

Supplementary Materials for

The role of relational mobility in relationship quality and well-being

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Supplementary Section 1: Results from Study 1A and Study 2, controlling for confounds

A. Study 1A results, controlling for confounds

In Study 1A, we re-ran the indirect effect model, controlling for each nation's log-transformed GDP per capita (International Monetary Fund, 2019) and national level of individualism (Hofstede et al., 2010). Because we could only analyze nations for which we could retrieve relational mobility scores (Thomson et al., 2018), a complete set of relationship quality indices, the Gallup Global Well-Being Index (Gallup, 2019), *and* GDP per capita and individualism scores, we included a total of 29 nations¹ in the final dataset for this analysis.

We used the "INDIRECT" macro (bootstrapped $n = 1,000$) (Preacher & Hayes, 2008) to examine the associations among national levels of relational mobility, relationship quality, and well-being, controlling for log-transformed GDP per capita and individualism. First, relational mobility was positively associated with relationship quality ($B = .48$, $S.E. = .14$, $\beta = .45$, $t = 3.33$, $p = .003$), which was in turn positively associated with well-being ($B = .24$, $S.E. = .09$, $\beta = .62$, $t = 2.72$, $p = .012$). The direct effect of national relational mobility on well-being ($B = .21$, $S.E. = .07$, $\beta = .50$, $t = 2.91$, $p = .008$) became non-significant after entering relationship quality in the model ($B = .09$, $S.E. = .08$, $\beta = .22$, $t = 1.21$, $p = .239$); the standardized indirect effect size was $.28$ ($S.E. = .15$, $95\% \text{ CI} = [.07, .67]$).

B. Study 2 results, controlling for confounds

In Study 2, we re-ran the indirect effect model (which tests the effect of wave 1 relational mobility on wave 2 well-being via wave 2 support from new friends), controlling

¹ Australia, Brazil, Canada, Chile, Colombia, Estonia, Hong Kong, France, Germany, Hungary, Israel, Japan, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Philippines, Poland, Portugal, Singapore, South Korea, Spain, Sweden, Tunisia, United Kingdom, United States, Venezuela, Taiwan

for the influence of wave 2 relational mobility, wave 1 well-being, extraversion at both waves, and socio-economic status (SES) at both waves. We also ran the same indirect effect model after log-transforming the measure of support from new friends at wave 2.

Standardized indirect effect sizes and 95% CIs for these analyses are listed below.

Controlled (or transformed) variable	Standardized Indirect Effect (S.E.)	95% Confidence Interval
Wave 2 relational mobility	.07 (.04)	[.02, .18]
Wave 1 well-being	.02 (.02)	[.001, .08]
Wave 1 extraversion and SES	.04 (.03)	[.003, .11]
Wave 2 extraversion and SES	.05 (.03)	[.01, .12]
Support from new friends at Wave 2 (log-transformed)	.08 (.04)	[.02, .18]

Supplementary Section 2: Measures included in the batteries for Study 1B and Study 2

A. Measures included in the survey battery for Study 1B

Participants were given these instructions ahead of this section: “*Now please answer a series of questions about your own personality and experiences.*” Out of the following set of eight measures, measures #3–7 were presented in random order.

1. Satisfaction With Life Scale (SWLS; Diener et al., 1985)

Please indicate your agreement with each item below. Please be open and honest in your responding.

[1: Strongly disagree – 4: Neither agree or disagree – 7: Strongly agree]

- In most ways my life is close to my ideal.
- The conditions of my life are excellent.
- I am satisfied with my life.
- So far I have gotten the important things I want in life.
- If I could live my life over, I would change almost nothing.

2. Relational mobility scale (Thomson et al., 2018)

How much do you feel the following statements accurately describe people in the immediate society in which you live (such as your friends and acquaintances, colleagues in your workplace, and people in your neighborhood, 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.

[1: Strongly disagree, 2: Disagree, 3: Slightly disagree, 4: Slightly agree, 5: Agree, 6: Strongly agree]

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

3. *Positive Relations with Others subscale of the Psychological Well-Being Scale (PRO; Ryff, 1989; Ryff et al., 2010)*

Please choose the number that indicates the extent to which you agree or disagree with each of these statements.

[1: Strongly disagree – 7: Strongly agree]

- People would describe me as a giving person, willing to share my time with others.
- Most people see me as loving and affectionate.
- I have not experienced many warm and trusting relationships with others.
- Maintaining close relationships has been difficult and frustrating for me.
- I know that I can trust my friends, and they know that they can trust me.
- I often feel lonely because I have few close friends with whom to share my concerns.
- I enjoy personal and mutual conversations with family members or friends.
- I don't have many people who want to listen when I need to talk.
- It seems to me that most other people have more friends than I do.

4. *Self-disclosure (Thomson et al., 2018; Yuki & Schug, 2012)*

How likely would you tell your best friend/closest family member about...

[1: Not at all likely – 5: Extremely likely]

- Your biggest secret
- Your most embarrassing experience
- Your greatest failure
- Your greatest worry
- The worst thing that ever happened to you

5. *Subjective closeness (Thomson et al., 2018; Yuki & Schug, 2012)*

- Relative to all your other relationships (both same and opposite sex), how would you characterize your relationship with your best friend/closest family member?

[1: Not at all close – 10: Extremely close]

- Relative to what you know about other people's close relationships, how would you characterize your relationship with your best friend/closest family member?

[1: Not at all close – 10: Extremely close]

6. *Subjective relational mobility*

- Approximately, how many new friendships and acquaintanceships have you formed in the past month? Please provide one single number.
- Approximately, how many new friendships and acquaintanceships have you formed over the past 3 months? Please provide one single number.

7. *Ten-Item Personality Inventory (Gosling et al., 2003)*

Here are a number of personality traits that may or may not apply to you. Please choose a number to indicate the extent to which you agree or disagree with each statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

I see myself as:

[Disagree strongly – Disagree moderately – Disagree a little – Neither agree nor disagree – Agree a little – Agree moderately – Agree strongly]

- Extraverted, enthusiastic

- Anxious, easily upset
- Reserved, quiet
- Calm, emotionally stable

8. *Demographics and attention check*

- What is your family's socioeconomic level?
[Lower income; Lower middle income; Middle income; Upper middle income; Upper income]
- Next, we want to ask you a few questions about your experience doing this study. Please note that your answers to these questions will not impact your payment in any way—we simply want to get a sense of how people approached our task. So, please be completely honest.
 - Please list a few of the behaviors you were asked to evaluate (e.g. the behaviors that the people performed):
 - On how many questions did you provide answers with little or no thought put into them (e.g. just providing an answer so you could move on to the next question)?
 - Overall, how much attention did you pay to this HIT while you were taking it?
[1: Almost no attention – 7: My complete attention]

Participants who provided nonsensical answers to the open-ended attention check questions (e.g., “Good Psychology” in response to the prompt to report the number of answers that participants put little thought into) were excluded from further analyses.

In addition to the measures reported in the paper, the survey battery was composed of four additional tasks on social and moral cognition, and multiple individual difference measures that were not analyzed for the purposes of this study. A list of these tasks and individual difference measures are available on the Open Science Framework at [https://osf.io/ducbf/?view_only=4961f27e72a34a5bbdd91082156ca7e8].

B. Measures included in the survey battery for Study 2

Wave 1

The following measures were presented in the same way as Study 1B. There were no attention check questions in Study 2.

1. Satisfaction with Life Scale (Diener et al., 1985)

2. *Positive Relations With Others Subscale of the Psychological Well-Being scale*

(Ryff, 1989; Ryff et al., 2010)

3. *Ten-Item Personality Inventory (Gosling et al., 2003)*

4. *Relational mobility scale (Thomson et al., 2018)*

5. *Demographics*

Participants who completed Wave 1 but failed to complete the Wave 2 survey were excluded from further analyses.

In addition to the measures reported in the paper, the survey battery was composed of one additional task on social cognition, and multiple individual difference measures that were not analyzed for the purposes of this study. A list of these tasks and individual difference measures are available on the Open Science Framework at [https://osf.io/ducbf/?view_only=4961f27e72a34a5bbdd91082156ca7e8].

Wave 2

Measures #1 and #2 were presented in random order. Measures #3-7 were also presented in random order.

1. *Social support from old friends under COVID-19*

Over the past 2 months, how much emotional and social support have you received from your friends whom you met before coming to college? “0” means you have received no social and emotional support; “100” means you have received enormous social and emotional support.

2. *Social support from new friends under COVID-19*

Over the past 2 months, how much emotional and social support have you received from your friends whom you met since coming to college? “0” means you have received no social and emotional support; “100” means you have received enormous social and emotional support.

3. *Satisfaction with Life Scale (Diener et al., 1985)*

4. *Positive Relations with Others Subscale of the Psychological Well-Being Scale (Ryff, 1989; Ryff et al., 2010)*

5. *Ten-Item Personality Inventory (Gosling et al., 2003)*

6. Relational mobility scale (Thomson et al., 2018)

7. Demographics

In addition to the measures reported in the paper, the survey battery was composed of three additional tasks on social and moral cognition, and multiple individual difference measures that were not analyzed for the purposes of this study. A list of these tasks and individual difference measures are available on the Open Science Framework at [https://osf.io/ducbf/?view_only=4961f27e72a34a5bbdd91082156ca7e8].

Supplementary Section 3: Results from alternative analyses for Study 1B and Study 2

A. Results from indirect analyses after replacing composite well-being and relationship quality scores with individual aggregates for Study 1B

In Study 1B, we re-ran the indirect effect analyses after replacing the composite well-being score with individual Satisfaction With Life Scale (SWLS) and Positive Relations with Others (PRO) aggregates, and the composite relationship quality score with self-disclosure and subjective closeness aggregates, using the “INDIRECT” macro (bootstrapped $n = 1,000$) (Preacher & Hayes, 2008). We found the same patterns as when we used the composite well-being and composite relationship quality scores.

Outcome variable	Mediator	Standardized indirect effect (S.E.)	95% CI
Well-being composite	Relationship quality composite	.12 (.04)	 [.05, .22]
SWLS	Relationship quality composite	.10 (.04)	[.04, .19]
PRO	Relationship quality composite	.11 (.04)	[.04, .20]
Well-being composite	Self-disclosure	.06 (.03)	[.01, .14]
Well-being composite	Subjective closeness	.20 (.08)	[.08, .39]

Note. Indirect effect of relational mobility on the outcome variable, through the proposed mediator, controlling for extraversion and familial socio-economic status. The first row (bold) represents the effect with the composite well-being and composite relationship quality scores reported in the main paper. SWLS = Satisfaction With Life Scale; PRO = Positive Relations with Others scale.

B. Results from an exploratory factor analysis for Study 1B

We conducted an exploratory factor analysis using a principal component extraction method on: self-disclosure to best friend, self-disclosure to closest family member, subjective

closeness to best friend, and subjective closeness to closest family member, applying varimax rotation and looking for factors with eigenvalue greater than 1. This factor analysis revealed only one factor, eigen value = 2.29, explaining 57.23% of the variance. We labeled this factor “relationship quality” (Table S1). The same factor analysis on the Satisfaction With Life Scale (SWLS) and the Positive Relations With Others subscale (PRO) also revealed a single factor, eigen value = 1.46, explaining 73.01% of the variance (Table S2). We labeled this factor “well-being”.

We used the “INDIRECT” macro (bootstrapped $n = 1,000$) (Preacher & Hayes, 2008) to examine the indirect effect of relational mobility on the well-being factor, entering the relationship quality factor as the mediator, controlling for extraversion and SES. As predicted, relational mobility was significantly associated with relationship quality ($B = .47$, $S.E. = .11$, $\beta = .37$, $t = 4.28$, $p < .001$), which was in turn associated with well-being ($B = .32$, $S.E. = .08$, $\beta = .32$, $t = 4.11$, $p < .001$). The significant total effect of relational mobility on well-being ($B = .36$, $S.E. = .09$, $\beta = .28$, $t = 3.80$, $p < .001$) was reduced after entering relational quality in the model ($B = .21$, $S.E. = .10$, $\beta = .16$, $t = 2.18$, $p = .032$); the standardized indirect effect size was .12 ($S.E. = .04$, 95% CI = [.05, .23]).

Table S1. “Relationship quality” factor in Study 1B: Principal Component Matrix

Items	Factor	
	Relationship quality	Communalities
Self-disclosure to best friend	.78	.60
Self-disclosure to family member	.77	.60
Subjective closeness to best friend	.75	.57
Subjective closeness to family member	.72	.52
Eigenvalues	2.29	

Percentage of Total variance	57.23
Total variance	57.23

Table S2. “Well-being” factor in Study 1B and Study 2: Principal Component Matrix

Items	Study 1A		Study 2	
	Well-being	Communalities	Well-being	Communalities
SWLS	.59	.73	.57	.76
PRO	.59	.73	.57	.76
Eigenvalues	1.46		1.52	
Percentage of Total variance	73.01		75.83	
Total variance	73.01		75.83	

Note. SWLS = Satisfaction With Life Scale; PRO = Positive Relations with Others subscale of the Psychological Well-Being Scale

C. Results from an exploratory factor analysis for Study 2

We conducted an exploratory factor analysis using a principal component extraction method on wave 2 SWLS and PRO, applying varimax rotation and looking for factors with eigenvalue greater than 1. This analysis revealed a single well-being factor, eigen value = 1.52, explaining 75.83% of the variance (Table S2).

We used the “INDIRECT” macro (bootstrapped $n = 1,000$) (Preacher & Hayes, 2008) to examine the indirect effect of relational mobility on the wave 2 well-being factor, entering social support from new friends at wave 2 as the mediator. Relational mobility at wave 1

(before the outbreak of the COVID-19 pandemic) was significantly associated with social support from new friends at wave 2 (after the outbreak of the COVID-19 pandemic) ($B = 8.67$, $S.E. = 3.30$, $\beta = .24$, $t = 2.62$, $p = .010$), which was in turn associated with well-being ($B = .01$, $S.E. = .004$, $\beta = .32$, $t = 3.51$, $p < .001$). The significant total effect of wave 1 relational mobility on wave 2 well-being ($B = .37$, $S.E. = .13$, $\beta = .26$, $t = 2.76$, $p = .007$) was reduced after entering social support from new friends at wave 2 in the model ($B = .26$, $S.E. = .13$, $\beta = .18$, $t = 1.95$, $p = .053$); the standardized indirect effect size was .08 ($S.E. = .04$, $95\% CI = [.02, .19]$).

D. Results from indirect analyses after replacing composite well-being score with individual aggregates for Study 2

In Study 2, we re-ran the indirect effect analyses after replacing the composite well-being score measured at wave 2 with individual Satisfaction With Life Scale (SWLS) and Positive Relations with Others (PRO) aggregates measured at wave 2, using the “INDIRECT” macro (bootstrapped $n = 1,000$) (Preacher & Hayes, 2008). We found the same patterns as when we used the composite well-being score.

Outcome variable	Standardized indirect effect (S.E.)	95% CI
Well-being composite	.08 (.04)	[.02, .18]
SWLS	.05 (.03)	[.01, .14]
PRO	.09 (.04)	[.02, .21]

Note. Indirect effect of relational mobility at wave 1 on the outcome variable at wave 2, through the reported social and emotional support from new friends at wave 2. The first row (bold) represents the effect with the composite well-being score reported in the main paper. SWLS = Satisfaction With Life Scale; PRO = Positive Relations with Others scale.

Supplementary Section 4: Results from Study 1B, controlling for the number of new friends participants made

In Study 1B, the survey battery included measures of how many new friendships and acquaintanceships participants have formed in the past month, and how many new friendships and acquaintanceships participants have formed over the past 3 months. We re-ran the indirect effect model (which tests the effect of relational mobility on well-being via relationship quality), controlling for the log-transformed number of new friendships and acquaintanceships participants have formed in the past month/over the past 3 months². The results were consistent with those reported in the paper. Standardized indirect effect sizes and 95% CIs for these analyses are listed below.

Controlled variable	Standardized Indirect Effect (S.E.)	95% Confidence Interval
New friendships and acquaintanceships in the last month	.12 (.04)	[.06, .22]
New friendships and acquaintanceships over the past 3 months	.12 (.04)	[.05, .21]

² Because some participants reported that they formed 0 new relationships, we added 1 to the number of new friends participants reported making, ahead of log-transforming these values.

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