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Personality Trait Development During the Transition to Parenthood: A Test of Social Investment Theory

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Abstract

Social investment theory (SIT) proposes that the transition to parenthood triggers positive personality trait change in early adulthood. Using data from a representative sample of first-time parents compared to nonparents, the results of rigorous tests do not support the propositions of SIT. Specifically, we found no evidence for the proposition that parents show more pronounced mean-level increases in emotional stability, agreeableness, and conscientiousness compared to nonparents. We did find that agreeableness and openness changed depending on how long someone was in the parent role. Finally, our results suggest that high extraversion and low openness in both genders and high conscientiousness in females predict the likelihood to enter into parenthood. Discussion focuses on why this transition seems to be unrelated to mean-level personality trait change and the implications of these results for SIT.

Keywords

social investment, Big Five, personality development, life transitions, young adulthood

Meta-analytic evidence indicates that young adults tend to become more emotionally stable, conscientious, and agreeable as they traverse early adulthood (Roberts, Walton, & Viechtbauer, 2006), a pattern that has been referred to as the maturity principle of personality development (Roberts, Wood, & Smith, 2005). Two leading personality theories provide contradicting explanations for this pattern. Five-factor theory (McCrae & Costa, 2008) argues that personality trait development is largely determined by intrinsic biological maturation, with only a negligible role of life experiences. Alternatively, social investment theory ([SIT]; Roberts & Wood, 2006) proposes that personality maturation is associated with age-graded life transitions, such as entering the labor force, marrying, and becoming a parent because these transitions stimulate individuals to invest in new social roles. These social roles are typically associated with behavioral expectations to act in a more mature way (i.e., more emotionally stable, agreeable, and conscientious), which can lead to long-term changes in personality traits (Bleidorn, 2015; Hennecke, Bleidorn, Denissen, & Wood, 2014; Roberts & Jackson, 2008).

In the present study, we examined the premises of SIT with regard to the transition to parenthood. This major life transition is particularly relevant to study the propositions of SIT. Psychologists (Lodi-Smith & Roberts, 2007), sociologists (Hogan & Astone, 1986), and anthropologists (Schlegel, 1995) agree that parenthood is among the most far-reaching normative life transitions during early adulthood. Moreover, in contrast to other normative life transitions, like entering a romantic relationship or starting the first job, the transition to parenthood is nonreversible and demands sudden adaptations in parents' daily behavior (Nyström & Öhrling, 2004).

However, there is only little research on personality trait change over the transition to parenthood. Findings of these studies were mixed and did not provide a clear answer as to whether or how the transition to parenthood influences personality trait change.

Specifically, a number of studies found no association between the transition to parenthood and personality trait change (e.g., Bleidorn et al., 2013; Galdiolo & Roskam, 2014; Neyer & Asendorpf, 2001). Some studies reported changes in personality traits that contradicted the propositions by SIT. For example, some studies reported increases in neuroticism (Jokela, Kivimäki, Elovainio, & Keltikangas-Järvinen,

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2009) and decreases in conscientiousness (Specht, Egloff, & Schmukle, 2011) over the transition to parenthood. Other studies suggested that the quality of parenting experiences and parenting stress may shape the direction and degree of personality trait change. For example, Paris and Helson (2002) found that positive parenting experiences lead to an increase in ego resiliency and a decrease in feelings of vulnerability. Hutteman et al. (2014) found that parenting stress was related to a decrease in emotional stability, agreeableness, and conscientiousness in mothers of newborn babies.

Differences across studies may come down to differences in design. A rigorous examination of personality trait change requires a longitudinal research design that takes into account at least three complexities. The present research is the first study that thoroughly examines all of these complexities simultaneously.

First, a rigorous test of the hypothesis that the transition to parenthood triggers personality maturation requires examining personality trait change in first-time parents as compared to a control group of nonparents who do not experience this transition. Yet, even when comparing personality trait change in first-time parents and a nonparent control group, it is not entirely clear whether differences between these groups are due to the birth of the first child or to other preexisting differences. Parents and people without children differ systematically in a large number of socioeconomic, social, and psychological characteristics, including their personality (Dijkstra & Barelds, 2009; Hutteman, Bleidorn, Penke, & Denissen, 2013; Jokela et al., 2009; Jokela, Alvergne, Pollet, & Lummaa, 2011; Reis, Dörnte, & von der Lippe, 2011). These selection effects need to be statistically accounted for to adequately compare parents versus nonparents.

Second, a crucial question concerns the timing of potential personality trait change in first-time parents (Luhmann, Orth, Specht, Kandler, & Lucas, 2014). Directly after birth, the newborn demands new parents to act in a more mature and responsible way, potentially spurring personality change. However, some of these behavioral changes might already start before the birth of the child, for example, when a couple desires to have a baby, or during pregnancy. Ideally a study would tease apart timing differences due to desires to be a parent, preparing for birth, or actual birth events.

Third, the transition to parenthood is a different experience for men and women. For instance, men and women experience different biological and hormonal changes during pregnancy and after childbirth. Moreover, although gender-role attitudes have shifted from traditional to more egalitarian in the past 30 years, men and women are still expected to have different roles in child rearing (Katz-Wise, Priess, & Hyde, 2010). Therefore, gender differences in personality trait change likely occur during the transition to parenthood.

The Present Study

Using data from a national representative panel study, we addressed four questions: (1) Does personality predict who becomes a parent (i.e., selection effects)? (2) Does personality show evidence of change before the birth of the first child (i.e., anticipation effects)? (3) Does personality change after the birth of the first child (i.e., socialization effects)? (4) Do timing of childbirth (distance to birth in years) and age at childbirth influence personality trait change? To address these questions, we compared personality change in individuals who had their first child with a control group of people without children and used propensity-score matching (Thoemmes & Kim, 2011) to account for selection biases.

Method

Sample

We used data from the Household, Income and Labour Dynamics in Australia (HILDA) survey, and the data were collected between 2001 and 2011. In this nationally representative panel study, members of selected households aged 15 years and older were asked to participate. Big Five personality traits were measured at two time points, in 2005 and 2009 (for an overview of the HILDA survey, see Wooden & Watson, 2007).

To test whether becoming a parent was associated with changes in Big Five personality traits, we selected individuals who were between 17 and 45 years of age in 2005 and had no children at the first personality assessment in 2005. This resulted in a total of 2,469 participants (M age in 2005 = 26.74 years, $SD = 7.79$ years). Our analyses were based on all available responses, including participants who only completed the personality measure in 2005. From all participants who completed the personality measure in 2005, 13.1% did not participate in 2009. Compared to participants who remained in the study, male dropouts had slightly lower levels of conscientiousness ($d = -0.32$) and slightly higher levels of extraversion ($d = 0.30$). There were no differences between female participants who dropped out and those who remained in the study. Participants reported annually how many children they had, and we used this question to create three subsamples. First, 216 participants had their first child after the two personality assessments, that is, between 2009 and 2011 (*parent-to-be sample*, 48.1% male, M age in 2005 = 25.31 years, $SD = 5.29$ years). The parent-to-be subsample was used to study anticipation effects. Second, 556 participants had their first child between 2005 and 2009, that is, between the two personality assessments (*parent sample*, 50.4% male, M age in 2005 = 27.28 years, $SD = 5.77$ years).[1] The parent subsample was used to examine socialization effects. Third, 1,697 participants had no children before and during the entire research period (*nonparent sample,* 53.5% male, M age in 2005 = 26.75 years, $SD = 8.57$ years). The nonparent subsample was used as a comparison group.[2]

Measures

Big Five personality traits were measured in 2005 and 2009 using 36 adjectives adapted from the Big Five Mini-Markers (Saucier, 1994). Based on a maximum likelihood factor

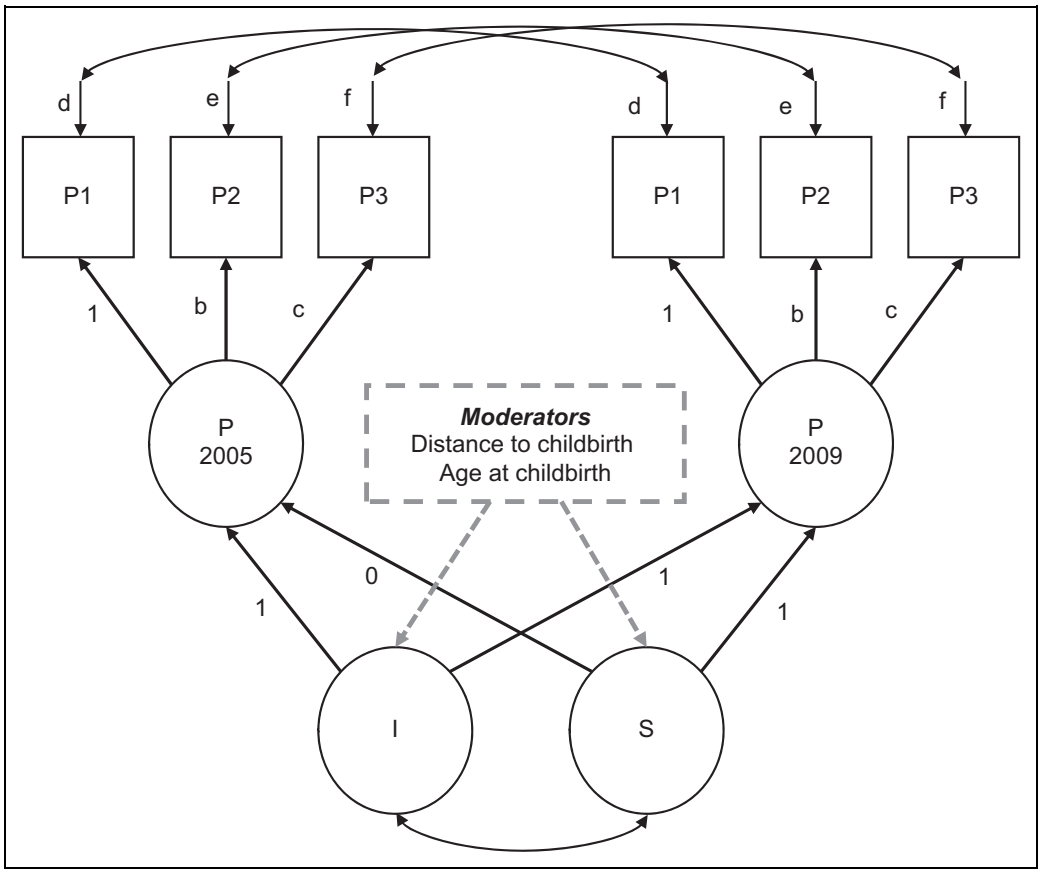

Figure 1. The latent change model that was used to estimate the intercept (I) and slope (S) for each of the Big Five personality traits. The intercept and slope were allowed to correlate. At both measurement points, each personality trait was measured with three parcels (p1, p2, and p3). Factor loadings (b and c), error variances (d, e, and f), and measurement intercepts of the parcels were constrained over the two time points, and residuals were allowed to correlate over time.

analysis, the survey organizers excluded 8 items that did not reach the cutoff factor loading of .45 or did not load more than 1.25 times higher on the expected factor than any other factor (Losoncz, 2009). The selected 28 items were rated on a 7-point Likert-type scale ranging from 1 (*does not describe me at all*) to 7 (*describes me very well*). Across the two measurement occasions, the average internal consistency was $\alpha = .79$ for agreeableness, $\alpha = .80$ for conscientiousness, $\alpha = .79$ for emotional stability, $\alpha = 78$ for extraversion, and $\alpha = .76$ for openness to experience.

Analyses

We used structural equation modeling and full information maximum likelihood in Mplus Version 7 to test our hypotheses (Muthén & Muthén, 1998–2012). Adequate model fit was indicated by comparative fit index (CFI) > .90 and root mean square error of approximation (RMSEA) < .08 (Hu & Bentler, 1998).

For each Big Five trait, three parcels were created as indicators of the latent personality variable. We used the factor loadings of the items as a guide to create equally balanced parcels (Little, Cunningham, Shahar, & Widaman, 2002). Although the use of item parcels continues to be a matter of debate (for a review, see Bandalos & Finney, 2001), we used this approach because it provides psychometric advantages and model estimation benefits (Cole, Perkins, & Zelkowitz, 2015; Little, Rhemtulla, Gibson, & Schoemann, 2013).

Selection effects. We tested whether personality predicts parenthood using logistic regression analyses. Separately for each trait and gender, we tested whether personality in 2005 predicted who becomes a parent 1 to 6 years later.

Anticipation and socialization effects. To test whether becoming a parent was associated with personality trait change, we ran multigroup latent change models for each of the Big Five. First, we compared personality change in the parent-to-be sample and the nonparent sample (anticipation effects). Second, we compared personality change in the parent sample and the nonparent sample (socialization effects). Our latent change models were based on the strict measurement invariance model and additionally included a latent intercept and slope. The intercept and slope were allowed to correlate (Figure 1). The change parameters were estimated simultaneously for each subsample while testing for significant differences between subsamples.[3]

Propensity-score matching. Propensity-score matching was used to control for preexisting differences between the subsamples (Rosenbaum & Rubin, 1983; Thoemmes & Kim, 2011). This approach creates balanced samples that statistically only differ with regard to the birth of the first child. Because propensity-score matching techniques do not allow for missing data, we used multiple imputation (Hill, 2004). We pooled all estimates across 10 imputations. In the first step of propensity-score matching, each participant received a propensity score based on a total of 71 variables measured in 2005, which were regressed on the binary treatment variable (i.e., entering into parenthood). All personality items from 2005 were included as well as a set of covariates that were theoretically likely to be associated with personality or birth of the first child. These variables ranged from background characteristics, such as age and income, to psychological variables such as life satisfaction (A full list of the variables and a description of the selection strategy are included in the online supplemental materials.). This propensity score reflects the probability that a given participant will have a child or not, given the values of the observed covariates.

In the second step, we used nearest neighbor matching to match each individual from the parent-to-be sample or parent sample to up to three nonparents based on their propensity scores (Thoemmes & Kim, 2011). We used the MatchIt package in *R* (Ho, Imai, King, & Stuart, 2007). To avoid bad matches, we employed a tolerance level on the maximum propensity-score distance between matches (i.e., caliper width). We used a caliper width of 0.2 *SD*s of the logit of the propensity score. On average, across 10 imputations, 413 parents (51.9% male) were matched to 708 nonparents (52.3% male) and 175 parents to be (50.7% male) were matched to 437 nonparents (52.4% male).

For each group comparison, we first ran a total of 10 (5 Trait Dimensions × 2 Genders) multigroup latent change models and compared the resulting change parameters without propensity-score matching. In a second step, we ran the same set of latent change models after including propensity-score matching to control for confounding covariates.

Moderators: Distance to childbirth and age at childbirth. Parents varied in their age and in the year in which their child was born. Specifically, in 2009, the temporal distance to childbirth varied from 0 (2009) to 4 years (2005). We examined whether the temporal distance to birth and parents' age at childbirth moderated the degree of mean-level change in personality traits in the parent sample by adding these variables as moderators in our latent change model (Figure 1).

Results

Measurement Invariance

Models that tested for strict measurement invariance across groups and time fit the data well (CFI > .95, RMSEA ≤ .06). Thus, strict measurement invariance was imposed in each of the following models. A complete description of all steps in testing measurement invariance and the corresponding fit indices are included in the online supplemental materials.

Personality Trait Change Irrespective of Parenthood

Before testing our main hypotheses, we examined mean-level personality change in the total sample. Consistent with previous research, we found an increase in conscientiousness, $b = 0.15$, 95% CI = [0.11, 0.19], $p < .001$, $d = 0.15$, and emotional stability, $b = 0.11$, 95% CI = [0.06, 0.15], $p < .001$, $d = 0.11$. We also found a decrease in extraversion, $b = -0.04$, 95% CI = [−0.07, −0.01], $p = .010$, $d = -0.05$, and openness to experience, $b = -0.08$, 95% CI = [−0.11, −0.04], $p < .001$, $d = -0.09$; there was no significant change in agreeableness, $b = -0.03$, 95% CI = [−0.07, 0.01], $p = .20$, $d = -0.03$.

Selection Effects

Controlling for age and relationship status, we tested if personality in 2005 predicted whether people would have their first child in the near future (1–6 years later). Extraversion was a significant positive predictor of parenthood in males, odds ratio = 1.29, $p = .003$, 95% CI [1.09, 1.52], and females, odds ratio = 1.18, $p = .037$, 95% CI [1.01, 1.38]. Openness to experience was a negative predictor of parenthood in males, odds ratio = 0.74, $p = .001$, 95% CI [0.62, 0.88], and females, odds ratio = 0.83, $p = .029$, 95% CI [0.71, 0.98]. In addition, conscientiousness was a significant positive predictor of parenthood in females, odds ratio = 1.25, $p = .024$, 95% CI [1.03, 1.52], but not in males, odds ratio = 0.92, $p = .408$, 95% CI [0.76, 1.12]. Agreeableness and emotional stability did not predict childbirth.

Anticipation Effects

To examine if personality change occurs before the birth of the first child, we compared personality change in the parent-to-be and the nonparent subsamples between 2005 and 2009 (Figure 1). The mean levels of the Big Five personality traits for each subsample are presented in Table 1.

The slopes for both the parent sample and the unmatched nonparent sample are presented in Table 2. All models fit the data well (CFI > .98, RMSEA < .05). We used Wald tests to compare the slopes of the parent-to-be and nonparent sample, for men and women separately. We found only one significant difference in change between the two groups. Specifically, fathers-to-be differed significantly from nonfathers in the slope of openness to experience (Wald = 8.98, $p = .003$, $d = 0.26$). While men without children showed significant decrease in openness to experience between 2005 and 2009, $b = -0.09$, 95% CI = [−0.15, −0.02], $p = .007$, fathers-to-be showed a significant anticipatory increase, $b = 0.18$, 95% CI = [0.01, 0.34], $p = .031$. This difference in change in openness was not found in women. We did not find significant

Table 1. Mean Personality Traits and Standardized Change Scores Across 2005 and 2009 for Nonparents, Parents, and Parents-to-Be.

		Nonparent			Parent			Parent-to-Be		
Trait	Gender	2005 *M* (*SD*)	2009 *M* (*SD*)	Cohen's *d*	2005 *M* (*SD*)	2009 *M* (*SD*)	Cohen's *d*	2005 *M* (*SD*)	2009 *M* (*SD*)	Cohen's *d*
Agreeableness	Male	5.10 (0.76)	5.08 (0.75)	−.03	5.05 (0.86)	5.01 (0.76)	−.04	5.21 (0.70)	5.25 (0.59)	.05
	Female	5.50 (0.69)	5.48 (0.73)	−.04	5.43 (0.70)	5.38 (0.68)	−.08	5.56 (0.71)	5.60 (0.66)	.06
Conscientiousness	Male	4.94 (0.83)	5.12 (0.82)	.21*	4.98 (0.92)	5.06 (0.84)	.08	5.01 (0.86)	5.09 (0.88)	.09
	Female	5.24 (0.84)	5.38 (0.82)	.17*	5.50 (0.80)	5.49 (0.75)	−.01	5.39 (0.81)	5.53 (0.79)	0.18*
Emotional stability	Male	4.87 (0.96)	4.99 (0.91)	.12*	4.89 (0.85)	5.04 (0.76)	.17*	4.99 (0.82)	5.07 (0.89)	.10
	Female	4.66 (1.00)	4.76 (0.96)	.10*	4.76 (0.91)	4.81 (0.89)	.05	4.73 (0.92)	4.86 (0.92)	.14
Extraversion	Male	4.55 (0.99)	4.54 (1.03)	−.01	4.88 (0.93)	4.71 (0.94)	−.18*	4.82 (0.84)	4.91 (0.85)	.11
	Female	4.77 (1.07)	4.70 (1.10)	−.07*	4.95 (0.98)	4.86 (1.03)	−.09	4.96 (0.89)	4.99 (1.00)	.03
Openness	Male	4.52 (0.93)	4.43 (0.98)	−.09*	4.31 (0.93)	4.26 (0.96)	−.05	4.27 (0.89)	4.44 (0.85)	.20*
	Female	4.68 (1.00)	4.58 (1.02)	−.10*	4.43 (1.03)	4.29 (0.94)	−.13*	4.59 (0.98)	4.36 (0.99)	−.23*

Note. We calculated Cohen's *d* by dividing the mean difference between personality measured in 2009 and 2005 by the standard deviation of this trait in each group in 2005.
*$p < .05$.

Table 2. Change (Slope) of the Personality Traits of the Parent-to-Be and Nonparent Sample Using Propensity-Score Matching and Multigroup Latent Change Models.

		Parent-to-Be		Nonparent (Unmatched)			Nonparent (Matched)		
Trait	Gender	Slope	95% CI	Slope	95% CI	Cohen's *d*	Slope	95% CI	Cohen's *d*
Agreeableness	Male	.04	[−.12, .20]	−.02	[−.08, .04]	.07	−.08	[−.23, .07]	.13
	Female	.05	[−.13, .23]	−.03	[−.08, .03]	.09	.06	[−.06, .17]	−.01
Conscientiousness	Male	.08	[−.06, .22]	.18*	[.12, .24]	−.10	.14	[.00, .28]	−.06
	Female	.19*	[.01, .37]	.14*	[.08, .20]	.04	.15*	[.02, .28]	.04
Emotional stability	Male	.07	[−.10, .24]	.11*	[.05, .18]	−.04	.08	[−.08, .23]	−.01
	Female	.14	[−.05, .34]	.10*	[.03, .17]	.04	.10	[−.05, .25]	.04
Extraversion	Male	.10	[−.09, .29]	−.01	[−.07, .06]	.10	−.04	[−.20, .12]	.13
	Female	.07	[−.12, .26]	−.07*	[−.13, −.01]	.12	−.10	[−.26, .05]	.15
Openness	Male	.18*	[.01, .34]	−.09*	[−.16, −.03]	.26*	−.04	[−.19, .10]	.21*
	Female	−.20	[−.41, .00]	−.10*	[−.16, −.03]	−.10	−.01	[−.14, .12]	−.18

Note. Cohen's *d* is calculated by dividing the difference in mean slope between groups by the standard deviation of the raw personality scores (in 2005) of the control group. CI = confidence interval.
*$p < .05$.

differences in anticipatory personality trait change between the parent-to-be and nonparent group in any of the other four personality traits.

After matching the parent and parent-to-be sample using propensity scores, all models fit the data well (CFI > .95, RMSEA $\leq$ .06).[4] The results were similar to the results of the unmatched analyses: Both groups still differed in change of openness to experience (pooled Wald = 4.53, $p = .040$, $d = 0.21$).

Socialization Effects

To examine if personality changes after the birth of the first child, we compared personality change of the parent and the nonparent subsamples between 2005 and 2009 (see Table 1 for the Big Five mean levels per subsample).

The slopes for the parent and the unmatched nonparent sample are presented in Table 3. All models fit the data well (CFI > .98, RMSEA < .05). Using Wald tests, we found that fathers and nonfathers differed significantly in the slope of extraversion (Wald = 6.24, $p = .013$, $d = -0.18$), with fathers evidencing a significant decrease in extraversion, $b = -0.19$, 95% CI [−0.31, −0.07], $p = .003$, whereas nonfathers remained stable. Mothers and nonmothers differed significantly in the slope of conscientiousness (Wald = 7.43, $p = .006$, $d = -0.14$). Whereas mothers remained stable in conscientiousness, nonmothers showed a significant increase, $b = 0.14$, 95% CI [0.08, 0.20], $p < .001$. There were no significant differences in change for agreeableness, emotional stability, and openness to experience.

After matching the parent and nonparent sample using propensity scores, the differences between the parent and nonparent groups became nonsignificant (see Table 3). All models had an acceptable fit (CFI > .95, RMSEA < .06).[4] Figure 2 illustrates the effects of propensity-score matching on the differences in conscientiousness and extraversion.

Table 3. Change (Slope) of the Personality Traits of Parent and Nonparent Sample Using Propensity-Score Matching and Multigroup Latent Change Models.

		Parent		Nonparent (Unmatched)			Nonparent (Matched)		
Trait	Gender	Slope	95% CI	Slope	95% CI	Cohen's *d*	Slope	95% CI	Cohen's *d*
Agreeableness	Male	−.07	[−.19, .06]	−.02	[−.08, .04]	−.02	−.02	[−.12, .08]	−.02
	Female	−.05	[−.17, .07]	−.03	[−.08, 0.03]	−.04	.01	[−.08, .10]	−.08
Conscientiousness	Male	.06	[−.07, .19]	.18*	[.12, .24]	−.10	.17*	[.07, .28]	−.09
	Female	.03	[−.09, .15]	.14*	[.08, .20]	−.14*	.14*	[.03, .24]	−.14
Emotional stability	Male	.16*	[.02, .30]	.11*	[.05, .18]	.05	.08*	[−.04, .20]	.07
	Female	.04	[−.13, .20]	.10*	[.03, .17]	−.05	.13*	[.02, .25]	−.08
Extraversion	Male	−.19*	[−.31, −.07]	−.01	[−.07, .06]	−.18*	−.08	[−.20, .04]	−.11
	Female	−.09	[−.21, .04]	−.07*	[−.13, −.01]	−.02	−.07	[−.17, .02]	−.02
Openness	Male	−.11	[−.27, .04]	−.09*	[−.16, −.03]	−.02	−.06	[−.17,.02]	−.05
	Female	−.16	[−.31, −.02]	−.10*	[−.16, −.03]	−.06	−.04	[−.15, .07]	−.12

Note. Cohen's *d* is calculated by dividing the difference in mean slope between groups by the standard deviation of the raw personality scores (in 2005) of the control group. CI = confidence interval.
*$p < .05$.

Moderators: Distance to Childbirth and Age at Childbirth

To test if distance to childbirth and parents' age at childbirth moderated personality change within the parent sample, we added these variables as moderators in the latent change model (Figure 1). The models fit the data well (CFI > .96, RMSEA < .07).

We found different effects for fathers and mothers. Specifically, there was a significant negative association between distance to childbirth and the slope of agreeableness in fathers, $b = -0.16$, 95% CI [−0.28, −0.05], $p = .005$, suggesting that men who had been father for a longer time might decrease in agreeableness. In mothers, distance to childbirth was positively related to the slope of openness to experience, $b = 0.14$, 95% CI [0.06, 0.21], $p < .001$, suggesting that longer term mothers showed alleviated decreases in openness to experience.

Age at childbirth moderated the results as well. This was true with regard to the slope of agreeableness, $b = -0.02$, 95% CI [−0.04, −0.00], $p = .018$, and conscientiousness, $b = -0.02$, 95% CI [−0.04, −0.01], $p = .022$, in fathers, suggesting that fathers who had their child at an older age tended to show less positive changes in agreeableness and conscientiousness compared to fathers of a younger age.

Discussion

The current study tested the key premises of SIT by examining whether the transition to parenthood triggers personality maturation. We applied one of the most rigorous tests of SIT to date, by using a well-matched comparison group to control for selection biases and taking timing of personality change into account. The findings did not support the proposition that parents show more pronounced mean-level increases in emotional stability, agreeableness, and conscientiousness compared to nonparents. We only found one significant difference in personality change between parents and nonparents: In anticipation to childbirth, fathers-to-be increased significantly more in openness than nonfathers did. However, in contrast to mostly null socialization effects, we found pervasive selection effects for extraversion, openness, and conscientiousness.

Selection Effects

Consistent with previous research, we found that personality predicts whether people will have children or not. Specifically, high extraversion and low openness predicted childbirth in both genders, and high conscientiousness predicted childbirth in women. Jokela, Alvergne, Pollet, and Lummaa (2011) reported a similar pattern, suggesting that high extraversion and low openness tend to be the most reliable Big Five predictors of childbirth. Other studies found that emotional stability (Jokela et al., 2011; Reis et al., 2011) and agreeableness (Dijkstra & Barelds, 2009; Jokela et al., 2011) were positively related to the birth of the first child; these findings were not replicated in the current study.

Anticipation Effects

A novel feature of our study is the investigation of how anticipation to be a parent promotes personality change. In fathers-to-be, anticipating childbirth was associated with increases in openness, whereas nonfathers did not change in this trait. Given the number of tests performed, this small effect ($d = 0.21$) might be attributed to chance. Alternatively, this finding might be explained by the fact that high openness can help dealing with new and unknown situations (McCrae, 1996). An intervention study not related to childbirth has shown that openness can be changeable in a bottom-up fashion and that novel experiences can promote gains in openness (Jackson, Hill, Payne, Roberts, & Stine-Morrow, 2012), suggesting that this might also be the case in other areas of life in which individuals have novel experiences. Successfully dealing with the novel experience of pregnancy and thinking about the future parental role might lead fathers-to-be to view themselves as more open.

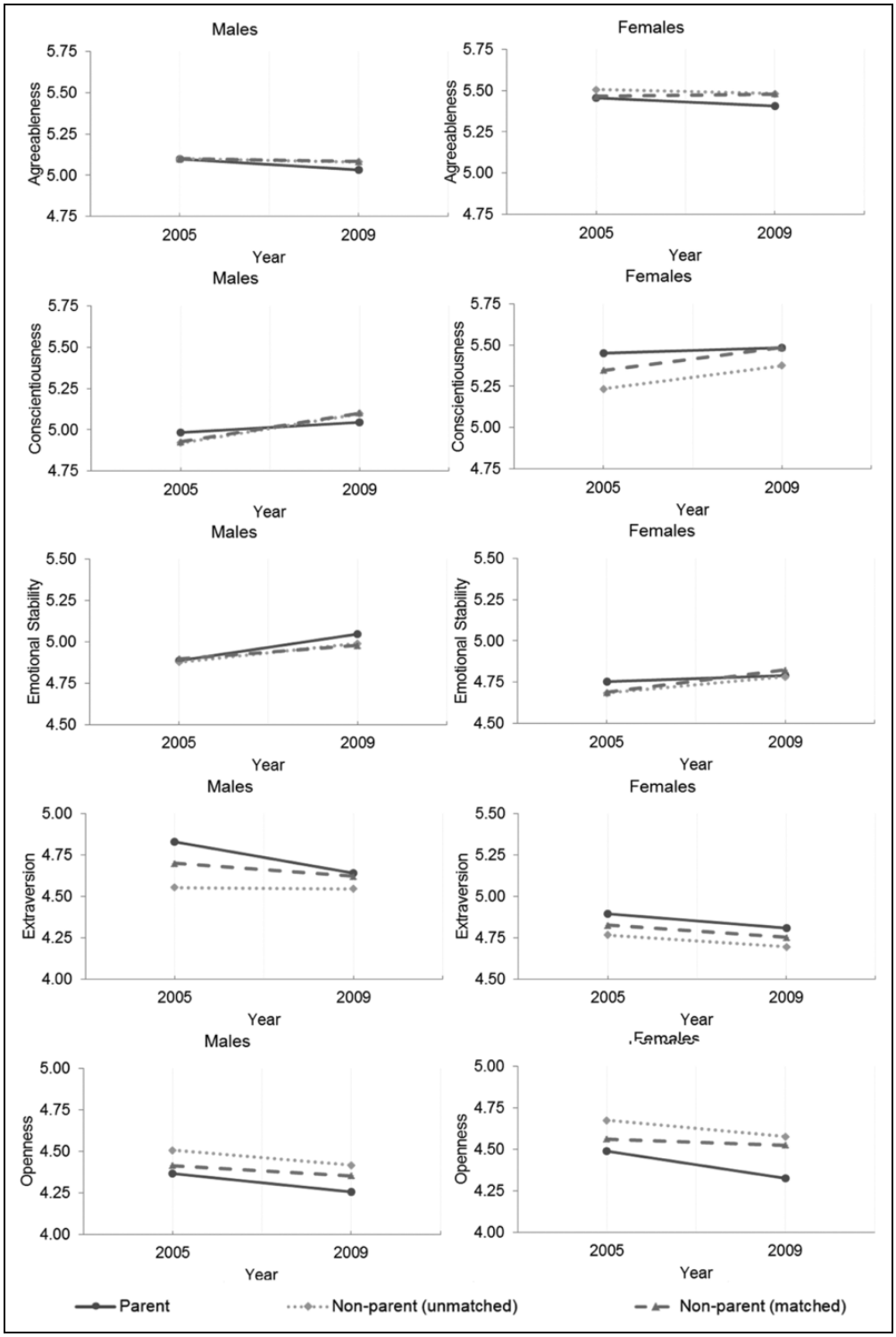

Figure 2. Mean-level change in Big Five personality traits in males and females as a function of time of measurement (2005 and 2009) and group (nonparent and parent group).

Socialization Effects

Before using propensity-score matching, the parent sample differed significantly from the nonparent sample with regard to change in extraversion and conscientiousness, though differences between groups were relatively small ($d < .20$). These findings are in line with some of the previous studies on personality trait change during the transition to parenthood (Galdiolo & Roskam, 2014; Specht et al., 2011).

After using propensity-score matching, there were no significant differences in change in extraversion and conscientiousness

or any other personality trait. Especially in extraversion, there was a clear decrease in effect size after using propensity-score matching, suggesting that preexisting differences between the two subsamples might explain the differences in personality trait change. These results show the importance of controlling for preexisting differences between groups when studying how life transitions are related to personality change (Jackson, Thoemmes, Jonkmann, Lüdtke, & Trautwein, 2012).

Implications for SIT

Our results challenge the SIT prediction that the transition to parenthood is a key trigger of personality maturation. In fact, even though we found some evidence for personality maturation in the total sample (cf. Wortman, Lucas, & Donnellan, 2012), there were no significant differences between new parents' and nonparents' personality trajectories. The lack of change as a result of becoming a parent is surprising in light of the seeming impact of the transition on new parents' daily lives and social relationships (Belsky & Rovine, 1990). Several explanations can be advanced to account for the seeming lack of personality trait change during this major transitional experience.

First, one possible explanation advocated by five-factor theory (McCrae & Costa, 2008) is that parenthood and other life transitions do not influence personality trait change at all. However, other studies found evidence for personality trait change during life transitions, such as the transition to work (Bleidorn et al., 2013; Roberts, Caspi, & Moffitt, 2003) or the first romantic relationship (Neyer & Lehnart, 2007).

Second, the shape of change might have been nonlinear. We tested for linear change during and after the transition to parenthood. However, personality trait change might not unfold until some years of parenthood have gone by. Probably, the first years are particularly stressful, and parenting stress could hinder early personality maturation (Hutteman et al., 2014). Consistent with this idea, we found that time spent in the parent role moderated change in agreeableness and openness. Multiwave longitudinal data are needed to test for more complex nonlinear personality change before and after the birth of the first child (Luhmann et al., 2014).

Third, even though the transition to parenthood does not seem to have an immediate impact on broad personality traits, the child's need for constant care and attention instantly changes parents' daily behavior and routines. Such changes might only influence how people view themselves in their role as parents. New parents may, for example, view themselves as agreeable in their parent role, but this might not immediately influence their self-view in other roles. Furthermore, the Big Five trait level is just one (relatively broad) level of personality. Changes may occur only for specific facets of personality, which are obscured when only examining a broad trait level.

Fourth, personality trait change may depend on certain moderating conditions. For example, according to SIT, parents who show strong commitment to their role should show more pronounced personality trait change compared to parents who are less committed to their new role (Roberts, Walton, Bogg, & Caspi, 2006). Furthermore, the transition to parenthood is the start of a new relationship between a parent and a child. Characteristics of the child and the parent–child relationship might therefore influence the level of personality change. Adjustments within the couple's romantic relationship and relationships with family and friends could further shape the direction and degree of personality change. SIT only predicts relatively coarse main effects from life transitions on personality and does not focus on these more nuanced processes in the context of childbirth. These processes should be investigated by future studies that target socioemotional mediators and moderators.

Limitations

The present study used data of a national representative longitudinal sample and advanced statistical techniques such as latent change modeling and propensity-score matching. Nevertheless, the findings must be considered in the light of some limitations. First, propensity-score matching can only obtain unbiased estimates if all meaningful covariates are included in the model (Rosenbaum & Rubin, 1983). A similar assumption rests on any other regression model, and it is impossible to rule out unmeasured confounders. Second, personality was only measured at two time points, which made it impossible to examine nonlinear change. Third, all participants completed the personality measures in 2005 and 2009, unrelated to time of childbirth. Therefore, it was unclear if parents-to-be and parents were pregnant or not when they completed the personality measures. It might well be that parents already begin to show personality trait changes during pregnancy. Future research should include more frequent personality measures before and after the birth of the child (Bleidorn et al., 2015; Luhmann et al., 2014). Fourth, the Big Five were measured using a relatively short (28-item version) self-report questionnaire. Future studies are needed to examine whether the present results replicate using other reports and more extensive (and potentially more reliable) Big Five measures.

Conclusion

The transition to parenthood changes many aspects of new parents' lives, but it does not seem to result in changes in Big Five personality traits. Contrary to predictions by SIT, this study demonstrated that the transition to parenthood did not trigger personality maturation in young adulthood. Thus, it remains a question for future research as to why individuals do not show personality trait change in reaction to this event and how the widely observed personality maturation trends in young adulthood can be explained instead.

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Notes

1. According to the Australian Bureau of Statistics, the median age at birth of the first child in Australia (between 2005 and 2010) was 33. 0 for fathers and 30.7 years for mothers (Australian Bureau of Statistics, Births, 2011). In the present sample, the median age at birth was 30.0 for fathers ($M = 29.69$, $SD = 5.82$) and 28.0 for mothers ($M = 28.22$, $SD = 5.44$). This slightly lower median age at first birth might be due to the fact that we selected individuals who were below 45 years of age in 2005.
2. We first conducted a power analysis to estimate the required sample size. We adopted a conservative approach and assumed only small effects on the dependent variable (i.e., personality traits). Results indicated that a total sample of 120 people would be needed for 80% power using a repeated measures analysis of variance, with a within (two time points) and between (two groups) interaction and an α of .05. In all analyses, two samples are compared, so we needed at least 60 individuals per sample. Thus, all samples' sizes are adequate to answer our research questions.
3. The Mplus script of the latent change model is included in the online supplemental materials.
4. Fit indices are pooled across 10 imputations. The comparative fit index was above .95 for all imputations. Although the pooled root mean square error of approximation (RMSEA) was always below . 08, some imputations had an RMSEA that was above .08. The RMSEA ranged from .00–.09 across traits and imputations.

Supplemental Material

The online data supplements are available at http://spps.sagepub.com/supplemental.

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