity becomes less purely physical, and more psychological, with age. This shift may be part of a broader developmental process by which Activity gradually merges with Extraversion and Conscientiousness.

LIMITATIONS AND FUTURE DIRECTIONS

While the present research had some important strengths, it also had limitations. For example, we assessed personality using a particular measure, the common-language CCQ. We chose this instrument because of its broad and deep item pool, and because it was not developed to have a prespecified multidimensional structure. Nevertheless, the CCQ may underrepresent some important aspects of youths' personalities and overrepresent others. For example, Table 4 illustrates that the CCQ includes more content related to Agreeableness than to any other Little Six dimension and lacks content related to the aesthetic aspect of Openness to Experience. Such idiosyncrasies may have influenced the present results, and future research can test whether our findings generalize to other instruments. One promising approach is to administer multiple personality and temperament measures, and then examine their joint structure (e.g., De Pauw et al., 2009). Additional studies using this approach can further clarify overlaps and differences between personality and temperament constructs.

A second issue is that our data were parent reports. We examined parent reports because they could be obtained for youths spanning from early childhood into early adulthood. By contrast, teacher reports cannot be obtained for young children who have not yet started school, nor for young adults who have left it. As for self-reports, obtaining them prior to late childhood requires specialized, age-specific techniques (e.g., Measelle, John, Ablow, Cowan, & Cowan, 2005). Self-reports also confound age differences in personality structure, with age differences in the ability to provide reliable and differentiated ratings (Soto et al., 2008). Nevertheless, parent reports are imperfect indicators of behavior. For example, parents may overemphasize some traits, such as manageability versus difficultness, or apply different standards when judging children of different ages (Mervielde & De Fruyt, 2002; Slotboom et al., 1998). Additional research is needed to test whether the present results generalize to other rating perspectives.

A final limitation concerns the present sample of target children. The size, age range, and diversity of this sample allowed us to track age differences in youth personality structure with a valuable combination of precision and breadth. However, this sample was cross-sectional, and parents were self-selected and allowed to choose which of their children to rate. This raises the possibility that some observed age differences might reflect cohort effects (i.e., the effects of different children being born during different years) or differential selection effects (i.e., the effects of different children being rated for different reasons), rather than true developmental changes. It is unclear how cohort or selection effects would lead to the pattern of results observed here, but longitudinal data are needed to fully rule out these alternative explanations.

CONCLUSION

The present research advances our understanding of personality development in three important ways. First, it highlights several key similarities and differences between the youth and adult personality hierarchies. Second, it suggests one particularly important difference: The Little Six, rather than the Big Five, may constitute the foundational level of the youth hierarchy from middle childhood through adolescence. Finally, it shows that the meanings of some youth personality dimensions shift with age, in ways that might help explain the foundational transition from the Little Six to the Big Five. These findings contribute to a growing research literature, but much work remains to be done before we fully understand when and how personality structure develops.

Notes

1. Because personally identifying information was not collected, we cannot determine whether some target children were rated by more than one parent.
2. These items were "92. Is attractive, good looking," "27. Looks different from other people their own age," "100. Peers often pick on them; is often blamed for things they didn't do," "5. Peers look up to them and seek them out," "42. Is an interesting person; people notice and remember them," and "30. Most authority figures seem to like them."
3. A total of six CCQ items were scored on both a CCQ–Big Five scale and an additional CCQ scale. Items 28 and 63 were scored on both the Extraversion and Activity scales, item 78 was scored on the Neuroticism and Irritability scales, items 14 and 22 were scored on the Agreeableness and Dependency scales, and item 48 was scored on the Neuroticism and Dependency scales. Therefore, scores on these scales are not fully independent.
4. We also tested for curvilinear age trends. However, few items showed pronounced curvilinear trends, and there were no clear themes to these items' content.

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