PNAS
www.pnas.org

Supplementary Information for

Relational mobility predicts social behaviors in 39 countries and is tied to historical farming and threat

Robert Thomson, Masaki Yuki, Thomas Talhelm, Joanna Schug, Mie Kito, Arin H. Ayanian, Julia C. Becker, Maja Becker, Chi-yue Chiu, Hoon-Seok Choi, Carolina M. Ferreira, Marta Fülöp, Pelin Gul, Ana Maria Houghton-Illera, Mihkel Joasoo, Jonathan Jong, Christopher M. Kavanagh, Dmytro Khutkyy, Claudia Manzi, Urszula M. Marcinkowska, Taciano L. Milfont, Félix Neto, Timo von Oertzen, Ruthie Pliskin, Alvaro San Martin, Purnima Singh, Mariko L. Visserman

Corresponding author: Masaki Yuki
Email: myuki@let.hokudai.ac.jp

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Other supplementary materials for this manuscript include the following:

- All data, syntax, and survey materials are made available at the Open Science Framework link below. MPLUS syntax for analyses are organized in folders labelled with the corresponding table number/name.

www.pnas.org/cgi/doi/10.1073/pnas.1713191115

https://osf.io/qfbjc/

- Interactive visualizations of simple correlations presented in Tables S6 to S10 are available at the link below.

  http://relationalmobility.org

Supplementary Information Text

1. Materials and Methods

1.1 Participants and recruitment

A total of 18,707 participants from 46 countries completed one of two online surveys between October 2014 and June 2016 (see Table 1 for specific dates). Surveys were short (median completion time = 9.43 minutes). Participants completed the relational mobility scale and questions about their closest friend (the Friendship Survey) or their romantic partner (the Romance Survey). The two surveys included mostly the same measures (see Section 1.2 below), and the measures of intimacy, similarity, and self-disclosure were either about their closest friend (the *Friendship Survey*) or their romantic partner (the *Romance Survey*). There was no meaningful difference in relational mobility factor scores between people who responded to the Romance Version of the survey (N = 8,433, M = 2.53, SD = 0.42) and those who responded to the Friendship Version [N = 8,506, M = 2.54, SD = 0.41, $t(16900.15) = 1.80$, $p = 0.071$, $d = 0.02$].

We recruited participants to the surveys using Facebook advertisements, displayed to logged-in Facebook users on the site (Figure S1). Facebook is a major global social networking site, where the vast majority of users mainly connect with existing offline social contacts (1), and boasts a massive international userbase; more than 80% of users hail from outside the US (2). We chose Facebook as a recruitment vehicle because it has proven useful in previous studies (3) and because it has a few advantages over traditional non-probability sampling methods. Although Facebook cannot produce random population samples, Facebook's exposure to the general public means we have access to people who are not "survey experts"—such as the frequent participants of many commercial panel samples. Compared to college student samples, Facebook ads arguably reach a wider sociodemographic audience—particularly in countries where university education is a privilege limited to the wealthy. Screenshots of all ads by language and survey version are available at */Materials/Questionnaire/Facebook_Ads* in *https://osf.io/qfbjc/files/*.

The Facebook advertisements and surveys used the dominant official language in the society targeted (see Section 1.2.1 below). Advertisements displayed on users' news feeds (as opposed to sidebar-displayed ads and Facebook's Audience Network) accounted for approximately 81.0% of the total reach of the advertisements across countries and regions. The average click-through rate (the percentage of users who were displayed an ad who clicked on the ad) was 2.7%, which is comparable (and somewhat higher) than clicks for an average News Feed "action story" advertisement click-through rate of 2.32% in 2013 (4) Our average response rate was 15.9% (percentage of users who clicked on an ad and validly completed the survey).

As noted in the main text, our strategy for sampling societies balanced two main motivations: 1) maximizing representativeness of within-nation samples based on the recruitment method and 2) maximizing variance in relational mobility and hypothesized correlates. To maximize within-nation representativeness, we strove to target Facebook users in societies where Facebook penetration rates exceeded 30%. Doing so should maximize the extent to which any individual within a society has an opportunity to respond to the survey. Of the countries targeted, the average Facebook penetration rate at the time of recruitment was 45.7% (SD = 12.7%), ranging from 17% (Japan) to 67%

(Singapore). Where Facebook penetration rates were below 30%, we selected countries either because they often feature in cross-cultural research (e.g., Japan, 17% penetration rate; South Korea, 28%) or they are relatively under-represented in cross-cultural research, but still have a relatively high Facebook penetration rate (e.g., Morocco, 22% penetration rate; Egypt, 23%; Libya, 26%; Ukraine 26%).

We offered no extrinsic incentives (such as payment or raffles) for recruitment. Instead, participants were offered intrinsic rewards: they could learn about their relationship with either their romantic partner or closest friend. After completing the survey, respondents received immediate feedback on how their responses compared to the average so far of other respondents from the same country or language group. For examples of the report pages, see *Materials/Questionnaire/Report_Page* in *https://osf.io/qfbjc/files/*. By clicking on the Facebook advertisements in order to access the survey landing page, prospective participants were directed immediately to the survey landing page, hosted on the Qualtrics survey platform. The survey landing page offered information about the survey, and participants indicated their willingness to take part in the survey by clicking on the 'Start Survey' link (see Figure S2 and *Materials/Questionnaire/Landing_Page* in *https://osf.io/qfbjc/files/* for survey landing pages). The survey did not require participants to log in to any app associated with Facebook, nor did it require access to or collect data associated with their Facebook account.

Tables S6, S8, and S10 include society-level correlations with the full available sample. These tables also include alternative analyses excluding Latin American countries (Brazil, Chile, Colombia, Mexico, Trinidad and Tobago, Venezuela, Puerto Rico) and Hungary. We ran these analyses because patterns of correlations for some variables were a misfit in Latin America and Hungary. Those societies were high in relational mobility, but they have ecological factors and cultural correlates more common in societies with lower relational mobility. However, the main findings reported in the text are robust to including or excluding Latin America and Hungary.

1.1.1 Sample characteristics

From the 18,707 completed responses, we first removed duplicates. In cases where people responded to both the Friendship and Romance Surveys (as identified by IP address), we kept only the first response. We then removed clearly careless responses (such as selecting the same score for 10 out of 12 items on the balanced relational mobility scale). The pattern of careless responding was not random; the proportion of cases deleted was higher in countries and regions that are lower on the UNDP Education Index (5), $r = -0.45$, $p = 0.009$.

Finally, we removed respondents from countries with less than 100 responses across both surveys so that there would be at least 50 responses per version of the survey ($N \geq 50$ for the Friendship Survey, $N \geq 50$ for the Romance Survey). The excluded countries were: Ghana, $N = 15$; India, $N = 68$; Italy, $N = 81$; Kuwait, $N = 33$; Nigeria, $N = 31$; Saudi Arabia, $N = 63$; United Arab Emirates, $N = 38$. After this, the final sample (combining responses from the Friendship Survey and Romance Survey) had 16,939 responses from 39 countries (Table 1).

Gender bias. Reflecting the inherent self-selection bias in a Facebook-advertisement sampling strategy, and the focus of our survey on close interpersonal relationships, our

sample's gender distribution was heavily skewed towards women: 86.2% of the sample were women, 13.3% men, and 0.5% other. We tested whether this influenced the results by testing at the individual level whether gender (women versus men) was associated with any of the main variables listed below in Section 1.2: relational mobility, self-disclosure, interpersonal similarity, intimacy, and social support. We did this using Mplus 7.4 with the commands Type=complex and CLUSTER IS. These analyses take into account the fact that individuals are not truly independent observations, but rather are nested within societies (6). These nested models help separate out true individual-level effects of gender from differences between societies.

Table S2 shows the results from these regression analyses. All coefficients are very low or non-significant, with R^2 values all below 1%. Importantly, gender explains only 0.04% of the variance in relational mobility scores. This suggests that gender-imbalanced samples are not strongly biasing estimates for different countries. The results for other key outcome variables, such as self-disclosure, also suggest that gender does not have an outsized influence on the key variables in this study. At the same time, we acknowledge the gender imbalance in our samples. Gender differences in relational mobility and other variables should be explored in future studies, but gender differences do not appear to influence the key results in our study.

Age bias. Mean age of the combined sample was 28.9 years (SD = 13.2). An ANOVA of mean age of sample across all societies was significant, $F(38, 16{,}787) = 78.11$, $p < 0.001$, which suggests there is meaningful variance between societies in the mean age of respondents in our overall sample. However, age at both the society level and individual level was not meaningfully associated with levels of relational mobility or other variables (Table S2). The correlation between society-level relational mobility latent means and average age of samples (the between level) was not significant ($r = 0.21$, $p = 0.211$). In within-level (individual-level) analyses, the relationship between age and relational mobility, self-disclosure, similarity, intimacy, and social support were both not meaningful and also weak, predicting 2% or less of the variance (Table S2).

Economic level. We included a single question to gauge the approximate economic level of participant. Participants were asked "How would you characterize the economic level of the household you grew up in?" and asked to respond on a scale from 1 (Low income) to 5 (High income). Most participants (58.6%) reported having grown up in a "middle income" household. However, there was significant variance in mean respondent economic level between countries $F(38, 16{,}876) = 17.24$, $p < 0.001$. Therefore, similar to the analysis above, we examined the individual-level data (taking into account the clustering of the data), to see if economic level predicted any of the outcome variables. The relationship between economic level and relational mobility, self-disclosure, similarity, intimacy, and social support were both weak and not meaningful, predicting 1% or less of the variance (Table S2). Furthermore, society-level means on this economic level variable did not correlate significantly with the society-level relational mobility latent means ($r = -.19$, $p = 0.250$).

While variance in age, gender, and economic level across countries in our sample do not appear to be affecting the main variables of interest in our study, future studies should strive for more probability sampling in order to further rule out confounding effects due to non-probability samples.

1.2 Instruments

Both versions of the survey included the 12-item relational mobility scale [6-point Likert; (7)], a self-disclosure scale (8), a 10-item intimacy scale (9, 10), an interpersonal similarity scale (11), a single-item social support measure, a question about the number of new acquaintances met in the last month, and demographic items. The targets associated with the self-disclosure, intimacy, and interpersonal similarity scales, as well as the social support item, were adjusted to be either "closest friend" or "romantic partner." The Romance Survey included additional questions on the number of romantic partners participants have had. Full scale and question wording (including translations) can be found in *Data_and_Syntax/SPSS/survey-item-wording-all-languages.xlsx* in *https://osf.io/qfbjc/files/*).

1.2.1 Survey languages

The surveys were administered in 20 languages (Table 1). In six Spanish-speaking countries, we adjusted the language to local norms (Chile, Colombia, Mexico, Spain, Puerto Rico, Venezuela). We adjusted Portuguese to Brazilian Portuguese in Brazil. Because Malaysia does not have a clear majority language, we set up advertisements such that total impressions per language would roughly match demographics of the dominant languages spoken within Malaysia: Malay (60%), Chinese (20%) and English (20%).

Survey translation. We used the widely accepted backtranslation procedure (12) to translate the original English version of the survey into each of the other languages. We first hired separate professional translators to translate and backtranslate the surveys. Next we enlisted English-bilingual collaborators for whom the target language was their native tongue. It was a considerable task to ensure the academic rigorousness of the translations. Collaborators discussed any inconsistencies with the first and second author. Scales in all languages are available from the Open Science Framework (*Data_and_Syntax/SPSS/survey-item-wording-all-languages.xlsx* in *https://osf.io/qfbjc/files/*).

1.2.2 The relational mobility scale

The relational mobility scale was first developed by Yuki and colleagues in 2007 (7). It is designed to capture individuals' perceptions of the degree to which people in a society or social context have the freedom and opportunity to choose and dispose of relationships based on personal preference. Table S1 shows the 12 items of the scale. The scale is balanced between positively and negatively worded items. The instructions for participants are as follows:

> How much do you feel the following statements accurately describe people in the immediate society in which you live (friends and acquaintances in your school, colleagues in your workplace, and residents in your town etc.)? Regarding those people around you, please indicate to what extent you agree or disagree with the following statements.
>
> NOTE: The term "groups" in some items refers to collections of people who know each other or who share the same goals, such as friendship groups, hobby groups, sports teams, and companies.

An important aspect of the scale is that it has participants rate the people around them, rather than their own relational mobility. In theory, shifting the reference should help reduce the confound of individual-level characteristics of respondents (13, 14). For example, extraverted, wealthy, or socially attractive people probably have higher *personal* relational mobility, but this is not the focus of the scale. This design could explain why individual factors like gender and income predicted less than 1% of the variance in relational mobility (Section 1.1.1).

Conceptually, the items in Table S1 can be grouped into two correlated factors: a "meeting" factor capturing the degree to which a society or social context affords opportunities for individuals to meet new people and forge new relationships, and a "choosing" factor capturing the degree to which people have the freedom to choose and leave relationships based on personal preference [Figure S4; (7)].

1.2.3 Measurement invariance of the relational mobility scale

In cross-cultural research, it is important to make sure that the instrument used to measure a construct is not only *reliable* in each society it is used in, but also that people in different societies use the instrument in the same ways (i.e., that the scale has *measurement invariance*). There may be cases where a certain item in a scale is easily understood in one society, but is interpreted in a completely different way in another. Previous research has shown that the relational mobility scale and its underlying two-factor structure is reliable and structurally invariant in samples from Japan and the US [see (*14*, *15*)].

However, previous studies have been limited to dual-country comparisons and measurement invariance analysis techniques using exploratory factor analysis (7, 15), which is not as thorough as more recent techniques. In this study, we use multi-group confirmatory factor analysis to robustly test the measurement invariance of the relational mobility scale across the 39 societies in our study. Beyond this, in order to test whether it makes sense to aggregate individual-level relational mobility scores to the society level (16), we also tested for within-nation agreement, between-nation variability, and the reliability of society-level relational mobility scores (as outlined in the main text). Results supported aggregating individual scores to the society level.

We used multi-group confirmatory factor analysis to fully test the measurement invariance of the scale – structural as well as metric and scalar invariance – in our present samples. This method tests the assumption that the items in the scale do indeed measure the concept they were designed to measure, but with the added strength of simultaneously testing this assumption within numerous disparate groups and also modeling the error associated with each item (17–20). But beyond this, if we are going to compare relational mobility between societies, we must be sure that responses to the scale reflect differences in relational mobility, uncontaminated as much as possible by differences in the way in which people respond to scale items. As several researchers put it, "observed differences [in a measured construct] may be due to one or more measurement artifacts unrelated to the constructs of interest" (18). Thus, these potential artifacts must be taken into account.

Multi-group confirmatory factor analysis is a method for doing just that. This procedure allows us to 1) produce latent mean scores for relational mobility at the country and regional level that are relatively free from measurement error, and 2) additionally test for and partial out variance between items that is due to specific, non-

random response styles, which can obscure substantive variance around the core construct of interest.

Previous researchers have found evidence of two response styles that can plague multi-nation studies: acquiescent response style and extreme response style (18, 19, 21, 22). Acquiescent response style is the tendency to agree with scale items in general, regardless of what the items say, and it has been shown to vary based on levels of education, socioeconomic status, and affluence (23, 24). This is particularly relevant for our sample of general-public Facebook users. Many multi-country studies use student samples, which are fairly homogeneous in educational level and SES (particularly when comparing developed and developing countries). But our sampling procedure ensures no such homogeneity beyond the economic and educational means to use and access a computer or a smartphone. Extreme response style is the tendency to use the extreme ends of a Likert scale, again regardless of item content.

We test for acquiescent response style by modelling a latent acquiescent response style factor in our multi-group confirmatory factor analysis (25–27). Then we test for extreme response style as a part of our measurement invariance tests outlined below (18).

1.2.3.1 Relational mobility measurement model (Model 1). Figure S4 shows the overall relational mobility measurement model (Model 1), the model we ultimately utilized in our analyses. In order to test the validity of this second-order measurement model in all 39 countries, we ran a multi-group confirmatory factor analysis, in Mplus 7.4. There was significant multi-variate kurtosis in all samples ($Mdn_{\text{MARDIA'S NORMALIZED ESTIMATE}} = 23.64$, $\text{Range}_{\text{MARDIA'S NORMALIZED ESTIMATE}} = 9.37 – 284.78$), so we used the multiple least squares robust estimation method (MLR) available in Mplus. Therefore, all fit indices indicated below are based on the robust chi-square statistic (as denoted by an asterisk). All Mplus data files and syntax used in the following analyses are publically available from the Open Science Framework (*https://osf.io/qfbjc/files/* in */Data_and_Syntax/Mplus*).

1.2.3.2 Relational mobility measurement model within a pooled individual-level, "culture-free" dataset (Table S3, Model 1).

A common first step in large multi-country studies is to establish a well-fitting model at the individual level using the entire sample. This pooled dataset uses the individual measured variables adjusted and weighted such that cases from each country have equal bearing on the covariance matrix. Mplus does this using raw data and the commands Type=complex and CLUSTER IS (6).

Before settling on the second-order Model 1 (Figure S4) as our final model for analysis, we tested several competing models. First, we specified a first-order two-factor model (Model 1a), which was essentially Figure S4 without the second-order structure. This model is precisely the same model which has emerged in most previous exploratory factor analyses in previous relational mobility research (7, 15). In this model, there is a correlated 'choosing' factor and a 'meeting' factor. The 'choosing' factor is made up of items in the scale which conceptually relate to the freedom that people have in a society to choose their interpersonal relationships and group memberships based on personal preference. The 'meeting' is made up of items which capture the concept of opportunity to meet new people in a society. This model had acceptable fit (Table S3), and the two latent factors were highly correlated ($r = 0.65$, $p < 0.001$).

Next, working on the principle that the simplest model should always be sought, we attempted to fit a first-order single-factor model (Model 1b). This model ignores the previously demonstrated two-factor structure described above, and rather assumes that all the relational mobility items should load onto one general relational mobility factor. This model had a very poor fit, however (Table S3), so was not selected as an alternative to the traditional, slightly more complex two-factor model.

Finally, we tested Model 1 – a model which incorporates a second-order structure into the traditional two-factor, first-order relational mobility scale. This had adequate fit to the data (Table S3), with the two first-order factors loading highly onto the second-order relational mobility factor (.78 for the 'meeting' factor and .83 for the 'choosing' factor). Figure S5 shows all of the path estimates. Despite Model 1 being a more complex model than Model 1b, we selected Model 1 so that we could obtain overall latent means in each sample for the latent construct of relational mobility. If we had chosen Model 1b, we would only be able to obtain latent means for each of the relational mobility sub-constructs, rather than relational mobility as a whole.

Following Billiet and McClendon's method (25), Model 1 (as well as Model 1a and Model 1b) included a factor for common-method bias, labelled STYLE (Figure S4). As discussed above, we expected the STYLE factor to consist of acquiescent response style. In order to test this expectation, we tested a modified version of Model 1 (Model 1c), whereby we added a latent factor, N_AGREE, measured by a single observed acquiescent response style variable (Figure S6). The observed n_agree variable was a simple summation of the frequency an individual responded in the affirmative to a number of semantically similar but oppositely keyed items in the survey (*52*, *53*). In our short web surveys, the only negatively worded items in the survey were in the relational mobility scale. Of course, a random sample of heterogeneous pairs from a number of different scales would have been preferable (30). However, the best we could use were the following three semantically similar item pairs from the relational mobility scale: Pair 1, rm2 and rm5r; Pair 2, rm3 and rm7r; Pair 3, rm6 and rm12r (see Table S1 for item wording).

When testing this model against our pooled culture-free sample, the correlation between the STYLE factor and the N_AGREE factor was $r = 0.84$, suggesting that the latent "style" factor in our measurement model is indeed measuring acquiescent response style (Figure S6).

Finally, we also attempted to fit a relational mobility measurement model that did *not* include a style factor (Model 1d). This initial model was essentially specified identically to Model 1 (Figure S4), but without the STYLE factor, and initially it contained no correlated error terms. But based on multiple iterative tests of this model, the best-fitting model (with error terms RM11r↔RM12r and RM1↔RM5r allowed to covary) still showed poor fit (Table S3). This provides further evidence that the ways that people respond to the relational mobility scale vary between societies and that this variance in response style needs to be removed in order to get a "clean" measure of relational mobility.

1.2.3.3 Testing invariance across groups: Comparative model testing. Returning now to Model 1 (Figure S4), we outline our strategy and results for testing the invariance of the measurement model across samples. We follow the popular process of first testing for

configural invariance, then metric invariance, followed by scalar invariance (17). Considering the χ^2 difference test's sensitivity to sample size when comparing model fit, we follow Chen's (31) model-comparison-specific recommended cutoff values: metric vs. configural, Δ*CFI < .010, Δ*SRMR < .030, Δ*RMSEA < .015; scalar vs. metric, Δ*CFI < .010, Δ*SRMR < .010, Δ*RMSEA < .015. As noted above, the asterisk before the fit index name denotes that the index is based on the robust chi-square, as produced using the robust estimation method in Mplus.

1.2.3.4 Configural invariance (Model 2). Our aim here is to ascertain whether the general structure of Model 1 (Figure S4) is attainable in each society's sample. In testing for configural invariance, we constrain the pattern of fixed and free factor loadings for both the first- and second-order factors to be the same across groups. This model includes the STYLE factor as indicated in Figure S4. The fit indices in Table S3 (Model 2) show acceptable fit of this configural invariance model to the data: S-B χ^2 = 4423.33, p < 0.001, *df* = 1950, **CFI* = .928, **SRMR* = .050, **RMSEA* = .054 (90% *CI* = .052, .056). From here, we will use these fit indices from Model 2 as a baseline to begin comparing the relative fit of the following increasingly restrictive invariance models.

1.2.3.5 Invariance of the first-order factor loadings (first-order metric invariance – Model 3). Here, we are interested in whether first-order factor loadings are invariant across societies. Invariance of factor loadings across groups indicates that participants respond to the items in similar ways. In this sense, invariance of factor loadings is one indication that extreme response style is not biasing people's responses (18). Note that this model, as well as all subsequent models, do not test the invariance of parameters associated with the STYLE factor. A comparison of fit indices from this test with the configural model (Model 2) indicated that the first-order factor loadings to the two content factors (MEETING and CHOOSING) cannot be considered completely invariant across groups; Δ*CFI =.014, Δ*SRM*R* = .021, Δ*RMSEA = .000. While the difference in robust SRMR and RMSEA between Model 2 and 3 are acceptable, the robust CFI difference of .014 is above Chen's (31) suggested cutoff.

However, after examining modification indices it became clear that the factor loading associated with RMob9r was particularly variable across several countries. Thus, we tested a modified model whereby this loading was allowed to vary across all societies (Model 3a). This model brought the CFI difference below .010 (Table S3). Therefore, first-order factor loadings can be considered to be partially invariant (32). This result gives initial evidence that participants in each country responded to the majority of the relational mobility scale items in a similar manner. Furthermore, this result gives initial evidence that responses may not be biased with non-uniform extreme response style. Note that, while the next step would typically be to test for invariance of second-order factor loadings (33), both second-order factor loadings in Model 1 are already constrained to 1 in all samples (for model identification purposes), so we did not run this test.

1.2.3.6 Invariance of observed variable intercepts (first-order scalar invariance – Model 4). In this analysis, we tested the invariance of the intercepts of Model 1's observed variables (scale items). If these intercepts show invariance, it would suggest that 1) acquiescent response style bias is not affecting responses (18), and 2) latent means of the

first-order latent variables can be meaningfully compared across groups (18). However, differences in the fit indices between Model 3a and Model 4 were beyond accepted levels: Δ*CFI =.084, Δ*SRM*R* = .042, Δ*RMSEA = .018. So we iteratively fitted several models, each removing the cross-group intercept invariance constraints one at a time that showed the largest degree of variance across groups. The final partial scalar invariance model (Model 4a) relaxed equality constraints for three intercepts from the meeting factor (RMob2, RMob 4r and RMob5r) and four intercepts from the choosing factor (RMob3, RMob6, RMob7r, RMob9r) across all regions. This partial scalar invariance model, showing the invariance of at least two intercepts per first-order latent factor across all samples had acceptable between-model fit index differences, Δ*CFI =.010, Δ*SRM*R* = .002, Δ*RMSEA = .002.

1.2.3.7 Invariance of intercepts of first-order latent factors (Second-order scalar invariance – Model 5). Next we tested for the invariance of the first-order latent variable intercepts. Comparing Model 5 with Model 4a indicated that the first-order latent variable intercepts are invariant across samples (Δ*CFI =.006, Δ*SRM*R* = .002, Δ*RMSEA = .002). This suggests that we can confidently compare latent mean scores on the second-order latent variable "relational mobility" across samples, with the assumption that they represent relatively unbiased estimates of relational mobility.

1.2.3.8 Invariance of second-order factor variance (Model 6). As a final step, we tested for the invariance of the second-order latent variable variance. While the results from Model 3a gave initial evidence that extreme response style may not be biasing the data, the invariance of factor loadings only suggests that *non-uniform* extreme response style is not at play. The possibility still remains that responses are biased by *uniform* extreme response style. One way to test for uniform extreme response style bias is to test for invariance of latent variable variances (18). Therefore, in Model 6, we constrained the second-order latent variable variance to be equal across groups. Comparing results between Model 5 and Model 6, comparative fit indices overall indicate that variances are invariant (Δ*CFI =.006, Δ*SRM*R* = .014, Δ*RMSEA = .001), which suggests that uniform extreme response style bias is not likely a problem.

1.2.4 Relational mobility has high between-group variability and reliability, as well as high within-group agreement.

We conceptualize relational mobility latent means as contextual, socioecological variables at the community or culture level. Thus, each society's relational mobility latent mean is essentially an aggregation of participants' individual evaluations of relational mobility in their own society (minus variability due to error and response styles). But do societies actually vary systematically in their relational mobility? And do citizens agree on levels of relational mobility within their society?

To test these questions, we tested for within-group agreement and between-group variance in relational mobility by calculating $r_{wg(j)}$, ICC(1), and ICC(2) statistics (16). $R_{wg(j)}$ quantifies agreement within groups; ICC(1) quantifies the amount of variance in relational mobility that can be explained by group membership; and ICC(2) quantifies how reliable the group means are.

First, the average $r_{wg(j)}$ value of the raw relational mobility data was .92 (*SD* = .02, *Min* = .87). This exceeds the recommended cutoff of .70 (16) and demonstrates that individuals within societies agreed about the level of relational mobility in their own society.

Using relational mobility factor scores imputed for each participant (based on Model 1), the ICC(1) statistic was .09. This indicates that country of residence can explain approximately 9% of the variance in individual evaluations of the relational mobility of their society. This exceeds a suggested minimum of .06 (16).

Once again using individual relational mobility factor scores based on Model 1, the ICC(2) calculation was .98. This surpasses the suggested minimum of .70 (16) and demonstrates that the relational mobility country means were highly reliable (34).

In summary, the results in Sections 1.2.3 and 1.2.4 suggest that 1) the relational mobility scale has satisfactory partial scalar measurement invariance, 2) responses show satisfactory within-group agreement, 3) relational mobility scores show satisfactory between-group variance, and 4) relational mobility country scores were highly reliable. We therefore present the society-level relational mobility latent means in Table 1. These latent means were produced using Mplus 7.4 based on Model 1 (Figure S4) with all partial cross-group constraints in place (33). They represent the deviance between the relational mobility means for the societies and the relational mobility latent mean of Portugal. We chose Portugal as the reference group because it stood in the middle compared to other societies in our sample.

1.2.5 Relational mobility latent means have convergent validity.

So far, we have only established that individual-level relational mobility scores can be aggregated to the societal level and that societal level scores can be meaningfully compared. We have not yet addressed the question of whether or not individuals' perceptions of relational mobility do in fact reflect the objective socioecological reality of a society. In order to test this question, Table S6 and S7 provide evidence that country-level relational mobility latent means are positively associated with other indicators of *actual* relational movement (such as job mobility, divorce, and new acquaintances made in the last month). We also show that these means are correlated with indicators that would seem to support free movement between relationships (such as attitudes towards divorce and expectations regarding job mobility).

1.2.6 The intimacy, self-disclosure, and interpersonal similarity scales

For the intimacy (10 items), self-disclosure (5 items) and interpersonal similarity (5 items) scales, respondents first typed the first name initial of their closest friend (Friendship Survey) or romantic partner (Romance Survey). This initial was then piped into the lead-in text of each scale, so that the respondent would be thinking about the romantic partner or closest friend while responding to the scales. For example, for the intimacy scale, respondents were asked "Please rate the extent to which you either agree or disagree with the following statements in regards to your relationship with <initial>". For the similarity scale, participants were asked "How similar are you and <initial> on each of the following aspects?" Full wording and items are available from the Open Science Framework here: *https://osf.io/5rqdd/* (*/Data_and_Storage/SPSS/survey-item-wording-all-languages.xlsx*).

We expected that each of these three scales would fit one-factor first-order measurement models. In order to test this expectation for each scale, we repeated a similar procedure to the testing of the validity and invariance of the relational mobility measurement model as outlined above. Like the relational mobility scale analyses, all analyses were conducted in Mplus 7.4, using the multiple least squares robust estimation method (MLR) available in Mplus. All Mplus data files and syntax used in analyses are publicly available from the Open Science Framework (*https://osf.io/qfbjc/files/* in */Data_and_Syntax/Mplus*).

First, in Table S4, we establish that in a pooled, culture-free sample (taking into account the non-independent nature of the individual-level data), each model fits the data well, regardless of the target of the scale. In Table S5, we demonstrate that all scales, regardless of target, achieve at least partial scalar measurement invariance.

1.3 Multi-level structural equation modelling

As outlined in the main text, we propose that distal subsistence styles and ecological and historical threats and should drive socioecological levels of relational mobility, which should then impact the adaptive psychologies and behaviors of individuals. In order to test this implied two-level causal structure (Level 1: individual behaviors and psychology, Level 2: threats, subsistence styles and relational mobility), we conducted multilevel structural equation analyses.

We represent our analytic strategy in Figure S7. In this figure, the country-level means of various interpersonal variables (represented in Figure S7 by the filled in black circle in the "Within (Level 1)" pane) are expected to vary across countries and regions, and this variance across countries and regions (represented in Figure S7 by the ellipse in the "Between (Level 2)" pane) is predicted to be explained by society-level relational mobility. Between-level variables for self-esteem (35) and trust (36) where we do not have individual-level survey data are also displayed, in squares. Ecological and historical threat as well as subsistence style (both adjusted for either modern or historical GDP per capita) in turn are expected to predict country-level relational mobility. We include individual-level control variables of age, sex, and economic level. Table S11 shows fit statistics for each target's model as well as regression coefficients, split up into rows that display the results when different years' GDP per capita are used to adjust the antecedent variables.

1.3.1 Controlling for regional effects in multilevel models

One issue in cross-national studies is that traditional statistics treat each observation as independent, but nations are not truly independent. For example, Estonia, Latvia, and Lithuania are neighbors and share cultural and political history. Treating these observations as independent would make the estimates of standard errors smaller than they should be.

To correct for the non-independence of datapoints, researchers run models that correct the standard errors (37). To do this, we ran our multi-level structural equation analyses with countries nested within Schmitt and colleagues' 10 world geographical regions (38) (Table S11). We also ran the same analyses when societies were clustered within continents, with largely similar results. These results were similar to the results

reported in the main text, which suggests that the estimates in the main paper are not strongly biased due to the non-independence of observations.

We also attempted to cluster countries by majority religion [Judeo-Christian, Muslim, Buddhist, Hindu, Secular; (39)], but this was not practical with our dataset because the group sizes were heavily imbalanced. The vast majority of observations were either Judeo-Christian or Muslim.

Despite this, there was lower relational mobility in majority Muslim (r = -0.55, p < 0.001) and Buddhist countries (r = -0.45, p = 0.004; Table S6). Future studies that explore the dynamics of religion and relational mobility will be a welcome avenue for further inquiry (see also SM Section 1.9).

Another method that previous researchers have used is to add fixed effects for continents (40). Unfortunately, our dataset does not have enough datapoints within each continent to tease apart continent effects and effects of variables like GDP per capita. For example, Alesina and colleagues (40) had 159 datapoints versus our 39. Models that control for continent fixed effects will have to be addressed in future research.

1.4 Ecological and Historical Threats

Drawing on Gelfand et al. (41), and as mentioned in the main text, we created a composite 'threat' variable consisting of ecological and historical threats using a theoretically-driven selection of indicators, favoring variables that provide a good coverage of the countries in our dataset. This composite uses the following seven variables from Table S10, in order to capture a number of domains of threat: 1) history of territorial threats, 2) demanding geoclimate, 3) historical prevalence of pathogens, 4) average incidence of tuberculosis per 100,000 people, 5) vulnerability to disasters, 6) real population density in AD1500, and 7) daily fat supply (values reversed to represent *deprivation* of this high-energy food-source).

The history of territorial threats measure was obtained from Brecher et al.'s International Crisis Behavior Data Codebook, and refers to the number of times territorial threat has been the gravest national threat during an inter-state conflict (42). Geoclimate harshness is a simple measure of a country or region's "midrange temperature controlled for the winter-summer variation in summer" (43). Historical prevalence of pathogens is Murray and Schaller's (44) rating of the prevalence of nine infectious diseases from 230 geopolitical regions. The average incidence of tuberculosis per 100,000 people captures the average annual rate of tuberculosis for the years 1990 till 2013, as calculated from the World Health Organization archives (45). This variable was included in order to 'smooth out' the effects of variability in healthcare development between countries in our dataset. For vulnerability to disasters, we reversed Indicator 14 of the Environmental Sustainability Index (ESI) ("Reducing Environment Related Natural Disaster Vulnerability"), which is made up from two variables that refer to 1) how likely natural disasters are, and 2) deaths from disasters (46). Real population density in AD1500 refers to the population per square kilometer of arable land in a country, and this was calculated from the country-level statistics in McEvedy and Jones (47). The daily fat supply variable was reversed before adding to our composite, so the reversed variable refers to the relative scarcity of this high-energy foodstuff. Fat supply values were obtained from the Food and Agriculture Organization of the United Nations (FAOSTAT) data archives (48).

Before creating the composite variable, we standardized the individual indicators (z-scores), and conducted exploratory factor analyses (principle components) using the seven variables. Results suggested these variables best loaded onto one single factor (α = .71). Factor loadings were above .57, apart from demanding geoclimate (.41) and real population density in AD1500 (.36). This factor explained 46.92% of variance, with a clear inflection beyond the first component ($\lambda_1 = 3.28$, $\lambda_2 = 1.32$, $\lambda_3 = 1.00$, $\lambda_{4\text{-}7} < 1$). These seven items were therefore combined into one composite threat variable by averaging values across the seven items for each country.

We noted that five countries or regions were missing more than half of the seven individual threat indicators (Hong Kong, Palestinian Territories, Puerto Rico, Mauritius, Singapore). Therefore, threat composite scores were not calculated for these countries and regions. Of the remaining 34 countries and regions, 24 countries had full coverage of the individual variables that make up the threat composite index, and an additional 10 had at least four indicators present. In all main country-level analyses in this paper that include threat analyses, we use threat composite scores for those 34 countries that have at least 4 indicator variables present.

Including country-level threat scores that are missing indicators may bias results. Therefore, we investigated the correlation between relational mobility and threat when using (a) a dataset which only includes countries where all threat indicators are present (N = 24) and (b) a dataset which includes countries that have at least four threat indicators (N = 34). The results were very similar: When adjusting for GDP per capita in 2012 and using only threat scores that consisted of all indicators, the correlation between relational mobility and threat was $r = -0.54$ ($N = 24$, $p = 0.008$), and when including countries with at least 4 indicators (also adjusting for 2012 GDP per capita), this correlation was $r = -0.52$ ($N = 34$, $p = .001$).

We also present the full multi-level SEM results when using the smaller $N = 24$ list of composite threat scores, in Table S12. Multi-level SEM results when using the larger $N = 34$ list are presented in Table S11.

1.5 Subsistence Statistics

1.5.1 Rice

To measure rice, we used data from the United Nations Food and Agriculture Organization's Global Agro-Ecological Zones database (49). This database has statistics on the area harvested for wetland rice in the year 2000. We then calculated the portion of this per amount of land under cereal production in the year 2000 from the World Bank (50).

1.5.1.1 Estimating Rice Statistics for Settlement Cities

Hong Kong and Singapore were not in the rice datasets above because both are small and mostly urban, with little farmland. However, since we are more interested in historical farming legacy rather than modern farming, we used rice data from the areas where settlers to these regions came from.

For Hong Kong, we used paddy cropland data from Guangdong province (from *27*). For Singapore, we used the average of Guangdong and Fujian province because over 86% of Chinese people in Singapore come from these two provinces [(52); most of the

other Chinese immigrants came from other rice provinces, primarily Zhejiang and Hainan). In 2013, Singapore was 74% ethnic Chinese, 13% Malay, and 9% Indian. We use statistics for Chinese settlers because they make up the majority of the population, but Malaysia and India are also large rice producers, so statistics would be similar if we were to incorporate these areas. Taiwan was not included in the dataset, so we used data for Fujian province, which was the major source of settlement for Taiwan.

One concern with modern rice statistics is that modern technology has brought rice to some regions where rice was not an important traditional crop. For example, regions in Australia and the USA now grow significant amounts of rice, but we would not expect these places to be highly collectivistic. Thus, we sought to confirm whether the modern rice data adequately represented historical rice farming. To do so, we created a dichotomous rice variable representing the authors' judgment of whether rice was an important crop in the society traditionally. This dichotomous variable was highly correlated with the rice crop data $r = 0.83$, $p < 0.001$. Thus, the rice dataset seems to reasonably approximate historical rice farming.

1.5.2 Herding

Studies comparing farming and herding communities have found that people in herding communities are more individualistic than people in farming communities (51, 53, 54). Particularly relevant for relational mobility is a study by Uskul and Over (54), who compared nearby herding and farming communities in Turkey. They found that people in herding communities cared more about being rejected by a stranger than people in farming communities. Caring about social exclusion can seem like an interdependent trait, but that is a misunderstanding of individualism. In individualistic cultures, people frequently build new relationships, so being rejected by a new person is painful and consequential. But in tight, interdependent cultures, people rely on their fixed, long-term relationships, which means a stranger's reaction is less important. Thus, we would expect that cultures that herded traditionally have higher relational mobility.

We quantified herding using data from the United Nations Food and Agricultural Organization's Corporate Statistical Database [FAOSTAT, (55)]. This database gives data per country on the percentage of land with (a) pasture land and (b) pasture and fodder land combined. Fodder land is land used to grow crops like alfalfa that are then fed to livestock. We used the percentage of pasture land because growing fodder crops is still a form of farming, although the two measures are highly correlated $r = 0.96$, $p < 0.001$. We used 1990 data rather than more recent data because earlier data is probably more representative of traditional subsistence styles.

One weakness of this data is that it calculates pasture land as a percentage of *total* land. This would also include unproductive land like mountains, glaciers, and deserts, which are mostly unpopulated. Instead, pasture land as a percentage of arable/pasture land would probably more accurately represent how important herding was in different societies. However, we were limited by the data available in FAOSTAT.

Data was available for 35 countries that were also in our relational mobility dataset. FAOSTAT binned the data in five categories from 0-9% to 51-80%. Similar to the rice data, we imputed values for Hong Kong and Singapore. However, we did not impute this using data from China because the China data appeared to be biased by its three, large outlying herding provinces (Tibet, Xinjiang, and Inner Mongolia). These dry

herding areas account for about 40% of China's land, but only about 3.8% of the population. Thus, these large areas give China a value 40% of land devoted to herding, but this land area is not representative of the vast majority of the Chinese population, which is concentrated in the farming areas.

Instead, Guangdong and Fujian Province (where most Chinese immigrants to Singapore and Hong Kong came from) have land-use patterns more similar to Japan, Korea, and Taiwan, which are all in the lowest category of herding land. Thus, we used this value for Hong Kong and Singapore. This estimate seems reasonable for Singapore's immigrant heritage because Singapore's two other major population sources are Malaysia and India, which are also in the lowest category of pasture land.

Herding is not correlated with GDP per capita from 2011-2013 (r = -0.02, p = 0.92), although it is moderately correlated with 1950 GDP per capita (r = 0.34, p = 0.05). Herding countries scored lower on the 7-item threat index (r = -0.38, p = 0.024), although the relationship between herding and relational mobility held after controlling for threats.

Australia was an outlier in the herding data. It was the only country that had relational mobility data *and* fell in the 51-80% pasture land category. Thus, we tested whether Australia had an outsized impact on the herding analysis. Excluding Australia, herding was still strongly correlated with relational mobility r = 0.53, p = 0.001. This suggests that Australia was not biasing the results.

1.5.3 Combining Rice, Wheat, and Herding Into a Subsistence Style Composite

In a sense, herding and rice farming are not independent variables. Land devoted to herding is by definition land not devoted to rice. Subsistence styles can be thought of as a continuum from mobile and independent (herding) to settled and interdependent (paddy rice farming). Analyzing subsistence style as a single variable may better represent how these two variables are on a spectrum and not fully independent.

We created an index of interdependent subsistence style by starting with the amount of harvested area devoted to wheat, adding rice-farming values and subtracting herding. To estimate wheat farming, we used the amount of area harvested with wheat in the year 2000 and divided by the amount of harvested area for cereal land from the FAOSTAT database.

We then compared a model with this single subsistence variable to a model with independent rice and herding variables. The single spectrum model explained 39.1% of the variance in relational mobility ($p < 0.001$), versus 36.8% of with herding and rice independently. Thus, using a single continuum to represent the spectrum of interdependence in subsistence styles seemed to work well in this dataset.

However, this index is quite rudimentary. It does not take into account other types of farming like wheat, corn, and millet. We start with herding, wheat, and rice because prior research makes clear predictions about the relationship of these three subsistence styles (51, 56). In our estimation, there is not yet enough research on subsistence styles like fishing, corn, and millet to make confident predictions. A more comprehensive index would take into account more dryland crops, as well as important traditional subsistence styles such as slash-and-burn agriculture and hunting and gathering.

1.6 Historical GDP Per Capita

In addition to modern GDP per capita statistics, we tested historical GDP per capita statistics (57). Historical GDP per capita may be a better predictor of culture because (a) cultures have inertia, (b) it takes time for changes in the economy to alter the culture, and (c) modern GDP per capita represents *current* economic output, but the economic environment *while people were growing up* may be more important for how they behave.

Maddison (57) created a large historical database with estimates of GDP per capita for many countries going back to the early 1900s (and even beyond for countries with richer historical records). Because data is missing for many years for a portion of countries that lack strong historical records, we chose the three years between 1900 and 1950 that have the broadest data for countries that also have relational mobility data. The three years were: 1913 (N = 31), 1929 (N = 24), and 1950 (N = 36).

Historical GDP per capita from all three years correlated highly with relational mobility (rs = 0.39 – 0.51). Historical GDP per capita was a far better predictor than GDP per capita from 2011-2013 (r = 0.13, p = 0.42).

However, one alternative explanation could be that historical GDP per capita correlated more highly than modern GDP per capita because historical GDP per capita has a smaller set of countries. To test whether this was true, we re-tested modern GDP per capita with only the 31 countries with 1913 data and then only the 24 countries with 1929 data. The results were similar. Modern GDP per capita was still the worst predictor, and 1950 GDP per capita remained the strongest predictor (although 1913 data was almost as strong as 1950, within about 0.10 correlation points).

1.6.1 Adjusting for modern and historical GDP per capita

In Tables S6, S10 and S11 where indicated, variables were adjusted for GDP per capita as follows, so that we had "GDP-free" variables for use not only in analyses, but also in data visualizations.

1. The raw variable of interest (e.g., 7-item threat variable) was regressed on GDP per capita, while saving the residuals as new variables.
2. The resulting residuals were *added* to the original variable of interest, creating a new variable with variance due to GDP per capita partialled out.

1.6.2 Are Environmental Threats Just Poverty?

One issue with environmental threats is that they may be confounded GDP per capita. Overall, the 7-item threat index was correlated with GDP per capita from 1950 to 1913, r = -0.52 to -0.66, ps $\leq$ 0.001. In this section, we run additional analyses examining whether these historical threats measure something other than poverty. We focus here on historical GDP per capita measures, since many of the threat measures reflect historical pressures. Most of the threat variables correlate much more strongly with historical GDP per capita than modern GDP per capita.

How should we think about GDP per capita and threats? For some variables, the associations between poverty and threats are clear. For diseases like malaria and tuberculosis, poverty creates conditions that help spread disease. Or conversely, wealth gives societies the tools to treat disease and keep it from spreading. This direct link probably explains why 1913 GDP per capita is correlated so highly with historical pathogen prevalence, r = -0.84, p < 0.001. GDP per capita from 1913 is also correlated

with the amount of fat, calories, and protein available per person per day in 2002 (*r*s = 0.46-0.63, *p*s < 0.02). Historical GDP per capita also correlates highly with life expectancy, infant mortality, and lives lost to communicable diseases.

For other variables, the relationship probably runs both ways. For example, for the number of wars and other conflicts, poverty can create tension over resources that bubbles over into war. But war can also ravage countries, creating poverty. This bidirectional relationship is probably why there is more war and other territorial threat in poorer countries both historically and based on modern GDP per capita (*r*s = -0.46-0.50, *p*s < 0.02).

Finally, there are variables that GDP per capita cannot plausibly cause, such as the harshness of the climate or the frequency of natural disasters. Yet these threats could lower countries' GDP per capita. Countries vulnerable to more natural disasters were poorer in 1913 (r = -0.40, p = 0.049), but this relationship was weaker with modern GDP (r = -0.21, p = 0.27). The harshness of the climate was unrelated to modern GDP per capita, but areas with harsh climates were somewhat less wealthy historically (*r*s = -0.35, *p*s = 0.07-0.08).

We test whether threats are measuring something different from GDP per capita in two ways. First, we regress relational mobility simultaneously on threats and GDP per capita. Second, we regress relational mobility on threat after partialling out the effect of GDP per capita on threats.

The threat index was significant in regressions predicting relational mobility and controlling for GDP per capita from 2011-2013 (β = -0.51, p = 0.003) and 1950 (β = -0.44, p = 0.009). Controlling for 1913 GDP per capita, the threat index bordered significance (β = -0.40, p = 0.072), although 1913 data was available for fewer countries in our dataset (N = 31).

We also ran regressions predicting relational mobility from threats controlling for GDP per capita using an average of 1950 and 2011-2013 GDP per capita. This variable may be closer to what the threat index measures because some threats were measured historically (such as pathogens) and others were measured recently (lives lost to tuberculosis). Controlling for this GDP per capita composite, threats remained a significant predictor of relational mobility (p = 0.003). Threats were also marginally significant controlling for a composite of 1913, 1950, and 2011-2013 GDP per capita (p = 0.062).

As we describe in Section 1.6.1, we also tested the robustness of threats by regressing threats on GDP, retaining the residual, and running analyses with this "GDP per capita free" threat index. Table S10 shows correlations after adjusting for GDP per capita. The "GDP per capita free" threat index strongly predicted relational mobility (*p*s ≤ 0.01). Although the threat index is correlated with GDP per capita, as a whole, these results suggest that (a) the threat index is picking up on variation other than just poverty and (b) threats still predict relational mobility after taking GDP per capita into account.

1.6.3 Is Wealth a Buffer For Threats?

Another way to think about GDP per capita is as a buffer against threats. For example, in his theory of demanding climates, Van de Vliert (43) argues that climate affects cultures except when cultures have enough wealth to counteract the climate. Heat

affects human behavior, but much less so where people can live in air-conditioned homes and travel in climate-controlled cars.

We tested whether this theory held in our data, but there was weak or no support for GDP per capita as a buffer overall. We tested this by including an interaction term between GDP per capita and various environmental threats. The interaction between the threat index and GDP per capita was in the predicted direction but not significant for modern GDP per capita, 1950 GDP per capita, and 1913 GDP per capita (*P*s 0.19-0.55).

However, one weakness of this analysis is that some of the threat index items are already correlated with GDP per capita, such as tuberculosis incidence and daily fat supply. Wealth already influences whether countries suffer from severe tuberculosis or not. Thus, we analyzed threat variables that do not take GDP per capita into account.

Natural disaster frequency was non-significant (*p*s = 0.13-0.93) and in the wrong direction (wealth + more natural disasters = less relational mobility). Population density in 1500AD was in the right direction and significant or marginal depending on the year of GDP used (*p*s = 0.04-0.11). Climate harshness in the wrong direction and non-significant (*p*s = 0.17-0.84).

Overall, these results gave little support for the view of GDP per capita as a buffer against environmental threats. One possibility is that relational mobility in a culture changes more slowly (or not at all) in response to relative wealth and comfort. Singapore and Japan may be examples here of countries that are wealthy now and score above average on historical threats, but are still low on relational mobility.

1.7 Socio-political and cultural correlates with relational mobility

As noted in the main text, this paper is based on correlational analyses, which do not allow us to prove causality. This is particularly evident when theorizing about relational mobility, cultural values, and socio-political variables. In reality, there is likely to be a co-construction process whereby relational mobility – as caused by objective ecological and historical antecedents – simultaneously causes and is sustained by shared cultural mindsets and social institutions (such as politics and media institutions; *8*, *69*).

There are methods that can start to tease apart these questions. Future work can address this question using methods such as longitudinal studies, priming experiments, and agent-based simulations. Lab experiments where researchers put participants in flexible groups or fixed groups can more conclusively test whether changing the parameters of groups actually causes people to change their social behaviors [there is already some early evidence that this is the case: (60)].

1.8 Residential Mobility

Relational mobility is probably related to another socio-ecological variable that psychologists have studied recently, residential mobility [for reviews, see (61, 62)]. Psychologists have compared communities with a higher percentage of people who have moved within the last year or few years to communities that have more stable populations. Researchers have found that people in mobile areas have larger friendship networks, more conditional group support, and even more "fairweather fans." People in more mobile US and Japanese cities attend home baseball games more often when their team is winning, whereas people in more stable cities are more loyal attendees regardless of winning percentage (60, 63).

Despite the similarities, relational- and residential-mobility have important differences. Relational mobility is primarily about "opportunity" for relational change, whereas residential mobility refers to the degree to which people actually move [which includes both voluntary and forced moves (64)]. We do expect that these two concepts should be related, but it is not clear whether residential mobility should be an outcome or cause of relational mobility. High relational mobility could encourage people to move. Or it could make moving easier. For example, if you move in a society where people are constantly making new friends, it should be easier to adjust after a move. But at the same time, if people are moving a lot in a society, that should feed into the society's relational mobility.

Ultimately, we think the most reasonable view is to think of residential and relational mobility as reinforcing each other. In that sense, residential mobility is similar to a validity check for relational mobility.

We tested two measures of residential mobility. First, the Organization for Economic Cooperation and Development publishes the percentage of households that changed residence in the last two years (65). This measure is strong because it is a direct measure of mobility, but it only covers 13 wealthy, Western countries in our dataset. Despite this, countries with higher residential mobility also had higher relational mobility $r = 0.47$, $p = 0.109$. However, with only 13 countries, the correlation was not significant.

Next we analyzed Gallup survey data asking "In the next 12 months, are you likely or unlikely to move away from the city or area where you live?" (66). This data covers a more diverse set of countries, such as Mexico and Malaysia. However, it is a less direct measure of mobility, and it still only covers 16 countries in our dataset. Despite the small sample, societies with more people planning on moving had higher relational mobility $r = 0.53$, $p = 0.036$.

Overall, these results suggest that there is a connection between relational mobility and physically moving. Reasonable researchers could interpret this relationship in different ways. We suspect that relational and residential mobility encourage each other. Relational mobility makes it easier for people to move, and a society with lots of movers reinforces loose social ties.

That said, regardless of direction of causation, and while acknowledging the association between residential and relational mobility, we think it is important to distinguish between relational mobility and actual movement. Relational mobility focuses on relational movement based on personal preference and choice. Measures of actual relational movement (such a residential mobility or the number new acquaintances in the last month) confound moves by choice and moves that are forced. We think the latter should not be as strong of predictors of acquisition and retention behaviors.

Consider the following example to illustrate this point. Let's say your friend is a naval officer, who could be ordered to transfer at any time to another city. The knowledge that your friend may soon be transferred to another city (quite possibly against their own preference) is not likely to increase the likelihood that you'll try to work harder to retain that friend, such as by increasing intimacy or self-disclosing more. If your friend's moving away is determined by an outside force, then any attempt to try to retain the person as a friend is for naught, trying harder to retain the friendship would not help. If, on the other hand, it is entirely up to your friend's choosing whether they move away or

not, then why not try to "convince them" to stay, by engaging in relationship-retention behaviors? If there is choice, the relationship-retention behaviors are adaptive.

Of course, if this thesis is correct, then we should see weaker relationships between measures of *actual* relational movement and the various psychological and behavioral outcomes that relational mobility predicts. If choice is important, objective measures of actual relational movement should be a weaker predictor because they mix chosen and un-chosen moves. Therefore, we re-ran the key means-as-outcomes multi-level analyses reported in Table S11, replacing relational mobility latent means with country-level (a) residential mobility (Gallup World Poll, 2013, country $N = 16$) and (b) number of new acquaintances met in the last month (as measured in our study, country $N = 38$). As Table S13 shows, while some relationships are reproduced when using these measures of actual movement, not only are some not reproduced, but the ones that are reproduced are weaker than when relational mobility is the predictor.

This suggests to us that while actual movement between relationships can predict some interpersonal behaviors and psychology to some extent, relationship acquisition and retention behaviors are intensified when people have the freedom and opportunity to select relationships based on personal preference. This suggests that choice may be a key in the link from mobility to human relationships.

1.9 Religion

We analyzed religion using statistics from the CIA Factbook (2003-2011; *75*). This scheme codes countries based on their majority religion. The largest categories are Judeo Christian, Muslim, Buddhist, and Hindu. Estonia was the only country coded as "secular" among the countries we tested. We recoded it as Judeo Christian because of its history of Lutheranism and Eastern Orthodox Christianity. Our dataset only had large enough samples to test for simple effects of Judeo Christianity ($N = 25$) and Islam ($N = 9$).

In a simultaneous regression, there was somewhat lower relational mobility in Muslim ($\beta = -0.49$, $p = 0.096$) societies. Judeo Christian societies had slightly higher mobility, but the association was weak and not significant ($\beta = 0.07$, $p = 0.249$).

Muslim countries also had lower GDP per capita in 2011-2013 ($r = -0.48$, $p = 0.002$) and in 1950 ($r = -0.41$, $p = 0.014$), so we tested whether the Muslim difference was really just the effect of GDP per capita. Controlling for modern and historical GDP per capita, Muslim countries still had lower relational mobility ($ps \leq 0.015$). Thus, Islam seems to be associated with lower relational mobility beyond GDP per capita.

In a regression controlling for Islam, the 7-item historical and ecological threat index remained significant ($\beta = -0.44$, $p = 0.002$). The subsistence style index from herding to rice was also significant ($\beta = -0.53$, $p < 0.001$). This suggests that the threat and subsistence relationships are not confounds of religion.

Future studies could provide stronger tests by including more Buddhist countries. In particular, it would be useful to test more non-Buddhist societies that grow significant amounts of rice such as India, Pakistan, Bangladesh, and areas of West Africa.

Another way to test whether religion is to use it as a grouping variable in Hierarchical Linear Models (HLMs). This method treats religious blocs as related cultural groups. After taking these groupings into account, if the effects of threat and subsistence style are still significant, it suggests that these effects are not artifacts of religion. In

individual regressions, the threat index and subsistence style index were significant ($ps \leq 0.04$). In a simultaneous regression, subsistence style remained significant and the threat index was marginal ($p = 0.13$). Overall, these results show that threats and subsistence style are moderately robust to religion, and Muslim countries have lower relational mobility on average.

1.10 Ethnic Diversity

We tested whether relational mobility is related to ethnic diversity. However, we can think of reasons why diversity might increase or decrease relational mobility. On the one hand, a homogenous society could make it easier to meet new people. If making new friends across ethnic lines is more difficult, homogeneity should make it easier to make new friends.

On the other hand, homogeneity could signal a relatively closed society. For example, Japan scores high on ethnic homogeneity (67), and it has been a relatively closed society in modern history. If homogeneity is a marker of being closed off, homogenous societies should have less relational mobility.

We tested several measures of ethnic diversity, as well as linguistic and religious diversity. First we used ethnic fractionalization indexes from Fearon (67) and Alesina and colleagues (40). These were not strongly related to relational mobility $rs = 0.10\text{-}0.26$, $ps = 0.13\text{-}0.54$.

Next we tested measures of cultural diversity (67), linguistic diversity (40), and religious diversity (40). Again, diversity was not strongly related to relational mobility $rs = 0.03\text{-}0.12$, $ps = 0.46\text{-}0.87$. Overall, diversity does not seem to be an important factor for relational mobility.

1.10.1 Historical Ethnic Diversity

Recent research found evidence that different norms of emotional display across cultures are related to how much ethnic diversity those cultures had historically (68). But as with modern-day ethnic diversity, it's not clear what prediction to make about how diversity might influence relational mobility.

We tested this question using the same historical heterogeneity estimates from 1500 AD as in previous research (68). The earlier study used (a) "the number of source countries that have contributed to a given country's present-day population since A.D. 1500" (p. E2429) and (b) indigeneity, which is the percentage of the modern population that derives from the people who were living in that territory in 1500 AD (68). This data covered 39 societies in our dataset. The earlier study found that number of source countries was a better predictor of emotion display norms than indigeneity. Note that more diverse regions will have higher source country scores and lower indigeneity scores.

Indigeneity predicted slightly less relational mobility but the association was not significant, $r = -0.19$, $P = 0.240$. Areas with more source countries had higher relational mobility, $r = 0.55$, $P < 0.001$. Thus, higher modern-day relational mobility is related to historical population diversity, but not modern-day diversity (SI 1.10). And similar to the study of emotion display (68), the number of source countries was a stronger predictor than the percentage of the population from a single source.

1.11 Existing cultural variables and relational mobility

One way of viewing shared cultural values and mindsets is to consider them adaptations to surrounding socioecological environments (58). Therefore, as a distal socioecological variable which determines the structure of interpersonal relationships within a society, we expect that relational mobility should be associated with previously identified cultural values, culturally shared mindsets, and ways of viewing the self within society. Specifically, in lower relational mobility societies, where relationships are long lasting and difficult to change, we would expect shared values and mindsets that help to maintain harmony and order within groups and interpersonal relationships. On the other hand, as relational mobility increases, we would expect values and mindsets that reflect relative autonomy of the individual with respects to relationships and group memberships.

In order to explore these expectations, we collated existing society-level data from public sources for cultural tightness (41, 69), independent/interdependent self-construal (70, 71), Hofstede's cultural dimensions (72), Schwartz's (73), GLOBE (74), and Inglehart's (75) cultural values, Leung and Bond's social axioms (76), and Smith et al.'s sources of guidance (77). For full results with confidence intervals, please refer to Table S8.

1.11.1 Cultural tightness

We expected moderate correlations between relational mobility and variables which measure the relative tightness of cultures. Cultural tightness refers to the degree to which norms and rules are enforced and the degree to which there is an intolerance towards deviance from norms in a society. In societies low in relational mobility, where relationships and group membership are relatively inflexible and outright rejection from relationships is less likely, we argue that strict rules and norms are more likely to be enforced in order to limit free-riding; if rules and norms are not enforced, members could conceivably reap benefits of a relationship without input (78). In high relational mobility societies, in contrast, there should be less cost associated with rejecting a member of a group or relationships—since replacements should be more easy to come by—therefore strict adherence to rules should not be as critical a requirement for avoiding free-riding; rejection of free-riders should be relatively more straight forward as a form of punishment. Society-level correlations between relational mobility and cultural tightness variables from two separate datasets showed that indeed relational mobility was negatively associated with two different measures of cultural tightness, with correlations between $r = -0.39$ ($p = 0.063$) (41) and $r = -0.70$ ($p < .001$) (69).

1.11.2 Cultural self-construals

Cultural self-construals refer chiefly to whether individuals in a society view the self in terms of separateness from others, and a focus on one's personal goals over those of the group (i.e., independent self-construal) or whether individuals view the self as fundamentally connected with others, with a focus on group goals rather than one's own goals (i.e., interdependent self-construal) (79). We expected moderate associations between relational mobility and self-construals, in that independent self-construals would be positively, and interdependent self-construals would be negatively related to relational mobility. This is because in high relational mobility societies, individuals should conceivably be more focused on the autonomy of the self from others; such a focus

should allow individuals to actively seek out new relationships within an open relational marketplace. Interdependent self-construals should be more prevalent in low relational mobility societies, due to the long-lasting and hard to change nature of interpersonal relationships in these societies; in such a society, a view of the self as interconnected with others should help a person to maintain good relationships with surrounding others. Data from Vignoles et al.'s recent large-scale study into cultural self-construals which identifies specific domains of independence and interdependence (70), as well as data from Cheng et al.'s smaller-scale study (71) show moderate to strong correlations with relational mobility and independent self-construals (up to $r = 0.76$, $p = 0.050$), and interdependent self-construals ($r = -0.72$, $p = 0.068$), respectively.

1.11.3 Hofstede's cultural dimensions.

We expected that relational mobility should be moderately associated with a number of Hofstede's cultural dimensions (72). Individualism is a cultural syndrome whereby members of a society value autonomy and prefer relatively loose-knit interpersonal networks. Collectivism is a cultural syndrome whereby embeddedness in society is valued, as are tight-knit societal frameworks (72). Socialization into a society where relationships are easy to change (i.e., high relational mobility societies) should therefore foster preferences and values along individualistic terms, and vice-versa. Society-level correlations supported this theory, with relational mobility positively correlated with individualism, but only when Latin American countries were removed from our sample ($r = 0.70$, $p < .001$).

Power-distance is the degree to which members of a society accept and expect unequal distribution of power and status within a society (72). We expected that in lower relational mobility societies, similar to the cultural tightness argument presented above, such an acceptance of unequal distribution of status should be adaptive in maintaining harmony within long-lasting difficult to change relationships. In line with our expectations, results showed power distance was negatively correlated with relational mobility, but again only when the Latin American countries were excluded from the analysis ($r = -0.54$, $p < .001$).

Indulgence is the degree to which a society allows the free and unbridled gratification of having fun and enjoying life. Cultures at the lower end of this dimension are more likely to enforce strict social norms (72). Therefore, in line with our argument related to cultural tightness above, we expected, and subsequently found, that relational mobility is positively related to indulgence, $r = 0.62$, $p < .001$.

To the extent that uncertainty avoidance is associated with rigid adherence to rules of behavior (72), we expected relational mobility to be negatively associated with uncertainty avoidance, as per our logic presented in relation to cultural tightness. However, relational mobility was not associated with uncertainty avoidance, $r = 0.11$, $p = 0.519$.

Masculinity represents a focus and preference on competitiveness, heroism and achievement and femininity represents a focus on cooperation and fairness (72). We would therefore expect a positive association between relational mobility and masculinity, reflecting the more socially competitive nature of high relational mobility societies. Results however were contrary to expectations, showing a negative association,

suggesting higher relational mobility being associated with more feminine values, r = -0.38, p = .048.

Long-term Orientation refers to a tendency towards perseverance, thrift, ordering relationships by status, and having a sense of shame (80). We anticipated a negative relationship between long-term orientation and relational mobility because long-term orientation values are primarily concerned with maintaining order and harmony within interpersonal relationships (80); this should be an important task within long-lasting difficult to change relationships in low relational mobility societies. While results showed the expected direction of association (i.e., negative), this association was not statistically significant, r = -0.22, p = 0.203.

1.11.4 Schwartz's basic cultural values

Schwartz identified seven key cultural values (73). The first three represent embeddedness (or conservatism) versus autonomy, whereby people either focus on maintaining the status quo and group norms, or seek independent thought and action, respectively. Mirroring previous arguments above, we expected relational mobility to be negatively associated with embeddedness (lower relational mobility being associated with more embeddedness) and positively correlated with autonomy. Results showed these expected directions of correlations, but results were not significant: relational mobility showed correlations in a negative direction with embeddedness (r = -0.40, p = 0.077) and a positive direction with affective autonomy (r = 0.38, p = 0.095) and intellectual autonomy (r = 0.20, p = 0.388).

Another two of Schwatz's cultural values are hierarchy versus egalitarianism. These represent either a clear social order with acceptance of social hierarchies, or an emphasis on the equal social position of all, respectively (73). In line with our arguments about power-distance above, we expected relational mobility to be negatively related to hierarchy, and positively related to egalitarianism. Results confirmed our expectation, with a negative correlation with hierarchy (r = -0.46, p = 0.041), and a positive correlation with egalitarianism (r = 0.53, p = 0.016).

Mastery and harmony are two cultural values where individuals either actively seek success for themselves or the group through individual action, or are relatively more focused on accepting one's place in the world (73). With no clear emphasis on the individual or the group in this cultural value, we did not expect any clear association with relational mobility. Their associations with relational mobility were r = -0.03 (p = 0.908) and r = 0.25 (p = 0.280), respectively.

1.11.5 GLOBE organizational practices

The Global Leadership and Organizational Behavior Effectiveness Project (GLOBE) is a large-scale project which measured a number of cultural values as they relate to individuals' perceptions of practices and values within organizations (74). We did not anticipate a great deal of association between relational mobility—as we measured it in our study—and GLOBE cultural values, due to the discrepancy between the focus of the relational mobility scale—i.e., relational mobility in general society—and that of the GLOBE surveys—i.e., cultural values within organizations. The relational mobility scale, however, can be adjusted to suit any number of domains of society. A researcher could, for example, adjust the lead-in of the relational mobility scale such that

respondents would rate the relational mobility of their workplace or the workforce in general. Such a referent-shift may reveal more meaningful associations between relational mobility within the workplace and organizational cultural values.

1.11.6 Inglehart's cultural values

Inglehart and Welzel (75) categorize clusters of world regions and nations on two axes: traditional vs. secular values and survival vs. self-expression values. To the extent that traditional and survival values are associated with the relative poverty of a nation, we expected relational mobility to be negatively related to traditionalism and positively related to self-expression. Results indicated that indeed relational mobility was positively correlated with self-expression values ($r = 0.64$, $p < .001$), and the association with traditional values was in the direction expected, albeit not a significant correlation ($r = -0.24$, $p = 0.180$).

1.11.7 Social axioms

Social axioms are beliefs—i.e., what an individual believes to be true about the world and the relationship between people and their surrounding worlds (76). Social cynicism is a negative assessment of human nature, characterized by a mistrust of institutions and a belief that people use unethical means to achieving their desired ends (76). Given that relational mobility theory states that a positive view of human nature and goodwill—i.e., high generalized trust—is adaptive in high relational mobility societies, we expected that relational mobility would be negatively related to relational mobility. Correlation analyses showed this was indeed the case, with relational mobility negatively correlated with social cynicism, $r = -0.54$, $p = 0.010$.

Religiosity (or, Spirituality) is a belief that asserts "the existence of a supernatural being and the beneficial social functions of religious institutions and practices" (81). We expected religiosity to be higher in lower relational mobility societies, as religious institutions could conceivably help reinforce norms and guides to behavior (82), which would in turn help low mobile, tight-knit social networks to regulate free-riding and maintain harmony. Results showed that indeed religiosity was more prevalent in lower relational mobility societies, $r = -0.41$, $p = 0.061$, albeit not significantly.

Fate control is a belief in life events being determined by external forces, which can be influenced through individual action. We expected fate control beliefs to be less prevalent in high relational mobility societies, because where relational choice is high, we would expect people to be more likely to believe that they are the driver of their life outcomes, rather than outside forces determining their social lives. Indeed, fate control was negatively correlated with fate control, $r = -0.51$, $p = 0.016$.

Reward for application is the belief that "effort, knowledge, careful planning, and the investment of these and other resources will lead to positive results" (81). Relational mobility theory does not clearly predict what relationship relational mobility will have with this particular belief, however results found that reward for application was a more prevalent belief in lower relational mobility societies, $r = -0.37$, $p = 0.090$, albeit not significant.

Social complexity is a belief that people's behavior is inconsistent from one context to the next, and that there are multiple ways of achieving outcomes. To the extent that interpersonal harmony should be a goal in long-lasting difficult to change relationships in

low relational mobility societies, we expected social complexity to be negatively related to relational mobility—i.e., that it would be higher in low relational mobility societies. This is because we expect that in low relational mobility societies, the ability to 'fit in'—i.e., to be able to adjust one's behavior to the context—in one's relatively rigid social structures in more inflexible, low relational mobility societies should be more important. Results however did not indicate clear relationship between relational mobility and social complexity, $r = 0.15$, $p = 0.506$.

1.11.8 Sources of guidance

Smith et al.'s sources of guidance tap into how individuals within organizations deal with work-related events, and where they seek guidance for behavior (77). Similar to the GLOBE values, we did not anticipate a great deal of association between 'general' relational mobility and organizational values such as sources of guidance, due to the discrepancy between the general relational mobility scale's focus on general society, and Smith et al.'s guidance sources' focus on the workplace in particular. We did, however, find that relational mobility showed a negative direction of relatedness to 'vertical sources' ($r = -0.49$, $p = 0.030$) and 'beliefs that are widespread in my nation' ($r = -0.40$, $p = 0.083$), but only when Latin American countries were excluded from the analyses. We expect these sources of guidance are more prevalent in low relational mobility societies to the extent that individuals in low relational mobility societies are more likely to find themselves embedded within close-knit social structures—including workplaces—where following clear guides for behavior should be more adaptive, in order to avoid causing dis-harmony within one's difficult to replace relationships. Future work could edit the lead-in to the relational mobility scale to make it more applicable to a society's work environment in order to explore this theory further.

1.11.9 Relational mobility as a mediator of the effect of subsistence style and threat on culture

Previous studies have shown that historical threats and subsistence styles predict certain cultural characteristics, such as cultural self-construal (51) and the homogeneity and strength of norms (41, 69). In our thesis, we argue and demonstrate that subsistence styles and threat predict relational mobility, and that relational mobility predicts cultural characteristics. In this sense, relational mobility (a proximal social ecology) is a possible mediator between distal social ecologies (i.e., threat and subsistence styles) and cultural characteristics. That is, distal social ecologies (threat and subsistence style) predict the proximal social ecology (relational mobility) which in turn predicts cultural characteristics.

To test this possible indirect effect of distal social ecology on cultural characteristics via the proximal social ecology of relational mobility, we modelled relational mobility as a mediating variable in the relationship between threats/subsistence style and 1) cultural self-construals conceptually related to independence/interdependence and 2) cultural looseness and tightness. First, Figure S8 displays a conceptual representation of the mediation model for independence vs. interdependence. We expect historical threats and subsistence style to predict relational mobility, and relational mobility should predict various facets of cultural self-construals that are conceptually related to independence/interdependence. Table S14 displays the results from this model. Particular

attention should be paid to the right-hand column labelled "Indirect Effect." All 95% confidence intervals are significant, suggesting that there are indeed indirect effects of subsistence style and threats on cultural self-construals via relational mobility.

Second, we proposed a similar model to Figure S8, replacing the self-construal variables with two independent measures of cultural tightness/looseness: 1) Gelfand and colleagues' (2011) measure of perceptions of cultural tightness (41) and 2) Uz's (2014) measure of domain-general cultural looseness (69). Results from this analysis were mixed. Using bootstrapped confidence intervals (5,000 samples), we found no indirect effect of threats [$\beta = 0.040$, 95%CI = (-0.112, 0.356)] or subsistence style [$\beta = 0.072$, 95%CI = (-0.251, 0.590)] on perceptions of cultural tightness via relational mobility. However, we did find a significant indirect effect of threats [$\beta = -0.170$, 95%CI = (-0.464, -0.001)] and subsistence style [$\beta = 0.310$, 95%CI = (-0.766, -0.072)] on domain-general cultural looseness via relational mobility.

A researcher could also present a competing argument that threats and subsistence style predict cultural characteristics—as others such as Gelfand et al. (41) and Talhelm et al. (51) have previously—and those cultural characteristics are what cause relational mobility. Therefore we also tested a number of competing mediation models where instead of relational mobility mediating the effect of threats and subsistence style on cultural characteristics, we tested the indirect effect of threats and subsistence style on relational mobility via the cultural characteristics mentioned above (see Figure S9). To do this, we ran seven separate mediation models, where each of Vignoles et al.'s (70) cultural self-construal variables (conceptually related to independence vs. interdependence) as well as two measures of cultural tightness/looseness were, in turn, put in place of the "Cultural characteristics" box indicated in Figure S9. A single table summarizing each and every path implied in Figure S9 would be prohibitively complex, so we simply report the indirect effect of threats and subsistence style on relational mobility via each cultural characteristic variable in Table S15. Note that none of the indirect effects are significant. Looking at our analysis output, we saw that it was the X (threat or subsistence style) → M (independence/interdependence variable) path (a^1 or a^2 in Figure S9) that was causing the indirect effect to break down in all of the analyses except where cultural tightness (Gelfand et al., 2011) were included as mediating variables (in this one exception, it was the b^1 path that was not significant). Apart from the one exception, there was simply no direct effect of threats or subsistence style on the various cultural characteristics.

These results lend credence to our argument that relational mobility as a proximal social ecology 'sits between' distal social ecologies and cultural characteristics; in response to ecological threats and ways of life associated with different subsistence styles, humans form community structures that either afford ample choice and freedom in relationships or not (i.e., high or low relational mobility), and this variance in relational mobility impacts the self-concepts and other cultural characteristics of people that live in those environments.

1.11.10. The relative explanatory power of cultural variables versus relational mobility

Often when proposing a new society-level or individual-level cultural variable, researchers will run tests to find out the relative explanatory power of the new proposed variable against existing cultural constructs. However, as discussed in the section above,

we propose that relational mobility—as a socioecological variable—should in fact be a predictor of shared cultural values and mindsets. Thus, it sits at a different level in the macro-micro hierarchy of societal variables. Indeed, relational mobility can be thought of as a mediator of distal social ecologies' effects on cultural syndromes (as demonstrated in Section 1.11.9 above).

Nonetheless, we tested the model indicated conceptually in Figure S10, running a number of separate multi-level analyses replacing the variable indicated as 'Competing Antecedent' with a selection of variables often seen in cross-cultural research. Each competing variable was entered into the model separately, with separate tests for each new variable.

As Table S16 shows, relational mobility held up against most existing cultural variables tested. However, results should be interpreted with extreme caution because multicollinearity was high; often, relational mobility and the competing antecedent are correlated.

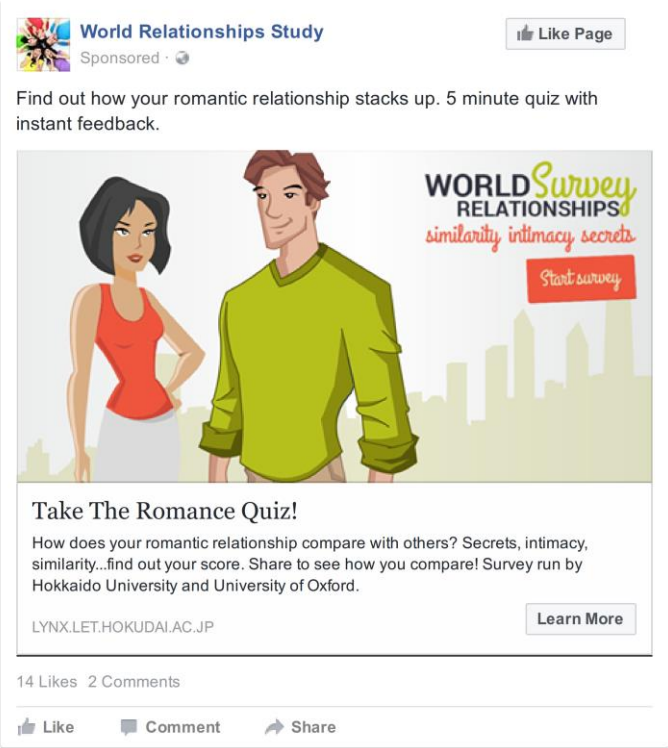

Fig S1

Sample Facebook advertisement used for participant recruitment. Screenshots of all ads by language and survey version are available at */Materials/Questionnaire/Facebook_Ads* in *https://osf.io/qfbjc/files/*.

Fig. S2

Sample survey landing page – the Facebook advertisements linked to this page. For landing pages for both versions of the survey and in all languages see *Materials/Questionnaire/Landing_Page* in https://osf.io/qfbjc/files/.

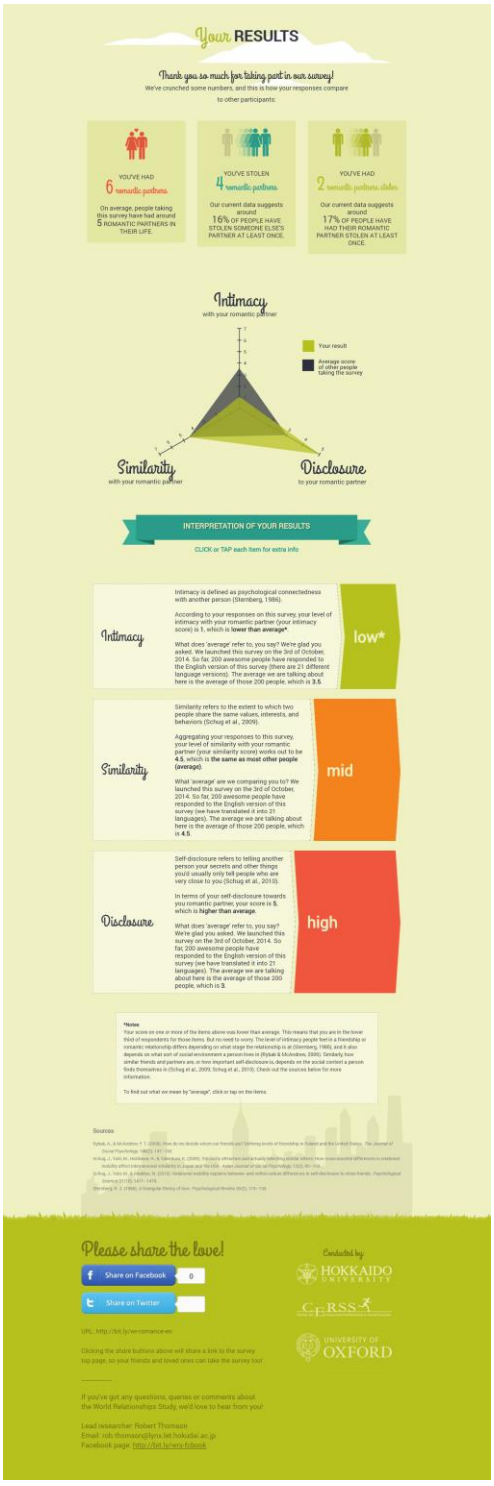

Fig. S3

Sample survey report page. For all survey versions and all languages, see *Materials/Questionnaire/Report_Page* in *https://osf.io/qfbjc/files/*.

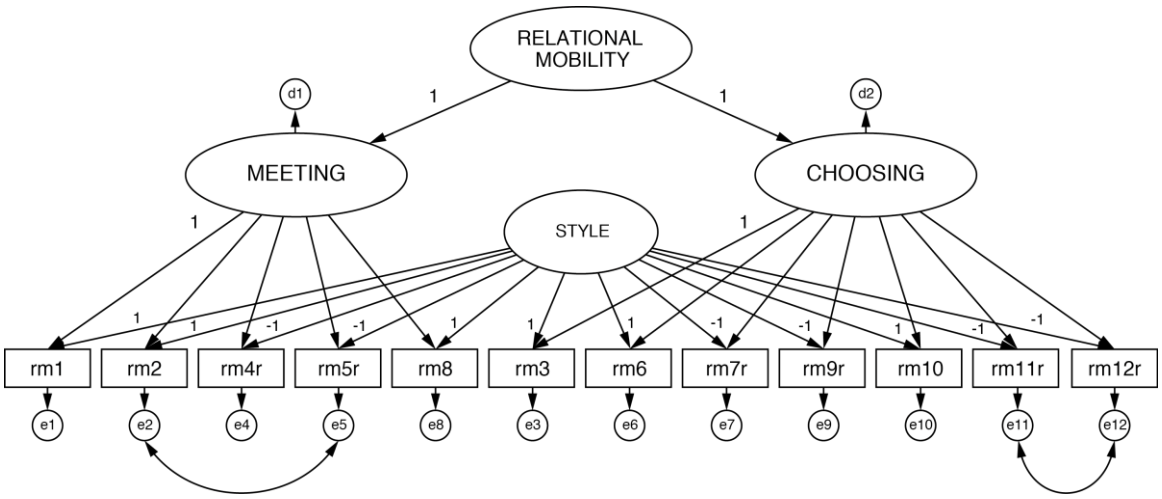

Fig. S4.

Multi-group confirmatory factor analysis specifications with two first-order content factors, one second-order content factor, and one common-method bias factor (STYLE) (Model 1). All loadings and correlations not explicitly specified are freely estimated.

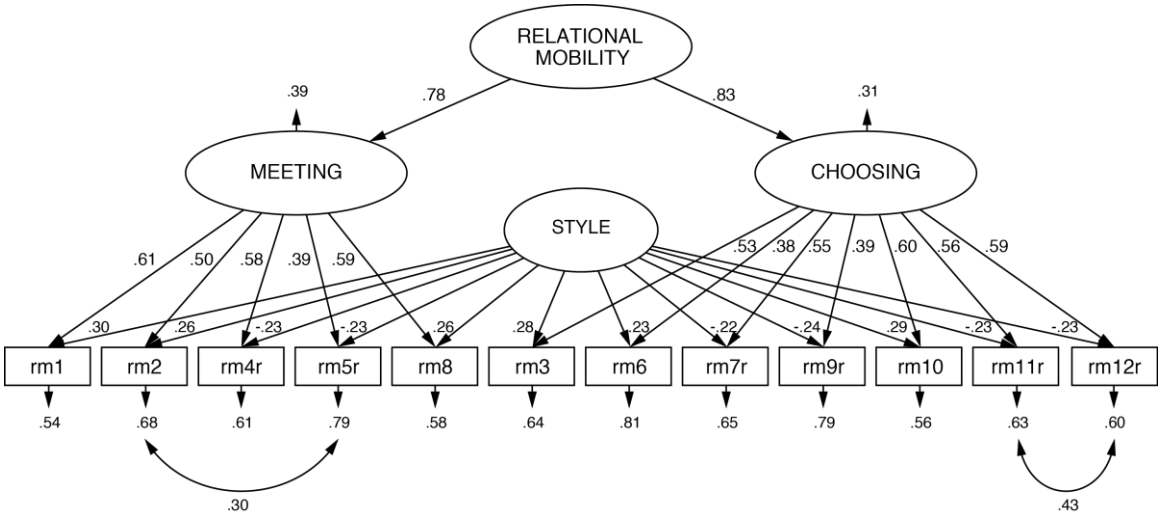

Fig. S5

Model 1 with standardized estimates displayed, estimated in the ‘pooled-within’ full sample.

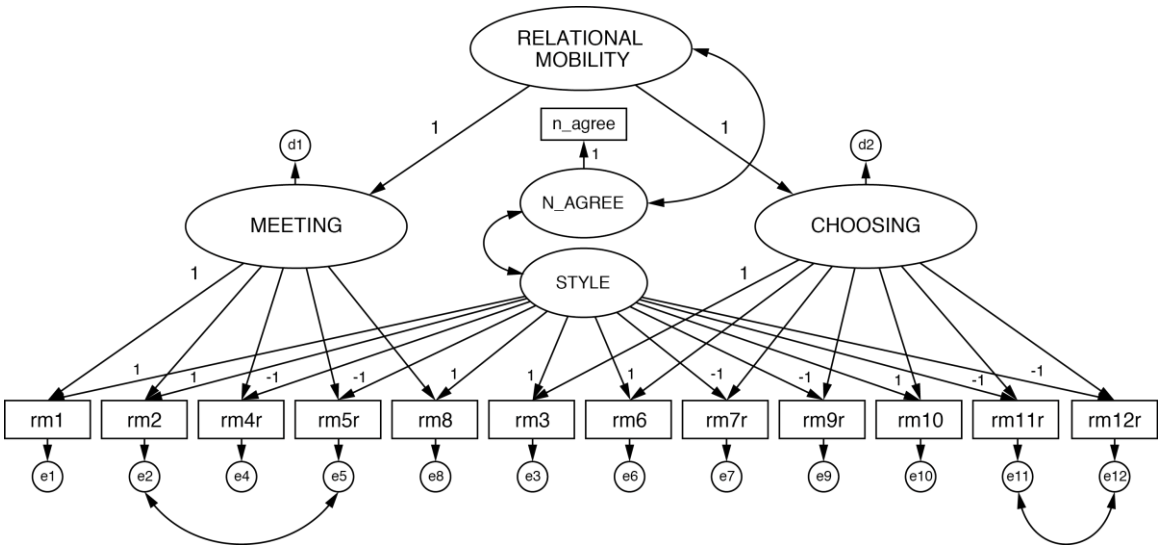

Fig. S6

Model 1c with two first-order content factors, one second-order content factor, a style factor, and a score for agreement

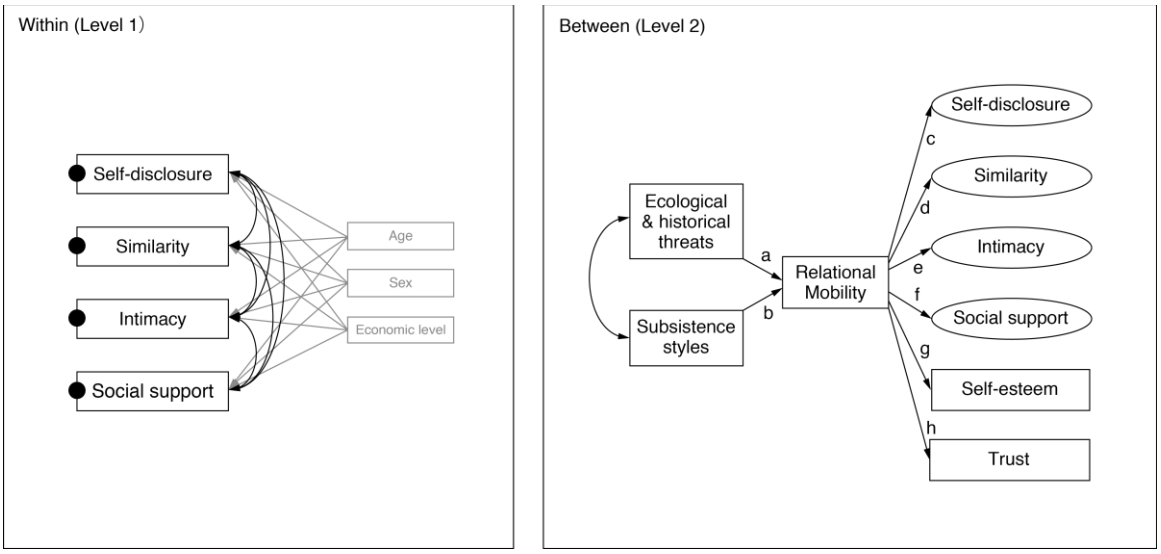

Fig. S7

Formal representation of the multilevel SEM analysis (means-as-outcomes), following Muthén and Asparouhov's style of diagramming (83). Antecedent variables are adjusted for GDP per capita. Path coefficients can be found in Table S11.

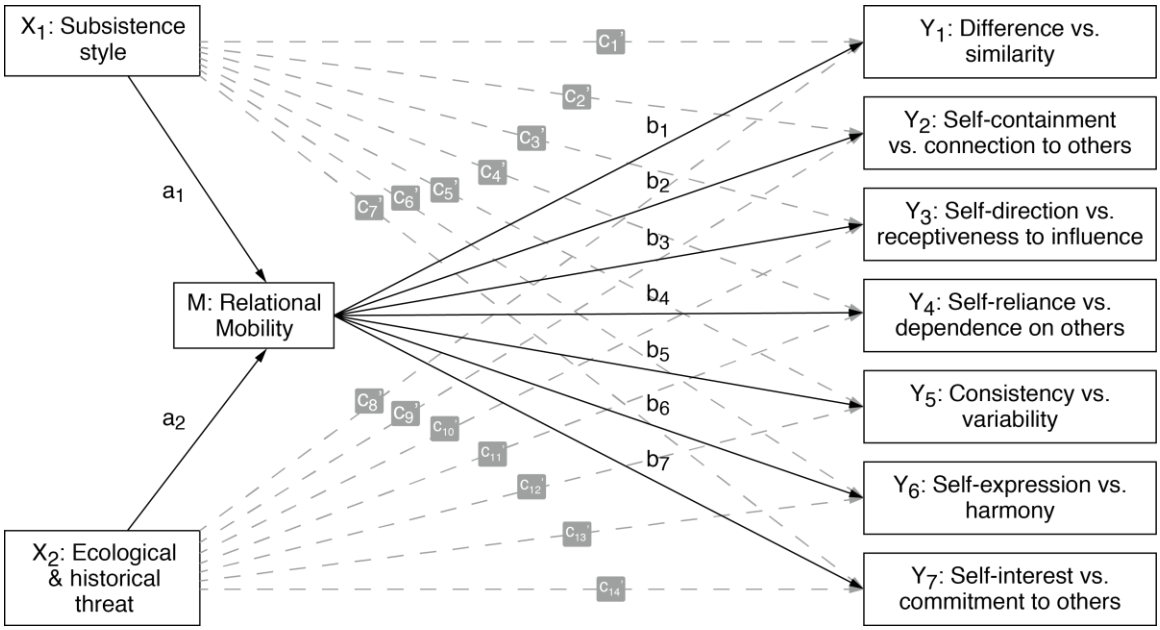

Fig. S8
A model representing the indirect effect of subsistence style and threat on dimensions of interdependent and independent cultural self-construals (70) via relational mobility. Covariances between subsistence style and threat, as well as between the seven self-construal dimensions were modelled but are not shown for ease of presentation. See Table S14 for path coefficients.

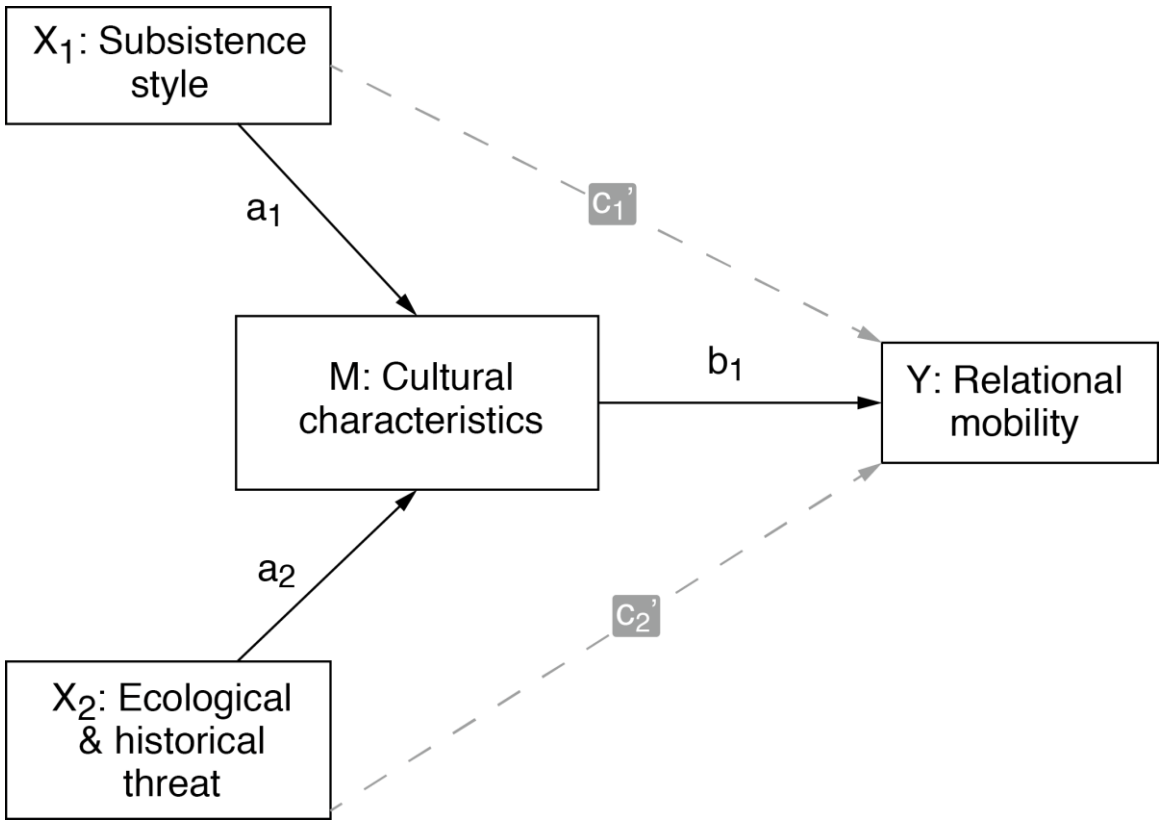

Fig. S9
A model representing a competing argument regarding the indirect effect of subsistence style and threat on relational mobility via cultural characteristics. See Table S15 for indirect path coefficients.

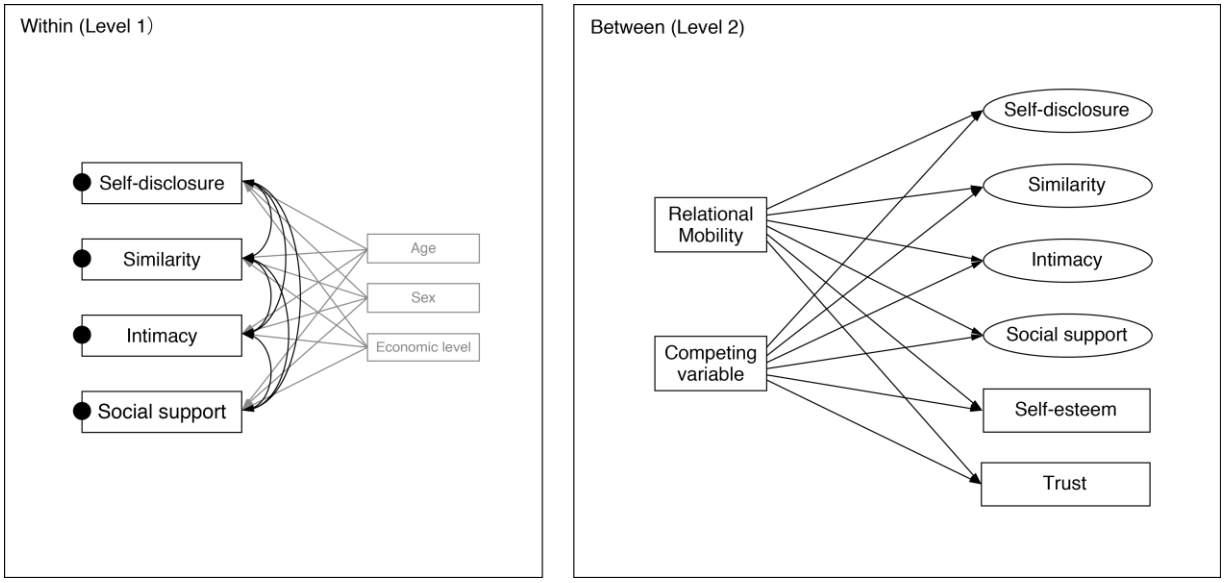

Fig. S10
A conceptual representation of the multi-level models tested in Table S16; the comparative explanatory power of relational mobility versus existing cultural constructs.

Table S1. Relational Mobility Scale Items

Item name	Item wording	Factor
rm1	They (the people around you) have many chances to get to know other people.	Meeting
rm2	It is common for these people to have a conversation with someone they have never met before.	Meeting
rm3	They are able to choose, according to their own preferences, the people whom they interact with in their daily life.	Choosing
rm4r	There are few opportunities for these people to form new friendships (reversed).	Meeting
rm5r	It is uncommon for these people to have a conversation with people they have never met before (reversed).	Meeting
rm6	If they did not like their current groups, they could leave for better ones.	Choosing
rm7r	It is often the case that they cannot freely choose who they associate with (reversed).	Choosing
rm8	It is easy for them to meet new people.	Meeting
rm9r	Even if these people were not completely satisfied with the group they belonged to, they would usually stay with it anyway (reversed).	Choosing
rm10	They are able to choose the groups and organizations they belong to.	Choosing
rm11r	Even if these people were not satisfied with their current relationships, they would often have no choice but to stay with them (reversed).	Choosing
rm12r	Even though they might rather leave, these people often have no choice but to stay in groups they don't like (reversed).	Choosing

Table S2. Individual-level regression coefficients (standardized) predicting key in-survey variables from gender, age, and household economic level.

Variables	*N*	Demographic predictors											
		Gender				Age				Economic level			
		Coeff.	*SE*	*p*	R^2	*Coeff.*	*SE*	*P*	R^2	*Coeff.*	*SE*	*p*	R^2
Relational mobility factor scores	16,939	0.061	0.014	0.000	0.004	0.005	0.020	0.788	0.000	0.016	0.015	0.298	0.000
Close friend target													
Self-disclosure	8,503	0.078	0.018	0.000	0.006	-0.085	0.022	0.000	0.007	0.041	0.011	0.000	0.002
Similarity	8,491	0.018	0.013	0.147	0.000	-0.064	0.023	0.004	0.004	0.102	0.017	0.000	0.010
Intimacy	8,503	0.081	0.015	0.000	0.007	-0.042	0.018	0.021	0.002	0.070	0.015	0.000	0.005
Social support	4,385[a]	-0.029	0.023	0.202	0.001	-0.043	0.038	0.252	0.002	0.029	0.018	0.113	0.001
Romantic partner target													
Self-disclosure	8,429	0.081	0.026	0.002	0.007	-0.135	0.032	0.000	0.018	0.024	0.016	0.132	0.001
Similarity	8,424	0.037	0.019	0.051	0.001	-0.079	0.023	0.001	0.006	0.078	0.017	0.000	0.006
Intimacy	8,427	0.080	0.024	0.001	0.006	-0.128	0.023	0.000	0.016	0.062	0.019	0.002	0.004
Social support	4,366[a]	0.017	0.017	0.328	0.000	-0.039	0.020	0.056	0.002	0.024	0.018	0.171	0.001

Note. [a] The single-item social support item was displayed randomly to every second respondent, in order to reduce the impact of respondent fatigue, an issue we foresaw particularly because we were recruiting via Facebook advertisements with no monetary incentive.

Table S3. Relational Mobility measurement model MGCFA fit indices. Asterisks denote robust fit indices.

Model	*S-B χ^2	*df*	**CFI*	**SRMR*	**RMSEA*	**RMSEA* 90% CI	Model Compari-son	Δ*CFI	Δ*SRMR	Δ*RMSEA	Decision
Model 1 Second-order model (Figure S4)	1021.73	50	.940	.031	.034	.032, .036	-	-	-	-	-
Model 1a First-order two-factor model	1021.72	50	.940	.031	.034	.032, .036	-	-	-	-	-
Model 1b First-order one-factor model	2158.74	52	.871	.052	.049	.047, .051	-	-	-	-	-
Model 1c Second-order model with score for acquiescence (Figure S6)	3405.77	59	.862	.052	.058	.056, .060	-	-	-	-	-
Model 1d Second-order model with no STYLE factor	3782.07	51	.771	.062	.066	.064, .068	-	-	-	-	-
Model 2 Configural invariance	4423.33	1950	.928	.050	.054	.052, .056	-	-	-	-	Accept
Model 3 First-order factor loadings invariant	5290.33	2330	.914	.071	.054	.052, .056	3 vs 2	.014	.021	.000	Reject
Model 3a First-order factor loadings partially invariant (RMob9)	5085.36	2292	.919	.067	.053	.051, .055	3a vs 2	.009	.017	.001	Accept
Model 4 Observed variable intercepts invariant	8345.37	2634	.835	.109	.071	.069, .072	4 vs 3a	.084	.042	.018	Reject
Model 4a Observed variable intercepts partially invariant	5506.27	2368	.909	.069	.055	.053, .057	4a vs 3a	.010	.002	.002	Accept
Model 5 First-order latent variable intercepts invariant	5750.88	2406	.903	.071	.057	.055, .058	5 vs 4a	.006	.002	.002	Accept
Model 6	5996.41	2444	.897	.085	.058	.056, .060	6 vs 5	.006	.014	.001	Accept

Second-order factor variance invariant

Table S4. Factor loadings for in-survey measured variables of self-disclosure, similarity, and intimacy. Within a pooled culture-free sample.

Target [a]	Latent variable	Standardized factor loadings (latent variable → observed variable *x*)										Fit Indices					
		1	2	3	4	5	6	7	8	9	10	S-B χ^2	*df*	**CFI*	**SRMR*	**RMSEA*	(90% CI)
Close friend	Disclosure	.70	.78	.80	.81	.77	-	-	-	-	-	132.93	4	.989	.019	.062	(.053, .071)
	Similarity	.67	.55	.66	.81	.70	-	-	-	-	-	45.82	4	.997	.016	.035	(.026, .045)
	Intimacy	.78	.74	.57	.77	.59	.78	.77	.75	.77	.63	382.26	33	.963	.026	.035	(.032, .039)
Romantic partner	Disclosure	.72	.80	.82	.81	.80	-	-	-	-	-	110.74	4	.995	.018	.056	(.048, .066)
	Similarity	.56	.54	.76	.80	.74	-	-	-	-	-	13.69	3	.999	.007	.021	(.010, .032)
	Intimacy	.84	.77	.55	.83	.64	.83	.86	.82	.81	.66	389.95	33	.976	.026	.036	(.033, .039)

Notes. [a] Close friend $N = 8{,}428$, Romantic partner $N = 8{,}387$. Error covariances allowed: Disclosure items 4 with 2 (both targets), Similarity items 1 with 2 (friend target) and items 1 with 2 & 4 (romantic partner target), Intimacy items 5 with 3 & 3 with 2 (friend target) and items 5 with 3 & 1 with 2 (romantic partner target).

Table S5. Measurement invariance indices from multi-group confirmatory factor analysis for disclosure, similarity, and intimacy scales, analyzed by target.

Model	Target	Scale	S-B χ^2	*df*	**CFI*	**SRMR*	**RMSEA*	**RMSEA* 90% CI	Comp-arison[a]	Δ**CFI*	Δ**SRMR*	Δ**RMSEA*	Decision
Model 1 Configural invariance	Close friend	Disclosure	327.84	156	.984	.028	.071	.060, .082	-	-	-	-	Accept
		Similarity	429.01	156	.970	.034	.090	.080, .100	-	-	-	-	Accept
		Intimacy	2887.97	1287	.934	.047	.076	.072, .079	-	-	-	-	Accept
	Romantic partner	Disclosure	416.97	156	.979	.027	.088	.078, .098	-	-	-	-	Accept
		Similarity	191.30	117	.993	.021	.054	.040, .068	-	-	-	-	Accept
		Intimacy	2639.86	1287	.958	.041	.070	.066, .074	-	-	-	-	Accept
Model 2 Metric invariance Factor loadings invariant	Close friend	Disclosure	545.83	308	.978	.080	.060	.051, .068	2 vs 1	.006	.052	-.011	Reject
		Partial[b]	424.46	232	.982	.056	.062	.052, .071	2a vs 1	.002	.028	-.009	Accept
		Similarity	734.48	308	.954	.085	.080	.072, .087	2 vs 1	.016	.051	-.010	Reject
		Partial[c]	630.02	270	.961	.063	.078	.070, .086	2a vs 1	.009	.029	-.012	Accept
		Intimacy	3408.07	1629	.927	.160	.071	.067, .074	2 vs 1	.007	.113	-.005	Reject
		Partial[d]	2978.22	1401	.935	.075	.072	.068, .075	2a vs 1	-.001	.028	-.004	Accept
	Romantic partner	Disclosure	682.64	308	.969	.079	.075	.067, .083	2 vs 1	.010	.052	-.013	Reject
		Partial[e]	527.71	232	.976	.054	.077	.068, .085	2a vs 1	.003	.027	-.011	Accept
		Similarity	430.24	269	.985	.065	.053	.043, .062	2 vs 1	.008	.044	-.001	Reject
		Partial[f]	298.62	193	.990	.044	.050	.039, .061	2a vs 1	.003	.023	-.004	Accept
		Intimacy	3351.66	1629	.946	.137	.070	.067, .073	2 vs 1	.012	.001	.000	Reject
		Partial[g]	2960.23	1477	.954	.071	.068	.065, .072	2a vs 1	.004	.030	-.002	Accept
Model 3 Scalar invariance Observed variable intercepts invariant	Close friend	Disclosure	998.52	384	.943	.079	.086	.079, .092	3 vs 2a	.039	.023	.024	Reject
		Partial[h]	574.74	308	.975	.060	.063	.055, .071	3a vs 2a	.007	.004	.001	Accept
		Similarity	1217.89	422	.913	.078	.093	.087, .099	3 vs 2a	.048	.015	.015	Reject
		Partial[i]	732.07	308	.954	.066	.080	.072, .087	3a vs 2a	.007	.003	.002	Accept
		Intimacy	3985.43	1743	.908	.124	.077	.074, .080	3 vs 2a	.027	.079	.005	Reject
		Partial[j]	3298.43	1514	.926	.080	.074	.070, .077	3a vs 2a	.009	.005	.002	Accept
	Romantic partner	Disclosure	1043.25	384	.946	.078	.089	.083, .096	3 vs 2a	.030	.024	.012	Reject
		Partial[k]	685.45	308	.969	.058	.075	.068, .083	3a vs 2a	.007	.004	-.002	Accept
		Similarity	971.17	345	.941	.072	.092	.085, .098	3 vs 2a	.049	.028	.042	Reject
		Partial[l]	379.58	231	.986	.047	.055	.045, .064	3a vs 2a	.004	.003	.005	Accept
		Intimacy	4315.36	1819	.922	.108	.080	.077, .083	3 vs 2a	.032	.037	.012	Reject
		Partial[m]	3333.89	1591	.946	.084	.071	.068, .075	3a vs 2a	.008	.013	.003	Accept

Notes. [a] Fit index value comparisons are with the immediately preceding model's respective scale, e.g., Model 3 disclosure (target: close friend) vs. Model 2 disclosure (target: close friend). [b] Factor loading equality constraints relaxed: Items 3 and 4. [c] Factor loading equality constraints relaxed: Item 3. [d] Factor loading equality constraints relaxed: Items 1, 3, 4, 5, 6, 7. [e] Factor loading equality constraints relaxed: Items 2 and 5. [f] Factor loading equality constraints relaxed: Items 1 and 3. [g] Factor loading equality constraints relaxed: Items 3, 4, 5, and 10. [h] Intercept constraints relaxed: Items1 & 2. [i] Intercept constraints relaxed: Items 2, 3, 4. [j] Intercept constraints relaxed: Items1, 3, 4, 5 (Japan only), 6, 7, 8. [k] Intercept constraints relaxed: Items 1 and 2. [l] Intercept constraints relaxed: Items 1, 2, 4. [m] Intercept constraints relaxed: Items 2, 4, 5, 6, 10.

Table S6. Relational mobility convergent/divergent validity. The Source column indicates where the indicators were drawn from. Self-reported measures are indicated with "SR". The N column indicates the number of countries/regions from our sample where data is available. Results when Latin American countries are excluded are also displayed (see SM section 1.1).

Correlates	Source	Correlations							
		All available data				Latin America/Hungary removed			
		N	*r*	95% CI	*p*	*N*	*r*	95% CI	*p*
Divorce and marriage									
Divorce to marriage ratio	Various (http://bit.ly/1ttOwHR)	27	0.04	-0.30, 0.39	0.832	21	**0.45**	0.10, 0.76	0.040*
Justifiability of divorce (SR)	World Values Survey Wave 6, V205[a]	27	**0.51**	0.18, 0.79	0.007*	22	**0.68**	0.32, 0.90	0.000*
Marriage outdated (SR)	World Values Survey Wave 5, V58[b]	22	**0.46**	0.11, 0.72	0.033*	17	**0.44**	0.08, 0.72	0.075*
Job mobility and work environment (SR)									
Unconcern over losing job	World Values Survey Wave 6, V181[c]	28	0.19	-0.25, 0.64	0.327	23	**0.52**	0.13, 0.80	0.011*
Job security is important in a job[a]	World Values Survey Wave 4, v88[d]	14	**-0.58**	-0.24, -0.86	0.029*	11	**-0.52**	-0.04, 0.88	0.101*
Salary increase after job change	Boston Consulting Group, 2015	8	**0.67**	-0.48, 0.96	0.068	7	**0.64**	-0.72, 0.97	0.120*
One job one career	Databook of International Labour Statistics, 2014	8	**-0.54**	-0.80, -0.41	0.169	-	-		-
Job satisfaction	E. van de Vliert & Janssen, 2002 (84)	19	**0.70**	0.30, 0.91	0.001*	14	**0.64**	0.21, 0.91	0.013*
Satisfaction with company	E. van de Vliert & Janssen, 2002 (84)	21	**0.72**	0.46, 0.91	0.000*	16	**0.64**	0.31, 0.90	0.008*
Performance motives (other-referenced)	E. van de Vliert & Janssen, 2002 (84)	24	**-0.36**	-0.67, 0.11	0.081	19	**-0.54**	-0.76, -0.26	0.017*
Performance motives (self-referenced)	E. van de Vliert & Janssen, 2002 (84)	24	**0.51**	0.18, 0.73	0.010*	19	**0.31**	-0.17, 0.66	0.199
Residential mobility									
OECD	Sánchez & Andrews (65)	13	**0.47**	0.13, 0.79	0.109*	12	**0.50**	0.04, 0.83	0.099*
Gallup World Poll	Gallup Inc. (66)	16	**0.53**	0.02, 0.83	0.036*	13	**0.40**	-0.24, 0.81	0.177
Mate poaching behavior[e] (SR)				Partial corr.					
Has attempted to poach (occurrence)									
Male, short-term	Schmitt, 2004 (38)	10	**0.72**	0.21, 0.94	0.018*	-	-		-
Female, short-term	Schmitt, 2004 (38)	10	**0.83**	0.52, 0.97	0.003*	-	-		-
Male, long-term	Schmitt, 2004 (38)	10	**0.55**	-0.08, 0.88	0.098*	-	-		-
Female, long-term	Schmitt, 2004 (38)	10	**0.82**	0.48, 0.99	0.004*	-	-		-
Has successfully poached (occurrence)									
Male, short-term	Schmitt, 2004 (38)	10	**0.57**	-0.77, 0.97	0.085*	-	-		-

Female, short-term	Schmitt, 2004 (38)	10	**0.65**	0.10, 0.93	0.043*	-	-		-
Male, long-term	Schmitt, 2004 (38)	10	0.24	-0.35, 0.66	0.499	-	-		-
Female, long-term	Schmitt, 2004 (38)	10	0.29	-0.55, 0.79	0.420	-	-		-
Recipient of poaching attempt (occurrence)									
Male, short-term	Schmitt, 2004 (38)	10	**0.76**	0.12, 0.97	0.011*	-	-		-
Female, short-term	Schmitt, 2004 (38)	10	**0.70**	0.13, 0.92	0.025*	-	-		-
Male, long-term	Schmitt, 2004 (38)	10	**0.50**	-0.47, 0.91	0.145	-	-		-
Female, long-term	Schmitt, 2004 (38)	10	**0.59**	-0.27, 0.93	0.075*	-	-		-
Successfully been poached (occurrence)									
Male, short-term	Schmitt, 2004 (38)	10	0.11	-0.45, 0.56	0.755	-	-		-
Female, short-term	Schmitt, 2004 (38)	10	0.27	-0.47, 0.75	0.451	-	-		-
Male, long-term	Schmitt, 2004 (38)	10	-0.18	-0.75, 0.73	0.627	-	-		-
Female, long-term	Schmitt, 2004 (38)	10	0.10	-0.49, 0.65	0.785	-	-		-
Religion and ethnic diversity									
Islam as majority (dummy variable)	CIA World Factbook (39)	39	**-0.55**	-0.77, -0.34	0.000*	-	-		-
Buddhism as majority (dummy variable)	CIA World Factbook (39)	39	**-0.45**	-0.67, -0.18	0.004*	-	-		-
Judeo-Christian as majority (dummy variable)	CIA World Factbook (39)	39	**0.50**	0.23, 0.76	0.001*	-	-		-
Historical ethnic diversity	Rychlowska et al., 2015 (68)	38	-0.21	-0.48, 0.07	0.214	30	-0.00	-036, 0.38	0.994
Government and Media									
Democratic polity[f]	Center for Systemic Peace, 2015 (85)	37	**0.42**	0.13, 0.68	0.009*	29	**0.51**	0.22, 0.81	0.004*
Press control[f]	Freedom House, 2013b (86)	37	-0.28	-0.61, 0.03	0.092*	30	**-0.60**	-0.83, -0.35	0.000*
Digital Access Index[f]	Environmental Sustainability Index (2005)	38	0.16	-0.14, 0.46	0.325	31	**0.41**	0.07, 0.75	0.024*
Political and Civil Liberties									
Political rights[f]	Freedom House, 2013a (87)	36	**0.34**	0.02, 0.64	0.043*	29	**0.60**	0.35, 0.84	0.001*
Civil liberties[f]	Freedom House, 2013a (87)	36	**0.44**	0.15, 0.70	0.008*	29	**0.72**	0.54, 0.89	0.000*
Democracy Index 2014	The Economist, 2014 (88)	38	**0.46**	0.21, 0.69	0.003*	31	**0.62**	0.37, 0.85	0.000*
Criminal Justice									

Population per police officer[f]	Kurian's World Rankings (2013)	29	**-0.31**	-0.52, -0.16	0.105*	23	-0.19	-0.42, -0.02	0.377
Retention of the Death Penalty	Amnesty International (2013)	37	**-0.53**	-0.77, -0.21	0.001*	30	**-0.72**	-0.89, -0.46	0.000*
Murders per 100,000[f]	Kurian's World Rankings (2013)	24	0.25	-0.08, 0.73	0.236	21	0.23	-0.15, 0.74	0.323
Crimes per 100,000[f]	Kurian's World Rankings (2013)	37	**0.36**	0.14, 0.58	0.027*	29	**0.64**	0.50, 0.78	0.000*
Divergent validity									
Social mobility									
Intergenerational correlation of education	Brunori, Ferreira, & Peragine, 2013 (89)	10	-0.00	-0.78, 0.72	0.991	7	**-0.43**	-0.98, 0.80	0.342
Intergenerational income elasticity	Corak, 2013 (90)	13	0.07	-0.47, 0.50	0.832	11	-0.12	-0.55, 0.26	0.729

Notes. [a] Country-level Average (via WVS online analysis tool). [b] Percent "agree" (via WVS online analysis tool). [c] Calculated Country-level Indicator (via WVS online analysis tool). [d] Percent mentioned (via WVS online analysis tool). [e] *N* for this section refer to *categories* of countries, i.e., the current study's countries were re-categorized into regions using Schmitt's (2004) categories: North America (United States, Canada), South America (Brazil, Chile, Colombia, Mexico, Trinidad and Tobago, Venezuela, Puerto Rico), Western Europe (France, Germany, Sweden, United Kingdom), Eastern Europe (Estonia, Hungary, Poland, Ukraine), Southern Europe (Portugal, Spain), Africa (Morocco, Tunisia, Egypt), Middle East (Israel, Jordan, Lebanon, Libya, Turkey, Occupied Palestinian Territories), Oceania (Australia, New Zealand), South/Southeast Asia (Malaysia, Philippines, Singapore), East Asia (Hong Kong, Japan, South Korea, Taiwan). [f] Controls for 2011-2012 GDP per capita.

All confidence intervals are bootstrapped 95% Bias Corrected accelerated, using 5,000 samples. *$p < .05$. Correlations $r > .30$ are displayed in bold.

Table S7. Convergent validity measures (within-survey self-reported interpersonal variables), multi-level analysis, unstandardized coefficients shown.

Individual-level dependent variable	Model[d]	Dependent variable coefficients				Level-2 predictor	Effect sizes [e]	
		Dependent Intercept, γ_{00} (SE)	Within-group variance, r (SD)	Between-group variance, u_0 (SD)	ICC	Relational mobility γ_{01}	R^2	R_1^2 (%)
New acquaintances in last month (log)[a]	1	0.752*** (0.026)	0.174*** (0.005)	0.010*** (0.002)	0.05	-	-	-
	2	0.755*** (0.034)	0.174*** (0.005)	0.009*** (0.003)	-	0.172† (0.092)	0.10	0.5
Number of romantic partners[b]	1	2.817*** (0.669)	6.441*** (0.377)	0.302*** (0.082)	0.04	-	-	-
	2	2.837*** (0.613)	6.440*** (0.377)	0.259*** (0.080)	-	1.042* (0.473)	0.14	0.7
Number of times romantic partner was poached (log)[c]	1	1.275*** (0.177)	4.427*** (0.295)	0.141*** (0.035)	0.03	-	-	-
	2	1.285*** (0.154)	4.427*** (0.295)	0.132*** (0.026)	-	0.447 (0.587)	0.06	0.2
Similarity								
With close friend	1	4.577*** (0.112)	1.449*** (0.067)	0.053* (0.023)	0.04	-	-	-
	2	4.591*** (0.136)	1.449*** (0.067)	0.037*** (0.008)	-	0.627* (0.271)	0.30	1.1
With romantic partner	1	4.582*** (0.131)	1.714*** (0.125)	0.078*** (0.026)	0.04	-	-	-
	2	4.601*** (0.150)	1.714*** (0.125)	0.064*** (0.015)	-	0.583 (0.362)	0.18	0.8

Notes. [a] $N^1 = 16{,}939$, $N_2 = 39$. [b] $N^1 = 8{,}031$~$8{,}120$, $N_2 = 36$. [c] Raw data was multiplied by a constant (10) in order to obtain suitable decimal places. Divide results by 10 in order to obtain original metric. [d] Model 1: Unconditional means model; Model 2: Regression with means-as-outcomes (91). Both models include age, sex and household income levels as covariates, and nest societies within Schmitt et al.'s (38) 10 world regions to account for the non-independence of country scores. [e] R^2 quantifies the proportion of between-level variability in the dependent variable (the ICC statistic) that is explained by the Level 2 predictor. R_1^2 represents the total model error of Model 1 explained by Model 2. $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\dagger}p < 0.10$.

Table S8. Country-level correlations of relational mobility with selected existing data for psychological variables, cultural dimensions and self-construals. Results when Latin American countries are excluded are also displayed (see SM section 1.1).

Correlates	Source	Correlations							
		All available data				Latin America/Hungary removed			
		N	*r*	95% CI	*p*	*N*	*r*	95% CI	-
Psychological variables									
Self-esteem	Schmitt & Allik, 2005 (35)	25	**0.66**	0.28, 0.83	0.000*	22	**0.66**	0.30, 0.84	0.001*
General Trust									
Trust in strangers	World Values Survey (Wave 5 V128, Wave 6 V105) [a]	32	**0.36**	0.03, 0.63	0.046*	26	**0.67**	0.48, 0.81	0.000*
Most people can be trusted	World Values Survey (WVS Wave 6 V24, Wave 5 V23) [b]	33	0.11	-0.24, 0.44	0.548	27	**0.43**	0.06, 0.71	0.026*
Religion									
Religious syncretism	World Values Survey Wave 6 (2010 – 2014), V154[a]	26	**0.50**	0.21, 0.77	0.009*	22	**0.55**	0.22, 0.83	0.009*
Tightness/looseness									
Gelfand et al.	Gelfand et al., 2011 (41)	23	**-0.39**	-0.74, 0.05	0.063	19	**-0.60**	-0.81, 0.31	0.007*
Domain specific	Uz, 2015 (69)	24	**0.64**	0.31, 0.89	0.001*	20	**0.69**	0.36, 0.94	0.001*
Domain general	Uz, 2015 (69)	22	**0.70**	0.43, 0.86	0.001*	19	**0.71**	0.51, 0.88	0.001*
Combined	Uz, 2015 (69)	23	**0.65**	0.47, 0.83	0.001*	20	**0.68**	0.43, 0.88	0.001*
Self-construal									
Difference vs. similarity	Vignoles et al., 2016 (70)	17	**0.55**	0.15, 0.92	0.021*	13	**0.68**	0.21, 0.97	0.011*
Self-containment vs. connection to others	Vignoles et al., 2016 (70)	17	**0.38**	-0.23, 0.87	0.128	13	**0.30**	-0.51, 0.93	0.323
Self-direction vs. receptiveness to influence	Vignoles et al., 2016 (70)	17	**0.34**	-0.34, 0.86	0.177	13	0.28	-0.49, 0.91	0.349
Self-reliance vs. dependence on others	Vignoles et al., 2016 (70)	17	-0.13	-0.69, 0.42	0.611	13	-0.03	-0.62, 0.49	0.920
Consistency vs. variability	Vignoles et al., 2016 (*84*)	17	**0.32**	-0.17, 0.64	0.211	13	0.23	-0.55, 0.68	0.454
Self-expression vs. harmony	Vignoles et al., 2016 (70)	17	**0.64**	0.38, 0.86	0.006*	13	**0.75**	0.36, 0.98	0.003*
Self-interest vs. commitment to others	Vignoles et al., 2016 (70)	17	-0.16	-0.59, 0.30	0.541	13	**-0.47**	-0.78, -0.05	0.104

Independent self-construal	Cheng et al., 2011 (71)	7	**0.76**	0.07, 0.99	0.050*	7	-		-
Interdependent self-construal	Cheng et al., 2011 (71)	7	**-0.72**	-0.92, -0.46	0.068	7	-		-
Cultural values									
Individualism	Hofstede, 2001 (72)	35	0.23	-0.10, 0.54	0.191	28	**0.70**	0.50, 0.85	0.000*
Power distance	Hofstede, 2001 (72)	35	-0.27	-056, 0.05	0.116	28	**-0.54**	-0.76, -0.29	0.003*
Uncertainty avoidance	Hofstede, 2001 (72)	35	0.11	-0.24, 0.43	0.519	28	0.06	-0.33, 0.41	0.780
Masculinity index	Hofstede, 2001 (72)	35	-0.26	-0.54, 0.14	0.137	28	**-0.38**	.0.67, 0.08	0.048*
Long-term orientation	Hofstede, 2001 (72)	35	-0.22	-0.53, 0.14	0.203	28	-0.03	-0.40, 0.37	0.880
Indulgence	Hofstede, 2001 (72)	34	**0.62**	0.39, 0.80	0.000*	28	**0.45**	0.90, 0.73	0.020*
Harmony	Schwartz, 1994 (73)	20	0.25	-0.27, 0.67	0.280	17	0.29	-0.26, 0.71	0.256
Conservatism	Schwartz, 1994 (73)	20	**-0.40**	-0.67, -0.09	0.077	17	**-0.51**	-0.77, -0.16	0.036*
Hierarchy	Schwartz, 1994 (73)	20	**-0.46**	-0.73, -0.13	0.041	17	**-0.58**	-0.82, -0.28	0.015*
Mastery	Schwartz, 1994 (73)	20	-0.03	-0.56, 0.52	0.908	17	**-0.32**	-0.73, 0.24	0.217
Affective autonomy	Schwartz, 1994 (73)	20	**0.38**	0.06, 0.67	0.095	17	**0.54**	0.22, 0.78	0.024*
Intellectual autonomy	Schwartz, 1994 (73)	20	0.20	-0.26, 0.57	0.388	17	**0.35**	-0.19, 0.71	0.170
Egalitarian commitment	Schwartz, 1994 (73)	20	**0.53**	0.16, 0.79	0.016*	17	**0.64**	0.35, 0.85	0.005*
Traditional/secular rational values	Inglehart & Welzel, 2005 (75)	33	-0.24	-0.58, 0.15	0.180	25	0.13	-0.33, 0.62	0.538
Survival vs. self-expression	Inglehart & Welzel, 2005 (75)	34	**0.64**	0.48, 0.79	0.000*	25	**0.66**	0.44, 0.83	0.000*
Cultural practices									
Family/in-group collectivism	House et al., 2004 (74)	27	**0.41**	0.06, 0.70	0.036	22	**0.50**	0.13, 0.78	0.019*
Institutional collectivism	House et al., 2004 (74)	27	0.17	-0.14, 0.46	0.258	22	-0.03	-0.44, 0.33	0.891
Performance orientation	House et al., 2004 (74)	27	**0.42**	0.18, 0.65	0.029	22	**0.43**	0.12, 0.70	0.045*
Power distance	House et al., 2004 (74)	27	-0.21	-0.45, 0.05	0.240	22	-0.15	-0.47, 0.13	0.511
Gender egalitarianism	House et al., 2004 (74)	27	**0.63**	0.41, 0.83	0.000*	22	**0.73**	0.57, 0.89	0.000
Assertiveness	House et al., 2004 (74)	27	**-0.39**	-0.73, 0.16	0.048	22	**-0.41**	-0.76, 0.26	0.059
Uncertainty avoidance	House et al., 2004 (74)	27	-0.21	-0.49, 0.07	0.286	22	**-0.50**	-0.73, -0.24	0.019*

Future orientation	House et al., 2004 (74)	27	-0.18	-0.48, 0.15	0.378	22	-0.27	-0.61, 0.10	0.221
Humane orientation	House et al., 2004 (74)	27	-0.07	-0.29, 0.47	0.732	22	-0.28	-0.07, 0.64	0.209
Social Axioms									
Fate control	Leung & Bond, 2004 (76)	22	**-0.51**	-0.73, -0.23	0.016*	20	**-0.51**	-0.76, -0.18	0.022*
Spirituality	Leung & Bond, 2004 (76)	22	**-0.41**	-0.76, 0.15	0.061	20	**-0.52**	-084, -0.01	0.018*
Reward for application	Leung & Bond, 2004 (76)	22	**-0.37**	-0.80, 0.15	0.090	20	**-0.51**	-0.84, -0.04	0.023*
Social cynicism	Leung & Bond, 2004 (76)	22	**-0.54**	-0.79, -0.24	0.010*	20	**-0.56**	-0.83, -0.20	0.011*
Social complexity	Leung & Bond, 2004 (76)	22	0.15	-0.24, 0.52	0.506	20	0.28	-015, 0.68	0.227
Sources of Guidance									
Vertical sources	Smith et al., 2002 (77)	25	-0.11	-0.58, 0.35	0.593	20	**-0.49**	-0.72, -0.17	0.030*
Beliefs that are widespread in my nation	Smith et al., 2002 (77)	25	0.09	-039, 0.48	0.676	20	**-0.40**	-0.66, -0.10	0.083
Unwritten rules	Smith et al., 2002 (77)	25	0.02	-0.34, 0.33	0.935	20	-0.08	-0.45, 0.27	0.731
Specialists	Smith et al., 2002 (77)	25	0.13	-0.41, 0.67	0.526	20	0.27	-0.10, 0.60	0.257
Co-workers	Smith et al., 2002 (77)	25	0.06	-0.29, 0.43	0.785	20	0.04	-0.33, 0.49	0.859

Notes. [a] Calculated Country-level Indicator (via WVS online analysis tool). [b] Percent responding "Most people can be trusted" (via WVS online analysis tool). All confidence intervals are 95% Bias Corrected accelerated, using 5,000 samples. All confidence intervals are bootstrapped 95% Bias Corrected accelerated, using 5,000 samples. *$p < .05$.

Table S9. Multi-level analyses predicting self-reported interpersonal behavior and psychology from societal relational mobility.

Target	Level-1 Dependent Variable	Model[c]	Dependent Intercept γ_{00} (SE)	Within-group Variance r (SE)	Between-group Variance u_0 (SE)	ICC	Level-2 Predictor Relational Mobility (SE) γ_{01}	Effect Sizes[d] R^2	R_1^2 (%)
Close friend[a]	Self-disclosure	1	3.765*** (0.083)	0.808*** (0.045)	0.043*** (0.009)	0.05	-	-	-
		2	3.770*** (0.079)	0.808*** (0.045)	0.020** (0.009)	-	0.747*** (0.181)	0.54	2.7
	Intimacy	1	5.491*** (0.047)	0.787*** (0.026)	0.031*** (0.019)	0.04	-	-	-
		2	5.505*** (0.064)	0.786*** (0.026)	0.020** (0.008)	-	0.566** (0.223)	0.36	1.5
	Social support	1	4.475*** (0.101)	0.628*** (0.127)	0.044*** (0.018)	0.07	-	-	-
		2	4.490*** (0.082)	0.628*** (0.127)	0.034*** (0.009)	-	0.508* (0.219)	0.23	1.5
Romantic partner[b]	Self-disclosure	1	4.033*** (0.183)	0.914*** (0.051)	0.121*** (0.029)	0.12	-	-	-
		2	4.079*** (0.143)	0.929*** (0.051)	0.090*** (0.022)	-	0.955** (0.330)	0.26	1.6
	Intimacy	1	5.569*** (0.214)	1.460*** (0.151)	0.065*** (0.021)	0.05	-	-	-
		2	5.605*** (0.199)	1.459*** (0.081)	0.062*** (0.014)	-	0.528† (0.321)	0.05	0.3
	Social support	1	4.465*** (0.071)	0.510 (0.046)	0.018 (0.011)	0.04	-	-	-
		2	4.470*** (0.063)	0.510 (0.046)	0.018 (0.009)	-	0.197 (0.225)	0.00	0.0

Notes. [a] N^1 = 8,369~8,503, N_2 = 39. [b] N^1 = 8,326~8,429, N_2 = 39. [c] Model 1: Unconditional means model (includes age, sex, and household income level as covariates at the individual level, and nests societies within Schmitt et al.'s (38) 10 world regions); Model 2: Regression with means-as-outcomes (includes age, sex, and household income level as covariates at the individual level, and nests societies within Schmitt et al.'s (38) 10 world regions) (91). [d] R^2 quantifies the

proportion of between-level variability in the dependent variable (the ICC statistic) that is explained by the Level 2 predictor. R_1^2 represents the total model error of Model 1 explained by Model 2. $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$, $^{\dagger}p < 0.10$.

Table S10. Country- and region-level correlations between relational mobility and existing data for ecological, historical, and subsistence variables. Variables with label "(log)" were transformed by the natural log function to correct for skewed distributions. Results when Latin American countries and Hungary are excluded are also displayed (see SM section 1.1).

Variable	Sources	Correlations with relational mobility after the following GDP per capita adjustment												Latin America and Hungary excluded (2012 GDP-control)		
		None			2012			1950			1913					
		N	*r* (95%CI)	*p*	*N*	*r*	*p*	*N*	*r*	*p*	*N*	*r*	*p*	*N*	*r*	*p*
GDP per capita																
2012	The World Bank	39	0.13 (-0.17, -0.49)	0.423	-	-	-	-	-	-	-	-	-	31	**0.31** (-0.03, 0.73)	0.089
1950	Maddison (57)	36	**0.51** (0.33, 0.69)	0.002*	-	-	-	-	-	-	-	-	-	28	**0.67** (0.52, 0.80)	0.000*
1929	Maddison (57)	24	**0.39** (0.11, 0.65)	0.060	-	-	-	-	-	-	-	-	-	18	**0.66** (0.47, 0.84)	0.003*
1913	Maddison (57)	31	**0.48** (0.24, 0.70)	0.007*	-	-	-	-	-	-	-	-	-	25	**0.73** (0.59, 0.85)	0.000*
Human Development Index 2000	UN Human Development Report	33	0.20 (-0.12, 0.50)	0.259	-	-	-	-	-	-	-	-	-	26	**0.46** (0.11, 0.79)	0.017*
Subsistence style																
Subsistence style composite	See SM Section 1.5.3.	35	**-0.63** (-0.80, -0.40)	0.000*	35	**-0.66** (-0.83, -0.40)	0.000*	33	**-0.57** (-0.78, -0.26)	0.001*	31	**-0.64** (-0.81, -0.38)	0.000*	29	**-0.63** (-0.82, -0.36)	0.000*
Cereal land devoted to rice cultivation in 2000	UN GAEZ (n.d.)	35	**-0.48** (-0.70, -0.17)	0.003*	35	**-0.51** (-0.74, -0.21)	0.002*	33	**-0.40** (-0.67, -0.00)	0.020	31	**-0.44** (-0.71, -0.05)	0.014*	29	**-0.66** (-0.84, -0.39)	0.000*
Crop land devoted to pasture in 1990	FAOSTAT (48)	37	**0.52** (0.29, 0.71)	0.001*	37	**0.51** (0.27, 0.70)	0.001*	34	**0.45** (0.18, 0.68)	0.008*	31	**0.47** (0.16, 0.73)	0.008*	31	**0.43** (0.16, 0.65)	0.015*

Historical and ecological threat composite variable (7-items)																
Historical and ecological threat		34	**-0.54** (-0.70, -0.38)	0.001*	34	**-0.52** (-0.73, -0.29)	0.002*	32	**-0.45** (-0.67, -0.21)	0.010*	29	**-0.47** (-0.70, -0.21)	0.011*	27	**-0.53** (-0.76, -0.28)	0.004*
Population Density and Pressure (GDP per capita adjusted)																
Population density in 1500 (log)	McEvedy & Jones, 1978 (47)	29	**-0.34** (-0.61, -0.04)	0.071	29	**-0.34** (-0.60, -0.03)	0.074	28	-0.27 (-0.55, 0.05)	0.167	28	**-0.31** (-0.61, 0.05)	0.115	23	-0.22 (-0.62, 0.34)	0.315
Real population density in 1500 (log)	McEvedy & Jones, 1978 (47)	27	**-0.39** (-0.62, -0.11)	0.047	27	**-0.36** (-0.63, -0.02)	0.062	27	**-0.31** (-0.59, 0.09)	0.119	27	**-0.33** (-0.58, -0.01)	0.090	21	**-0.37** (-0.69, 0.14)	0.101
Population density in 2013 (log)	The World Bank (n.d.)	31	**-0.39** (-0.60, -0.14)	0.029	31	**-0.42** (-0.61, -0.21)	0.018*	28	**-0.33** (-0.57, -0.04)	0.081	27	**-0.39** (-0.64, -0.06)	0.043	25	**-0.41** (-0.70, -0.07)	0.040*
Population pressure by 2050	Environmental Sustainability Index (2005)	39	-0.25 (-0.52, 0.12)	0.132	38	-0.14 (-0.49, 0.24)	0.404	36	-0.13 (-0.51, 0.27)	0.448	31	-0.01 (-0.44, 0.46)	0.978	29	**-0.30** (-0.63, 0.10)	0.113
Number of people per room (2002)	Statistical Division, UN	21	-0.14 (-0.53, 0.22)	0.545	21	-0.12 (-0.44, 0.22)	0.602	21	-0.05 (-0.40, 0.29)	0.823	18	-0.07 (-0.55, 0.39)	0.778	16	**-0.34** (-0.63, -0.09)	0.193
Population growth rate (2003 – 2013)	The World Bank	37	-0.14 (-0.48, 0.20)	0.407	37	-0.14 (-.048, 0.23)	0.415	35	-0.12 (-0.49, 0.24)	0.494	30	0.02 (-0.42, 0.43)	0.917	29	-0.28 (-0.58, 0.05)	0.139
Natural Resources (GDP per capita adjusted)																
Arable land hectares per person (1980)	The World Bank, 1980 (93)	32	**0.32** (-0.03, 0.57)	0.075	32	**0.35** (0.01, 0.60)	0.049	32	0.25 (-0.16, 0.56)	0.165	28	**0.36** (0.01, 0.61)	0.062	24	**0.58** (0.34, 0.77)	0.003*
Agriculture (% value added to GDP)	The World Bank, 2010 (94)	34	0.01 (-0.42, 0.32)	0.943	34	0.05 (-0.35, 0.35)	0.762	32	0.04 (-0.38, -0.34)	0.818	29	0.11 (-0.34, 0.39)	0.561	26	0.16 (-0.30, 0.47)	0.425
Percentage of country as farmland	Kurian's World Ranking (2001)	37	0.18 (-0.22, 0.58)	0.293	37	0.18 (-0.22, 0.56)	0.292	35	0.13 (-0.28, 0.56)	0.445	30	0.10 (-0.32, 0.55)	0.590	29	**0.35** (-0.05, 0.70)	0.063*

Food supply per capita, kcal/day (2002)	FAOSTAT, 2002 (48)	34	0.14 (-0.19, 0.47)	0.447	34	0.08 (-0.25, 0.40)	0.667	33	0.09 (-0.23, 0.44)	0.641	30	0.06 (-0.27, 0.40)	0.763	27	**0.38** (0.03, 0.66)	0.041*
Fat supply per capita, g/day (2002)	FAOSTAT, 2002 (48)	35	0.15 (-0.16, 0.45)	0.377	35	0.12 (-0.24, 0.45)	0.480	33	0.05 (-0.30, 0.40)	0.784	30	0.05 (-0.30, 0.39)	0.809	28	**0.48** (0.20, 0.70)	0.009*
Protein supply per capita g/day (2002)	FAOSTAT, 2002 (48)	35	0.16 (-0.13, 0.46)	0.350	35	0.13 (-0.15, 0.43)	0.446	33	0.10 (-0.20, 0.40)	0.595	30	0.09 (-0.23, 0.42)	0.626	28	**0.50** (0.25, 0.73)	0.007*
Access to clean water	The World Bank (95)	36	0.21 (-0.17, 0.48)	0.230	36	0.17 (-0.19, 0.44)	0.309	34	0.11 (-0.32, 0.44)	0.536	29	-0.04 (-0.45, 0.33)	0.826	28	**0.40** (0.12, 0.71)	0.035*
Air quality (concentration of N02)	Environmental Sustainability Index (2005) (46)	25	0.15 (-0.20, 0.52)	0.489	25	0.15 (-0.17, 0.48)	0.490	23	0.15 (-0.22, 0.52)	0.502	22	0.16 (-0.18, 0.55)	0.473	20	0.03 (-0.47, 0.56)	0.897
History of Territorial Conflict																
Number of territorial threats	International Crisis Behavior Data, 1918 – 2013 (42, 96)	31	**-0.32** (-0.54, -0.14)	0.076	31	-0.26 (-0.55, -0.00)	0.160	30	-0.21 (-0.48, 0.03)	0.266	28	-0.20 (-0.48, 0.06)	0.300	26	-0.22 (-0.48, 0.00)	0.274
Environmental and Health Vulnerabilities (GDP per capita adjusted)																
Environmental Performance Index	EPI 2016	36	**0.33** (0.04, 0.59)	0.052	36	**0.32** (0.03, 0.58)	0.055	34	0.21 (-0.09, 0.52)	0.239	30	0.22 (-0.09, 0.53)	0.237	29	**0.55** (0.35, 0.73)	0.002*
Natural Disaster Vulnerability[a]	Environmental Sustainability Index 2005 Indicator 14	34	-0.25 (-0.14, 0.52)	0.155	34	-0.22 (-0.14, -0.46)	0.206	32	-0.18 (-0.20, 0.46)	0.328	29	-0.17 (-0.20, 0.44)	0.376	26	**-0.43** (-0.66, -0.14)	0.024*
Demanding geoclimate	E. V. de Vliert, 2006 (43)	28	**-0.45** (-0.63, -0.23)	0.018*	28	**-0.45** (-0.63, -0.23)	0.017*	28	**-0.37** (-0.60, -0.11)	0.050	27	**-0.41** (-0.63, -0.14)	0.035	23	**-0.44** (-0.65, -0.19)	0.036*

Historical pathogen prevalence	Murray & Schaller, 2010 (44)	37	-0.28 (-0.55, -0.02)	0.090	37	-0.28 (-0.55, 0.01)	0.092	35	-0.14 (-0.46, 0.17)	0.439	31	-0.19 (-0.55, 0.15)	0.313	30	**-0.67** (-0.81, -0.51)	0.000*
Life lost to communicable diseases	World Health Organization, 2000 (97)	35	-0.22 (-0.46, 0.01)	0.199	35	-0.19 (-0.45, 0.06)	0.266	33	-0.12 (-0.39, 0.17)	0.517	29	-0.15 (-0.43, 0.16)	0.454	28	**-0.43** (-0.66, -0.28)	0.024*
Tuberculosis per 100,000 people (average 1990 to 2013, log transformed)	World Health Organization, 2014 (45)	37	**-0.38** (-0.59, -0.15)	0.019*	37	**-0.38** (-0.62, -0.12)	0.019*	34	**-0.31** (-0.55, -0.05)	0.072	29	-0.23 (-0.52, 0.06)	0.219	29	**-0.43** (-0.70, -0.12)	0.021*
Infant mortality rate per 1,000 live births (1960 – 2015 average)	United Nations, 2015 (98)	35	-0.24 (-0.52, 0.06)	0.168	35	-0.21 (-0.53, 0.11)	0.219	33	-0.11 (-0.44, 0.22)	0.548	29	-0.09 (-0.43, 0.26)	0.659	28	**-0.43** (-0.71, -0.20)	0.022*
Children under 5 mortality rate per 1000 live births (Log)	United Nations, 2015 (99)	35	-0.25 (-0.58, 0.11)	0.156	35	-0.23 (-0.54, 0.08)	0.186	33	-0.11 (-0.45, 0.24)	0.559	29	-0.08 (-0.45, 0.27)	0.691	28	**-0.52** (-0.79, -0.24)	0.005*
Life expectancy at birth (1960 – 2013 average)	The World Bank, 2016 (100)	37	0.24 (-0.09, 0.57)	0.145	37	0.28 (-0.03, 0.58)	0.100	35	0.13 (-0.23, 0.49)	0.469	30	0.07 (-0.29, 0.46)	0.723	29	**0.45** (0.09, 0.80)	0.015*

Notes. [a] Correlation has been reversed for ease of interpretation. Correlations r > .30 are displayed in bold. All confidence intervals are bootstrapped 95% Bias Corrected accelerated, using 5,000 samples. *$p < .05$.

Table S11. Fit statistics and standardized regression coefficients for the multi-level systems model (Figure S7), while accounting for non-independence of country-level means, as clustered by Schmitt et al.'s (2004) world regions.

			Target for paths c to f							
			Friend[a]				Romance[b]			
GDP per capita adjustment for paths a and b			None	2012	1950	1913	None	2012	1950	1913
Path coefficients and standard errors[e]	a (threats)[c]	β	-0.361**	-0.284**	-0.319**	-0.273*	-0.361**	-0.284**	-0.319**	-0.273*
		(*SE*)	(0.102)	(0.091)	(0.099)	(0.127)	(0.102)	(0.091)	(0.099)	(0.127)
	b (subsistence style)[d]	β	-0.492***	-.525***	-0.475***	-0.530***	-0.492***	-.525***	-0.475***	-0.530***
		(*SE*)	(0.116)	(0.091)	(0.123)	(0.118)	(0.116)	(0.091)	(0.123)	(0.118)
	c (disclosure)	β	0.742***	0.742***	0.742***	0.742***	0.552***	0.552***	0.552***	0.552***
		(*SE*)	(0.137)	(0.137)	(0.137)	(0.137)	(0.137)	(0.137)	(0.137)	(0.137)
	d (similarity)	β	0.565***	0.565***	0.565***	0.565***	0.431*	0.431*	0.431*	0.431*
		(*SE*)	(0.148)	(0.148)	(0.148)	(0.148)	(0.208)	(0.208)	(0.208)	(0.208)
	e (intimacy)	β	0.655***	0.655***	0.655***	0.655***	0.403*	0.403*	0.403*	0.403*
		(*SE*)	(0.118)	(0.118)	(0.118)	(0.118)	(0.200)	(0.200)	(0.200)	(0.200)
	f (social support)	β	0.509**	0.509**	0.509**	0.509**	0.296	0.296	0.296	0.296
		(*SE*)	(0.158)	(0.158)	(0.158)	(0.158)	(0.272)	(0.272)	(0.272)	(0.272)
	g (self-esteem)	β	0.660***	0.660***	0.660***	0.660***	0.628***	0.628***	0.628***	0.628***
		(*SE*)	(0.122)	(0.122)	(0.122)	(0.122)	(0.123)	(0.123)	(0.123)	(0.123)
	h (trust)	β	0.374*	0.374*	0.374*	0.374*	0.355†	0.355†	0.355†	0.355†
		(*SE*)	(0.166)	(0.166)	(0.166)	(0.166)	(0.185)	(0.185)	(0.185)	(0.185)
Model fit statistics		S-B χ^2	20.25	13.99	17.09	18.45	20.53	16.97	18.31	27.57
		df	12	12	12	12	12	12	12	12
		P	.062	.302	.146	.103	.058	.151	.107	.006
		**CFI*	.997	.999	.998	.998	.998	.999	.998	.996
		**TLI*	.988	.997	.992	.990	.991	.995	.993	.984
		**SRMR* (within)	.001	.001	.001	.001	.001	.001	.001	.001
		**SRMR* (between)	.077	.064	.068	.072	.103	.086	.092	.097

Notes. [a] N_1 = 8,369~8,503. [b] N_1 = 8,326~8,429. [c] "None" N_2 = 34, "2012" N_2 = 34, "1950" N_2 = 32, "1913" N_2 = 29. [d] "None" N_2 = 35, "2012" N_2 = 35, "1950" N_2 = 33, "1913" N_2 = 31. [e] Standardized coefficients shown. Coefficients a and b are based on predictor variables adjusted for GDP per capita in the year indicated. Coefficients c-f control for individual-level effects of age, sex, and household income level (see Fig S4). Model also takes into account Level 2 clustering of countries in Schmitt et al.'s (2004) world regions. Results were largely the same when clustering countries in continents. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, † $p < 0.10$

Table S12. Fit statistics and standardized regression coefficients for the multi-level systems model (Figure S7), while accounting for non-independence of country-level means, as clustered by Schmitt et al.'s (2004) world regions. Path a (threats) only includes countries and regions where all seven threat composite variable indicators are present (N = 23).

			Target for paths c to f							
			Friend[a]				Romance[b]			
GDP per capita adjustment for paths a and b			None	2012	1950	1913	None	2012	1950	1913
Path coefficients and standard errors[e]	a (threats)[c]	β	-0.415**	-0.372*	-0.408**	-0.392**	-0.415**	-0.372*	-0.408**	-0.392**
		(*SE*)	(0.139)	(0.144)	(0.146)	(0.131)	(0.139)	(0.144)	(0.146)	(0.131)
	b (subsistence style)[d]	β	-0.497***	-.490***	-0.475***	-0.508***	-0.497***	-.490***	-0.475***	-0.508***
		(*SE*)	(0.125)	(0.108)	(0.129)	(0.101)	(0.125)	(0.108)	(0.129)	(0.101)
	c (disclosure)	β	0.742***	0.742***	0.742***	0.742***	0.552***	0.552***	0.552***	0.552***
		(*SE*)	(0.137)	(0.137)	(0.137)	(0.137)	(0.137)	(0.137)	(0.137)	(0.137)
	d (similarity)	β	0.565***	0.565***	0.565***	0.565***	0.431*	0.431*	0.431*	0.431*
		(*SE*)	(0.148)	(0.148)	(0.148)	(0.148)	(0.208)	(0.208)	(0.208)	(0.208)
	e (intimacy)	β	0.655***	0.655***	0.655***	0.655***	0.403*	0.403*	0.403*	0.403*
		(*SE*)	(0.118)	(0.118)	(0.118)	(0.118)	(0.200)	(0.200)	(0.200)	(0.200)
	f (social support)	β	0.509**	0.509**	0.509**	0.509**	0.296	0.296	0.296	0.296
		(*SE*)	(0.158)	(0.158)	(0.158)	(0.158)	(0.272)	(0.272)	(0.272)	(0.272)
	g (self-esteem)	β	0.660***	0.660***	0.660***	0.660***	0.628***	0.628***	0.628***	0.628***
		(*SE*)	(0.122)	(0.122)	(0.122)	(0.122)	(0.123)	(0.123)	(0.123)	(0.123)
	h (trust)	β	0.374*	0.374*	0.374*	0.374*	0.355†	0.355†	0.355†	0.355†
		(*SE*)	(0.166)	(0.166)	(0.166)	(0.166)	(0.185)	(0.185)	(0.185)	(0.185)
Model fit statistics		S-B χ^2	25.48	20.40	21.67	21.67	19.42	17.33	18.95	26.24
		df	12	12	12	12	12	12	12	12
		P	.013	.060	.041	.041	.068	.138	.090	.010
		**CFI*	.995	.997	.997	.997	.998	.999	.998	.997
		**TLI*	.980	.987	.985	.985	.991	.994	.992	.985
		**SRMR* (within)	.001	.001	.001	.001	.001	.001	.001	.001
		**SRMR* (between)	.089	.077	.081	.081	.105	.093	.097	.093

Notes. [a] N_1 = 8,369~8,503. [b] N_1 = 8,326~8,429. [c] "None" N_2 = 23, "2012" N_2 = 23, "1950" N_2 = 23, "1913" N_2 = 23. [d] "None" N_2 = 35, "2012" N_2 = 35, "1950" N_2 = 33, "1913" N_2 = 31. [e] Standardized coefficients shown. Coefficients a and b are based on predictor variables adjusted for GDP per capita in the year indicated. Coefficients c-f control for individual-level effects of age, sex, and household income level (see Fig S4). Model also takes into account Level 2 clustering of countries in Schmitt et al.'s (2004) world regions. Results were largely the same when clustering countries in continents. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, † $p < 0.10$

Table S13. Reproduction of standardized path coefficients for Figure S7 (as reported in Table S11), when replacing relational mobility with measures of actual relational movement (at the country-level). Threats and subsistence style variables are adjusted for 2012 GDP per capita.

			Relational mobility (as per Table S11)	Variables replacing relational mobility[1]	
				Residential mobility	New acquaintances met in last month
Standardized path coefficients (see Figure S7) and standard errors	a (threats)	β	-0.284**	-0.523***	0.011
		(*SE*)	(0.091)	(0.102)	(0.178)
	b (subsistence style)	β	-0.525***	-0.141	-0.284***
		(*SE*)	(0.091)	(0.152)	(0.077)
	c (disclosure)	β	0.742***	0.387	0.208
		(*SE*)	(0.137)	(0.246)	(0.180)
	d (similarity)	β	0.565***	0.507**	0.183
		(*SE*)	(0.148)	(0.174)	(0.145)
	e (intimacy)	β	0.655***	0.488	0.199
		(*SE*)	(0.118)	(0.323)	(0.176)
	f (social support)	β	0.509**	0.400	0.260
		(*SE*)	(0.158)	(0.288)	(0.258)
	g (self-esteem)	β	0.660***	0.505***	0.352*
		(*SE*)	(0.122)	(0.121)	(0.152)
	h (trust)	β	0.374*	0.141	-0.101
		(*SE*)	(0.166)	(0.194)	(0.209)
Model fit statistics		S-B χ^2	13.99	29.85	39.48
		df	12	12	12
		P	.302	.003	.000
		**CFI*	.999	.994	.991
		**TLI*	.997	.973	.959
		**SRMR* (within)	.001	.001	.001
		**SRMR* (between)	.064	.142	.201

Notes. [1] "Residential mobility" country $N = 15$, "new acquaintances met in the last month" country $N = 39$. *** $p < .001$, ** $p < .01$, * $p < .05$

Table S14. Standardized path coefficients, standard errors, and model summary information for Fig S8; a model representing the indirect effect of subsistence style and threat on cultural self-construal variables conceptually related to interdependence/independence (92) via relational mobility.

		Antecedent										Indirect effect		
		X_1 (Subsistence style)			X_2 (Threats)			M (Relational mobility)						
Consequent		β [95%CI]	*SE*	*p*	β [95%CI]	*SE*	*p*	β [95%CI]	*SE*	*p*	R^2		β [95%CI]	*SE*
M (Relational mobility)	a_1	-0.508 [-0.706. -0.409]	0.102	0.000	a_2	-0.278 [-0.407, -0.006]	0.102	0.006	-	-	-	0.46			
Y_1 (Difference vs. similarity)	c_1'	0.221 [-0.081. 0.496]	0.186	0.236	c_8'	-0.497 [-0.640, -0.176]	0.162	0.334	b_1	0.423 [0.098, 0.666]	0.154	0.006	0.47	a_1b_1	-0.215 [-0.517, -0.043]	0.099
														a_2b_1	-0.118 [-0.258, -0.011]	0.063
Y_2 (Self-containment vs. connection to others)	c_2'	0.323 [-0.042 0.747]	0.220	0.143	c_9'	0.020 [-0.335, 0.573]	0.233	0.933	b_2	0.602 [0.520, 0.787]	0.096	0.000	0.21	a_1b_2	-0.306 [-0.612, -0.217]	0.100
														a_2b_2	-0.168 [-0.244, -0.005]	0.068
Y_3 (Self-direction vs. receptiveness to influence)	c_3'	0.477 [0.196. 0.776]	0.189	0.012	c_{10}'	0.040 [-0.190, 0.472]	0.213	0.850	b_3	0.661 [0.574, 0.900]	0.123	0.000	0.26	a_1b_3	-0.336 [-0.638, -0.190]	0.114
														a_2b_3	-0.184 [-0.377, -0.006]	0.079
Y_4 (Self-reliance vs. dependence on others)	c_4'	0.186 [-0.263. 0.443]	0.228	0.415	c_{11}'	-0.466 [-0.919, -0.191]	0.238	0.051	b_4	-0.243 [-0.303, -0.227]	0.109	0.025	0.17	a_1b_4	0.123 [0.073, 0.157]	0.069
														a_2b_4	0.068 [0.003, 0.115]	0.043
Y_5 (Consistency vs. variability)	c_5'	0.200 [-0.270. 0.357]	0.184	0.277	c_{12}'	-0.037 [-0.439, 0.256]	0.201	0.853	b_5	0.420 [0.366, 0.457]	0.142	0.003	0.12	a_1b_4	-0.213 [-0.279, -0.153]	0.073
														a_2b_4	-0.117 [-0.165, -0.065]	0.051
	c_6'	0.169	0.211	0.422		-0.197	0.204	0.334	b_6	0.632	0.128	0.000	0.43	a_1b_6	-0.321	0.100

Y_6 (Self-expression vs. harmony)		[-0.181. 0.490]			c_{13}'	[-0.476, 0.040]			[0.294, 0.776]					a_2b_6	[-0.582, -0.215] -0.176 [-0.297, -0.062]	0.075
Y_7 (Self-interest vs. commitment to others)	c_7'	-0.201 [-0.327, -0.120]	0.152	0.187	c_{14}'	0.008 [-0.383, 0.317]	0.213	0.971	b_7	-0.265 [-0.441. -0.099]	0.119	0.025	0.04	a_1b_7 a_2b_7	0.135 [0.046, 0.292] 0.074 [0.013, 0.141]	0.073 0.038

Notes. Confidence intervals are bootstrapped using 5,000 samples.

Table S15. Standardized indirect effect coefficients for Fig S9; a model representing the indirect effect of subsistence style and threat on relational mobility via cultural self-construal variables conceptually related to interdependence/independence **(70)** and cultural tightness/looseness **(41, 69)**.

	Indirect effects from independent variable to relational mobility					
	X_1 (Subsistence style, a^1b^1)			X_2 (Threats, a^2b^1)		
Mediator (Y)	β [95%CI]	*SE*	*p*	β [95%CI]	*SE*	*p*
Difference vs. similarity	0.002 [-0.293, 0.346]	0.258	0.993	-0.223 [-0.782, 0.157]	0.281	0.428
Self-containment vs. connection to others	0.006 [-0.439, 0.474]	0.225	0.980	-0.049 [-0.563, 0.256]	0.212	0.819
Self-direction vs. receptiveness to influence	0.051 [-0.298, 0.472]	0.195	0.793	-0.052 [-0.580, 0.242]	0.190	0.784
Self-reliance vs. dependence on others	-0.047 [-0.800, 0.218]	0.233	0.847	0.061 [-0.297, 0.575]	0.232	0.794
Consistency vs. variability	-0.003 [-0.276, 0.246]	0.189	0.987	-0.036 [-0.473, 0.138]	0.151	0.813
Self-expression vs. harmony	-0.065 [-0.511, 0.274]	0.197	0.740	-0.161 [-0.601, 0.149]	0.194	0.406
Self-interest vs. commitment to others	0.009 [-0.150, 0.593]	0.184	0.959	-0.012 [-0.384, 0.269]	0.192	0.952
Cultural tightness (Gelfand et al., 2011)	-0.007 [-0.288, 0.224]	0.138	0.958	-0.081 [-0.591, 0.346]	0.236	0.732
Cultural looseness (Uz, 2015)	-0.105 [-0.455, 0.100]	0.147	0.474	-0.180 [-0.475, 0.087]	0.139	0.195

Notes. Confidence intervals are bootstrapped using 5,000 samples. Subsistence style and threats are adjusted for 2012 GDP per capita.

Table S16. Comparisons of standardized path coefficients predicting behavioral and psychological outcomes (towards one's closest friend) from relational mobility and other cultural variables. See Figure S10 for a conceptual diagram demonstrating the models tested; the 'competing' antecedent variables were entered in the place of 'Competing Antecedent' in Figure S10, with each forming a new separate model.

Competing antecedent variable		Outcomes														
		Self-disclosure			Similarity			Intimacy			Self-esteem			General trust		
		β	*SE*	*p*	β	*SE*	*p*	β	*SE*	*p*	β	*SE*	*p*	β	*SE*	*p*
Tightness (Gelfand et al., 2011)	Relational mobility	0.431	0.272	0.114	**0.506**	0.207	0.014	0.786	0.501	0.117	**0.475**	0.223	0.034	0.254	0.279	0.362
	Tightness	**-0.307**	0.119	0.010	-0.083	0.137	0.546	0.220	0.144	0.128	-0.238	0.155	0.126	-0.153	0.174	0.383
Secular vs. traditional (Inglehart & Welzel, 2005)	Relational mobility	**0.765**	0.170	0.000	**0.598**	0.127	0.000	**0.714**	0.116	0.000	**0.630**	0.116	0.000	**0.415**	0.164	0.011
	Secular vs. traditional	**0.253**	0.107	0.018	-0.023	0.196	0.905	-0.108	0.153	0.482	-0.147	0.142	0.299	**0.474**	0.140	0.001
Self-expression vs survival (Inglehart & Welzel, 2005)	Relational mobility	**0.566**	0.179	0.002	0.403	0.269	0.134	**0.646**	0.173	0.000	**0.757**	0.118	0.000	-0.100	0.253	0.694
	Expression vs. survival	0.218	0.147	0.139	0.331	0.247	0.179	0.126	0.161	0.432	-0.149	0.089	0.093	**0.711**	0.196	0.000
Individualism (Hofstede, 2001)	Relational mobility	**0.636**	0.180	0.000	**0.480**	0.137	0.000	**0.616**	0.123	0.000	**0.634**	0.146	0.000	**0.188**	0.085	0.026
	Individualism	0.340	0.174	0.051	**0.456**	0.157	0.004	0.210	0.133	0.114	0.003	0.167	0.986	**0.602**	0.084	0.000
Power distance (Hofstede, 2001)	Relational mobility	**0.608**	0.166	0.000	**0.485**	0.180	0.007	**0.622**	0.147	0.000	**0.605**	0.167	0.000	0.195	0.156	0.211
	Power distance	**-0.414**	0.132	0.002	-0.372	0.218	0.088	-0.155	0.176	0.376	-0.107	0.191	0.577	**-0.505**	0.142	0.000

Uncertainty avoidance (Hofstede, 2001)	Relational mobility	**0.730**	0.174	0.000	**0.611**	0.159	0.000	**0.662**	0.118	0.000	**0.617**	0.110	0.000	**0.381**	0.194	0.049
	Uncertainty avoidance	-0.140	0.142	0.327	-0.232	0.121	0.055	-0.013	0.075	0.867	0.125	0.105	0.233	**-0.336**	0.161	0.037
Masculinity (Hofstede 2001)	Relational mobility	**0.737**	0.136	0.000	**0.569**	0.159	0.000	**0.652**	0.103	0.000	**0.652**	0.093	0.000	0.310	0.233	0.182
	Masculinity	0.087	0.197	0.658	-0.052	0.263	0.844	-0.041	0.170	0.811	-0.046	0.121	0.703	-0.046	0.164	0.621
Long-term orientation (Hofstede, 2001)	Relational mobility	**0.755**	0.162	0.000	**0.535**	0.143	0.000	**0.624**	0.125	0.000	**0.613**	0.108	0.000	**0.365**	0.172	0.034
	Long-term orientation	0.179	0.140	0.202	-0.183	0.107	0.086	-0.172	0.099	0.082	-0.130	0.133	0.328	0.115	0.147	0.434
Difference vs. similarity (Vignoles et al., 2016)	Relational mobility	0.326	0.561	0.561	0.611	0.388	0.115	0.568	0.405	0.161	0.501	0.340	0.140	0.222	0.231	0.335
	Difference	0.540	0.367	0.141	-0.054	0.327	0.869	0.017	0.375	0.964	0.116	0.367	0.753	0.295	0.201	0.142
Self-containment vs. commitment to others (Vignoles et al., 2016)	Relational mobility	0.598	1.671	0.721	0.713	0.674	0.290	0.665	0.528	0.207	0.637	0.235	0.007	0.365	0.267	0.172
	Self-containment	0.128	0.400	0.750	-0.460	0.407	0.259	-0.281	0.385	0.465	-0.197	0.307	0.522	0.051	0.166	0.760
Self-direction vs. receptiveness to influence (Vignoles et al., 2016)	Relational mobility	0.623	0.570	0.274	0.651	0.435	0.135	0.634	0.357	0.076	**0.692**	0.165	0.000	0.296	0.308	0.336
	Self-direction	-0.009	0.341	0.979	-0.216	0.319	0.498	-0.178	0.324	0.584	-0.367	0.174	0.035	0.252	0.242	0.295
Self-reliance vs. dependence on	Relational mobility	0.630	0.951	0.508	**0.631**	0.179	0.000	0.621	0.636	0.329	**0.603**	0.172	0.000	0.382	0.285	0.180
	Self-reliance	0.077	0.245	0.754	**0.516**	0.263	0.050	0.468	0.561	0.404	**0.440**	0.197	0.049	-0.021	0.112	0.853

others (Vignoles et al., 2016)																
Consistency vs. variability (Vignoles et al., 2016)	Relational mobility	0.566	0.577	0.326	**0.472**	0.208	0.023	0.438	0.424	0.302	0.322	0.223	0.149	0.521	0.272	0.056
	Consistency	0.130	0.250	0.604	0.306	0.257	0.233	0.370	0.571	0.516	**0.711**	0.121	0.000	**-0.424**	0.215	0.048
Self-expression v. harmony (Vignoles et al., 2016)	Relational mobility	0.302	0.546	0.580	0.643	0.587	0.273	0.564	1.066	0.597	0.405	0.463	0.382	0.349	0.261	0.181
	Self-expression	0.550	0.780	0.481	-0.119	0.430	0.783	0.012	0.908	0.989	0.272	0.362	0.452	0.057	0.225	0.799
Self-interest vs. commitment to others (Vignoles et al., 2016)	Relational mobility	0.579	0.409	0.157	0.538	0.452	0.235	**0.534**	0.213	0.012	**0.610**	0.127	0.000	0.273	0.168	0.103
	Self-interest	-0.212	0.265	0.424	-0.274	0.265	0.424	-0.206	0.260	0.427	0.188	0.115	0.102	**-0.667**	0.147	0.000

Notes: Coefficients with $p < .05$ are highlighted in bold typeface.

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