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Parent Personality and Positive Parenting as Predictors of Positive Adolescent Personality Development Over Time

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Abstract

We investigated the degree to which parent positive personality characteristics in terms of conscientiousness, agreeableness and emotional stability predict similar adolescent personality traits over time as well as the role played by positive parenting in this process. Mothers and fathers of 451 White adolescents (52% female, mean age = 13.59 years) were assessed on three occasions, with 2-year lags between each assessment. Parent personality and observed positive parenting both predicted 12th graders personality. Additionally, we found evidence for an indirect link between parent personality and later adolescent personality through positive parenting. The results suggest that parents may play a significant role in the development of adolescent personality traits that promote competence and personal well-being across the life course.

Keywords

Parenting style; childrearing practices; personality development; socialization; five factor model

Although a central task of development is the emergence of healthy and competent functioning, the field of developmental psychology has tended to focus on the development of dysfunction (Seligman, 1999). This de-emphasis on healthy functioning is particularly apparent among studies of adolescents, which more frequently consider the determinants or prevention of maladaptive or dysfunctional development. The problem with this approach is that knowing, for example, what predicts low rates of maladjustment will not necessarily indicate what produces a competent individual. In contrast to this general trend toward research on the presence or absence of dysfunction, a growing literature focuses on both the nature of change in normative adolescent personality as well as the correlates of positive personality traits in adolescence (Ganiban, Saudino, Ulbricht, Neiderhiser, & Reiss, 2008; Klimstra et al., 2009). The current study contributes to this growing interest in positive

youth development by investigating the degree to which parent personality and observed parenting behavior are related to the development of positive adolescent personality traits over time. By positive personality characteristics we mean traits that appear to promote healthy and competent functioning in multiple life domains.

Personality is usually described as a set of psychological characteristics that lead one to behave in meaningfully consistent ways. Moreover, research suggests that myriad personality descriptors can be captured by a smaller set of broad trait domains such as the well known Big Five domains of extraversion, agreeableness, conscientiousness, neuroticism, and openness (Costa & McCrae, 1985). Especially important for research on development is the fact that these overarching descriptors of personality are not immutable but rather change in meaningful ways across the years of adolescence (Ganiban, Saudino, Ulbricht, Neiderhiser, & Reiss, 2008; Klimstra et al., 2009). Moreover, personality change appears to result from environmental as well as biological influences, consistent with the interests of the present study (Hopwood et al., 2011).

Especially important, recent interest in personality has also examined higher order attributes that reflect certain constellations of traits likely to be associated with competent functioning. In particular, Digman (1997) suggested that conscientiousness, agreeableness, and low neuroticism (i.e., emotional stability) cohere into a higher-order trait of great developmental significance (DeYoung, 2006; Jang et al., 2006). Digman called this the alpha factor of personality and suggested that this broad attribute facilitates competency and reflects successful socialization. He concluded that: "...Factor α is what personality development is all about...if all proceeds according to society's blueprint." (p. 1250). To be sure, alpha-linked traits would seem to capture the attributes that developmental researchers consider to be crucial for competent functioning. That is, a well-socialized child is kind and compassionate (i.e., high in agreeableness; Graziano & Eisenberg, 1997), plans for the future and delays gratification (i.e., high in conscientiousness; Heaven & Ciarrochi, 2008), and is emotionally stable and relatively free from predispositions towards internalizing problems (i.e., low on neuroticism; Shiner, 2009). Thus, alpha-linked traits would seem to be a natural target for evaluating whether parenting behaviors are linked with the development of child and adolescent dispositions expected to promote adaptive functioning across time.

Recent empirical work supports this conceptualization of alpha personality in terms of positive correlations with various elements of adaptive functioning (DeYoung, Hasher, Djikic, Criger, & Peterson, 2007; van der Linden, Nijenhuis, & Bekker, 2010) and negative correlations with maladaptive functioning (DeYoung, Peterson, Séguin, & Tremblay, 2008; Hirsh, DeYoung, & Peterson, 2009). However, this earlier work is based almost exclusively on adult samples and cross-sectional data. Our survey of the literature identified only one study that addressed the correlates of alpha personality over time for an adolescent sample (Schofield et al., 2011). This multigenerational study followed a cohort of adolescents into adulthood and found that alpha personality (measured during early adolescence) positively predicted later educational success, income, and competent parenting. Alpha personality also predicted lower levels of stress in the new families formed by these adolescents when they reached adulthood. The results of this research are consistent with the idea that specific personality traits may promote healthy development during adolescence and into adulthood. Given this possibility, it becomes important to understand the determinants of these types of personality attributes. In the present report we consider the role that parents may play in this process.

A core dimension of parenting is the affect expressed by parents toward the child (Baumrind, 1971), including both warmth and hostility. Parental warmth reflects general tendencies to be supportive, affectionate, and sensitive to the child's needs (Darling &

Steinberg, 1993). In theory, parental warmth/responsivity is hypothesized to promote children's prosocial behavior because it gives children feelings of security, control, and trust in the environment (e.g., Hoffman, 1982; Janssens & Gerris, 1992; Radke-Yarrow, Zahn-Waxler, & Chapman, 1983; Staub, 1979). Consistent with this reasoning, research shows that parental warmth positively predicts a host of indicators of positive development (Maccoby & Martin, 1983), including adolescent school performance and stronger school engagement (Steinberg, Lamborn, Dornbusch, & Darling, 1992), adaptive coping strategies (Herman & McHale, 1993), secure attachment (Güngör & Bornstein, 2010) and prosocial behavior (Kestenbaum, Farber, & Sroufe, 1989).

In contrast, hostile or coercive parenting behaviors are viewed as inhibitors of prosocial development and risk factors for behavioral problems (Eddy, Leve, & Fagot, 2001; O'Connor, Deater-Deckard, Fulker, Rutter, & Plomin, 1998). Consistent with this perspective, parenting behaviors such as coercion and harshness are associated with children's oppositional and aggressive behaviors (Stormshak et al., 2000), self-regulatory deficits, and psychopathology (Egeland & Sroufe, 1981; Larsson, Viding, Rijdsdijk, & Plomin, 2008; Rodriguez, Ayduk, et al., 2005; Sethi et al., 2000). Therefore, it is reasonable to expect that parental warmth and harshness may be, respectively, positively and negatively associated with positive personality development during adolescence.

Although early trait theories argued that biological maturation was the sole cause of changes in personality (Costa & McCrae, 2006), emerging empirical work suggests that personality change in adulthood also is influenced by social factors (Hopwood et al., 2011), including relationship formation (Neyer & Lehnart, 2007), work experiences (Roberts, Caspi, & Moffitt, 2003), retirement (Lockenhoff, Terracciano, & Costa, 2009), income (Sutin, Costa, Miech, & Eaton, 2009), and changes in life goals (Roberts, O'Donnell, & Robins, 2004). In contrast to this literature on personality change during adulthood, our review found no studies documenting social factors which predicted change in personality during adolescence.

Despite the lack of research on social correlates of adolescent personality development, there is a considerable literature which supports the position that adolescent personality has a significant environmental component. Although discussion continues regarding the degree to which personality traits are influenced by social factors (Bleidorn, Kandler, Riemann, Angleitner, & Spinath, 2009), many behavioral genetic studies have demonstrated that 50% or more of the variance in personality characteristics results from environmental influences (Loehlin, 1992). For example, one study of adolescents found heritability estimates of .46 for conscientiousness, .51 for agreeableness (benevolence), and .18 for emotional stability (De Fruyt et al., 2006). These findings suggest significant environmental influences on adolescent personality development, consistent with the goals of the present study. Moreover, earlier research indicates significant change in personality during adolescence as indicated by test-retest correlations (Roberts & DeVecchio, 2000). In the present investigation, we propose that at least some of this change will be explained by parental traits and behaviors.

The Current Study

The present study contributes to the fields of adolescent and personality development by examining the degree to which family context predicts adolescent personality traits associated with competence and positive adjustment across the life course. Specifically, we propose that parent alpha personality will promote the development of positive adolescent traits both directly and indirectly through supportive parenting behaviors. We hypothesize that: (a) higher levels of parental alpha-linked traits will be associated with greater warmth

and lower hostility in parenting behaviors, (b) higher levels of parental alpha-linked traits will be associated with higher levels of adolescent alpha-linked traits, and (c) greater parental warmth and lower parental hostility will be associated with higher levels of adolescent alpha-linked traits. In other words, we predict that parent personality will show both a direct and mediated association with adolescent personality.

In addition to positing a link between parenting and the personality development of adolescents as discussed earlier, we also posit a link between parental personality and parenting behaviors. This prediction stems from Belsky's (1984) proposal that parent personality influences parenting behaviors and the growing literature consistent with this proposition (see Prinzie et al., 2009 for a meta-analytic review). Specifically, we expect that parents with alpha-linked traits of agreeableness, emotional stability and conscientiousness will demonstrate these dispositions through their warm and supportive behaviors toward their children.

We also expect that parent personality will directly predict adolescent personality. There are two reasons for this hypothesis. First, behavioral genetic studies have demonstrated that considerable variance in personality characteristics results from genetic influences (Loehlin, 1992), findings consistent with a positive association between parent and child personality. Second, it is also possible that characteristics of parents and children may be linked through social learning processes separate from the parenting variables we consider in the present study. Children and adolescents are most likely to emulate the behaviors of models that produce positive outcomes (Bandura, 1977). Thus, children and adolescents may emulate behaviors of their parents that are agreeable, conscientious, and emotionally stable because these characteristics represent modes of interaction with the environment that promote both social and instrumental success (e.g., Ashton, Paunonen, Helmes, & Jackson, 1998).

This research extends previous work to a significant degree. To our knowledge, this is the first study to examine whether observed parenting behaviors predict adolescent personality over time, after controlling for the personality of parents and the earlier personality of adolescents. That is, it is the first study of which we are aware that predicts adolescent personality from the characteristics of parents, after controlling for a prior measure of adolescent personality. Consideration of parent personality is especially important because any association from parenting to child personality could be due to either genetic or social influences involving the personality of the parent (Komsis et al., 2008).

In addition, in contrast to prior work on development that downplayed or ignored the role of fathers, in the present study we explicitly model the behavior of fathers as well as mothers. As Parke (1996) has argued, however, unless there are compelling theoretical and/or empirical reasons to posit differential influences by mothers and fathers, it is reasonable to start by hypothesizing no differences in effects between mothers and fathers and then explicitly test this hypothesis of no difference. Only if the hypothesis of no difference can be rejected should we consider fathers to have effects different from mothers. The current study applies this strategy and predicts no differences between mothers and fathers in terms of their influence on adolescent personality development. Stated another way, we expect fathers compared to mothers to be equally influential in adolescent personality development.

Method

Participants

Data for the present study were collected as part of a broader project concerned with the life course trajectories of parents and their children. A sample of 451 two-parent families was recruited via telephone through the cohort of all seventh-grade students (ages 12–13), male

and female, in eight counties in north central Iowa who were enrolled in public or private schools during winter and spring of 1989. An additional criterion for inclusion in the study was the presence of a sibling within four years of age of the focal seventh grader. However, analyses for the present study focused only on parenting practices directed toward the seventh grader.

Seventy-seven percent of the eligible families agreed to participate in the study. This is comparable to the response rates reported by other community studies that attempt to recruit multiple family members (Capaldi & Patterson, 1987). Families were assessed in 1990 (adolescent in 8th grade), 1992 (adolescent in 10th grade), and 1994 (adolescent in 12th grade), and 95% of the families were retained through the 1994 assessment. Families in the present project received \$250 for their effort, which translated into about \$10 per hour for each family member's time.

The families in the study lived on farms (about one-third) or in small towns. Because minority families are very rare in rural Iowa, all of the families were white and spoke English. Annual income ranged from \$0 to \$135,000 with a mean of \$29,642. Fathers' education ranged from 8 to 20 years with a mean of 13.5 years of education, while for mothers the range was from 8 to 18 years with a mean of 13.4 years. Few parents had not completed high school (2% for fathers, 1% for mothers), over half had completed high school (75% for fathers, 81% for mothers), and some had completed four years of college (23% for fathers, 18% for mothers). The fathers ranged in age from 31 to 68, with a mean of 39.7 years, while mothers' ages ranged from 29 to 53, with a mean of 37.7 years. Because families of less than four were excluded from the sampling frame, the families were larger on average than would be expected from a general population survey. Families ranged from 4 to 13 members with an average of 4.9 members. Adolescents were approximately evenly split across gender.

Procedures

Each family was visited twice at their home each year of assessment. The purpose of two visits was to distribute the data collection and reduce respondent fatigue. During the first visit, each of the three family members completed a set of questionnaires focusing on family processes, individual family member characteristics, and socioeconomic circumstances. On average, the first visit took approximately two hours. Between the first and second visits, family members completed questionnaires left with them by the first interviewer. These questionnaires dealt with information concerning the parents' parents, beliefs about parenting, and plans for the future. Each family member was instructed to place his or her completed questionnaire in an envelope, seal it, and give it to the interviewer at the time of the second visit.

The second visit usually occurred within one or two weeks after the first visit and began by having each individual complete a short questionnaire designed to identify issues of concern that prompted disagreements within the family (e.g., chores, recreation, money, etc.). The family was then videotaped while engaging in four separate structured interaction tasks: a family discussion task (task 1), a family problem-solving task (task 2), a marital couple task (task 3), and a sibling interaction task (task 4). Tasks 1 and 2 were used in the present analyses. To start the process, interviewers explained task 1, gave the task cards to a family member, and then left the room while the family members (mother, father, the target adolescent, and a sibling) discussed issues raised by the task cards such as how the family spends time together, enjoyable experiences they have had, and household rules. The family members were given 30 min to complete this task (task 1). The second task (task 2), 15 min in length, also involved the same four family members. For this task, the family was asked to discuss and try to resolve issues and disagreements they had cited as most problematic in

the questionnaire they had completed earlier in the visit. The second visit lasted approximately 2 hours.

The videotaped interactions were rated by project observers using the Iowa Family Interaction Rating Scales (Melby et al., 1991). The project observers were staff members who had received several weeks of training on rating family interactions and specialized in coding one of the interaction tasks. Before coding tapes, coders had to independently rate precoded interaction tasks and achieve at least 90% agreement with that standard (i.e., rate within one point of the criterion code for that task for nine out of 10 scales). Different observers rated the two different tasks, and there was one observer per task. For purposes of assessing interobserver reliability, 25% of the tasks were randomly selected to be observed and rated by a second observer.

Measures

Parent personality was assessed in 1990 using parent's self-report on the *NEO Five Factor Inventory (NEO-FFI)*, a 60-item inventory that contains 12 items tapping each of the five personality dimensions of Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. Previous studies have demonstrated and described the convergent and discriminant validity of the instrument (Costa & McCrea, 1992). In the current study, we focused on alpha-linked traits and consequently used reports of agreeableness (A), neuroticism (N; reverse-coded), and conscientiousness (C) as indicators of this broad dimension. All scales had acceptable composite reliability (α 's > .80).

The adolescent's personality was assessed in 10th grade and in 12th grade. Adolescent's personality was assessed in 10th grade using their self report on the *NEO Five Factor Inventory (NEO-FFI)*. All three scales had acceptable composite reliability (α 's > .80). In 12th grade, we did not administer the *NEO-FFI* to either parents or adolescents. A change in study protocol eliminated the *NEO-FFI* and incorporated instead the *Multidimensional Personality Questionnaire (MPQ)* developed by Tellegen (e.g., Harkness, Tellegen, & Waller, 1995). An abbreviated 33-item informant report for the *MPQ* was used to obtain reports of adolescent personality from the parents. Mothers and fathers independently rated the adolescent on a 5-point scale by comparing their adolescent on a particular trait to other individuals of the same age and sex (1=*Lowest 5%*; 2=*Lower 30%*; 3=*Middle 30%*; 4=*Higher 30%*; 5=*Highest 5%*). Markon, Krueger, and Watson (2005) found that the control, stress reaction (reverse scored), and aggression (reverse scored) scales from the *MPQ* correspond reasonably well to Digman's alpha-linked traits. We used these scales to represent adolescent alpha-linked traits in 12th grade. The correlations between mother and father reports ranged from .39 for stress reaction to .64 for control, which indicated a reasonable amount of agreement, a result broadly consistent with existing personality research (e.g., Funder, 1999). Reports were averaged across mother and father responses (α = .72 for stress response, .73 for aggression, .81 for control). All scales had acceptable composite reliability (α 's > .80).

Positive parenting was operationalized as high levels of observed warmth and support and low levels of hostility and coercion. Observed parenting was evaluated at two time points; 8th grade (1990) and 10th grade (1992). Trained observers watched two videotaped interactions between the parents and child (tasks 1 and 2 described earlier) and rated each parent separately on a nine-point scale on the degree to which they showed hostility toward the adolescent (HS; angry or rejecting behavior), angry coercive behavior toward the adolescent (AC; demanding, stubborn, coercive), and antisocial behavior toward the target (AN; self-centered, immature, insensitive). Observers also rated each parent's warmth toward the target (WM; showed liking, appreciation), prosocial responses to the target (PR; cooperative, respectful), and positively assertiveness toward the target (AR; was direct,

empathetic, and positive). Parallel items were averaged across both tasks (e.g., HS from task 1 was combined with HS from task 2, for each parent).

Although we initially ran the models separately for warm and harsh parenting, there was no difference between the results; the pattern of results was identical. As there was no information gained from keeping parent harshness and warmth separate, they were allowed to load onto a common factor we labeled 'positive parenting'. This factor approach identifies greater extremes in parenting. For example, parent harshness is considered a risk factor, but its effect is likely even greater if the parent never demonstrates any warmth or affection. That is what a low score on this parenting factor represents. Similarly, the other pole represents a parent who is extremely supportive and almost never harsh or negative. Combining parental warmth and harshness into a single model also reduced the number of models tested, and facilitated the presentation of results. Specifically, we combined the positive-valence parenting dimensions (WM, AR, PR) into a single scale labeled 'parent warmth' and combined the negative-valence parenting dimensions (HS, AC, AN) into a second scale labeled 'parent harshness' (Kishton & Widaman, 1994). Intraclass correlations (r_C) for these composites demonstrated moderate to high interobserver agreement for both parents across all parcels (r_C ranged from .74 to .89, with an average of .85). Each scale had adequate internal consistency at each time point (α ranged from .84 to .93, with an average of .88). Every significant path in the results that follow was also significant in the preliminary analyses which modeled warmth and harshness separately.

Analyses Testing Study Hypotheses

All substantive analyses were conducted using latent variables, and descriptive statistics for the manifest variables are presented in Appendix A. Analyses involved the comparison of five nested models consistent with study hypotheses. Because an infinite number of models can provide good fit to a given dataset, we tested a sequence of increasingly parsimonious models, described in the results section. We initially examined the possible moderating role of adolescent gender on these associations by fitting these models in a multiple-group framework. Because none of the structural paths varied significantly by adolescent gender, what follows are results based on the overall sample. In other words, we found no compelling evidence that adolescent gender moderated the associations in question.

When evaluating the fit of structural models to the data, we used the standard chi-square index of statistical fit, the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993) and the Tucker – Lewis index (TLI; Tucker & Lewis, 1973). RMSEA values under .06 indicate close fit to the data (Hu & Bentler, 1999), while TLI values should be greater than .90, and preferably greater than .95, to consider the fit of a model to data to be acceptable (Hu & Bentler).

Results

Model Comparisons and Correlations

We used Mplus Version 4 (Muthén & Muthén, 2006) to estimate each model using full information maximum likelihood estimation. We went through a series of nested model tests (see Table 1), and settled on the most appropriate on statistical and conceptual grounds. These tests were conducted to evaluate the robustness of the measures and to identify any differences in mother and father effects. Model 1a allowed all 8 factors to correlate freely and allowed correlated residuals for parallel indicators of observed parenting. Although positive parenting was composed of parallel manifest variables at each occasion, the latent factors cannot be considered as representing the exact same parenting construct without constraining the loadings for the manifest variables to equality over occasions of

measurement. Therefore, Model 1b constrains the loadings for the parenting variables to equality over occasions of measurement. As shown in Table 2, the change in chi-square (2.40) from Model 1a to Model 1b was not statistically significant; thus, we conclude that the same measure of parenting was evaluated and is comparable over time.

Model 1c trims the structural model to be consistent with study hypotheses by allowing only within-time correlations, longitudinal stability paths, and paths predicted by our hypotheses. As shown in Table 2, these theoretically-informed restrictions did not worsen the fit of the model. Model 1d invokes invariance constraints on the regression weights of parallel paths across time, testing whether the hypothesized associations vary across the two spans of development (i.e., from 8th to 10th grade and from 10th to 12th grade). For example, the regression weight of the path from mother parenting while the adolescent was in 8th grade to adolescent personality in 10th grade was constrained to equality with the regression weight associated with the path from mother parenting while the adolescent was in 10th grade to adolescent personality in 12th grade. Again, this restriction did not change model fit and is consistent with our expectation that study hypotheses will hold across the years of adolescence.

Finally, to evaluate our hypothesis that the model will work similarly for mothers and fathers, Model 1e invokes invariance constraints on the regression weights of parallel paths across parents. For example, the regression weight of the paths from mother parenting to adolescent personality was constrained to equality with the regression weight associated with the paths from father parenting to adolescent personality. Based on the nonsignificant drop in fit from Model ad to Model 1e, Model 1e was selected as the final and most parsimonious representation of study findings. The restrictions imposed on Model 1e provide the most rigorous test of study hypotheses.

Information regarding the measurement model from Model 1e is presented in Table 2. Standardized loadings of manifest indicators onto latent factors ranged from .446 – .813. All loadings were statistically significant and in the expected direction. For example, the standardized loadings from the adolescent NEO-FFI personality scales onto the latent variable during the 10th grade (1992) were .717 for conscientiousness, .675 for neuroticism, and .655 for agreeableness. The standardized loadings from adolescent MPQ personality scales onto the latent variable during the 12th grade (1994) were similar: .661 for control, .597 for stress reaction, and .709 for aggression¹. As the loadings for positive parenting were equated across time in Model 1b (see Table 1), they are only presented once in Table 2.

Correlations among the eight latent factors derived from Model 1e are presented in Table 3. Adolescent personality in 10th grade was correlated .50 with adolescent personality in 12th grade, which is generally consistent with prior findings regarding the stability of personality among adolescents (Roberts & DelVicchio, 2000). This stability is actually even a little higher than might be expected given the absence of shared-reporter variance in the current study due to different reporters of adolescent personality (i.e., adolescent self-report at 10th grade and parent report at 12th grade). Consistent with our predictions, alpha-linked traits of parents were positively associated with adolescent personality (Mean = .24, Range = .14 to .35) and positive parenting (Mean = .18, Range = .12 to .25). Especially important, observed parenting was significantly related to adolescent personality over time.

¹The measurement models for self-report alpha personality at 1992 and parent report of adolescent at 1994 were so similar, they could be constrained to equality with a negligible, nonsignificant worsening in model fit. However, we did not constrain the measurement paths to equality in primary analyses, as they represented different reporters reporting on different instruments.

Figure 1 contains the paths and coefficients associated with Model 1e, with within-time correlations among latent variables omitted from the figure for the sake of clarity. The model-estimated within-time correlations during 8th grade match the correlations presented in Table 3. The model estimated within-time correlations between adolescent personality and parenting were not significant for either father, $r = .18$, $SE = .10$ or mother parenting $r = .15$, $SE = .09$. Mother and father parenting were significantly correlated in 8th grade, $r = .69$ ($SE = .10$), and in 10th grade, $r = .74$ ($SE = .05$). Significant stability in observed parenting was seen for both parents ($\beta = .63$ for mothers, $.74$ for fathers) as was significant stability in personality for adolescents ($\beta = .38$).

We predicted that higher levels of alpha-linked traits of parents would be associated with greater warmth and lower hostility in parenting behaviors. Consistent with this hypothesis, parent alpha-linked traits in 8th grade positively predicted observed parenting in 10th grade over and above the stabilities of the parenting behaviors. This suggests that alpha-linked traits of parents are associated with relative increases in positive parenting over time.

We also hypothesized that higher levels of alpha-linked traits of parents would be associated with higher levels of adolescent alpha-linked traits. Figure 1 has two paths representing the link between each parent's personality and later adolescent personality: parent personality in 8th grade to adolescent-reported personality in 10th grade, and parent personality in 8th grade to parent-reported adolescent personality in 12th grade. Consistent with expectations, these paths were significant and positive suggesting that mother and father personality both predict higher levels of alpha personality in 10th grade, as well as later in 12th grade (after controlling for adolescent alpha personality in 10th grade).

Finally, we proposed that positive parenting would predict higher levels of adolescent alpha-linked personality traits. Consistent with this hypothesis, these associations were significant and positive. Positive parenting in 8th grade predicted greater adolescent-reported personality traits in 10th grade and positive parenting in 10th grade predicted higher levels of parent-reported adolescent personality traits in 12th grade, after controlling for adolescent-reported personality in 10th grade.

The indirect path from parent personality and later adolescent personality through positive parenting also was significant, $b = .009$ (unstandardized coefficient), $SE = .004$, $p < .05$, and was equal for mothers and fathers. Follow-up analyses using bootstrapped confidence intervals also showed this indirect path to be significant ($.000 < b < .015$). The indirect path suggests that, in this sample, the association between parent personality and parent-reported adolescent personality is partially mediated via positive parenting (Kenny, Kashy, & Bolger, 1998).

Discussion

The present study was guided by three general propositions. First, and consistent with Belsky (1984), we proposed that parent alpha personality would be associated with warm and supportive parenting. Second, we expected intergenerational continuity in positive parenting traits. Finally and consistent with recent work proposing links between parenting and personality development (e.g., Pomerantz and Thompson, 2008), we proposed that parental warmth and support would promote positive personality development during adolescence. We consider each proposition and the findings in turn.

Our first hypothesis, that parents' personality would positively predict observed parenting, was supported by the data. This result is consistent with prior work showing parent personality to be a significant correlate of parenting (Belsky & Barends, 2002; Prinzie et al., 2009). These findings suggest that positive parenting may be promoted by alpha-linked traits

such as agreeableness, emotional stability, and conscientiousness (see also Clark, Kochanska, & Ready, 2000). Broadly speaking these findings also support the conclusion of Belsky and Barends (2002) that these personality-parenting associations are not limited to parenting in infancy and childhood. Interestingly, these results suggest that a parent who has high levels of alpha-linked traits may demonstrate relative increases over time in their positive parenting toward the adolescent, whereas a parent who has low levels of alpha-linked traits may experience decreases in positive parenting. These results extend earlier work in at least two important ways. First, to our knowledge this is the only study to demonstrate that parent personality predicts rank-order change in parenting behaviors. Although this result does not demonstrate a causal relationship, it increases confidence that parent personality may have an influence on parenting. Second, this result was found using observation-based ratings of parenting, which addresses concerns regarding shared-method variance.

Our second hypothesis was also supported by these analyses: higher levels of parental alpha-linked traits were associated with higher levels of adolescent alpha-linked traits. There are at least two possible explanations for these associations. Social learning theory (Bandura, 1977) may in part explain the relationship between parent and adolescent personality. First, children witness parents' behavior and likely model the behavior they see. Modeling the behavior of the parent can be an adaptive strategy when a child is looking for a guide for his or her own behaviors. Thus, the intergenerational continuity in personality observed in this study may, in part, reflect the emulation by the adolescent of observable parent traits. In addition, because personality has been shown to have a significant genetic component (Bouchard & Loehlin, 2001), any association between parent and child personality is likely explainable, in part, by genetic transmission. Thus, the results from the current study are consistent with both biological and social explanations of intergenerational continuity in personality, and both possibilities appear to be fruitful areas for future research.

Because of the different informants used to assess adolescent personality, however, it may be that the association between parent personality and adolescent personality in the 12th grade is inflated due to shared-method variance. That is, parents reported on their own personality traits in 1990 and on adolescent personality in 1994. The correlations in Table 3, however, demonstrate very little difference in the magnitude of the associations between parent and adolescent personality as a function of the source of information regarding adolescent personality. Thus, any method variance effects are minimal. These findings suggest that both parent and adolescent reports of adolescent personality are measuring a very similar construct. The major implication of these findings from our perspective, then, is that they provide evidence of parent-child continuities in those personality traits that are likely to contribute to successful adaptation across the life course.

Finally, high levels of parental warmth and low levels of hostility positively predicted adolescent alpha-linked personality traits. Observed parenting accounted for variance in adolescent personality after controlling for earlier levels of both adolescent and parent personality. Our measures of adolescent personality were not identical across time, so replication is needed using exactly the same indicators of personality. Nevertheless, these findings are consistent with the idea that parents play a salient role in personality development and they are more generally consistent with models of personality development which incorporate social influences as predictors of consequence. However, we emphasize that the effect sizes were fairly modest, a finding also consistent with contemporary perspectives suggesting that parenting is but one of many significant contributors to the development of children and adolescents (e.g., Collins et al., 2000). Peers, media, life events, school experiences, and other social factors most likely also account for significant

variance in personality over time, as could biological factors such as neural development during the course of adolescence (Nelson, 2011).

Also as expected, mothers and fathers did not seem to vary with regard to the associations between personality traits and parenting. Recent theoretical and empirical work has reintroduced fathers as salient characters in child development (Parke, 1996) and consistent with that work, the current study found no indication that parenting by fathers is less strongly associated with adolescent personality than parenting by mothers. Likewise, there were no indications that the strength of the association between parental personality and adolescent personality differed between mothers and fathers. Thus, we believe these findings highlight the importance of including mothers and fathers in developmental research, as well as the considerable value in testing for differential effects of parenting by mothers and fathers rather than assuming that these differences exist.

Study Limitations

This study has several limitations that should be noted. Foremost, this is a non-experimental design and thus we cannot draw causal inferences from these results. Nonetheless, the results were consistent with study hypotheses and warrant further scrutiny. A second limitation is the ethnic homogeneity of the sample. Although socioeconomically diverse, because of their location in rural Iowa the participants were White. Replication with other ethnic groups will increase our confidence in the generalizability of the findings. However, this concern is somewhat diminished by the fact that other findings from this sample related to associations among economic stress, personal characteristics, family relationships and child adjustment have been replicated across a number of ethnic groups (Conger & Donnellan, 2007). That is to say, when researchers have sought to replicate other findings from this ongoing study using data from other ethnic groups or nationalities, the attempted replications have usually been successful (e.g., Conger et al., 2002; Mistry, Vandewater, Huston, & McLoyd, 2002; Parke et al., 2004; Solantaus, Leinonen, & Punamäki, 2004; Yeung, Linver, & Brooks-Gunn, 2002). This past history suggests that the current results may replicate as well. Another limitation of the current study is our focus on a relatively limited period of time during adolescence. To get a more nuanced picture of personality development over time, it will be important to examine these issues beginning in childhood. Indeed, in some ways it is remarkable that we found the expected associations between parenting and adolescent personality given the frequent assumption that parents have a greater impact on younger children than adolescents.

It is also important to recognize a possible limitation with respect to the assessment of key constructs in the analyses – personality traits. Although the measurement models suggest the MPQ scales recovered an alpha personality factor similar to the NEO-FFI scales, the results might have been stronger had the NEO-FFI been available at all time points. In addition, whereas the measures of alpha personality performed as expected in the current study, the ontological status of the alpha factor is the subject of ongoing debate (McCrae et al., 2008). Nonetheless, we elected to focus on alpha-linked traits given that they correspond well to the broad theorizing about parenting and personality (Pomerantz & Thompson, 2008; Shiner & Caspi, 2003). That is, those authors describe links between parenting and the psychological resources (residing within children) that facilitate competence. The alpha-linked traits seem well matched to this idea. Likewise, prior work showed similar associations between the three trait-domains of parent alpha personality and their parenting behavior (Clark, Kochanska, & Ready, 2000). Thus, our focus on higher-order aspects of personality was motivated by both theoretical and empirical considerations.

In closing, the current findings suggest that both parent personality and the quality of parenting behaviors may play an important role in personality development during

adolescence. The identified associations between parenting and alpha-linked traits are particularly useful because they suggest that prevention and intervention efforts designed to help adolescents develop competence may find the expressed affect within the parent-child dyad an effective point of entry for intervention. Moreover, the suggestion of social influence in these findings indicates that other venues within the environment may provide the opportunity to promote the development of positive personality traits. More broadly, the current results support continued efforts to incorporate personality constructs into developmental research involving children and adolescents.

References

- Ashton MC, Paunonen SV, Helmes E, Jackson DN. Kin altruism, reciprocal altruism, and the Big Five personality factors. *Evolution and Human Behavior*. 1998; 19:243–255.
- Bandura, A. *Social learning theory*. Oxford, England: Prentice-Hall; 1977.
- Baumrind D. Current patterns of parental authority. *Developmental Psychology Monographs*. 1971; 4(1)
- Belsky J. The determinants of parenting: A process model. *Child Development*. 1984; 55:83–96. [PubMed: 6705636]
- Belsky, J.; Barends, N. Personality and parenting. In: Bornstein, MH., editor. *Handbook of parenting: Vol. 3: Being and becoming a parent*. 2. Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers; 2002. p. 415-438.
- Bleidorn W, Kandler C, Riemann R, Angleitner A, Spinath FM. Patterns and sources of adult personality development: Growth curve analyses of the NEO PI-R scales in a longitudinal twin study. *Journal of Personality and Social Psychology*. 2009; 97:142–155. [PubMed: 19586245]
- Bouchard TJ Jr, Loehlin JC. Genes, evolution, and personality. *Behavior Genetics*. 2001; 31:243–273. [PubMed: 11699599]
- Bouchard TJ Jr, McGue M. Genetic and environmental influences on human psychological differences. *Journal of Neurobiology*. 2003; 54:4–45. [PubMed: 12486697]
- Browne, MW.; Cudeck, R. Alternative ways of assessing model fit. In: Bollen, KA.; Long, JS., editors. *Testing structural equation models*. Beverly Hills, CA: Sage; 1993. p. 136-162.
- Capaldi DI, Patterson GR. An approach to the problem of recruitment and retention rates for longitudinal research. *Behavioral Assessment*. 1987; 9:169–177.
- Caspi A, Roberts BW, Shiner RL. Personality development: Stability and change. *Annual Review of Psychology*. 2005; 56:453–484.
- Clark LA, Kochanska G, Ready R. Mothers' personality and its interaction with child temperament as predictors of parenting behavior. *Journal of Personality and Social Psychology*. 2000; 79:274–285. [PubMed: 10948980]
- Collins WA, Maccoby EE, Steinberg L, Hetherington EM, Bornstein MH. Contemporary research on parenting: The case for nature and nurture. *American Psychologist*. 2000; 55:218–232. [PubMed: 10717969]
- Conger RD, Donnellan MB. An interactionist perspective on the socioeconomic context of human development. *Annual Review of Psychology*. 2007; 58:175–199.
- Conger RD, Wallace LE, Sun Y, Simons RL, McLoyd VC, Brody G. Economic pressure in African American families: A replication and extension of the family stress model. *Developmental Psychology*. 2002; 38:179–193. [PubMed: 11881755]
- Costa, PT., Jr; McCrae, RR. *The NEO personality inventory manual*. Odessa, FL: Psychological Assessment Resources; 1985.
- Costa PT, McCrae RR. Age changes in personality and their origins: Comment on Roberts, Walton, and Viechtbauer (2006). *Psychological Bulletin*. 2006; 132:26–28. [PubMed: 16435955]
- Costa PT, McCrae RR. Normal personality assessment in clinical practice: The NEO Personality Inventory. *Psychological Assessment*. 1992; 4:5–13.
- Darling N, Steinberg L. Parenting style as context: An integrative model. *Psychological Bulletin*. 1993; 113:487–496.

- De Fruyt F, Bartels M, Van Leeuwen KG, De Clercq B, Decuyper M, Mervielde I. Five types of personality continuity in childhood and adolescence. *Journal of Personality and Social Psychology*. 2006; 91:538–552. [PubMed: 16938036]
- DeYoung CG. Higher-order factors of the Big Five in a multi-informant sample. *Journal of Personality and Social Psychology*. 2006; 91:1138–1151. [PubMed: 17144770]
- DeYoung CG, Hasher L, Djikic M, Criger B, Peterson JB. Morning people are stable people: Circadian rhythm and the higher-order factors of the Big Five. *Personality and Individual Differences*. 2007; 43:267–276.
- DeYoung CG, Peterson JB, Séguin JR, Tremblay RE. Externalizing behavior and the higher order factors of the Big Five. *Journal of Abnormal Psychology*. 2008; 117:947–953. [PubMed: 19025240]
- Digman JM. Higher-order factors of the Big Five. *Journal of Personality and Social Psychology*. 1997; 73:1246–1256. [PubMed: 9418278]
- Eddy JM, Leve LD, Fagot BI. Coercive family processes: A replication and extension of Patterson's Coercion Model. *Aggressive Behavior*. 2001; 27:14–25.
- Egeland B, Sroufe LA. Attachment and early maltreatment. *Child Development*. 1981; 52:44–52. [PubMed: 7238152]
- Funder, DC. *Personality judgment: A realistic approach to person perception*. San Diego, CA: Academic Press; 1999.
- Gagne, JR.; Saudino, KJ.; Cherny, SS. Genetic influences on temperament in early adolescence: A multimethod perspective. In: Petrill, SA.; Plomin, R.; DeFries, JC.; Hewitt, JK., editors. *Nature, nurture, and the transition to early adolescence*. New York: Oxford University Press; 2003.
- Ganiban JM, Saudino KJ, Ulbricht J, Neiderhiser JM, Reiss D. Stability and change in temperament during adolescence. *Journal of Personality and Social Psychology*. 2008; 95:222–236. [PubMed: 18605862]
- Graziano, WG.; Eisenberg, N. Agreeableness: A dimension of personality. In: Hogan, R.; Johnson, JA.; Briggs, SR., editors. *Handbook of personality psychology*. San Diego, CA, US: Academic Press; 1997. p. 795-824.
- Güngör D, Bornstein MH. Culture-general and -specific associations of attachment avoidance and anxiety with perceived parental warmth and psychological control among Turk and Belgian adolescents. *Journal of Adolescence*. 2010; 33:593–602. [PubMed: 20079527]
- Harkness AR, Tellegen A, Waller N. Differential convergence of self-report and informant data for Multidimensional Personality Questionnaire traits: Implications for the construct of negative emotionality. *Journal of Personality Assessment*. 1995; 64:185–204. [PubMed: 16367738]
- Heaven PCL, Ciarrochi JI. Parental styles, conscientiousness, and academic performance in high school: A three-wave longitudinal study. *Personality and Social Psychology Bulletin*. 2008; 34:451–461. [PubMed: 18340031]
- Herman MA, McHale SM. Coping with parental negativity: Links with parental warmth and child adjustment. *Journal of Applied Developmental Psychology*. 1993; 14:121–136.
- Hirsh JB, DeYoung CG, Peterson JB. Meta-traits of the Big Five differentially predict engagement and restraint of behavior. *Journal of Personality*. 2009; 77:1085–1102. [PubMed: 19558442]
- Hoffman ML. Affect and moral development. *New Directions for Child Development*. 1982; 16:83–103.
- Hopwood CJ, Donnellan MB, Blonigen DM, Krueger RF, McGue M, Iacono WG, Burt SA. Genetic and environmental influences on personality trait stability and growth during the transition to adulthood: A three-wave longitudinal study. *Journal of Personality and Social Psychology*. 2011; 100:545–556. [PubMed: 21244174]
- Hu L, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling*. 1999; 6:1–55.
- Jang KL, Livesley WJ, Ando J, Yamagata S, Suzuki A, Angleitner A, Ostendorf F, Riemann R, Spinath F. Behavioral genetics of the higher-order factors of the Big Five. *Personality and Individual Differences*. 2006; 41:261–272.
- Jang KL, Livesley WJ, Vernon PA. Heritability of the big five personality dimensions and their facets: A twin study. *Journal of Personality*. 1996; 64:577–591. [PubMed: 8776880]

- Janssens, JMAM.; Gerris, JRM. Child rearing: Influence on prosocial and moral development. Swets & Zeitlinger; 1992.
- Keller MC, Coventry WL, Heath AC, Martin NG. Widespread evidence for non-additive genetic variation in Cloninger's and Eysenck's personality dimensions using a twin plus sibling design. *Behavior Genetics*. 2005; 35:707–721. [PubMed: 16273321]
- Kenny, DA.; Kashy, DA.; Bolger, N. Data analysis in social psychology. In: Gilbert, DT.; Fiske, ST.; Lindzey, G., editors. *The handbook of social psychology*. 4. New York, NY: McGraw Hill; 1998. p. 233-265.
- Kestenbaum R, Farber EA, Sroufe LA. Individual differences in empathy among preschoolers: Relation to attachment history. *New Directions for Child Development*. 1989; 44:51–64. [PubMed: 2771129]
- Kishton JM, Widaman KF. Unidimensional versus domain representative parceling of questionnaire items: An empirical example. *Educational and Psychological Measurement*. 1994; 54:757–765.
- Klimstra TA, Hale WW, Raaijmakers QAW, Branje SJT, Meeus WHJ. Maturation of personality in adolescence. *Journal of Personality and Social Psychology*. 2009; 96:898–912. [PubMed: 19309210]
- Komsi N, Räikkönen K, Heinonen K, Pesonen A, Keskivaara P, Järvenpää A, Strandberg TE. Transactional development of parent personality and child temperament. *European Journal of Personality*. 2008; 22:553–573.
- Larsson H, Viding E, Rijdsdijk FV, Plomin R. Relationships between parental negativity and childhood antisocial behavior over time: A bidirectional effects model in a longitudinal genetically informative design. *Journal of Abnormal Child Psychology*. 2008; 36:633–645. [PubMed: 17602294]
- Löckenhoff CE, Terracciano A, Costa PT. Five-factor model personality traits and the retirement transition: Longitudinal and cross-sectional associations. *Psychology and Aging*. 2009; 24:722–728. [PubMed: 19739928]
- Loehlin, JC. *Genes and environment in personality development*. Newbury Park, CA: Sage; 1992.
- Maccoby, EE.; Martin, J. Socialization in the context of the family: Parent-child interaction. In: Mussen, PH.; Hetherington, EM., editors. *Handbook of child psychology: Vol. 4. Socialization, personality, and social development*. 4. New York: Wiley; 1983. p. 1-101.
- Markon KE, Krueger RF, Watson D. Delineating the structure of normal and abnormal personality: An integrative hierarchical approach. *Journal of Personality and Social Psychology*. 2005; 88:139–157. [PubMed: 15631580]
- McCrae RR, Yamagata S, Jang KL, Riemann R, Ando J, Ono Y, Angleitner A, Spinath FM. Substance and artifact in the higher-order factors of the Big Five. *Journal of Personality and Social Psychology*. 2008; 95:442–455. [PubMed: 18665712]
- Melby, J.; Conger, RD.; Book, R.; Reuter, M.; Lucy, L.; Repinski, D.; Ahrens, K.; Black, D.; Brown, D.; Huck, S.; Mutchler, L.; Rogers, S.; Ross, J.; Stavross, T. *The Iowa Interaction Rating Scales*. 3. Ames, IA: Iowa State University; 1991.
- Mistry RS, Vandewater EA, Huston AC, McLoyd VC. Economic well-being and children's social adjustment: The role of family process in an ethnically diverse low-income sample. *Child Development*. 2002; 73:935–951. [PubMed: 12038561]
- Muthén, LK.; Muthén, BO. *Mplus User's Guide*. 4. Los Angeles, CA: Muthén & Muthén; 2006.
- Nelson, CA. Neural development and lifelong plasticity. In: Keating, DP., editor. *Nature and nurture in early child development*. New York, NY: Cambridge University Press; 2011. p. 45-69.
- Neyer FJ, Lehnart J. Relationships matter in personality development: Evidence from an 8-year longitudinal study across young adulthood. *Journal of Personality*. 2007; 75:535–568. [PubMed: 17489891]
- O'Connor TG, Deater-Deckard K, Fulker D, Rutter M, Plomin R. Genotype–environment correlations in late childhood and early adolescence: Antisocial behavioral problems and coercive parenting. *Developmental Psychology*. 1998; 34:970–981. [PubMed: 9779743]
- Parke, RD. *Fatherhood*. Cambridge, MA: Harvard University Press; 1996.

- Parke RD, Coltrane S, Duffy S, Buriel R, Dennis J, Powers J, French S, Widaman KF. Economic stress, parenting, and child adjustment in Mexican American and European American families. *Child Development*. 2004; 75:1632–1656. [PubMed: 15566370]
- Pomerantz, E.; Thompson, RA. Parents' role in children's personality development: The psychological resource principle. In: John, OP.; Robins, RW.; Pervin, LA., editors. *Handbook of personality: Theory and research*. 3. New York: Guilford Press; 2008. p. 351-374.
- Prinzle P, Stams GJJM, Dekovi M, Reijntjes AHA, Belsky J. The relations between parents' Big Five personality factors and parenting: A meta-analytic review. *Journal of Personality and Social Psychology*. 2009; 97:351–362. [PubMed: 19634980]
- Radke-Yarrow, M.; Zahn-Waxler, C.; Chapman, M. Prosocial dispositions and behavior. In: Hetherington, EM., editor. *Socialization, personality, and social development: Mussen's Handbook of Child Psychology*. 4. Vol. 4. New York: Wiley; 1983. p. 469-545.
- Roberts BW, Caspi A, Moffitt TE. Work experiences and personality development in young adulthood. *Journal of Personality and Social Psychology*. 2003; 84:582–593. [PubMed: 12635918]
- Roberts BW, DelVecchio WF. The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin*. 2000; 126:3–25. [PubMed: 10668348]
- Roberts BW, O'Donnell M, Robins RW. Goal and personality trait development in emerging adulthood. *Journal of Personality and Social Psychology*. 2004; 87:541–550. [PubMed: 15491277]
- Roberts, BW.; Wood, D.; Caspi, A. The development of personality traits in adulthood. In: John, OP.; Robins, RW.; Pervin, LA., editors. *Handbook of personality: Theory and research*. 3. New York: Guilford Press; 2008. p. 375-398.
- Roberts BW, Wood D, Smith JL. Evaluating Five Factor Theory and social investment perspectives on personality trait development. *Journal of Research in Personality*. 2005; 39:166–184.
- Scarr S. Developmental theories for the 1990s: Development and individual differences. *Child Development*. 1992; 63:1–19. [PubMed: 1343618]
- Schmitt-Rodermund E. Pathways to successful entrepreneurship: Parenting, personality, early entrepreneurial competence, and interests. *Journal of Vocational Behavior*. 2004; 65:498–518.
- Schofield TJ, Martin MJ, Conger KJ, Neppl TM, Donnellan MB, Conger RD. Intergenerational transmission of adaptive functioning: A test of the interactionist model of SES and human development. *Child Development*. 2011; 82:33–47. [PubMed: 21291427]
- Seligman MEP. Presidential address. *American Psychologist*. 1999; 54:559–562.
- Shiner RL. The development of personality disorders: Perspectives from normal personality development in childhood and adolescence. *Development and Psychopathology*. 2009; 21:715–734. [PubMed: 19583881]
- Shiner RL, Caspi A. Personality differences in childhood and adolescence: Measurement, development, and consequences. *Journal of Child Psychology and Psychiatry*. 2003; 44:2–32. [PubMed: 12553411]
- Solantaus T, Leinonen J, Punamäki RL. Children's mental health in times of economic recession: Replication and extension of the family economic stress model in Finland. *Developmental Psychology*. 2004; 40:412–429. [PubMed: 15122967]
- Staub, E. *Positive social behavior and morality: Socialization and development*. Vol. 2. New York: Academic Press; 1979.
- Steinberg L, Lamborn SD, Dornbusch SM, Darling N. Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement, and encouragement to succeed. *Child Development*. 1992; 63:1266–1281. [PubMed: 1446552]
- Sutin AR, Costa PT, Miech R, Eaton WW. Personality and career success: Concurrent and longitudinal relations. *European Journal of Personality*. 2009; 23:71–84. [PubMed: 19774106]
- ter Laak J, de Goede M, Aleva L, Brugman G, van Leuven M, Hussmann J. Incarcerated adolescent girls: Personality, social competence and delinquency. *Adolescence*. 2003; 38:251–265. [PubMed: 14560879]
- Tucker LR, Lewis C. A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*. 1973; 38:1–10.

- van der Linden D, te Nijenhuis J, Bakker AB. The General Factor of Personality: A meta-analysis of Big Five intercorrelations and a criterion-related validity study. *Journal of Research in Personality*. 2010; 44:315–327.
- Yeung WJ, Linver MR, Brooks-Gunn J. How money matters for young children’s development: Parental investment and family processes. *Child Development*. 2002; 73:1861–1879. [PubMed: 12487499]

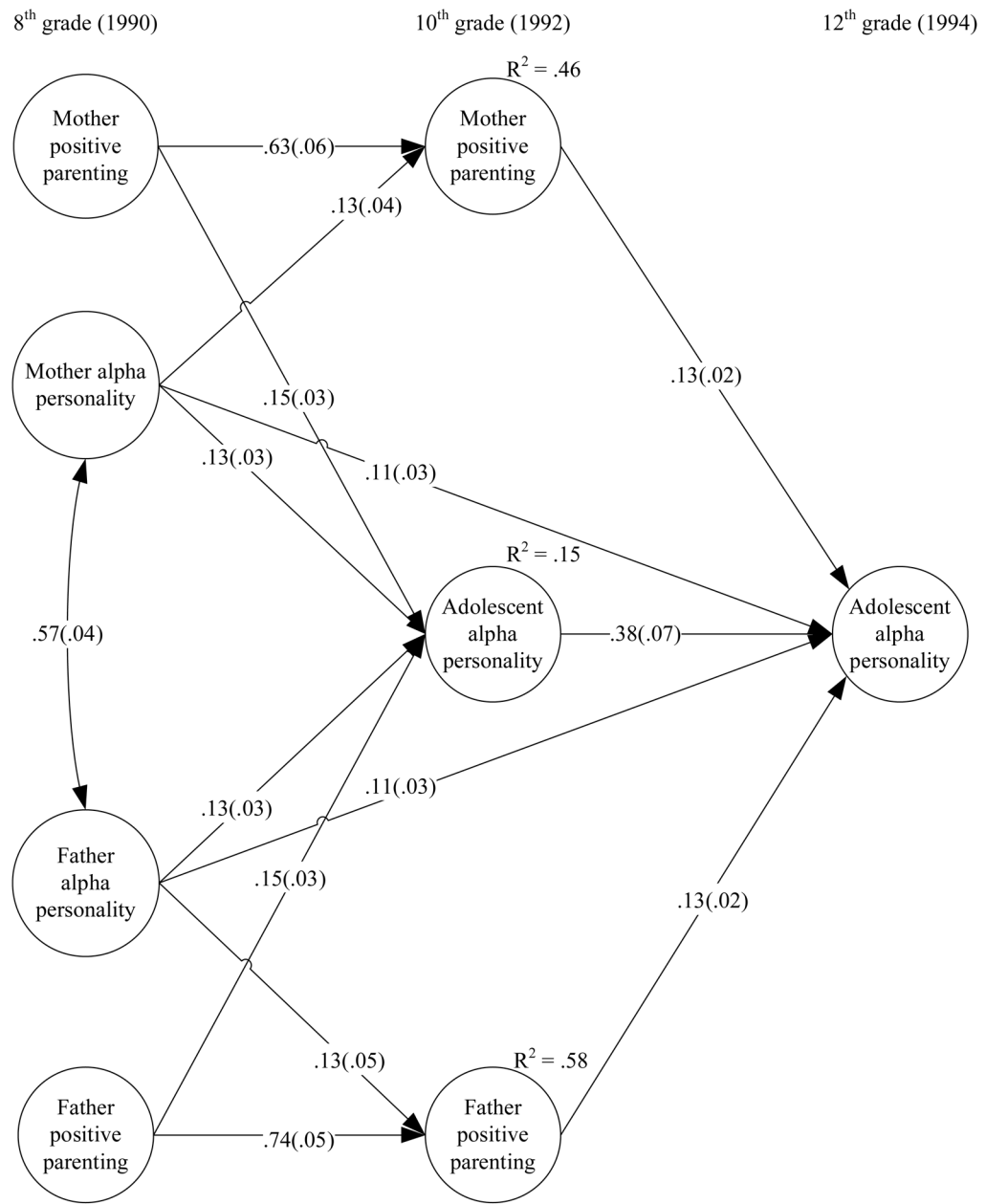


Figure 1. Standardized Coefficients from Model 1e: $\chi^2 (153) = 313.99$, $TLI = .912$, $RMSEA = .044$ (90% CI: .037 – .051).

Table 1
Fit of Structural Models to Data on Mother Personality, Father Personality, Adolescent Personality, and Observed Parenting

Model	χ^2	df	RMSEA	CI	TLI	$\Delta\chi^2$	Δdf	<i>p</i>
1a. 8-factor model with 8 residual covariances, factors freely correlated	301.08	136	.047	.040–.055	.904	-	-	-
1b. Model 1a, with invariance in Λ over time for parenting	303.48	140	.047	.040–.054	.905	2.40	4	.66
1c. Model 1b, with restricted pattern of regression weights in <i>B</i>	306.99	146	.047	.040–.054	.905	3.51	6	.74
1d. Model 1c, with invariance of regression weights over time in <i>B</i>	312.59	150	.045	.038–.052	.909	5.60	4	.23
1e. Model 1d, with invariance of regression weights across parents in <i>B</i>	313.99	153	.044	.037–.051	.912	1.40	3	.70

Note. RMSEA = root mean square error of approximation; e = the RMSEA value; CI = confidence interval of the RMSEA value, which ideally has .05 falling within it; TLI = Tucker-Lewis (1973) index; $\Delta\chi^2$ = change in chi-square from the immediately preceding model; Δdf = change in degrees of freedom from the immediately preceding model; *p* = probability associated with the $\Delta\chi^2$ value.

Table 2

Measurement Model: Unstandardized and Standardized Coefficients, and Standard Errors

Latent Factor	Manifest	Adolescent			Mother			Father		
		λ	SE	Std. λ	λ	SE	Std. λ	λ	SE	Std. λ
Alpha personality	C	.364	.028	.717	.212	.025	.489	.258	.024	.634
	N (reversed)	.408	.034	.675	.431	.038	.766	.400	.034	.770
Positive parenting	A	.278	.024	.655	.165	.019	.517	.140	.019	.446
	Warmth				.813	.062	.679	.786	.062	.629
Alpha personality	Harshness				-1.141	.077	-.813	-1.165	.081	-.812
	CO	.370	.032	.661						
AG (reversed)	SR (reversed)	.307	.029	.597						
	AG (reversed)	.382	.034	.709						

Note: C = Conscientiousness, N = Neuroticism, A = Agreeableness, CO = Control, SR = Stress Reaction, AG = Aggression

Table 3

Correlations Among Latent Variables

Variable	1	2	3	4	5	6	7	8
1. Father alpha personality in 1990	-							
2. Mother alpha personality in 1990	.20**	-						
3. Adolescent alpha personality in 1992	.14*	.29**	-					
4. Adolescent alpha personality in 1994	.17*	.35**	.50**	-				
5. Observed fathering in 1990	.12*	.28**	.33**	.33**	-			
6. Observed mothering in 1990	-.01	.27**	.31**	.30**	.65**	-		
7. Observed fathering in 1992	.21*	.23*	.37**	.41**	.75**	.59**	-	
8. Observed mothering in 1992	.02	.30**	.33**	.38**	.54**	.67**	.68**	-

Note:

*
 $\alpha < .05,$ **
 $\alpha < .01$

Appendix A

Correlations Among Manifest Variables Used in Analyses

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1. Adolescent C	-																								
2. Adolescent A	.43*	-																							
3. Adolescent N	.49*	.45*	-																						
4. Adolescent CO	.31*	.25*	.08	-																					
5. Adolescent AG	.17*	.29*	.06	.47*	-																				
6. Adolescent SR	.24*	.14*	.33*	.37*	.45*	-																			
7. Father C	.07	-.04	.05	.01	.07	.01	-																		
8. Father A	.06	.15*	.02	.06	.22*	.12*	.26*	-																	
9. Father N	.08	.05	.14*	.09	.03	.10	.50*	.32*	-																
10. Mother C	.16*	-.01	.02	.09	.10*	.09	.02	.02	.01	-															
11. Mother A	.08	.14*	.10*	.14*	.19*	.17*	.06	.07	.01	.23*	-														
12. Mother N	.09	.14*	.08	.15*	.16*	.21*	.11*	.11*	.15*	.38*	.39*	-													
13. Father harsh T1	.11*	.24*	.05	.28*	.25*	.12*	-.02	.19*	.05	.13*	.12*	.19*	-												
14. Father warmth T1	.04	.15*	.10*	.18*	.22*	.17*	.03	.14*	.06	.02	.06	.03	.51*	-											
15. Mother harsh T1	.11*	.16*	.04	.26*	.20*	.14*	-.05	.07	-.04	.10*	.12*	.15*	.48*	.41*	-										
16. Mother warmth T1	.18*	.13*	.12*	.20*	.16*	.11*	-.01	.09	.02	.10	.08	.17*	.43*	.50*	.55*	-									
17. Father harsh T2	.16*	.24*	.09	.28*	.22*	.11*	.08	.24*	.13*	-.02	.09	.14*	.55*	.29*	.35*	.26*	-								
18. Father warmth T2	.07	.14*	.11*	.22*	.19*	.15*	.10	.13*	.13*	-.02	.11*	.14*	.34*	.50*	.31*	.20*	.39*	-							
19. Mother harsh T2	.17*	.12*	.06	.27*	.20*	.15*	.03	.08	.03	.01	.14*	.10*	.25*	.28*	.53*	.30*	.48*	.37*	-						
20. Mother warmth T2	.14*	.17*	.08	.20*	.18*	.10*	-.02	.11*	.02	.11*	.12*	.15*	.32*	.24*	.35*	.51*	.37*	.43*	.41*	-					
21. Father harsh T3	.07	.18*	.10	.25*	.22*	.12*	.06	.21*	.11	-.02	.05	.11	.50*	.31*	.21*	.25*	.55*	.31*	.24*	.31*	-				
22. Father warmth T3	.07	.13*	.10	.21*	.26*	.16*	.06	.12*	.06	-.02	.08	.09	.26*	.46*	.22*	.23*	.24*	.55*	.20*	.26*	.32*	-			

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
23. Mother harsh T3	.13*	.05	.05	.22*	.20*	.13*	.02	.05	-.02	-.01	.06	.05	.34*	.30*	.47*	.29*	.30*	.27*	.54*	.32*	.33*	.24*	-	-
24. Mother warm T3	.13*	.13*	.09	.19*	.25*	.17*	.03	.06	-.02	-.01	.14*	.08	.31*	.30*	.33*	.48*	.26*	.28*	.34*	.48*	.24*	.36*	.54*	-
Mean	3.53	3.56	-2.80	3.32	-2.24	-2.77	3.64	3.57	-2.49	3.74	3.81	-2.68	6.76	4.16	6.68	4.51	6.54	3.80	6.24	4.30	6.91	4.47	6.11	4.76
SD	0.53	0.44	0.63	0.72	0.70	0.66	0.41	0.33	0.52	0.44	0.32	0.56	1.43	1.24	1.40	1.20	1.61	1.17	1.66	1.16	1.52	1.27	1.83	1.28

Note. C = conscientiousness, A = agreeableness, N = neuroticism(reversed), CO = control, AG = aggression (reversed), SR = stress response(reversed), Harshness reversed.