Personality–Relationship Transaction in Young Adulthood

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Personality and social relationships were assessed twice across a 4-year period in a general population sample of 489 German young adults. Two kinds of personality–relationship transaction were observed. First, mean-level change in personality toward maturity (e.g., increase in Conscientiousness and decrease in Neuroticism) was moderated by the transition to partnership but was independent of other developmental transitions. Second, individual differences in personality traits predicted social relationships much better than vice versa. Specifically, once initial correlations were controlled for, Extraversion, Shyness, Neuroticism, self-esteem, and Agreeableness predicted change in various qualities of relationships (especially with friends and colleagues), whereas only quality of relationships with preschool children predicted later Extraversion and Neuroticism. Consequences for the transactional view of personality in young adulthood are discussed.

To the extent that the most important sources of continuity (and change) are to be found in interpersonal settings, the ideal study of individual development ought to be conceived of as a study of social relationships (Caspi, 2000, p. 169).

Dynamic *transactions* between personality and the environment emerge over time, perhaps most powerfully in the context of interpersonal interaction. Environmental changes that typically occur in early adulthood, such as leaving the parental home, entering the occupational world, forming and maintaining close relationships, and becoming a parent oneself, involve dyadic interactions with more or less important relationship partners, such as parents, siblings, peers, romantic partners, children, friends, and colleagues. How young adults create, for example, closeness or intimacy across different types of relationship may be expressed by their personality, and these relationships may influence further personality development. This view of codevelopment of personality and relationships is advocated by the *dynamic interactional paradigm* (Caspi, 1998; Magnusson, 1990; Sameroff, 1983). Starting out on these premises, we conducted a two-wave panel study that investigated personality traits and social relationships of German young adults across a 4-year period.

Stability and change of personality and relationships that include transactions can basically be viewed from (at least) two broad perspectives. First, the perspective of *mean-level stability*

focuses on the general or normative age-related trajectory of personality and relationship development and is, for example, concerned with the question of to what extent mean-level decline in Neuroticism is associated with the constitution of close relationships. We consider this question by studying the moderation of decline in Neuroticism by the transition to partnership. Second, the perspective of *rank-order stability* taps the relative standing of individuals on specific personality traits and relationship characteristics and studies to what extent individual differences in personality predict change in social relationships and how relationship experiences predict change in personality. We address this question by studying the longitudinal paths between personality and the quality of various kinds of relationship. Before we outline why personality effects on relationships may dominate relationship effects on personality, we review what is currently known about the stability and change of personality in young adulthood.

Mean-Level Stability and Change

In young adulthood, personality changes toward maturity, as various longitudinal studies have shown. Specifically, Conscientiousness or Behavioral Constraint, including Self-Control, has been found to increase, and Negative Emotionality has been found to decrease from adolescence to young adulthood, whereas findings on Positive Emotionality, including Extraversion and Sociability, are somewhat ambiguous (e.g., Carmichael & McGue, 1994; Haan, Millsap, & Hartka, 1986; Helson & Moane, 1987; Holmlund, 1991; McGue, Bacon, & Lykken, 1993; Roberts & Chapman, 2000; Robins, Fraley, Roberts, & Trzesniewski, 2001; Stein, Newcomb, & Bentler, 1986; Viken, Rose, Kaprio, & Koskenvuo, 1994; Watson & Walker, 1996). It was Gordon Allport (1961) who characterized the emerging mature person as being more happy, lacking neurotic and abnormal tendencies, and being able to maintain warm and compassionate relationships, especially with romantic partners. Though this general developmental line is well supported empirically, the question of whether this development unfolds by intrinsic maturation or whether it is triggered by

extrinsic factors is still being heavily debated among essentialists and contextualists.

A clear and provocative standpoint characterizing the *essentialist* perspective was suggested by Costa and McCrae (1994), who argued that personality development from childhood to adulthood is fully driven by intrinsic maturation and almost completely genetically determined. This especially applies to the development of the Big Five personality traits, which are "set like a plaster" and defined as endogenous basic tendencies and which are unambiguously understood as being determined by nature rather than by nurture. Although other areas of personality, such as personal strivings, goals, attitudes, and social relationships, are conceptualized as *characteristic adaptations* and are sensitive to external influences, McCrae and Costa (1999) have asserted that the Big Five are endogenous, temperament-like dispositions, not influenced by the environment at all.

Evidence for the essentialist model was presented in two recent articles (McCrae et al., 1999, 2000) showing that age differences in mean levels of the Big Five personality traits appeared consistent across different cultures. It was observed that from adolescence to age 50 and above, Extraversion, Neuroticism, and Openness decreased, whereas Agreeableness and Conscientiousness increased. Because these age-related trends emerged in different cultures that surely represent extremely diverse environments, the major conclusion by McCrae et al. (1999, 2000) about the primacy of nature over nurture seems strongly supported. In light of these findings, even mean-level change of traits is interpreted as part of endogenous maturational processes that are expressed by basic tendencies.

However, from a *contextual* perspective, mean-level change may also be understood as maturation resulting from adaptations to life transitions that typically occur during young adulthood. Family life cycle transitions such as to partnership and parenthood involve new relationships with romantic partners and children and may offer "turning points" for personality change (Caspi & Roberts, 1999). For example, forming a compassionate partner relationship may induce a decline in traits related to Neuroticism, whereas becoming a dutiful and reliable parent may increase Conscientiousness. The first goal of this study was therefore to investigate whether personality maturation occurred over a 4-year period and how maturation was "catalyzed" by such life transitions.

Rank-Order Stability and Change

Rank-order stability refers to the ordinal placement of individuals on a trait, but it is important to keep in mind that high rank-order stability does not necessarily imply high mean-level stability. For example, individual differences in Neuroticism may appear quite stable over a few years while at the same time mean-level Neuroticism may decline. Recent longitudinal studies such as the Dunedin Longitudinal Study (Caspi, 2000; Caspi & Silva, 1995) and the Block Longitudinal Study (Block & Kremen, 1996) have suggested substantial stability from childhood temperament to the adolescent's or young adult's personality, but the empirical evidence on stability in adulthood is inconsistent, leading to quite contradictory conclusions. For example, the "age 30 hypothesis" suggested by Costa and McCrae (1994) predicts almost perfect stability beyond this age, whereas Aldwin and Levenson (1994) expected personality change even in old age.

More recently, the question was settled by Roberts and DelVecchio (2000), who concluded from an extensive meta-analysis that the rank-order stability of the Big Five personality traits, when they are controlled for retest intervals, was moderate in young and middle adulthood and reached its peak not before the age of 50 years. These findings suggest that personality differences stabilize more slowly and later than Costa and McCrae (1994) had originally concluded. It was therefore the second goal of our research to examine the rank-order stability of basic personality traits in a general population sample of young adults during the 3rd decade of their lives and to study how initial individual differences in personality are related to change in various kinds of relationships and vice versa.

Personality–Relationship Transaction

We investigated two kinds of personality–relationship transaction. First, we studied whether mean-level changes in personality of young adults were associated with life transitions such as the transition to partnership. This striking question arose because we found in the first assessment of the sample presented in this article that personality profiles differed strongly according to whether participants were attached to a partner (Neyer, 1999): Singles reported lower levels of Extraversion, Conscientiousness, and self-esteem and were higher in Neuroticism and Shyness, as compared with participants who were attached to a partner. Most notably, these effects were independent of age and sex differences, marital status, and whether participants cohabited with the partner, lived on their own, or still lived with their parents. However, this finding left open whether personality affected partner status or vice versa. We therefore surveyed this sample again 4 years later, a period that we thought sufficient for personality and relationship change to occur. In this longitudinal approach, we intended to study the effect of partnership constitution by contrasting mean-level personality change between *beginners* and *single continuers* (i.e., individuals who entered a partnership vs. stable singles) and to study the effect of partnership dissolution by contrasting mean-level personality change between *committed continuers* and *discontinuers* (i.e., individuals who remained partner attached vs. separated individuals).

Second, we studied how individual differences in personality traits predicted change across a broad range of social relationships and vice versa and also how changes in personality and relationships were correlated over time. Until now, most research on personality correlations with relationship outcomes has focused on romantic or marital relationships. This line of research has consistently shown detrimental effects of traits related to Neuroticism and some beneficial effects of Conscientiousness, Agreeableness, and Extraversion (e.g., Caughlin, Huston, & Houts, 2000; Karney & Bradbury, 1995, 1997; Kelly & Conley, 1987; Kurdek, 1993, 1999; Robins, Caspi, & Moffitt, 2000; Watson, Hubbard, & Wiese, 2000a). In contrast, other kinds of relationship have rarely been studied from the personality perspective.

The rank-order stability of social relationships with partner, family members, friends, or acquaintances pertains not only to duration but also to relationship qualities such as, for example,

frequency of contact, emotional closeness, and conflict. With the exception of specific kinds of relationship such as marital relations (e.g., Karney & Bradbury, 1995), there exist, to the best of our knowledge, no systematic reviews or meta-analytic studies on the stability of relationship characteristics. Nonetheless, it can be assumed that, similar to growing personality stability, stability of relationships and their characteristics increases with one's age, the age of relationship partners, and relationship duration. However, we hypothesize that social relationship characteristics are less stable than are personality traits. We base this hypothesis on the fact that relationships consist not only of two persons with separate personalities, who repeatedly interact with one another, but also of unique relationship histories. Therefore, the outcome of these repeated interactions (i.e., the relationship) should be less stable than its underlying factors (i.e., the personalities of partners and the relationship history). For example, dissatisfaction in friendship may be due to dyadic differences in Neuroticism of the partners but may also be affected by a history of repeated quarrel. This unbalanced stability of personality and relationships leads to quite different predictions of the direction of personality–relationship transaction.

If it is true that personality traits are more stable than are relationship characteristics, personality has a greater chance of predicting change in social relationships than the reverse. The effects of a stable personality trait are constant and accumulate over time, whereas the effects of the less stable relationship quality are likely to fluctuate and may even cancel each other out. For example, the quality of peer relationships may change even over a few days, depending on the peers' idiosyncratic view of the relationship and experiences in other social contexts, whereas the Neuroticism of each partner is a relatively stable trait, thereby influencing his or her way of life as well as other relationships.

The effects of personality and relationship experiences cannot be inferred from concurrent correlations between personality and relationship, because these correlations may be due either to causal directions or to third unmeasured factors. The same is true for cross-lagged correlations in longitudinal studies (Rogosa, 1980, 1988). For example, a correlation between Neuroticism at Time 1 and conflict with peers at Time 2 does not indicate that Neuroticism predicts change in conflict unless the concurrent correlation of both measures at Time 1 as well as the temporal stability of peer conflict have been controlled for (Figure 1).

The methodology of path analysis provides a more powerful technique to overcome the problems of cross-lagged correlations and is appropriate for disentangling the effects of antecedent personality on relationship qualities and vice versa. Consider the example in Figure 1, in which a personality trait at Time 1 (P_1, e.g., Neuroticism) shows a cross-lagged correlation with relationship quality at Time 2 (R_2, e.g., peer conflict). When the whole correlational pattern is examined (i.e., the correlations between P_1, P_2, R_1, and R_2), the predictive correlation between P_1 and R_2 may even turn out to be spurious because Neuroticism and peer conflict were already positively correlated at Time 1 and peer conflict proved to be a stable relationship quality across time. Path analysis, however, separates these *direct effects* (e.g., Path e) from *indirect effects* (a → c). In other words, Path e reflects the prediction of change in peer conflict by initial Neuroticism, controlling

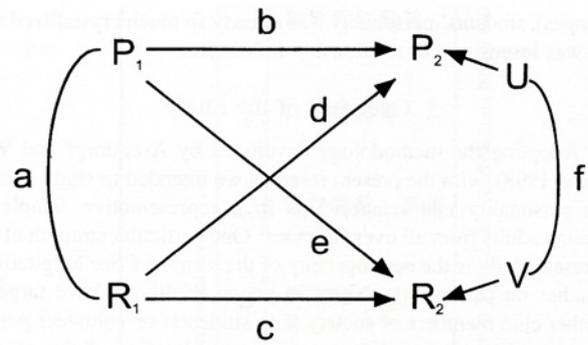*Figure 1.* Cross-lagged paths between personality (P_1, P_2) and relationships (R_1, R_2) and correlated change of Time 2 personality and relationships (U, V), controlling for all antecedent factors. Path analysis labels are indicated by a, b, c, d, e, and f.

not only for the concurrent correlation at Time 1 (a) but also for the stability of peer conflict (c).

Beyond the cross-paths between personality and relationships, changes in personality may be accompanied by changes in relationship experiences. For example, occupational success after Time 1 may decrease conflict with colleagues at Time 2 (change in relationship experience) and consequently lead to a decrease of Neuroticism at Time 2 (personality change). This type of personality–relationship transaction is indicated by correlated change and can be inferred from residual change scores analysis; that is, from the correlation f between the residuals of personality and relationship experiences at Time 2 (i.e., U and V) that controls for all antecedent paths (Rogosa, 1988; Campbell & Kenny, 1999).

Another important advantage of path analysis and the analysis of correlated change is that it reduces shared method variance, which results if both personality and relationship quality are reported by the same individual. Because a path coefficient (e.g., e) controls for the indirect path (a → c), which contains the full bias, the error is at least partly eliminated. It should be acknowledged that the analysis of cross-paths and correlated change is unable to provide conclusive evidence of causal effects, because the quasi-experimental nature of longitudinal designs does not allow one to rule out alternative explanations such as third variable, mediation, or selection effects. We therefore use the terms *personality effects* and *relationship effects* in a statistical sense rather than a theoretical one, which would imply causal arguments.

Path analysis was previously used in the Berlin Relationship Study (Asendorpf & Wilpers, 1998), which examined personality–relationship transactions of students over the 18-month period after they entered university. A clear pattern of personality–relationship transaction emerged: Once initial correlations between personality and relationships were controlled for, the personality traits predicted change in social relationships but not vice versa. Specifically, Extraversion, Agreeableness, and Conscientiousness predicted students' later relationship characteristics, such as the number of peers, peer conflict, falling in love, and the development of relationships with the family of origin. Thus, despite the tremendous environmental changes during the transition to university (e.g., moving to Berlin, new contacts, peers, and academic chal-

lenges), students' personality was already so much crystallized that it was insensitive to relationship influences.

Overview of the Study

Adopting the methodology developed by Asendorpf and Wilpers (1998), with the present research we intended to study change in personality and relationships in a representative sample of young adults from all over Germany. One particular strength of the present study is the heterogeneity of the sample: Prior longitudinal studies on personality change in young adulthood have targeted either elite members of society (i.e., students) or volunteer participants, whose personalities are not representative of the general population (e.g., Asendorpf & Wilpers, 1998; Helson & Moane, 1987; McGue et al., 1993; Robins et al., 2001). Because participants were contacted by mail and because we used self-report measures, it was extremely important to restrict the questionnaire to a reasonable size. It included various personality scales, a broad relationship inventory, and contextual information.

For personality assessment, we referred to the five-factor theory and chose to assess Extraversion, Neuroticism, Conscientiousness, and Agreeableness. We did not study Openness or culture because we wanted to keep the questionnaire short, and Openness seems to be the factor of the five-factor model that is least related to individual differences in personal network structure (e.g., Asendorpf & Wilpers, 1998). In addition, we assessed two subfactors of Extraversion, Shyness and Sociability, which have been previously shown to be particularly relevant to social relationship development in early adulthood (Asendorpf & Wilpers, 1998). Although Shyness is negatively correlated with Sociability, empirical evidence suggests discriminant validity of both constructs, with Sociability being more related to the selection of new social situations and Shyness reflecting more the uneasiness in unfamiliar or evaluative social situations (Cheek & Buss, 1981). In addition, we assessed general self-esteem (Marsh & O'Neill, 1984) because this concept taps the self-evaluation of young adults, which also seems central to social relationships. As general self-esteem is usually found to be sensitive to situational influences, we expected that it would be more open to possible relationship effects than would the more stable traits of the five-factor model.

One major goal of the study was to assess a wide range of social relationships that are typically meaningful to young adults in either a positive or a negative sense. We used the *personal network approach,* which allows the study of all significant relationships from the perspective of one individual (Milardo, 1992). With this approach, individuals are typically requested to name all persons who are important to them and to rate the qualities of each relationship on different dimensions. From the resulting Person × Relationship Quality matrix, various variables can be extracted through aggregation across all relationships or specific relationships of a given type, such as overall number of peers, mean conflict with parents, partner, and so forth. These variables do not describe specific dyads but rather cover the "relationship status" of a single participant (Asendorpf & van Aken, 1994).

Hypotheses

Our first set of hypotheses starts with the claim that mean-level changes in personality of young adults across 4 years reflect

personality maturation. We also hypothesized that maturation would be associated with the constitution of new relationships and new social obligations: First, we expected that mean-level decreases in Neuroticism and related traits (i.e., decrease in Shyness, increase in self-esteem) would by moderated by the transition to partnership. Second, we expected that the transition to parenthood would be associated with increase in Conscientiousness.

The second set of hypotheses pertains to the rank-order stability of personality traits and social relationships. We expected that rank-order stability of personality traits would be higher than that of the qualities of various kinds of relationship. As we have previously outlined, we thought this unbalanced stability would have consequences for the prediction of change in personality and relationship experiences. Therefore, we also hypothesized that personality effects would have a clear superiority over relationship effects.

Method

Participants

At the first assessment, we targeted participants from a large-scale interview study (Bien, 1996) that was funded by the Deutsches Jugendinstitut (German Youth Institute) and aimed to study change and development of family life forms in a representative population of 10,000 interviewees. Potential participants between the ages of 18 and 30 years ($N = 2,002$) were contacted again by mail and asked to complete further questionnaires that were related to their views on themselves (i.e., personality) and their personal relationships (e.g., with romantic partners and other important persons). The resulting sample of 637 young adults (M age = 24.4 years, $SD = 3.7$) was largely representative of the population of young adult Germans, with the exception of a slight oversampling of respondents with a high school diploma (37.2% vs. 28.9% in the population; Neyer, 1999).

About 4 years later all respondents were contacted again and were asked to participate in a follow-up survey. In a detailed cover letter, we explained to participants that we were again interested in their views of themselves and their personal relationships. To maximize return rate and to minimize sample selectivity, we offered respondents 50 DM (approximately $30) as gratification for their commitment to the longitudinal study. In case of no return, participants were sent two reminders 3 and 6 weeks later and again were kindly asked to participate. Because a subsample of 152 persons could not be reached by regular mail after the 4 years (because they had moved or changed their names in marriage), we additionally commissioned the local registration offices (in Germany all residents must register with the police) to search for their addresses and repeated the procedure with up to three reminders.

In total, 489 participants responded (return rate = 76%). The longitudinal sample included 223 male participants and 266 female participants. At the time of the second assessment, mean age was 28.6 years ($SD = 3.8$) and was independent of sex, $t(487) < 1$, ns. Twenty-one percent of male participants and 21.9% of female participants still attended school or university or were in professional training, whereas 72.6% of men and 50.2% of women were working. Seventy-seven percent of the participants were engaged in romantic relationships, 39.1% were married, and 38.4% were parents. All in all, the demographic characteristics of the longitudinal sample (i.e., sex, age, and marital, parental, and partner status) did not differ from the original, fully representative sample, with the exception of an increased proportion of respondents (50.6%) having received a high school diploma. We also tested for possible attrition effects by comparing the Time 1 personality scores and various measures of relationship status between the 489 longitudinal participants and the 148

persons who did not participate in the second assessment, but we observed no differential attrition due to personality, $ts(635) < 1.8$, *ns*, or to measures of relationship status such as mean relationship qualities or number of relationships, $ts(635) < 1.7$, *ns*.

Measures

Contextual information. Participants were asked on both measurement occasions to indicate their sex, age, and marital, occupational, and educational status. Moreover, they were asked whether they were involved in a serious relationship and, if so, how long this relationship had existed and whether and how long they had cohabited with the partner. Respondents were also asked about whether they had children and whether children lived in the same household. Additional demographic information (e.g., age of children at Time 1) was provided by the database of the Deutsches Jugendinstitut survey study (Bien, 1996).

Personality. From the Big Five, we assessed Extraversion, Neuroticism, Conscientiousness, and Agreeableness using the German version of the NEO Five-Factor Inventory (NEO-FFI; Borkenau & Ostendorf, 1993). We also assessed Shyness and Sociability as subfactors of Extraversion. Shyness was measured using four items developed by Asendorpf (1987) and one additional item ("I feel uneasy at parties and in large groups"). Sociability was measured by five items developed in the Berlin Relationship Study by Asendorpf and Wilpers (1998). An additional scale of five items assessed the general self-esteem of the participants (Marsh & O'Neill, 1984). All items were randomly mixed and presented in a 5-point agreement format rating ranging from 1 (*not at all*) to 5 (*completely*).

Social relationship inventory. Social relationships were assessed at both occasions using a personal network inventory similar to the instrument used in the Berlin Relationship Study (Asendorpf & Wilpers, 1998). Respondents were asked to recall those persons who play an important role in their life, either positive or negative, and with whom they had had contact at least once during the last 3 months. To obtain a sufficient number of relationships, it is advisable to prime participants to specific relationship types using a recognition technique (Neyer, 1997). Participants were therefore presented with a list of relationship types (partner, parents, siblings, grandparents, other relatives, friends, colleagues, and acquaintances) and were asked to assign each person to one of these relationship categories and to include information on sex and age (e.g., "younger," "of similar age," "much older"). Finally, the participants rated the quality of their relationship with each person on five items rated on Likert-type scales: (a) "How often do you have contact with this person?" (0 = *less than once a month* to 5 = *every day*), (b) "How important is this relationship for you?" (1 = *it would be better to end this relationship* to 5 = *ending this relationship would be a great strain for me*), (c) "How close do you feel to this person?" (1 = *very distant* to 5 = *very close*), (d) "How often do you have conflicts with this person?" (1 = *never* to 5 = *nearly each time we meet*), and (e) "Do you feel insecure with this person's presence?" (1 = *never* to 5 = *always*).

Results

Stability and Change of Personality Traits

Internal consistency and intercorrelations. Table 1 shows means, standard deviations, internal consistencies, rank-order stability, and mean-level change of personality scales and their intercorrelations at both assessment occasions. The internal consistencies were all satisfactory in both surveys, ranging from $\alpha = .66$ for Sociability to $\alpha = .83$ for Shyness, Neuroticism, and Conscientiousness (Time 2). As compared with the NEO-FFI norms based on 2,112 participants of the German population, mainly university students, (M age = 29 years; Borkenau & Ostendorf, 1993),

Table 1
Means, Standard Deviations, Internal Consistency, Four-Year Stability and Change, and Intercorrelations of Personality Scales

Scale	Time 1		Time 2		Internal consistency (Cronbach's α)		Rank-order stability (r₁₂)	Mean-level change (d)	Intercorrelations						
	M	SD	M	SD	1995	1999			1	2	3	4	5	6	7
1. Extraversion	3.39	0.55	3.40	0.54	.76	.78	.61	.04	—	-.64	.69	-.39	.53	.27	.17
2. Shyness	2.61	0.84	2.50	0.80	.81	.83	.62	-.21	-.65	—	-.48	.46	-.52	-.22	-.09
3. Sociability	3.44	0.68	3.46	0.63	.69	.66	.53	.04	.67	-.45	—	-.21	.32	.12	.25
4. Neuroticism	2.64	0.62	2.55	0.63	.81	.83	.60	-.22	-.37	.44	-.26	—	-.68	-.27	-.07
5. Self-esteem	3.88	0.68	3.98	0.66	.77	.81	.49	.18	.52	-.50	.37	-.69	—	.42	.19
6. Conscientiousness	3.67	0.57	3.82	0.56	.81	.83	.62	.44	.13	-.13	.06	-.25	.34	—	.14
7. Agreeableness	3.64	0.49	3.67	0.45	.71	.70	.56	.12	.23	-.17	.33	-.17	.25	.17	—

Note. Significant rank-order stabilities (*rs*), mean-level changes (*ds*), and correlations are in boldface ($p < .05$). Intercorrelations above the diagonal refer to Time 2; intercorrelations below the diagonal refer to Time 1.

participants of the present study reported at both assessments almost comparable levels of Extraversion, $ts(2,599) < 1.45$, ns, $ds < .07$,[1] but scored higher in Conscientiousness, $ts(2,599) > 4.83$, $ps < .001$, $ds > .23$, and Agreeableness, $ts(2,599) > 8.09$, $ps < .001$, $ds > .41$. In contrast, Neuroticism was lower at both occasions, $ts(2,599) > 6.03$, $ps < .001$, $ds > .29$. These differences can be attributed either to our more representative sample or to the self-selection for our study. As compared with the longitudinal sample from the Berlin Relationship Study (M age $= 20$ years; Asendorpf & Wilpers, 1998), participants of the present study reported at both occasions consistently higher levels of general self-esteem, $ts(619) > 2.81$, $ps < .001$, $ds > .20$, and lower levels of Shyness, $ts(619) > 6.24$, $ps < .001$, $ds > .30$, but comparable levels of Sociability, Conscientiousness, and Agreeableness, $ts(619) < 1.38$, ns, $ds < .07$. Therefore, the higher Conscientiousness and Agreeableness of the present sample seem to be due to the self-selection of participants, whereas the lower Neuroticism seems to be due to the more representative sampling in terms of educational level. The variance of personality traits was not restricted (the mean standard deviation for the NEO-FFI scales was .59 for the normative sample and .55 in the present sample, and standard deviations in Shyness, Sociability, and self-esteem were comparable to those for the Berlin Relationship Study).

The intercorrelations of the NEO-FFI scales were not significantly different from those reported by Borkenau and Ostendorf (1993). Shyness and Sociability were both related to Extraversion. A hierarchical regression indicated that Shyness accounted for 42%–43% and Sociability for an additional 18%–19% of the variance at both assessments. Also, self-esteem and Shyness were both related to Neuroticism. Self-esteem accounted for 26%–30% of the variance, and Shyness accounted for an additional 19%–22% of the variance.

Mean-level change and rank-order stability. Substantial mean-level change of personality occurred over the 4 years. The strongest increase was observed for Conscientiousness, $t(488) = 6.84$, $p < .001$, $d = .44$. Neuroticism, $t(488) = 3.45$, $p < .001$, $d = .22$, and Shyness, $t(488) = 3.26$, $p < .001$, $d = .21$, decreased significantly, whereas self-esteem increased markedly over the 4 years, $t(488) = 2.85$, $p < .01$, $d = .18$, whereas the increase in Agreeableness was only marginally significant, $t(488) = 1.85$, $p < .07$, $d = .12$. Extraversion and Sociability did not change, $ts(488) < 1$, ns. This result replicated prior findings showing that personality in young adults generally changes toward maturity.

Rank-order stability of personality traits was moderate, ranging from $r = .49$ for self-esteem to $r = .62$ for Shyness and Conscientiousness. The moderate correlations, unadjusted for unreliability, indicate substantial stability over 4 years but are far from being perfect and thus are generally consistent with the mean stability of .57 between age 22 and 29, as reported by Roberts and DelVecchio (2000).

Stability and Change of Personal Relationships

Personal network size, composition, and relationship qualities. The personal networks included a mean number of 14.5 persons at the first assessment and a mean number of 17.4 persons at the second assessment, $t(488) = 7.30$, $p < .001$, $d = .47$. The significant increase in network size was partly due to new part-nerships, $t(488) = 4.23$, $p < .001$, $d = .27$, new children, $t(488) = 7.08$, $p < .001$, $d = .46$, and additional relatives, friends, colleagues, and other acquaintances, $ts(488) > 3.60$, $ps < .001$, $ds > .25$. The rank-order stability of the overall network size was moderate ($r = .43$) and ranged from .28 for the number of reported acquaintances to .60 for number of reported children (see Table 2).

To create global indices of cross-relationship quality, we first calculated aggregate measures of overall relationship status (i.e., mean contact, importance, closeness, conflict, and insecurity, collapsed across all persons within the individual network). Second, we computed relationship-specific aggregates of relationship quality (i.e., mean contact, importance, closeness, conflict, and insecurity for relationship with partner, parents, friends, etc.). Because the mean intercorrelation among the five relationship qualities (with conflict and insecurity inversely coded into positive qualities) for the cross-relationship qualities was not sufficiently high for aggregation (i.e., .18 at Time 1 and .25 at Time 2) and because it also differed among relationship-specific qualities (ranging from .12 for relationships with colleagues to .31 for relationships with parents), we analyzed each relationship quality separately. As was shown in the Berlin Relationship Study, single-item measures of relationship status had sufficient retest reliabilities over short time periods (i.e., 3 months; Asendorpf & Wilpers, 1998).

Mean-level change and rank-order stability of relationship status. As Table 2 indicates, mean-level change in relationship status was observed for cross-relationship contact frequency, $t(488) = 6.96$, $p < .001$, $d = .45$. The overall decrease in contact was due to reduced contact with parents, $t(428) = 6.06$, $p < .001$, $d = .42$, siblings, $t(346) = 5.41$, $p < .001$, $d = .41$, and friends, $t(416) = 5.19$, $p < .001$, $d = .36$, although mean contact with romantic partner increased over the 4 years, $t(291) = 3.68$, $p < .001$, $d = .30$. Also, the mean level of cross-relationship importance decreased, $t(488) = 3.03$, $p < .005$, $d = .20$, whereas the mean level of importance in specific relationship types remained fairly stable. Mean levels in other qualities remained unchanged over time, with the exception of a decrease in conflict with parents, $t(428) = 2.92$, $p < .005$, $d = .20$.

Rank-order stability of relationship qualities was in most cases substantial (with modest to moderate effect sizes, $ps < .005$), with the exception of the importance assigned to children and colleagues, the frequency of conflict with colleagues, and insecurity in contact with acquaintances. As compared with the average rank-order stability of the seven measured personality traits (mean $r = .59$, computed using Fisher's r-to-Z transformation), the average stability of the six cross-relationship measures of relationship status (i.e., size, mean contact, importance, closeness, conflict, insecurity) was much lower (mean $r = .39$). This confirmed the expectation that stability of personality was higher than stability of relationship status (see also Asendorpf & Wilpers, 1998).

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[1] As measures of effect size for mean differences, throughout this article we use Cohen's d. That is, for independent comparisons, $d = (M_1 - M_2)/SD$; for dependent comparisons, $d = ([M_1 - M_2]/SD_D)*\sqrt{2}$, where SD_D refers to the standard deviation of difference scores (Cohen, 1988).

Table 2
Rank-Order Stability and Mean-Level Change of Network Composition and Relationship Qualities

| | Network composition | | | | No. of reported personsª | | | Contact frequency | | Importance of relationship | | Closeness with partner | | Conflict frequency | | Insecurity in relationship | |
| | Time 1 | | Time 2 | | | | | | | | | | | | | | | |
Relationship	M	SD	M	SD	nᵇ	r	d	r	d	r	d	r	d	r	d	r	d
All persons	14.54	8.10	17.47	8.51	489	**.43**	**.47**	**.37**	**−.45**	**.33**	**−.20**	**.33**	−.13	**.40**	−.13	**.49**	−.05
Partner	0.67	0.47	0.77	0.44	292	**.42**	**.27**	**.19**	**.30**	**.25**	.13	**.27**	.14	**.46**	−.14	**.33**	−.20
Parents	1.81	0.78	1.77	0.79	429	**.32**	−.06	**.56**	**−.42**	**.27**	.02	**.49**	.06	**.48**	**−.20**	**.49**	−.07
Sibling	1.21	1.11	1.28	1.11	347	**.56**	.10	**.56**	**−.41**	**.42**	−.05	**.44**	.08	**.37**	−.18	**.43**	.09
Grandparent	0.56	0.85	0.50	0.85	110	**.40**	−.09	**.44**	−.34	**.47**	.09	**.53**	−.18	**.50**	.09	**.46**	.19
Child	0.35	0.73	0.60	0.94	99	**.60**	**.46**	**.39**	.09	.17	.22	**.37**	.14	**.40**	.34	**.38**	−.07
Relative	1.46	2.99	1.96	2.60	175	**.30**	**.25**	**.43**	−.06	**.38**	−.05	**.47**	−.11	**.42**	.07	**.50**	.13
Friend	4.84	4.22	5.65	4.72	417	**.49**	**.25**	**.35**	**−.36**	**.34**	.03	**.32**	.03	**.30**	−.15	**.38**	−.12
Colleague	1.78	2.23	2.42	2.77	235	**.35**	**.31**	**.20**	.01	.16	−.07	**.31**	−.02	.11	.19	**.28**	.06
Acquaintance	1.86	2.85	2.53	3.19	202	**.28**	**.26**	**.25**	−.09	**.22**	.04	**.20**	−.02	**.22**	.08	.10	.00

Note. Zero order correlations refer to rank-order stability of the reported number or the mean quality of a given relationship type (significant correlations are in boldface, after correction for Type I error, $p < .005$). Effect sizes (d) refer to mean-level change in reported number or mean qualities of a given relationship type (significant effect sizes are in boldface, after correction for Type I error, $p < .005$).
ª Analyses of numbers of reported relationships were based on an overall sample of 489 participants (including reports of zero when a respondent did not report any relationship in a given category in one of both waves).   ᵇ Analyses of relationship qualities were based on subsamples of respondents who reported partners of the specific relationship type.

Stability and Change in Partner Status

In both assessments, *partner status* was defined as being currently involved in a partnership, irrespective of whether participants were married or cohabited with their partner. The number of singles was 143 (29.3%) at Time 1 and 111 (22.1%) at Time 2; this was in line with the general expected proportion of singles, which is estimated at about 25% in the population of German young adults (Klein, 1999). Partner status of the participants was fairly stable over time (Cohen's $\kappa = .50$, $p < .001$). However, 63 of the formerly single participants (44.1%) reported at Time 2 that they were involved in a partnership, whereas 80 participants (55.9%) remained single. Three hundred fifteen participants (91.0%) who had a partner at Time 1 were still involved in a serious relationship at Time 2, whereas 31 participants (9.0%) had returned to single status.

Change in partner status enabled us to test the effects of two developmental transitions on personality stability and change. These were, first, the transition from being single to being in a partnership and, second, the transition from being in a partnership back to being single. A comparison of the personality change of the 80 stable singles (i.e., single continuers) and of the 63 respondents who had changed from single to partnership status during the last 4 years (i.e., beginners) provided a test for the effects of partnership formation on personality. A test for the effects of partnership dissolution was offered by a comparison of the personality change of the 31 respondents whose earlier partner relationships had ended and who were single at the second assessment (i.e., discontinuers) and of the 315 respondents who continued to be involved in a serious relationship with the same partner or had a serious relationship with a new partner (i.e., committed continuers).

Interactions of Mean-Level Change in Personality and Partner Status

Mean differences at Time 1. All personality scores assessed at Time 1 and Time 2 were corrected for sex and age of participants. Before testing whether mean-level personality change was related to transitions in partner status, we conducted two control analyses. First, we checked post hoc whether the longitudinal sample ($N = 489$) showed personality correlates of partner status that were analogous to those of the initial sample ($N = 637$). At Time 1, compared with the partner-attached participants ($n = 346$), the singles ($n = 143$) reported significantly lower levels of Extraversion, $t(487) = 3.44$, $p < .001$, $d = .31$, were higher in Shyness, $t(487) = 3.45$, $p < .001$, $d = .31$, and Neuroticism, $t(487) = 3.77$, $p < .001$, $d = .34$, and reported lower self-esteem, $t(487) = 4.49$, $p < .001$, $d = .41$, and Conscientiousness, $t(487) = 2.24$, $p < .05$, $d = .20$, although differences in Sociability and Agreeableness were insignificant, $ts(487) < 1.5$, *ns*. Virtually the same pattern was found in the initial sample. Therefore, the final sample is considered as unbiased for these effects (see Neyer, 1999).

Second, we controlled for possible preselection effects within groups that may have resulted from a nonrandom self-assignment of participants to one of the comparison groups. For example, as compared with the single continuers, the beginners might have reported higher levels of Sociability at Time 1 and thus have been differently predisposed for finding a partner. Therefore, we analyzed post hoc whether the groups were already different in personality traits at Time 1. Beginners and single continuers were comparable in each personality trait at Time 1, $ts(141) < 1.5$, *ns*, with the notable exception of Sociability. It appears that the beginners were preselected and reported higher levels of Sociability than did the single continuers, $t(141) = 2.12$, $p < .05$, $d = .36$. Comparisons of discontinuers and committed continuers, however,

indicate no preselection effects, as both groups reported comparable levels in each assessed personality trait at Time 1, $ts(344) < 1.37$, ns.

Effects of partnership transition. Although preselection effects could be ruled out at the level of mean differences (with one exception), individual differences within groups at Time 1 could also have affected personality at Time 2. To perform strict tests for the effects of the two kinds of partnership transition, we conducted analyses of covariance (ANCOVAs) that predicted a specific personality trait at Time 2 by the group membership (i.e., beginners vs. single continuers and single continuers vs. discontinuers, respectively) while controlling for individual differences in the given trait at Time 1. As effect size measure, we report eta squared, indicating the incremental variance that was attributable to a given partnership transition. Figure 2 shows change in personality traits for beginners, single continuers, committed continuers, and discontinuers.

Over time, the beginners changed their personality, whereas the single continuers remained fairly stable. Thus, when individual differences at Time 1 were controlled, the transition to partnership moderated significant decreases in Neuroticism, $F(1, 143) = 6.95$, $p < .01$, $\eta^2 = .047$, and Shyness, $F(1, 143) = 7.47$, $p < .01$, $\eta^2 = .051$, and significant increases in Extraversion, $F(1, 143) = 8.36$, $p < .01$, $\eta^2 = .056$, general self-esteem, $F(1, 143) = 6.09$, $p < .05$, $\eta^2 = .042$, and Conscientiousness, $F(1, 143) = 7.37$, $p < .01$, $\eta^2 = .050$. Agreeableness, however, was unrelated to this transition ($Fs < 1$). In contrast, the effect of partnership dissolution was nonsignificant, as was indicated by a comparison of personality change between committed continuers and discontinuers, $Fs(1, 346) < 2.0$, ns, despite the fact that the test for dissolution was based on much larger subsamples than was the test for partnership formation.

It is interesting that Sociability was fairly stable in each subgroup, and no change due to partnership formation or dissolution was observed, $Fs < 3.00$, ns. As noted above, however, the beginners were preselected for Sociability and reported higher levels than did single continuers at Time 1, whereas the latter group was comparable to participants who were in a partnership at the first time of assessment, $t(406) < 1$, ns.

Overall, mean-level personality change was significantly moderated by the transition to partnership but unrelated to partnership dissolution. It should also be noted that the effects were independent of partnership duration, as was indicated by correlations of partnership duration (*M* duration in beginners = 26.1 months, $SD = 22.1$) with difference scores in personality traits (controlled for participants' age and sex) that were all insignificant, $rs(63) < .17$, ns. Similarly, personality change was unrelated to partnership duration in committed continuers (*M* duration = 94.1 months, $SD = 61.5$) and discontinuers (*M* duration = 33.7 months, $SD = 26.1$, $rs < .10$, ns).

Finally, we controlled for the possible effects of marital transitions on personality change. Within the group of committed continuers, we compared the personality development of unmarried participants ($n = 176$) and newly married participants ($n = 67$). No effects were observed, $Fs(1, 243) < 2.40$, ns. Thus, it seemed that it was not marriage but rather beginning a partnership that moderated personality maturation in young adults.
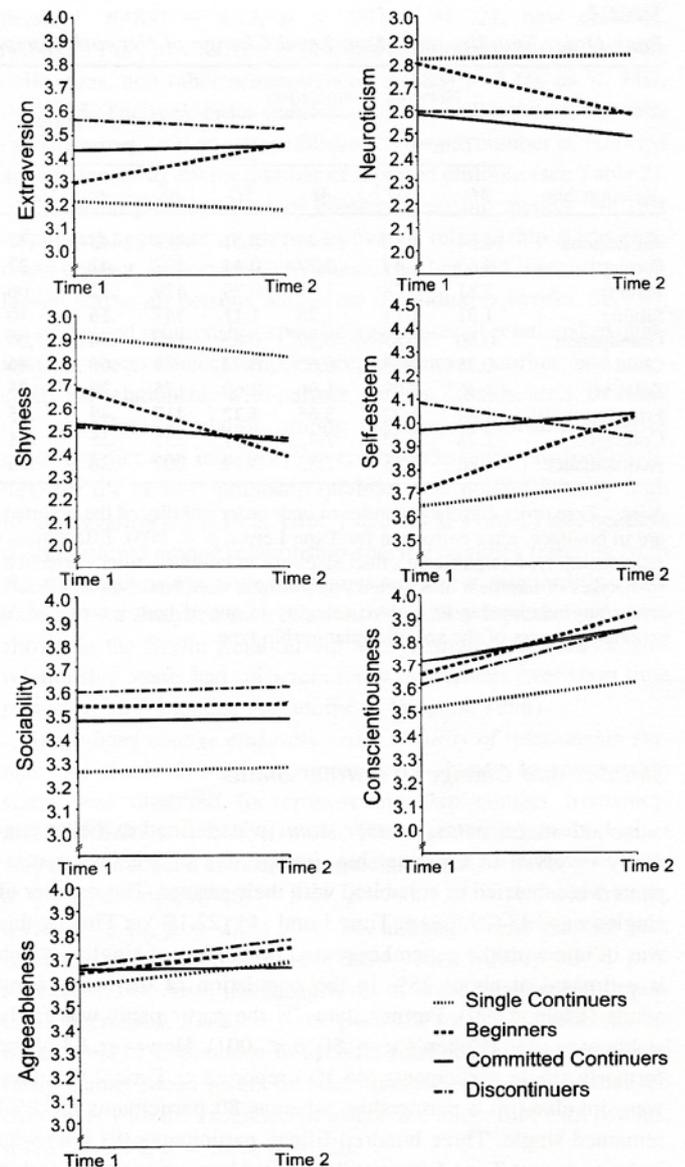

Figure 2. Mean-level change in personality traits is moderated by transition to partnership but independent of partnership dissolution.

Personality Change and Other Life Transitions

We also investigated interactions of personality change with other life transitions, such as the transition from school or university to professional working life and the transition to parenthood. We studied the effects of transitions from school or university to work and from work to further status-improving professional training by contrasting personality development of participants with stable status with personality development of those undergoing status transition, but no effects were observed ($Fs < 1$). We tested the effects of transition to parenthood by contrasting personality change between childless participants ($n = 100$) and new parents ($n = 59$), but no effects were found ($Fs < 1$). Thus, our hypothesis that Conscientiousness increases when people become (responsible) parents was not confirmed.

Personality Effects on Relationships

To test personality effects on relationships, we conducted path analyses as described in the introductory section (see Figure 1). After correction of all personality and relationship variables for the sex and age of the participants, each relationship quality at Time 2 was regressed in a first step on the corresponding quality at Time 1 and in a second step on personality traits of Time 1. The standardized beta for the personality trait is the path coefficient for the direct path leading from this trait at Time 1 to the relationship quality at Time 2 while its stability and the initial correlation of relationship status and personality at Time 1 are controlled (we used multiple regression analyses instead of structural equation modeling because social relationship variables were not assessed by multiple items).

There were regression analyses for seven personality scales, for five relationship variables (i.e., contact, importance, closeness, conflict, and insecurity), for nine kinds of relationship (i.e., partner, parent, sibling, grandparent, child, other relative, friend, colleague, and acquaintance), and for the cross-relationship measures of relationship status (e.g., mean level of conflict). Thus, in sum, the analyses included tests of 35 cross-relationship and 315 relationship-specific effects. Because of the large number of tests, it was important to avoid false positive findings resulting from

Type I error. We applied two strategies for this purpose. First, we fixed the p level throughout the study to .01. Whereas path analyses of the cross-relationship effects pertained to the total sample ($N = 489$), the tests of relationship-specific effects were based on subgroups with sample sizes ranging from 99 participants who had relationships with children at both times of assessment to 417 participants with friendships. Therefore, the same p level corresponded to very different effect sizes for different kinds of relationship. To take the effect sizes into consideration, we looked in a second step at the additional variance explained by a personality trait once stability and synchronic correlations were controlled for. Because population-based field studies such as the present investigation usually do not yield large effect sizes (Ahadi & Diener, 1989; McClelland & Judd, 1993), we considered personality effects as substantial if they explained at least 1% of the incremental variance in a relationship status measure. Only 10 cross-relationship and 9 relationship-specific effects met these strict criteria. Table 3 shows synchronic correlations between personality trait and relationship status at Time 1, path coefficients, and effect sizes for the cross-relationship and the relationship-specific effects.

Changes in cross-relationship closeness, importance, and insecurity were predicted by personality traits at Time 1. Extraversion

Table 3

Personality Effects on Relationships

Personality trait	Relationship status	r^a	Path from initial personality to later relationship status	
			β^b	$\Delta R^{2\,c}$
Cross-relationship effects				
Extraversion	Closeness	.19***	.15***	.020
	Importance	.09*	.14***	.019
Shyness	Closeness	−.16**	−.14***	.020
	Insecurity	.22***	.10**	.011
Neuroticism	Closeness	−.16***	−.14***	.020
	Insecurity	.37***	.11**	.011
Self-esteem	Closeness	.17***	.19***	.035
	Importance	.18***	.18***	.031
	Insecurity	−.35***	−.15***	.019
Agreeableness	Importance	.16***	.13**	.015
Relationship-specific effects				
Extraversion	Closeness with friends	.21***	.12**	.012
	Importance of friends	.12**	.12**	.014
	Importance of colleagues	.01	.20**	.041
Neuroticism	Insecurity with colleagues	.21***	.19**	.033
Self-esteem	Insecurity with friends	−.26***	−.18***	.029
	Importance of colleagues	−.06	.22***	.049
	Insecurity with colleagues	−.24***	−.19**	.033
	Conflict with colleagues	−.01	−.20**	.039
Agreeableness	Importance of colleagues	−.05	.26***	.066

Note. All reported effects were controlled for age and sex of participants. Only effects with $p < .01$ for β and $\Delta R^2 > .01$ are reported.
[a] Pearson product–moment correlation between personality and relationship status at Time 1.   [b] Standardized beta in regression of later relationship status on initial status and personality.   [c] R^2 change from hierarchical regression analyses of later relationship status on corresponding status at Time 1 (Step 1) and personality trait at Time 1 (Step 2).
* $p < .05$.   ** $p < .01$.   *** $p < .001$.

led to an increase of closeness and importance. In line with the Extraversion effects, Shyness predicted a decrease in mean closeness but also resulted in stronger experience of insecurity across relationships. This pattern was also found for Neuroticism. In accordance with the effects of Extraversion and Neuroticism, general self-esteem predicted an increase in closeness and importance and a decrease in insecurity. Finally, Agreeableness predicted increase in overall importance. The remaining personality traits, Conscientiousness and Sociability, yielded no substantial effects.

At the level of specific relationship types, personality effects were exclusively limited to peer relationships such as friends and colleagues. Extraversion predicted increasing closeness and importance of friends and increasing closeness with colleagues in working or professional training contexts. Neuroticism predicted increased insecurity with colleagues. Antecedent self-esteem was related to changes in insecurity with friends and colleagues and also to changes in importance of and conflict with colleagues. Agreeableness predicted change in importance of colleagues.

Relationship Effects on Personality

Relationship effects were analyzed in the same fashion as were personality effects, that is, by hierarchical regressions of personality traits measured at Time 2 on, first, the corresponding personality measure at Time 1 and, second, on the quality of a given type of relationship. Again, we took only relationship effects into account at $p < .01$, which additionally explained at least 1% of the variance once personality stability and concurrent correlations at the first assessment were controlled (see Table 4).

Most relationship qualities had no effects on personality, with the exception of one cross-relationship effect of overall insecurity at Time 1 being related to increased Neuroticism at Time 2 and two relationship-specific effects of qualities of relationships with participants' own preschool children. These effects were corrected for age of children at Time 1 (M age = 4.2 years, SD = 2.7) and indicate that conflict predicted increasing Extraversion, whereas insecurity with children was related to increasing Neuroticism.

Correlated Change in Personality and Relationship Experiences

Because the present study includes only two assessments, it was not possible to apply Asendorpf and Wilpers's (1998) procedure of estimating growth curves for the differential personality change and differential relationship change. Instead, we first computed zero-order correlations between difference scores of personality traits and difference scores of relationship status measures, which were controlled for participants' sex and age. Because difference scores are often suspected to be unreliable (although the issue of unreliability is controversial; e.g., Campbell & Kenny, 1999; Rogosa, 1988), we next replicated the analyses by correlations of residual change scores (i.e., correlation f in Figure 1). These residual change scores of personality traits were derived from multiple regressions that regressed the Time 2 personality measures simultaneously on the corresponding personality measure and the given relationship measure at Time 1. Residual change scores of relationship variables were derived in the same fashion. Because of the resulting 350 possible correlations between difference scores and residual change scores, respectively, it was again important to avoid false positive findings. We therefore considered only correlations that were replicated by both methods (at $p < .01$) and replicated across at least three kinds of relationship.

No such patterns of correlations were found at the level of specific relationship types, but it appeared that cross-relationship insecurity was correlated with change in all personality traits (except Agreeableness). Specifically, increased insecurity was significantly correlated with a decrease in Extraversion, $r(489) = -.16, p < .001$, and Sociability, $r(489) = -.15, p < .001$, an increase in Shyness, $r(489) = .17, p < .001$, and Neuroticism, $r(489) = .15, p < .001$, and a decrease in self-esteem, $r(489) = -.15, p < .001$, and Conscientiousness, $r(489) = -.17, p < .001$.

Because this consistent pattern of modest correlations could also reflect personality change associated with partnership transition, we compared the correlations between beginners, discontinuers, and both groups of continuers but found no differences ($Zs < 1.5$, ns), with the exception of a higher correlation between change in

Table 4
Relationship Effects on Personality

Relationship status	Personality trait	r^a	Path from initial relationship status to later personality		
			β^b	ΔR^{2c}	
Cross-relationship effect					
Insecurity	Neuroticism	.37***	.11**	.010	
Relationship-specific effect					
Conflict with children[d]	Extraversion	.04	.24**	.052	
Insecurity with children[d]	Neuroticism	.14	.19**	.032	

Note. All reported effects were controlled for age and sex of participants. Only effects with $p < .01$ for β and $\Delta R^2 > .01$ are reported.
[a] Pearson product–moment correlation between personality and relationship status at Time 1. [b] Standardized beta in regression of personality trait on initial personality and relationship status. [c] R^2 change from hierarchical regression analyses of later personality trait on corresponding trait at Time 1 (Step 1) and relationship status at Time 1 (Step 2). [d] Child effects were controlled for children's age.
** $p < .01$. *** $p < .001$.

self-esteem and insecurity in the beginners, $r(63) = -.40$, $p < .001$, than in the other groups ($Zs > 2.0$, $ps < .05$). We interpret these effects as being due to differential maturation and only marginally due to transition to partnership.

Discussion

We studied two kinds of personality–relationship transaction in a general population sample of young adults across a period of 4 years. First, we looked at general personality development and found that mean-level change in personality was directed toward maturity. The maturation of personality was, however, substantially moderated by one of the major environmental changes in early adulthood (i.e., the transition to partnership), whereas other developmental transitions were unrelated to personality change. Second, we looked from an individual-differences perspective at personality and relationship development. Path analyses showed that once initial correlations were controlled, personality traits predicted change in various aspects of social relationships, whereas effects of antecedent relationships on personality were rare and restricted to very specific relationships with one's preschool children. In sum, first, these results favor a contextual view of personality maturation in early adulthood, which acknowledges the powerful transaction between personality and pair bonding. Second, our results show nonetheless that individual differences in personality traits of young adults are already so much stabilized that personality effects on relationships have a clear primacy over relationship effects on personality. We discuss both types of personality–relationship transaction separately because they are fundamentally different from one another. Whereas moderation of mean-level change indicates what generally changes when people undergo a life transition, moderation of differential change reflects whether and how individual differences in personality predict later individual differences in relationships and vice versa.

Personality of Young Adults Changes Toward Maturity

Although a period of 4 years is relatively short when considered from a life-span perspective, substantial mean-level change occurred in most of the personality traits that we studied. With the exception of Extraversion, Sociability, and Agreeableness, which remained stable, change was directed toward maturity (i.e., increased general self-esteem and Conscientiousness, decreased Neuroticism and Shyness). These results largely replicate prior findings on personality change in young adulthood (e.g., Carmichael & McGue, 1994; Haan et al., 1986; Helson & Moane, 1987; Holmlund, 1991; McGue et al., 1993; Roberts & Chapman, 2000; Robins et al., 2001; Stein et al., 1986; Viken et al., 1994; Watson & Walker, 1996) and are also in line with the cross-culturally observed cross-sectional age differences in the Big Five personality traits, as reported by McCrae et al. (1999, 2000).

Personality Maturation in Early Adulthood Is Associated With Forming a Partnership

The evidence of an environmental effect on personality maturation is a new finding in the field. With the exception of change in Agreeableness and Sociability, participants who had moved from single status to being in a partnership increased in self-reported Conscientiousness, Extraversion, and self-esteem, and their Neuroticism and Shyness decreased. These effects were independent of partnership duration and of respondents' sex and age. The beginners became more integrated, adjusted, and healthy in this transition, whereas the single continuers did not change. The moderating role of this developmental transition can be understood in terms of a socializing effect of adult partnerships, leading to a stronger positive emotionality as well as more long-term planning and optimism toward the future. This general development may also favor an increased responsibility and commitment toward the partner, perhaps related to plans to raise children. The constitution of this new relationship may therefore be interpreted as a turning point in individual development, one that directs personality toward the accommodation to new social tasks and obligations. Because longitudinal studies have consistently shown that emotional stability predicts marital stability and satisfaction (e.g., Caughlin et al., 2000; Karney & Bradbury, 1995, 1997; Kelly & Conley, 1987; Kurdek, 1993, 1999), this kind of personality maturation also seems to best serve the adaptive function of strengthening and stabilizing the partner relationship.

It is important to recognize that these relationship effects were unrelated to marital transitions. Therefore, it seems that it is not the institutional transition (i.e., marriage) but rather the relationship transition itself (i.e., beginning a partnership) that promoted the maturation of personality. This conclusion, however, exclusively pertains to a developmental transition in young adults and is therefore not necessarily inconsistent with the established beneficial effects of marriage on well-being and health (e.g., Brown, 2000; Horwitz & White, 1998; Stack & Eshleman, 1998).

The question of whether personality maturation leads to finding a partner or whether finding a partner initiates personality change, however, cannot be answered conclusively by the present study because of its quasi-experimental design. That is, although preselection effects could be ruled out at least for the personality traits that we studied, pair bonds were not "administered" to the beginners, nor were the single continuers prevented from entering a partnership. Instead, the options of staying single or entering a partnership might have been deliberate choices, a result of external factors, or influenced by additional unmeasured or unknown aspects of personality. In other words, it ultimately cannot be decided whether personality change resulted from becoming "nurtured" by a partner or whether engaging in a partnership was what McCrae and Costa (1999) called a "characteristic adaptation" of intrinsic personality change.

Nevertheless, it is an important finding that partnership dissolution was unrelated to personality change. That is, the discontinuers remained fairly stable with regard to the mean levels of their personality traits, which were similar to the profiles of the committed continuers. If both studied transitions are considered in terms of successive developmental stages, starting with being single, then initiating and maintaining a close romantic relationship, and perhaps dissolving the relationship later on, the data suggest that the developmental benefits that one gains from a close relationship seem to be irreversible: Engaging in a serious partnership is a game one can only win. However, this heartwarming finding does not exclude the possibility that partnership dissolutions have short-term effects on personality traits that we did not

study, such as depression (see, e.g., Monroe, Rohde, Seeley, & Lewinsohn, 1999), or long-term effects that are not evident until later in life (see, e.g., Myers & Diener, 1995).

Nonetheless, we believe that our findings have implications for the nature–nurture issue. Although cross-cultural and behavior–genetic research on personality have contributed much empirical evidence favoring the essentialist model of personality growth (e.g., McCrae et al., 1999, 2000; McGue et al., 1993), the present findings speak against a purist, essentialist view and should remind us that personality does not grow in a vacuum but instead within an interpersonal context (Caspi & Roberts, 1999; Haan et al., 1986; Helson & Stewart, 1994). Although we did not find further con-textual effects on personality growth, such as transitions from school or university to professional work or changes to parental status, these and other contextual effects cannot be completely ruled out and need further consideration. Future research should test these possible contextual influences explicitly, one by one, not only in early adulthood but also in other periods of life.

The Plasticity of Personality and Relationship Experiences

Individual differences in personality and various aspects of social relationships were fairly stable over the 4 years, although moderate levels of stability also implicate differential change. The mean rank-order stability of personality traits of about .59 was consistent with the meta-analytic findings of Roberts and DelVec-chio (2000) and therefore supports a "plasticity" rather than a "plaster" model of personality in early adulthood. As we have hypothesized, the mean rank-order stability of the various mea-sures of cross-relationship status (.39) was smaller than that of personality traits (.59) and varied at the level of specific kinds of relationship according to familiarity and the supposed relationship duration. For example, the rank-order stability of contact was higher in relationships with one's family of origin (i.e., parents or siblings; .56) than with friends (.35) or colleagues (.20). Because of their higher stability, personality traits had a better chance of predicting change in relationships than vice versa.

Personality Effects Have Primacy Over Relationship Effects

Indeed, personality effects on relationships were stronger than relationship effects on personality: For seven traits, we found 10 substantial cross-relationship effects and 9 relationship-specific effects. In contrast, for 60 relationship variables, we found only 1 cross-relationship effect and 2 relationship-specific effects on per-sonality. When this is considered in terms of person–environment transactions, it may be concluded that proactive and manipulative person–environment transactions had priority over passive and reactive transactions (Buss, 1987; Caspi, 1998; Caspi & Roberts, 1999). Thus, the young adult personality clearly emerged as active creator of the individual's social environment rather than being a passive victim of external social forces. With the notable exception of effects of relationships with children that we discuss later, our findings replicate the major results of the Berlin Relationship Study by Asendorpf and Wilpers (1998), who concluded that the

personality of young students is already so much crystallized that it is almost immune to influences of social relationships.

More particularly, when the substantial concurrent correlations between personality and relationship status at Time 1 were con-trolled for, personality predicted change in cross-relationship sta-tus with regard to closeness, importance, insecurity, and conflict. For example, Extraversion predicted increases in closeness and importance of relationships, whereas Shyness and Neuroticism predicted an increase in insecurity and a decrease in closeness with relationship partners. Although general self-esteem was expected to be relatively unstable, the observed rank-order stability reached a level comparable to those of the other personality traits, and self-esteem was related to later closeness, importance, insecurity, and conflict. These results indicate that overall interpersonal be-havior is, at least in part, the final result of characteristics within the individual personality that became stabilized over the life course.

At the level of specific kinds of relationship, personality effects were exclusively limited to peer relationships (i.e., with friends and colleagues), whereas other relationships (e.g., with family members) were completely unaffected by personality effects. This does not imply, however, that there were no concurrent correla-tions between personality and qualities of these relationships, but such correlations tell nothing about personality effects on change in relationship qualities. For example, relationships with parents may be well influenced by childhood personality, but over time, when children reach adolescence and early adulthood, these rela-tionships become increasingly stable, so that the general fit be-tween personality and relationship with parents is already achieved, as indicated by concurrent correlations, but without initiating transactions in either direction.

This mechanism, on the other hand, does not apply to peer relationships. Work relationships in particular are newly, albeit not always deliberately, established when young adults enter the oc-cupational world, and people usually spend more time with col-leagues in work or professional training contexts than with the family of origin, perhaps even more than with romantic or marital partners. This relatively new social context gave rise to personality effects, with Extraversion and Agreeableness predicting increases in importance of colleagues. Neuroticism was related to an in-crease in felt insecurity, and high self-esteem predicted a decrease in insecurity and conflict but an increase in importance of col-league relationships. These results are also interesting in the light of recent findings concerning the importance of work experiences for personality development (e.g., Roberts, 1997; Roberts, Helson, & Klohnen, in press) and may imply that the relations between adult personality and work experience partly evolve through social interactions with colleagues.

Adult friendships are types of peer relationships that are delib-erately formed and characterized by relatively high levels of emo-tional closeness. They are sometimes viewed as special attachment relationships (Blieszner & Adams, 1992; Rawlins, 1992). As we found, Extraversion predicted later increases of importance and closeness of friendships, whereas self-esteem predicted a decrease in insecurity. These results again underscore the role of personality dispositions in creating and maintaining adult peer relations and also replicate some of the findings by Asendorpf and Wilpers

(1998), who showed, for example, that Extraversion influenced the number of peer relationships and received support.

As expected, relationship effects on personality were rare. Although the initial positive correlation between overall insecurity in relationships and Neuroticism could be partly attributed to a negative response tendency, it is remarkable that high initial insecurity predicted a significant increase in Neuroticism. At the level of specific relationships, however, effects were exclusively observed for relationships with preschool children (even when the age of children was controlled). Conflict with children at Time 1 was related to an increase in Extraversion at Time 2, whereas experienced insecurity in relationship with children was related to an increase in later Neuroticism. Although the latter finding appears reasonable in light of the demanding challenges of having children who are experienced as difficult, we were puzzled by the effects on Extraversion. However, repeated constructive confrontations with children, which can be considered normal in numerous parent–child relationships, could lead a parent to come out of his or her shell repeatedly and thereby to become more extraverted. Although these issues require closer investigation, especially regarding the dyadic processes between young parents and their preschool children, it is impressive that relationship effects were restricted to those kinds of relationship that were relatively new and surely had changed one's life more dramatically than would most other relationships. Moreover, this result supports the long-standing observation that "socializing" or "nurturing" effects in parent–child relationships are not necessarily unidirectional from parents to children (Bell, 1968).

One characteristic of the study of cross-paths between personality and relationship experiences was that effect sizes were generally not large. Small effect sizes have been shown to be impressive elsewhere (Ahadi & Diener, 1989; Caspi, 2000; McClelland & Judd, 1993; Prentice & Miller, 1992), but Asendorpf (in press) pointed out that effect sizes of personality–relationship transaction are necessarily small, because a dyadic relationship is influenced by two personalities plus the related interaction history. If one assumes that the personalities of most relationship partners are not systematically correlated, as is the case for romantic relationships (e.g., Robins et al., 2000), and that the interaction history is as important for the relationship as is each partner's personality, the concurrent personality–relationship correlations cannot exceed .50, and path coefficients that control for these relations necessarily are even smaller. However, even small effects can be important when they accumulate over time. Personality effects can accumulate over the whole life span, whereas relationships—with the exception of few significant ones that dramatically change one's life—probably have only short-term effects that do not accumulate. Therefore, personality effects have primacy over relationship effects, and effect sizes are small to moderate.

In early adulthood, personality–relationship transactions become increasingly proactive and manipulative, thereby enabling young adults to actively shape the quality and course of social interactions that they deem suitable, although this does not always imply a perfect fit. Increasing personality and environmental stability, genetic factors that maintain stability, and identity consolidation in early adulthood may be mechanisms that stabilize the goodness of fit between personality and social relationships. The psychological processes that promote such proactive personality–

relationship transactions are not yet fully understood. However, as Caspi and Roberts (1999) have recently suggested, such processes may include responding to contingencies, watching oneself, and watching and listening to others, which all imply an active personality that is continuously involved in interactions with various more or less important relationship partners.

Limitations and Future Directions

The present study has several limitations. First, the longitudinal study consisted of only two assessments. This may give rise to the suspicion that the individual trajectories of change are perhaps unreliable and that observations over alternative time periods would have resulted in different findings (Rogosa, 1988). Although these suspicions cannot be completely ruled out, they are counteracted by the fact that we covered a broad age range (from 18 to 30 years) at Time 1 and used a general population sample of young adults who were differently exposed to environmental change.

Second, the study included a relatively large time interval and did not investigate short-term variations in personality and social relationship development. Also, the quasi-experimental nature of the study did not allow for causal inferences; rather, it enabled us to test antecedent predictions of change in personality and relationships. But according to Caspi (2000), prediction and explanation as the two goals of developmental research are not always best served by the same type of study. Although panel studies such as the present one are appropriate to test predictions of large-scale continuity, change, and long-term transactions between personality and environment, it is nevertheless necessary to uncover the underlying social, cognitive, and behavioral processes. To study these processes, one might look at moment-by-moment transactions between two personalities at the dyadic level and design studies that are suitable for this purpose.

Third, our study relies exclusively on self-report data. Personality and social relationships were studied from an individual perspective, although relationships consist of two persons, and recent studies have attempted to consider personality and relationships from a dyadic perspective (e.g., Caspi & Herbener, 1990; Robins et al., 2000). The personality or relationship ratings may therefore be biased by shared method variance. It should be noted, however, that the shared method variance of personality and relationship measures did not account for longitudinal effects, because this variance was statistically controlled for both in the path analyses and in the analyses of correlated change. Beyond that, we still cannot rule out the possibility that ratings provided by relationship partners would have yielded somewhat different results. It is nonetheless well established that self–other agreement correlations regarding the Big Five personality traits are .40 and higher and increase with the degree of acquaintanceship (e.g., John & Robins, 1993; Kenny, 1994; Watson, Hubbard, & Wiese, 2000b). Moreover, it has been shown empirically that dyadic similarity in relationship judgments, for example, across various measures of satisfaction in partnerships, typically ranges from .40 to .80 (e.g., Karney, Bradbury, Fincham, & Sullivan, 1994; Watson et al., 2000a). These findings suggest that personality and relationship experiences reported by single participants include substantial

knowledge on personality and dyadic relationships and that this knowledge is perceived consistently by both relationship partners.

Finally, the quality of various kinds of relationship was assessed using single-item measures. It is the primary concern of the personal network approach to assess a broad range of personal relationships that people experience as important in a positive or negative sense. This network-generating procedure enabled us to strengthen findings through aggregation over all kinds of relationship or over special relationship types. As was shown by Asendorpf and Wilpers (1998), these measures of relationship status seem reliable in terms of high retest stabilities over short time periods.

Stability and change of personality and relationships can be studied from different perspectives, and Caspi and Roberts (1999) recently reminded researchers once more to be explicit about different types of stability, because much confusion over personality stability and change seems due to the imprecise use of these concepts. In our study we looked at mean-level and rank-order stability as two types of stability in young adulthood. Both types imply fundamentally distinct perspectives on personality–relationship transactions, the former dealing with the general trajectory of personality development in interaction with a major life transition, and the latter dealing with the prediction of individual differences in personality and relationship qualities. We hope that future research will build on these issues and create more complex studies on personality–relationship transactions at various stages of the life span.

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