

Personality Development at Work: Workplace Conditions, Personality Changes,
and the Correspondive Principle

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Abstract

Objective: Investigations concerning adult personality development have increasingly focused on factors that are associated with apparent personality trait changes. The current study contributes to this literature by replicating and extending previous research concerning personality trait development in young adulthood and perceptions of workplace conditions.

Method: Analyses were based on up to 442 individuals who participated in the ongoing Family Transitions Project (e.g., Conger & Conger, 2002). The current analyses included personality trait data from 1994 and 2003, high-school grades and SES indicators from 1994, and reports about work conditions in 2001, 2003, and 2005. **Results:** Personality attributes were prospectively associated with work conditions and income. Findings also support the corresponsive principle of personality development (e.g. Roberts, Caspi, & Moffitt, 2003): Traits that were prospectively associated with particular workplace conditions often seemed to be accentuated by those conditions. **Conclusions:** Personality traits are prospectively associated with perceptions of the workplace. Workplace conditions are also associated with trait development.

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The workplace is one of the primary settings of adult life and there is increasing interest in whether conditions at work are associated with personality trait development in adulthood (Hudson, Roberts, & Lodi-Smith, 2012; Roberts, Caspi, & Moffitt, 2003; Roberts, Walton, Bogg, & Caspi, 2006; Scollon & Diener, 2006; Sutin, Costa, Miech, & Eaton, 2009). This attention dovetails with research suggesting that personality traits are associated with job performance (e.g., Barrick & Mount, 1991; Barrick, Mount & Judge, 2001) and achievement in similar contexts like educational settings (Nofle & Robins, 2007). Evidence that personality traits are associated with future work experiences and the suggestion that the workplace can facilitate personality development fits well with the emerging life course perspective on adult personality trait development (see e.g., Roberts, Donnellan, & Hill, in press). This perspective holds that personality traits help shape an individual's life experiences, which in turn facilitates the development of personality traits across the life span. The goal of this paper is to contribute additional evidence for this proposition by replicating and extending existing research. In addition, we use parent reports of personality to evaluate whether traits are prospectively related to workplace conditions and income, thereby helping to further the case that personality attributes have life course consequences with multi-method data (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007).

Work as a Context for Trait Development in Young Adulthood

There is replicable evidence that normative personality trait changes occur in young adulthood such as increased self-control and emotional stability (e.g., Blonigen, Carlson, Hicks, Krueger, & Iacono, 2008; Caspi, Roberts, & Shiner, 2005; Donnellan, Conger, & Burzette, 2007; Hopwood et al., 2011; Neyer & Asendorpf, 2001; Roberts, Caspi, & Moffitt, 2001; Robins, Fraley, Roberts, & Trzesniewski, 2001; Vaidya, Gray, Haig, Mroczek, & Watson, 2008).

Moreover, genetically-informed research into the etiology of personality change suggests that trait development in young adulthood is associated with environmental factors as well as genetic factors (Hopwood et al., 2011). Thus, researchers are directing attention to the life experiences, contexts, and transitions occurring during young adulthood that are plausibly associated with personality development (Caspi, Roberts, & Shiner, 2005). Primary considerations involve experiences in relationships, educational settings, and the workplace (Schulenberg, Sameroff, & Cicchetti, 2004). Likewise, there are suggestions that events associated with these contexts may impact individuals differently and even serve to accentuate individual differences (e.g., Rutter, 1996). We consider the potential associations between workplace conditions and personality trait development in the current report.

Arnett (2004) argued that young people “want their work to be an expression of themselves, to fit well with their interests and abilities, to be something they find satisfying and enjoyable” (p. 162). This desire to find meaningful work is reasonable in light of the sheer amount of time that adults spend in the workplace. In fact, estimates from U.S. Census Bureau data indicate that the average adult spends more than thirty hours per week working (McGrattan & Rogerson, 1998), an amount that is roughly equivalent to the time that parents spend with their children (Sandberg & Hofferth, 2001). Moreover, there is evidence that work conditions are correlated with indices of psychological well-being (e.g. Heller, Watson, & Illies, 2004; Judge & Watanabe, 1993; Wilhelm, Kovess, Rios-Seidel, & Finch, 2004) and even evidence that work conditions are a distal influence on physical health (Wickrama, Lorenz, Conger, Matthews, & Elder, 1997). In terms of psychological attributes, Mortimer and Staff (2004) found that work stressors in young adulthood were associated with feelings of self-efficacy and resilience over a period of up to 9 years.

In light of these considerations, there is increasing recognition that workplace experiences may play a role in adult personality trait development (Hudson et al., 2012; Roberts et al., 2003). This proposition fits well with the long tradition in sociology of positing links between individual characteristics and job characteristics (e.g. Kohn, 1963; Kohn & Schooler, 1982; Spenner, 1988). In short, it is plausible that work conditions might influence the development of personality traits, in part, because the workplace provides clear contingencies that reward and punish particular kinds of behaviors (Hudson et al., 2012). Thus, the workplace might be an important context for human development in adulthood.

It is also the case that personality attributes are associated with workplace variables. For example, there is a growing developmental literature demonstrating that early emerging individual differences in personality and temperament predict subsequent academic, economic, and occupational outcomes such as bouts of unemployment, economic pressure, grades, and job performance (e.g., Caspi, Wright, Moffitt, & Silva, 1998; Donnellan, Conger, McAdams, & Neppi, 2009; Kokko & Pulkkinen, 2000; Roberts, Caspi, & Moffitt, 2003; Shiner, Masten & Roberts, 2003). For instance, Shiner et al. (2003) found that personality traits related to Agreeableness, Extraversion, and Conscientiousness at age 10 were prospectively associated with future academic attainment and work competence. Similarly, Roberts, Harms, Caspi, and Moffitt (2007) found that personality attributes at age 18 predicted counterproductive workplace behaviors.

The developmental research converges with a considerable amount of research in Industrial/Organizational psychology pointing to connections between work-related behaviors and individual differences in personality and cognitive ability (e.g., Barrick & Mount, 1991; Howard & Bray, 1990; Judge, Higgins, Thoresen & Barrick, 1999; Lord, De Vader, & Alliger,

1986; Schmidt & Hunter, 1998). For example, Judge et al. (1999) examined whether childhood and adult assessments of the Big Five predicted career success as defined in both intrinsic (i.e., job satisfaction ratings) and extrinsic (i.e., income) terms. They found that Conscientiousness and Extraversion were positively associated with extrinsic career success, whereas Neuroticism and Agreeableness were negatively associated with intrinsic career success.

In short, there is evidence from diverse literatures that personality traits and workplace conditions are linked. Broadly speaking, previous research provides support for two occasionally competing explanations for the association between individual characteristics and social conditions: social selection and social influence. Social selection refers to the processes whereby the personal characteristics of individuals shape their social conditions, whereas social influence refers to the processes whereby contextual conditions shape the individuals' characteristics. The emerging life course perspective argues that both social selection and social influence mechanisms are relevant for understanding personality development (see Roberts et al., in press). One integrative proposition stemming from this perspective is that life experiences accentuate those personal characteristics that were prospectively associated with those life experiences in the first place, a proposal known as the "corresponsive principle" of personality development (Caspi et al., 2005; Roberts et al., 2003).

There is existing support for the corresponsive principle when considering the workplace. In particular, Roberts et al. (2003) assessed the association between workplace conditions and personality trait development in a longitudinal study of a birth cohort born in Dunedin, New Zealand. These researchers found that personality traits assessed at age 18 predicted work conditions at age 26 and that work conditions were related to personality change from age 18 to age 26. For example, Roberts et al. (2003) found that Agentic Positive Emotionality (a broad trait

akin to Extraversion in the Big Five taxonomy that captures individual differences in ambition and social zest) at age 18 was positively associated with work involvement and commitment. Work involvement was, in turn, related to relative increases in Agentic Positive Emotionality from ages 18 to 26. More recent studies have also supported the idea of reciprocal personality-work associations using the Big Five domains. Scollon and Diener (2006) used a longitudinal study of Australians and found that work satisfaction was related to decreases in Neuroticism and increases in Extraversion. Sutin et al. (2009) used data from the Baltimore Epidemiologic Catchment Area Study (e.g., Robins & Regier, 1991) and found that work experiences were related to personality changes in longitudinal analyses. Specifically, income was associated with decreases in Neuroticism and increases in Extraversion over a 10-year period.

The Present Study

The objective of this report is to replicate and extend existing research concerning personality traits and the workplace using data from the Family Transitions Project, an ongoing longitudinal study focused on the transition from adolescence to adulthood (e.g., Conger & Conger, 2002). A notable feature of this study is that we assessed the same personality traits measured by Roberts et al. (2003) so that our investigation presents the unusual opportunity to try to replicate results from an existing longitudinal study (with the caveat there are differences in the measurement of other variables). Specifically, we used the Multidimensional Personality Questionnaire (MPQ; Tellegen & Waller, 2008) to assess four broad personality attributes: Agentic Positive Emotionality (an energetic orientation to master achievement-related contexts and the tendency to experience positive affect in such settings), Communal Positive Emotionality (an orientation to interpersonal relationships and the tendency to experience positive affect in such settings), Negative Emotionality (the susceptibility to negative emotions such as anxiety,

anger, and general distress), and Constraint (self-control and the endorsement of traditional values). Replications are crucial but underappreciated scientific activities (e.g., Kline, 2004, p. 247). Even so, we extend Roberts et al.'s (2003) earlier work in three important ways.

First, we obtained informant reports of personality in 1994. Accordingly, we can use these reports to rule out concerns that shared method variance completely explains the prospective associations between personality and work conditions. Although individuals have a unique perspective on their own thoughts, feelings, and behaviors, relying on a single method to assess both personality and workplace conditions raises concerns that common method variance inflates associations. One way to address this issue is to supplement self-reports with other approaches to personality assessment. In this study, we used parent-reports of personality to predict later workplace conditions. We also attempted to use self-reports of both relatively objective (e.g., reports of income) and more subjective (e.g., perceptions of workplace fit) elements of the workplace to test connections between personality traits and workplace conditions.

Second, we evaluate the association between personality traits and grades in high school (see Nofle & Robins, 2007 for a review of this literature) to test whether associations between personality and work variables can be partially attributable to success in agentic domains. We can also control for indicators of socioeconomic standing. Thus, we are able to evaluate whether controlling for earlier grades and indicators of socioeconomic standing eliminates relation between adolescent personality traits and later work variables to provide more conservative tests of the relevant associations. Third, we investigated whether work conditions assessed at an earlier wave forecast personality changes. Whereas Roberts et al. (2003) found that work conditions at age 26 were associated with personality changes from age 18 to age 26, we are able

to examine whether work conditions at around age 25 are associated with personality changes from ages 18 to 27. This analytic strategy is fairly conservative because it removes any shared “state variance” between reports of the workplace and personality assessments taken at the same measurement occasion. All told, there are two primary aims of this investigation.

Aim #1: Evaluate How Well Late Adolescent Personality Traits Predict Young Adult Work Conditions and GPA. This first aim provided a test of the hypothesis that personality traits predict future objective and subjective conditions in the work place using both self-reports and parent reports of personality. Based on previous research and the underlying nature of the personality traits, we predicted that individuals who are more outgoing and forceful (i.e., high in Agentic Positive Emotionality) and more traditional, self-controlled, and planful (i.e., high in Constraint) should be more successful in the workplace in terms of income and material rewards. We also expect such individuals to have more positive perceptions of the workplace. In addition, we expect that individuals who are drawn to social relationships and are generally positive (i.e., high in Communal Positive Emotionality) should have more positive impressions of the workplace. On the other hand, we predicted that individuals who are easily distressed by negative feelings like anxiety and anger (i.e., high in Negative Emotionality) would be more likely to have negative perceptions of their workplace than those less likely to chronically experience negative emotional states.

Aim #2: Evaluate Whether Young Adult Work Conditions Are Associated with Personality Changes from Adolescence to Adulthood. This second aim provided a test of the hypothesis that contextual conditions are associated with the development of personality. Consistent with a life-course perspective, we expected that work conditions would be associated

with relative changes in those traits that were prospectively correlated with those work conditions following the corresponsive principle of personality development.

Method

Sample and Procedures

The data analyses in this report are based on data from a subset of the 559 (56% female) participants in the ongoing Family Transitions Project (FTP; see Conger & Conger, 2002, for an overview of the study). The ethnic/racial background was predominately European American and largely reflected the underlying demographics of rural Iowa. The FTP was started in 1994 when the Iowa Youth and Families Project and the Iowa Single Parent Project were merged to follow the focal participants as they transitioned from adolescence to adulthood (see Conger & Conger, 2002). The MPQ was first administered to this sample in 1994. A thorough description of the personality trait development of the FTP sample from 1994 to 2003 is reported in Donnellan et al. (2007) whereas other details of this project can be found in Conger and Conger (2002).

Participants completed self-reports of personality using the MPQ during Years 1 and 10 of the FTP (primarily collected during calendar year 1994 and 2003, respectively), self-reports of work characteristics and income during Years 8, 10, and 12 (collected primarily during calendar years 2001, 2003, and 2005 respectively), and had at least one parent complete an informant report of personality during Year 1. We refer to these waves by the primary year of data collection for the remainder of the report. The average age of FTP participants in 1994 was 18.11 years ($SD = .42$; Median = 18.10), 25.77 years in 2001 ($SD = .46$; Median = 25.70), 27.75 years in 2003 ($SD = .47$; Median = 27.70) and 29.59 years in 2005 ($SD = .42$; Median = 29.60). These

ages were calculated by comparing birthdates with interview dates. All respondents were paid approximately \$10 per hour of participation.

We restricted the sample used in these analyses to those participants with some personality data who were also employed during at least one of the 2001, 2003, and 2005 assessments. As seen in Table 1, 442 had self-reported personality information in 1994, 423 had parent-reported personality information in 1994, and 420 had self-reported personality information in 2003. Of the 423 who had parent-reported personality information in 1994, 383 (91%) had work characteristic information in 2001 whereas those numbers dropped to 361(85%) and 351 (83%) in 2003 and 2005, respectively. Of the 442 participants that had self-reported personality data from 1994, 400 (90%) had work characteristic information in 2001, 375 (85%) had this information in 2003, and 362 (82%) had this information in 2005. Finally, of the 420 who had personality information in 2003, 384 (91%) had work characteristic information in 2001, 387 (92%) had work characteristic information in 2003, and 354 (84%) had work information in 2005.

Measures - Personality

Self-Reports of Personality. Participants completed the 155-item Multidimensional Personality Questionnaire – Brief Form (MPQ-BF; Patrick, Curtin, & Tellegen, 2002) in both 1994 and 2003. Participants responded to each item using a dichotomous scale (mostly true-false items), and responses were averaged to create scales. The means and standard deviations are presented in Table 1, and the reliabilities are presented in Table 2. Ten of the 11 primary scales of the MPQ can be organized into the four broad dimensions investigated in the current paper (e.g., Roberts et al., 2001; Roberts et al., 2003):

Agentic Positive Emotionality was calculated by averaging the items on the Achievement and Social Potency primary scales. *Communal Positive Emotionality* was calculated by averaging the items on the Well-Being and Social Closeness primary scales. *Negative Emotionality* was calculated by averaging the items on the Aggression, Alienation, and Stress Reaction primary scales. *Constraint* was calculated by averaging the items on the Control, Harm Avoidance, and Traditionalism primary scales.¹

Parent Reports of Personality. A 33-item informant report of the MPQ developed by Tellegen (e.g., Harkness, Tellegen, & Waller, 1995) was used to obtain reports of personality from the parents of the focal participants in 1994. Mothers and fathers independently rated their child on a 5-point scale that asked them to compare their child on a particular trait to other individuals of the same age and sex. We calculated scales by averaging mother and father reports. Descriptive statistics are presented in Table 1, and reliability coefficients are presented in Table 2. More details on the parent reports of personality are available in Donnellan et al. (2007).

Measures – Workplace Conditions and Income

Workplace conditions. Participants completed a 52-item questionnaire that assessed workplace conditions using a 1 (strongly agree) to 5 (strongly disagree) scale in 2001, 2003, and 2005. All items were then scored so that higher values indicated more positive working conditions. The item pool was drawn from diverse sources (e.g., Jencks, Perman, & Rainwater,

¹ We did not examine the Absorption scale in this report because it was not included in the Roberts et al. (2003) investigation. Furthermore, we compared the group of participants who were included in this report (because they reported on work characteristics in later years) to those who were not included (because they did not provide work characteristic reports) on self-reports of personality in 1994 to address concerns over selection biases. We computed *d*-metric effect sizes such that positive numbers indicated that the group that was included in this report scored higher on a particular trait than those who were not included. These comparisons provided little reason to suspect large selection biases given all effect sizes were small and none were statistically significant: Agentic Positive Emotionality ($d = .06$), Communal Positive Emotionality ($d = .10$), Negative Emotionality ($d = .06$), and Constraint ($d = .03$).

1988; Karasek, 1990) and some items were created specifically for the Family Transitions Project. The measure was intended to assess several domains of work experience (see Spenner, 1988) including self-determination at work, work pressures, the presence of material benefits, and work fit.

Income. Participants reported how much they earned “per hour, week, month, or year in this job” in 2001, 2003, and 2005. In addition, participants reported “how many hours per week on average” they worked at their main job and how many weeks they worked at the job during the past 12 months (including paid vacation time). We transformed these responses into an annual income variable. Thus, if participants reported monthly income, we multiplied this amount by 12. If participants reported weekly income, we multiplied this amount by the number of weeks they reported working at their job. If participants reported hourly income, we multiplied this amount by the number of hours they reported working per week (on average) and the number of weeks they reported working in the past 12 months. The rank-order stability of income from 2001 to 2003, 2001 to 2005, and 2003 to 2005 was .58, .52, and .58, respectively.

Control Variables

GPA. In 1994 participants were asked which letter grade (A, A-, B+, and so on through F) was closest to their grade point average. We assigned a numerical value to each letter grade using a traditional 0 to 4 GPA scale ($M = 2.76$, $SD = 1.15$, Median = 3.00).

Indicators of Family of Origin Socioeconomic Status (SES). It is potentially important to assess whether young adult outcomes can be explained by pre-existing socioeconomic conditions. Socioeconomic status is typically conceptualized as broad composite reflecting social position (see e.g., Conger & Donnellan, 2007). In practice, it is often measured using indicators of income, education, and occupational prestige. In the current report, we used

household income, both parents' education, and both parents' occupational prestige to create a composite measure of SES. We standardized the parents' self-report of their gross annual income ($M = \$45,479$, $SD = \$38,635$), years of education as of 1994 ($M = 13.68$, $SD = 2.17$ for fathers; $M = 13.55$, $SD = 1.75$ for mothers), and occupational prestige as of 1994 ($M = 43.55$, $SD = 11.50$ for fathers; $M = 44.42$, $SD = 13.83$ for mothers). Mothers' and fathers' education level were correlated ($r = .39$) as was their occupational prestige scores ($r = .17$). We standardized all 5 variables and averaged them to create a composite indicator of family of origin socioeconomic status.

Results

For all analyses, we used the conventional $p < .05$ as our criterion for judging coefficients as statistically significant. All discussed coefficients met this threshold unless otherwise noted. Given the large number of tests performed, we encourage readers to focus on effect size estimates and the consistency of findings across informants and years as well as the consistency of findings with the existing literature instead of relying on the statistical significance of any single result to interpret results. To interpret the size of correlations and standardized regression coefficients, we followed the conventional rule of thumb in personality and developmental research such that $|.1|$ was considered small, $|.3|$ was considered moderate and $|.5|$ or larger was considered large (see McCartney & Rosenthal, 2000).

Exploratory Factor Analyses of the Work Characteristics Questionnaires

We performed a series of principal axis factor analyses using a promax rotation on the 52 work items administered in 2001, 2003, and 2005 to reduce them to a manageable set of variables for use in subsequent analyses. An examination of the scree plots suggested the presence of 5 major dimensions at all three waves. We also examined 4 factor and 6 factor

solutions, but the results were not as easily interpretable as the 5 factor solution. Table 3 displays the pattern factor coefficients for each item used in subsequent scales. These coefficients are similar to beta weights in regression analyses as they indicate the independent association between each item and the corresponding factor (e.g., Russell, 2002). Based on Table 3, we calculated 5 scales at each wave by averaging the items with the highest primary loadings on that factor: *Fit* (5 items) captured how well the individuals' talents and abilities matched the demands of their work and the lack of repetition in daily activities; *Self-determination* (5 items) reflected how much freedom and feedback participants felt at work; *Ease* (6 items) represented the lack of tension participants felt at work, *Material Benefits* (5 items), represented the tangible benefits and stability of participants' jobs; *Safety/Quality* (5 items) reflected the labor intensity of the job and perceptions of poor working conditions.

Scale means and standard deviations are reported in Table 1. Internal consistencies and stability coefficients are reported in the bottom rows of Table 3. The average inter-correlation for the five scales was .23 in 2001 ($SD = .10$, $Median = .21$, $Range: .12 - .40$), .22 in 2003 ($SD = .11$, $Median = .19$, $Range: .08 - .45$), and .24 in 2005 ($SD = .12$, $Median = .22$, $Range = .03 - .44$). Together, the 5 dimensions accounted for 40.24% of the variance in 2001, 43.31% in 2003, and 41.22% in 2005.

How Well Do Late Adolescent Personality Traits Forecast Work Conditions in Young Adulthood?

We evaluated correlations between personality traits (both parent- and self-reports) and work conditions averaged across 2001, 2003, and 2005. These correlations are presented in Table 4. The pattern of correlations between personality and work characteristics were generally similar whether one used parent-reports or self-reports of personality. That is, of the 96 total

correlations reported in Table 4, 66 of the correlations had the same sign and were similar in statistical significance when comparing across self- and parent-reports of personality. Agentic and Communal Positive Emotionality were positively associated with work conditions, whereas Negative Emotionality was negatively associated with work conditions. Constraint seemed to have the fewest significant associations with workplace conditions. In addition, Table 4 reports the correlations between personality and work conditions assessed in 2001 given the developmental analyses reported below. Of the 31 statistically significant correlations that were observed with averaged work conditions, 24 (77%) were statistically significant when using only 2001 work conditions. This result underscores the fact that aggregation typically increases the strength of the associations between personality and life outcomes².

Table 5 presents the associations between personality and GPA, personality and 1994 family SES, as well as correlations between personality and averaged work conditions controlling for GPA and family SES. As seen in Table 5, the size of the associations between personality and work outcomes are reduced slightly when controlling for both GPA and family SES. However, most of the statistically significant relations in Table 4 were also statistically significant in Table 5. The notable exceptions to this generalization were that the associations between parent reported Constraint and Material Benefits (zero-order $r = .12$; partial $r = .08$) and self-reported Negative Emotionality and Self-determination (zero-order $r = -.11$; partial $r = -.09$) were no longer statistically significant. Even so, a comparison of the size of the coefficients in Tables 4 and 5 reveals that the magnitude of associations remained similar after controlling for GPA and SES, as the discrepancies were only .04 and .02 units, respectively. In general, associations between personality and subsequent work conditions were not eliminated

² Upon request, we can provide the data for the analyses between personality and single years of work experience.

controlling for GPA and SES. In short, we found that certain late adolescent personality traits foreshadow work conditions assessed up to 11-years in the future.

Are Work Conditions Associated with Relative Changes in Personality Traits?

The second aim of this report was to evaluate whether work conditions were related to relative changes in personality. We used the same multiple regression strategy followed by Roberts et al. (2003). Specifically, we regressed personality characteristics assessed in 2003 on personality characteristics assessed in 1994 and work characteristics in 2001³. These results are displayed in Table 6.

As seen in Table 6, we found evidence that work conditions were related to relative changes in personality traits⁴. For example, relative increases in Agetic Positive Emotionality were associated with Fit Self-determination, Ease, and Material Benefits. Individuals who reported that their jobs allowed them to use their skills, make decisions, and provided a secure working environment, tended to report becoming more ambitious and forceful from late adolescence to young adulthood. Similarly, relative increases in Negative Emotionality were associated with Fit, Ease, Material Benefits, and Safety/Quality. Individuals who reported that their jobs did not allow them to use their skills, were stressful, did not provide a secure working environment, and were lower quality and involved some level of danger tended to report becoming more hostile and antagonistic from late adolescence to young adulthood.

³ We also regressed personality characteristics assessed in 2003 on personality characteristics in 1994 and work characteristics in 2003. The results were similar to the ones presented here and can be provided upon request. However, we believe that the analyses we present provide stricter tests of the corresponsive principle because it assured the appropriate temporal ordering of the hypothesized associations and removes any concurrent biases in 2003 that may have influenced reports of both personality and work conditions. We did not perform these analyses with work characteristics assessed in 2005 because personality was not assessed in 2005 with the MPQ-BF. Therefore, we could not use the work characteristics in 2005 to assess concurrent or later personality changes for the MPQ dimensions.

⁴ We also performed regression analyses controlling for SES and GPA. The pattern and statistical significance of associations did not change. Thus, for brevity we did not include the table. These results can be obtained upon request.

Is there A Corresponsive Relation Between Work Conditions and Personality Development?

Considered together, Tables 4 and 6 provided evidence that personality trait change occurred largely along the lines of the corresponsive principle identified by Roberts et al. (2003). We formally tested this impression using similar procedures as Roberts et al. (2003, p. 589). First, we counted the number of associations in Table 4 that showed correspondence with the coefficients reported in Table 6. In other words, we counted the instances where there was a positive coefficient for a personality trait predicting a work outcome in 2001 and a positive coefficient for that work variable predicting a relative change in that trait. Likewise, we counted the instances where there was a negative coefficient for a personality trait predicting a work outcome and a negative coefficient for that work variable predicting a relative change in that trait. Of the 24 self-report correlations in Table 4 for work conditions in 2001, 20 change coefficients in Table 6 demonstrated correspondence (83%). Similar to Roberts et al (2003), we also conducted a second test of the corresponsive principle by correlating the coefficients reported in Table 4 with the corresponding change coefficient reported in Table 6 after performing z-transformations of the correlations. The correlation between the two vectors of 24 coefficients was $.76, p < .05$. Thus, these analyses suggest there was evidence consistent with the corresponsive principle of personality development⁵.

Discussion

The current study provided some indications that personality traits are prospectively associated with workplace conditions and that workplace conditions are associated with

⁵ We also conducted mediation analyses using the PROCESS Bootstrapping method by Hayes (2012). Of the 15 possible instances where work conditions might mediate personality development 9 were statistically significant and supportive of the corresponsive principle. The rest were not statistically significant. For brevity, we only present the simpler analyses. The bootstrapping results are available upon request.

personality changes during the transition from adolescence to adulthood. These findings were consistent with expectations informed by a life-course perspective on personality development (e.g., Donnellan & Robins, 2009; Roberts et al., in press). Moreover, we replicated the general findings of Roberts et al. (2003) using a slightly longer time-frame, using prospective reports of workplace conditions rather than exclusively using concurrent reports, and using parent-reports of personality in addition to self-reports. Generally speaking, the size and pattern of associations between late adolescent personality traits and work conditions in this report was consistent with the Roberts et al. (2003) pattern of results. It seems as if personality characteristics help shape an individual's work-related circumstances and such contextual conditions, in turn, seem to contribute to personality development in young adulthood. We now comment on several of the key findings from this investigation.

Personality Characteristics Forecast Income and Working Conditions in Young Adulthood

The trait perspective emphasizes the idea that personality characteristics influence how individuals function in the real world (e.g., Allport, 1937; see Ozer & Benet-Martínez, 2006 and Roberts et al., 2007 for broad reviews). The current study provides support for this idea given that late adolescent personality characteristics were prospectively associated with income and work conditions in young adulthood. In short, our work indicates that personality variables are relevant to theorizing about the antecedents of workplace success and economic attainment. One of the most noteworthy findings was that late adolescent Agentic Positive Emotionality predicted young adult income, a widely understood and relatively objective indicator of economic success. On the other hand, the fact that Constraint was not a robust predictor of work outcomes was counter to our expectations.

Moreover, we responded to criticisms that personality psychology relies too heavily on evidence from self-report studies and found that parent reports of adolescent personality traits also predicted young adult outcomes. This finding is consistent with earlier work from this project also showing that parent reports of personality in late adolescence predict subsequent behavior in romantic relationships (Donnellan, Larsen-Rife, & Conger, 2005). Given such results, it is worth speculating on some of the reasons why parent-reports seem to be useful for predicting young adult outcomes. A simple explanation is that parents are in a relatively good position to observe consistencies in their offspring's behavior over time and across situations and this abundance of information may help make parents particularly valuable judges of the characteristics of their offspring. It might also be the case that the self-protective biases that influence self-reports (e.g., Spain, Eaton, & Funder, 2000) are not as present with parent-reports, even though parent-reports likely have their own set of biases.

In general, previous research has found that the criterion validity of personality judgments is contingent on a number of factors including the personality trait in question and the criterion being predicted (e.g., Funder, 1995; Spain, Eaton & Funder, 2000). A recent meta-analysis by Connelly and Ones (2010) found that intimate others compared to coworkers, acquaintances, and strangers were reasonably good informants of personality attributes that are more intrapsychic (such as Neuroticism and Openness) as opposed to those with more clearly defined social expressions that are easier for strangers to judge (such as Extraversion). Consistent with our results, Connelly and Ones also found that close others were more accurate in predicting academic achievement outcomes and job performance relative to self-reports of personality. Although additional research is needed to identify boundary conditions for the predictive validities for parent reports of personality, we have tentatively concluded that parents are

reasonably “good” judges of the personalities of their adolescent children when trying to predict future outcomes for these individuals in the domains of love and work during young adulthood.

All of the associations reported in this paper naturally raise questions about the precise mechanisms linking traits to workplace conditions. We believe that multiple mechanisms are likely to underlie these associations. For instance, individuals with high scores on Agentic Positive Emotionality likely have high levels of motivation and ambition and therefore may both select into higher paying jobs and be selected for such jobs because of their personal characteristics. Individuals with a high degree of Negative Emotionality are prone to externalizing problems and have lower quality romantic relationships (see e.g., Humbad, Donnellan, Iacono, McGue, & Burt, 2010; Krueger et al., 1994). Likewise, individuals who score high in Negative Emotionality might engage in more counterproductive work behaviors (Roberts et al., 2007) and have less positive relationships with co-workers and supervisors. These processes would likely create work tensions and potentially channel the individual into less desirable working conditions. Although these processes seem plausible, future research is needed to explicitly test these kinds of explanations. A thorough investigation into the potential mechanisms behind such associations was beyond the scope of this paper and largely exceeds the data available for such tests in the Family Transitions project.

Work Conditions Are Associated With Young Adult Personality Trait Development

Although we found evidence that personality traits were associated with future workplace conditions, the primary motivation behind this investigation was to evaluate whether contextual conditions were associated with personality development. We found some evidence that work conditions assessed in 2001 predicted personality changes from 1994 to 2003. For example, individuals who made more money in 2001 showed relative declines in Negative Emotionality

when compared to individuals who made less money in 2001. This pattern is consistent with results reported by Sutin et al. (2009) given that they also found that higher incomes were associated with relative decreases in Neuroticism. In addition, Sutin and Costa (2010) found that job characteristics such as prestige and psychological demandingness were associated with relative changes in Extraversion. This finding is compatible with the current results indicating that autonomy and benefits at work were associated with relative changes in Agentic Positive Emotionality. Collectively, these kinds of results indicate that workplace conditions are associated with personality trait development.

Further and consistent with the contention of Roberts et al. (2003), we found general support for the corresponsive principle of personality development (Caspi et al., 2005). Work conditions tended to be associated with the development of traits that were linked with those conditions in the first place. As an illustration, consider the case of Agentic Positive Emotionality and workplace conditions that included security and benefits, conditions we labeled Material Benefits. Self-reports of Agentic Positive Emotionality at age 18 were positively associated with reports of Material Benefits in 2001. Reports of Material Benefits were also linked with relative increases in Agentic Positive Emotionality from 1994 to 2003. In other words, assertive and ambitious adolescents seem to find themselves working in positions with higher security and stability in young adulthood, conditions which seem to accentuate traits related to ambition and assertiveness. Thus, our results provide further illustration of how the processes of social selection and social influence are interwoven across the life span.

Limitations, Future Directions, and Conclusions

There are several limitations and qualifications of our work that should be noted. First, our analyses were based on a predominately European American sample from the Midwest

region of the United States. It will be important to test whether the same patterns are also found in more diverse and potentially larger samples. Second, one of the contributions of the present study is the use of parent reports of adolescent personality. However, we still relied on self-reports of later personality and work characteristics to test the associations between work and personality change. Future studies could further test the extent to which the personality-work associations are biased because of shared method variance⁶.

Third, the current analyses used the same statistical techniques used by Roberts et al. (2003) paper. Future studies could use more sophisticated approaches to address the current research questions. One potential issue is that we did not control for early work experiences in 1994 when predicting work experiences in 2001 to 2005. Such workplace data were not available in 1994. Fortunately, there is a potentially mitigating consideration that may temper the importance of this omission. Specifically, Roisman, Masten, Coatsworth, and Tellegen (2004) found little indication that work-related competence in late adolescence (around age 20) predicted work outcomes in adulthood (around age 30). The explanation was that mastery of the work domain was not a major developmental task of adolescence and thus success or failure at work had little predictive validity for later outcomes, including work at around age 30. Thus, the omission of a thorough set of work-related control variables at late adolescence might not be a major limitation of the current report.

Last, future studies examining personality development should evaluate the connection between personality trait development and work in later developmental periods. It could be that work is a particularly important context for young adult personality development precisely

⁶ In addition to assessing personality change using self-reports of personality in 1994, we also conducted regression analyses using parent-reports of personality in 1994 to predict personality change from 1994 to 2003. Generally, the pattern of associations was the same as those in Table 6. However, we believe that using self-reports of personality in 1994 is actually a more rigorous test because self-reports of personality are a better predictor of future self-reports of personality than are parent-reports (see Table 2).

because this is the time in the life span when establishing a career path and an identity as a specific kind of worker are particularly salient (e.g., Arnett, 2004). Young adulthood might generally be the period in development when researchers are likely to find evidence of contextual effects on personality (Caspi et al., 2005). As it stands, Sutin and Costa (2010) found few indications that work conditions were associated with personality development in a sample of adults about 47 to 52 years old whereas Sutin et al. (2009) found that the association between work conditions and personality development was stronger for those early in their careers. However, Scollon and Diener (2006) found that the association between work satisfaction and personality change did not differ between those younger than 30 and those older than 30 (see also Hudson et al., 2012). Thus, additional research is needed to evaluate whether workplace conditions are a more salient factor in personality development at different points in the life span.

In closing, we offer a few comments that are relevant for future research concerning personality trait development. Although we found evidence that life conditions are associated with personality development, we found no indication that contextual circumstances radically reshape an individual's personality. The observed effect sizes were small but we believe that relatively small effects will characterize nearly all positive findings in this research area given that personality traits are multiply-influenced entities that show impressive levels of rank-order stability (see e.g., Ferguson, 2010; Roberts & DelVecchio, 2000). This expectation for relatively small effect sizes has a methodological consequence in that future investigations into personality development should be designed using appropriately large samples and using intervals of sufficient length. Replication is also critical as well so researchers can have increased confidence that results generalize across studies and investigative teams. Nonetheless, we expect that future studies will find evidence for the proposition that personality development involves a

transaction between the individual and her or his contextual circumstances that plays out across the life span (Roberts et al., in press).

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Table 1
Descriptive Statistics and Sample Sizes for Personality, GPA, and Work Conditions

	Mean (SD)		Mean (SD)
<i>1994 Self-reported Personality (N = 442)</i>		<i>2001 Work Characteristics & Income (N = 431)</i>	
Agentic Positive Emotionality	.56 (.19)	Income	26,778 (37,130)
Communal Positive Emotionality	.80 (.18)	Fit	3.47 (1.31)
Negative Emotionality	.42 (.20)	Self-determination	3.60 (1.22)
Constraint	.61 (.16)	Ease	3.70 (1.22)
<i>2003 Self-reported Personality (N = 420)</i>		Material Benefits	3.81 (.74)
Agentic Positive Emotionality	.55 (.21)	Safety/Quality	4.03 (1.52)
Communal Positive Emotionality	.76 (.20)	<i>2003 Work Characteristics & Income (N = 398)</i>	
Negative Emotionality	.24 (.17)	Income	30,088 (20,857)
Constraint	.69 (.16)	Fit	3.56 (1.50)
<i>1994 Parent-reported Personality (N = 423)</i>		Self-determination	3.66 (1.42)
Agentic Positive Emotionality	3.41 (.59)	Ease	3.74 (1.43)
Communal Positive Emotionality	3.72 (.56)	Material Benefits	3.74 (.79)
Negative Emotionality	2.40 (.54)	Safety/Quality	4.11 (1.69)
Constraint	3.39 (.55)	<i>2005 Work Characteristics & Income (N = 389)</i>	
<i>1994 GPA (N = 462)</i>		Income	37,075 (27,095)
	2.76 (1.15)	Fit	3.59 (1.47)
		Self-determination	3.69 (1.37)
		Ease	3.68 (1.42)
		Material Benefits	3.82 (.76)
		Safety/Quality	4.09 (1.59)

Table 2
Correlations between Personality Scales

	1	2	3	4	5	6	7	8	9	10	11	12
<i>1994 Parent Reports</i>												
1. Agentic Emotionality	.84											
2. Communal Emotionality	.64	.84										
3. Negative Emotionality	-.34	-.55	.87									
4. Constraint	.31	.37	-.52	.88								
<i>1994 Self Reports</i>												
5. Agentic Emotionality	.39	.24	-.10	-.03	.80							
6. Communal Emotionality	.15	.30	-.19	.04	.28	.85						
7. Negative Emotionality	-.20	-.26	.36	-.30	-.06	-.41	.88					
8. Constraint	.02	.07	-.17	.44	-.16	.03	-.23	.81				
<i>2003 Self Reports</i>												
9. Agentic Emotionality	.23	.10	.08	-.19	.50	.17	.04	-.19	.84			
10. Communal Emotionality	.09	.23	-.09	.01	.14	.47	-.25	.02	.31	.87		
11. Negative Emotionality	-.14	-.15	.26	-.13	-.10	-.31	.49	-.09	-.06	-.51	.88	
12. Constraint	-.01	.07	-.14	.31	-.16	.10	-.13	.57	-.22	.09	-.22	.82

Note: Bold values are statistically significant at $p < .05$. Values along the diagonal are internal consistency reliability coefficients.

Table 3
Results from Exploratory Factor Analyses of the Work Items

<u>Item</u>	Fit	Ease	<u>Scale</u>		
			Material Benefits	Self-determination	Safety/Quality
<i>My job matches what I like to do.</i>	.78 / .72 / .81				
<i>I have skills from training or experience that I would like to use, but can't in this job. (R)</i>	.65 / .60 / .53				
<i>I do the same things over and over in my work. (R)</i>	.67 / .67 / .53				
<i>There is a lot of variety in my job.</i>	.58 / .74 / .67				
<i>My work is pretty repetitious. (R)</i>	.72 / .79 / .59				
<i>I have a lot of interruptions. (R)</i>		.53 / .47 / .39			
<i>I am often bothered, upset, or worried in my work. (R)</i>		.72 / .79 / .72			
<i>I have more work than I can handle. (R)</i>		.66 / .67 / .68			
<i>There is a lot of stress and tension in this job. (R)</i>		.65 / .74 / .67			
<i>I am frequently held responsible for tasks over which I have no control (R)</i>		.52 / .57 / .66			
<i>I often feel tense at work. (R)</i>		.75 / .82 / .77			
<i>My work provides good fringe benefits such as health insurance, retirement, and paid vacations.</i>			.74 / .82 / .67		
<i>This job provides good job security.</i>			.69 / .61 / .55		

Table Continues

<u>Item</u>	<u>Scale</u>				
	Fit	Ease	Material Benefits	Self-determination	Safety/Quality
<i>This job provides a very good income.</i>			.52 / .66 / .48		
<i>This job provides a steady income.</i>			.71 / .78 / .55		
<i>I expect that my income will increase in this job.</i>			.50 / .60 / .52		
<i>In this work, I am mostly my own boss.</i>			-- / -- / -.36	.64 / .75 / .65	
<i>I often find out how well I am doing on the job as I work.</i>			-- / -- / .44	.50 / -- / .48	
<i>On my job, I have very little freedom to decide how I work.(R)</i>				.54 / .56 / .44	
<i>My boss often lets me know how I am doing on the job.</i>	-- / -- / -.31		-- / -- / .51	.47 / -- / .45	
<i>I have a lot to say about what happens on my job.</i>				.68 / .62 / .65	
<i>This job involves some danger of illness or injury. (R)</i>					.69 / .71 / .71
<i>I work in a lot of dust and dirt. (R)</i>					.66 / .70 / .64
<i>My work involves a lot of physical labor. (R)</i>					.80 / .84 / .91
<i>There is a lot of noise in my work environment. (R)</i>					.60 / .57 / .60
<i>I am physically exhausted when I end work each day (R)</i>					.50 / .53 / .49

Table Continues

<u>Item</u>	<u>Scale</u>				
	Fit	Ease	Material Benefits	Self-determination	Safety/Quality
<u>Scale Statistics</u>					
Internal Consistency	.77/.77/.77	.80/.81/.81	.77/.81/.78	.69/.64/.63	.81/.84/.82
Stability Coefficient	.24/.09/.15	.31/.12/.23	.56/.36/.61	.26/.08/.13	.48/.28/.36

Note: 2001 values/2003 values/2005 values. Pattern coefficients are reported. Values less than .30 were suppressed to increase clarity. (*R*) indicates that the item is reversed. Boldface coefficients indicate the items used to calculate each scale. Stability coefficient for 2001-2003/2001-2005/2003-2005.

Table 4

Associations between Late Adolescent Personality Traits assessed in 1994 and Young Adult Work Conditions Averaged over 2001, 2003, and 2005

	Fit	Self-determination	Ease	Material Benefits	Safety/Quality	Income
<i>Parent Reports of Personality^a</i>						
Agentic Positive Emotionality	.22 (.17)	.14 (.12)	.03 (.08)	.20 (.17)	.28 (.25)	.19 (.13)
Communal Positive Emotionality	.20 (.15)	.15 (.16)	.07 (.08)	.23 (.23)	.31 (.27)	.09 (.06)
Negative Emotionality	-.20 (-.12)	-.13 (-.13)	-.01 (-.04)	-.17 (-.12)	-.20(-.18)	-.06 (.01)
Constraint	.17 (.12)	.01 (.00)	-.07(-.03)	.12(.07)	.25 (.26)	.06 (.02)
<i>Self-Reports of Personality^b</i>						
Agentic Positive Emotionality	.18 (.10)	.21 (.17)	.05 (.08)	.22 (.14)	.04 (.01)	.15 (.12)
Communal Positive Emotionality	.16 (.09)	.14 (.09)	.18 (.16)	.10(.04)	.11 (.08)	.04 (.03)
Negative Emotionality	-.17 (-.11)	-.11 (-.07)	-.14 (-.10)	-.05 (-.02)	-.31 (-.29)	-.02 (.03)
Constraint	.07 (.01)	.04 (.02)	.05 (.04)	.10(.08)	.21 (.19)	-.09 (-.09)

Note: ^a N = 423 for averaged values and 383 for 2001 values. ^b N = 442 for averaged values and 400 for 2001 values. Boldface correlations are statistically significant at the $p < .05$ level. Values in parentheses are associations with Work Conditions in 2001.

Table 5

Associations between Late Adolescent Personality Traits assessed in 1994 and Young Adult Work Conditions Averaged over 2001, 2003, and 2005, Controlling for GPA and Family Socioeconomic Status in 1994

	Partial Correlations Controlling for GPA and Family Socioeconomic Status							
	Family SES	GPA	Fit	Self-determination	Ease	Material Benefits	Safety/Quality	Income
<i>Parent-Reports of Personality</i>								
Agentic Positive Emotionality	.14	.34	.17	.13	.06	.16	.15	.15
Communal Positive Emotionality	.03	.26	.16	.13	.09	.20	.20	.05
Negative Emotionality	-.09	-.23	-.17	-.12	-.03	-.14	-.12	-.02
Constraint	.12	.36	.12	-.02	-.05	.08	.16	-.00
<i>Self-Reports of Personality</i>								
Agentic Positive Emotionality	.10	.15	.15	.21	.07	.20	-.06	.13
Communal Positive Emotionality	.03	.06	.16	.15	.21	.10	.07	.03
Negative Emotionality	-.05	-.13	-.15	-.09	-.14	-.03	-.26	.01
Constraint	.01	.15	.04	.02	.05	.08	.16	-.11
Family SES	-	.20	.04	-.07	-.11	.05	.19	.10
GPA	.20	-	.15	.09	-.06	.14	.28	.14

Note: N = 376 for partial correlations. Boldface correlations are statistically significant at the $p < .05$ level. Associations between 1994 SES and GPA and other variables are zero-order correlations. We also tested the associations between Personality Traits and 2001 Work Conditions. The patterns of association are similar to the averaged work condition values included in the tables. The specific-year associations are available upon request.

Table 6

Associations Between Work Conditions in 2001 and Relative Personality Changes from 1994 to 2003

	Fit	Self- determination	Ease	Material Benefits	Safety/Quality	Income
<i>Agentic Positive Emotionality</i>	.11 (.28)	.22 (.31)	-.09 (.27)	.11 (.28)	.02 (.26)	.06 (.26)
<i>Communal Positive Emotionality</i>	.16 (.24)	.13 (.24)	.13 (.23)	.14 (.24)	.14 (.24)	.04 (.20)
<i>Negative Emotionality</i>	-.13 (.26)	-.08 (.25)	-.19 (.27)	-.17 (.27)	-.16 (.26)	-.09 (.25)
<i>Constraint</i>	.06 (.32)	-.05 (.32)	.08 (.32)	.07 (.32)	.13 (.33)	.01 (.32)

Note: N = 370 for work condition associations. N = 368 for income associations. Personality in 2003 was regressed on Personality in 1994 and Work Conditions in 2001 using Ordinary Least Squares Regression analysis. Reported coefficients are standardized regression coefficients for the 2001 work variables. Boldface values are significant at $p < .05$. Standard error coefficients associated with all the work characteristics variables were .01. Standard error coefficients associated with income were all smaller than .00. Values in parentheses are R-squared coefficients for the entire regression model.