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Residential Mobility, Well-Being, and Mortality

Shigehiro Oishi
University of Virginia

Ulrich Schimmack
University of Toronto Mississauga

We tested the relation between residential mobility and well-being in a sample of 7,108 American adults who were followed for 10 years. The more residential moves participants had experienced as children, the lower the levels of well-being as adults. As predicted, however, the negative association between the number of residential moves and well-being was observed among introverts but not among extraverts. We further demonstrated that the negative association between residential mobility and well-being among introverts was explained by the relative lack of close social relationships. Finally, we found that introverts who had moved frequently as children were more likely to have died during the 10-year follow-up. Among extraverts, childhood residential mobility was unrelated to their mortality risk as adults. These findings indicate that residential moves can be a risk factor for introverts and that extraversion can be an interpersonal resource for social relationships and well-being in mobile societies.

Keywords: residential mobility, well-being, mortality, personality, social relationships

When Alexis de Tocqueville visited the U.S.A. in 1831, he was amazed by the ease with which Americans changed their residence and stated the following:

> In the United States, a man will carefully construct a home in which to spend his old age and sell it before the roof is on. . . . He will settle in one place only to go off elsewhere shortly afterwards with a new set of desires. (de Tocqueville, 1835/2003, p. 623)

Indeed, residential mobility has been one of the defining characteristics of the American ethos since its inception (Van Minnen & Hilton, 2002). Many Americans move to another city in search of a better education, job, lifestyle, and their inalienable right, happiness (Sell & DeJong, 1983). In the present research, we examined the relation between childhood residential mobility and subjective judgments of well-being in adulthood (e.g., life satisfaction, positive affect) as well as mortality. We asked two questions: (a) What are the psychological correlates of frequent residential moves, and (b) are frequent moves more negatively associated with the well-being of some individuals than that of others?

Previous research has shown that children who move frequently tend to do poorly in school and report more behavioral problems (Adam, 2004; Jelleyman & Spencer, 2008). Adolescents who moved frequently as children are more likely to smoke, consume alcohol, and attempt suicide (Dong et al., 2005). These associations were observed even when other demographic variables such as parental education and race were statistically controlled. However, the long-term effects of childhood residential mobility on well-being in adulthood have rarely been examined (see Bures, 2003; Juon, Ensminger, & Feehan, 2003, for exceptions).

Bures (2003) found that early residential mobility was negatively associated with self-rated global health and mental health. Namely, individuals who moved more frequently as children reported poorer physical and mental health. Both global health and mental health were assessed with a single item. Among middle-aged adults, the number of lifetime moves was also negatively associated with life satisfaction (Stokols, Shumaker, & Martinez, 1983). The only study that investigated the relationship between childhood mobility and mortality during adulthood did so when participants were still 32 to 34 years old (Juon et al., 2003). In this study, participants who had moved more than three times before Time 1 (when they were 6 to 9 years old) had a high probability of death by Time 2 (25–26 years' follow-up), or the odds ratio of 1.62. Although the effect size indicated by the odds ratio is impressive, it did not reach statistical significance. This is in part because only 44 (or 3.5%) of 1, 243 original participants had died before Time 2.

In summary, the relation between childhood residential mobility and later well-being has not been well established. It is virtually unknown whether early childhood residential moves are associated with higher levels of mortality risks later in adulthood among the general population of Americans. Most central to our research, furthermore, none of the previous studies examined whether some personality traits would buffer or magnify the negative association between residential mobility during childhood and well-being during adulthood. The main goals of this investigation were to test (a) the link between childhood residential mobility and well-being during adulthood and (b) whether this link is moderated by personality.

Personality and Well-Being

The current research builds on the rich research tradition in personality and well-being (see Diener, Oishi, & Lucas, 2003; Lucas, 2007b, for reviews). Personality is one of the most consis-

Shigehiro Oishi, Department of Psychology, University of Virginia; Ulrich Schimmack, Department of Psychology, University of Toronto Mississauga, Mississauga, Ontario, Canada.

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Correspondence concerning this article should be addressed to Shigehiro Oishi, Department of Psychology, University of Virginia, P.O. Box 400400, Charlottesville, VA 22904-4400. E-mail: soishi@virginia.edu

tent predictors of well-being. A recent meta-analysis (Steele, Schmidt, & Shultz, 2008) showed, for instance, that neuroticism and extraversion are strongly associated with most components of well-being (happiness, life satisfaction, positive affect, quality of life; ρs range from −.35 to −.72 for neuroticism; ρs range from .35 to .57 for extraversion). Agreeableness and conscientiousness are moderately associated with various aspects of well-being (ρs range from .15 to .36 for agreeableness; ρs range from .27 to .51 for conscientiousness). Openness to experience is not strongly associated with well-being (ρs range from .04 to .26). Most behavioral genetic studies on well-being found the heritability of well-being to be somewhere between .30 to .50 (see Lucas, 2007b, for a review; Lykken & Tellegen, 1996, found the heritability up to .80 with the correction of measurement error). Combined with the findings from behavioral genetic studies of personality traits (e.g., Jang, McCrae, Angleitner, Riemann, & Livesley, 1998; Tellegen, Lykken, Bouchard, Wilconx, & Rich, 1988), it is likely that the direct association between personality traits and well-being is accounted for in part by genes.

Although personality and well-being are both in part affected by genes, various life events have also been shown to affect personality and well-being. For instance, an increase in work and marital satisfaction was associated with an increase in extraversion and a decrease in neuroticism over time (Scollon & Diener, 2006; see also Roberts & Chapman, 2000, for a similar finding). Occupational achievement (landing a high-status job) was also associated with an increase in positive emotionality and a decrease in negative emotionality (Roberts, Caspi, & Moffitt, 2003). Recent large-scale longitudinal studies revealed that most individuals' well-being decreases after divorce, widowhood, and unemployment and that recovery from these major life events is often incomplete even several years after the incident (Lucas, 2005, 2007a; Lucas, Clark, Georgellis, & Diener, 2003, 2004).

In addition to the main effect of personality and life events on well-being, various moderating effects of personality have been shown in well-being research. For instance, the degree to which physical pleasure was associated with life satisfaction was moderated by levels of sensation seeking (Oishi, Schimmack, & Colcombe, 2003; Oishi, Schimmack, & Diener, 2001). Sensation seekers felt happier on days they experienced lots of physical pleasures than on days they did not. In contrast, non–sensation seekers' daily well-being was not as strongly associated with the experience of physical pleasure.

Similarly, the moderating role of extraversion and neuroticism has been demonstrated in emotional reactivity. For example, neurotic individuals felt more negative moods when they encountered a negative event than did nonneurotic individuals who encountered the same negative event (Bolger & Zuckerman, 1995; Suls, Green, & Hillis, 1998). Extraverts tend to react more positively to the same positive mood induction than introverts, whereas neurotics tend to react more negatively to the same negative mood induction than nonneurotics (Gross, Sutton, & Ketelaar, 1998; Larsen & Ketelaar, 1991; see, however, Lucas & Baird, 2004, for the lack of evidence for the moderating effect of extraversion). These findings on the moderating role of personality illustrate that life events affect individuals' well-being differently across individuals, depending on their personality (see Brunstein, Schultheiss, & Grässman, 1998; Cantor, Norem, Langston, Zirkel, Fleeson, & Cook-Flannagan, 1991; Diener & Fujita, 1995; Emmons, 1991; Oishi, Diener, Suh, & Lucas, 1999, for the moderating role of goals and values).

To our knowledge, the present study is one of the first to investigate the direct link between childhood residential mobility and well-being and the moderating role of personality in the link between childhood residential mobility and well-being. More generally, this type of research should contribute to the understanding of how life experiences are related to one's well-being and how personality traits might moderate the relation between life experiences and well-being. Allport (1937) defined personality as "the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment" (p. 48). Explaining what he meant by *determine,* Allport famously stated that "personality *is* something and *does* something" (Allport, 1937, p. 48). We believe that the identification of the moderating role of personality in the relationship between life events and well-being illuminates individuals' adjustments to their environments, or what personality does (Allport, 1937; Cantor, 1990).

Residential Moves and Well-Being

Before presenting specific hypotheses regarding moderators, however, it is instructive to first consider the main association between residential moves and lower levels of well-being. To begin with, why should childhood residential moves be negatively associated with well-being? The negative association between residential moves and well-being could be driven by the quality of social relationships. Hartup and Stevens's (1997) comprehensive review of friendship showed that the establishment of friendships in childhood gives rise to a sense of social competence and provides a solid foundation for the formation and maintenance of social relationships in adolescence and adulthood. When individuals move to a completely new neighborhood or town from a place they have lived for an extended period of time, they are forced to uproot many of their long-term social relationships and asked to re-create social networks. This is not an easy task. In a famous monograph, *The Organization Man,* William Whyte (1956) described the tough requirement of organization men and their families as "an ability to leave one set of friends and circumstances and affiliate with another, and to repeat this whenever necessary, and repeat it again" (p. 307).

In the chapter entitled "The Outgoing Life," Whyte (1956) also observed that the transient's defense against rootlessness is outgoingness and that to survive a transient lifestyle, one must possess or develop highly sophisticated social skills. Even if a person moves often, if the person is outgoing and has social skills to build new relationships in a new location, he or she can build a social support system quickly. Thus, if a person is extraverted, then a residential move is likely to have little debilitating effect. In contrast, if a person is introverted and has difficulty creating new social networks in a new location, then a residential move is probably more difficult. In other words, because introverts typically have more difficulty making new friends in a new place than do extraverts (Asendorpf, 1998), we predicted that residential moves would be more negatively associated with well-being for introverts than for extraverts.

In addition to extraversion, there are other potential moderators of residential moves on well-being. Below, we review each of the

four remaining Big Five personality traits. First, neurotic individuals are known to react more negatively to a stressful life event than do nonneurotic individuals (Bolger & Zuckerman, 1995). Thus, residential moves might be particularly stressful for neurotic individuals, and childhood residential moves might be particularly negatively associated with well-being among neurotics when compared to nonneurotics. Second, openness to experience (characterized by vivid fantasy, artistic sensitivity, depth of feeling, behavioral flexibility, intellectual curiosity, and unconventional attitudes; McCrae, 1996) might also buffer the experience of residential moves, as behavioral flexibility, one facet of openness to experience, should be handy in a new situation. However, other facets, such as vivid fantasy and depth of feeling, might not be relevant. Third, to the extent that agreeableness is associated with positive social relationships (Branje, van Lieshout, & van Aken, 2005), agreeableness might serve as a buffer against rootlessness. However, as suggested by Whyte (1956), movers must also have the rational, "cold" attitude that "if one loses some old friends, there will always be comparable ones to replace them" (p. 329). This could be difficult for agreeable individuals who are by definition softhearted and empathic. Finally, some of the characteristics associated with conscientiousness, such as orderliness, might exacerbate the effect of residential moves, whereas other characteristics, such as hard work, might alleviate the negative effect of residential moves, at least in the long run. Taking these considerations all together, it is far from clear whether agreeableness and conscientiousness would moderate the effect of residential moves on well-being in one way or another. In short, we predicted that extraversion should have a protective effect, whereas neuroticism should have an exacerbating effect of childhood residential moves on well-being in adulthood. It is not clear whether openness, agreeableness, and conscientiousness would have any moderating effects.

There is some evidence consistent with our hypotheses. Most relevant to the current research, Kling, Ryff, Love, and Essex (2003) assessed personality and well-being of 285 older women (average age = 69.5 years) before and after their relocation. Extraversion and openness to experience assessed before the move predicted an increase in self-esteem. Namely, the self-esteem of women high in extraversion and openness increased after the move more than that of women low in extraversion and openness. In terms of depressive symptoms over time, neuroticism and openness assessed before the move predicted an increase in depressive symptoms. Namely, the depressive symptoms of women high in neuroticism and openness increased after the move more than those of women low in neuroticism and openness. Openness to experiences was associated with increases in both self-esteem and depressive symptoms. Conscientiousness and agreeableness were unrelated to either self-esteem or depressive symptoms. Overall, then, Kling et al. found that extraversion had a protective effect, while neuroticism exacerbated the effect of the residential move on self-esteem or depressive symptoms. It should be noted, however, that there are some important differences between the current research and Kling et al. First, our research is concerned with childhood residential moves, which are most likely to be initiated by parents, not by the participants themselves, whereas a later adulthood move like that measured in Kling et al. has probably been initiated by the participants themselves. Second, our research is concerned with the frequency of childhood residential moves, whereas Kling et al. were concerned with a single relocation in late adulthood.

The Present Study

In sum, we conducted the current research to test two interrelated questions: (a) What are the psychological correlates of frequent residential moves, and (b) are frequent moves more negatively associated with the well-being of some individuals than others? First, we hypothesized that frequent residential moves would be negatively associated with various indicators of well-being, namely, lower levels of life satisfaction, psychological well-being, and positive affect and more negative affect. Second, we hypothesized that the negative associations between residential moves and well-being would be greater among introverts than among extraverts and greater among neurotics than among nonneurotics. Third, we expected to find two different mechanisms underlying the moderating effects of extraversion and neuroticism. We predicted that residential moves would affect the quality of social relationships (i.e., friendships, family relations, and relationships with neighbors) differently for introverts and extraverts and that the quality of social relationship would explain the Extraversion × Residential Moves effect. In other words, we hypothesized that residential moves are more negatively associated with the quality of social relationships among introverts than among extraverts and that the quality of social relationships would account for the original Extraversion × Move interaction effect on well-being. In contrast, we predicted that the Neuroticism × Move interaction effect would be explained by neurotics' stronger stress reaction to the moves, relative to nonneurotics' reaction to the moves. Finally, previous research showed that individuals high in subjective well-being lived longer than those low in subjective well-being (e.g., Danner, Snowdon, & Friesen, 2001; Lyubomirsky, King, & Diener, 2005, for review). We thus also examined (a) whether childhood residential moves are also associated with mortality in adulthood and (b) whether the link between childhood residential moves and mortality risk in adulthood would be moderated by extraversion and neuroticism.

Method

Participants were 7,108 adults (3,395 men and 3,632 women; 81 participants did not specify their gender) aged between 20 and 75 years at the beginning of the study (Time 1). Detailed information regarding the materials and procedures can be found in the MIDUS-I 1994–1995 and MIDUS-II 2004–2006 documentation (available at http://midus.wisc.edu). The mean age was 46.38 years (SD = 13.00) at Time 1. Participants comprised individuals from four subsamples. The largest subsample, which consisted of 3,487 individuals, was recruited using a nationally representative random digit dialing method. The second subsample comprised siblings of individuals from the main random digit dialing sample (n = 950). The third subsample consisted of a nationally representative random digit dialing sample (separate from the aforementioned random digit dialing sample) of twin pairs (n = 1,914). The final subsample (n = 757) was individuals from the metropolitan areas of Boston, MA; Atlanta, GA; Chicago, IL; Phoenix, AZ; and San Francisco, CA. Participants from these metropolitan areas were oversampled so that the MIDUS researchers could conduct an

in-depth study of these areas, which were close to where the MIDUS researchers resided.

Approximately 10 years later (Time 2), these participants were contacted again, and 4,963 of the original participants (70%) completed the additional surveys. Four hundred twenty-one of the original participants (5.9%) were deceased by Time 2. Out of 421 deaths, 396 were confirmed by submitting participants' name and social security number to the National Death Index through 2004. In addition, the MIDUS team discovered an additional 25 deaths through recruitment processes for Time 2 projects.[1] Gender was coded as follows: 1 = male, 2 = female. Education level was assessed with the 13-point scale, ranging from 0 = *no schooling at all* to 12 = *Ph.D., M.D., Ed.D., J.D., or other advanced professional degree* ($M = 6.77$, $SD = 2.49$).

Self-reported well-being was measured on four scales. First, life satisfaction was assessed with three items: "How satisfied are you with your life?" (originally rated on 1 = *a lot* to 4 = *not at all,* which was recoded to 1 = *not at all* to 4 = *a lot*), "Pleased with my life" (originally rated on 1 = *strongly agree* to 7 = *strongly disagree,* but recoded to 1 = *strongly disagree* to 7 = *strongly agree*), and "Rate my life now" (0 = *the worst possible* to 10 = *the best possible*; $\alpha = .75$). Second, psychological well-being (Ryff & Keyes, 1995) was assessed with 18 items ($\alpha = .81$) on a 7-point scale from 1 = *strongly agree* to 7 = *strongly disagree* (we recoded these items so that the higher numbers indicate higher levels of psychological well-being). Sample items include "I like most parts of my personality," "When I look at the story of my life, I am pleased with how things have turned out so far," "I have confidence in my own opinions, even if they are different from the way most other people think," "For me, life has been a continuous process of learning, changing, and growth," "The demands of everyday life often get me down" (reversed item), and "Some people wander aimlessly through life, but I am not one of them" (reversed item). Third, positive affect (PA) was assessed with the following six items: "cheerful," "in good sprits," "extremely happy," "calm and peaceful," "satisfied," "full of life" ($\alpha = .91$; Mroczek & Kolarz, 1998), using a 5-point scale from 1 = *all the time* to 5 = *none of the time* (they were then recoded so that the higher numbers indicate more positive emotion). Finally, negative affect (NA) was assessed with the following six items: "so sad nothing could cheer you up," "nervous," "restless or fidgety," "hopeless," "that everything was an effort," "worthless" ($\alpha = .87$; Mroczek & Kolarz, 1998), using a 5-point scale from 1 = *all the time* to 5 = *none of the time* (they were then recoded so that the higher numbers indicate more negative emotion). We formed affect balance by taking the mean negative affect score from the mean positive affect score. Thus, the higher number means more positive relative to negative affect experienced.

Extraversion was assessed with the following items: "outgoing," "friendly," "lively," "active," "talkative" ($\alpha = .78$). Neuroticism was assessed with "moody," "worrying," "nervous," and "calm" (reverse item; $\alpha = .74$). Openness to experience was assessed with "creative," "imaginative," "intelligent," "curious," "broad-minded," "sophisticated," and "adventurous" ($\alpha = .77$). Agreeableness was measured with "helpful." "warm," "soft hearted," and "sympathetic" ($\alpha = .80$). Finally, conscientiousness was assessed with "organized," "responsible," "hardworking," and "careless" (reversed; $\alpha = .58$). All items were rated on a 4-point scale (1 = *a lot* to 4 = *not at all,* but later recoded so that the higher numbers indicate extraversion, neuroticism, etc.) developed by Rossi (2001). This personality scale has been used in a number of studies (e.g., Keyes, Shmotkin, & Ryff, 2002; Lachman & Weaver, 1997; Staudinger, Fleeson, & Baltes, 1999).

The number of residential moves during childhood was assessed by the following item: "How many times during your childhood did you move to a totally new neighborhood or town?" ($M = 1.98$, $SD = 3.18$, range 0–60). Because the number of moves was heavily skewed (skewness = 4.96, kurtosis = 50.85), we recoded all responses of 11 or more to 11 ($M = 1.88$, $SD = 2.51$). This transformation removed the severe departure from normal distribution (skewness = 1.89, kurtosis = 3.48).

Social relationships were measured by three indices. The scales mentioned below were developed by Schuster, Kessler, and Aseltine (1990) and Whalen and Lachman (2000). First, we created the friendship quality scale by taking the difference between the four-item friendship support scale ("How much do your friends really care about you?", "How much do they understand the way you feel about things?"; $\alpha = .88$), measured on a 4-point scale from 1= *a lot* to 4 = *not at all* (we recoded so that the higher numbers indicate more support), and the four-item friendship strain scale ("How often do your friends make too many demands on you?", "How often do they criticize you?"; $\alpha = .79$), measured on a 4-point scale from 1 = *often* to 4 = *never* (we recoded so that the higher numbers indicate more strain). Similarly, we created the quality of family relationship scale by taking the difference between the four-item family support scale ("Not including your spouse or partner, how much do members of your family care about you?", "How much do they understand the way you feel about things?"; $\alpha = .82$), measured on a 4-point scale from 1 = *a lot* to 4 = *not at all* (we recoded so that the higher numbers indicate more support), and the four-item family strain scale ("Not including your spouse or partner, how often do members of your family make too many demands on you?", "How often do they criticize you?"; $\alpha = .80$), measured on a 4-point scale from 1 = *often* to 4 = *never* (we recoded so that the higher numbers indicate strain). Finally, we created the quality of relationships with neighbors scale (Keyes, 1998; measured on a 4-point scale from 1 = *often* to 4 = *not at all*, which we recoded so that the higher numbers indicate better relationships) by taking the mean of responses to the following two items: "I could call on a neighbor for help if I needed it" and "People in my neighborhood trust each other." Participants completed these measures at Time 1.

Results

Table 1 shows the descriptive statistics of and correlations among key variables. As expected, three well-being measures (life satisfaction, psychological well-being, and affect balance) were highly correlated with one another. The Big Five personality traits also showed the patterns and sizes of correlations with well-being measures expected from Steele et al.'s (2008) recent meta-analysis. Finally, demographic variables (e.g., age, gender, education, and number of childhood residential moves) showed expected small correlations with well-being and personality traits.

[1] We classified individuals *alive* if they completed the Time 2 survey or confirmed themselves *not deceased* in the National Death Index through 2004.

Table 1
Descriptive Statistics of and Correlations Among Key Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	—	.00	−.10***	−.01	.08***	−.01	−.14***	.03**	−.07***	.13***	−.00	.11***
2. Gender		—	−.06***	.03**	.26***	.06***	.11***	.11***	−.08**	−.01	−.02	−.07***
3. Education			—	−.07***	−.09***	−.02	−.10***	.10***	.21***	.07***	.20***	.06***
4. Move				—	−.01	−.02	.05***	−.05***	.02	−.07***	−.05***	−.08***
5. Agreeable					—	.53***	−.05***	.29***	.34***	.16***	.27***	.15***
6. Extraversion						—	−.16***	.28***	.51***	.29***	.40***	.32***
7. Neuroticism							—	−.20***	−.17***	−.39***	−.47***	−.57***
8. Conscientiousness								—	.27***	.28***	.42***	.25***
9. Openness									—	.16***	.37***	.19***
10. Life satisfaction										—	.62***	.63***
11. Psychological well-being											—	.58***
12. PA-NA												—
M	46.38	1.59	6.77	1.88	3.49	3.20	2.24	3.42	3.02	8.18	5.54	1.85
SD	13.00	0.85	2.49	2.51	0.49	0.56	0.66	0.44	0.53	1.71	0.79	1.22

Note. Gender: male = 1, female = 2. Education: 0–12. Move: number of childhood residential moves (0–11). PA-NA = positive affect − negative affect.
** $p < .05$. *** $p < .01$.

Exploratory Analyses

Next, we conducted a series of regression analyses, predicting each of the well-being constructs (i.e., life satisfaction, psychological well-being, and affect balance) from age, gender, education, the number of childhood moves, each of the Big Five traits, and interaction terms involving each of the Big Five traits and the number of childhood moves. We included age, gender, and education because previous research showed that these demographic factors are sometimes associated with well-being (see Diener, Suh, Lucas, & Smith, 1999, for a review). However, the inclusion or exclusion of these variables did not change the key findings reported below. Following Aiken and West (1991), we centered the number of childhood moves and personality traits before forming interaction terms. These regression analyses supported our hypotheses. As seen in Table 2, controlling for age, gender, and education level, the frequency of childhood residential moves was consistently negatively associated with all three well-being measures. The more residential moves participants had experienced as children, the lower life satisfaction, psychological well-being, and affect balance they reported as adults. Most important, the link between residential mobility and well-being was moderated by extraversion and neuroticism but not by agreeableness, conscientiousness, and openness to experiences.

We conducted a series of simple slope analyses to probe the interaction effect between extraversion and residential mobility, following Aiken and West (1991). As predicted, among introverts (1 *SD* below mean on the extraversion scale), the frequency of childhood moves was significantly negatively associated with all three indicators of well-being, namely, life satisfaction, $B = -.05$, $\beta = -.08$, $t(6, 175) = -4.95$, $p < .001$; psychological well-being, $B = -.02$, $\beta = -.06$, $t(6, 156) = -3.76$, $p < .001$; and affective balance, $B = -.05$, $\beta = -.10$, $t(6, 144) = -6.13$, $p < .001$, controlling for age, gender, and education. In other words, among introverts, the more moves participants had experienced as children, the lower their subjective reports of well-being were as adults. In contrast, among extraverts (1 *SD* above mean on the extraversion scale) the frequency of childhood residential moves was not related to any of the three well-being indicators: life satisfaction, $B = -.02$, $\beta = -.03$, $t(6, 175) = -1.49$, *ns*; psychological well-being, $B = .00$, $\beta = .01$, $t(6, 156) = 0.32$, *ns*; and affect balance, $B = -.01$, $\beta = -.02$, $t(6, 144) = -1.19$, *ns.* That is, among extraverts, the negative correlation between the frequency of residential moves and well-being was not present.

Next, we conducted a series of simple slope analyses among neurotics (1 *SD* above the mean neuroticism score) and nonneurotics (1 *SD* below the mean neuroticism score) for each of the well-being indicators. As predicted, among neurotics, residential moves were negatively associated with all three indicators of well-being: life satisfaction, $B = -.05$, $\beta = -.08$, $t(6, 169) = -4.83$, $p < .001$; psychological well-being, $B = -.01$, $\beta = -.04$, $t(6, 152) = -2.52$, $p < .05$; and affect balance, $B = -.04$, $\beta = -.08$, $t(6, 137) = -5.53$, $p < .001$. In contrast, among nonneurotics, residential moves were not associated with any of the well-being measures: life satisfaction, $B = -.01$, $\beta = -.02$, $t(6, 169) = -0.91$, *ns*; psychological well-being, $B = .00$, $\beta = .00$, $t(6, 152) = -0.07$, *ns*; and affect balance, $B = -.01$, $\beta = -.02$, $t(6, 137) = -0.99$, *ns.*

Main Analyses

Because the exploratory analyses presented above revealed that extraversion and neuroticism moderated the link between childhood residential moves and well-being, for the rest of the main analyses we focused on these two moderators. As noted in the introduction, we expected two very different mechanisms for extraversion and neuroticism as the moderators (i.e., we expected to find a mediated moderation for extraversion, but not for neuroticism). Thus, we tested these two different mechanisms in turn below.

The Extraversion × Residential Move Interaction Effect: Mediated by the Quality of Social Relationships?

We tested our mediated moderation hypothesis by creating a latent well-being factor with life satisfaction, psychological well-being, and affect balance as indicators using Mplus 4.1 (Muthén & Muthén, 2007). We used the latent construct model for the main

Table 2
Regression Analyses: Predicting Well-Being Measures From Age, Gender, Education Level, Childhood Moves, Personality Traits, and Move × Personality Interaction Terms

	Life satisfaction			Psychological well-being			Affect balance		
Predictor	*B*	β	*t*	*B*	β	*t*	*B*	β	*t*
Age	.010	.160	13.36***	.001	.023	1.99**	.012	.122	10.26***
Gender	−.034	−.021	−1.76*	−.039	−.025	−2.17**	−.20	−.08	−6.86***
Education	.027	.083	6.85***	.062	.195	16.96***	.031	.063	5.21***
Move	−.017	−.054	−4.51***	−.008	−.027	−2.35**	−.029	−.060	−5.04***
Extraversion	.438	.301	25.19***	.574	.409	35.94***	.718	.330	27.79***
Move × Extraversion	.016	.029	2.41**	.018	.033	2.89***	.034	.041	3.44***
Age	.012	.093	7.83***	−.003	−.054	−4.77***	.003	.032	3.02***
Gender	.097	.030	2.55**	.072	.046	4.09***	−.016	−.007	−0.64
Education	.029	.045	3.77***	.045	.142	12.65***	.001	.001	0.10
Move	−.029	−.046	−3.90***	−.006	−.019	−1.74*	−.022	−.047	−4.43***
Neuroticism	−.899	−.369	−30.98***	−.553	−.467	−41.26***	−1.03	−.563	−52.72***
Move × Neuroticism	−.030	−.031	−2.67***	−.009	−.019	−1.70*	−.023	−.032	−3.10***
Age	.017	.138	11.12***	.000	−.003	−0.24	.010	.107	8.53***
Gender	−.166	−.052	−4.012***	−.124	−.079	−6.38***	−.254	−.104	−8.09***
Education	.060	.092	7.34***	.066	.207	17.13***	.033	.068	5.41***
Move	−.037	−.058	−4.67***	−.010	−.031	−2.59**	−.031	−.065	−5.186***
Agreeableness	.580	.175	13.65***	.495	.307	24.77***	.421	.169	13.07***
Move × Agreeableness	.014	.011	0.90	.008	.012	1.03	.023	.024	1.89*
Age	.017	.139	11.46***	.000	.002	0.21	.010	.108	8.84***
Gender	−.129	−.040	−3.28***	−.079	−.05	−4.33	−.223	−.092	−.7.41***
Education	.034	.052	4.20***	.046	.144	12.39***	.015	.030	2.38**
Move	−.032	−.049	−4.08***	−.006	−.02	−1.70*	−.027	−.057	−4.62***
Conscientiousness	.995	.273	22.28***	.720	.405	34.99***	.686	.250	20.16***
Move × Conscientiousness	.001	.001	0.07	.003	.004	0.35	.018	.017	1.39
Age	.010	.165	13.23***	.002	.035	3.00***	.012	.127	10.17***
Gender	.011	.007	0.554	.033	.021	1.79*	−.120	−.049	−3.95***
Education	.015	.047	3.68***	.037	.116	9.59***	.009	.019	1.51
Move	−.022	−.068	−5.45***	−.016	−.051	−4.31***	−.037	−.076	−6.08***
Openness	.250	.161	12.69***	.534	.357	29.72***	.434	.188	14.74***
Move × Openness	.005	.008	0.62	.002	.003	0.30	.008	.009	0.73

Note. Gender: male = 1, female = 2. Education: 0–12. Move: number of childhood residential moves (0–11).
* $p < .10$. ** $p < .05$. *** $p < .01$.

mediated moderation analysis because measurement error biases the estimation of mediation effect (Kenny, Kashy, & Bolger, 1998). First, we tested the initial part of the model, namely, the moderation model in Figure 1, predicting latent well-being from childhood residential mobility, extraversion, and the interaction term (the interaction term was formed again using the centered variables). Model fit was acceptable, $\chi^2(6, N = 6{,}142) = 179.19$, CFI = .978, RMSEA = .069, SRMR = .020. According to the modification indices, however, the error term for affect balance was significantly associated with the error terms for life satisfaction and psychological well-being. Thus, we allowed these associations subsequently. Model fit with these modifications was excellent and significantly improved over the original model, $\Delta\chi^2 = 164.17$, $p < .01$, $\chi^2(4, N = 6{,}142) = 15.02$, comparative fit index (CFI) = .999, root-mean-square error of approximation (RMSEA) = .021, standardized root-mean-square residual (SRMR) = .007 (Schermelleh-Engel, Moosbrugger, & Müller, 2003). Below, we present the coefficients and significance tests from the modified model. However, they were not substantially different from the original model (i.e., all three terms were significant in the original model as well). Replicating previous research (Bures, 2003; Jelleyman & Spencer, 2008) and the regression analyses above, the number of residential moves was associated with lower levels of well-being ($\beta = -.060$, $z = -4.85$, $p < .01$). Extraversion was positively associated with well-being ($\beta = .440$, $z = 24.83$, $p < .001$). Most importantly, we found the expected interaction between residential moves and extraversion on the latent well-being factor ($\beta = .046$, $z = 3.73$, $p < .01$). To help interpret the nature of the interaction, we calculated and plotted the simple slopes as recommended by Aiken and West (1991). As predicted, residential moves were associated with lower levels of well-being among introverts ($B = -.037$, $\beta = -.103$, $z = -6.16$, $p < .001$), whereas they were virtually unrelated to the levels of well-being among extraverts ($B = -.005$, $\beta = -.015$, $z = -.86$, *ns*; see Figure 2).

Why do introverts who moved frequently as children have lower levels of well-being as adults? One possibility is that introverts who moved frequently as children were unable to develop close relationships with others. Thus, we tested the idea that the interaction effect identified above would be mediated by the quality of

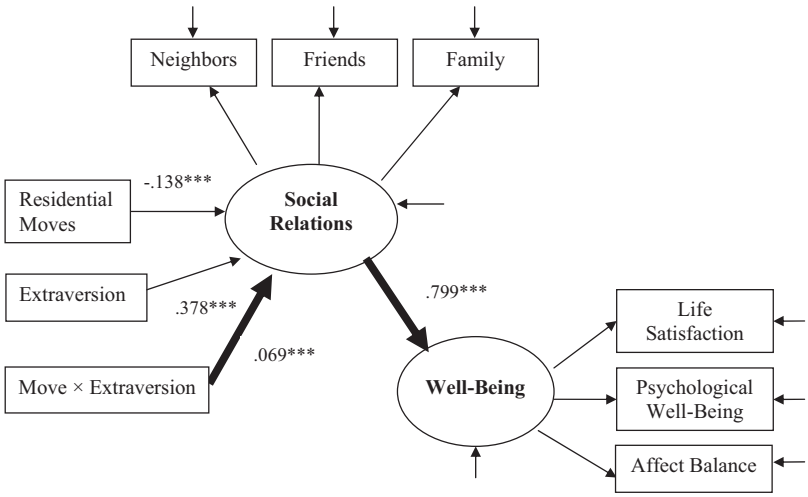

Figure 1. The mediated moderation analysis. The interaction effect of residential moves and extraversion on the latent well-being factor is mediated by the latent social relationship quality factor. The residual variance for affect balance and life satisfaction, friendship and family relationships, neighbor relations and life satisfaction, and neighbor relationship and psychological well-being is allowed to be associated. There is a significant association between residential moves and well-being ($\beta = -.041$, $z = -2.79$, $p < .01$) and extraversion and well-being ($\beta = .158$, $z = 7.98$, $p < .01$). *** $p < .01$.

social relationships (i.e., mediated moderation effect), following Morgan-Lopez and MacKinnon (2006). We created a latent social relationship quality factor with the quality of relationships with neighbors, friends, and family as indicators and first tested whether introverts who had moved frequently as children indeed had less satisfying social relationships as adults than introverts who had not moved. Specifically, we regressed the latent social relationship quality factor on mean-centered residential moves, mean-centered extraversion, and the interaction term. Model fit was acceptable, $\chi^2(6, N = 6{,}093) = 109.07$, CFI = .963, RMSEA =.053, SRMR = .023. According to the modification indices, the error term for the quality of friendship was significantly associated with the error terms for the quality of family relationships and neighbors. Thus, we allowed these associations subsequently. Model fit with these modifications was excellent and significantly improved over the original model, $\Delta\chi^2 = 75.56$, $p < .01$, $\chi^2(4, N = 6{,}093) = 33.51$, CFI = .989, RMSEA =.035, SRMR = .011. Below, we present the coefficients and significance tests from the modified model. However, they are not substantially different from the original model (all three terms were significant in the original model as well). The number of residential moves was negatively associated with the quality of social relationships ($\beta = -.101$, $z =$

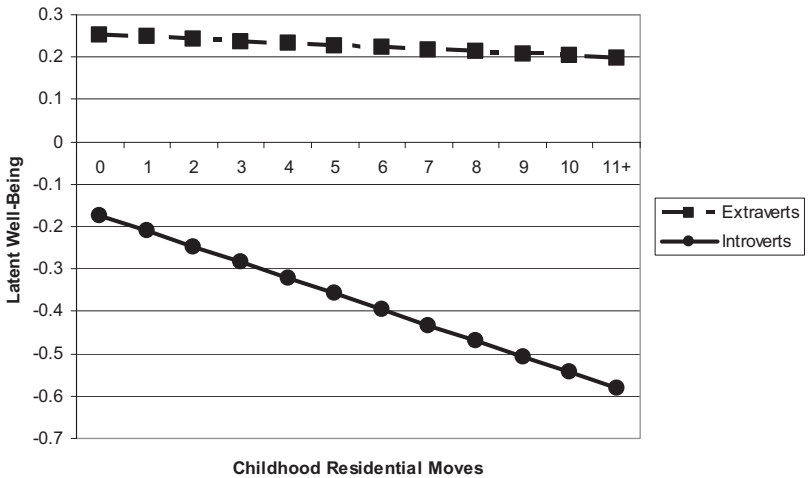

Figure 2. The *y*-axis indicates the estimated latent well-being score (ranging from −2.44 to 1.06; $M = .00$, $SD = .52$). The *x*-axis indicates the number of residential moves during childhood. Regression lines represent the relations between the number of residential moves and latent well-being score for extraverts (1 *SD* above the mean extraversion score) and introverts (1 *SD* below the mean extraversion score).

-6.49, $p < .01$). The more frequently participants moved as children, the lower the quality of social relationships they had as adults. Extraversion was positively associated with social relationships ($\beta = .356$, $z = 18.40$, $p < .001$). As predicted, we found the expected interaction between residential moves and extraversion on the quality of social relationships ($\beta = .061$, $z = 3.95$, $p < .01$). We then conducted simple slope analyses for introverts and extraverts (1 *SD* below or above the mean extraversion score, respectively) to probe this interaction. As expected, the number of residential moves was strongly negatively associated with social relationship quality among introverts ($\beta = -.161$, $z = -7.47$, $p < .001$), whereas it was only marginally related to social relationships among extraverts ($\beta = -.042$, $z = -1.94$, $p < .10$).

Finally, we tested the full mediated moderation model described in Figure 1, in which the latent well-being factor described above was predicted from the latent social relationship quality, which in turn was predicted from residential moves, extraversion, and the interaction term. As in the previous models, the same four errors were allowed to be associated (affect balance–life satisfaction, affect balance–psychological well-being, friend–neighbor, and friend–family). Model fit was acceptable, $\chi^2(16, N = 6{,}044) = 330.70$, CFI = .975, RMSEA =.057, SRMR = .021. As seen in Figure 1, extraversion was positively associated with the quality of social relationships ($\beta = .38$, $z = 19.60$, $p < .01$), and childhood residential moves were negatively associated with the quality of social relationships ($\beta = -.14$, $z = -7.77$, $p < .01$). There was a significant interaction between childhood residential moves and extraversion in predicting the quality of social relationships ($\beta = .07$, $z = 3.93$, $p < .01$), such that childhood residential moves were more negatively associated with the quality of social relationships for introverts than for extraverts. Furthermore, as predicted, the quality of social relationships was strongly positively associated with latent well-being ($\beta = .799$, $z = 19.60$, $p < .01$). Most important, once the quality of social relationship was included as a mediator in the model, the original Move × Extraversion interaction effect disappeared almost completely ($\beta = -.006$, $z = -0.46$, *ns*). Namely, the moderation effect of extraversion on the relation between residential moves and well-being was mediated by the quality of social relationship (indirect effect[2] = .06, Sobel = 3.88, $p < .01$). That is, residential moves were more negatively associated with the well-being of introverts than that of extraverts because the experiences of residential moves prevented introverts from forming high-quality social relationships as adults.

In addition, this analysis revealed that the direct link between extraversion and latent well-being was partially mediated by the quality of social relationships (indirect effect = .30, Sobel = 15.00, $p < .01$; the direct link between extraversion and well-being remained significant, however, $\beta = .16$, $z = 7.98$, $p < .01$). That is, extraverts were higher in well-being than introverts partially because they had better quality social relationships than introverts. Finally, the negative association between childhood residential moves and well-being was mediated by the quality of social relationships (indirect effect = $-.11$, Sobel = -7.38, $p < .01$). Indeed, once the quality of social relationships was statistically controlled, the negative correlation between childhood residential moves and latent well-being disappeared ($\beta = .04$, $z = 2.79$, $p < .01$).

The Neuroticism × Move Interaction Effect on Well-Being

We repeated the same structural equation modeling above, replacing extraversion with neuroticism. In the first model, the latent quality of social relationships was predicted from mean-centered residential moves, mean-centered neuroticism, and the interaction term. As in the above analysis, the error for friendship was allowed to associate with that for family and neighbors. Model fit was excellent, $\chi^2(4, N = 6{,}087) = 8.45$, $p = .08$, CFI = .998, RMSEA = .014, SRMR = .006. As predicted, neurotic individuals had lower quality social relationships than nonneurotics ($\beta = -.460$, $z = -17.59$, $p < .01$). Residential moves were negatively associated with the quality of social relationships ($\beta = -.127$, $z = -7.07$, $p < .01$). Unlike the analysis with extraversion above, however, there was no Neuroticism × Move interaction ($\beta = -.028$, $z = -1.65$, *ns*). That is, the relation between residential moves and the quality of social relationships did not differ across individuals depending on their levels of neuroticism.

We next conducted the full mediated moderation model depicted in Figure 1, this time replacing extraversion with neuroticism. As in the analysis with extraversion, the same four error terms were allowed to covary. In addition, to increase the model fit, we allowed the error for neighbor relation to associate with the error for life satisfaction. Model fit was acceptable, $\chi^2(15, N = 6{,}040) = 325.44$, $p < .01$, CFI = .977, RMSEA =.059, SRMR = .023. As predicted, neuroticism was strongly associated with latent well-being, above and beyond the quality of social relationship ($\beta = -.392$, $z = -24.37$, $p < .01$). The original Neuroticism × Move interaction on latent well-being remained marginally significant ($\beta = -.026$, $z = -1.72$, $p < .10$) even when the quality of social relationship was included. Thus, the moderation effect of neuroticism on the relation between residential moves and latent well-being was not mediated by the quality of social relationships, unlike the moderation effect of extraversion. In sum, the interaction between residential moves and neuroticism (residential moves were more strongly negatively associated with well-being among neurotics than among nonneurotics) was not mediated by the quality of social relationships. Thus, we identified divergent underlying mechanisms for the two moderation effects for extraversion and neuroticism.

Mortality Analyses: Did Introverts Who Moved Frequently Die Younger?

As in most research on subjective well-being, one limitation of the above analyses derives from the fact that well-being was measured via self-reports. Although the interaction effects that we found above cannot be readily explained by artifacts typically associated with self-reports (e.g., response styles), critics might argue that introverts and neurotics who moved frequently as children are, for some reason, more likely to complain about their lives than those who did not. It is thus desirable to test whether the interaction effects identified above could be observed in a non-

[2] The default method for computing the indirect effect in Mplus 4.1 is based on the delta method standard errors (Muthén & Muthén, 2007). The indirect effect reported in this article is equivalent of Sobel's (1982) test.

self-report measure of well-being-related phenomena. Because previous research has shown that individuals high in positive affect are more likely to live longer than those low in positive affect (Danner et al., 2001) and the MIDUS project obtained morality status at Time 2 (10 years after Time 1), we were able to examine whether we could replicate the aforementioned interaction effects with mortality as an outcome measure.

Out of the original 7,108 participants, 421 (5.9%) were confirmed to be dead by the 10-year follow-up. Because only 2.4% of participants age 50 or younger at Time 1 (or 94 out of 3,938 participants with mortality information) passed away before the second data collection, we analyzed only participants who were 51 years old or older at Time 1 (2,323 participants with mortality information). Among this group, 14. 00% of participants (or 325 of 2,323 such participants) were deceased by Time 2, which allowed us to test our hypothesis without a major concern for a floor effect. Because age, gender, and race (White or not) are known to be associated with mortality, we included these variables in addition to residential moves, extraversion, and the interaction term in a binary logistic regression analysis, in which the dependent variable was mortality (0 = alive, 1 = dead). The mortality rate was 12.98% for the participants with all the information, namely, age, gender, race, childhood residential moves, and extraversion. As seen in Table 3, the older the participants had been at Time 1, the more likely they were to be deceased at Time 2. Similarly, men were more likely to have passed away before Time 2 than were women. In addition, childhood residential moves were marginally associated with mortality risk. Extraversion and race were not associated with mortality risk. Most important, consistent with our hypothesis, we found a significant effect of the interaction between the number of residential moves and extraversion on mortality, $B = -.111$, $SE = .056$, Wald = 3.94, $p < .05$, Exp(B, the exponentiation of the B coefficient, which is the odds ratio) = 0.895. We computed the simple slopes for introverts (1 *SD* below the mean extraversion score) and extraverts (1 *SD* above the mean) to help interpret the nature of the interaction. As seen in Figure 3, the number of childhood residential moves was unrelated to the estimated mortality rate among extraverts, $B = -.003$, $SE = .089$, Wald = 0.001, $p = .971$, Exp(B) = 0.997. In contrast, the number of residential moves was positively associated with the estimated mortality rate among introverts, $B = .219$, $SE = .078$, Wald = 7.94, $p < .01$, Exp(B) = 1.245. Namely, introverts who had moved frequently had a greater risk of death than introverts who had not moved.

We repeated the above analysis, this time replacing extraversion with neuroticism. As in the previous analysis, age and gender were significantly associated with mortality risk—age, $B = .096$, $SE = .010$, Wald = 96.28, $p < .01$, Exp(B) = 1.10; gender, $B = -.393$, $SE = .132$, Wald = 8.83, $p < .01$, Exp(B) = 0.675—and childhood residential moves were marginally associated with higher mortality risk, $B = .047$, $SE = .025$, Wald = 3.73, $p = .05$, Exp(B) = 1.05. Interestingly, neurotic individuals were more likely to have passed away before Time 2 than nonneurotics, $B = .215$, $SE = .104$, Wald = 4.23, $p < .05$, Exp(B) = 1.24. There was, however, no Neuroticism × Residential Move interaction on mortality risk ($B = -.036$, $SE = .036$, Wald = 0.99, *ns*).

Next, we examined whether the interaction effect between residential mobility and extraversion on mortality was also mediated by the quality of social relationships. As expected, Time 1 social relationship quality predicted the mortality risk at Time 2, controlling for age, gender, and race among participants who were 51 years old or older at Time 1, $B = -.189$, $SE = .093$, Wald = 4.15, $p < .05$, Exp(B) = 0.828. The poorer the quality of social relationships at Time 1, the more likely that the participants had died within the 10-year period following Time 1. When extraversion, residential moves, and the interaction term were added to the logistic regression, however, the effect of Time 1 social relationship disappeared, $B = -.123$, $SE = .101$, Wald = 1.48, $p = .22$, Exp(B) = 0.885, while the interaction between residential moves and extraversion remained significant, $B = -.078$, $SE = .040$, Wald = 3.80, $p = .05$, Exp(B) = 0.925. Thus, the interaction effect on mortality was not mediated by the quality of social relationships.

Finally, we repeated the above mortality analysis on extraversion with different age cutoffs to make sure that our findings on the main effect of childhood residential moves and the interaction effect between extraversion and childhood residential moves on mortality were not specific to the age cutoff of 51. When we analyzed participants who were 55 years old or older at Time 1 (15.09%, or 243 out of 1,610 participants who had complete information, namely, age, childhood moves, extraversion, gender, and race, were deceased by Time 2), the results remained almost identical. The main effect of childhood residential moves was again marginally significant, $B = .050$, $SE = .026$, Wald = 3.55, $p = .06$, Exp(B) = 1.05. The interaction effect was again significant, $B = -.10$, $SE = .045$, Wald = 4.79, $p = .029$, Exp(B) = 0.906. When we analyzed participants who were 60 years old or older at Time 1 (19.30%, or 210 out of 1,088 participants with all the information, were deceased by Time 2), the results remained similar: $B = .050$, $SE = .029$, Wald = 2.93, $p = .087$, Exp(B) = 1.05, for the main effect of childhood residential move; $B =$

Table 3
Logistic Regression Analysis, Predicting Mortality (0 = Alive, 1 = Dead) at Time 2

Predictor	*B*	*SE*	Wald	*df*	Significance	Exp(*B*)
Age	.101	.010	97.526	1	.000	1.106
Gender	−.423	.135	9.780	1	.002	0.655
Race	.295	.288	1.051	1	.305	1.343
Residential moves	.043	.025	3.021	1	.082	1.044
Extraversion	−.123	.040	1.046	1	.306	0.884
Move × Extraversion	−.079	.040	3.938	1	.047	0.924
Constant	−7.892	.761	107.431	1	.000	0.000

Note. Gender: male = 1, female = 2. Race: White = 1, non-White = 2.

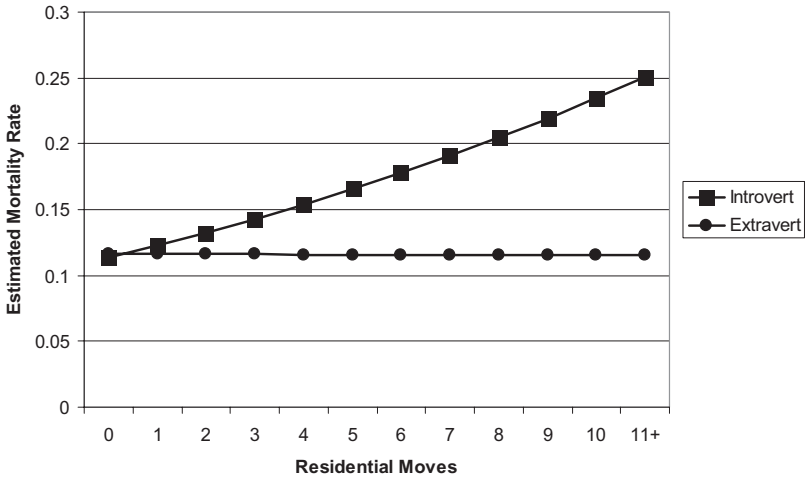

Figure 3. The *y*-axis indicates the estimated mortality rate during the 10 years following Time 1. The *x*-axis indicates the number of residential moves during childhood. Graphed are the simple slopes calculated based on the logistic regression analysis for introverts and extraverts. For the sake of simplifying control variables, graphed above are the data for White 60-year-old men. At each data point plotted, the estimated mortality rate would be lower for women and higher for older men and non-Whites. However, the differences between introverts and extraverts remain the same.

$-.086$, $SE = .049$, Wald $= 3.12$, $p = .077$, Exp(B) $= 0.912$, for the interaction effect. When we analyzed participants who were 62 years old or older at Time 1 (20.09%, or 189 out of 904 participants with all the information, were deceased by Time 2), the results again remained very similar to the original analysis: $B = .057$, $SE = .031$, Wald $= 3.40$, $p = .06$, Exp(B) $= 1.06$, for the main effect of childhood moves; $B = -.114$, $SE = .056$, Wald $= 4.21$, $p = .040$, Exp(B) $= 0.892$, for the interaction effect. Thus, the key findings on mortality were replicated when different age cutoffs were used.

On Accuracy of Self-Reported Childhood Residential Moves

The accuracy of self-reported childhood residential moves is of major concern, as retrospective judgments of this sort could be distorted (Schwarz, 1999). Because one subsample of the current sample consisted of twins, we examined the degree of similarity in self-reported childhood residential moves within monozygotic (MZ) and dizygotic (DZ) twins. Considering that most twins grew up in the same households, their self-reported childhood residential moves should be similar to each other. In addition, if their reports were indeed accurate, there should be a large shared environment effect because residential moves are largely shared within family.

There were 339 MZ twins, 509 DZ twins, and 12 twins whose zygoticity was undetermined in the current sample. We excluded 23 twins who reported that they had never lived with their co-twins because their reports of childhood moves were not expected to be the same. The intraclass correlation on self-reported childhood residential moves for the combined MZ and DZ twin sample was .77 ($p < .001$). Namely, 77% of interindividual differences in self-reported childhood residential moves among 1,470 participants (or 735 pairs) were explained by the grouping variable, or here twin pairs (see Kreft & de Leeuw, 1998, for the interpretation of intraclass correlation). That is, twins' self-reported childhood residential moves were mostly confirmed by their co-twins' self-reports. When we analyzed the similarity of self-reported childhood moves for the MZ twins and the DZ twins separately, the size of the correlation was almost identical: $r = .779$, $p < .01$, for the MZ twin sample and $r = .772$, $p < .01$, for the DZ twin sample. The heritability coefficient of self-reported childhood moves, therefore, was .014 (or $2 \times [.779 - .772]$). The shared environment effect was .765. We also conducted the univariate twin ACE model analysis with Mplus 4.1. This model showed an adequate fit: $\chi^2(6, N = 724) = 3.45$, $p = .75$, CFI $= 1.00$, RMSEA $= .000$, SRMR $= .028$. The estimates for heritability and shared environment effects on self-reported childhood residential moves were nearly identical to the estimates derived from the traditional estimation method: A (heritability coefficient) $= .029$, C (shared environment effect) $= .755$, and E (nonshared environment effect) $= .216$. Thus, the high intraclass correlation and the large shared environment effect obtained in this study indicate that self-reported frequency of childhood moves in the current study was fairly reliable.

Discussion

We started our investigation with two questions in mind: (a) What are the psychological correlates of frequent childhood residential moves, and (b) are frequent childhood moves more negatively associated with well-being in adulthood for some individuals than others? Our regression analyses revealed that individuals who had moved frequently in childhood reported lower levels of well-being than those who had not, controlling for age, gender, and education levels. Why should childhood residential moves be negatively associated with well-being? There are several potential consequences of frequent residential moves in childhood. First, peer rejection is a common experience among new transfer stu-

dents in childhood (Jason, Reyes, Danner, & De La Torre, 1994). Peer rejection in turn can create academic as well as psychological problems such as withdrawal and loneliness in childhood (Asher & Paquette, 2003) and could have long-term consequences such as dropping out of school and criminal activities in adulthood (Parker & Asher, 1987). Social withdrawal is further known to be associated with a smaller number of friends and a lower quality of friendship (e.g., lack of helpfulness, guidance; Rubin, Coplan, & Bowker, 2009). Although the interpersonal difficulty associated with a residential move is often limited to the initial phase of the move (typically disappearing by the end of academic year; Vernberg, Greenhoot, & Biggs, 2006), most movers do suffer from the lack of companionship and intimate friends, at least temporarily. When individuals have to repeat residential moves, then, many of them also have to suffer from the lack of intimate friends repeatedly. Namely, repeated rejection experiences and the relative lack of intimate friendships associated with frequent residential moves in childhood could create difficulty in forming intimate social relationships as an adult. Like rejection-sensitive adults (e.g., Purdie & Downey, 2000), childhood movers might be sensitive to rejection cues, feel rejected by others often, and have a harder time creating intimate relationships as adults. Also, frequent childhood moves could make maintaining long-term relationships difficult. Although the size of social networks changes over developmental phases, the size of the closest friend group remains relatively stable across time (Lang & Carstensen, 1994). Long-term friends play a significant role when one loses a spouse or family member (Zaslow, 2009). It is quite possible that frequent movers do not have as many long-term friends as nonmovers with whom they engage in leisure and other daily social activities (e.g., shopping, meals, exercise) together or on whom they can depend in an emergency. Considering that having companions is one of the strongest predictors of subjective well-being (Diener & Seligman, 2002), it might be the difficulty of having and maintaining long-term companions among frequent movers that makes their well-being as adults lower on average than nonmovers.

Besides the main effect of residential moves, we found that the negative association between childhood residential moves and adult well-being was stronger among introverts than extraverts and among neurotics than nonneurotics. We identified that the association between childhood residential moves and adult well-being was more negative among introverts than among extraverts because residential moves were linked with a lower quality of social relationships among introverts than among extraverts. An additional process that explains the moderating role of adulthood extraversion on the link between childhood residential mobility and adulthood well-being is long-term social relationships. As stated above, residential moves on average make it difficult for movers to maintain long-term close relationships. This might not be a serious problem for extraverts, who can create new social relationships quickly. In contrast, the lack of long-term close relationships may cause more serious problems for introverts, as they typically have a harder time making new friends (Asendorpf, 1998). As a result, introverted adults who moved frequently in childhood are less likely to have quality long-term friendships than introverted adults who did not move often. Thus, introverted adults who moved often as children should be less satisfied with their lives than introverted adults who did not move often. Extraverted adults who moved frequently in childhood are also less likely to have quality long-term friends than extraverted adults who did not move often in childhood. However, because extraverts can cultivate new social relationships fairly easily, the lack of long-term close relationships might not hurt their well-being as much as it does the well-being of introverts.

Whereas the negative association between residential moves and well-being was explained by the quality of social relationships, the negative association among neurotics was not explained by the quality of social relationships. As shown in previous research (e.g., Bolger & Zuckerman, 1995), neurotics might have reacted more negatively to stressful life events such as residential moves than nonneurotics and ruminated more than nonneurotics. That is, while the negative connection between residential moves and well-being among introverts was explained in part by the interpersonal process (i.e., the lower quality of social relationships), the negative link between moves and well-being among neurotics might be explained by the intrapsychic process (e.g., strong stress reaction, rumination). Because we did not have a direct measure of stress reaction, we were unable to explicitly test this explanation for the Neuroticism $\times$ Childhood Residential Move interaction. The latter needs to be tested more explicitly in the future.

Finally, our mortality analyses revealed that individuals who had moved frequently as children were marginally more likely to have passed away before Time 2, controlling for age, gender, race, extraversion, and neuroticism. Why should childhood moves be associated with marginally higher mortality risks in adulthood? We believe that this is because a residential move is a highly stressful life event. For instance, it was ranked 28th out of the 43 stressful life events listed by Holmes and Rahe (1967). Frequent residential moves during childhood, then, might result in long-term stress reactions in the body (e.g., compromised immune functions; Repetti, Taylor, & Seeman, 2002), which could result in higher mortality risks as adults. Most important, we found that introverts who had moved frequently not only reported lower levels of life satisfaction, psychological well-being, and affect balance but also were more likely to have died before Time 2 than introverts who had not moved often. This interaction could also be explained by the differential levels of the perceived stressfulness of residential moves between introverts and extraverts. Because it is much harder to create new social networks for introverts than for extraverts, childhood residential moves must also be more stressful for introverts than for extraverts. It is unclear, however, why we did not find the interaction between residential moves and mortality among neurotics.

These findings have important implications for personality and well-being research. First, one of the most important research agendas in personality psychology is to understand the effects of person and situation on behaviors (Funder, 2008). Self-reported well-being is associated with various important life outcomes, including income, education, and marriage (Lyubomirsky et al., 2005; Oishi, Diener, & Lucas, 2007). Mortality is one of the most significant life outcomes that social and behavioral scientists can predict. We found that both person (e.g., neurotics) and situation (e.g., frequent residential moves) could predict well-being and mortality in later adulthood. Most important, however, we showed the Person $\times$ Situation interaction effect on well-being and mortality; frequent residential moves were negatively associated with well-being and mortality among introverts, whereas they were not among extraverts. As stated at the beginning of this article, resi-

dential moves are common and significant life experiences for many Americans (Sell & DeJong, 1983). Nevertheless, they have received little research attention in psychology (see Oishi, in press, for a review). Personal history of residential mobility provides an important piece of information regarding individual differences in life experiences (Oishi, Lun, & Sherman, 2007). Persons who never moved while growing up are clearly different from those who moved in their experiences with their friendship and other social networks (Seder & Oishi, 2008). Most central to our discussion, however, personality traits moderate the relationship between this life experience and various important life outcomes, including well-being and mortality. We believe that residential moves present a fertile ground for future personality research by illuminating the person and situation effect on significant behavioral outcomes.

Second, our findings have a practical implication for people's life decisions regarding where to live. As stated at the beginning of this article, Americans are highly mobile (Bellah, Madsen, Sullivan, Swidler, & Tipton, 1985; Van Minnen & Hilton, 2002; Whyte, 1956). Roughly half of Americans move in any 5-year period (Long, 1992). Previous research has shown that residential mobility has some cost to the well-being of society (Oishi, Rothman, et al., 2007). The present study found that frequent childhood residential moves are negatively associated with well-being in particular for introverts and neurotics. It should be noted that the effect sizes obtained in the current study are small in magnitude. This means that (a) many adults who experienced frequent childhood residential moves are quite satisfied with their lives and (b) many introverted and/or neurotic adults who experienced frequent childhood residential moves are as satisfied with their lives as introverts and/or neurotics who did not experience as frequent childhood residential moves. Furthermore, people move for various reasons. Sometimes people are forced to move by external factors (e.g., victims of Hurricane Katrina), while others move in search of better opportunity. The present finding suggests that when people do have the option to stay or move, they might want to consider the potential negative psychological correlates of childhood residential moves, especially if they or their children are introverted or neurotic.

Remaining Questions and Future Directions

There are important theoretical questions that need to be clarified in the future. First, in the present study, childhood personality was not assessed. Thus, we used adulthood personality as a proxy for childhood personality. It is important, then, to consider the degree of stability and change in personality. Conley's (1984) meta-analysis showed an impressive degree of stability in personality over a long period of time in adulthood. Specifically, a 10-year stability coefficient estimate (test–retest reliability corrected for measurement error) was .82, a 20-year stability coefficient estimate was .67, and a 30-year stability coefficient estimate was .55. Although impressive, these results demonstrate that personality still changes over a long period of time. Stability of personality is also lower in childhood than in adulthood. Roberts and DelVecchio's (2000) meta-analysis revealed the estimated stability coefficient of .45 between ages 6 and 12 years and .47 between ages 12 and 18 years. It is important, then, to note that we used adulthood personality as a rough proxy for childhood personality in the current study. On the one hand, despite the sizable measurement error in estimating childhood personality in our study, we were able to obtain the expected interaction between extraversion/neuroticism and childhood residential moves in predicting adulthood well-being. This is encouraging in the sense that the present test is conservative (because of the measurement errors involving estimating childhood personality). On the other hand, however, the present use of adult personality as a rough proxy for childhood personality presents an alternative explanation for the obtained interaction between extraversion/neuroticism and residential moves. For instance, it is quite plausible that pleasant childhood residential moves increased extraversion and decreased neuroticism, whereas painful residential moves decreased extraversion and increased neuroticism over time. Instead of childhood extraversion and neuroticism buffering or exacerbating the effect of residential moves on well-being, the outcome of childhood residential moves (i.e., success or not) could have resulted in different levels of extraversion and neuroticism in adults. It will be important in the future to assess childhood personality traits along with childhood residential moves to test our theoretical account more directly.

Second, it is unclear why the Extraversion $\times$ Residential Move interaction effect on self-reported well-being was mediated by the quality of social relationships but the same interaction effect on mortality was not. This might be partly explained by the fact that death could be caused by various factors outside of the quality of social relationships, including accidents and infectious diseases. Another possibility is that frequent residential moves during childhood, in particular among introverts, might have accumulated long-term stress reactions in the body (e.g., chronically elevated levels of cortisol), which are known to be associated with mortality risk (e.g., Repetti et al., 2002; Sephton & Speigel, 2003). It will be important in the future to uncover why introverts who had frequently moved as children had a higher rate of mortality later in adulthood compared with introverts who had not moved often. Stress-related bodily reactions (e.g., cortisol, a weaker immune system; Miller, Cohen, & Ritchey, 2002; Segerstrom & Miller, 2004) might hold the key in this process.

Third, it should be noted that childhood residential mobility was assessed with a single item. In addition to the concern over the reliability of the single-item measure, memory bias is another concern for this particular item. One might wonder how accurately participants can remember how many times they moved to a totally new neighborhood or city decades earlier. One is unlikely to make an error of a large magnitude, however (e.g., those who never moved are unlikely to say that they moved 10 times). Rather, errors are likely to be concentrated in higher ends of the distribution, among those who moved a lot, for instance, saying they moved 10 times versus 15 times. This concern is somewhat ameliorated because we truncated the higher end of the distribution (i.e., treated 11 times or more as 11 times) to make the distribution as normal as possible. Finally, some participants might have wondered whether to say three times or four times because they were not sure what counted as a totally new neighborhood or what ages were and were not included in childhood. Again, although this is true and a concern, the high intraclass correlation among twins obtained in the current study ($r = .77$, $p < .001$) provides some confidence that memory and other reporting biases (Schwarz, 1999) might not be as serious a concern as one might expect.

Nevertheless, it would be ideal to document the frequency of residential moves more directly (e.g., asking participants to list the name of the cities in which they lived, as in Oishi, Lun, & Sherman, 2007) in the future.

Finally, although we treated childhood residential moves and personality traits as independent constructs, recent research has shown that personality traits are associated with the frequency of residential moves. For instance, Jokela, Elovainio, Kivimäki, and Keltikangas-Järvinen (2008) found that temperament activity and emotionality predicted the probability of residential moves during adulthood in Finland. Similarly, Kling, Oishi, and Ryff (2002) found that openness to experience and lack of conscientiousness predicted the number of lifetime residential moves among middle-aged women. It should be noted, however, that the current study examined childhood residential moves, as opposed to adulthood residential moves. Unlike residential moves during adulthood, childhood moves were basically initiated by participants' parents. Considering that the parent–child similarity in personality traits is small ($r = .10–.15$; Loehlin, 1992), however, the personality effect on the frequency of childhood moves is likely to be small. Indeed, the correlations between childhood residential moves and Big Five personality traits ranged in the absolute magnitude from .01 to .05 in the current study (see Table 1). Nevertheless, in the future, the effect of personality on the frequency of residential moves should be examined in the context of the present research questions to enrich understanding of the person and situation effect on human behaviors.

Conclusion

There are three main reasons to make only tentative conclusions about mortality on the basis of this one study: (a) The interaction predicting mortality was only barely significant, and the main effect of moves on mortality only approached significance, despite the large sample; (b) we do not have a sufficient explanation for the interactive prediction of mortality; and (c) the one explanation we tested was not able to explain the interactive prediction of mortality. Despite these limitations, the current research has revealed important Person × Situation interaction in understanding an ultimate life outcome, mortality, as well as self-reported well-being, using a nationally representative sample. Residential moves were on average negatively associated with well-being and also marginally associated with higher mortality risk later in adulthood. Furthermore, we found that the more childhood residential moves introverts and neurotics had experienced, the lower their levels of well-being in adulthood. Most important, moving frequently in childhood was associated with a higher mortality risk as adults among introverts. This study needs to be replicated, however, before it should influence people's decisions about moving.

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