

The Psychological Benefits of Income are Contingent on Individual-Level and Culture-Level Religiosity

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Abstract

Higher income is related to better psychological adjustment. We propose that religiosity attenuates this relation. First, in comforting the poor, religious teachings de-emphasize the importance of money, which would buffer low-income's psychological harms (religiosity as poverty buffer account). Second, religious teachings convey antiwealth norms, which would reduce income's psychological benefits (religiosity as antiwealth norms account). A study involving 187,957 respondents from 11 religiously diverse cultures showed that individual-level, as well as culture-level, religiosity weakens the relation between personal income and psychological adjustment in accordance with the religiosity as antiwealth norms account. Performance self-esteem mediated this relation. Religiosity's moderating effects were so pervasive that religious individuals in religious cultures reported better psychological adjustment when their income was low than high.

Keywords

religiosity, culture, income, self-esteem, psychological adjustment

Higher personal income is related to better psychological adjustment. The size of this relation is modest but persistent ($r = .14$, Cummins, 2000; $.09 \leq r \leq .44$, Diener, Ng, Harter, & Arora, 2010; $r = .13$, Diener & Oishi, 2000; $r = .12$, Diener, Sandvik, Seidlitz, & Diener, 1993; $r = .17$, Haring, Stock, & Okun, 1984). In fact, the relation emerges robustly across many demographic variables, including sex, age, and residence (urban vs. rural; Diener et al., 2010). For these reasons, this relation is considered meaningful and consequential (Kahneman & Deaton, 2010; Nickerson, Schwarz, Diener, & Kahneman, 2003).

Religiosity as Poverty Buffer: Individual-Level and Culture-Level

Nevertheless, there is reason to suppose that religiosity, at the individual-level, qualifies this relation. In comforting the poor, teachings of world religions de-emphasize the importance of money. The Judeo-Christian God is said to "save the souls of the needy" (Psalm 72:13) and to "raiseth up the poor out of the dust, and lifteth the needy out of the dunghill" (Psalm 113:7). Jesus purportedly stated, "Blessed be ye poor: for yours is the kingdom of God" (Luke 6:20). Individual-level religiosity, then, may buffer the aversive consequences of low income.

Independent of such individual-level effects of religiosity, culture-level religiosity may also buffer low-income's aversive ramifications. With increasing culture-level religiosity,

devaluation of the poor may weaken and even vanish in religious cultures. The Judeo-Christian tradition reinforces the belief that "he that hath mercy on the poor, happy is he" (Proverbs 14:21) and "he that oppreseth the poor reprocheth his Maker: but he that honoureth him mercy on the poor" (Proverbs 14:31). Similarly, God purportedly exclaimed "I the LORD will hear them [the poor], I the God of Israel will not forsake them" (Isaiah 41:17), and most members of religious cultures should seek to follow this example. Thus, both individual-level and culture-level religiosity may independently attenuate the relation between higher income and psychological adjustment, as religiosity will buffer low-income's psychological harms.

Religiosity as Antiwealth Norms: Individual-level and Culture-Level

Religiosity, at the individual-level, may attenuate this relation for another reason. Antiwealth norms are central to world

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religions (Gebauer & Maio, 2012; Schwartz & Huisman, 1995). The *Story of the Golden Calf* (Exodus 32) provides a vivid illustration: “Then the LORD said to Moses, ‘Go down, because your people, . . . turn[ed] away from what I commanded them and have made themselves an idol cast in the shape of a [golden] calf. . . . Now leave me alone so that my anger may burn against them and that I may destroy them.’” Jesus allegedly advocated antiwealth norm as well, “It is easier for a camel to go through the eye of a needle than for someone who is rich to enter the kingdom of God” (Mark 10:25). Hence, religious individuals are likely to endorse religious antiwealth norms as personally valued goals (Schwartz & Huisman, 1995; Sedikides & Gebauer, 2010). For them, financial goals should be little valued, or even devalued, as sinful and guilt arousing. Given that wealth and income confer psychological benefits when financial goals are personally valued (Nickerson et al., 2003), individual-level religiosity may decrease the relation between higher income and psychological adjustment, as religious antiwealth norms will prohibit religious individuals from reaping high-income’s psychological benefits. The relevant literature is scarce and suggestive. La Barbera and Gürhan (1997) compared 110 born-again Christians (a religiously intense group) with 133 not born-again Christians. Although rich not born-again Christians reported positive general affect, rich born-again Christians did not. This study, though, failed to test whether differing degrees of religiosity are associated with reduced psychological income benefits.

Independent of such individual-level effects, culture-level religiosity may also stand in the way of benefiting psychologically from high income. In religious cultures, antiwealth norms are part of the cultural value system (Schwartz & Huisman, 1995; Sedikides & Gebauer, 2010). People endorse cultural values as personally valued goals (Greenberg, Solomon, & Pyszczynski, 1997; Sedikides, Gaertner, & Toguchi, 2003). Together, people from cultures high in antiwealth norms (religious cultures) should adopt such norms as personally valued goals and do so even if they are not religious themselves given the norms’ transcendent or contagious influence (Bernard, Gebauer, & Maio, 2006). Hence, culture-level religiosity will weaken the link between higher personal income and psychological adjustment. We are unaware of relevant research.

In summary, we expect that the relation between income and psychological adjustment will be modest, replicating past findings (Diener et al., 1993, 2010). However, this relation will be moderated by religiosity: the relation will be lower among religious individuals. Additionally, and independently, the relation will be lower in religious cultures. We test these ideas in the backdrop of the religiosity as poverty buffer and the religiosity as antiwealth norms accounts.

The Role of Performance Self-Esteem

Heatherton and Polivy (1991) distinguished among three self-esteem domains: performance, social, and attractiveness. We examined whether the relation between income and self-esteem is functionally comparable to that between income and

psychological adjustment. Specifically, we tested whether higher income is related to higher domain-specific self-esteem and whether these relations are moderated by individual- and culture-level religiosity. We hypothesized that only the results of performance self-esteem would parallel those of psychological adjustment. Income falls into the achievement/performance domain (Schwartz, 1992) and, thus, higher income will evoke performance self-esteem. Moreover, the maladaptive influence of low income on performance self-esteem may be ameliorated due to religious teachings (earning little money does not render one’s work less valuable; *Parable of the Laborers in the Vineyard*; Matthew 20:1–16), and the beneficial effects of high income on performance self-esteem may decrease due to religious teachings (earning much money does not render one’s work more valuable; *Zacchaeus the Tax Collector*; Luke 19:1–10). In contrast, we see no reason why religiosity would moderate the (presumably low) relation between income and social or attractiveness self-esteem.

Finally, we examined whether performance self-esteem mediates the relation between income and psychological adjustment. Intuitively, performance self-esteem should function as a mediator: high income will elicit pride in the achievement domain (performance self-esteem), which will boost psychological adjustment (Cummins, 2000). Indeed, high income is an important value of most (nonreligious) individuals and most (nonreligious) cultures, whereas living up to personal (Higgins, 1987) and cultural (Greenberg et al., 1997) goals is most immediately linked to higher self-esteem (Gebauer, Wagner, Sedikides, & Neberich, in press), which promotes psychological adjustment (Alicke & Sedikides, 2009).

Method

We analyzed data from 187,957 individuals (53% male; $M_{\text{age}} = 37.49$ years, $SD = 12.22$) included in the eDarling data set (Gebauer, Sedikides, & Neberich, 2012). Respondents were from 11 European countries: Austria ($N = 17,109$), France ($N = 18,105$), Germany ($N = 19,318$), Italy ($N = 13,899$), Poland ($N = 18,789$), Russia ($N = 19,734$), Spain ($N = 17,339$), Sweden ($N = 19,457$), Switzerland ($N = 11,183$), the Netherlands ($N = 13,552$), and Turkey ($N = 19,472$). Respondents completed the measures confidentially while constructing profiles at the eDarling online-dating site, which is designed for singles looking for long-term relationships (Gebauer, Leary, & Neberich, 2012a). The sample is unrepresentative of national populations on relationship status, but otherwise it is similar to them. For example, the average median age across the 11 countries is 40.54 years in nationally representative samples and 37.18 years in the eDarling subsamples. Further, the average gender ratio (number of men per woman) across the 11 countries is 0.96 in nationally representative samples and 1.22 in the eDarling subsamples. Finally, the average annual income per capita (standardized on each country’s purchasing power per capita) across the 11 countries is 25,573 in nationally representative samples and 28,111 in the eDarling subsamples (The World Factbook, n.d.). Thus, our

sample is closer to representativeness on major demographic dimensions than are student samples.

Personal Income

Respondents completed the item “How high is your gross income per year?” They had several response options (Kahneman & Deaton, 2010; Nickerson et al., 2003), which varied between cultures due to different currencies.¹ In Germany, for example, the response options were 1 = 0€; 2 = less than 12,500€; 3 = 12,500–25,000€; 4 = 25,000–37,500€; 5 = 37,500–50,000€; 6 = 50,000–75,000€; and 7 = more than 75,000€. We set four criteria to derive meaningful income scores that allow cross-cultural comparisons. First, we excluded cases where respondents indicated zero income, because it cannot be interpreted (Kahneman & Deaton, 2010).² Second, we used the mean value of each income range (31,250€ for 25,000–37,500€). Given that there was no upper boundary for the highest response option (more than 75,000€), we set the range for it equal to the range of the preceding response option (75,000–100,000€). Third, we divided respondents’ income by their country’s most recent purchasing power parity per capita (Center for International Comparisons, n.d.), so that scores reflect respondents’ personal purchasing power within their country (Diener et al., 2010; Kahneman & Deaton, 2010). Finally, we log transformed the resultant scores (Diener et al., 2010; Kahneman & Deaton, 2010).

Individual-Level Religiosity

Respondents completed the single-item “My personal religious beliefs are important to me” (1 = *not at all*, 7 = *very much*). Single-item religiosity measures are common and effective (Schwartz & Huismans, 1995). Our measure was valid and reliable. In previous research, the measure replicated well-established findings regarding religiosity and psychological adjustment (Gebauer, Sedikides, & Neberich, 2012) and religiosity and personality (Gebauer, Paulhus, & Neberich, 2013). Also, in an independent validation study ($N = 347$), the measure loaded highly (.90) on a single factor together with validated measures of global religiosity (Gebauer, Sedikides, & Neberich, 2012). One of these measures, the Global Religiosity Measure (Gebauer & Maio, 2012), includes the item “How strongly do you believe in God?” and thus is a proxy measure for atheism versus theism. This item correlated highly with our single-item measure in the independent validation study, $r(333) = .73$, $p < .001$, suggesting that our single-item measure is effective in differentiating between atheist and religious belief.

Culture-Level Religiosity

As in past research with this sample (Gebauer et al., 2013; Gebauer, Sedikides, & Neberich, 2012), we implemented three indices of culture-level religiosity. First, we averaged the individual-level responses from our religiosity measure. Second, we used the average individual-level responses from the

Gallup World Poll (Diener, Tay, & Myers, 2011). Finally, we used Zuckerman’s (2007) inverse portion of “nonbelievers in God.” Result patterns were identical and hence we limit our reported findings to the first index.

Psychological Adjustment

We averaged the 10 items of the Trait Psychological Adjustment Scale (Gebauer, Sedikides, & Neberich, 2012), which asks respondents “How well does each of the following generally describe you?” followed by 10 trait adjustment indicators: adaptable, calm, cheerful, content, energetic, healthy, optimistic, positive, resilient, and stable (1 = *not at all*, 7 = *very much*; $\alpha = .84$; mean item total correlation: $r = .54$, range: $.35 \leq r \leq .65$). In the independent validation study, this scale loaded highly (.89) on a single factor together with established measures of life satisfaction, positive affect, optimism, well-being, and vitality (Gebauer, Sedikides, & Neberich, 2012). Also, this scale showed measurement invariance across cultures: unconstrained root mean square error of approximation (RMSEA) = .029, variance and factor loadings constrained RMSEA = .028 (Cheung & Rensvold, 2002).

Self-Esteem

Respondents completed Gebauer, Leary, and Neberich’s (2012b) 12-item trait adaptation of the State Self-Esteem Scale (Heatherton & Polivy, 1991), including a 4-item Performance Self-Esteem subscale (“I am proud of my educational background,” “I catch on to things quickly,” “I can handle a lot of information,” and “I am good at analyzing problems,” $\alpha = .70$), a 4-item Social Self-Esteem subscale (“How skilled do you perceive yourself in . . .” “. . . social situations,” “. . . making new friends,” “. . . socializing,” “It is easy for me to engage in conversations with people I have just met”; $\alpha = .76$), and a 4-item Appearance Self-Esteem subscale (“I am satisfied with my physical appearance,” “How well does the following describe your physical appearance: . . .” “. . . stylish,” “. . . attractive,” and “. . . sexy;” $\alpha = .83$) (1 = *not at all*, 7 = *very much*). The scale (including each subscale) manifested measurement invariance across cultures: unconstrained RMSEA = .020, fully constraint RMSEA = .024.

Results

Table 1 shows means, standard deviations, and mean zero-order correlations of all study variables across cultures. For the main analyses, we used multilevel modeling (HLM 6.06; Raudenbush, Bryk, & Congdon, 2004), because respondents were nested in cultures. We used group-mean centering of individual-level predictors and grand-mean centering of culture-level predictors, because our analyses involved cross-level interactions. Due to the large sample size, we set the significance level at .001.

Table 1. Mean Zero-Order Correlations (Including Their Ranges Across Cultures) Between All Study Variables, Means, and Standard Deviations.

| | Personal income | Individual-level religiosity | Psychological adjustment | Performance self-esteem | Social self-esteem | Appearance self-esteem |
|------------------------------|------------------|------------------------------|--------------------------|-------------------------|--------------------|------------------------|
| Individual-level religiosity | -.06 | | | | | |
| Psychological adjustment | -.14 (T)–.01 (G) | .09 | | | | |
| Performance self-esteem | .01 (E)–.17 (S) | -.01 (S)–.23 (T) | | | | |
| Social self-esteem | .21 | .07 | .53 | | | |
| Appearance self-esteem | .15 (S)–.25 (N) | .13 (R)–.02 (C) | .52 (G)–.55 (P) | | | |
| M | .08 | .10 | .54 | .46 | | |
| SD | .05 (G)–.13 (I) | .03 (S)–.15 (R) | .49 (F)–.62 (R) | .37 (F)–.50 (T) | | |
| M | .12 | .10 | .41 | .41 | .41 | |
| SD | .07 (R)–.16 (I) | .05 (C)–.17 (F) | .37 (S)–.46 (R) | .37 (C)–.49 (P) | .36 (I)–.46 (P) | |
| M | 4.24 | 3.40 | 5.41 | 5.13 | 5.18 | 4.83 |
| SD | 0.49 | 2.03 | 0.88 | 1.08 | 1.12 | 1.13 |

Note. A = Austria; C = Switzerland; E = Spain; F = France; G = Germany; I = Italy; N = the Netherlands; P = Poland; R = Russia ; S = Sweden; T = Turkey.

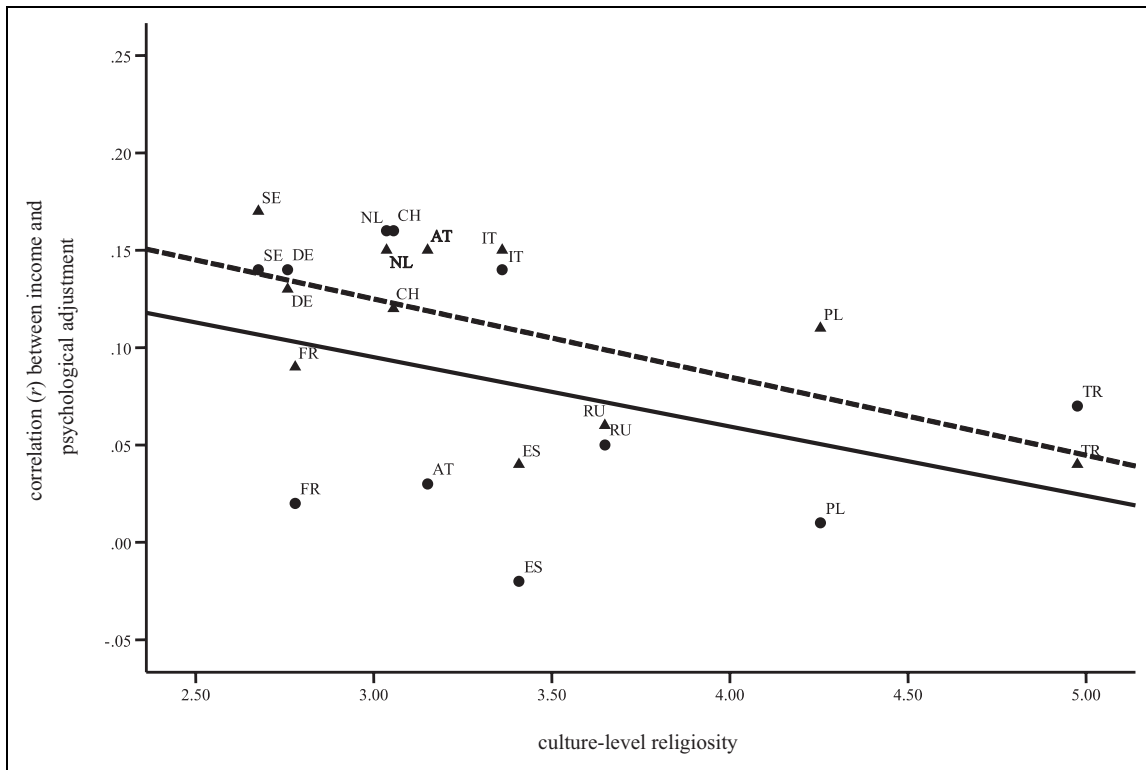


Figure 1. Zero-order correlation between income and psychological adjustment within each culture. AT = Austria; CH = Switzerland; ES = Spain; FR = France; DE = Germany; IT = Italy; NL = the Netherlands; PO = Poland; RU = Russia; SE = Sweden; TR = Turkey.
 Note. = income –psychological adjustment relation among high religiosity individuals within a given culture, including their best fitting regression line over all cultures (solid line); = income –psychological adjustment relation among low religiosity individuals within a given culture, including their best fitting regression line over all cultures (dashed line). High religiosity individuals were defined as individuals who on average scored 1 SD (tolerance:+0.25 SD) above the mean of their culture’s religiosity, low religiosity individuals were defined as individuals who on average scored 1 SD (tolerance:+0.25 SD) below the mean of their culture’s religiosity.

Table 2. Psychological Adjustment Model ($dfs = 170,562$).

| | <i>b</i> | <i>SE</i> | <i>t</i> | <i>p</i> |
|---|----------|-----------|----------|-----------|
| Main effect income | .13 | .003 | 41.41 | <.001 |
| Main effect individual-level religiosity | .09 | .002 | 37.02 | <.001 |
| Income × Individual-Level Religiosity | −.05 | .003 | −16.40 | <.001 |
| Income × Culture-Level Religiosity | −.02 | .004 | −4.49 | <.001 |
| Income × Individual-Level Religiosity × Culture-Level Religiosity | −.01 | .002 | −2.00 | <i>ns</i> |

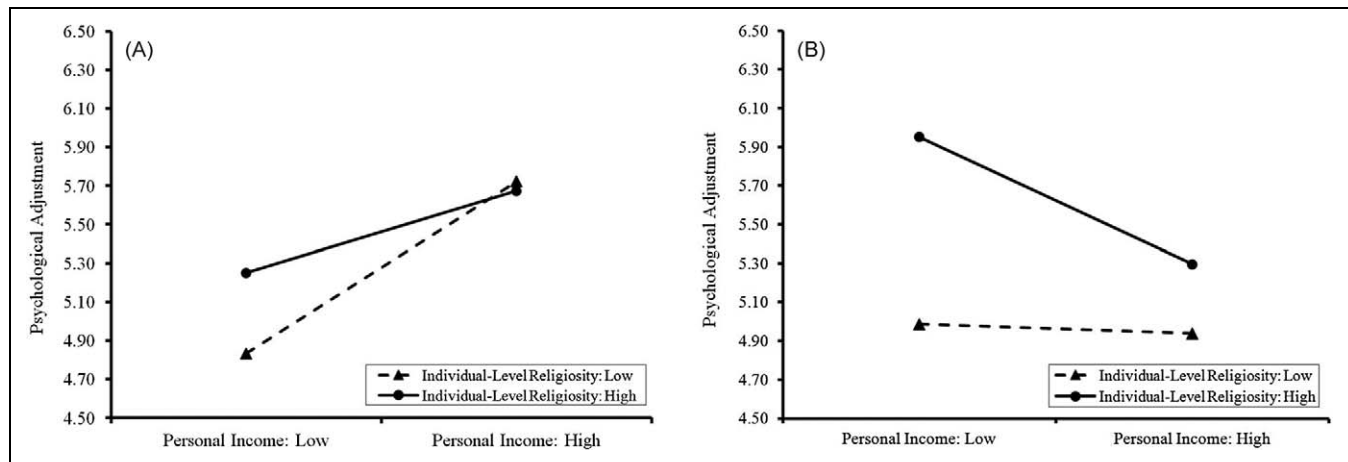


Figure 2. (A) The moderating effect of individual-level religiosity on the relation between income and psychological adjustment within the lower half cultures in culture-level religiosity. (B) The moderating effect of individual-level religiosity on the relation between income and psychological adjustment within the upper-half cultures in culture-level religiosity.

Effects on Psychological Adjustment

In a first model (Figure 1), we predicted psychological adjustment with income, individual-level religiosity, Income × Individual-Level Religiosity, Income × Culture-Level Religiosity, and Income × Individual-Level Religiosity × Culture-Level Religiosity. Table 2 displays the results. A significant income main effect indicated that higher income predicted better psychological adjustment. Importantly, a significant Income × Individual-Level Religiosity interaction specified that this effect was reduced among religious individuals. Independently, a significant Income × Culture-Level Religiosity cross-level interaction specified that the effect of income on psychological adjustment was also reduced within religious cultures. The Income × Individual-Level Religiosity × Culture-Level Religiosity interaction did not reach significance (at $p < .001$). The relation between higher income and psychological adjustment was attenuated among religious individuals and within religious cultures.

Religiosity as Poverty Buffer and Religiosity as Antiwealth Norms

We drew on two accounts why religiosity may diminish the relation between higher income and psychological adjustment. First, higher religiosity buffers low-income's detriments

(religiosity as poverty buffer). Second, higher religiosity entails stronger antiwealth norms, resulting in decrease of high-income's benefits (religiosity as antiwealth norms). Complementing Figure 1, Figure 2A and 2B speak to these accounts, and we proceed to interpret the relevant patterns. For ease of exposition, we refer to high-religiosity/high-income participants as "richer believers," to high-religiosity/low-income participants as "poorer believers," to low-religiosity/high-income participants as "richer nonbelievers," and to low-religiosity/low-income participants as "poorer nonbelievers."

Figure 2A portrays the moderating effect of individual-level religiosity on the relation between income and psychological adjustment within the lower half cultures in culture-level religiosity (Sweden, Germany, France, the Netherlands, Switzerland; $N = 81,614$). The religiosity as poverty buffer account would explain this pattern as follows. Richer nonbelievers evinced better psychological adjustment than poorer nonbelievers, $b = .22$, standard error [SE] = .01, $t(74,316) = 24.53$, $p < .001$ (simple comparison test; Aiken & West, 1991), likely because higher income confers psychological benefits in the absence of religious antiwealth norms (Diener et al., 2010). Critically, poorer believers evinced better psychological adjustment than poorer nonbelievers, $b = .11$, $SE = .01$, $t(74,316) = 9.65$, $p < .001$, likely because religiosity buffers low-income's harms. The account, though, runs into subsequent trouble: richer believers were not any better adjusted than richer nonbelievers,

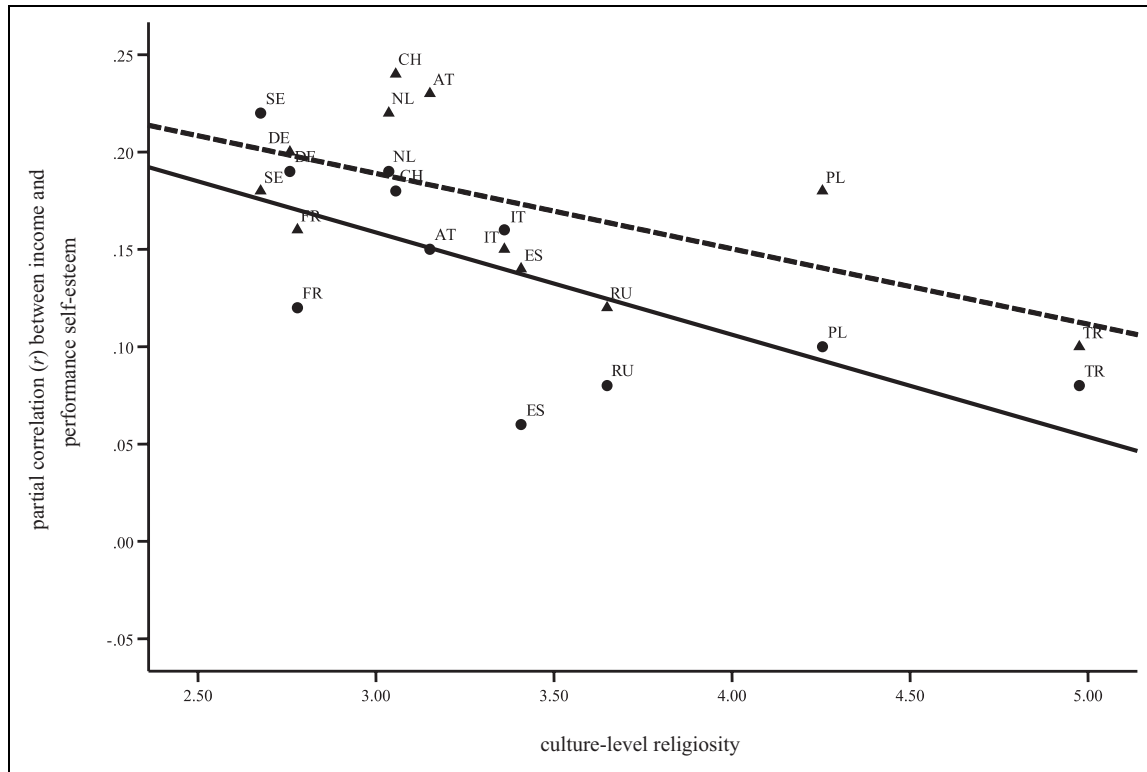


Figure 3. Partial correlation between income and performance self-esteem within each culture (social and appearance self-esteem controlled). AT = Austria; CH = Switzerland; ES = Spain; FR = France; DE = Germany; IT = Italy; NL = the Netherlands; PO = Poland; RU = Russia; SE = Sweden; TR = Turkey.

Note. ● = income—performance self-esteem relation among high religiosity individuals within a given culture, including their best fitting regression line over all cultures (—); ▲ = income—performance self-esteem relation among low religiosity individuals within a given culture, including their best fitting regression line over all cultures (---). High religiosity individuals were defined as individuals who on average scored 1 SD (tolerance: ± 0.25 SD) above the mean of their culture's religiosity, low religiosity individuals were defined as individuals who on average scored 1 SD (tolerance: ± 0.25 SD) below the mean of their culture's religiosity.

$b = -.01$, $SE = .01$, $t(74,316) = -1.54$, $p = .12$, albeit religiosity confers modest psychological benefits in the relevant cultures (Diener et al., 2011; Gebauer, Sedikides, & Neberich 2012). Thus, this account would need to evoke additional processes for explicating why religiosity confers no psychological benefits among high-income individuals. In contrast, the religiosity as antiwealth norms account can fully explain Figure 2A without the need to summon additional processes. Richer nonbelievers evinced better psychological adjustment than poorer nonbelievers, likely because higher income bestows psychological benefits in the absence of religious antiwealth norms. Poorer believers evinced better psychological adjustment than poorer nonbelievers, likely because religiosity bestows psychological benefits. Critically, richer believers did not evince better psychological adjustment than richer nonbelievers, likely because religious individuals' antiwealth norms lessen the psychological benefits of income.

Figure 2B portrays the moderating effect of individual-level religiosity on the relation between income and psychological adjustment within the upper half cultures in culture-level religiosity (Italy, Spain, Russia, Poland, Turkey; $N = 88,920$). The religiosity as poverty buffer account would explain the

pattern as follows. Poorer nonbelievers did not evince worse psychological adjustment than richer nonbelievers, $b = -.01$, $SE = .01$, $t(80,537) = -1.43$, $p = .15$, likely because culture-level religiosity buffers low-income's harms, and this should be the case even among low-religiosity individuals. Further, poorer believers evinced better psychological adjustment than poorer nonbelievers, $b = .24$, $SE = .01$, $t(80,537) = 43.36$, $p < .001$, likely because religiosity confers psychological benefits particularly in religious cultures (Diener et al., 2011; Gebauer, Sedikides, & Neberich., 2012). Critically, because richer and poorer nonbelievers were already equally well adjusted, the account would anticipate that richer and poorer believers also be equally well adjusted. However, richer believers were worse adjusted than poorer ones, $b = -.17$, $SE = .01$, $t(80,537) = -32.28$, $p < .001$. This account, then, would need to rely on additional assumptions or processes. In contrast, the religiosity as antiwealth norms account can fully explain Figure 2B. Richer nonbelievers did not manifest better psychological adjustment than poorer nonbelievers, likely because antiwealth norms in religious cultures reduce income's psychological benefits, and this may be the case even for low-religiosity individuals. Poorer believers manifested better psychological adjustment than poorer nonbelievers, likely

Table 3. Self-Esteem Models ($dfs = 170,560$).

| | <i>b</i> | <i>SE</i> | <i>t</i> | <i>p</i> |
|---|----------|-----------|----------|-----------|
| Criterion: performance self-esteem | | | | |
| Main effect income | .23 | .003 | 70.12 | <.001 |
| Main effect individual-level religiosity | .04 | .003 | 16.68 | <.001 |
| Income × Individual-Level Religiosity | -.04 | .003 | -11.88 | <.001 |
| Income × Culture-Level Religiosity | -.05 | .005 | -9.94 | <.001 |
| Income × Individual-Level Religiosity × Culture-Level Religiosity | .03 | .003 | 11.08 | <.001 |
| Criterion: social self-esteem | | | | |
| Main effect income | -.03 | .004 | -6.93 | <.001 |
| Main effect individual-level religiosity | .04 | .003 | 13.88 | <.001 |
| Income × Individual-Level Religiosity | .01 | .003 | 2.02 | <i>ns</i> |
| Income × Culture-Level Religiosity | .03 | .005 | 6.10 | <.001 |
| Income × Individual-Level Religiosity × Culture-Level Religiosity | -.02 | .003 | -6.52 | <.001 |
| Criterion: appearance self-esteem | | | | |
| Main effect income | .06 | .004 | 16.97 | <.001 |
| Main effect individual-level religiosity | .08 | .003 | 27.26 | <.001 |
| Income × Individual-Level Religiosity | -.01 | .003 | -2.96 | <i>ns</i> |
| Income × Culture-Level Religiosity | .01 | .005 | 1.20 | <i>ns</i> |
| Income × Individual-Level Religiosity × Culture-Level Religiosity | .02 | .003 | 5.72 | <.001 |

because religiosity confers psychological benefits particularly in religious cultures. Critically, richer believers manifested worse psychological adjustment than poorer ones, likely because of religious individuals' antiwealth norms. Together, the law of parsimony favors the religious antiwealth norms account over the religiosity as poverty buffer account.

Effects on Performance, Social, and Appearance Self-Esteem

We wondered whether the effects on psychological adjustment replicate with performance (but not social or appearance) self-esteem as the criterion. In three consecutive models, we predicted each self-esteem domain involving the same predictors as in the above psychological adjustment model, while controlling for the other two self-esteem domains. Results of the performance self-esteem model fully replicated those of the psychological adjustment model (Table 3). The exception was a three-way interaction, which, however, did not alter the overall results pattern (Figure 3). Performance self-esteem, then, was functionally identical to psychological adjustment in its relation with income, individual-level religiosity, culture-level religiosity, and their interactions. Hence, in line with theory and research, performance self-esteem is a promising processing candidate for clarifying the effects of income on psychological adjustment.

In contrast, results of the social and appearance self-esteem models did not replicate those of the psychological adjustment model. First, higher income predicted somewhat lower social self-esteem, and this small negative effect was driven by individuals from religious cultures. Individual-level religiosity did not moderate income's negative effect on social self-esteem. Thus, social self-esteem is an unsuitable process variable in our model (Baron & Kenny, 1986). Second, higher income predicted somewhat higher appearance self-esteem, but this effect was moderated by neither individual-level religiosity nor

culture-level religiosity. Appearance self-esteem is also an unsuitable process variable in our model.³

Does Performance Self-Esteem Mediate the Income–Psychological Adjustment Link?

A precondition for mediation analyses is that the three relevant measures assess distinct psychological constructs. Therefore, we tested for the distinctiveness of the constructs underlying measures of performance self-esteem and psychological health. We began by examining the correlation between performance self-esteem and psychological health. We controlled for social and appearance self-esteem, because our planned mediation analyses also controlled for these variables. Supporting the distinctiveness of performance self-esteem and psychological adjustment, their relation was moderate across cultures, $.25 \leq r \leq .37$, $ps < .001$ (mean $r = .33$). Next, we conducted a multigroup confirmatory factor analysis comparing models with two correlated latent variables and a single latent variable. In the two-factor model, the four performance self-esteem items served as indicators for one latent variable, and the 10 psychological adjustment items served as indicators for the other latent variable. In the single-factor model, all 14 items were indicators of the single latent variable. Comparison of fit indices revealed that the two-factor model fit the data sufficiently well, comparative fit index (CFI) = .90, RMSEA = .02, standardized root mean residual (SRMR) = .05, whereas the single-factor model did not fit the data well, CFI = .82, RMSEA = .03, SRMR = .07. Evidently, the performance self-esteem and psychological adjustment measures assess distinct constructs.

Subsequently, we examined whether performance self-esteem mediated the effect of income on psychological adjustment while controlling for social and appearance self-esteem. We ignored the role of religiosity, because our prior results showed that

individual-level and culture-level religiosity exerted parallel moderating effects on the relations between income and psychological adjustment and between income and performance self-esteem.⁴ We obtained a significant indirect path from income via performance self-esteem on psychological adjustment, $z = 63.59$, $SE = .001$, $p < .001$ (Sobel, 1982). Performance self-esteem explained 100% of the variance regarding the effect of income on psychological adjustment (Baron & Kenny, 1986). Finally, we tested the alternative mediation model in which psychological adjustment mediates the effect of income on performance self-esteem. Due to the large sample, we obtained a significant indirect path from income via psychological adjustment on performance self-esteem, $z = 13.51$, $SE = .001$, $p < .001$, but this path was weak: psychological adjustment only explained 6% of the effect of income on performance self-esteem. Together, it appears that high income contributes to higher performance self-esteem, which in turn promotes psychological adjustment.

Discussion

The benefits of income on psychological adjustment and performance self-esteem were modest, replicating past research. Importantly, the benefits of income were reduced among religious individuals. Independent of individual-level religiosity, these benefits were also attenuated in religious cultures. Finally, performance (but not social or appearance) self-esteem emerged as a process variable driving the effects of income on psychological adjustment.

The findings highlight the explanatory potential of religiosity for the psychological benefits of income. They illustrate that individual-level and culture-level religiosity can independently influence income's benefits on psychological adjustment and performance self-esteem. These independent effects were so pervasive that religious people in religious cultures reported higher psychological adjustment when their income was low than high (Figure 2B).

Our findings help to address an enduring paradox pertaining to cross-cultural differences in psychological benefits of income. Veenhoven (1991) hypothesized that income is most beneficial when money is necessary to satisfy basic needs. He examined the relation between income and happiness across 22 countries (World Database of Happiness) and found stronger psychological benefits in countries with low (e.g., Dominican Republic, Nigeria, India) than high (e.g., United States, Australia, West Germany) gross domestic products (GDPs) per capita. To their surprise, Diener et al. (2010) did not obtain the same pattern with the Gallup World Poll sample, which is a representative sample of planet Earth. Despite the theoretical appeal of Veenhoven's (1991) hypothesis, the 132 country-strong Gallup World Poll revealed stronger psychological benefits of income in wealthier countries. Given that higher culture-level religiosity is strongly related to lower culture-level wealth (Diener et al., 2011), Diener et al.'s (2010) puzzling findings may be explained by our results that

culture-level religiosity decreases the psychological benefits of income.

We wondered about the causal direction between income and psychological adjustment. As all other large-scale, cross-cultural data sets on income and psychological adjustment (Diener et al., 2010; Kahneman & Deaton, 2010), our data are cross-sectional, allowing no causal conclusions. However, smaller scale studies have tested for causality and found that higher income predicted better psychological adjustment but not vice versa (Diener & Oishi, 2000). Nonetheless, future research should consider longitudinal replication of our results. It should also consider replication with non-online-dating samples. Although our sample was diverse in age, culture, and income, it comprised singles at an online-dating platform. Yet this limitation may entail advantages. The Gallup World Poll assesses household income but does not permit adjusting for household size (Diener et al., 2010). Our results complement (and back) key findings from the Gallup World Poll by capitalizing on personal income among singles.

We also wondered whether our results are generalizable to all religious denominations. This hinges on whether antiwealth norms are common to religious denominations. Such norms are prominent in the five world religions (Buddhism, Christianity, Hinduism, Islam, and Judaism; Diener et al., 2011; Schwartz & Huisman, 1995). Given that world religions shape a country's culture-level religiosity, our culture-level findings should generalize to non-European cultures. At the individual level, however, there may be boundaries to generalizability. Some denominations (or religious sectors within world religions) may not advocate antiwealth norms. If so, our individual-level results may not replicate among individuals from such faiths.

The findings encourage speculation about real-life implications. Psychological adjustment and self-esteem have motivational potential (Ryan & Deci, 2001; Sedikides & Gregg, 2008). A stronger link between income and these motivational forces should nurture more persistent strivings for financial success. Consequently, as long as religiosity fosters antiwealth norms, it may undermine financial strivings and success both at the individual and culture level. This may be a mixed blessing: religiosity may curb ever-needed economic growth but may also thwart individuals and cultures from making risky financial decisions.

Coda

Much research has focused on the psychological benefits of income. We examined the moderating effects of individual- and culture-level religiosity. World religions embrace antiwealth norms in comforting the poor, and this should weaken the relation between higher income and psychological adjustment among religious individuals and in religious cultures. Results across 187,957 persons from 11 cultures supported these ideas. If religiosity continues to decline in many cultures, the psychological benefits of income may keep on growing. This trend would invite a fuller understanding of the psychological and cultural sources underlying such benefits.

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Notes

1. In Russia, there was the response option "I do not want to respond." A total of 314 respondents (1.6%) choose it and were excluded from further analyses.
2. Albeit respondents may not actively earn money, they have some income (e.g., student stipends, financial support). After all, online-dating requires regular internet access, which is a wealth indicator (Diener et al., 2010).
3. We re-ran the same model controlling for two culture-level covariates: the 2011 World Bank GINI index (a measure of culture-level income inequality) and culture-level average income. We added both covariates to the model in the same way as culture-level religiosity. Despite these conservative controls, result patterns remained largely unchanged. We obtained a main effect of income on psychological adjustment, $b = .13$, $SE = .003$, $t(170,556) = 40.37$, $p < .001$, which was qualified by an interaction with individual-level religiosity, $b = -.04$, $SE = .003$, $t(170,556) = -13.69$, $p < .001$, and by a somewhat reduced interaction with culture-level religiosity, $b = -.02$, $SE = .01$, $t(170,556) = -2.31$, $p = .02$. Further, the income main effect was qualified neither by the GINI index, $b = .0006$, $SE = .0009$, $t(170,556) = .69$, $p = .49$ nor by culture-level average income, $b = -.01$, $SE = .02$, $t(170,556) = -.64$, $p = .52$. Thus, the covariates cannot explain our results. Further, considering these covariates' strong relation to culture-level religiosity (Diener et al., 2011) and the relatively small number of cultures in our data set ($N = 11$), it is remarkable that our cross-level interaction with culture-level religiosity remained largely intact ($p = .02$). That is, although this cross-level interaction's p value dropped below the set significance level ($p = .001$), change due to the conservative covariates was small; by comparison, the cross-level interactions with the covariates fell far from significance ($ps \geq .48$).
4. In line with this reasoning, controlling for individual-level and culture-level religiosity in the mediation analyses did not change the results pattern.

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