A socioecological perspective to understanding mental and physical health: The mediating role of relationship mindsets and goals

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Abstract
People’s mindsets and goals regarding social relationships affect their relationship quality and psychological well-being. We employed multiple group path modeling to examine how perceived relational mobility affects mental and physical health through relationship mindsets (destiny and growth mindsets) and relationship goals (approach and avoidance goals) across countries, surveying community adults in the U.S. (n = 206; M_age = 39.14; 48% female) and South Korea (n = 236; M_age = 38.89; 51% female) through online questionnaires. Results showed that stronger growth mindsets and approach goals predicted better mental and physical health, whereas stronger destiny mindsets and avoidance goals predicted poorer mental and physical health in both countries. Moreover, higher levels of relational mobility were linked to higher levels of subjective well-being and fewer depressive symptoms via growth mindsets and approach goals. The results provide evidence for the importance of socioecological factors such as relational mobility in influencing relationship mindsets and goals with eventual consequences for health outcomes.

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Successful relationships increase an individual’s happiness and life satisfaction, ultimately boosting subjective well-being (SWB; Deci & Ryan, 1985). However, when relationships become distressing, one’s mental and physical health suffer (Holt-Lunstad, 2017). When a relationship does not develop as desired, negative affect may increase, contributing to the development of anxiety and depression (Flynn, Kecmanovic, & Alloy, 2010) and to common diseases and conditions such as ulcers, heart disease, asthma, and arthritis (Loving & Slatcher, 2013). Thus, relationships can be beneficial or detrimental to mental and physical health depending on how individuals navigate social ties in their daily lives.

To demonstrate the influence of environment on people’s daily behaviors in relationships, we apply a socioecological perspective, which considers the influence of physical, societal, and interpersonal environments on human behavior (Oishi, 2014). Extending previous studies that have shed light on the association between interpersonal environment and health (Oishi & Graham, 2010), we demonstrate how relational mobility—the extent of opportunities to choose relationship partners according to one’s own preferences in a given context—evokes distinctive behaviors in forming and maintaining relationships, which lead to different mental and physical health outcomes across and within societies. For example, levels of relational mobility vary across countries (e.g., U.S. vs. Japan) and within countries (e.g., an individual’s subjective perception in the U.S. and Japan; Yuki & Schug, 2012).

Notwithstanding the overarching role of relational mobility in shaping different patterns of behaviors in relationships (Yuki & Schug, 2012), it is still unclear how relational mobility leads to such behaviors. Therefore, the present study aims to further clarify underlying psychological factors that predict such behaviors in societies with different levels of relational mobility. In particular, prior research has suggested that how people navigate and cope with relationship issues is influenced by their relationship-specific mindsets and goals (Knee, Patrick, & Lonsbary, 2003). Two common mindsets involve whether people believe that relationships are “meant to be” (i.e., destiny mindsets) or can be cultivated through effort (i.e., growth mindsets). In line with these mindsets, some people may adopt different relationship goals, focusing on either increasing positive experiences (i.e., approach goals) or decreasing negative experiences (i.e., avoidance goals) in relationships.

Although accumulating evidence suggests relationship mindsets and goals play a role in relationship outcomes and health (Elliot, Gable, & Mapes, 2006; Elliot & Sheldon, 1998), little work has directly examined the role of relational mobility in its connections to relationship mindsets, relationship goals, and mental and physical health across and within countries. Integrating prior theoretical and empirical research, we propose a socioecological health model for understanding the role of relational mobility in predicting the link between relationship mindsets and goals with SWB, physical symptoms, and depressive symptoms using community samples in the U.S. and South Korea.
The role of relational mobility on relationships and health

Although previous studies have focused on the role of immediate environments such as parent–child relationships in the development of mindsets in learning (Haimovitz & Dweck, 2017), a socioecological perspective includes different levels of immediate and macro environments. It is noteworthy that the level of relational mobility can differ between countries (e.g., North America vs. East Asia) and within countries, such as between regions within a country (e.g., metropolitan vs. rural areas), or within persons across different social contexts (e.g., first vs. second school year; Oishi, 2014). Thus, the socioecological perspective extends the focus of prior research to the influence of multifaceted environments in human development.

Among many features in a socioecological environment that influence an individual’s relationship quality and well-being (Oishi & Graham, 2010), recent research has emphasized the role of relational mobility in explaining the origin of between-societal and within-societal differences in how people form and maintain social relationships (Yuki & Schug, 2012). Yuki and his colleague demonstrated that people living in high relational mobility societies (Americans) have frequent opportunities to meet potential relationship partners and freely leave their current relationships if they want to, and this fluid interpersonal environment requires a greater amount of effort to form and maintain relationships. Conversely, those in societies with low relational mobility (Japanese) have few opportunities to meet potential relationship partners and have difficulty leaving current relationships, thus requiring less effort to maintain relationships. Furthermore, these between-societal differences were consistent with the differences from perceptions of relational mobility among individuals within these societies (high vs. low relational mobility score of individuals in America and Japan).

Focusing on socioecological characteristics (i.e., relational mobility) provides a framework for understanding different interpersonal and intrapersonal processes and behaviors between and within societies (Kito, Yuki, & Thomson, 2017; Sato & Yuki, 2014; Schug, Yuki, Horikawa, & Takemura, 2009). In societies and social contexts with high relational mobility, people have more freedom to choose and develop their relationships, and this environment motivates them to pursue desired relational outcomes such as intimacy or growth. Previous studies have found that people in high relational mobility contexts are more likely to choose relationship partners with qualities similar to their own (Schug et al., 2009), provide frequent social support to others (Kim, Sherman, & Taylor, 2008), disclose more frequently to others (Schug, Yuki, & Maddux, 2010), and show a higher level of self-esteem and SWB (Sato & Yuki, 2014) compared to those in low relational mobility contexts. These findings suggest that people develop approach-oriented social strategies to adapt to the socially flexible and changing environment.

In contrast, in societies and social contexts with low relational mobility, people have less freedom to choose and leave their relationships, and this environment orients them to avoid undesired outcomes in their relationships such as rejection or conflict. Previous studies found that people in low relational mobility contexts are more sensitive than those in high relational mobility contexts about damaging their friendships (Li, Adams, Kuriç, & Hamamura, 2015) and being rejected by others (Lou & Li, 2017). This sensitivity to negative experiences in relationships can explain why negative affect is more
prevalent among people in low relational mobility contexts (Norasakkunkit, Kitayama, & Uchida, 2012). Therefore, people adopt avoidance-oriented social strategies through repeated environmental exposure, which in turn may threaten their mental health.

**Relationship mindsets and goals as mediators**

Despite accumulating evidence of the associations between relational mobility and health, it is still unclear what psychological factors underlie these associations. Extant research in various fields has suggested that people’s mindsets and goals are key predictors for human behavior. Mindsets about the potential for changes in themselves and their surroundings guide which goals people pursue and how they react to situations (Dweck & Leggett, 1988). Previous studies have documented that these mindsets predict goal choices and behavioral tendencies in the domains of learning (Dweck, Chiu, & Hong, 1995), attribution (Chiu, Hong, & Dweck, 1997), communication (Lou & Noels, 2017), and interpersonal relationships (Franiuk, Pomerantz, & Cohen, 2004; Knee et al., 2003).

Notably, relationship research has highlighted how these differing mindsets lead to different relationship goals (Franiuk et al., 2004; Knee et al., 2003). While destiny mindsets orient people toward evaluating the potential of relationships, growth mindsets orient people toward cultivating their relationships with effort. These orientations may ultimately guide people’s adoption of approach or avoidance coping goals (Gable & Impett, 2012). When confronting conflicts in romantic relationships, people with destiny mindsets tend to focus on negative experiences and avoid coping with relationship challenges, whereas people with growth mindsets tend to focus on the process of learning about their romantic partners and put effort toward overcoming relationship challenges (Knee & Canevello, 2006). For people who believe in growth, compared to those who believe in destiny, relationship conflicts have less negative impact on their perception of relationship satisfaction and commitment (Knee, Patrick, Vietor, & Neighbors, 2004; Mattingly, McIntyre, Knee, & Loving, 2018). In this regard, growth mindsets function more adaptively in stressful relationship situations; they help individuals cope more actively and maintain more positive and fewer negative emotions than do destiny mindsets (Knee et al., 2003).

The adoption of specific goals can predict how individuals interpret and react to a situation, inasmuch as goals act as a more proximal predictor of behaviors in relationships than mindsets (i.e., mindset–goal–response models; Dweck & Leggett, 1988; Lou & Noels, 2016). Whereas approach social goals encourage focusing on and moving toward desired outcomes such as intimacy and growth in relationships, avoidance social goals encourage focusing on and moving away from potential undesired outcomes such as conflict and rejection (Gable & Impett, 2012). Approach or avoidance goals have important implications for relationship satisfaction (Kuster et al., 2017) and for well-being and physical symptoms (Elliot et al., 2006). In the domain of romantic relationships, Kuster et al. (2017) found that people with strong approach goals reported fewer experiences of stress from their relationships and applied more effective ways of coping through communication with their partners, whereas those with strong avoidance goals perceived more frequent experiences of stress and demonstrated ineffective ways of coping.
Beyond couple unions, interpersonal relationships with family members, friends, and peers are also a core part of individuals’ social lives. Elliot, Gable, and Mapes (2006) demonstrated that strong approach-oriented goals in friendships led to increased SWB, whereas strong avoidance-oriented goals in friendships led to increased physical symptoms. Moreover, the adoption of avoidance goals was associated with experiences of anxiety and depression (Dickson & MacLeod, 2004). These findings converge to suggest that relationship mindsets and goals can be important predictors of mental and physical health.

To date, only a limited number of studies have empirically examined how relationship mindsets and goals function as an underlying mechanism mediating the associations between relational mobility and relationship outcomes. We expect that people who can freely move between relationships and choose relationship partners based on their preferences (i.e., high relational mobility) would acquire the mindset that the nature of relationships can change with their efforts and would apply approach-oriented social goals for improving their relationships. In contrast, people who do not have such freedom of choice in their environment (i.e., low relational mobility) would adopt the mindset that the nature of relationships is due to destiny and would apply avoidance-oriented goals for securing their current relationships. A recent study partially supported this idea by demonstrating that people who perceived their social context as low in relational mobility (i.e., Hong Kong Chinese) had stronger destiny mindsets and more sensitivity to social rejection, whereas people who perceived their social context as high in relational mobility (i.e., European Canadians) had stronger growth mindsets and less sensitivity to rejection (Lou & Li, 2017). Further, the results suggested that relational mobility explained individual differences in relationship mindsets and sensitivity to negative interpersonal events.

**A socioecological health model**

Integrating prior theoretical and empirical research on the role of relational mobility in explaining different interpersonal and intrapersonal processes between and within societies (Kito et al., 2017; Schug et al., 2010), we apply a socioecological health model to explain how a person’s perceived social environment shapes the underlying psychological processes in one’s relationships and health in a given context (Holt-Lunstad, 2017; Oishi & Graham, 2010). Importantly, we highlight how relationship mindsets and goals lead to mental and physical health, while relational mobility functions as an antecedent factor (see Figure 1).

This proposed model specifies three directional associations. First, relational mobility is a predictor of relationship mindsets, relationship goals, and mental and physical health. Specifically, we expect that higher relational mobility would predict stronger mindsets in growth, whereas lower relational mobility would predict stronger mindsets in destiny (Lou & Li, 2017).

Second, relationship goals mediate the link between relationship mindsets and health outcomes, consistent with previous mindset–goal–response models (Dweck & Leggett, 1988; Lou & Noels, 2016). We expect that people with growth mindsets would be more...
likely to adopt approach goals in relationships, whereas people with destiny mindsets would be more likely to adopt avoidance goals in relationships.

Third, growth mindsets and approach relationship goals predict positive consequences in mental and physical health, whereas destiny mindsets and avoidance goals predict the opposite. Therefore, we expect that the pathways between relationship mindsets and goals would result in different levels of SWB, physical symptoms, and depressive symptoms (Elliot et al., 2006; Knee et al., 2003). In the present study, we compare these associations among adults from the U.S. and South Korea to test whether the socioecological health model can be applied across and within societies. Further, we examine the indirect effects from relational mobility to mental and physical health via relationship mindsets and goals.

**Method**

**Participants and procedure**

Two-hundred six American participants (48% female; $M_{age} = 39.14, SD_{age} = 11.35$; age range = 21–77) completed an online survey through Amazon Mechanical Turk. Seventy-three percent of the participants were European American, 8.7% were African American, 5.8% were Hispanic/Latino/Latina, and 4.9% were East Asian. All were born in the U.S. and had English as their first language. Two-hundred thirty-six Korean participants (51% female; $M_{age} = 38.89, SD_{age} = 11.11$; age range = 20–59) were recruited through a professional Korean survey company. Korean participants were born and raised in Korea and spoke Korean as their first language.¹

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¹ The original questionnaires were constructed in English. We used the equivalent Korean-translated versions of the Relational Mobility Scale (Yuki & Schug, 2012), the
Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), and the Epidemiological Studies Depression Scale (Radloff, 1977). The questionnaires that had not been used in Korea were translated into Korean by a Korean–English bilingual research assistant. Another Korean–English bilingual research assistant back-translated the Korean version to English and compared them with the original (Brislin, 1970). Any discrepancies in the comparison were resolved through discussion among three Korean–English bilingual researchers.

**Measures**

Relational mobility. The Relational Mobility Scale (Yuki & Schug, 2012) was used to measure participants’ perceived relational mobility. Participants were asked to respond to 12 statements about how easy or difficult it is for people around them to meet new people and to form and choose relationships (e.g., “People around me have many chances to get to know other people”) on a 6-point scale (1 = strongly disagree; 6 = strongly agree). Higher scores represent greater perceived relational mobility.

Relationship mindsets. The Implicit Theories of Relationships Questionnaire (Knee et al., 2003) was used to measure participants’ mindsets about general relationships including family, friends, neighbors, romantic partners, classmates, and schoolmates. The questionnaire consists of 11 destiny mindset items (e.g., “Relationship partners are either compatible or they are not”) and 11 growth mindset items (e.g., “A successful relationship with family, friends, romantic partners, classmates, and schoolmates evolves through hard work and resolution of incompatibilities”). Participants responded on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating a stronger mindset.

Relationship goal orientations. We adapted Elliot et al.’s (2006) Friendship Goal Items so that participants could focus on their general relationship goals. The questionnaire consists of four relationship approach goal items (e.g., “I try to deepen my relationships with people around me”) and four relationship avoidance goal items (e.g., “I try to avoid disagreements and conflicts with people around me”). Participants responded to the items on a scale from 1 (not at all true of me) to 7 (very true of me), with higher scores signifying a stronger endorsement of that goal.

Subjective well-being. The SWB index comprises items assessing participants’ life satisfaction, positive affect, and negative affect “during the past few days” (Diener et al., 1985). Diener, Emmons, Larsen, and Griffin’s (1985) Satisfaction with Life Scale was used to assess participants’ life satisfaction. Participants responded to each of the five items (e.g., “I am satisfied with my life”) on a scale from 1 (strongly disagree) to 7 (strongly agree). In addition, we used Mackinnon et al.’s (1999) Short Positive and Negative Affect Scale to evaluate participants’ experience of five positive affects (enthusiastic, inspired, alert, excited, and determined) and five negative affects (afraid, upset, nervous, scared, and distressed). Participants reported how often they had felt each affect during the past few days on a scale from 1 (not at all) to 7 (very frequently).
Following the recommended procedure (Diener, Diener, & Diener, 1995), an SWB index was created by subtracting the mean score for negative affect from the sum of the mean scores for life satisfaction and positive affect.

**Physical symptoms.** Elliot and Sheldon’s (1998) 13-item Physical Symptom Scale was used to assess participants’ experience of physical symptoms during the “past few days.” This measure draws from a number of other brief symptom inventories and assesses the following symptoms: headaches, coughing/sore throat, shortness of breath, stiff/sore muscles, chest/heart pain, faintness/dizziness, acne/pimples, stomach ache/pain, runny congested nose, hot or cold spells, nausea or upset stomach, feeling weak in parts of your body, and numbness or tingling in parts of your body. These symptoms have been identified as precursors to common diseases and conditions such as ulcers, heart disease, asthma, and arthritis. Participants responded to each of the items on a scale from 1 (not at all) to 7 (very frequently), with higher scores signifying more frequent symptoms.

**Depressive symptoms.** To assess depressive symptoms that arise when individuals experience stress, we used Ryder and his colleagues’ (2008) psychological and somatic subscales, derived from both the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) and the General Health Questionnaire (GHQ; Goldberg & Williams, 1988). Participants rated “how often you felt each symptom when your stress level got extremely high” on a scale from 1 (rarely or none of the time) to 4 (most or all of the time). Specifically, our psychological subscale consisted of 10 items from the CES-D scale (e.g., “I felt that I could not shake off the blues even with help from my family and friends”) and 7 items from the GHQ (e.g., “I felt that I could not face problems”). The somatic subscale consisted of 2 items from the CES-D scale (e.g., “My sleep was restless”) and 9 items from the GHQ (e.g., “I had aches and pains all over my body”). A depressive symptom index was computed by averaging scores from these subscales, with higher scores indicating more frequent symptoms arising from stressful events.

**Analytic plan**

Analyses were conducted with Mplus 7.11 (Muthén & Muthén, 1998–2012). We first estimated observed power to detect expected effects based on our conceptual model using a Monte Carlo approach (Muthén & Muthén, 2002; Thoemmes, MacKinnon, & Reiser, 2010). In 10,000 simulations, analyses revealed that with our sample size for each group, we had adequate power (86–100% power across parameters) to detect the significant paths between relational mobility and growth mindsets, between growth mindsets and approach goals, and between approach goals and health outcomes. Further, the power for detecting the indirect effects for both groups was 75–84% of samples (observed power = between .75 and .84), which is close to the guideline of .80 (Cohen, 1988).

To examine between and within societal differences in study variables, we then compared the mean differences of study variables between the American and Korean samples and computed correlations between the variables for each cultural sample. Next, we tested the measurement equivalence of model variables using multigroup confirmatory factor analysis, with the fully constrained model, in which all factor loadings
and the intercepts of the indicators were set to be equal between the two countries. This process allows for a comparison of the relationship between psychological constructs among different groups (Van de Vijver & Leung, 1997; see Online Supplementary Table for each model’s fit information).

To test whether our conceptual model was applicable across and within societies, we then applied multiple group path modeling, which is often used to answer this type of research question (Mutheén & Mutheén, 2005), to confirm associations among relational mobility, relationship mindsets and goals, and mental and physical health in both countries (see Figure 1 for our conceptual model). Finally, the indirect paths were tested with bootstrapping procedures (Preacher & Hayes, 2008). Overall model fit was assessed with the $\chi^2$ test, the root mean square error of approximation (RMSEA), and the comparative fit index (CFI). A nonsignificant $\chi^2$ test, RMSEA values less than .05, and CFI values greater than .95 indicate a good fit. RMSEA values less than .08 and CFI values greater than .90 suggest an acceptable fit (Little, 2013).

### Results

Each measure’s descriptive statistics and reliabilities including means ($M$s), standard deviations ($SD$s), and Cronbach’s alphas ($\alpha$s) are presented in Table 1.

#### Table 1. Means, standard deviations, and correlation matrix of the primary variables in the U.S. and Korea ($N_{total} = 442$).

<table>
<thead>
<tr>
<th>Variable</th>
<th>U.S. ($n = 206$)</th>
<th>Korea ($n = 236$)</th>
<th>Theoretical range</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$\alpha$</td>
</tr>
<tr>
<td>1. Relational mobility</td>
<td>4.11</td>
<td>.81</td>
<td>.87</td>
</tr>
<tr>
<td>2. Destiny mindsets</td>
<td>2.80</td>
<td>.79</td>
<td>.91</td>
</tr>
<tr>
<td>3. Growth mindsets</td>
<td>3.64</td>
<td>.65</td>
<td>.85</td>
</tr>
<tr>
<td>4. Relationship avoidance goals</td>
<td>5.06</td>
<td>1.13</td>
<td>.80</td>
</tr>
<tr>
<td>5. Relationship approach goals</td>
<td>5.23</td>
<td>1.22</td>
<td>.89</td>
</tr>
<tr>
<td>6. SWB</td>
<td>5.94</td>
<td>3.47</td>
<td>.71</td>
</tr>
<tr>
<td>7. Physical symptoms</td>
<td>2.54</td>
<td>1.22</td>
<td>.93</td>
</tr>
<tr>
<td>8. Depressive symptoms</td>
<td>2.16</td>
<td>.68</td>
<td>.96</td>
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<tr>
<td></td>
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<tr>
<td>Note. Correlations above the diagonal are for the Korean sample, and correlations below the diagonal are for the American sample. SWB = subjective well-being; SD: standard deviation. *$p &lt; .05$; **$p &lt; .01$; ***$p &lt; .001$ (two-tailed).</td>
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</tr>
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</table>
Mean differences

We examined mean-level gender differences in SWB, depressive symptoms, and physical symptoms between the American and Korean samples. A 2 (gender: male and female) × 2 (country: America and Korea) analysis of variance (ANOVA) revealed that there were neither gender differences nor country by gender interactions with SWB, Fs (1, 438) < 1.79, ps > .15. Consistent with previous findings (van Wijk, Huisman, & Kolk, 1999), there was a gender difference in physical symptoms, such that female participants (M = 2.97, SD = 1.17) reported more frequent physical symptoms than did male participants (M = 2.66, SD = 1.22), F (1, 438) = 7.03, p = .01, η² = .02. Similarly, consistent with previous findings (Nolen-Hoeksema, Larson, & Grayson, 1999), there was a gender difference in depressive symptoms: female participants (M = 2.27, SD = .68) reported more frequent depressive symptoms than male participants (M = 2.03, SD = .67), F (1, 438) = 13.95, p < .001, η² = .03. There was no interaction of gender by country in physical and depressive symptoms, Fs (1, 438) < 1.32, ps > .25.

We also tested mean-level age differences in relational mobility, relationship mindsets and goals, and health outcomes. A 4 (age range: 20s, 30s, 40s, 50s, and over) × 2 (country: America and Korea) ANOVA showed that there were no age differences nor country by age interactions in relational mobility, relationship mindsets and goals, SWB, or physical symptoms, Fs (3, 434) < 2.35, ps > .07. There were significant age differences in depressive symptoms, F (3, 434) = 2.90, p = .04, η² = .02. Further planned comparisons showed that younger participants in their 20s and 30s reported more frequent depressive symptoms compared to older participants in their 40s and older, t(438) = 2.98, p = .003. There was no interaction of country by age in depressive symptoms, F (3, 434) < 2.34, p > .07. Therefore, we did not include age and gender in the following preliminary analyses.

We then compared mean-level differences of the study variables between American and Korean samples using t-tests (see Figure 2). Tests of the eight comparisons were adjusted using Holm’s (1979) sequential procedure. Results showed that Americans reported higher relational mobility than Koreans, t(440) = 5.72, p < .001, d = .54, which is consistent with previous findings (Yuki & Schug, 2012). Additionally, Americans had stronger growth mindsets, t(440) = 8.12, p < .001, d = .77, and stronger relationship approach goals than Koreans, t(440) = 2.89, p = .004, d = .27. There was no difference in the strength of destiny mindsets and avoidance goals between the two samples, ts < 1, ps > .50. Finally, consistent with prior research (Diener et al., 1995; Ryder et al., 2008), Americans reported higher SWB, t(440) = 8.79, p < .001, d = .82, and fewer physical symptoms than Koreans, t(440) = -4.53, p < .001, d = .43. There was no difference in depressive symptoms between the two samples, t(440) < 1, p = .68.

Correlations

As shown in Table 1, in both Korea and the U.S., higher relational mobility was linked with higher SWB (Americans: r = .33; Koreans: r = .30), fewer physical symptoms (Americans: r = -.24; Koreans: r = -.15), and fewer depressive symptoms (Americans:
This implies that relational mobility is a key variable in understanding individual differences in mental and physical health across countries.

We then compared correlations between relationship mindsets and goals and health outcomes. In both countries, stronger destiny mindsets were positively associated with physical (Americans: $r = .27$; Koreans: $r = .33$) and depressive (Americans: $r = .24$; Koreans: $r = .26$) symptoms, whereas stronger growth mindsets were positively associated with SWB (Americans: $r = .21$; Koreans: $r = .19$). Stronger destiny mindsets were associated negatively with SWB among Americans ($r = -.18$), but not among Koreans ($r = -.11$). Stronger growth mindsets were positively associated with physical symptoms among Koreans ($r = .14$), but not among Americans ($r = -.10$). There was no association between growth mindsets and depressive symptoms in either country (Americans: $r = .01$; Koreans: $r = .06$).

Additionally, while stronger avoidance goals were associated with more physical and depressive symptoms among Koreans (from $r = .13$ to $r = .23$), stronger approach goals were associated with higher levels of SWB in both countries (Americans: $r = .38$; Koreans: $r = .20$) and fewer physical symptoms among Americans ($r = -.21$). Thus, we found that stronger growth mindsets and approach goals were associated with better mental health, whereas stronger destiny mindsets were associated with poorer mental and physical health in both countries. In the light of these exploratory results, we proceeded to the multiple group path modeling.

**Multiple group path analyses**

To test whether our conceptual model (an individual’s perceived relational mobility impacts mental and physical health via relationship mindsets and goals) can be applied in both countries (see Figure 1), we computed a multiple group path analysis with gender,
age, and education level as control variables. This model fit the data well: $\chi^2(29) = 47.76, p = .02$; RMSEA = .05 [90% confidence interval (CI) = .02, .08]; CFI = .98. In addition to the global fit testing, we also conducted local fit testing by inspecting the normalized residuals. This process confirmed the good fit of our model.

Figure 3 depicts the standardized path modeling results. Model constraints were placed on corresponding paths between groups, and $\chi^2$ difference tests were computed to test the consistency of associations across countries. This process revealed that most paths were equivalent between the two countries; the only parameters moderated by country were (1) the path from destiny mindsets to physical symptoms, which may be due to greater prevalence of physical symptoms among East Asians compared to North Americans (Ryder et al., 2008) and (2) three covariances between destiny and growth mindsets, SWB and physical symptoms, and SWB and depressive symptoms.

Higher levels of relational mobility were associated with stronger growth mindsets and weaker destiny mindsets, consistent with Lou and Li’s (2017) findings. Higher relational mobility was also associated with stronger approach and avoidance goals. Finally, higher relational mobility was associated with greater SWB and fewer physical symptoms. Relationship mindsets also predicted relationship goals; those with stronger growth mindsets tended to pursue both approach and avoidance goals, but stronger destiny mindsets were only associated with stronger avoidance goals. Consistent with our expectations, stronger relationship approach goals predicted positive health outcomes, including higher levels of SWB and fewer depressive symptoms. In contrast, stronger destiny mindsets and avoidance goals predicted less SWB and more physical and depressive symptoms.

Model comparison

Given the cross-sectional nature of our data, we compared our conceptual model to three alternative models considering plausible alternate directional paths among the study variables. Specifically, we tested for nondirected or reverse-directed paths between relationship mindsets and goals due to the influence of relationship partners (Canevello & Crocker, 2011), and an alternative theoretical health model which suggests that prior health conditions affect psychological factors, such as self-efficacy and outcome expectation (Bandura, 2004). In contrast, our health model suggests that relationship mindsets in a given environment predict relationship goals, which influences health outcomes. These alternative models were evaluated using non-nested model comparisons with the Akaike information criterion (AIC) and Bayesian information criterion (BIC) where smaller AIC and BIC values indicate less discrepancy between our conceptual model and a model most likely to be replicated in future samples (i.e., a true model; West, Taylor, & Wu, 2012).

We first tested our conceptual model against a model with nondirected paths between relationship mindsets and goals, that is, relational mobility → relationship mindsets → relationship goals → mental and physical health (AIC = 7966.18; BIC = 8252.57). We then compared our model with a model that has the reverse-directed paths between relationship mindsets and goals, that is, relational mobility → relationship goals → relationship mindsets → mental and physical health (AIC = 7963.51; BIC = 8217.17).
Figure 3. Path analysis displaying the effect of relational mobility on mental and physical health via relational mindsets and goals among Americans and Koreans. Standardized coefficients displayed. Nonsignificant paths not shown for clarity. Gender, age, and education level were included as controls. Model fit indices: $\chi^2(29) = 47.76$, root mean square error of approximation = .05 (90% confidence interval [.02, .08]), comparative fit index = .98, Tucker–Lewis index = .96, and standardized root mean square residual = .06. All paths were constrained with equality between groups except those in boldface. The coefficients from the American sample are not in parentheses, and Korean coefficients are in parentheses. SWB = subjective well-being. *$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed).
Lastly, we assessed whether relational mobility influences health, which then shapes relationship mindsets and goals, that is, relational mobility → mental and physical health → relationship mindsets → relationship goals (AIC = 7990.79; BIC = 8236.27). We found that the AIC and BIC values of our conceptual model (AIC = 7909.70; BIC = 8163.36) were smaller than those of the three alternative models. These results suggest less discrepancy between our conceptual model and the true model, and therefore, support the proposed model.

### Indirect effects

The indirect paths from relational mobility to mental and physical health were tested using the 5,000 bootstrapping procedure (an indirect path is significant when 0 is not included in the 95% CIs). In particular, we tested whether relationship mindsets and goals mediated associations between relational mobility and self-reported mental and physical health. We tested nine indirect pathways in the model (see Table 2), and four indirect pathways were significant for both American and Korean samples: (1) relational mobility → growth mindsets → approach goals → SWB (β = .05, p < .001, 95% CI [.02, .07]); (2) relational mobility → growth mindsets → avoidance goals → SWB (β = -.02, p < .01, 95% CI [−.04, −.01]); (3) relational mobility → growth mindsets → approach goals → depressive symptoms (β = −.02, p < .01, 95% CI [−.04, −.01]); and (4) relational mobility → growth mindsets → avoidance goals → depressive symptoms.

### Table 2. Indirect associations between relational mobility and health outcomes with relationship mindsets and goals as mediators: 5000 bootstrap estimates and 95% CIs (N_{total} = 442).

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Mediator</th>
<th>Outcome</th>
<th>β</th>
<th>C.I.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher relational mobility →</td>
<td>Stronger growth mindsets →</td>
<td>Stronger approach goals →</td>
<td>Higher SWB</td>
<td>.05***[.02, .07]</td>
</tr>
<tr>
<td>Higher relational mobility →</td>
<td>Stronger growth mindsets →</td>
<td>Stronger avoidance goals →</td>
<td>Lower SWB</td>
<td>−.02**[−.04, −.01]</td>
</tr>
<tr>
<td>Higher relational mobility →</td>
<td>Weaker destiny mindsets →</td>
<td>Weaker avoidance goals →</td>
<td>Higher SWB</td>
<td>.01[.00, .02]</td>
</tr>
<tr>
<td>Higher relational mobility →</td>
<td>Stronger growth mindsets →</td>
<td>Stronger approach goals →</td>
<td>Lower physical symptoms</td>
<td>−.02[−.03, −.01]</td>
</tr>
<tr>
<td>Higher relational mobility →</td>
<td>Stronger growth mindsets →</td>
<td>Stronger avoidance goals →</td>
<td>Higher physical symptoms</td>
<td>.01[.00, .03]</td>
</tr>
<tr>
<td>Higher relational mobility →</td>
<td>Weaker destiny mindsets →</td>
<td>Weaker avoidance goals →</td>
<td>Lower physical symptoms</td>
<td>.00[−.01, .00]</td>
</tr>
<tr>
<td>Higher relational mobility →</td>
<td>Stronger growth mindsets →</td>
<td>Stronger approach goals →</td>
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<td>−.02**[−.04, −.01]</td>
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<td>.03**[.01, .04]</td>
</tr>
<tr>
<td>Higher relational mobility →</td>
<td>Weaker destiny mindsets →</td>
<td>Weaker avoidance goals →</td>
<td>Lower depressive symptoms</td>
<td>−.01[−.02, .00]</td>
</tr>
</tbody>
</table>

Note. Standardized β estimates shown. CI = 95% bias-corrected CI; CI: confidence interval; SWB = subjective well-being.

*p < .10; *p < .05; **p < .01; ***p < .001 (two-tailed).
These indirect effects can be interpreted to mean that a 1-SD increase in relational mobility was associated with a .05-SD increase in SWB via the growth mindsets and approach goals, whereas a 1-SD increase in relational mobility was associated with a .02-SD decrease in SWB via the growth mindsets and avoidance goals. Likewise, a 1-SD increase in relational mobility was associated with a .02-SD decrease in depressive symptoms via the growth mindsets and approach goals, while a 1-SD increase in relational mobility was associated with a .03-SD increase in depressive symptoms via the growth mindsets and avoidance goals.

In sum, the results from significant indirect pathways suggest that people who perceive their social environment as having high mobility are more likely to hold strong growth mindsets; their decision to adopt relationship approach or avoidance goals leads to different mental health outcomes. Although the indirect pathways from relational mobility to mental and physical health via destiny mindsets and avoidance goals were not significant, we identified significant paths whereby people who perceive their social environment as having low mobility are more likely to hold strong destiny mindsets, leading to avoidance goals and, ultimately, poorer mental and physical health. However, we could not find any significant indirect pathways leading from relational mobility to physical health via relationship mindsets and goals.

**Discussion**

The present research provides support for our hypothesized socioecological health model in the U.S. and Korea. The results lead to three conclusions. First, relational mindsets and goals predict mental and physical health. Growth mindsets and approach relationship goals may direct individuals’ attention to desired outcomes in their relationships and contribute to better mental health, whereas destiny mindsets and avoidance goals may direct individuals’ attention to possible undesired outcomes and lead to poorer mental and physical health, consistent with Elliot et al. (2006) and Knee, Patrick, and Lonsbary (2003).

Second, we provide an important contribution to the understanding of the theoretical links among social ecology, individual differences, and health. In our socioecological health model, relational mobility predicts relationship mindsets and goals, leading to different mental and physical health outcomes in both countries. While cross-country differences in the link between relationships and health have been extensively discussed in terms of the cultural framework of independent and interdependent self-construals (Markus & Kitayama, 1991), several researchers (Kito et al., 2017) have argued that the self-construal framework tends to oversimplify the cause of behaviors as internalized cultural norms and values, and that this framework cannot support some distinctive psychological tendencies and behaviors in close relationships (e.g., a strong preference for similar relationship partners among individuals with independent self-construals; Schug et al., 2009). Instead, they suggested that a socioecological perspective can be an alternative explanatory framework. Indeed, our findings support the mounting evidence that the socioecological perspective serves as a strong theoretical framework for elucidating the origin of relationship mindsets and goals and their influences on mental and physical health.
Third, based on our socioecological health model, we found support for the mediating role of relationship mindsets and goals in the link between relational mobility and health outcomes. As expected, positive health outcomes among people in high relational mobility societies were explained by strong growth mindsets and approach goals, whereas negative health outcomes among people in low relational mobility societies were explained by strong destiny mindsets and avoidance goals. While prior research has highlighted the benefits of growth mindsets in actively coping with negative events in relationships (Knee et al., 2003), we also found an indirect path whereby people who perceive their social environment as high in mobility can have negative health outcomes when they hold strong growth mindsets and avoidance goals (see Table 2).

Why, then, would people who live in high relational mobility societies and believe in growth adopt both approach and avoidance goals in relationships? We speculate that a social environment where there is greater freedom of choice in interpersonal relationships encourages individuals to acquire growth mindsets, emphasizing an individual’s efficacy in developing and maintaining desired relationships (Sato & Yuki, 2014). It is possible that individuals with growth mindsets, in general, are more goal-oriented and flexibly apply both approach and avoidance strategies depending on the social situation at hand. In contrast, individuals holding destiny mindsets have lower social motivation to improve relationships but may have stronger motivation to maintain relationships and avoid letting their relationships become negative; thus, they are more likely to adopt avoidance goals.

Limitations and future directions

This study has several limitations. First, our findings were based on self-reported cross-sectional data. Specifically, while relational mobility is conceptualized as a socioecological construct, we draw from self-reported measures rather than objective and/or behavioral measures (such as divorce/remarriage rates, job turnover rates, and residential mobility; Li, Masuda, & Lee, 2018). For instance, Li, Masuda, and Lee (2018) employed an experimental manipulation method to investigate a causal relationship between “induced” relational mobility and changes in interpersonal behaviors. Also, though self-reported health has implications for mortality (McGee, Liao, Cao, & Cooper, 1999), we did not find any significant indirect effects of relational mobility to physical health using the self-reported measure. Additionally, since our data were cross-sectional, our analysis was unable to confirm the temporal precedence of the predictor over the mediating variables. Thus, further research is needed to extend the current findings with experimental manipulation and objective health indicators, such as the measurement of heart rate and cortisol level.

While Knee et al. (2003) proposed that destiny and growth mindsets are independent, we found opposite associations between these mindsets among Americans ($r = -.19$) and Koreans ($r = .17$). Consistent with previous work (Knee et al., 2003; Lou & Li, 2017), our data showed that both Americans and Koreans rated themselves stronger on growth mindsets compared to destiny mindsets, but the mean difference between growth and destiny mindsets was greater among Americans ($M_{diff} = .84$) than Koreans ($M_{diff} = .39$). Further, destiny and growth mindsets were positively correlated in the Korean
sample, whereas they were negatively correlated in the American sample. We speculate that the negative association between the mindsets among Americans reflects the strong difference of valuing more growth mindsets than destiny mindsets. In contrast, the positive association among Koreans may indicate that both mindsets are perceived as more equally valued among Koreans. Specifically, the positive association among Koreans may be explained by their culturally dominant dialectical beliefs (i.e., tolerance of contradictions; Choi, Koo, & Choi, 2007). Future research should confirm the role of cultural beliefs in the association between mindsets.

Although we found significant paths whereby people with destiny mindsets tend to adopt avoidance goals, which leads to negative health outcomes, prior research has addressed possible moderators among people with destiny mindsets in relationship goals and behaviors (Burnette & Franiuk, 2010; Franiuk et al., 2004). For instance, when people with destiny mindsets perceive their relationship partner as the “right” person, they tend to adopt relationship approach strategies including downplaying negative events in relationships, ultimately contributing to positive outcomes in relationships. Future research should consider the influence of possible factors in the link among relationship mindsets, goals, and health outcomes.

Building on our unexpected finding that growth mindsets and avoidance goals mediate the relationships between relational mobility and health outcomes, we would like to further investigate situations in which growth mindsets produce avoidance goals and negative outcomes in relationships. As Knee et al. (2003) suggested, growth mindsets are associated with a committed, long-term approach in relationships, whereas destiny mindsets are associated with a process of evaluating potential partners and moving on.

It is possible that other individual factors may mediate the link between growth mindsets and goal orientations. For example, the extent to which people experience the integration of their partners into the self (self-expansion) in their relationships can determine whether to pursue approach or avoidance goals. Perhaps only those with growth mindsets and self-expansion have approach goals and positive outcomes in relationships and health (Mattingly et al., 2018). Future research should seek to confirm the underlying mechanism of this indirect pathway.

Conclusion

Applying a socioecological perspective to a multilevel investigation of mental and physical health, the current study documents how a socioecological factor (relational mobility) predicts different mental and physical health outcomes, mediated by individual factors (relationship mindsets and goals). Our findings underscore the need to consider the socioecological context when making cross-country comparisons, given that between-country and within-country variations stem from how individuals adapt to differing social environments.

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Open research statement
This research was not pre-registered. The data and materials used in the research are available upon request by emailing hajin@ualberta.ca or can be obtained at: openscienceframework.org.

Supplemental material
Supplemental material for this article is available online.

Note
1. There were no differences in mean age, \( t(440) = .24, p = .81 \), or gender composition, \( \chi^2 = .34, p = .56 \), between Americans and Koreans. Regarding education level, 55.8\% of Americans and 71.2\% of Korean participants obtained a bachelor’s degree or higher. American and Korean participants differed significantly in their level of education, \( \chi^2 = 10.46, p = .001 \).

References


