



Social mobility and motivational payoff: Achievement motivation is more important in students' performance and well-being in cultures with high vs. low social mobility

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### Abstract

Achievement motivation encompasses a well-established distinction between the motive to avoid failure (e.g., fear of failure) and the orientation to improve competence (e.g., mastery goal). But how well do they generalize across cultures in understanding students' performance and well-being? We argue that students' achievement motivation is less pronounced in societies characterized by low (vs. high) social mobility, where people have fewer opportunities to change their social status. To test this hypothesis, we analyzed a cross-national dataset ( $n = 498,362$  high-school students from 65 regions) using multilevel modeling. The results indicated that societal-level social mobility significantly moderated the role of (a) mastery goals and fear of failure on academic performance and (b) fear of failure on well-being. These associations were stronger in societies with high (vs. low) social mobility, suggesting that students derive greater academic benefits from mastery goals and fear of failure in societies with higher social mobility. In such societies, however, fear of failure also poses a stronger hindrance to students' well-being. These findings highlight that the same type of motivation may operate differently across cultures, and that socioecological environments may influence the motivational impacts on learning and well-being.

*Keywords:* Mastery goal, fear of failure, social mobility, culture, motivation

Culture and motivational payoff: Achievement motivation is more important in students' performance and well-being in cultures with high vs. low social mobility

Understanding the role of the sociocultural environment in motivation and learning has become an increasingly important issue in educational psychology (King et al., 2018; Lou & Li, 2023; Pintrich, 2003). Scholars have increasingly questioned whether the prevalent motivation constructs (e.g., mastery goals, fear of failure) can encapsulate the experiences of learners around the world and called for more research on cultural influences on these constructs (Heine, 2007; King, 2021; Liem & Elliot, 2018; Pintrich, 2003; Wang et al., 2020). However, few studies offer answers as to how *social ecology* can enhance or attenuate the effect of achievement motivation on students' learning, and even fewer on students' well-being. In this paper, we argue that social mobility (i.e., the extent to which the ecological environment provides fair opportunities for individuals to move up their social status) is a crucial socioecological factor in understanding the effects of achievement motivation. Drawing on the established motivational distinction between fear of failure (FoF) and mastery goals (MG)<sup>1</sup>, we explore how well their links to achievement and well-being generalize or vary across diverse cultures and whether social mobility can systematically explain such cultural variations.

### **Mastery Goals and Fear of Failure in Learning and Well-being**

Achievement motivation refers to the reason and direction of behavior in the context of achieving competence (e.g., at school; Atkinson & Feather, 1966). Although achievement motivation is a multidimensional, complex concept, a common distinction is the motive to avoid failure (e.g., FoF) and the motive to master learning (e.g., MG), which are common in achievement contexts (Pintrich, 2003). FoF represents the drive and emotional response to avoid failure or potential poor performance, including external concern about others' judgment (Covington, 1985; Martin & Marsh, 2003). In contrast, MG represent the intrinsic desire to develop mastery of tasks and improve competence through hard work (McGregor & Elliot, 2005; Sagar & Jowett, 2015). FoF and MG play distinct roles in students' learning. According to the model of need achievement, although failure-avoidant-oriented students are anxious about learning and use self-defensive strategies, they may be motivated to study due to such fear (Bartels & Ryan, 2013; Covington, 1985). These students may work hard to focus on their performance to avoid failing, although they tend to have negative attitudes toward learning (Busato et al., 2000; Conroy & Elliot, 2004). In contrast, extensive research has shown that mastery-oriented goals are associated with more positive attitudes toward learning and adaptive learning strategies (Elliot & Sommet, 2023; Finney et al., 2004; Harackiewicz et al., 2002).

The consequences of FoF and MG extend beyond learning – they also concern students' mental health and well-being (Guo et al., 2022; Huang, 2011). In general, FoF tends to be associated with maladaptive psychological outcomes (Tuominen et al., 2020; Yi et al., 2020). Because students with strong FoF tend to be motivated to avoid failures, their well-being and mental health may be compromised due to their anxiety. These students are more likely to have lower self-esteem and report more stress and depressive symptoms when facing

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<sup>1</sup>In this study, we focus on the classic distinction of MG and FoF to understand the cultural variations of their role in shaping students' learning and well-being. Although there are more nuanced models for achievement goal theories (e.g., the 2×2 framework; Conroy & Elliot, 2004; Elliot and Murayama, 2008), their related constructs were not measured in the most recent PISA data used in this study (see the methods section).

setbacks (Bartels & Ryan, 2013; Conroy, 2001; Conroy et al., 2007). In contrast, MG tends to be associated with positive psychological consequences (Hall et al., 2016; Lou & Noels, 2016). Students who endorse strong MG are more likely to see their purpose in learning and focus on their learning progress. Accordingly, they are more likely to interpret challenges as an opportunity to grow and, thus, experience positive emotions (e.g., hope and enjoyment).

While FoF and MG are widely studied individual factors in students' learning and well-being, their effects are not uniform across studies. Some studies showed that FoF is a positive contributor to students' learning and academic success (Busato et al., 2000; Conroy & Elliot, 2004), while others showed no relation (Castella et al., 2013) or even identified negative relations (Wach et al., 2015). Similarly, MG were generally positively correlated with better learning outcomes in some studies (e.g., Guo et al., 2022; King et al., 2021), whereas others did not support this finding (Cho et al., 2018; Hulleman et al., 2010).

The heterogeneity observed in achievement motivation can be attributed, in part, to contextual influences (Linnenbrink-Garcia et al., 2008; Skaalvik & Federici, 2016). For example, research has shown that MG is linked to more favourable outcomes in a supportive classroom environment (Benita et al., 2014; Senko, 2019). Despite the theoretical and empirical advancement of achievement motivation in relation to learners' classroom environment, social ecology, a more distal but important context, is largely neglected in the achievement motivation literature (King, 2021). To fill this gap, this study examines how social mobility, as an important socioecological factor, may explain the systematic cultural variations of the effects of FoF and MG on achievement and well-being.

## **Socioecological Psychology and Social Mobility**

### ***Socioecological Psychology***

There has been a resurgence in psychological research in understanding how the socioecological environment and psychological processes influence each other – namely, socioecological psychology (for a review, Oishi, 2014; Oishi et al., 2019). While cultural psychology focuses on how cultural values and practices affect people, socioecological psychology focuses on the role of objective macro conditions (e.g., macroeconomic conditions and demographic structures; Yamagishi & Hashimoto, 2016). Different socioecological factors have been identified that predict a wide range of psychological processes. For instance, relational mobility (i.e., the number of opportunities to form and abandon social relationships afforded by an environment; Yuki & Schug, 2020) and residential mobility (i.e., the frequency of residential moving within an environment; Oishi, 2010) are found to exert direct effects (Lee et al., 2019; Li, L. et al., 2022; Li, W. et al., 2022; Lou & Li, 2017) as well as moderating effects (Wang & Li, 2020) on people's interpersonal relationships and psychological well-being.

### ***Social Mobility***

One socioecological factor that has recently received extensive research for achievement and well-being (Joshnanloo, 2022; Suriyanrattakorn & Chang, 2022) is *social mobility*, which refers to the extent to which a society fosters fair chances for people to advance their socio-economic status (World Economic Forum, 2020). Different indicators of social mobility have been adopted in previous studies. Some studies measured social mobility by asking participants to indicate their perceived social mobility (e.g., Schalembier, 2019), which is rather subjective. Some studies measured social mobility by using the intergenerational difference in educational attainment or income (e.g., Garcia-Munoz et al., 2019), which is limited in fully capturing social mobility that is related to a broader range of

domains (e.g., health, education, work, and institutions). To overcome these limitations, the World Economic Forum (2020) adopted a holistic approach and developed the *Global Social Mobility Index*. This index captures access to ten important domains affecting social mobility, including education, health, work, technology, and social protection and institutions (World Economic Forum, 2020). Adopting the socioecological perspective, the present research used the Global Social Mobility Index to indicate societal-level social mobility, which provides a relatively objective and comprehensive assessment of environmental affordance for social mobility.

In high-mobility societies (e.g., Finland and Sweden), individuals, regardless of their background, have more resources to overcome obstacles and a greater chance of succeeding in society, which is an indication of a just society. In contrast, in low-mobility societies (e.g., Morocco, Peru, and Indonesia), disadvantaged individuals would have more constraints to overcome obstacles and find success beyond their families' economic status. When such inequalities exist within a society, underprivileged individuals, despite being motivated, are less likely to become high-status and generally stay in their current social status.

The degree of societal social mobility is associated with the level of academic performance and well-being across societies (e.g., Bridger & Daly, 2020; Zhang et al., 2020). More importantly, it also moderates individuals' psychological processes and outcomes in goal pursuit. Joshanloo (2022) found that societal-level social mobility (using the Global Social Mobility Index) weakened the positive relationship between individuals' orientation for their own goals and life satisfaction among 116 societies. Using the same indicator, Suriyanrattakorn and Chang (2022) found that societal-level social mobility weakened the negative relationship between income equality and life satisfaction in 143 societies. In this study, we aim to understand how social mobility moderates the role of achievement motivation, specifically, fear of failure and mastery goals.

### **Social Mobility Moderates the Role of FoF and MG**

It is important to acknowledge that the same type or level of motivation does not necessarily lead to the same learning outcomes across learners, and the motivational payoff differs depending on the interplay between the individual and their learning environment (e.g., Lou & Li, 2023; Silverman et al., 2023; Yeager et al., 2022). Considering the differences in societies varying in social mobility, we predict that achievement motivations are more likely to manifest into learning and psychological outcomes in a high- rather than a low-social-mobility environment.

As presented in Table 1, because a high mobility environment provides more fair opportunities, people, regardless of their background, could advance their socio-economic status. In such an environment, students are more likely to put their achievement goals into learning behaviors, strengthening the positive association between motivation and outcomes. In other words, the high-mobility environment provides the affordance that maximizes the payoff of these academic motives (Jia et al., 2021). This idea is consistent with research showing that individuals' personal characteristics have a stronger predictive power on behaviors when the context supports the individual factors (Chan, 2020; Li L., 2017). As such, in high-mobility societies, students with MG may increase behaviors to engage in the learning process, while students with high FoF may act by increasing effort to reduce their worry of not reaching their learning outcomes, resulting in more positive consequences. In contrast, a low-mobility environment can attenuate the effects of achievement motivation. In such a society, people have little opportunity to advance their socio-economic status. Subsequently, they may not act toward fulfilling their goals, despite wanting to learn more or wanting to avoid failing, which may attenuate the link between academic motivation and

outcomes. Supporting this idea, recent research shows that growth mindsets, the beliefs that one's ability can be improved via effort (Dweck & Yeager, 2019), are less effective in predicting students' performance when students are less likely to overcome educational obstacles due to low social mobility (Jia et al., 2021). Similarly, in a study conducted in Indonesia (a low-mobility society), researchers did not find a positive link between MG and performance (Liem et al., 2012).

We argue that social mobility also moderates the role of achievement motivation in well-being, such that students' achievement motivations are more likely to guide their well-being in a high (vs. low)-mobility society. In high (vs. low) mobility societies, students' academic performance is more relevant to their self and identity as the environment provides more affordance for motivated students to act according to their achievement motivation. Accordingly, their emotional responses are more likely to attune to their motivational actions. Thus, students with high FoF may feel more anxious about learning and not reaching their learning outcomes. In contrast, students with MG may feel more positive about the learning process, which may, in turn, affect their overall well-being. In other words, we expect a stronger negative association between FoF and psychological well-being and a stronger positive association between MG and psychological well-being in high (vs. low)-social-mobility societies.

### **The Present Study**

A well-established distinction in the achievement motivation literature is between the motive to avoid failure (e.g., FoF) and success orientation (e.g., MG). Although previous research provides insights into what specific classroom conditions can optimize students' achievement motives, little is known as to whether both motives are culturally equivalent in understanding students' academic performance and well-being. This study explores whether the role of FoF and MG in students' academic achievement and psychological well-being can be generalized across societies with different levels of social mobility. As discussed, social mobility is a key socioecological factor crucial to human motivation and could potentially modulate psychological and achievement outcomes in goal pursuit (e.g., Bridger & Daly, 2020; Zhang et al., 2020). As shown in Table 1, we hypothesize that in societies characterized by a high level of social mobility, achievement motivation will be a more potent contributor to academic achievement and well-being. In contrast, we expect that the effect of achievement motivation will be attenuated in low social-mobility societies.

To test our hypotheses, we analyzed a large-scale open dataset from PISA 2018 (OECD, 2019a). This dataset includes students' three achievement scores (reading, math, and science), three well-being scores (meaning in life, positive affect, and life satisfaction), and FoF and MG scores. Separate models were conducted for each outcome variable, as previous studies suggested that they are conceptually distinct despite their conceptual relevance (e.g., for academic achievement: Coley et al., 2019; for well-being: Cheng et al., 2022). We retrieved country-level scores for social mobility in the World Economic Forum (2020). In addition, we included individual variables that can potentially obscure the findings, including gender and family income, because they were found to be related to students' achievement and well-being (Darnon et al., 2018; Sirin, 2005). Controlling for these covariates can potentially help isolate the unique predictive power of students' FoF and MA. Regarding the societal level, we included the region's GDP as a covariate because the country's resources were found to affect students' motivation and achievement (Zheng et al., 2019) and thus could confound the effect of social mobility. Therefore, including GDP might help better understand the unique country-level effect of social mobility.

**Table 1**

*Theoretical Framework and Hypothesis of Social Mobility and Motivational Payoff: Social Mobility's Influences on the Role of Achievement Motivation in Academic and Mental Health Outcomes*

| Societal mobility   | Achievement-relevant socialization   | Differences in the manifestation of achievement motivation   | Outcome of achievement motivation (Motivational payoff)s   |  |
|---|--|--|--|--|
|   |  |  | Academic Performance   | Well-being   |
| <p>High mobility societies</p> <p>(e.g., Norway, Finland, Canada)</p>         | <p>There are equal and plenty of opportunities to change in social class and economic status, such as through a supportive educational system.</p> <p>Achievement motivation is instrumentally beneficial to move up in social status.</p> | <p>This environment provides psychological affordance (e.g., maximizing the chance to reach the potential of students), such that students put their achievement goals into learning behaviors, which strengthens the positive consequences.</p> <p>Achievement motivation is more influential on students' learning outcomes and well-being.</p>      | <p>Achievement motivation (e.g., fear of failure and mastery goals) has a robust predictive power on academic performance.</p>     | <p>Achievement motivation has a robust predictive power on well-being. Specifically, mastery goals positively predicts well-being, whereas fear of failure negatively predicts well-being.</p> |
| <p>Low mobility societies</p> <p>(e.g., Tukey, Mexico, Brazil, Indonesia)</p> | <p>There are unequal opportunities and access to education, and lack opportunity to overcome obstacles.</p> <p>Achievement motivation provides relatively less benefit for economic and status growth.</p>                                 | <p>This environment provides little psychological affordance (e.g., introducing obstacles to reach the potential of students), such that achievement orientation is less likely to manifest into action, which weakens the positive consequences.</p> <p>Achievement motivation is less likely to translate into learning and well-being outcomes.</p> | <p>Achievement motivation (e.g., fear of failure and mastery goals) has a diminished predictive power on academic performance.</p> | <p>Achievement motivation (fear of failure and mastery goals) has a diminished predictive influence on well-being.</p>   |

## Methods

### Participants

The PISA (OECD, 2019a) is a multi-country assessment of nationally representative samples of 15-year-old students' academic performance, personal characteristics, and motivational/psychological variables (such as MG and FoF). We used the most recent dataset, which was collected across 79 regions in 2018. The common technical and administrative procedures were ensured by each participating region for data collection. The OECD Secretariat was responsible for monitoring and managing the project implementation worldwide. The data can be retrieved online (<https://www.oecd.org/pisa/data/>), and readers can refer to the technical support for further detail of participants and the implementation of PISA (OECD, 2019b). Only the regions with available data of societal-level social mobility ( $n = 65$ ) were included in the present study. As a result, the final sample included 498,362 students (49.9% female participants,  $Age_{mean} = 15.79$ ,  $SD = .29$ ). Table S1 (online supplement) presents the list of all included regions, sample sizes, and the means of the variables used in the present study.

### Measures

#### *PISA Data (OECD, 2019a)*

The PISA 2018 used a rigorous procedure in scale development and validation, including ensuring measurement equivalent of the constructs across regions (OECD, 2019b). For the academic performance measures and the single-item life satisfaction, their scores are reported below. For the non-academic-performance measures with multiple items in the present study, including both measures for achievement motivation (mastery goals and fear of failure) and two of the three measures for psychological well-being (meaning in life and positive affect), the PISA 2018 provides a combined, standardized score across all the surveyed regions based on Item-Response Theory (see the technical report for more detail; OECD, 2019b). These standardized scores were computed with a mean value of zero with the data of all responses. Since we only included data with available societal social mobility scores, the mean for the standardized scores in the present study could be non-zero.

**Mastery goals.** Three items were used to measure students' mastery goals with a 4-point scale (1 = not at all true; 4 = extremely true). The items are based on a previously validated Achievement Goal Questionnaire (Elliot & Murayama, 2008; e.g., "My goal is to learn as much as possible" and "My goal is to completely master the material presented in my classes"). The values of Cronbach's alpha ranged from 0.710 (in Vietnam) to 0.913 (in Iceland) across different countries, with a mean of 0.854. As discussed previously, the PISA 2018 provides a standardized mastery goal index combining the responses of these three items. A higher score indicates stronger endorsements of mastery goals ( $M = .081$ ,  $SD = 1.04$ ).

**Fear of failure.** Three items were used to measure students' general fear of failure with a 4-point scale (1 = strongly disagree; 4 = strongly agree). The items were adapted from the multidimensional fear of failure measure (Conroy et al., 2002; e.g., "When I am failing, I worry about what others think of me" and "When I am failing, I am afraid that I might not have enough talent"). The values of Cronbach's alpha ranged from 0.702 (in Ukraine) to 0.887 (in Iceland) across regions, with a mean of 0.798. A standardized fear of failure index

for each student was created by PISA 2018, with a higher score indicating greater fear of failure ( $M = -.03$ ,  $SD = .98$ ).

**Academic achievement.** The test scores in science, reading, and mathematics in PISA 2018 were used to indicate students' academic achievement. To account for the measurement errors and evaluate the uncertainties associated with the observed data, PISA conducted the latent regressions methods to impute 10 plausible values for the proficiency of each student on each subject based on the student's posterior distribution (see the technical report for more detail; OECD, 2019b). Given the results with different plausible values were almost identical, as demonstrated in previous studies (Spiezia, 2010), we only used the first plausible value of each subject by following previous work. The mean and the  $SD$  of each subject were as follows: Reading:  $M = 468.14$ ,  $SD = 102.34$ ; Science:  $M = 468.11$ ,  $SD = 101.43$ ; Mathematics:  $M = 464.29$ ,  $SD = 106.32$ .

**Psychological well-being.** Three measures were used to indicate students' psychological well-being: meaning in life, positive affect, and life satisfaction. To assess meaning in life, participants reported their agreement with three statements, including "My life has clear meaning or purpose" and "I have discovered a satisfactory meaning in life," on a 4-point scale (1 = strongly disagree; 4 = strongly agree). The values of Cronbach's alpha ranged from 0.693 (in Vietnam) to 0.915 (in Iceland) across regions, with a mean of 0.840. Three items (i.e., "Happy," "Joyful," and "Cheerful") were used to assess students' positive affect on a 4-point scale (1 = never; 4 = always). The values of Cronbach's alpha ranged from 0.593 (in Italy) to 0.891 (in Iceland) across regions, with a mean of 0.804. Separate standardized indices for meaning in life ( $M = .12$ ,  $SD = .98$ ) and positive affect ( $M = .12$ ,  $SD = 1.00$ ) across all the surveyed regions were created. One item was used to assess students' life satisfaction ("overall, how satisfied are you with your life as a whole these days;" 0 = not at all satisfied; 10 = completely satisfied). Because this was a single-item response, the raw score was used ( $M = 7.28$ ,  $SD = 2.54$ ).

### *Societal-level Social Mobility (Moderator)*

The data pertaining to the Global Social Mobility Index 2020 was obtained from the World Economic Forum (2020) as an indicator of societal-level social mobility ( $M = 67.18$ ,  $SD = 10.45$ , range = 43.7 – 85.2). This indicator was calculated by key determinants of social mobility in one society, covering domains in health, education access, technology access, work opportunities, social welfare systems, and efficient institutions. A higher score indicates that the socioecological environment affords a greater likelihood of promoting social mobility among the members.

### *Covariates*

At the student level, students' sex (male=0; female=1) and their family wealth from the PISA 2018 dataset were entered as covariates. At the societal level, we also controlled for the effect of societal-level affluence (i.e., GDP per capita of each region) obtained from the World Bank (<https://data.worldbank.org/>). To make the results more interpretable, we divided the value of GDP per capita by 1,000 ( $M = 27.27$ ,  $SD = 24.33$ ).

### **Data Analysis**

We conducted multilevel analyses using mixed linear modeling in SPSS. Consistent with the centering procedure recommended by Enders and Tofighi (2007), the student-level



(level 1) continuous variables were centered by the group mean, while the country-level (level 2) continuous variables were centered by the grand mean. The interclass correlations of the outcome variables were as follows: mathematics (.24), science (.21), reading (.19), meaning in life (.05), positive affect (.05), and life satisfaction (.04), all with statistical significance ( $ps < .002$ ). This result indicated that it was appropriate to conduct multilevel analyses. Separate analyses were performed for each of the six outcome variables. In all the models tested, we specified the intercepts of the outcome variables and the student-level factors (viz., fear of failure, mastery goal, sex, and family wealth) with random effects. This allowed us to account for the variability of these factors at the student level while examining the relationships between these factors and the outcome variables. We also specified the cross-level interactions between two primary factors (i.e., fear of failure and mastery) and societal-level social mobility.<sup>2</sup>

## Results

The online supplementary presents the correlations between MG and outcome variables (Table S2) and between FoF and outcome variables (Table S3) for each region. The correlations of MG with academic performance and psychological well-being varied widely across societies [math:  $-.07 \leq r \leq .31$ ; science:  $-.08 \leq r \leq .27$ ; reading:  $-.08 \leq r \leq .34$ ; meaning in life:  $-.26 \leq r \leq .42$ ; positive affect:  $.14 \leq r \leq .36$ ; and life satisfaction:  $-.20 \leq r \leq .29$ ]. Similarly, the correlations between FoF and outcome variables varied widely across societies [math:  $-.14 \leq r \leq .17$ ; science:  $-.13 \leq r \leq .17$ ; reading:  $-.13 \leq r \leq .19$ ; meaning in life:  $-.26 \leq r \leq .16$ ; positive affect:  $-.25 \leq r \leq .03$ ; and life satisfaction:  $-.35 \leq r \leq -.01$ ]. These results demonstrated the substantial variations in the role of achievement motivation in shaping students' academic performance and psychological well-being.

To explain these cultural variations, we further tested the moderating role of societal-level mobility on the effect of achievement motivation with multilevel analyses. Tables 2 and 3 (with unstandardized coefficients) present the results for two models in which MG and FoF were treated as the predictor, respectively. In the main text, we focus on the results related to our research questions (i.e., effects of social mobility, mastery goal, and fear of failure; see Tables 2 and 3 for the effects of covariates). The results remained similar when we included MG and FoF in the same model (see Table S4 in the online supplement).

### *Academic Achievement*

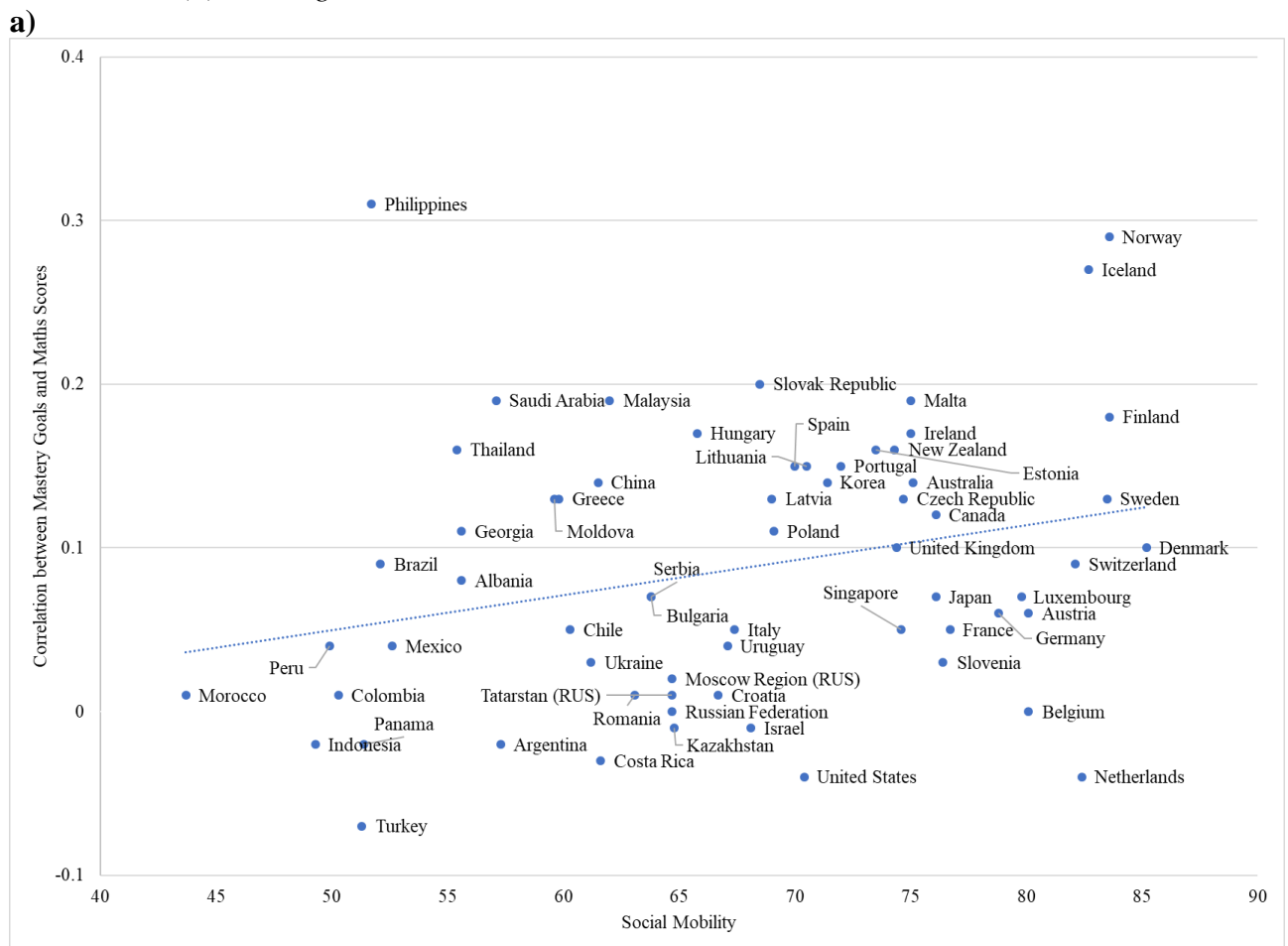
**Mastery goals as the predictor.** Overall, the score of individual-level MG was positively associated with their academic achievement in all subjects (Math:  $b = 7.60$ ,  $p < .001$ , 95% CI = [5.99, 9.22]; Science:  $b = 6.88$ ,  $p < .001$ , 95% CI = [5.22, 8.55]; Reading:  $b = 7.48$ ,  $p < .001$ , 95% CI = [5.63, 9.33]). Societal-level social mobility was also positively associated with each domain of academic achievement (Math:  $b = 4.46$ ,  $p < .001$ , 95% CI = [3.25, 5.68]; Science:  $b = 3.76$ ,  $p < .001$ , 95% CI = [2.52, 5.00]; Reading:  $b = 3.42$ ,  $p < .001$ , 95% CI = [2.22, 4.63]).

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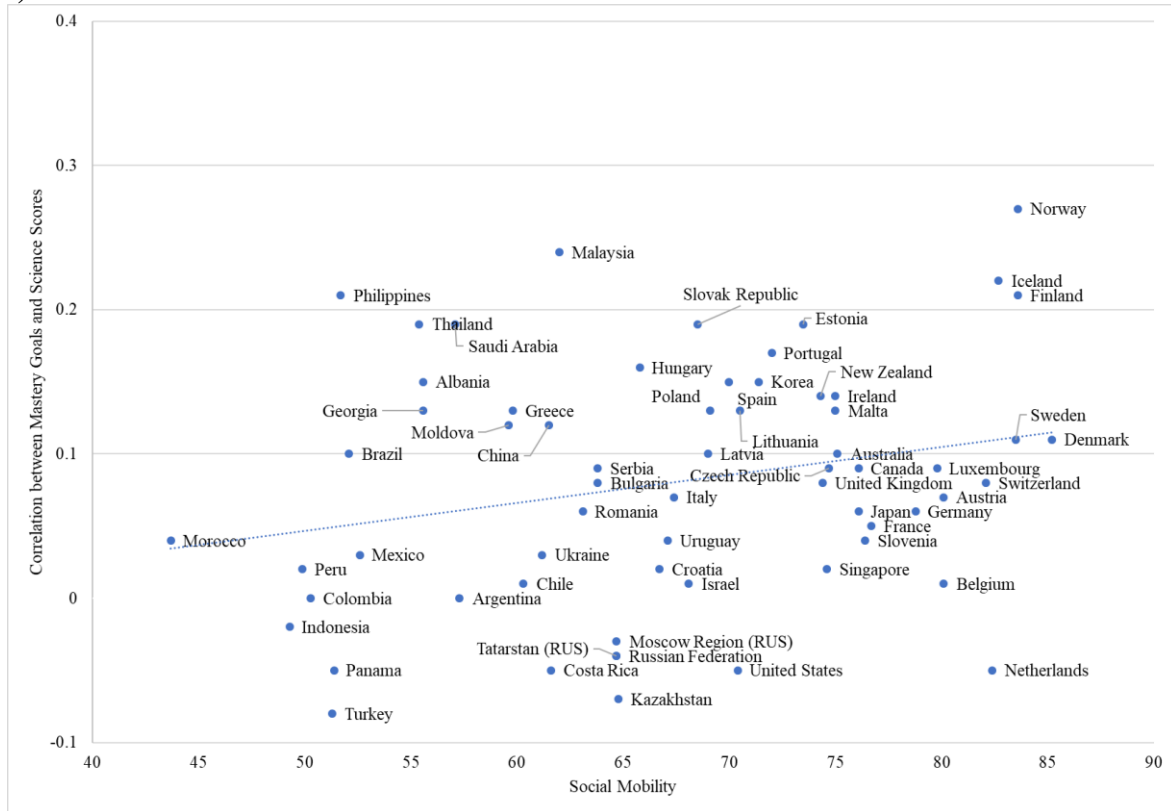
<sup>2</sup> We appreciate a reviewer's suggestion of ruling out the effect of other potential cultural factors, such as individualism, in the analysis. Therefore, we conducted an additional analysis controlling for the effect of country-level individualism and its interactions with individuals' fear of failure and mastery goals. When we only controlled for the main effect of individualism, the moderating effect of societal social mobility remained similar. When we also controlled for the interaction with individualism, the moderating effect of societal social mobility on mastery goals was weakened and became non-significant (see Tables S5 and S6 in the online supplement).

The interaction between individual' MG and societal-level social mobility was also significant in predicting each domain of academic achievement (Math:  $b = .22, p = .005, 95\%CI = [.07, .38]$ ; Science:  $b = .23, p = .005, 95\%CI = [.07, .39]$ ; Reading:  $b = .26, p = .005, 95\%CI = [.08, .44]$ ) (see Figures 1a-c). Follow-up simple-slope analyses revealed a stronger positive association between MG and academic performance in societies with higher social mobility (1SD above the mean; Math:  $b = 9.95, p < .001, 95\%CI = [7.67, 12.24]$ ; Science:  $b = 9.31, p < .001, 95\%CI = [6.95, 11.66]$ ; Reading:  $b = 10.22, p < .001, 95\%CI = [7.62, 12.82]$ ) than in societies with lower social mobility (1SD below the mean; Math:  $b = 5.25, p < .001, 95\%CI = [2.94, 7.57]$ ; Science:  $b = 4.46, p < .001, 95\%CI = [2.08, 6.84]$ ; Reading:  $b = 4.74, p = .001, 95\%CI = [2.10, 7.38]$ ).

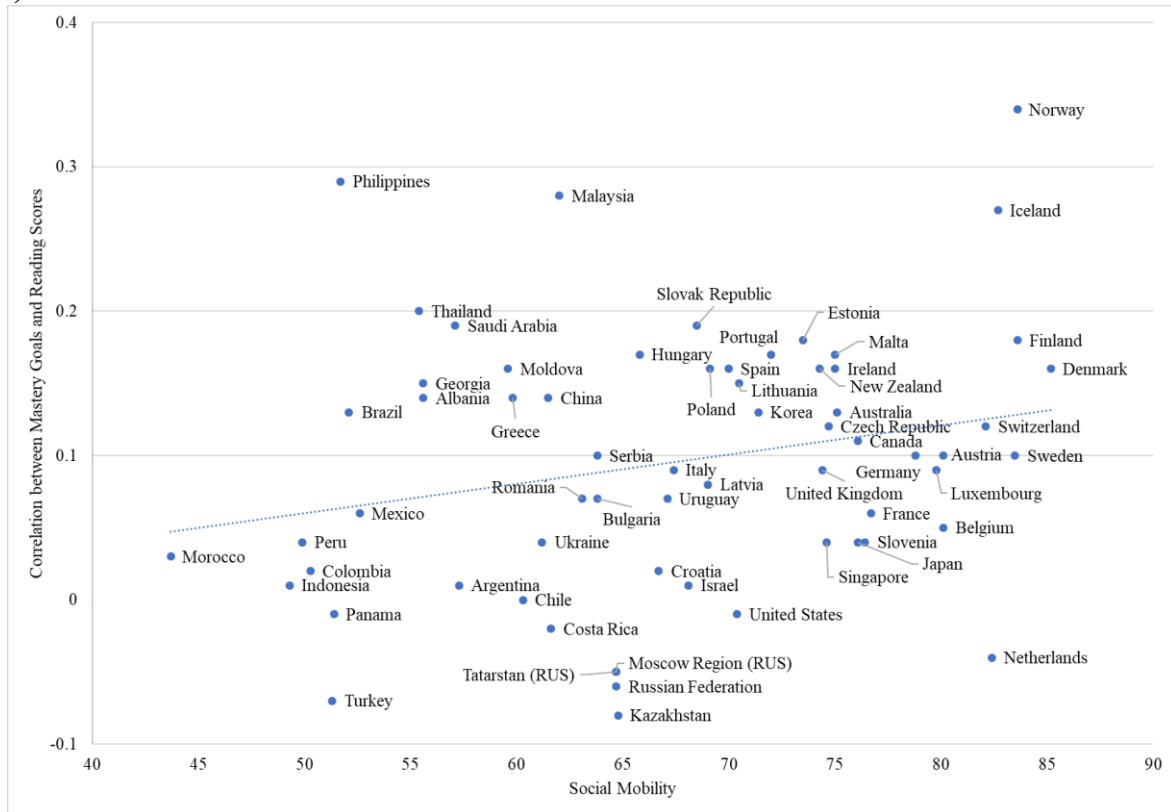
**Figure 1**  
*Social Mobility Predicted Stronger Correlations between Mastery Goals and (a) Math, (b) Science, and (c) Reading*



b)



c)



**Table 2***Summary of the Two-level Multilevel Analysis with Mastery Goals as the Predictor and Social Mobility as the Moderator*

| Predictors                                 | Outcome variables          |                            |                            |                            |                         |                         |
|--|----------------------------|----------------------------|----------------------------|----------------------------|-------------------------|-------------------------|
|  | Math                       | Science                    | Reading                    | Meaning in life            | Positive affect         | Life satisfaction       |
|  | Coefficient<br>[95% CI]    | Coefficient<br>[95% CI]    | Coefficient<br>[95% CI]    | Coefficient<br>[95% CI]    | Coefficient<br>[95% CI] | Coefficient<br>[95% CI] |
| <b>Societal level<sup>†</sup></b>          |                            |                            |                            |                            |                         |                         |
| GDP  | -0.36<br>[-.89, .17]       | -0.25<br>[-.79, .29]       | -0.07<br>[-.59, .46]       | .001<br>[-.001, .004]      | .001<br>[-.003, .004]   | -.005<br>[-.01, .004]   |
| Social Mobility                            | 4.46***<br>[3.25, 5.68]    | 3.76***<br>[2.52, 5.00]    | 3.42***<br>[2.22, 4.63]    | -.013***<br>[-.019, -.007] | -.01*<br>[-.02, -.0002] | .004<br>[-.02, .03]     |
| <b>Individual level<sup>†</sup></b>        |                            |                            |                            |                            |                         |                         |
| Family wealth                              | 16.15***<br>[14.13, 18.16] | 13.80***<br>[11.77, 15.83] | 13.72***<br>[11.36, 16.07] | .035***<br>[.027, .043]    | .07***<br>[.06, .08]    | .18***<br>[.15, .21]    |
| Gender (male = 0; female = 1)              | -7.44***<br>[-9.22, -5.65] | -.02<br>[-1.92, 1.87]      | 25.86***<br>[23.94, 27.78] | -.14***<br>[-.17, -.12]    | -.04**<br>[-.07, -.01]  | -.54***<br>[-.62, -.47] |
| Mastery goals                              | 7.60***<br>[5.99, 9.22]    | 6.88***<br>[5.22, 8.55]    | 7.48***<br>[5.63, 9.33]    | .29***<br>[.27, .31]       | .23***<br>[.22, .25]    | .52***<br>[.47, .56]    |
| <b>Cross-level interaction<sup>†</sup></b> |                            |                            |                            |                            |                         |                         |
| Social mobility × Mastery goals            | .22**<br>[.07, .38]        | .23**<br>[.07, .39]        | .26**<br>[.08, .44]        | .0004<br>[-.002, .002]     | -.0004<br>[-.002, .001] | .001<br>[-.004, .01]    |
|  | $R^2$ ‡                    |                            |                            |                            |                         |                         |
|  | 26%                        | 23%                        | 22%                        | 14%                        | 11%                     | 11%                     |

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ . Unstandardized coefficients are reported.

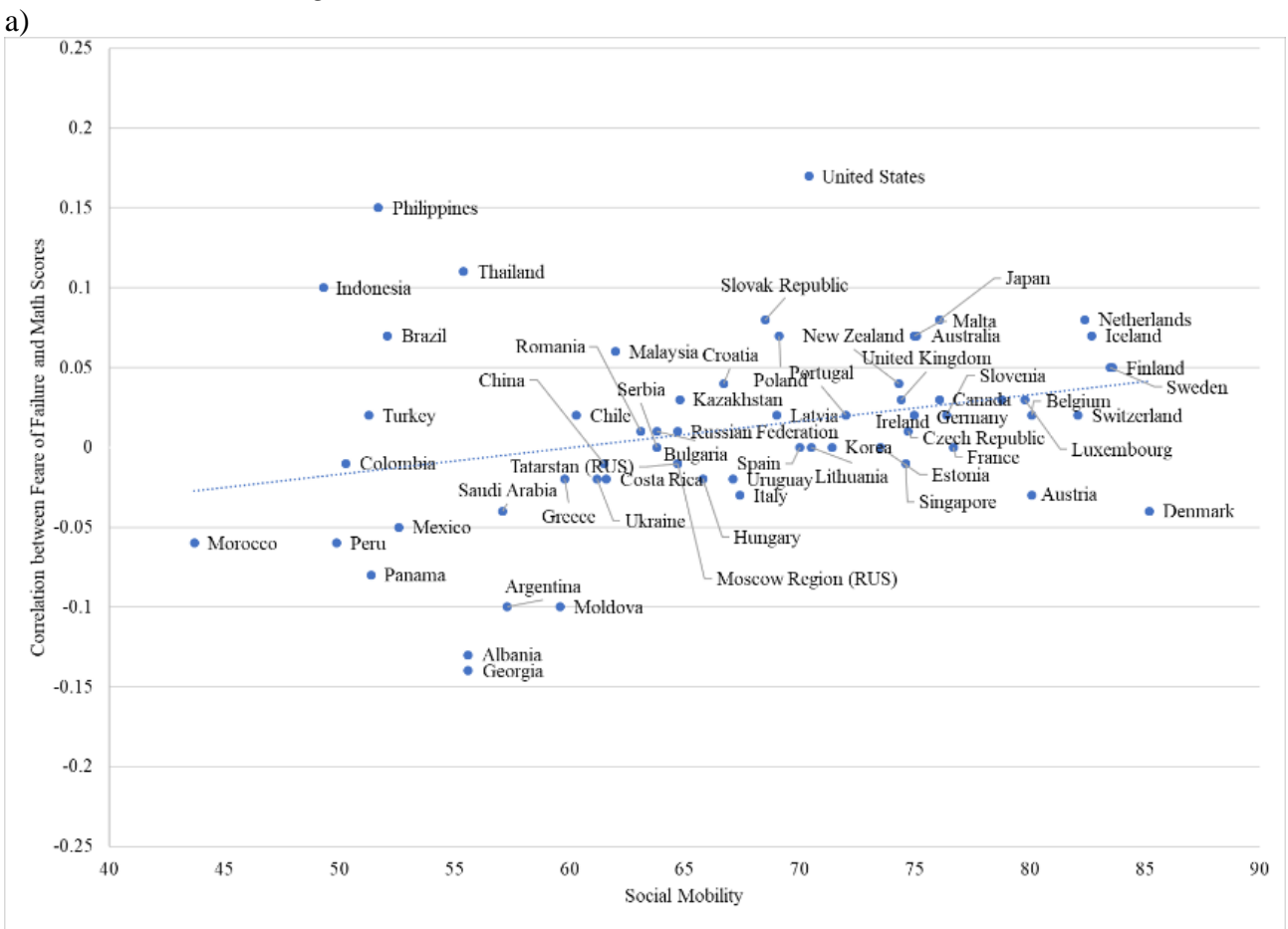
<sup>†</sup> The degree of freedom for both societal- and individual-level predictors as well as the interaction was estimated based on the number of level-2 units (i.e., the number of societies;  $n \sim 65$  societies) instead of the number of level-1 units (i.e., the number of all participants), as the intercepts and the effect of individual-level predictors were specified to be random.

<sup>‡</sup> The explained variance was estimated by *R* package “r2mlm” (Shaw et al., 2020) following the procedures in Rights and Sterba (2020) with cases with missing values of any variables removed.

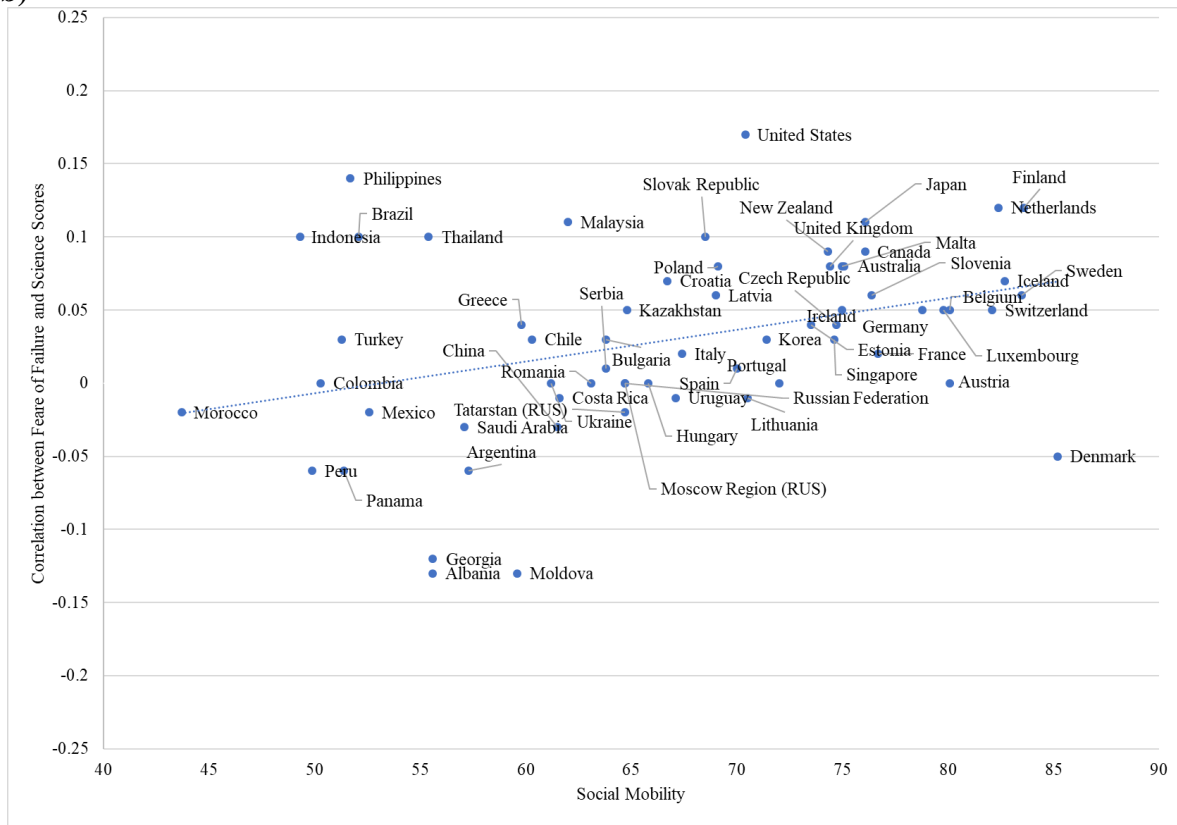
**Fear of failure as the predictor.** Overall, students' FoF was positively associated with each domain of academic achievement (Math:  $b = 1.70, p = .004, 95\% \text{ CI} = [.57, 2.83]$ ; Science:  $b = 2.98, p < .001, 95\% \text{ CI} = [1.76, 4.20]$ ; Reading:  $b = 4.07, p < .001, 95\% \text{ CI} = [2.76, 5.38]$ ). Societal-level social mobility was also positively associated with each domain of academic achievement (Math:  $b = 4.54, p < .001, 95\% \text{ CI} = [3.29, 5.78]$ ; Science:  $b = 3.83, p < .001, 95\% \text{ CI} = [2.55, 5.11]$ ; Reading:  $b = 3.51, p < .001, 95\% \text{ CI} = [2.26, 4.75]$ ).

The interaction between individuals' FoF and societal-level social mobility was also significant in predicting each domain of academic achievement (Mathematics:  $b = .18, p = .002, 95\% \text{ CI} = [.07, .28]$ ; Science:  $b = .22, p < .001, 95\% \text{ CI} = [.11, .34]$ ; Reading:  $b = .28, p < .001, 95\% \text{ CI} = [.15, .40]$ ) (see Figures 2a-c). Follow-up simple-slope analyses revealed a significant positive association between FoF and academic performance in societies with higher social mobility (Math:  $b = 3.53, p < .001, 95\% \text{ CI} = [1.92, 5.15]$ ; Science:  $b = 5.31, p < .001, 95\% \text{ CI} = [3.57, 7.05]$ ; Reading:  $b = 6.97, p < .001, 95\% \text{ CI} = [5.10, 8.85]$ ). In contrast, the results showed a non-significant association for each domain of academic achievement in societies with lower social mobility (Math:  $b = -.14, p = .865, 95\% \text{ CI} = [-1.73, 1.46]$ ; Science:  $b = .65, p = .453, 95\% \text{ CI} = [-1.07, 2.37]$ ; Reading:  $b = 1.16, p = .215, 95\% \text{ CI} = [-0.69, 3.01]$ ).

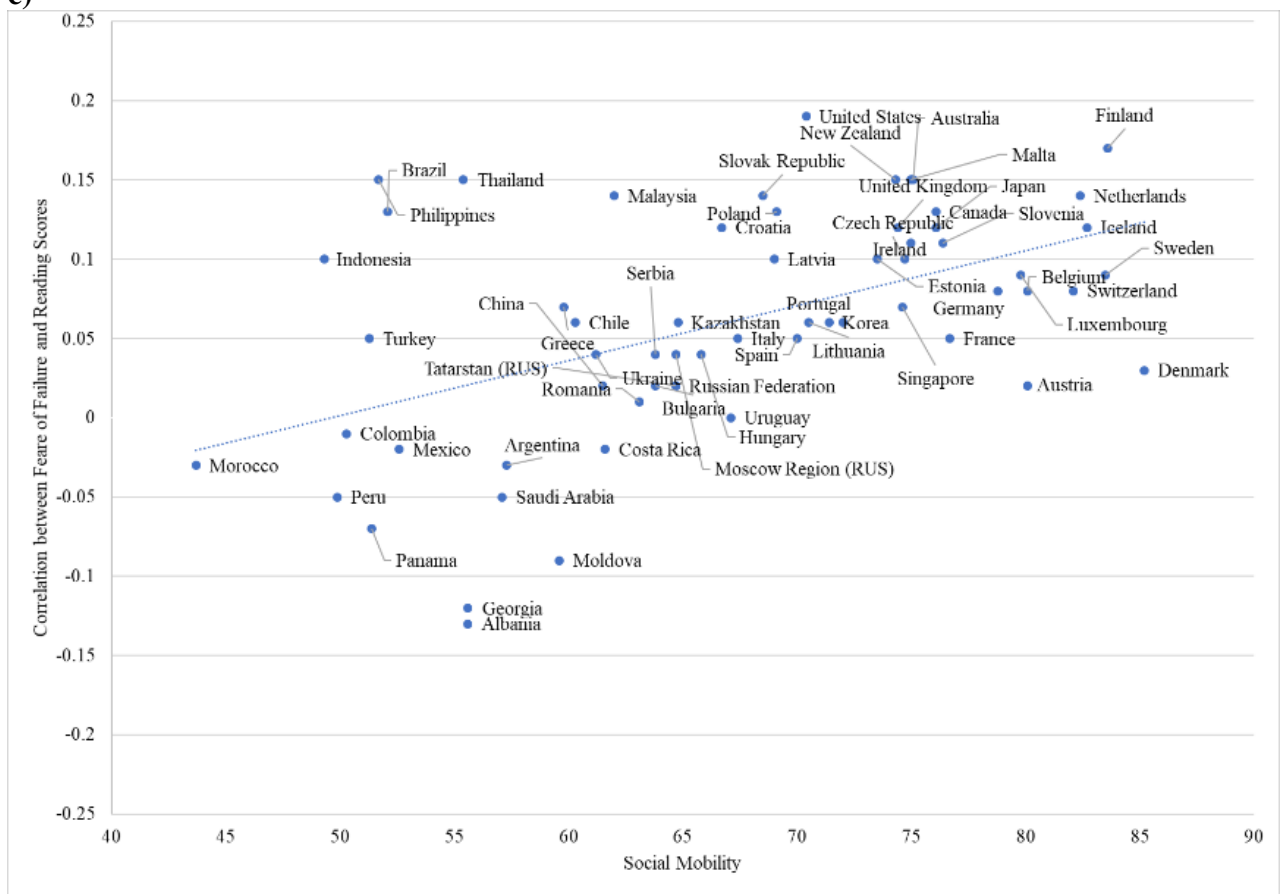
**Figure 2**  
Social Mobility Predicted Stronger correlations between fear of failure and (a) Math, (b) Science, and (c) Reading



b)



c)



**Table 3***Summary of the Two-level Multilevel Analysis with Fear of Failure as the Predictor and Social Mobility as the Moderator*

| Predictors                                 | Outcome variables          |                            |                            |                           |                            |                           |
|--|----------------------------|----------------------------|----------------------------|---------------------------|----------------------------|---------------------------|
|  | Math                       | Science                    | Reading                    | Meaning in life           | Positive affect            | Life satisfaction         |
|  | Coefficient<br>[95% CI]    | Coefficient<br>[95% CI]    | Coefficient<br>[95% CI]    | Coefficient<br>[95% CI]   | Coefficient<br>[95% CI]    | Coefficient<br>[95% CI]   |
| <b>Societal level<sup>†</sup></b>          |                            |                            |                            |                           |                            |                           |
| GDP  | -0.34<br>[-.89, .21]       | -0.23<br>[-.79, .34]       | -0.06<br>[-.60, .49]       | .001<br>[-.002, .004]     | .0003<br>[-.003, .004]     | -.006<br>[-.015, .004]    |
| Social Mobility                            | 4.54***<br>[3.29, 5.78]    | 3.83***<br>[2.55, 5.11]    | 3.51***<br>[2.26, 4.75]    | -.01***<br>[-.02, -.007]  | -.01*<br>[-.02, -.001]     | .001<br>[-.02, .02]       |
| <b>Individual level<sup>†</sup></b>        |                            |                            |                            |                           |                            |                           |
| Family wealth                              | 16.82***<br>[14.85, 19.79] | 14.48***<br>[12.53, 16.43] | 14.55***<br>[12.30, 16.79] | .05***<br>[.04, .06]      | .08***<br>[.07, .09]       | .21***<br>[.17, .24]      |
| Gender (male = 0; female = 1)              | -6.69***<br>[-8.63, -4.74] | .16<br>[-1.87, 2.20]       | 25.61***<br>[23.57, 27.64] | -.05***<br>[-.07, -.02]   | .05***<br>[.03, .08]       | -.29***<br>[-.36, -.23]   |
| Fear of Failure                            | 1.70**<br>[.57, 2.83]      | 2.98***<br>[1.76, 4.20]    | 4.07***<br>[2.76, 5.38]    | -.11***<br>[-.13, -.09]   | -.15***<br>[-.17, -.14]    | -.50***<br>[-.53, -.47]   |
| <b>Cross-level interaction<sup>†</sup></b> |                            |                            |                            |                           |                            |                           |
| Social mobility × Fear of Failure          | .18**<br>[.07, .28]        | .22***<br>[.11, .34]       | .28***<br>[.15, .40]       | -.004***<br>[-.01, -.003] | -.003***<br>[-.004, -.002] | -.01***<br>[-.014, -.008] |
|  | $R^2$ ‡                    |                            |                            |                           |                            |                           |
|  | 25%                        | 22%                        | 22%                        | 7%                        | 8%                         | 10%                       |

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ . Unstandardized coefficients are reported.

<sup>†</sup> The degree of freedom for both societal- and individual-level predictors as well as the interaction was estimated based on the number of level-2 units (i.e., the number of societies;  $n \sim 65$  societies) instead of the number of level-1 units (i.e., the number of all participants), as the intercepts and the effect of individual-level predictors were specified to be random.

<sup>‡</sup> The explained variance was estimated by *R* package “r2mlm” (Shaw et al., 2020) following the procedures in Rights and Sterba (2020) with cases with missing values of any variables removed.

**Psychological Well-being**

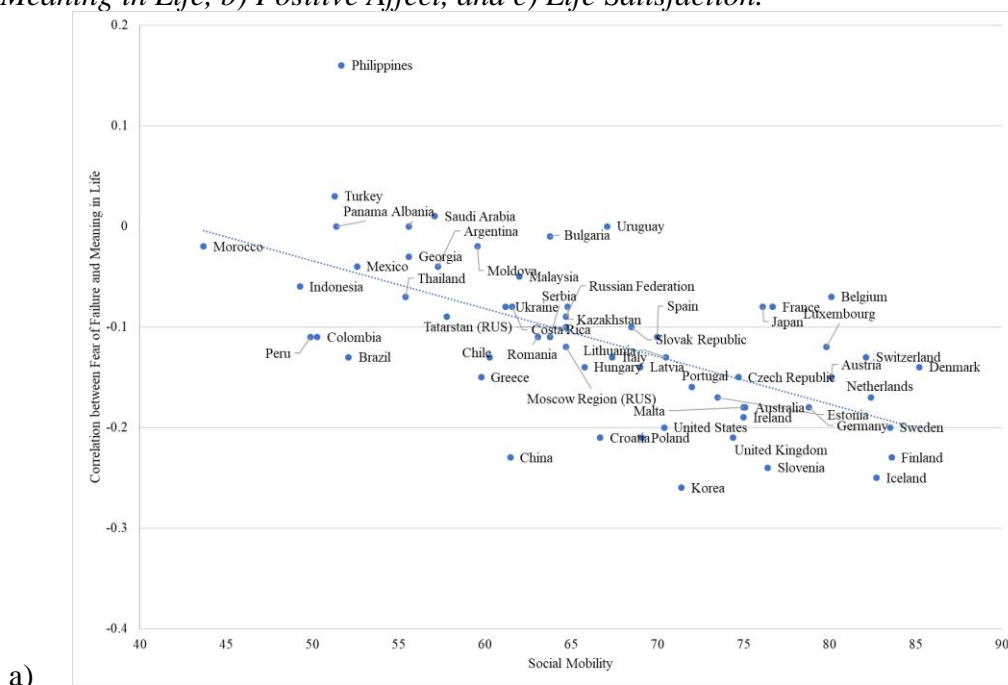
**Mastery goals as the predictor.** Overall, the individual-level score of MG was positively associated with each aspect of psychological well-being (Meaning in life:  $b = .29, p < .001, 95\%CI = [.27, .31]$ ; Positive affect:  $b = .23, p < .001, 95\%CI = [.22, .25]$ ; Life satisfaction:  $b = .52, p < .001, 95\%CI = [.47, .56]$ ). Societal-level social mobility was negatively associated with meaning in life ( $b = -.013, p < .001, 95\%CI = [-.019, -.007]$ ) and positive affect ( $b = -.01, p = .046, 95\%CI = [-.02, -.0002]$ ), whereas it was not significantly associated with life satisfaction ( $b = .004, p = .669, 95\%CI = [-.02, .03]$ ).

The interaction between individual’ MG and societal-level social mobility was not significant in predicting each aspect of psychological well-being (Meaning in life:  $b = .00004, p = .966, 95\%CI = [-.002, .002]$ ; Positive affect:  $b = -.0004, p = .533, 95\%CI = [-.001, .001]$ ; Life satisfaction:  $b = .001, p = .693, 95\%CI = [-.004, .01]$ ).

**Fear of failure as the predictor.** Overall, students’ FoF was negatively associated with each aspect of psychological well-being (Meaning in life:  $b = -.11, p < .001, 95\%CI = [-.12, -.09]$ ; Positive affect:  $b = -.15, p < .001, 95\%CI = [-.17, -.14]$ ; Life satisfaction:  $b = -.50, p < .001, 95\%CI = [-.54, -.47]$ ). Societal-level social mobility was negatively associated with meaning in life ( $b = -.01, p < .001, 95\%CI = [-.02, -.007]$ ) and positive affect ( $b = -.01, p = .029, 95\%CI = [-.02, -.001]$ ), but not with life satisfaction: ( $b = .001, p = .907, 95\%CI = [-.02, .02]$ ).

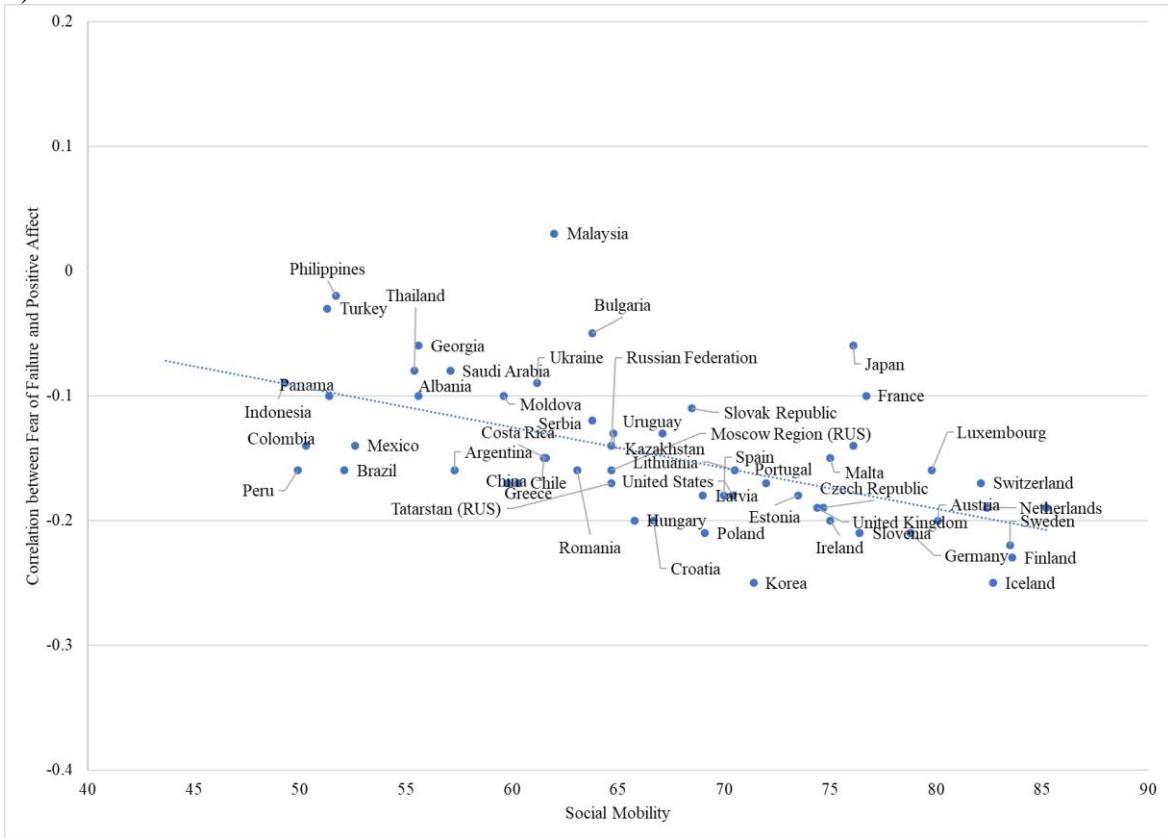
The interaction between individuals’ FoF and societal-level social mobility was significant in predicting each aspect of psychological well-being (Meaning in life:  $b = -.004, p < .001, 95\%CI = [-.01, -.003]$ ; Positive affect:  $b = -.003, p < .001, 95\%CI = [-.004, -.002]$ ; Life satisfaction:  $b = -.01, p < .001, 95\%CI = [-.014, -.008]$ ) (see Figures 3a-c). Follow-up simple-slope analyses revealed a stronger negative association between FoF failure and psychological well-being in societies with higher social mobility (Meaning in life:  $b = -.16, p < .001, 95\%CI = [-.18, -.13]$ ; Positive affect:  $b = -.19, p < .001, 95\%CI = [-.21, -.17]$ ; Life satisfaction:  $b = -.62, p < .001, 95\%CI = [-.67, -.57]$ ) than in societies with lower social mobility (Meaning in life:  $b = -.06, p < .001, 95\%CI = [-.09, -.04]$ ; Positive affect:  $b = -.12, p < .001, 95\%CI = [-.14, -.10]$ ; Life satisfaction:  $b = -.39, p < .001, 95\%CI = [-.43, -.34]$ ).

**Figure 3.** The Moderating Effect of Social Mobility on the Link between Fear of Failure and a) Meaning in Life, b) Positive Affect, and c) Life Satisfaction.

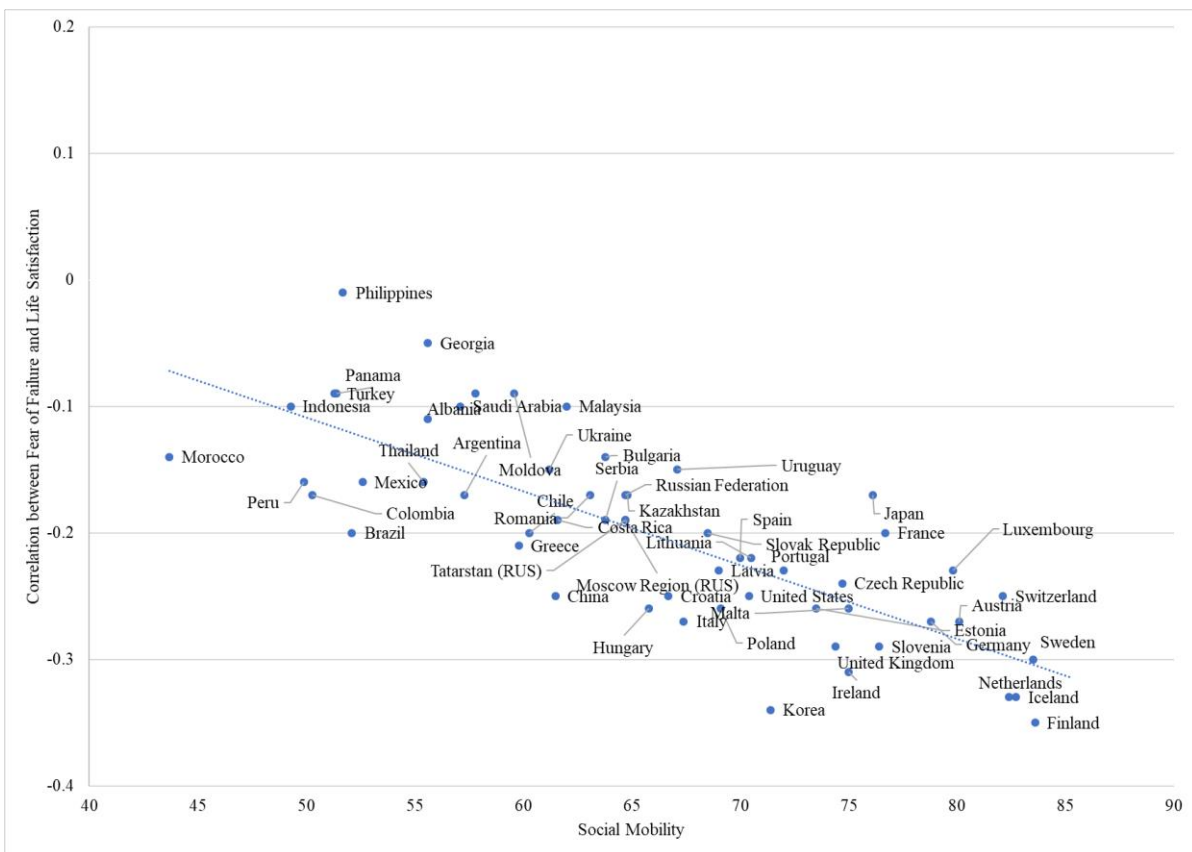




b)



c)



## Discussion

Achievement motivation is a key to students' academic success and well-being, but this claim may not be equivalent across cultures (King, 2021; Liem & Elliot, 2018). The goal of this study is to understand whether social mobility can explain such cultural variations. Using a global dataset across 65 regions, we examined whether social mobility moderated the effect of fear of failure (FoF) and mastery goals (MG) on academic performance and psychological well-being. Consistent with our hypotheses, FoF and MG were less prominent contributors to students' academic performance (in all math, science, and literacy scores) in low- (vs. high-) mobility societies. Regarding well-being outcomes (meaning in life, positive affect, and life satisfaction), FoF consistently and negatively predicted all well-being scores, but the associations were more robust in high-mobility societies. MG also positively predicted students' well-being, but social mobility did not significantly moderate these links.

### Implications for Achievement Motivation Theories

Our findings challenge the notion that achievement motivation (FoF and MG in this study) serves as an equally important predictor of academic performance across cultures. The correlations observed between FoF and performance (from  $-.14$  to  $.19$ ) and between MG and performance (from  $-.07$  to  $.34$ ) showed considerable variation across regions (see Tables S2 and S3). These results emphasize the importance of considering socio-cultural contexts when evaluating the effect of achievement motivation. Specifically, our study revealed that in low-mobility societies, where people have fewer fair chances to improve their social status, both FoF and MG were less relevant to students' achievement. This finding corroborates the idea that students' internal attributes, such as mindsets, are less important drivers for achievement outcomes in low-mobility societies (Jia et al., 2021). This socioecological approach to motivation enriches the perspectives of educational psychologists, to examine the relevance and generalization of achievement motivation theories beyond Western societies, allowing for a more nuanced examination of the applicability and generalizability of achievement motivation theories beyond Western societies, where social mobility tends to be relatively high. For example, researchers should reconsider the extent to which the mainstream achievement motivation research from the US and Canada can fully represent the motivational processes of students worldwide. Notably, in this present study, Canada and the US are ranked relatively high in social mobility (14<sup>th</sup> and 27<sup>th</sup>) among the 65 regions.

This study also clarifies the double-edged sword effect of FoF. While FoF positively predicts students' academic performance in many regions, it compromises their psychological well-being in most regions surveyed in this study. This finding supports the notion that FoF is generally a maladaptive motivational drive, given its emotional toll on students (Busato et al., 2000; Conroy & Elliot, 2004). Importantly, this double-edged sword effect of FoF is more pronounced in high-mobility societies, where motivation also yields greater benefits for learning outcomes. This finding contributes to the ongoing debates regarding how FoF, and performance goals by extension, should be viewed by educators (Harackiewicz et al., 2002; Midgley et al., 2001). As such, the evaluation of whether FoF is detrimental may depend on the specific outcomes being considered (performance vs. well-being) and the contextual factors at play.

In contrast to FoF, MG demonstrated consistent positive associations with both achievement and psychological well-being across most regions. Notably, the effect of MG on well-being is not moderated by social mobility, which is also inconsistent with the findings of

FoF. This discrepancy suggests that FoF may reflect an affect-based motivation rooted in external concern (i.e., fear of judgment), making its connection with emotional outcomes more susceptible to environmental influences (e.g., McGregor & Elliot, 2005; Martin & Marsh, 2003; Pekrun, 2017). In learning environments that provide equal opportunities for all students, those who possess high levels of FoF may find it challenging to attribute their failures to external circumstances. As a result, the impact on their emotional well-being becomes more pronounced and threatening. In contrast, MG represents a goal-based, intrinsic orientation, and thus the socioecological environment may not undermine this internal process of emotions. Even in societies with limited social mobility, students who enjoy the learning process (a sign of mastery goal) still feel happier and more meaningful in life than students who do not.

Finally, our findings underscore the value of adopting the socioecological approach when examining achievement motivation, as it serves as a key indicator of modern societies. While educational psychologists often emphasize the importance of a supportive immediate environment, including factors such as autonomy support and mastery-structured classrooms, it is crucial to recognize that a supportive environment extends beyond the confines of the classroom. Extending previous studies suggesting that MG are more adaptive when the environment provides support (Benita et al., 2014), this study further demonstrated that students benefit more from endorsing MG *in a high-mobility environment* that is supportive of students' learning.

### **Implications for Policies and Practices**

This study provides implications for culturally relevant and responsive educational practices. Previous research emphasized the importance of fostering MG among students. However, our study highlights the need to consider the societal environment. In societies that do not promote an opportunity for improvement, the promotion of mastery goals may have limited impacts on students' academic performance, although it may still provide mental health benefits. Furthermore, interventions promoting mastery goals (e.g., mindset intervention; TARGET intervention) may be more effective in high-mobility societies (Jia et al., 2021). Future cross-cultural research should investigate this hypothesis, examining the differential effects of mastery-goal interventions across societies with varying levels of social mobility. Moreover, our findings confirm the importance of not promoting FoF among students. Despite its positive association with academic performance, FoF compromises students' well-being, particularly in high-mobility societies.

This study also has implications for educational policies. Recognizing the intricate relationship between a country's education and its social ecology (including economics, population density, equality, etc.), our findings demonstrated that a high-mobility society is more beneficial for students' academic achievement than a low-mobility society. In societies that provide fair opportunities for people to enhance their status, one would anticipate that highly motivated students would generally achieve higher levels of academic performance. In contrast, societies with low social mobility may undermine the potential of highly motivated students to succeed. Therefore, in low-mobility societies, prioritizing equality may benefit the achievement for the whole society. When students are provided with equitable resources and support, they are more likely to thrive academically, which can indirectly promote scientific and economic growth (World Economic Forum, 2020). Hence, when the educational system should not only focus on fostering positive material goals among students, but also prioritize the provision of equal opportunities for students to succeed.

### Limitations and Future Directions

The results of this study should be interpreted with caution. First, although we controlled for relevant factors (the regions' GDP and individualism score, and participants' family income and gender), future research may consider manipulating mobility (e.g., priming students' perceptions of mobility; see Jia et al., 2021; Sagioglou et al., 2019) and achievement motivation to understand how the causal effect of achievement motivation is moderated by mobility. Second, this study focused on FoF and MG as two representative constructs for achievement motivation. However, student motivation is a multidimensional construct; thus, researchers can explore whether these motivation  $\times$  mobility effects can be applied to other achievement motivational concepts (e.g., performance goals, intrinsic motivation). Third, the effect of achievement motivation varied greatly across regions, and most fell within the range of small to moderate effect size ( $|.07| \leq rs \leq |.42|$ ). One possible reason could be that the brief scales might fail to capture the full constructs (e.g., FoF, MG, well-being), which is often a trade-off in large-scale surveys. Another possibility could be that the effect of achievement motivation might be susceptible to other individual (e.g., motivational beliefs), micro-environmental (e.g., school context), and socio-cultural (e.g., cultural values) factors. For instance, it was found that individuals' perceived socioeconomic mobility exerted a greater influence on motivating low-(vs. high)-socioeconomic-status students to work harder (Browman et al., 2017). Following these findings, future research can explore the interplay of perceived status, social mobility, and achievement motivation on learning outcomes.

### Conclusions

This study, based on a global analysis, provides compelling evidence that social mobility systematically explains cultural variations in the effects of FoF and MG. These findings suggest that we should be cautious when applying FoF and MG to explain learners' differences in adaptive-versus-maladaptive patterns of achievement motivations, particularly in low-mobility societies. To further advance our understanding of the cultural differences and universality of motivational constructs, future research should explore how other socioecological factors (e.g., political ideology and gender equality) influence the motivational payoff among diverse student populations. By expanding our understanding of these socioecological influences, we can develop more culturally relevant and responsive educational practices that address the specific needs and challenges of students across different cultural contexts.

### References

- Atkinson, J. W., & Feather, N. T. (Eds.). (1966). *A theory of achievement motivation* (Vol. 66). Wiley.
- Bartels, J. M., & Ryan, J. J. (2013). Fear of failure and achievement goals: A canonical analysis. *Journal of Instructional Psychology, 40*(2), 42-49.
- Benita, M., Roth, G., & Deci, E. L. (2014). When are mastery goals more adaptive? It depends on experiences of autonomy support and autonomy. *Journal of Educational Psychology, 106*(1), 258-267. <https://doi.org/10.1037/a0034007>
- Bridger, E., & Daly, M. (2020). Intergenerational social mobility predicts midlife well-being: Prospective evidence from two large British cohorts. *Social Science & Medicine, 261*, 113217. <https://doi.org/10.1016/j.socscimed.2020.113217>
- Browman, A. S., Destin, M., Carswell, K. L., & Svoboda, R. C. (2017). Perceptions of socioeconomic mobility influence academic persistence among low socioeconomic status students. *Journal of Experimental Social Psychology, 72*, 45-52. <https://doi.org/10.1016/j.jesp.2017.03.006>
- Busato, V. V., Prins, F. J., Elshout, J. J., & Hamaker, C. (2000). Intellectual ability, learning style, personality, achievement motivation and academic success of psychology students in higher

- education. *Personality and Individual Differences*, 29(6), 1057-1068.  
[https://doi.org/10.1016/S0191-8869\(99\)00253-6](https://doi.org/10.1016/S0191-8869(99)00253-6)
- Chan, H. W. (2020). When do values promote pro-environmental behaviors? Multilevel evidence on the self-expression hypothesis. *Journal of Environmental Psychology*, 71, 101361.  
<https://doi.org/10.1016/j.jenvp.2019.101361>
- Cheng, A., Leung, Y., & Brodaty, H. (2022). A systematic review of the associations, mediators and moderators of life satisfaction, positive affect and happiness in near-centenarians and centenarians. *Aging & Mental Health*, 26(4), 651-666.  
<https://doi.org/10.1080/13607863.2021.1891197>
- Cho, E., Lee, M., & Toste, J. R. (2018). Does perceived competence serve as a protective mechanism against performance goals for struggling readers? Path analysis of contextual antecedents and reading outcomes. *Learning and Individual Differences*, 65, 135-147.  
<https://doi.org/10.1016/j.lindif.2018.05.017>
- Coley, R. L., Kruzik, C., & Votruba-Drzal, E. (2020). Do family investments explain growing socioeconomic disparities in children's reading, math, and science achievement during school versus summer months? *Journal of Educational Psychology*, 112(6), 1183-1196.  
<https://doi.org/10.1037/edu0000427>
- Conroy, D. E. (2001). Progress in the development of a multidimensional measure of fear of failure: The Performance Failure Appraisal Inventory (PFAI). *Anxiety, Stress and Coping*, 14(4), 431-452. <https://doi.org/10.1080/10615800108248365>
- Conroy, D. E., & Elliot, A. J. (2004). Fear of failure and achievement goals in sport: Addressing the issue of the chicken and the egg. *Anxiety, Stress & Coping*, 17(3), 271-285.  
<https://doi.org/10.1080/1061580042000191642>
- Conroy, D. E., Kaye, M. P., & Fifer, A. M. (2007). Cognitive links between fear of failure and perfectionism. *Journal of Cognitive-Behavior Therapy*, 25(4), 237-253.  
<https://doi.org/10.1007/s10942-007-0052-7>
- Covington, M. V. (1985). Strategic thinking and the fear of failure. *Thinking and learning skills*, 1, 389-416.
- Darnon, C., Jury, M., & Aelenei, C. (2018). Who benefits from mastery-approach and performance-approach goals in college? Students' social class as a moderator of the link between goals and grade. *European Journal of Psychology of Education*, 33(4), 713-726.  
<https://doi.org/10.1007/s10212-017-0351-z>
- De Castella, K., Byrne, D., & Covington, M. (2013). Unmotivated or motivated to fail? A cross-cultural study of achievement motivation, fear of failure, and student disengagement. *Journal of Educational Psychology*, 105(3), 861-880. <https://doi.org/10.1037/a0032464>
- Dweck, C. S., & Yeager, D. S. (2019). Mindsets: A view from two eras. *Perspectives on Psychological Science*, 14(3), 481-496. <https://doi.org/10.1177/1745691618804166>
- Elliot, A. J., & Sommet, N. (2023). Integration in the achievement motivation literature and the hierarchical model of achievement motivation. *Educational Psychology Review*, 35(3), 1-31.  
<https://doi.org/10.1007/s10648-023-09785-7>
- Elliot, A. J., & Murayama, K. (2008). On the measurement of achievement goals: critique, illustration, and application. *Journal of Educational Psychology*, 100(3), 613-628.  
<https://doi.org/10.1037/0022-0663.100.3.613>
- Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods*, 12(2), 121-138.  
<https://doi.org/10.1037/1082-989X.12.2.121>
- Finney, S. J., Pieper, S. L., & Barron, K. E. (2004). Examining the psychometric properties of the achievement goal questionnaire in a general academic context. *Educational and Psychological Measurement*, 64(2), 365-382. <https://doi.org/10.1177/0013164403258465>
- García-Munoz, T. M., Milgram-Baleix, J., & Odeh-Odeh, O. (2019). Inequality and life satisfaction in low- and middle-income countries: The role of opportunity. *Societies*, 9(2), 37.  
<https://doi.org/10.3390/soc9020037>
- Guo, J., Hu, X., Elliot, A. J., Marsh, H. W., Murayama, K., Basarkod, G., Parker, P. D., & Dicke, T. (2022). Mastery-approach goals: A large-scale cross-cultural analysis of antecedents and

- consequences. *Journal of Personality and Social Psychology*. Advance online publication. <https://doi.org/10.1037/pspp0000436>
- Harackiewicz, J. M., Barron, K. E., Pintrich, P. R., Elliot, A. J., & Thrash, T. M. (2002). Revision of achievement goal theory: Necessary and illuminating. *Journal of Educational Psychology*, *94*(3), 638-645. <https://doi.org/10.1037//0022-0663.94.3.638>
- Heine, S. J. (2007). Culture and motivation: What motivates people to act in the ways that they do? In S. Kitayama & D. Cohen (Eds.), *Handbook of cultural psychology* (pp. 714–733). The Guilford Press.
- Huang, C. (2011). Achievement goals and achievement emotions: A meta analysis. *Educational Psychology Review*, *23*(3), 359-388. <https://doi.org/10.1007/s10648-011-9155-x>
- Hulleman, C. S., Schrager, S. M., Bodmann, S. M., & Harackiewicz, J. M. (2010). A meta-analytic review of achievement goal measures: Different labels for the same constructs or different constructs with similar labels?. *Psychological Bulletin*, *136*(3), 422-449. <https://doi.org/10.1037/a0018947>
- Jia, L., Lim, C. H., Ismail, I., & Tan, Y. C. (2021). Stunted upward mobility in a learning environment reduces the academic benefits of growth mindsets. *Proceedings of the National Academy of Sciences*, *118*(10), e2011832118. <https://doi.org/10.1073/pnas.2011832118>
- Joshanloo, M. (2022). Social mobility as a moderator of the association between agency-orientation and life satisfaction: A study in 116 countries. *Personality and Individual Differences*, *196*, 111755. <https://doi.org/10.1016/j.paid.2022.111755>
- Karaman, M. A., & Watson, J. C. (2017). Examining associations among achievement motivation, locus of control, academic stress, and life satisfaction: A comparison of US and international undergraduate students. *Personality and Individual Differences*, *111*, 106-110. <https://doi.org/10.1016/j.paid.2017.02.006>
- King, R. B. (2021). Sociocultural and ecological perspectives on achievement motivation. *Asian Journal of Social Psychology*. <https://doi.org/10.1111/ajsp.12507>
- King, R. B., McInerney, D. M., & Pitliya, R. J. (2018). Envisioning a culturally imaginative educational psychology. *Educational Psychology Review*, *30*(3), 1031–1065. <https://doi.org/10.1007/s10648-018-9440-z>
- King, R. B., Wang, H., & Mcinerney, D. M. (2021). Prosocial motivation leads to better learning when mastery motivation is high: The synergistic effects of prosocial and mastery goals. *Current Psychology*. <https://doi.org/10.1007/s12144-021-02331-0>
- Lee, H., Lou, N. M., Johnson, M. D., & Park, S. W. (2019). A socioecological perspective to understanding mental and physical health: The mediating role of relationship mindsets and goals. *Journal of Social and Personal Relationships*, *36*(10), 3117-3138. <https://doi.org/10.1177/0265407518814371>
- Li, L. M. W. (2017). Social class, social capital and residential mobility in China. *Social Indicators Research*, *132*(3), 1117-1129. <https://doi.org/10.1007/s11205-016-1339-9>
- Li, L. M. W., Wang, S., & Lin, Y. (2022). The causal effect of relational mobility on integration of social networks: An agent-based modeling approach. *Current Psychology*, Advance online publication. <https://doi.org/10.1007/s12144-022-03130-x>
- Li, W.-Q., Li, L. M. W., Lou, N. M. (2022). Who moved with you? The companionship of significant others reduces movers' motivation to make new friends. *Asian Journal of Social Psychology*, *25*, 319-335. <https://doi.org/10.1111/ajsp.12497>
- Liem, A. D., & Elliot, A. J. (2018). Sociocultural influences on achievement goal adoption and regulation: A goal complex perspective. In G. A. D. Liem & D. M. McInerney (Eds.), *Big theories revisited 2* (pp. 41–68). Information Age.
- Liem, G. A. D., Martin, A. J., Porter, A. L., & Colmar, S. (2012). Sociocultural antecedents of academic motivation and achievement: Role of values and achievement motives in achievement goals and academic performance. *Asian Journal of Social Psychology*, *15*(1), 1-13. <https://doi.org/10.1111/j.1467-839X.2011.01351.x>
- Linnenbrink-Garcia, L., Tyson, D. F., & Patall, E. A. (2008). When are achievement goal orientations beneficial for academic achievement? A closer look at main effects and moderating factors. *Revue Internationale de Psychologie Sociale*, *21*(1), 19-70.

- Lou, N. M., & Li, L. M. W. (2017). Interpersonal relationship mindsets and rejection sensitivity across cultures: The role of relational mobility. *Personality and Individual Differences*, 108, 200-206. <https://doi.org/10.1016/j.paid.2016.12.004>
- Lou, N. M., & Li, L. M. W. (2023). The mindsets× societal norm effect across 78 cultures: Growth mindsets are linked to performance weakly and well-being negatively in societies with fixed-mindset norms. *British Journal of Educational Psychology*. Advance online publication. <https://doi.org/10.1111/bjep.12544>
- Lou, N. M., & Noels, K. A. (2016). Changing language mindsets: Implications for goal orientations and responses to failure in and outside the second language classroom. *Contemporary Educational Psychology*, 46, 22-33. <https://doi.org/10.1016/j.cedpsych.2016.03.004>
- Martin, A. J., & Marsh, H. W. (2003). Fear of failure: Friend or foe?. *Australian Psychologist*, 38(1), 31-38. <https://doi.org/10.1080/00050060310001706997>
- McGregor, H. A., & Elliot, A. J. (2005). The shame of failure: Examining the link between fear of failure and shame. *Personality and Social Psychology Bulletin*, 31(2), 218-231. <https://doi.org/10.1177/0146167204271420>
- Midgley, C., Kaplan, A., & Middleton, M. (2001). Performance-approach goals: Good for what, for whom, under what circumstances, and at what cost?. *Journal of Educational Psychology*, 93(1), 77-86. <https://doi.org/10.1037//0022-0663.93.1.77>
- OECD (2019a). *PISA 2018 results: Vol. III. What school life means for students' lives*. <https://doi.org/10.1787/acd78851-en>
- OECD. (2019b). *PISA 2018 technical report*. OECD publishing. <http://www.oecd.org/pisa/data/pisa2018technicalreport/#d.en.423800>
- Oishi, S. (2014). Socioecological Psychology. *Annual Review of Psychology*, 65, 581-609. <https://doi.org/10.1146/annurev-psych-030413-152156>
- Oishi, S. (2010). The psychology of residential mobility Implications for the self, social relationships, and well-being. *Perspectives on Psychological Science*, 5, 5-21. <https://doi.org/10.1177/1745691609356781>
- Oishi, S., Koo, M., & Buttrick, N. R. (2019). The socioecological psychology of upward social mobility. *American Psychologist*, 74(7), 751-763. <https://doi.org/10.1037/amp0000422>
- Pintrich, P. R. (2003). A motivational science perspective on the role of student motivation in learning and teaching contexts. *Journal of Educational Psychology*, 95(4), 667-686. <https://doi.org/10.1037/0022-0663.95.4.667>
- Pekrun, R. (2017). Emotion and achievement during adolescence. *Child Development Perspectives*, 11(3), 215-221. <https://doi.org/10.1111/cdep.12237>
- Rights, J. D., & Sterba, S. K. (2020). New recommendations on the use of R-squared differences in multilevel model comparisons. *Multivariate Behavioral Research*, 55(4), 568-599. <https://doi.org/10.1080/00273171.2019.1660605>
- Sagar, S. S., & Jowett, S. (2015). Fear of failure and self-control in the context of coach-athlete relationship quality. *International Journal of Coaching Science*, 9(2), 3-21.
- Sagioglou, C., Forstmann, M., & Greitemeyer, T. (2019). Beliefs in social mobility mitigates hostility resulting from disadvantaged social standing. *Personality and Social Psychological Bulletin*, 45(4), 541-556. <https://doi.org/10.1177/0146167218789073>
- Schalembier, B. (2019). An evaluation of common explanations for the impact of income inequality on life satisfaction. *Journal of Happiness Studies*, 20(3), 777-794. <https://doi.org/10.1007/s10902-018-9970-6>
- Senko, C. (2019). When do mastery and performance goals facilitate academic achievement?. *Contemporary Educational Psychology*, 59, 101795. <https://doi.org/10.1016/j.cedpsych.2019.101795>
- Shaw, M., Rights, J., Sterba, S., Flake, J. (2020). *r2mlm: R-squared measures for multilevel models*. <https://doi.org/10.31234/osf.io/x4sv>
- Silverman, D. M., Rosario, R. J., Wormington, S. V., Tibbetts, Y., Hulleman, C. S., & Destin, M. (2023). Race, academic achievement and the issue of inequitable motivational payoff. *Nature Human Behaviour*, 7(4), 515-528. <https://doi.org/10.1038/s41562-023-01533-9>

- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research*, 75(3), 417–453.  
<https://doi.org/10.3102/00346543075003417>
- Skaalvik, E. M., & Federici, R. A. (2016). Relations between classroom goal structures and students' goal orientations in mathematics classes: When is a mastery goal structure adaptive?. *Social Psychology of Education*, 19(1), 135-150. <https://doi.org/10.1007/s11218-015-9323-9>
- Spiezia, V. (2010). Does computer use increase educational achievements? Student-level evidence from PISA. *OECD Journal. Economic Studies*, 2010(1), 1 – 22.  
[https://doi.org/10.1787/eco\\_studies-2010-5km33scwlvkf](https://doi.org/10.1787/eco_studies-2010-5km33scwlvkf)
- Suriyanrattakorn, S., & Chang, C.-L. (2022). Does life satisfaction vary with income inequality and social mobility? *Social Sciences & Humanities Open*, 6(1), 100326.  
<https://doi.org/10.1016/j.ssaho.2022.100326>
- Tuominen, H., Niemivirta, M., Lonka, K., & Salmela-Aro, K. (2020). Motivation across a transition: Changes in achievement goal orientations and academic well-being from elementary to secondary school. *Learning and Individual Differences*, 79, 101854.  
<https://doi.org/10.1016/j.lindif.2020.101854>
- Wach, F. S., Spengler, M., Gottschling, J., & Spinath, F. M. (2015). Sex differences in secondary school achievement—The contribution of self-perceived abilities and fear of failure. *Learning and Instruction*, 36, 104-112. <https://doi.org/10.1016/j.learninstruc.2015.01.005>
- Wang, M. T., Guo, J., & Degol, J. L. (2020). The role of sociocultural factors in student achievement motivation: A cross-cultural review. *Adolescent Research Review*, 5(4), 435-450.  
<https://doi.org/10.1007/s40894-019-00124-y>
- Wang, Y., & Li, L. M. W. (2020). Does your trust in strangers or close acquaintances promote better health? Societal residential mobility matters. *The Journal of Social Psychology*, 160, 416-427.  
<https://doi.org/10.1080/00224545.2019.1658569>
- World Bank. (n.d.). The World Bank Open data. Retrieved May 16, 2021, from <https://data.worldbank.org/>
- World Economic Forum. (2020). *The Global Social Mobility Report 2020 Equality, Opportunity and a New Economic Imperative*. <https://www.weforum.org/reports/global-social-mobility-index-2020-why-economies-benefit-from-fixing-inequality>
- Yeager, D. S., Carroll, J. M., Buontempo, J., Cimpian, A., Woody, S., Crosnoe, R., ... & Dweck, C. S. (2022). Teacher mindsets help explain where a growth-mindset intervention does and doesn't work. *Psychological Science*, 33(1), 18-32. <https://doi.org/10.1177/095679762110289>
- Yi, H., Tian, L., & Huebner, E. S. (2020). Mastery goal orientations and subjective well-being in school among elementary school students: The mediating role of school engagement. *European Journal of Psychology of Education*, 35(2), 429-450.  
<https://doi.org/10.1007/s10212-019-00431-x>
- Yuki, M., & Schug, J. (2020). Psychological consequences of relational mobility. *Current Opinion in Psychology*, 32, 129–132. <https://doi.org/10.1016/j.copsyc.2019.07.029>
- Zhang, F., Jiang, Y., Ming, H., Ren, Y., Wang, L., & Huang, S. (2020). Family socio-economic status and children's academic achievement: The different roles of parental academic involvement and subjective social mobility. *British Journal of Education Psychology*, 90(3), 561-579.  
<https://doi.org/10.1111/bjep.12374>
- Zheng, A., Tucker-Drob, E. M., & Briley, D. A. (2019). National gross domestic product, science interest, and science achievement: A direct replication and extension of the Tucker-Drob, Cheung, and Briley (2014) study. *Psychological Science*, 30(5), 776-788.  
<https://doi.org/10.1177/0956797619835768>



## Supplementary Material

for

Culture and motivational payoff: Achievement motivation is more important in students' performance and well-being in cultures with high vs. low social mobility

**Table S1***The Descriptive Statistics of the Major Variables in Each Country/Region*

| Country/Region | <i>n</i> | Social mobility | MG    | FoF   | Math   | Science | Reading | MiL   | PA    | LS   |
|----------------|----------|-----------------|-------|-------|--------|---------|---------|-------|-------|------|
| Albania        | 6359     | 55.6            | 0.65  | -0.24 | 437.55 | 416.78  | 406.82  | 0.58  | 0.52  | 8.6  |
| Argentina      | 11975    | 57.3            | -0.24 | -0.11 | 391.53 | 417.59  | 415.03  | 0.06  | 0.07  | 7.3  |
| Australia      | 14273    | 75.1            | 0.05  | 0.25  | 491.62 | 502.07  | 502.47  | -0.11 | --    | --   |
| Austria        | 6802     | 80.1            | 0.04  | -0.27 | 502.76 | 492.57  | 486.4   | 0.16  | 0.12  | 7.21 |
| Belgium        | 8475     | 80.1            | 0.11  | -0.19 | 510.95 | 502.42  | 495.31  | 0.00  | --    | --   |
| Brazil         | 10691    | 52.1            | 0.55  | 0.03  | 384.28 | 406.52  | 415.79  | 0.09  | 0.06  | 7.05 |
| Bulgaria       | 5294     | 63.8            | -0.23 | -0.13 | 439.78 | 426.19  | 423.33  | 0.04  | 0.16  | 7.16 |
| Canada         | 22653    | 76.1            | 0.21  | 0.24  | 503.45 | 509.89  | 509.47  | --    | -0.07 | --   |
| Chile          | 7621     | 60.3            | 0.33  | 0.10  | 434.28 | 460.01  | 469.80  | 0.15  | 0.19  | 7.12 |
| Colombia       | 7522     | 50.3            | 0.45  | -0.20 | 399.98 | 421.57  | 422.32  | 0.45  | 0.23  | 7.57 |
| Costa Rica     | 7221     | 61.6            | 0.53  | -0.23 | 402.51 | 413.76  | 425.58  | 0.46  | 0.33  | 7.95 |
| Croatia        | 6609     | 66.7            | -0.10 | -0.22 | 462.76 | 471.43  | 477.53  | 0.17  | 0.26  | 7.67 |
| Czech Republic | 7019     | 74.7            | -0.06 | -0.03 | 515.14 | 513.64  | 506.77  | -0.25 | -0.13 | 6.92 |
| Denmark        | 7657     | 85.2            | 0.45  | -0.05 | 497.42 | 479.78  | 489.06  | 0.02  | 0.24  | --   |
| Estonia        | 5316     | 73.5            | -0.20 | -0.17 | 523.27 | 530.36  | 523.7   | -0.05 | -0.18 | 7.18 |
| Finland        | 5649     | 83.6            | -0.12 | -0.19 | 508.18 | 519.43  | 519.94  | 0.06  | -0.12 | 7.61 |
| France         | 6308     | 76.7            | -0.18 | 0.07  | 487.23 | 485.46  | 484.27  | 0.11  | 0.26  | 7.15 |
| Georgia        | 5572     | 55.6            | 0.44  | -0.33 | 400.71 | 384.06  | 381.16  | 0.09  | -0.13 | 7.56 |
| Germany        | 5451     | 78.8            | 0.01  | -0.38 | 502.01 | 504.3   | 500.85  | 0.11  | 0.08  | 7.03 |
| Greece         | 6403     | 59.8            | -0.08 | -0.08 | 453.67 | 454.96  | 460.48  | 0.03  | -0.05 | 6.98 |
| Hungary        | 5132     | 65.8            | -0.22 | -0.10 | 489.03 | 487.27  | 483.04  | -0.18 | 0.20  | 7.12 |
| Iceland        | 3296     | 82.7            | 0.25  | 0.00  | 494.61 | 473.62  | 473.07  | -0.09 | -0.09 | 7.34 |
| Indonesia      | 12098    | 49.3            | 0.45  | -0.16 | 401.00 | 414.64  | 390.10  | 0.53  | 0.35  | 7.35 |
| Ireland        | 5577     | 75.0            | -0.12 | 0.20  | 499.33 | 495.03  | 518.04  | -0.17 | -0.09 | 6.73 |
| Israel         | 6623     | 68.1            | 0.29  | --    | 464.19 | 464.48  | 471.95  | --    | --    | --   |
| Italy          | 11785    | 67.4            | -0.22 | -0.03 | 494.96 | 475.76  | 480.55  | -0.10 | --    | 6.99 |
| Japan          | 6109     | 76.1            | -0.30 | 0.38  | 528.21 | 528.97  | 502.91  | -0.40 | -0.13 | 6.19 |
| Kazakhstan     | 19507    | 64.8            | 0.47  | -0.31 | 439.91 | 413.75  | 404.49  | 0.35  | 0.50  | 8.50 |
| Korea          | 6650     | 71.4            | 0.06  | 0.19  | 526.54 | 520.47  | 515.58  | 0.09  | 0.03  | 6.50 |
| Latvia         | 5303     | 69.0            | -0.33 | -0.10 | 494.51 | 485.52  | 475.62  | -0.07 | 0.03  | 7.15 |

|                     |       |      |       |       |        |        |        |       |       |      |
|---------------------|-------|------|-------|-------|--------|--------|--------|-------|-------|------|
| Lithuania           | 6885  | 70.5 | 0.02  | -0.09 | 482.19 | 477.82 | 470.52 | 0.11  | 0.07  | 7.61 |
| Luxembourg          | 5230  | 79.8 | -0.03 | -0.14 | 483.89 | 477.68 | 470.22 | 0.09  | 0.07  | 7.04 |
| Malaysia            | 6111  | 62.0 | 0.37  | 0.35  | 441.45 | 439.16 | 416.23 | 0.11  | 0.28  | 7.05 |
| Malta               | 3363  | 75.0 | 0.22  | 0.24  | 472.88 | 458.70 | 450.19 | -0.05 | -0.04 | 6.57 |
| Mexico              | 7299  | 52.6 | 0.57  | 0.06  | 415.25 | 424.42 | 427.81 | 0.50  | 0.37  | 8.12 |
| Moldova             | 5367  | 59.6 | 0.10  | -0.04 | 420.97 | 429.03 | 425.69 | 0.32  | 0.22  | 7.67 |
| Morocco             | 6814  | 43.7 | 0.30  | -0.15 | 367.89 | 376.77 | 358.40 | 0.36  | 0.00  | 6.96 |
| Netherlands         | 4765  | 82.4 | -0.22 | -0.40 | 515.19 | 497.80 | 479.53 | -0.18 | 0.08  | 7.51 |
| New Zealand         | 6173  | 74.3 | 0.07  | 0.26  | 496.52 | 511.49 | 507.89 | --    | --    | --   |
| Norway              | 5813  | 83.6 | 0.40  | --    | 501.29 | 488.77 | 497.39 | --    | --    | --   |
| Panama              | 6270  | 51.4 | 0.61  | -0.07 | 354.14 | 364.98 | 378.90 | 0.62  | 0.40  | 7.92 |
| Peru                | 6086  | 49.9 | 0.38  | -0.2  | 401.82 | 406.45 | 402.66 | 0.51  | 0.36  | 7.28 |
| Philippines         | 7233  | 51.7 | 0.35  | 0.16  | 351.6  | 357.19 | 338.56 | 0.40  | 0.25  | 7.23 |
| Poland              | 5625  | 69.1 | 0.01  | 0.02  | 516.94 | 512.08 | 513.13 | -0.06 | -0.07 | 6.74 |
| Portugal            | 5932  | 72.0 | 0.01  | -0.01 | 493.22 | 490.94 | 490.88 | 0.10  | 0.23  | 7.15 |
| Romania             | 5075  | 63.1 | 0.09  | -0.27 | 430.93 | 425.35 | 427.57 | 0.24  | 0.20  | 7.87 |
| Russian Federation  | 7608  | 64.7 | -0.21 | -0.15 | 488.96 | 478.01 | 480.71 | 0.09  | -0.10 | 7.26 |
| Saudi Arabia        | 6136  | 57.1 | 0.43  | -0.33 | 376.71 | 388.46 | 402.15 | 0.35  | 0.06  | 7.93 |
| Serbia              | 6609  | 63.8 | -0.01 | -0.31 | 448.99 | 438.60 | 439.65 | 0.16  | 0.23  | 7.60 |
| Singapore           | 6676  | 74.6 | 0.32  | 0.50  | 566.05 | 548.88 | 548.58 | --    | --    | --   |
| Slovak Republic     | 5965  | 68.5 | -0.33 | 0.01  | 489.93 | 466.12 | 460.31 | -0.05 | -0.02 | 7.22 |
| Vietnam             | 5377  | 57.8 | -1.04 | -0.02 | --     | --     | --     | 0.34  | --    | 7.47 |
| Slovenia            | 6401  | 76.4 | -0.30 | -0.02 | 497.26 | 492.69 | 479.70 | 0.04  | -0.60 | 6.84 |
| Spain               | 35943 | 70.0 | -0.10 | -0.10 | 490.69 | 491.24 | 483.15 | 0.09  | 0.28  | 7.33 |
| Sweden              | 5504  | 83.5 | 0.01  | -0.01 | 502.80 | 498.86 | 505.44 | -0.11 | -0.05 | 7.00 |
| Switzerland         | 5822  | 82.1 | 0.00  | -0.25 | 516.67 | 495.08 | 484.51 | 0.19  | 0.20  | 7.38 |
| Thailand            | 8633  | 55.4 | 0.26  | 0.19  | 437.30 | 443.28 | 409.49 | 0.37  | 0.33  | 7.56 |
| Turkey              | 6890  | 51.3 | -0.05 | 0.12  | 452.70 | 467.49 | 464.23 | 0.15  | -0.26 | 5.61 |
| Ukraine             | 5998  | 61.2 | -0.35 | -0.22 | 455.91 | 471.52 | 468.12 | 0.00  | 0.31  | 8.03 |
| United Kingdom      | 13818 | 74.4 | -0.11 | 0.28  | 496.74 | 495.25 | 500.50 | -0.22 | -0.28 | 6.31 |
| United States       | 4838  | 70.4 | 0.31  | 0.14  | 473.14 | 497.28 | 500.15 | 0.13  | -0.12 | 6.77 |
| Uruguay             | 5263  | 67.1 | 0.16  | -0.08 | 416.38 | 425.69 | 426.02 | 0.08  | 0.19  | 7.54 |
| B-S-J-Z (China)     | 12058 | 61.5 | 0.06  | 0.01  | 592.43 | 593.64 | 561.03 | 0.09  | 0.10  | 6.68 |
| Moscow Region (RUS) | 2016  | 64.7 | -0.27 | -0.18 | 495.66 | 485.40 | 487.29 | 0.06  | -0.11 | 7.28 |
| Tatarstan (RUS)     | 5816  | 64.7 | -0.12 | -0.15 | 477.22 | 464.25 | 465.05 | 0.14  | -0.03 | 7.47 |

*Note.*  $n$  = sample size; MG = Mastery goals; FoF = Fear of failure; MiL = Meaning in life; PA = Positive affect; LS = Life satisfaction.

**Table S2***The Correlations between Mastery Goals and Different Outcome Variables in Each Country/Region*

| Country/Region | Math     | Science  | Reading  | MiL     | PA      | LS      |
|----------------|----------|----------|----------|---------|---------|---------|
| Albania        | 0.08***  | 0.15***  | 0.14***  | 0.33*** | 0.21*** | 0.20*** |
| Argentina      | -0.02    | 0.01     | 0.01     | 0.33*** | 0.22*** | 0.21*** |
| Australia      | 0.14***  | 0.10***  | 0.13***  | 0.35*** | --      | --      |
| Austria        | 0.06***  | 0.07***  | 0.10***  | 0.29*** | 0.22*** | 0.19*** |
| Belgium        | -0.00    | 0.01     | 0.05***  | 0.28*** | --      | --      |
| Brazil         | 0.09***  | 0.10***  | 0.13***  | 0.29*** | 0.25*** | 0.17*** |
| Bulgaria       | 0.07***  | 0.08***  | 0.07***  | 0.38*** | 0.28*** | 0.20*** |
| Canada         | 0.12***  | 0.09***  | 0.11***  | --      | 0.28*** |         |
| Chile          | 0.05***  | 0.01     | 0.00     | 0.34*** | 0.25*** | 0.23*** |
| Colombia       | 0.01     | 0.00     | 0.02     | 0.30*** | 0.18*** | 0.16*** |
| Costa Rica     | -0.03*   | -0.05*** | -0.02    | 0.36*** | 0.24*** | 0.21*** |
| Croatia        | 0.01     | 0.02     | 0.02     | 0.28*** | 0.21*** | 0.22*** |
| Czech Republic | 0.13***  | 0.09***  | 0.12***  | 0.20*** | 0.19*** | 0.18*** |
| Denmark        | 0.10***  | 0.11***  | 0.16***  | 0.26*** | 0.26*** | --      |
| Estonia        | 0.16***  | 0.19***  | 0.18***  | 0.26*** | 0.17*** | 0.22*** |
| Finland        | 0.18***  | 0.21***  | 0.18***  | 0.30*** | 0.29*** | 0.24*** |
| France         | 0.05***  | 0.05**   | 0.06***  | 0.27*** | 0.18*** | 0.19*** |
| Georgia        | 0.11***  | 0.13***  | 0.15***  | 0.28*** | 0.26*** | 0.18*** |
| Germany        | 0.06***  | 0.06***  | 0.10***  | 0.23*** | 0.15*** | 0.12*** |
| Greece         | 0.13***  | 0.13***  | 0.14***  | 0.24*** | 0.21*** | 0.21*** |
| Hungary        | 0.17***  | 0.16***  | 0.17***  | 0.26*** | 0.21*** | 0.20*** |
| Iceland        | 0.27***  | 0.23***  | 0.27***  | 0.31*** | 0.33*** | 0.28*** |
| Indonesia      | -0.02    | -0.02    | 0.01     | 0.35*** | 0.21*** | 0.16*** |
| Ireland        | 0.17***  | 0.14***  | 0.16***  | 0.24*** | 0.21*** | 0.21*** |
| Israel         | -0.01    | 0.01     | 0.01     | --      | --      | --      |
| Italy          | 0.05***  | 0.07***  | 0.09***  | 0.31*** | --      | 0.20*** |
| Japan          | 0.08***  | 0.06***  | 0.04**   | 0.27*** | 0.18*** | 0.16*** |
| Kazakhstan     | -0.01*** | -0.07*** | -0.08*** | 0.37*** | 0.32*** | 0.29*** |
| Korea          | 0.15***  | 0.15***  | 0.13***  | 0.36*** | 0.26*** | 0.26*** |
| Latvia         | 0.13***  | 0.10***  | 0.08***  | 0.24*** | 0.20*** | 0.18*** |
| Lithuania      | 0.15***  | 0.13***  | 0.15***  | 0.33*** | 0.26*** | 0.23*** |
| Luxembourg     | 0.07***  | 0.09***  | 0.10***  | 0.31*** | 0.22*** | 0.19*** |
| Malaysia       | 0.19***  | 0.24***  | 0.28***  | 0.31*** | 0.31*** | 0.23*** |
| Malta          | 0.19***  | 0.13***  | 0.17***  | 0.30*** | 0.23*** | 0.21*** |
| Mexico         | 0.05**   | 0.03*    | 0.06***  | 0.36*** | 0.26*** | 0.24*** |
| Moldova        | 0.13***  | 0.12***  | 0.17***  | 0.36*** | 0.25*** | 0.27*** |
| Morocco        | 0.01     | 0.04*    | 0.03     | 0.38*** | --      | 0.19*** |
| Netherlands    | -0.04**  | -0.05**  | -0.04*   | 0.27*** | 0.18*** | 0.17*** |
| New Zealand    | 0.16***  | 0.14***  | 0.17***  | --      | --      | --      |
| Norway         | 0.29***  | 0.27***  | 0.34***  | --      | --      | --      |
| Panama         | -0.02    | -0.05**  | -0.01    | 0.36*** | 0.22*** | 0.23*** |
| Peru           | 0.04**   | 0.02     | 0.04*    | 0.37*** | 0.25*** | 0.25*** |
| Philippines    | 0.31***  | 0.21***  | 0.29***  | 0.40*** | 0.32*** | 0.28*** |
| Poland         | 0.11***  | 0.13***  | 0.16***  | 0.17*** | 0.14*** | 0.13*** |

|                     |          |          |          |          |         |          |
|---------------------|----------|----------|----------|----------|---------|----------|
| Portugal            | 0.15***  | 0.17***  | 0.17***  | 0.24***  | 0.14*** | 0.17***  |
| Romania             | 0.01     | 0.07***  | 0.08***  | 0.33***  | 0.21*** | 0.21***  |
| Russian Federation  | 0.00     | -0.04**  | -0.06*** | 0.35***  | 0.33*** | 0.27***  |
| Saudi Arabia        | 0.19***  | 0.19***  | 0.19***  | 0.42***  | 0.33*** | 0.08***  |
| Serbia              | 0.07***  | 0.09***  | 0.10***  | 0.31***  | 0.27*** | 0.20***  |
| Singapore           | 0.05***  | 0.02     | 0.04**   | --       | --      | --       |
| Slovak Republic     | 0.20***  | 0.19***  | 0.19***  | 0.22***  | 0.22*** | 0.18***  |
| Vietnam             | --       | --       | --       | -0.26*** | --      | -0.20*** |
| Slovenia            | 0.03*    | 0.04**   | 0.04**   | 0.30***  | 0.25*** | 0.21***  |
| Spain               | 0.15***  | 0.15***  | 0.16***  | 0.27***  | 0.20*** | 0.23***  |
| Sweden              | 0.13***  | 0.11***  | 0.10***  | 0.29***  | 0.27*** | 0.24***  |
| Switzerland         | 0.09***  | 0.08***  | 0.12***  | 0.23***  | 0.20*** | 0.14***  |
| Thailand            | 0.16***  | 0.19***  | 0.20***  | 0.37***  | 0.25*** | 0.21***  |
| Turkey              | -0.08*** | -0.08*** | -0.07*** | 0.34***  | 0.24*** | 0.20***  |
| Ukraine             | 0.03*    | 0.03**   | 0.04**   | 0.27***  | 0.23*** | 0.23***  |
| United Kingdom      | 0.11***  | 0.08***  | 0.09***  | 0.29***  | 0.24*** | 0.23***  |
| United States       | -0.04**  | -0.05**  | -0.01    | 0.34***  | 0.26*** | 0.23***  |
| Uruguay             | 0.04**   | 0.04**   | 0.07***  | 0.30***  | 0.23*** | 0.21***  |
| B-S-J-Z (China)     | 0.14***  | 0.12***  | 0.14***  | 0.30***  | 0.20*** | 0.19***  |
| Moscow Region (RUS) | 0.02     | -0.03    | -0.05*   | 0.41***  | 0.33*** | 0.28***  |
| Tatarstan (RUS)     | 0.01     | -0.04**  | -0.05*** | 0.37***  | 0.36*** | 0.27***  |

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ . MG = Mastery goals; FoF = Fear of failure; MiL = Meaning in life; PA = Positive affect; LS = Life satisfaction.

**Table S3** The Correlations between Fear of Failure and Different Outcome Variables in Each Country/Region

| Country/Region | Maths    | Science  | Reading  | MiL      | PA       | LS       |
|----------------|----------|----------|----------|----------|----------|----------|
| Albania        | -0.13*** | -0.14*** | -0.13*** | 0.00     | -0.10*** | -0.11*** |
| Argentina      | -0.10*** | -0.06*** | -0.03**  | -0.04*** | -0.17*** | -0.17*** |
| Australia      | 0.07***  | 0.08***  | 0.15***  | -0.18*** | --       | --       |
| Austria        | -0.03**  | 0.00     | 0.02     | -0.15*** | -0.20*** | -0.27*** |
| Belgium        | 0.02     | 0.05***  | 0.08***  | -0.07*** | --       | --       |
| Brazil         | 0.07***  | 0.10***  | 0.13***  | -0.13*** | -0.16*** | -0.20*** |
| Bulgaria       | 0.01     | 0.03     | 0.02     | -0.01    | -0.06*** | -0.14*** |
| Canada         | 0.03***  | 0.10***  | 0.14***  | --       | -0.14*** |          |
| Chile          | 0.02     | 0.03*    | 0.06***  | -0.13*** | -0.17*** | -0.20*** |
| Colombia       | -0.01    | 0        | -0.01    | -0.11*** | -0.14*** | -0.17*** |
| Costa Rica     | -0.02    | -0.01    | -0.02    | -0.08*** | -0.15*** | -0.19*** |
| Croatia        | 0.04**   | 0.07***  | 0.12***  | -0.21*** | -0.20*** | -0.25*** |
| Czech Republic | 0.01     | 0.04**   | 0.10***  | -0.15*** | -0.19*** | -0.24*** |
| Denmark        | -0.04**  | -0.05*** | 0.03*    | -0.14*** | -0.19*** |          |
| Estonia        | 0.00     | 0.04**   | 0.10***  | -0.17*** | -0.18*** | -0.26*** |
| Finland        | 0.05***  | 0.12***  | 0.17***  | -0.23*** | -0.23*** | -0.35*** |
| France         | 0.00     | 0.02     | 0.05**   | -0.08*** | -0.10*** | -0.20*** |
| Georgia        | -0.14*** | -0.12*** | -0.12*** | -0.03    | -0.06*** | -0.05**  |
| Germany        | 0.03     | 0.05**   | 0.08***  | -0.18*** | -0.21*** | -0.27*** |
| Greece         | -0.02    | 0.04***  | 0.07***  | -0.15*** | -0.17*** | -0.21*** |
| Hungary        | -0.02    | 0.00     | 0.04**   | -0.14*** | -0.20*** | -0.26*** |

|                     |          |          |          |          |          |          |
|---------------------|----------|----------|----------|----------|----------|----------|
| Iceland             | 0.07***  | 0.07***  | 0.12***  | -0.25*** | -0.25*** | -0.33*** |
| Indonesia           | 0.10***  | 0.10***  | 0.10***  | -0.06*** | -0.09*** | -0.10*** |
| Ireland             | 0.02     | 0.05***  | 0.11***  | -0.19*** | -0.20*** | -0.31*** |
| Israel              | --       | --       | --       | --       | --       | --       |
| Italy               | -0.03**  | 0.02*    | 0.06***  | -0.13*** | --       | -0.27*** |
| Japan               | 0.08***  | 0.11***  | 0.12***  | -0.08*** | -0.06*** | -0.17*** |
| Kazakhstan          | 0.03***  | 0.05***  | 0.06***  | -0.08*** | -0.13*** | -0.17*** |
| Korea               | 0.00     | 0.03*    | 0.06***  | -0.26*** | -0.25*** | -0.34*** |
| Latvia              | 0.02     | 0.06***  | 0.10***  | -0.14*** | -0.18*** | -0.23*** |
| Lithuania           | 0.00     | -0.01    | 0.06***  | -0.13*** | -0.16*** | -0.22*** |
| Luxembourg          | 0.03*    | 0.05***  | 0.09***  | -0.12*** | -0.16*** | -0.23*** |
| Malaysia            | 0.06***  | 0.11***  | 0.14***  | -0.05*** | 0.03     | -0.10*** |
| Malta               | 0.07***  | 0.08***  | 0.15***  | -0.18*** | -0.15*** | -0.26*** |
| Mexico              | -0.05*** | -0.02    | -0.02    | -0.04**  | -0.14*** | -0.16*** |
| Moldova             | -0.10*** | -0.13*** | -0.09*** | -0.02    | -0.10*** | -0.09*** |
| Morocco             | -0.06*** | -0.02    | -0.03    | -0.02    | --       | -0.14    |
| Netherlands         | 0.08***  | 0.12***  | 0.14***  | -0.17*** | -0.19*** | -0.33*** |
| New Zealand         | 0.04**   | 0.09***  | 0.15***  | --       | --       | --       |
| Norway              | --       | --       | --       | --       | --       | --       |
| Panama              | -0.08*** | -0.06*** | -0.07*** | 0.00     | -0.10*** | -0.09*** |
| Peru                | -0.06*** | -0.06*** | -0.05*** | -0.11*** | -0.16*** | -0.17*** |
| Philippines         | 0.15***  | 0.14***  | 0.15***  | 0.16***  | -0.02    | -0.01    |
| Poland              | 0.07***  | 0.08***  | 0.13***  | -0.21*** | -0.21*** | -0.26*** |
| Portugal            | 0.02     | 0.00     | 0.06***  | -0.16*** | -0.17*** | -0.23*** |
| Romania             | 0.01     | 0.00     | 0.01     | -0.11*** | -0.16*** | -0.17*** |
| Russian Federation  | 0.01     | 0.00     | 0.02     | -0.09*** | -0.14*** | -0.17*** |
| Saudi Arabia        | -0.04**  | -0.03*   | -0.05*** | 0.01     | -0.08*** | -0.10*** |
| Serbia              | 0.00     | 0.02     | 0.05**   | -0.11*** | -0.12*** | -0.19*** |
| Singapore           | -0.01    | 0.03**   | 0.0***   | --       | --       | --       |
| Slovak Republic     | 0.08***  | 0.10***  | 0.14***  | -0.10*** | -0.11*** | -0.20*** |
| Vietnam             | --       | --       | --       | -0.09    | --       | -0.09    |
| Slovenia            | 0.02     | 0.06***  | 0.11***  | -0.24*** | -0.21*** | -0.29*** |
| Spain               | 0.00     | 0.01*    | 0.05***  | -0.11*** | -0.18*** | -0.22*** |
| Sweden              | 0.05**   | 0.06***  | 0.09***  | -0.20*** | -0.22*** | -0.30*** |
| Switzerland         | 0.02     | 0.05**   | 0.08***  | -0.13*** | -0.17*** | -0.25*** |
| Thailand            | 0.11***  | 0.10***  | 0.15***  | -0.07*** | -0.08*** | -0.16*** |
| Turkey              | 0.02     | 0.03*    | 0.05***  | 0.03*    | -0.03**  | -0.09*** |
| Ukraine             | -0.02    | 0.00     | 0.04**   | -0.08*** | -0.09*** | -0.15*** |
| United Kingdom      | 0.03***  | 0.08***  | 0.12***  | -0.21*** | -0.19*** | -0.29*** |
| United States       | 0.17***  | 0.17***  | 0.19***  | -0.20*** | -0.18*** | -0.25*** |
| Uruguay             | -0.03    | -0.02    | -0.01    | 0.00     | -0.13*** | -0.15*** |
| B-S-J-Z (China)     | -0.01    | -0.03**  | 0.02*    | -0.24*** | -0.15*** | -0.25*** |
| Moscow Region (RUS) | -0.01    | 0.00     | 0.04     | -0.12*** | -0.16*** | -0.19*** |
| Tatarstan (RUS)     | -0.01    | -0.02    | 0.02     | -0.10*** | -0.17*** | -0.19*** |

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ . MG = Mastery goals; FoF = Fear of failure; MiL = Meaning in life; PA = Positive affect; LS = Life satisfaction.

**Table S4**

*Summary of the Two-level Multilevel Analysis with Mastery Goals and Fear of Failure as the Predictors in One Model*

| Predictors                                 | Outcome variables               |                                    |                                    |  |  |  |
|--|---------------------------------|------------------------------------|------------------------------------|--|--|--|
|  | Math<br>Coefficient<br>[95% CI] | Science<br>Coefficient<br>[95% CI] | Reading<br>Coefficient<br>[95% CI] | Meaning in life<br>Coefficient<br>[95% CI] | Positive affect<br>Coefficient<br>[95% CI] | Life satisfaction<br>Coefficient<br>[95% CI] |
| <b>Societal level<sup>†</sup></b>          |                                 |                                    |                                    |  |  |  |
| GDP  | -.34<br>[-.89, .20]             | -.23<br>[-.79, .33]                | -.06<br>[-.60, .48]                | .001<br>[-.001, .004]                      | .001<br>[-.003, .004]                      | -.01<br>[-.01, .004]                         |
| Social Mobility                            | 4.53***<br>[3.31, 5.76]         | 3.84***<br>[2.58, 5.09]            | 3.51***<br>[2.29, 4.73]            | -.01***<br>[-.02, -.01]                    | -.01*<br>[-.02, -.002]                     | .0001<br>[-.02, .02]                         |
| <b>Individual level<sup>†</sup></b>        |                                 |                                    |                                    |  |  |  |
| Family wealth                              | 16.24***<br>[14.23, 18.25]      | 13.91***<br>[11.90, 15.92]         | 13.91***<br>[11.60, 16.22]         | .03***<br>[.03, .04]                       | .07***<br>[.06, .08]                       | .18***<br>[.15, .21]                         |
| Gender (male = 0; female = 1)              | -8.54***<br>[-10.38, -6.70]     | -1.58<br>[-3.54, .37]              | 23.78***<br>[21.85, 25.71]         | -.10***<br>[-.12, -.08]                    | .01<br>[-.02, .04]                         | -.38***<br>[-.44, -.32]                      |
| Mastery goals                              | 7.47***<br>[5.93, 9.01]         | 6.57***<br>[4.95, 8.19]            | 7.00***<br>[5.25, 8.76]            | .30***<br>[.28, .32]                       | .24***<br>[.23, .25]                       | .55***<br>[.50, .59]                         |
| Fear of Failure                            | 1.14*<br>[.05, 2.23]            | 2.52***<br>[1.33, 3.70]            | 3.55***<br>[2.29, 4.82]            | -.13***<br>[-.14, -.12]                    | -.17***<br>[-.18, -.16]                    | -.53***<br>[-.57, -.50]                      |
| <b>Cross-level interaction<sup>†</sup></b> |                                 |                                    |                                    |  |  |  |
| Social mobility × Mastery Goals            | .20**<br>[.05, .35]             | .19*<br>[.04, .35]                 | .21*<br>[.04, .38]                 | .001<br>[-.001, .003]                      | .00004<br>[-.001, .001]                    | .002<br>[-.002, .01]                         |
| Social mobility × Fear of Failure          | .16**<br>[.05, .26]             | .20***<br>[.09, .32]               | .26***<br>[.14, .38]               | -.005***<br>[-.01, -.004]                  | -.003***<br>[-.004, -.002]                 | -.01***<br>[-.01, -.01]                      |

*Note.* \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ . <sup>†</sup> The degree of freedom for both societal- and individual-level predictors as well as the interaction was estimated based on the number of level-2 units (i.e., the number of societies;  $n \sim 65$  societies) instead of the number of level-1 units (i.e., the number of all participants), as the intercepts and the effect of individual-level predictors were specified to be random. Unstandardized coefficients are reported.

**Table S5**

*Summary of the Two-level Multilevel Analysis with Mastery Goals and Fear of Failure as the Predictors and Social Mobility as the Moderator with Controlling for GDP and Societal Individualism in One Model*

| Predictors                                 | Outcome variables           |                            |                            |                          |                            |                         |
|--|-----------------------------|----------------------------|----------------------------|--------------------------|----------------------------|-------------------------|
|  | Math                        | Science                    | Reading                    | Meaning in life          | Positive affect            | Life satisfaction       |
|  | Coefficient<br>[95% CI]     | Coefficient<br>[95% CI]    | Coefficient<br>[95% CI]    | Coefficient<br>[95% CI]  | Coefficient<br>[95% CI]    | Coefficient<br>[95% CI] |
| <b>Societal level<sup>†</sup></b>          |                             |                            |                            |                          |                            |                         |
| GDP  | -.32<br>[-.88, .24]         | -.24<br>[-.82, .34]        | -.08<br>[-.64, .48]        | .003*<br>[.001, .01]     | .002<br>[-.002, .01]       | -.002<br>[-.01, .01]    |
| Societal Individualism                     | -.08<br>[-.56, .40]         | .04<br>[-.46, .53]         | .10<br>[-.38, .58]         | -.01***<br>[-.01, -.003] | -.004*<br>[-.01, .00]      | -.01<br>[-.02, .000]    |
| Social Mobility                            | 4.61***<br>[3.29, 5.93]     | 3.80***<br>[2.45, 5.16]    | 3.41***<br>[2.10, 4.72]    | -.01**<br>[-.02, -.004]  | -.01<br>[-.02, .003]       | .01<br>[-.02, .03]      |
| <b>Individual level<sup>†</sup></b>        |                             |                            |                            |                          |                            |                         |
| Family wealth                              | 16.24***<br>[14.23, 18.25]  | 13.91***<br>[11.91, 15.92] | 13.91***<br>[11.60, 16.22] | .03***<br>[.03, .04]     | .07***<br>[.06, .08]       | .18***<br>[.15, .21]    |
| Gender (male = 0; female = 1)              | -8.54***<br>[-10.38, -6.70] | -1.58<br>[-3.54, .37]      | 23.78***<br>[21.85, 25.71] | -.10***<br>[-.12, -.08]  | .01<br>[-.02, .04]         | -.38***<br>[-.44, -.32] |
| Mastery goals                              | 7.47***<br>[5.93, 9.01]     | 6.57***<br>[4.96, 8.19]    | 7.00***<br>[5.25, 8.76]    | .30***<br>[.28, .32]     | .24***<br>[.23, .25]       | .55***<br>[.50, .59]    |
| Fear of Failure                            | 1.14*<br>[.05, 2.23]        | 2.52***<br>[1.33, 3.71]    | 3.55***<br>[2.29, 4.82]    | -.13***<br>[-.14, -.12]  | -.17***<br>[-.18, -.16]    | -.54***<br>[-.57, -.50] |
| <b>Cross-level interaction<sup>†</sup></b> |                             |                            |                            |                          |                            |                         |
| Social mobility × Mastery Goals            | .20*<br>[.05, .35]          | .20*<br>[.04, .35]         | .21*<br>[.04, .38]         | .001<br>[-.001, .003]    | .00004<br>[-.001, .001]    | .002<br>[-.002, .01]    |
| Social mobility × Fear of Failure          | .16***<br>[.05, .26]        | .20***<br>[.09, .32]       | .26***<br>[.14, .38]       | -.01***<br>[-.01, -.004] | -.003***<br>[-.004, -.002] | -.01***<br>[-.02, -.01] |

*Note.* \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ . <sup>†</sup> The degree of freedom for both societal- and individual-level predictors as well as the interaction was estimated based on the number of level-2 units (i.e., the number of societies;  $n \sim 65$  societies) instead of the number of level-1 units (i.e., the number of all participants), as the intercepts and the effect of individual-level predictors were specified to be random. Unstandardized coefficients are reported.

**Table S6**

*Summary of the Two-level Multilevel Analysis with Mastery Goals and Fear of Failure as the Predictors and Social Mobility as the Moderator with Controlling for GDP, Societal Individualism, and the Interaction with Societal Individualism in One Model*

| Predictors                                 | Outcome variables               |                                    |                                    |  |  |  |
|--|---------------------------------|------------------------------------|------------------------------------|--|--|--|
|  | Math<br>Coefficient [95%<br>CI] | Science<br>Coefficient [95%<br>CI] | Reading<br>Coefficient [95%<br>CI] | Meaning in life<br>Coefficient [95%<br>CI] | Positive affect<br>Coefficient [95%<br>CI] | Life satisfaction<br>Coefficient [95%<br>CI] |
| <b>Societal level<sup>†</sup></b>          |                                 |                                    |                                    |  |  |  |
| GDP  | -.32<br>[-.88, .24]             | -.24<br>[-.82, .34]                | -.08<br>[-.64, .48]                | .003*<br>[.001, .01]                       | .002<br>[-.002, .01]                       | -.002<br>[-.01, .01]                         |
| Societal Individualism                     | -.08<br>[-.56, .40]             | .04<br>[-.46, .53]                 | .10<br>[-.38, .58]                 | -.01***<br>[-.01, -.003]                   | -.004*<br>[-.01, .00]                      | -.01<br>[-.02, .000]                         |
| Social Mobility                            | 4.61***<br>[3.29, 5.93]         | 3.80***<br>[2.45, 5.16]            | 3.41***<br>[2.10, 4.72]            | -.01**<br>[-.02, -.004]                    | -.01<br>[-.02, .003]                       | .01<br>[-.02, .03]                           |
| <b>Individual level<sup>†</sup></b>        |                                 |                                    |                                    |  |  |  |
| Family wealth                              | 16.24***<br>[14.23, 18.25]      | 13.91***<br>[11.90, 15.92]         | 13.91***<br>[11.60, 16.22]         | .03***<br>[.03, .04]                       | .07***<br>[.06, .08]                       | .18***<br>[.15, .21]                         |
| Gender (male = 0; female = 1)              | -8.54***<br>[-10.38, -6.70]     | -1.58<br>[-3.54, .37]              | 23.78***<br>[21.85, 25.71]         | -.10***<br>[-.12, -.08]                    | .01<br>[-.02, .04]                         | -.38***<br>[-.44, -.32]                      |
| Mastery goals                              | 7.47***<br>[5.92, 9.02]         | 6.57***<br>[4.94, 8.20]            | 7.00***<br>[5.23, 8.77]            | .30***<br>[.28, .32]                       | .24***<br>[.23, .26]                       | .55***<br>[.50, .59]                         |
| Fear of Failure                            | 1.13*<br>[.05, 2.22]            | 2.51***<br>[1.35, 3.67]            | 3.54***<br>[2.31, 4.78]            | -.13***<br>[-.14, -.12]                    | -.17***<br>[-.18, -.16]                    | -.54***<br>[-.57, -.50]                      |
| <b>Cross-level interaction<sup>†</sup></b> |                                 |                                    |                                    |  |  |  |
| Individualism × Mastery Goals              | .03<br>[-.06, .12]              | .02<br>[-.08, .11]                 | .03<br>[-.07, .14]                 | .00<br>[-.001, .002]                       | .00<br>[-.001, .001]                       | .001<br>[-.002, .003]                        |
| Individualism × Fear of Failure            | .04<br>[-.03, .10]              | .06<br>[-.01, .13]                 | .06<br>[-.01, .13]                 | .00001<br>[-.001, .001]                    | .00<br>[-.001, .001]                       | .001<br>[-.002, .003]                        |
| Social mobility × Mastery Goals            | .16<br>[-.04, .36]              | .17<br>[-.04, .38]                 | .16<br>[-.06, .39]                 | .00001<br>[-.003, .003]                    | .00<br>[-.002, .001]                       | .001<br>[-.01, .01]                          |
| Social mobility × Fear of Failure          | .10<br>[-.04, .24]              | .11<br>[-.04, .26]                 | .17*<br>[.01, .33]                 | -.01***<br>[-.01, -.003]                   | -.003***<br>[-.01, -.002]                  | -.01***<br>[-.02, -.01]                      |

*Note.* \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ . <sup>†</sup> The degree of freedom for both societal- and individual-level predictors as well as the interaction was estimated based on the number of level-2 units (i.e., the number of societies;  $n \sim 65$  societies) instead of the number of level-1 units (i.e., the number of all participants), as the intercepts and the effect of individual-level predictors were specified to be random. Unstandardized coefficients are reported.