PLACES AND TRACES OF PERSONALITY

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Personality psychology and socioecological research are kindred spirits in their investigation of person-environment transactions at different levels of analysis. In the present article, we provide an overview of empirical findings that substantiate the links between personality variation and (social) environment structures at both macro and individual levels of analysis. In doing so, we are particularly concerned about the role of geographical mobility; thus, we explore the conditions that bring it into effect as a moderator or mediator of person-environment associations. We complement our theoretical considerations with an empirical example from our research project PEDES—Personality Development of Sojourners to show that, indeed, personality traits determine individuals’ proximal social environments through both direct effects and indirect processes of self-selection in geographical mobility experiences. We conclude with reflections on future study objectives that capitalize on the integration of macro-level and individual-level perspectives in person-environment research.

Key words: personality, geographical mobility, social environments, person-environment transactions

How do human beings determine the physical, societal, and interpersonal characteristics of their environments? And how do these in turn retroact on the emotions, cognitions, and actions of groups and individuals? Such questions about the dynamic interdependence of individuals and their environments are at the core of socioecological research (Oishi & Graham, 2010). In principle, the socioecological perspective applies to macro-structures, that is, the physical and social aspects of distal environments (e.g., regional geography or population structure), as well as more intermediate structures in proximal contexts (e.g., housing conditions or social networks). However, in view of the guiding principle of bringing sociology closer to psychology (Oishi, Kesebir, & Snyder, 2009), a great deal of recent socioecological research has focused on the interdependence of societal, regional, or communal phenomena and distal environmental structures. Some examples include studies on the geographical distribution of entrepreneur-prone personality profiles (Obschonka, Schmitt-Rodermund, Silbereisen, Gosling, & Potter, 2013) or the effects of neighborhood residential mobility on civic participation or crime rates (Kang & Kwak, 2003; Sampson, 2012). By contrast, recent personality research in the tradition of the dynamic-transactional paradigm (Magnusson, 1990; Sameroff, 1983) has been much more concerned with associations at the individual level; for example, the dynamic interdependence between individual characteristics and (social) structures of proximal
environments such as individuals’ social relationships (Lehnart, Neyer, & Eccles, 2010; Neyer & Lehnart, 2007; Parker, Lüdtke, Trautwein, & Roberts, 2012; Selphout et al., 2010) or their personal living spaces (Gosling, Craik, Martin, & Pryor, 2005; Gosling, Ko, Mannarelli, & Morris, 2002).

This leads to the conclusion that socioecological psychology and personality psychology are kindred spirits with regard to their overall aspiration to understand how individuals and environments define each other. However, as each discipline developed its own focus of interest, the integration of findings from the two research traditions holds a lot of promise for providing a comprehensive understanding of person-environment interactions at macro and individual levels of analyses. Furthermore, some socioecological phenomena, such as geographical mobility, are observed at the macro level (i.e., residential mobility rates) as well as at the individual level (i.e., individual mobility experiences). Recent studies from various disciplines have made a strong case for the essential implications of geographical mobility for contemporary societies and individual biographies (Oishi & Talhelm, 2012; Viry, 2012). Comprehensive analyses thus call for integrated perspectives that consider both kinds of geographical mobility phenomena and investigate their role in the person-environment interplay.

Against this background, the purpose of the present article is to provide an overview of empirical findings from socioecological and personality research substantiating the links between macro-level geographical personality variation and structures of distal environments, and individual personality characteristics and structures of proximal environments. In doing so, we are especially concerned with the role of geographical mobility in this dynamic interplay. In particular, we explore the conditions that bring geographical mobility into effect as a moderator or mediator of person-environment associations within or between macro levels and individual levels of analysis. As previous research has paid scant attention to concurrent effects of personality traits and residential mobility experiences on proximal environmental characteristics, we complement our theoretical considerations with an empirical example from our own longitudinal research project PEDES—Personality Development of Sojourners (see Zimmermann & Neyer, 2013). With this example, we are able to show that, indeed, personality traits determine individuals’ proximal social environment in terms of social relationship fluctuation and that these personality effects are, in part, due to individuals’ self-selection in international mobility experiences. The implications of these findings, open questions, and more general objectives for future research are discussed.

MACRO-LEVEL PERSPECTIVES ON THE PERSON-ENVIRONMENT INTERPLAY

The Big Five taxonomy—also called the five-factor model—is the most influential conceptual model of personality traits today (Digman, 1990; John, Naumann, & Soto, 2008; McCrae & Costa, 2008). The most common terminology employs the labels Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism/Emotional Stability. Each of the five traits hierarchically subsumes a set of more specific facets. The
Big Five traits have been shown to capture substantial interindividual variation in individual characteristics in many different societies and languages (McCrae & Terracciano, 2005) and to reveal substantial consistency over time and across situations (Lucas & Donnellan, 2011; Specht, Egloff, & Schmukle, 2011; Terracciano, Costa, & McCrae, 2006). Hence, variations in the Big Five traits are considered to provide a parsimonious but meaningful framework for the description of individual differences in people’s patterns of thoughts, emotions, and behavior.

Although the Big Five traits were originally conceptualized to reflect differences between individuals, several recent studies that have investigated aggregated data on personality patterns at national or regional levels have provided evidence for characteristic geographic variation in the Big Five traits (e.g., Allik & McCrae, 2004; McCrae & Terracciano, 2005; Rentfrow, 2010; Rentfrow, Gosling, & Potter, 2008; Schmitt, Allik, McCrae, & Benet-Martínez, 2007). For example, a study by Schmitt and colleagues (2007) reported small to moderate Big Five differences in ratings of the Big Five Inventory in 56 nations around the world. Similar results were reported by Allik and McCrae (2004) and McCrae and Terracciano (2005), who investigated personality profiles in large samples of cultures using the Neo-PI-R scales. For example, these studies showed that Europeans and Americans obtained higher Extraversion scores than people from Asian and African countries. African nations scored particularly high on Agreeableness and Conscientiousness, whereas South American countries were characterized by high levels of Openness. Other studies have substantiated personality variation between different regions within a country (e.g., differences among the US states; Rentfrow, 2014; Rentfrow et al., 2008). For example, levels of Openness were shown to be highest in Northeast and West Coast states, whereas Extraversion tended to be highest in central states. The pattern for Neuroticism revealed a “stress belt” (Rentfrow et al., 2008, p. 360) that divided eastern from western states with the states ranging from Maine to Louisiana showing the highest levels of Neuroticism, states to the immediate Northwest and Southeast showing lower levels, and states in the West, the lowest scores.

An accumulating number of studies went beyond the mere description of geographical personality patterns and profiles and provided evidence for associations between geographical trait scores and distal environment characteristics. Examples of investigated environmental characteristics include environmental engagement (Milfont & Sibley, 2012), state political orientations (McCann, 2014; Rentfrow, Jost, Gosling, & Potter, 2009), economic indicators (McCrae, 2001; McCrae & Terracciano, 2005; Obschonka et al., 2013), and population characteristics such as the concentration of foreign-born residents, indicators of social involvement, religiosity, crime rates, and life expectancy (Florida, 2008; Rentfrow et al., 2008). Rentfrow (2014) added to these results by showing that trait facets are also meaningfully related to social indicators in the US states. For example, higher levels of both Aesthetics (O) and Ideas (O) were positively related to social tolerance and innovation but negatively correlated with political conservatism. By contrast, only Assertiveness (E) but not Activity (E) was negatively correlated with innovation. Activity (E) was positively related to general health indicators, whereas the associations of these indicators with Assertiveness (E) were negative. Furthermore, Rentfrow and colleagues
(2013) identified three prototypical patterns of trait configurations within the US that clustered geographically and displayed unique patterns of associations with distal environment characteristics, such as demographic, political, economic, and sociological indicators.

In sum, all of these studies corroborate the meaningfulness of aggregate-level personality differences. Geographical variance in all of the Big Five traits has been linked to relevant indicators of distal environment characteristics. Moreover, patterns of associations are frequently in line with contingencies found at the individual level (Rentfrow et al. 2008; Talhelm & Oishi, 2014).

**Explanations for Geographical Personality Variation**

Theoretical approaches to geographical personality variation suggest that the linked processes of selective migration, social influences, and geographical influences account for the emergence and persistence of these patterns, providing explanations for the links between geographical personality variation and characteristics of the distal environment (Rentfrow, 2014; Rentfrow et al., 2008). For example, if a region is characterized by high aggregate levels of Openness to Experience, the accumulated behavioral tendencies associated with Openness (e.g., participation in cultural activities and formal education, interest in other cultures) will be reflected by social indicators (e.g., frequency of cultural events, educational attainment rates, climate of social tolerance) and promote the establishment of respective institutions (e.g., theaters, universities, international restaurants). These associations describe the pattern of bottom-up processes by which personality traits become geographically represented in distal environment characteristics. Likewise, top-down paths might also be viable as social structures and institutions can be expected to feed back to the prevalence of trait-associated behaviors by several means. First, self-selection effects in terms of selective inward and outward mobility are assumed to determine geographical personality variation as the prevalence of (institutionalized) behavioral tendencies might selectively attract mobile individuals with different personality constellations (Hofstede, 2001; Hofstede & McCrae, 2004). Second, similar to the argumentation presented in models on individual trait development (e.g., the sociogenomic model of personality; Roberts & Jackson, 2008), repeated engagement in trait-relevant behaviors might, in the longer run, stabilize and result in trait changes. Hence, social structures and geographical conditions might promote particular behaviors that facilitate respective patterns of trait development. Such socialization processes are also presumed to contribute to the establishment, persistence, and accentuation of geographical personality variation (Rentfrow, 2014; Rentfrow et al., 2008).

However, in light of theories on individual-level personality development, we contend that the described patterns of self-selection and socialization processes might not operate independently but may rather interact. This mechanism is captured by the corresponsive principle, which states that “the most likely effect of life experience on personality development is to deepen the characteristics that lead people to those experiences” (Roberts, Caspi, & Moffitt, 2003, p. 583). It thus seems plausible that distal environments will affect and enforce the particular trait constellations that account for selective inward and outward
mobility patterns. As a consequence, geographical personality variation might stabilize over time, a phenomenon that is referred to as *cumulative continuity* at the individual level (Roberts & Caspi, 2003; Roberts & Wood, 2006). Unfortunately, to the best of our knowledge, there is no research on the long-term development of geographical personality variation or the dynamic interplay of processes that determine personality stability and change at aggregate levels. Hence, the transfer of individual-level theories on personality development and the empirical investigation of their validity at macro levels are promising endeavors for future research.

As most of the present evidence is correlational, we also cannot draw conclusions about the relative impact of bottom-up processes (i.e., effects of geographical personality variation on distal environment characteristics) as compared with top-down processes (i.e., effects of distal environment characteristic on geographical personality variation). Some studies that used aggregate data on personality characteristics beyond the Big Five illustrated that, indeed, earlier geographical personality variation predicted later distal environment characteristics. For example, general trust determined subsequent economic growth and the course of democratization (Inglehart & Welzel, 2005; Zak & Knack, 2001). However, the dynamic interplay of time-lagged effects that explain the emergence, persistence, and change of associations between geographical personality variation and distal environment structures still requires further consideration. Hence, linked to our previous call for longitudinal investigations of stability and change in geographical personality variation, we contend that research designs (such as cross-lagged panel designs) that consider the mutual influence of personality and environmental characteristics over time are essential for understanding the specific processes of dynamic person-environment interactions at macro levels.

*The Interplay of Personality, Environments, and Mobility at the Macro Level*

There is accumulating evidence for substantial effects of national and regional mobility rates on distal environment structures. For example, residential mobility rates have been shown to be related to levels of civic engagement and crime rates (Kang & Kwak, 2003; Sampson, 2012). Other research has shown associations with economic factors, such as the prevalence of national chain stores (Oishi, Miao, Koo, Kisling, & Ratliff, 2012) or local wages and economic vitality (Ottaviano & Peri, 2006; Vey & Forman, 2002). Moreover, higher immigration rates seem to promote further population mobility in terms of self-reinforcing processes (Crowder, Hall, & Tolnay, 2011; Pendakur & Young, 2013). With respect to social structures, residential mobility rates have been related to patterns of independent versus interdependent self-construal (Cousins, 1989; Kashima et al., 2004; Markus & Kitayama, 1991) as well as to relational mobility (i.e., the degree to which a social context provides individuals with options for social relationship formation; Yuki, Sato, Takemura, & Oishi, 2013).

Thus, previous research has provided solid (empirical) arguments that geographical personality variations as well as residential mobility rates are linked to diverse distal environment characteristics. However, few studies have examined the interdependence between the two kinds of predictors and accounted for the dynamic interplay between
geographical personality variation and residential mobility rates in determining distal environment characteristics. We submit that geographical mobility patterns can interfere with the personality-environment link in terms of both \textit{moderation} and \textit{mediation} effects. Which statistical model is best suited to investigate the interplay depends first and foremost on researchers’ assumptions about the link between geographical personality variation and residential mobility rates; that is, the conceptualization of residential mobility as a consequence of geographical personality variation (i.e., mediation) or a random phenomenon that is unrelated to these predictor variables (i.e., moderation). In the case of mediation analyses, residential mobility rates are presumed to provide an explanation for observed person-environment contingencies at macro levels. By contrast, moderation analyses serve to investigate whether residential mobility rates affect associations between geographical personality variation and distal environment characteristics in terms of independent context effects. Previous research has provided several arguments for both perspectives.

On the one hand, current approaches to the emergence and persistence of geographical personality variation emphasize the relevance of selective migration, that is, geographical differences in the attraction (and expulsion) of migrants determined by geographical personality variation and its manifestation in social indicators and institutions (Rentfrow, 2014; Rentfrow et al., 2008). This assumption implies that aggregate-level traits have an effect on the pattern and prevalence of residential mobility in the respective geographical entity. In other words, these approaches hypothesize a causal relation between the predictor (i.e., aggregate-level personality trait) and the intervening variable (i.e., residential mobility rates), thus calling for empirical examinations by \textit{mediation} models to determine whether residential mobility rates account for the observed association between geographical personality variation and distal environment characteristics. Recent research on the ideological migration hypothesis supported these assumptions. Several studies showed that people selectively migrate away from communities that do not fit their ideological worldviews but choose destinations that provide a better fit (Motyl, Iyer, Oishi, Trawalter, & Nosek, 2014). However, we are not aware of any studies that investigated selective migration by Big Five traits constellations, suggesting interesting objectives for future research.

On the other hand, the establishment of a causal relation between predictor and intervening variable might also vary with the specific mobility phenomenon under study. For example, self-selection effects that are determined by geographical personality variation might be more likely to occur in the context of voluntary geographical mobility, such as international students or expatriate mobility (Berry, 2006; Bochner, 2006; King & Ruiz-Gelices, 2003). However, there are also many geographical mobility phenomena that do not emerge from individuals’ voluntary decisions but rather reflect \textit{forced choices} as a consequence of external circumstances, such as housing shortages, unemployment, or the geographical dispersion of relevant social networks (Ager, 1999; Allen, Vaage, & Hauff, 2006). Such mobility phenomena might happen to communities regardless (or at least relatively independent) of their geographical personality profile. This argument is corroborated by individual-level research claiming that personality-determined self-
selection effects are less likely to be observed in the context of normative life experiences that leave few options for individual choices and influence (e.g., school entry or participation in compulsory social services; Neyer, Mund, Zimmermann, & Wrzus, in press).

Nevertheless, even if residential mobility rates are not determined by patterns of geographical personality variation, they might still constitute important socioecological conditions that affect the association between geographical personality variation and other distal environmental characteristics. In these premises, the implementation of moderation analyses provides an adequate tool for investigating how residential mobility rates affect person-environment interactions in terms of context effects.

Unfortunately, empirical studies on the interplay between geographical personality variation and macro-level mobility phenomena are sparse. To the best of our knowledge, the only study that jointly considered state-level personality characteristics and residential mobility rates was carried out by Talhelm and Oishi (2014). The authors investigated an unspecified form of geographical mobility, as this measure reflected the percentage of all residents who had changed residences within the last 5 years, ranging from moves within the same city to cross-country moves. In this case, a moderation model was implemented to predict state levels of life satisfaction from state-level personality traits, mobility rates, and the product term (interaction effect) of both variables. Although life-satisfaction is considered to be a characteristic of the person rather than the environment at the individual level (Kandler, Zimmermann, & McAdams, in press), aggregate measures at higher levels of analyses are considered to reflect characteristics of the distal environment in which individuals are embedded (Diener, Lucas, Schimmack, & Helliwell, 2009; Diener & Seligman, 2004). Against this background, we attempt to interpret the significant interaction effect of state-level Extraversion and residential mobility rates as tentative evidence that residential mobility can moderate the associations between geographical personality variation and characteristics of the distal environment. However, future research is needed to investigate whether the observed moderation pattern can be generalized to other samples and geographical mobility phenomena. To this end, studies comparing the effects of different mobility phenomena that reflect the continuum from voluntary to forced relocation are essential for testing our assumptions about the potential of moderation versus mediation analyses in different mobility contexts. In the following sections, we will turn to the investigation of personality-environment associations at the individual level and consider the implications of geographical mobility in terms of individual mobility experiences.

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1 The authors provided another interpretation as they stated that mobile states are happier unless they are introverted (i.e., the authors conceptualized mobility rates as constituting the predictor and Extraversion the moderator variable). However, as interaction effects are product terms, the two interpretation perspectives are equally plausible.
INDIVIDUAL-LEVEL PERSPECTIVES ON THE PERSON-ENVIRONMENT INTERPLAY

The dynamic-transactional paradigm (Magnusson, 1990; Sameroff, 1983) suggests continuous and reciprocal influences between individual personality characteristics and proximal environments. However, for reasons of parsimony, the present review is focused on personality effects on proximal environments rather than vice versa. Such effects can be understood as expressions of individuals’ active efforts to construct their (social) environment in accordance with their personalities (Caspì & Roberts, 2001). Several studies have provided evidence of personality traces in physical structures of personal living spaces, such as offices or bedrooms that were shown to provide valuable cues for self-rated as well as observer-rated personality (Gosling et al., 2005; Gosling et al., 2002). Quite recently, some studies have transferred these findings to the online world by substantiating the manifestation of personality traits on personal websites and online social network profiles (Back, et al. 2010; Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011; Stopfer, Egloff, Nestler, & Back, in press; Vazire & Gosling, 2004).

Another stream of research has addressed the impact of personality traits on social structures of proximal environments (i.e., individuals’ social relationships). Social relationships are relatively stable patterns of interactions between two individuals that include a mental representation of the dyad by both interacting partners. Social relationships can be distinguished from single interactions and zero-acquaintances by consisting of repeated interactions over time that emphasize their long-term orientation (Asendorpf & Banse, 2000; Hinde, 1979). Several studies have provided evidence for the sustainable impact of personality traits on social relationship qualities, including relationship closeness, conflict, and insecurity (Asendorpf & Wilpers, 1998; Neyer & Asendorpf, 2001; Neyer & Lehnart, 2007; Robins, Caspi, & Moffitt, 2002). Further research has revealed effects of personality traits on structural features of proximal social environments, such as preferred interaction partners, the nature of the interaction, network closure, and the international heterogeneity of a social network (de Miguel Luken & Tranmer, 2010; Kalish & Robins, 2006; Nezlek, Schütz, Schröder-Abé, & Smith, 2011). By contrast, very few studies have investigated the role of individual traits with respect to the persistence and initiation (i.e., fluctuation) of social ties. To the best of our knowledge, a single piece of evidence for the effects of personality traits on social relationship creation was provided by Selfhout and colleagues (2010), who assessed the impact of the Big Five personality traits on late adolescents’ friendship formation. Their research yielded a substantial association between Extraversion and relationship formation, as more extraverted individuals tended to select more friends than their fellow students who scored low on this trait. This finding points to the relevance of Extraversion with respect to individuals’ active efforts in relationship formation. Additionally, their analyses revealed that individuals high on Agreeableness tended to be selected more often as friends, which emphasizes the importance of Agreeableness with respect to passive involvement in new social encounters. However, not only personality characteristics but also life experiences were found to affect social relationship changes (Lang, Reschke, & Neyer, 2006; Wrzus, Hänel, Wagner, & Neyer, 2013).
The Interplay of Personality, Environments, and Mobility at the Individual Level

At the individual level, geographical mobility is conceived as an individual life experience that is particularly characterized by the (social) changes and challenges that relocation brings about (Bochner, McLeod, & Lin, 1977; Viry, 2012). Accordingly, several studies have provided evidence for mobility effects on individuals’ proximal social environments. More specifically, relationship qualities as well as relationship fluctuation are affected by geographical mobility at the intra- and international level. Furthermore, both the geographical distance of the move and whether the destination was located within or outside of national borders were found to moderate the impact of individual mobility experiences on social relationship fluctuation (Degenne & Lebeaux, 2005; Larner, 1990; Lubbers et al., 2010; Magdol, 2000; Terhell, van Groenou, & van Tilburg, 2007). However, although this accumulating research provides tentative indications of the concurrent effects of personality traits and geographical mobility experiences on proximal environments, none of these studies actually considered an empirical connection among all three items in the interplay. In order to bridge this gap, we used data from our longitudinal research project PEDES—Personality Development of Sojourners to investigate the dynamics of personality characteristics, international mobility experiences, and social relationship fluctuation in a large sample of young adults (Zimmermann, 2012).

AN EMPIRICAL EXAMPLE: PEDES—PERSONALITY DEVELOPMENT OF SOJOURNERS

Surprisingly, although the tremendous increase in international academic assignments in recent decades has made international student mobility one of Europe’s most important geographical movements (King & Ruiz-Gelices, 2003), recent research has shown extensive disregard for this particular mobility phenomenon. Several studies on how sojourners adapt to their new environments have emphasized the prevalence of social challenges in international student mobility (Bochner et al., 1977; Ward & Kennedy, 1999). However, little is known about the concrete patterns of social relationship change that such international mobility experiences bring about. With the present research, we aimed to investigate the interplay of personality traits and geographical mobility experiences in determining social structures of the proximal environment. As recent research has revealed impressive evidence for personality-determined self-selection effects for different kinds of geographical mobility phenomena, such as international migration (Silventoinen et al., 2008), within- and between-state relocation (Jokela, 2009), and international mobility experiences (Lüdtke, Roberts, Trautwein, & Nagy, 2011; Zimmermann & Neyer, 2013), we believe it is worthwhile to implement a mediation model to unravel whether personality effects on social relationships are explained (at least in part) by self-selection in international mobility experiences. We tested two different multivariate multilevel mediation models that both analyzed direct and indirect personality effects on the persistence of established social relationships (Model 1) and the formation of new social ties (Model 2).
Participants and Procedure

The prospective control group design included data from 275 long-term sojourners (i.e., university students who engaged in international mobility experiences for the length of approximately an academic year) and 569 control students (i.e., university students who continued their studies in Germany during the study period) who were surveyed three times over the course of an academic year through online questionnaires. For sojourners, the first measurement took place 2 weeks before their individual date of departure (T1). The subsequent measurement occasions were timed 20 weeks (T2) and 32 weeks (T3) after their transition abroad. Comparable measurement intervals of about 20 weeks (T1 to T2) and 32 weeks (T1 to T3) were established for participants in the control group who received their questionnaires on predefined calendar dates at the beginning, middle, and end of the academic year (for more details on the PEDES design and procedure, see Zimmermann & Neyer, 2013). For the present investigation, we used data from the first (T1) and the final (T3) measurement occasion to investigate social changes in the proximal environment over the course of a full academic year. Importantly, all sojourners were still living abroad when the final measurement (T3) took place.

As an important feature of the research design, information on students’ social relationships was gathered using a personal network approach premised on a recognition design (Milardo, 1992; Neyer, 1997) that allowed us to track the persistence and formation of young adults’ concrete relationships over the course of the study period. More precisely, different name-eliciting questions referred to in the literature as name generators (Burt, 1984; Campbell & Lee, 1991) were used to direct the naming of participants’ supportive social relationships (van der Poel, 1993). Participants were required to identify their support relationships with full first names, surname initials, age, sex, and role of the relationship to guarantee the unambiguous recognition of the relationship partner at the next occasion of data collection. Once participants had worked through all name-generating questions, they were presented with the full list of their support relationships along with the request that they check for possible unintentional repetitions, missing information, or misspellings and edit their entries if necessary. Once the lists were verified as unambiguous and valid, they were stored online and saved as recognition stimuli for the next wave of data collection when participants were asked to indicate whether each and every specific social relationship partner was still relevant. Hence, this design feature made it possible to keep track of each and every formerly-named relationship and to draw a conclusion about its persistence. At the same time, participants still had the opportunity to add any new contacts to the established relationship list, as this allowed us to keep track of their social relationship formation. Based on these data we investigated how personality characteristics predict the probability of social relationships’ persistence (Model 1) and new relationship formation (Model 2).

In order to rule out interfering effects of other qualities of the social relationships on indicators of social relationship fluctuation, we not only considered effects of the Big Five traits and international mobility experiences but controlled for levels of relationship closeness, conflict, experienced insecurity, and the social relationships’ multiplexity (i.e., the number of different support functions social relationship partners fulfilled). Likewise,
participants’ age and gender as well as the overall network size at the first measurement occasion were controlled for. The final conceptual model is shown in Fig. 1.

Results

As can be inferred from Fig. 2, the analyses revealed an average size of $M = 11.14$ ($SD = 5.59$) social relationship partners in young adults’ support networks at the onset of the study. The vast majority (about 75%) of participants’ overall support relationships were nonfamily relationships, including relationship categories such as “friend,” “partner,” “acquaintance,” “fellow student,” and “colleague.” On average, $M = 6.40$ ($SD = 3.67$) social relationships persisted from T1 to T3. This covers a proportion of 58% of the initial network. In contrast, new relationship partners ($M = 3.41$, $SD = 3.40$) comprised 35% of the social partners nominated at T3\(^2\). Taken together, these results show that individuals’ proximal social context is characterized by both stability and change.

In the next step, we analyzed how personality traits and geographical mobility experiences determine relationship persistence and formation above and beyond the impact of relationship qualities and demographic variables. We used two analogous multivariate multilevel mediation models with Bayesian estimators, the personality factors were modeled as latent constructs. With Model 1 we analyzed how personality characteristics

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\(^2\) The percentages do not add up to 100% as they refer to different overall networks. Whereas the proportion of persistent social relationships was calculated with reference to the overall network size at T1, the proportion of new relationships refers to the overall network size at T3.
predict the probability of social relationships’ persistence. Hence, we included dummy-coded outcome variables that reflected social relationship persistence (relationship ended = 0, relationship persisted = 1). With Model 2 we analyzed how personality characteristics predict the probability of new relationship formation. Hence, outcomes were dummy-coded indicators of social relationship formation (persistent relationship = 0, new relationship = 1). The analyses revealed that trait levels of Openness, Extraversion, Agreeableness, and Neuroticism directly affected the fluctuation of supportive ties above and beyond the impact of all other predictors. In particular, Model 1 revealed that higher levels of Openness decreased social relationships’ persistence ($b = –.11, p = .008$). In addition, Model 2 yielded that higher levels of Extraversion ($b = .11, p = .011$), Agreeableness ($b = .10, p = .040$), and Neuroticism ($b = .12, p = .006$) each increased social relationship formation. This means that, irrespective of individuals’ geographical mobility experiences, Openness, Extraversion, Agreeableness, and Neuroticism all provide incremental predictive value of the characteristics of individuals’ proximal social environment. Beyond that, the inspection of indirect effects in both models revealed that higher levels of Openness (Model 1: $b = .15, p = .002$; Model 2: $b = .15, p = .001$) and Extraversion (Model 1: $b = .12, p = .011$; Model 2: $b = .12, p = .010$) determined engaging in international mobility experiences by self-selection effects. In turn, choosing international mobility experiences had negative effects on social relationship persistence ($b = –.55, p < .001$) but positive effects on new relationship formation ($b = .77, p < .001$). All of the indirect effects were significant. In sum, these findings illustrate that individuals influence their proximal social environments in accordance with their individual personality characteristics (Caspi, 1998; Fraley & Roberts, 2005), through both direct effects and indirect processes, such as self-selection in international mobility experiences.

Conclusions and Future Directions

To the best of our knowledge, PEDES is the first study to conjointly consider effects of personality traits and geographical mobility experiences on proximal environment characteristics. The presented findings corroborate our assumptions that geographical mobility experiences constitute life experiences that individuals select themselves in by the virtue of their personalities. As a consequence, international mobility experiences provide an indirect pathway through which personality traits (Openness, Extraversion) influence
social relationship fluctuation. Of note, not all personality effects were explained by geographical mobility experiences, thus giving rise to speculations about other mechanisms that may facilitate these effects. As the presented analyses were restricted to a certain age group and a rather voluntary form of geographical mobility experience, further studies are needed to assess the generalizability of the current findings to other life phases and mobility phenomena. Furthermore, it would be fruitful to investigate the dynamic interplay of personality traits and geographical mobility experiences with respect to their influence on other social and physical characteristics of proximal environments. Although the current study adds to the accumulating evidence on personality-determined self-selection in geographical mobility experiences, it is still possible that particular (less voluntary) mobility phenomena (e.g., flight or asylum seeking) might occur independent of individual personality constellations and are thus not adequately reflected in mediation designs. Furthermore, there might also be research questions that provide good reasons for conceptualizing individual mobility experiences as a context in which certain forms of personality-environment transactions take place.

**OVERALL CONCLUSIONS**

In the previous sections, we delineated how geographical personality variation and individual personality traits are related to distal and proximal environment structures. Furthermore, we considered different possibilities for how geographical mobility phenomena at the macro and individual level might interfere with these associations as moderation and mediation effects. For reasons of parsimony, we focused on personality effects on environments rather than vice versa. However, it should be noted that there is also accumulating evidence that environments feed back into individuals and play a central role in shaping core aspects of the self (Oishi, Ishii, & Lun, 2009; Oishi, Lun, & Sherman, 2007). These processes, of course, are likewise subjected to geographical mobility effects (Goodwin, Polek, & Bardi, 2012). Similarly, the representation of distal environment structures in geographic personality variation by top-down processes might be moderated by residential fluctuation patterns. However, these patterns of causation still require further empirical clarification (e.g., in terms of longitudinal cross-lagged panel design studies that cover extended periods of time).

Overall, the previous review discussed some inspirational research perspectives that promote the theoretical and methodological integration of personality psychology and socioecological research. In particular, whereas previous personality research has frequently neglected the effects of macro-level structures, socioecological investigations have tended to pay scant attention to the role of individual differences. However, based on the personality literature and the presented findings from our own research illustrating substantial personality effects on proximal (social) environment structures, we submit that an individual difference perspective is mandatory for the comprehensive understanding of psychological processes and individual behaviors in proximal social contexts. For example, previous research suggested a link between residential mobility rates and relational mobility
(Yuki et al., 2013). However, macro structures that provide high relational mobility might differently affect the social relationship constellations of individuals who are characterized by high levels of Extraversion as compared with others who score low on this trait. Whereas extraverted individuals might take the chance to make as much as possible of their social opportunities and initiate many new relationships, introverts might rather refrain from such behaviors by virtue of their personality. The paradoxical theory of personality coherence (Caspi & Moffitt, 1993) states that such personality effects are promoted by new and ambiguous contexts that open a broad scope of action to individual preferences. As geographical mobility experiences can be presumed to literally move people into such open situations, the consideration of personality differences seems all the more relevant for analyzing the complex dynamics that embed person-environment transactions in socioecological contexts of mobile communities.

To conclude, we contend that promoting the integration of personality psychology and socioecological research will provide valuable perspectives by which to understand the dynamic interdependence of individuals and their environments in the contexts of globalized societies in the 21st century.

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