

# **Children's Behavioral Styles at Age 3 Are Linked to Their Adult Personality Traits at Age 26**

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**ABSTRACT** We observed 1,000 3-year-old children who exhibited five temperament types: Undercontrolled, Inhibited, Confident, Reserved, and Well-adjusted. Twenty-three years later, we reexamined 96% of the

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children as adults, using multiple methods of comprehensive personality assessment, including both self- and informant-reports. These longitudinal data provide the longest and strongest evidence to date that children's early-emerging behavioral styles can foretell their characteristic behaviors, thoughts, and feelings as adults, pointing to the foundations of the human personality in the early years of life.

“Show me the child and I'll show you the man.” Alas, the folk belief embodied in this aphorism is not widely shared by behavioral scientists. Classic theories of personality are divided by competing views about the nature of continuity and change in development, and clashing opinions are often impervious to data (Block, 1984; Kagan, 1996). Although longitudinal evidence now points to the long-term continuities of personality characteristics from late childhood and adolescence to adulthood (Caspi, 1998; Shiner, 1998), as well as across lengthy periods of adult life (Roberts & Friend-DelVecchio, 2000), some reviewers claim that it is nearly impossible to predict the course of adult personality from early childhood (Lewis, 1997). This empirical question has taken on new immediacy because human personality traits have become a primary target of the research of geneticists (Hamer, 1997), psychiatrists searching for pharmaceutical means to alter personality (Cloninger, 1999), as well as early-childhood interventionists (Bruer, 1999). Such research could benefit from a solid knowledge base about the natural course of human personality development. The goal of this article is to test the links between behavioral qualities observed at age 3 and personality functioning measured at age 26.

Eight years ago, we provided evidence that behavioral qualities observed at age 3 were linked to personality functioning, as measured via self-reports, at age 18 (Caspi & Silva, 1995). Since that time, study members in our longitudinal panel have experienced profound life changes; the period between ages 18–26 is one of the most dynamic periods in the life course (Rindfuss, 1991). During their 18th year of life, the vast majority of our study members were leading an adolescent lifestyle: 85% of them were still living on the South Island of New Zealand where they were born, 77% were residing in their parents' house, and 70% were enrolled in school. By age 26, our study members had left adolescence behind: 79% were working full time; 59% were living with an intimate partner; 32% had moved and worked overseas; 22% had become parents; 22%

had completed a university degree; and 21% had bought a house. By reexamining connections between age 3 behavioral styles and personality functioning at age 26, we are on more solid grounds in empirically testing the hypothesis that the “child is father of the man.”

The research reported here was designed to overcome three practical and methodological obstacles to testing whether or not children’s early-appearing behavioral differences can foretell their behaviors, thoughts, and feelings as adults (Magnusson & Bergman, 1990). First, a large sample is required to test hypotheses about the nature of connectedness in personality development because effect sizes associated with developmental continuities will be small to moderate, given the many intervening experiences between infancy and adulthood. Second, it is imperative to sample the right people, not just a lot of people, because biases in sample selection threaten both the internal and external validity of findings about longitudinal associations. Although infrequently used in psychological research, general population samples offer important advantages for studying developmental continuities because they yield accurate and generalizable estimates of the strength of associations across time. Third, it is necessary to wait many years for study members to grow up and to ensure that, when followed up, the sample has not been ravaged by attrition. When individuals are non-randomly lost from a longitudinal study, the validity and generalizability of conclusions about developmental continuities are compromised. We address these three challenges in the context of the Dunedin Study, a longitudinal-epidemiological investigation of some one thousand children born in 1972–1973. Since then, the Dunedin Study has suffered very little attrition, and 96% of the original study members participated in the most recent assessment conducted when they were 26 years old.

The research reported here also included measurement strategies to overcome a fourth obstacle in studying personality continuities. Many longitudinal studies rely on reports repeatedly obtained from the same rater at different ages. For example, longitudinal studies of children often rely on reports provided repeatedly by mothers. Using these reports may inflate estimates of continuity because observed continuities may reflect continuities in maternal characteristics as well as in children’s characteristics (Bates, 1994). Other studies of personality continuity rely only on the repeated administration of

self-report inventories, which, because of self-presentational biases, provide an incomplete perspective on continuities in personality development (John & Robins, 1994).

Multimethod assessments are the preferred strategy for testing the coherence of personality across the life course. We address this measurement challenge by studying the adult personality outcomes of distinct groups of children whose behavior was first observed and recorded by examiners when the children were 3 years old. Twenty-three years later, we obtained self-reports and informant reports about the children grown up, using two of the best-known contemporary trait models of personality: the Tellegen and the five-factor models of personality structure (Church & Burke, 1994; McCrae & Costa, 1997). The present study thus offers one of the strongest tests to date of the continuity hypothesis and allows for confident generalizations about the extent to which individual differences in personality are preserved across development.

## METHOD

### Sample

Participants are members of the Dunedin Study, a longitudinal investigation of health and behavior (Silva & Stanton, 1996). The cohort of 1,037 children (52% male) was constituted at age 3 when the investigators enrolled 91% of the consecutive births between April 1972 and March 1973 in Dunedin, New Zealand. Cohort families represent the full range of socioeconomic status in the general population of New Zealand's South Island, and they are primarily white. Follow-ups have been carried out at ages 5, 7, 9, 11, 13, 15, 18, 21, and, most recently, at age 26 when we assessed 980 (96%) of the 1,019 study members still alive.

### Measures

*Temperament Types in Early Childhood.* At age 3, each study child participated in a 90-minute developmental testing session administered by examiners who had no knowledge of the child's prior behavior history. Following the testing, each child was rated by the examiner on 22 behavioral characteristics that were derived from those used in the Collaborative Study on Cerebral Palsy, Mental Retardation, and Other Neurological Disorders of Infancy and

Childhood (see Goldsmith & Gottesman, 1981) and are similar in scope to the behavior ratings contained in Bayley's Infant Behavior Record (Matheny, 1980). Complete data were available for 1,023 children. We have been unable to locate information about the reliability of these single-assessment examiner ratings, completed in 1975. Rather than abandon these ratings, we carried out a contemporary study of interrater reliability on a sample of 83 4-year-old children who, just like the Dunedin children, were administered various cognitive tests and whose behavior was then rated using the same characteristics evaluated in the Dunedin study. Interrater reliabilities ranged from .7 to .9. This does not establish that the Dunedin ratings were reliable, but it does demonstrate they could easily have been so.

Factor and cluster analysis procedures were used to identify five reliable types of children (for details, see Caspi & Silva, 1995). The *Well-adjusted* type ( $n = 405$ ; 48% male) included children who were capable of self-control when it was demanded of them, were adequately self-confident, and who did not become unduly upset when confronting the examiner in a novel situation. The *Under-controlled* type ( $n = 106$ ; 62% male) included children who were impulsive, restless, negativistic, distractible, and labile in their emotional responses. The *Confident* type ( $n = 281$ ; 52% male) adjusted to the testing situation quickly; they were zealous, exceptionally friendly, somewhat impulsive, eager to explore the testing materials, and displayed little or no concern about separating from their caregiver. The *Inhibited* type ( $n = 80$ ; 40% male) included children who were socially reticent, fearful, and easily upset by the examiner. The *Reserved* type ( $n = 151$ ; 48% male) were timid and somewhat uncomfortable in the testing session; however, unlike inhibited children their shyness was not extreme and their caution did not interfere with their task orientation.

*Personality Assessments in Adulthood.* At age 26, we brought each participant to the research unit within 60 days of their birthdays for a day-long health assessment, in which various interviews and examinations (e.g., physical exam, personality assessment, dental exam) were conducted in counterbalanced order by different trained personnel. Participants completed the Multidimensional Personality Questionnaire (MPQ; Tellegen et al., 1988; Patrick, Curtin, &

Tellegen, in press) which provides, for each person, a profile of scores on 10 distinct personality traits that define three superfactors of personality: Negative Emotionality, Constraint (vs. Disinhibition), and Positive Emotionality (see Table 1). MPQ protocols were available for 975 of the 980 study members who participated in the age 26 assessment.

At age 26, we also asked the study members to nominate someone who knew them well. These "informants" were mailed questionnaires asking them to describe the study members using a brief version of the Big Five Inventory (BFI; Benet-Martinez & John, 1998) which assesses individual differences on the five-factor model of personality: Extraversion (e.g., "Makes things exciting,"  $\alpha = .79$ ), Agreeableness (e.g., "Cold and distant with others,"  $\alpha = .75$ ), Conscientiousness (e.g., "Works until a thing is done,"  $\alpha = .81$ ), Emotional Stability (e.g., "Is relaxed, handles stress well,"  $\alpha = .83$ ), and Openness to Experience (e.g., "Likes to reflect and play with ideas,"  $\alpha = .85$ ). Informant data were obtained for 946 (96%) of the 980 study members who participated in the age 26 assessment. Most informants were best friends, partners, or other family members.

The correlations between self- and informant-reports of personality are shown in Table 2 (cf. John & Robins, 1993). The pattern of convergent/discriminant correlations provides evidence regarding the validity of the personality reports.

## RESULTS

We examined personality differences among the five groups of children using analysis of variance. (We examined temperament group  $\times$  gender interactions for each of the age 26 MPQ and Big Five scales. Only one of 18 interaction terms was statistically significant at conventional levels. Because of this gender similarity, we report the analyses for males and females together.) All adult personality variables were standardized to the same scale using the z-score transformation. Each variable thus had a mean of 0 and a standard deviation of 1; effect sizes, expressed in standard-deviation unit differences, can be calculated from the presented data, where  $d = .2$  is a small effect size,  $d = .5$  a medium effect, and  $d = .8$  a large effect (Cohen, 1992).

**Table 1**  
**Multidimensional Personality Questionnaire (MPQ) Scale**  
**Descriptions**

MPQ Scale	Alpha	Description of a High Scorer
<i>Negative Emotionality</i>		
Alienation	.83	Views the world in malevolent terms; expects mistreatment and betrayal; feels a victim of bad luck.
Stress Reaction	.83	Tends to experience frequent and intense negative emotions, including anxiety, distress, and anger; overreacts to minor events.
Aggression	.81	Willing to hurt others for own advantage; enjoys frightening and causing discomfort to others.
<i>Constraint vs. Disinhibition</i>		
Traditionalism	.74	Conventional, moralistic; expresses authoritarian beliefs and attitudes; desires a conservative social environment.
Harm Avoidance	.79	Avoids excitement, thrills, and danger; prefers safe activities even if dull or tedious.
Self-Control	.81	Is reflective, cautious, careful, rational, planful; not impulsive.
<i>Positive Emotionality</i>		
Social Potency	.78	Is forceful, decisive; dynamic, fond of influencing others and of leadership roles.
Achievement	.75	Works hard; ambitious; enjoys demanding projects.
Well-Being	.75	Has a happy, cheerful disposition; feels good about self and sees a bright future.
Social Closeness	.80	Is sociable, likes people, and turns to others for comfort.

The Absorption scale was not included in the version of the MPQ administered in the Dunedin Study.

**Table 2**

Correlations Between Self-Reports on the Multidimensional Personality Questionnaire (MPQ) and Informant Reports About the Big Five Personality Factors. Both Self- and Informant Reports Were Collected When the Study Members Were Age 26 Years ( $N = 942$ )

	Big Five Scales				
	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness to Experience
<b>MPQ Primary Traits</b>					
Alienation	-.12	-.27	-.26	.27	-.14
Stress Reaction	-.05	-.09	-.07	.41	-.02
Aggression	-.07	-.32	-.21	.06	-.03
Traditionalism	.03	.17	.20	-.04	-.16
Harm Avoidance	-.08	.14	.22	.12	-.08
Self-Control	-.05	.12	.38	-.03	-.06
Social potency	.31	-.01	-.01	-.11	.25
Achievement	.06	-.01	.17	-.06	-.08
Well-Being	.17	.13	.06	-.23	.13
Social Closeness	.28	.25	.15	-.08	-.05
<b>MPQ Superfactors</b>					
Negative Emotionality	-.10	-.28	-.22	.37	-.07
Constraint vs. Disinhibition	.02	.19	.36	.03	-.13
Positive Emotionality	.33	.14	.14	-.19	.17

Table 3 shows the personality profiles of the age 3 temperament groups when they were assessed at age 26 with the MPQ. The upper panel of the table reveals that the temperament groups differed significantly on 5 of the 10 MPQ primary traits and, marginally, on a sixth trait. Each of these findings was followed by multiple comparison tests to highlight where the significant group differences occurred. We describe these differences for each MPQ scale.

*Alienation.* A high score on this MPQ scale indicates a propensity to view the world in malevolent terms. High scorers on this scale believe that they are the victims of bad luck and that other persons wish them harm; they feel mistreated, deceived, and betrayed by others and by life's circumstances. The Undercontrolled children scored highest on this scale.

*Stress Reaction.* A high score on this MPQ scale indicates a tendency to experience frequent and intense negative emotional states, including anxiety, distress, and anger. The Well-adjusted children scored lowest on this scale and were most likely to quickly get over upsetting experiences. The Undercontrolled children scored highest on this scale and acknowledged that they often responded with strong negative emotional reactions to many ordinary circumstances.

*Traditionalism.* A high score on this MPQ scale is associated with conventional, moralistic, and authoritarian beliefs and attitudes. For example, high scorers endorse strict child-rearing practices, are intolerant, and favor restrictions on freedom of expression. Undercontrolled children scored highest on this scale in adulthood, whereas the Confident children scored the lowest and grew up to be the least conventional adults, evincing relatively little concern about what is "proper."

*Harm Avoidance.* A high score on this MPQ scale indicates a propensity to shun physically dangerous and thrilling experiences and to prefer, instead, safe and dull activities that do not risk injury. The Inhibited children scored highest on this scale, followed by the Reserved children, and both of these groups diverged emphatically from the Undercontrolled children, and, to a lesser extent, the

**Table 3**

Temperament Types Identified at Age 3 Have Distinct Personalities at Age 26 (Bottom Rows) as They Did at Age 18 (Top Rows), as Seen Through Self-Reports on the Multidimensional Personality Questionnaire (MPQ) Provided by the Children Grown Up

		Temperament Groups at Age 3						Age 18 to
		Well-Adjusted ( <i>n</i> = 366–380)	Confident ( <i>n</i> = 263–270)	Under- controlled ( <i>n</i> = 92–97)	Reserved ( <i>n</i> = 137–142)	Inhibited ( <i>n</i> = 72–76)	F Ratio for Temperament	Age 26 Stability Correlation <sup>b</sup>
<b>MPQ Primary Traits</b>								
Alienation								
Age 18		-.08 <sup>a</sup>	-.02 <sup>a</sup>	.38 <sup>b</sup>	-.09 <sup>a</sup>	.11 <sup>ab</sup>	3.65 <sup>**</sup>	.59
Age 26		-.07 <sup>a</sup>	-.02 <sup>a</sup>	.34 <sup>b</sup>	-.10 <sup>a</sup>	.12 <sup>ab</sup>	4.20 <sup>**</sup>	
Stress Reaction								
Age 18		-.05	-.05	.17	.08	-.03	1.24	.52
Age 26		-.10 <sup>a</sup>	.04 <sup>ab</sup>	.15 <sup>b</sup>	.03 <sup>ab</sup>	.08 <sup>ab</sup>	1.90 <sup>†</sup>	
Aggression								
Age 18		-.04 <sup>a</sup>	.08 <sup>ab</sup>	.22 <sup>b</sup>	-.09 <sup>ac</sup>	-.28 <sup>c</sup>	3.41 <sup>*</sup>	.60
Age 26		-.06	.05	.14	-.07	.02	1.21	
Traditionalism								
Age 18		.06	-.09	-.02	.05	.08	.87	.55
Age 26		.05 <sup>a</sup>	-.17 <sup>b</sup>	.15 <sup>a</sup>	.05 <sup>a</sup>	-.02 <sup>ab</sup>	2.97 <sup>*</sup>	

<b>Harm Avoidance</b>									
Age 18	-.06 <sup>ab</sup>	-.01 <sup>ac</sup>	-.22 <sup>bc</sup>	.08 <sup>a</sup>	.40	4.73 <sup>**</sup>	.62		
Age 26	-.01 <sup>ab</sup>	-.08 <sup>ab</sup>	-.18 <sup>a</sup>	.07 <sup>b</sup>	.42	4.81 <sup>**</sup>			
<b>Self-Control</b>									
Age 18	.08 <sup>a</sup>	-.14 <sup>b</sup>	-.19 <sup>b</sup>	.08 <sup>a</sup>	.18 <sup>a</sup>	3.43 <sup>**</sup>	.58		
Age 26	.08	-.08	-.13	.02	-.03	1.54			
<b>Social Potency</b>									
Age 18	.08 <sup>a</sup>	.07 <sup>a</sup>	-.01 <sup>ab</sup>	-.15 <sup>bc</sup>	-.37 <sup>c</sup>	4.20 <sup>**</sup>	.56		
Age 26	.01 <sup>a</sup>	.16	-.05 <sup>ab</sup>	-.13 <sup>ab</sup>	-.31 <sup>b</sup>	4.42 <sup>**</sup>			
<b>Achievement</b>									
Age 18	.06	-.05	-.04	-.06	-.15	.95	.44		
Age 26	.05 <sup>a</sup>	.06 <sup>a</sup>	.01 <sup>ab</sup>	-.20 <sup>b</sup>	-.14 <sup>ab</sup>	2.38 <sup>*</sup>			
<b>Well-Being</b>									
Age 18	-.02	.07	-.09	.01	-.06	.65	.43		
Age 26	-.01	.06	-.03	.06	-.27	1.87			
<b>Social Closeness</b>									
Age 18	.05	-.03	-.03	-.04	-.02	.40	.51		
Age 26	.04	-.01	-.15	.01	.02	.71			
<b>MPQ Superfactors</b>									
<b>Negative</b>									
<b>Emotionality</b>									
Age 18	-.07 <sup>a</sup>	.04 <sup>a</sup>	.33	-.03 <sup>a</sup>	-.06 <sup>a</sup>	3.20 <sup>*</sup>	.60		
Age 26	-.11 <sup>a</sup>	.03 <sup>a</sup>	.27 <sup>b</sup>	-.05 <sup>a</sup>	.10 <sup>ab</sup>	3.46 <sup>**</sup>			

**Table 3 (continued)**

	Well-Adjusted ( <i>n</i> = 366–380)	Confident ( <i>n</i> = 263–270)	Under- controlled ( <i>n</i> = 92–97)	Reserved ( <i>n</i> = 137–142)	Inhibited ( <i>n</i> = 72–76)	F Ratio for Temperament	Age 18 to Age 26 Stability Correlation <sup>b</sup>
Constraint vs Disinhibition							
Age 18	.03 <sup>ad</sup>	-.11 <sup>ab</sup>	-.21 <sup>b</sup>	.10 <sup>cd</sup>	.31 <sup>c</sup>	3.95 <sup>**</sup>	.67
Age 26	.05 <sup>a</sup>	-.14 <sup>b</sup>	-.09 <sup>ab</sup>	.07 <sup>a</sup>	.18 <sup>a</sup>	2.69 <sup>*</sup>	
Positive Emotionality							
Age 18	.07 <sup>a</sup>	.05 <sup>a</sup>	-.07 <sup>ab</sup>	-.11 <sup>ab</sup>	-.27 <sup>b</sup>	2.54 <sup>*</sup>	.54
Age 26	.03 <sup>ab</sup>	.11 <sup>a</sup>	-.09 <sup>abc</sup>	-.11 <sup>bc</sup>	-.29 <sup>c</sup>	3.17 <sup>*</sup>	

Note: The lower- and upper-bound ranges on the groups' sample sizes indicate the number of study members about whom we obtained MPQ data at age 18 and age 26, respectively. The table shows Z-scores (Mean = 0; Standard Deviation = 1), standardized on the full sample. Groups that share a superscript do not differ from each other; <sup>\*</sup> $p < .05$ , <sup>†</sup> $p < .10$ .

<sup>a</sup>Caspi & Silva (1995) reported findings based on 862 MPQ protocols completed at the age 18 assessment. After the assessment, we obtained MPQs from an additional 76 study members. The findings reported here are based on the 938 protocols.

<sup>b</sup>All stability coefficients are significant at  $p < .001$ . For further details about personality continuity and change from age 18 to age 26, see Roberts, Caspi, & Moffitt, 2001.

Confident children, who, as adults, said they enjoyed dangerous and exciting experiences and activities.

*Social Potency.* A high score on this MPQ scale indicates a propensity to be forceful and decisive. The Inhibited and Reserved groups of children scored lowest on this scale and said they preferred others to take charge and that they did not enjoy being the center of attention. The Confident children scored significantly higher than every other group of children on this scale, and, as adults, wished to assume leadership roles and described themselves as vigorous, forceful, and dynamic.

*Achievement.* A high score on this MPQ scale indicates a tendency to work and drive oneself hard. The Inhibited and Reserved groups of children scored lowest on this scale, suggesting that they avoid very demanding projects and that they are not terribly ambitious.

In addition to these significant differences, several trends bear mention. The Confident and Undercontrolled children obtained the lowest scores on Self-control, whereas the Undercontrolled children also scored highest on Aggression and lowest on Social Closeness. The Inhibited children, meanwhile, scored significantly lower on Well-being than all other groups with the exception of the Undercontrolled children.

To summarize the adult personality correlates of early childhood temperament, we examined differences between the five temperament groups along the MPQ's three superfactors. The bottom panel of Table 3 shows that the five temperament groups differed significantly on each superfactor. Undercontrolled children grew up to be characterized by the highest trait levels of Negative Emotionality. Confident children grew up to be the most disinhibited (low Constraint) adults and differed significantly in this regard from the Well-adjusted, Reserved, and Inhibited children, but not from their Undercontrolled counterparts. Inhibited children grew up to have the highest trait levels of Constraint and the lowest trait levels of Positive Emotionality. The Reserved children were likewise characterized by low Positive Emotionality and differed significantly from Confident children who had the highest scores on this personality superfactor.

In this article, we report links between age 3 behavioral styles and the age 26 MPQ profiles of the study members. Eight years ago, we

published an article showing links between age 3 behavioral styles and the MPQ profiles of the study members when they were age 18 (Caspi & Silva, 1995). In order to facilitate comparisons between the associations reported in the two articles, Table 3 also shows the age 18 MPQ profiles of the five age 3 temperament groups. We thus report two means for each age 3 temperament group: each group's MPQ trait mean at age 18 and again at age 26, yielding a total of 65 mean pairs. Comparing these pairs, we see that in 58 of the 65 pairs, the means did not change by more than 1/10 of a standard deviation. The only changes of note occurred among the Inhibited children. Their relative scores on MPQ Well-being were much lower at age 26 than at age 18, although at both ages their overall relative Positive Emotionality scores were lowest. In addition, their relative scores on Aggression increased, and the Inhibited children appeared to be characterized by relatively more Negative Emotionality at age 26 than at age 18.

The age 26 MPQ results, derived from self-reports, are further confirmed by informant reports. Table 4 shows that the five groups of children differed in adulthood on each of the Big Five dimensions. The Confident children were rated as the most Extraverted adults and the Inhibited children as the least Extraverted. The Undercontrolled children were regarded as the least Agreeable and Conscientious members of the sample, and they were also rated as more tense and anxious (high Neuroticism). Finally, the Well-adjusted and Confident groups were rated as significantly more Open to Experience than the Undercontrolled, Reserved, and Inhibited children; the latter three groups were described as relatively closed to new experiences.

## DISCUSSION

That children's temperamental qualities should presage their adult personalities is not a novel proposition. What is novel is its empirical demonstration. Although the longitudinal connections reported in this article represent small-to-moderate effect sizes, the connections are striking in that they span three different data sources across 23 years; from observer ratings after a 90 min. exposure to the children at age 3 to self-reports and informant reports of the children as 26-year-old adults (for further discussion of effect sizes in longitudinal

**Table 4**  
**Temperament Types Identified at Age 3 Have Distinct Personalities at Age 26, as Seen Through Personality Reports About the Big Five Personality Factors Provided by Informants Who Know the Study Members Well**

<b>Big Five Scales</b>	<b>Temperament Groups at Age 3</b>					<b>F Ratio for Temperament</b>
	<b>Well-Adjusted (n = 370)</b>	<b>Confident (n = 260)</b>	<b>Under-Controlled (n = 90)</b>	<b>Reserved (n = 140)</b>	<b>Inhibited (n = 74)</b>	
<i>Extraversion:</i>	.02 <sup>ab</sup>	.13 <sup>b</sup>	-.08 <sup>ac</sup>	-.11 <sup>ac</sup>	-.23 <sup>c</sup>	2.75*
<i>Agreeableness:</i>	.07 <sup>a</sup>	.03 <sup>a</sup>	-.34	.03 <sup>a</sup>	-.04 <sup>a</sup>	3.23***
<i>Conscientiousness:</i>	.04 <sup>a</sup>	.04 <sup>a</sup>	-.35	-.04 <sup>a</sup>	.17 <sup>a</sup>	3.69***
<i>Neuroticism:</i>	-.06	-.04 <sup>a</sup>	.30 <sup>b</sup>	-.03 <sup>a</sup>	.04 <sup>ab</sup>	2.57*
<i>Openness to Experience:</i>	.13 <sup>a</sup>	.08 <sup>a</sup>	-.34 <sup>b</sup>	-.18 <sup>b</sup>	-.15 <sup>b</sup>	6.32***

Note: The table shows Z-scores (Mean = 0; Standard Deviation = 1) standardized on the full sample. Groups that share a superscript do not differ from each other; \*\*\* $p < .01$ , \* $p < .05$ .

studies, see Caspi, 2000). More importantly, the connections make psychological sense.

When observed at age 3, children classified as Undercontrolled (10% of the sample) were rated as irritable, impulsive, emotionally labile, and impersistent on tasks. At age 26, they were intolerant and scored high on traits indexing Negative Emotionality; they were easily upset, likely to overreact to minor events, and reported feeling mistreated, deceived, and betrayed by others. This profile was corroborated by other people, who described Undercontrolled children grown up as antagonistic, unreliable, tense, and narrow-minded. Elsewhere, we have shown that Undercontrolled children were also the most likely to become enmeshed in an antisocial lifestyle (Moffitt et al., 1996).

When observed at age 3, children classified as Inhibited (8% of the sample) were shy, fearful, and socially ill at ease. At age 26, they were characterized by an overcontrolled and nonassertive personality style; they expressed little desire to exert influence over others and reported taking little pleasure in life. This profile was corroborated by other people, who described Inhibited children grown up as less affiliative and lacking lively interest and engagement in their worlds. Elsewhere, we have shown that Inhibited children lacked social support and were prone to internalising psychiatric problems (Caspi et al., 1996). As adults, Inhibited children appear to be the kind of people who fail to take on the world in ways that will produce joy.

The remaining three temperament groups did not display such dramatic personality profiles as adults, but continuity was discernible in each group. Confident children (28% of the sample) were characterized by a zealous and outgoing approach to the testing session when observed by examiners at age 3. At age 26, they were the least conventional and most agentic members of the sample, and other people described them as extraverted. Reserved children (15% of the sample) were characterized as apprehensive in the novel testing session when they were observed at age 3. At age 26, they described themselves as unassertive and diffident and were described by people who knew them well as introverted and less open to experience. Finally, the Well-adjusted type (40% of the sample) included children whose behavior at age 3 was characterized as age- and situation-appropriate; their style of approach and response to the testing session was regarded as expectable by the examiners and

made for smooth testing. This style was still discernible at age 26; statistically, Well-adjusted children defined average adults.

The Dunedin study members previously completed the MPQ when they were 18 years old, at which time we reported that temperamental qualities at age 3 predicted those personality scores. The present article shows that, eight years later, the continuities from age 3 are still evident and the connections with age 26 personality scores are, in some instances, even stronger and more psychologically coherent. How can it be that personality continuities increase or, at least, retain their strength despite the passage of time? The period between ages 18–30 is brimming with niche-pick opportunities when young adults can create their own environments in ways that are correlated with their dispositional tendencies (Scarr & McCartney, 1983): They can choose what to do, where to live, and with whom. It is thus possible that becoming an adult actually gives individuals the opportunity to better express their true personalities.

We noted in the introduction that, historically, debates about personality continuity versus change have been contentious. Equally so are debates about nature versus nurture (McCrae et al., 2000). The findings reported in this article address the former debate but are silent about the latter. Unfortunately, these two debates are often conflated. Because evidence points to the considerable heritability of many psychological characteristics—including the temperamental qualities (Goldsmith & Gottesman, 1981) and personality traits (Plomin & Caspi, 1999) studied in this article—it is frequently inferred that genetic effects also explain how continuity is achieved. This is not necessarily so. Behavioral genetic studies are concerned primarily with the *origins* of individual differences, but genetic sources of influence on individual differences in personality do not preclude the possibility that *continuities* in these differences are mediated environmentally.

The Dunedin study's behavioral data were first collected only at age 3, after a lot of development already occurred. There is much to learn about the origins of these individual differences, and it also remains to be seen whether it is possible to foretell adult life patterns from individual differences measured before age 3 (Rothbart & Bates, 1998). What this study does establish are theoretically meaningful connections between 3-year-old children's behavioral styles and their adult personalities. There is more to establishing this answer than satisfying intellectual curiosity. If early-emerging behavioral differences did not predict outcomes, behavioral scientists, parents, and teachers could

safely ignore such individual differences. However, because such differences do shape the course of development, information about these individual differences can be harnessed to design parent-training programs and school-based interventions to improve children's development. Ironically, although demonstrations of continuity are often viewed as deterministic and pessimistic, such findings provide the strongest support for the urgency of early intervention.

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