

Higher Income Is Associated With Less Daily Sadness but not More Daily Happiness

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Abstract

Although extensive previous research has explored the relationship between income and happiness, no large-scale research has ever examined the relationship between income and sadness. Yet, happiness and sadness are distinct emotional states, rather than diametric opposites, and past research points to the possibility that wealth may have a greater impact on sadness than happiness. Using data from a diverse cross section of the U.S. population ($N = 12,291$), we show that higher income is associated with experiencing less daily sadness, but has no bearing on daily happiness. This pattern of findings could not be explained by relevant demographics, stress, and people's daily time use. Although causality cannot be inferred from this correlational data set, the present findings point to the possibility that money may be a more effective tool for reducing sadness than enhancing happiness.

Keywords

income, subjective well-being, happiness, sadness, ATUS

Steve and Mark are both middle-aged married men with two kids, but Mark makes twice as much money as Steve. Is Mark likely to be any happier than Steve? Most research relevant to the above question has explored the relationship between individuals' incomes and their global evaluations of life (Deaton, 2008; Diener & Biswas-Diener, 2002; Sacks, Stevenson, & Wolfers, 2012). Recently, however, researchers have also begun to examine the relationship between income and emotional well-being. Taken together, this work shows that income is more strongly related to global life evaluations than to emotional well-being (Diener, Ng, Harter, & Arora, 2010; Kahneman & Deaton, 2010), suggesting that Mark may experience higher overall life satisfaction than Steve, but the two men may not differ substantially in terms of their daily happiness. In the present research, we delve deeper into the relationship between income and emotional well-being by examining whether income relates differently to feelings of daily happiness versus sadness.

Measuring Emotional Well-Being in National Surveys

In order to precisely estimate the relationship between income and well-being, researchers have typically used data from large national samples (e.g., Diener & Biswas-Diener, 2002; Sacks et al., 2012). At the same time, reliably establishing the magnitude of the relationship between income and specific emotions such as happiness and sadness necessitates the use of precise measurements of emotional experience. Thus, the best way to estimate the relationship between income and

happiness versus sadness is to use fine-grained measures of those emotions in a large national sample. Most existing research on income and emotional well-being, however, has used either fine-grained measures of emotional experience or large samples, but not both. On one hand, the Gallup World Poll (GWP; Diener et al., 2010; Kahneman & Deaton, 2010) and the World Values Survey (WVS; e.g., Suh, Diener, Oishi, & Triandis, 1998) have measured emotional well-being in large national samples, but the measures of emotional well-being used in those surveys are somewhat limited. Specifically, emotional well-being is assessed using dichotomous measures that ask participants to report whether or not they felt various emotions at all during the preceding day (GWP; e.g., Kahneman & Deaton, 2010) or past few weeks (WVS; e.g., Suh et al., 1998). On the other hand, surveys using the current gold standard for assessing emotional well-being—the Experience Sampling Method (ESM)—have used small samples due to the costs and time associated with administering this method. Specifically, to provide precise measurements of emotional experience, the ESM requires that people rate their feelings on continuous scales multiple times a day.

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To provide a cheaper and quicker alternative to experience sampling, researchers have developed the Day Reconstruction Method (DRM; Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). In the DRM, people reconstruct their previous day, episode by episode, and report how they felt during those episodes. Thus, unlike other retrospective measures used in the GWP and the WVS, the DRM meets current recommendations for measuring emotional well-being reconstructively by assessing feelings in direct reference to actual experience (Kahneman & Krueger, 2006). To allow the use of the DRM in large national surveys, researchers recently streamlined this method to be administered in over-the-phone surveys (Krueger, Kahneman, Schkade, Schwarz, & Stone, 2009). This streamlined version of the DRM was used in the 2010 wave of the American Time Use Survey (ATUS), thus allowing the exploration of the relationship between income and emotional well-being in a large cross section of the U.S. population. In the present research, we use data from the ATUS in order to examine whether income is related differently to happiness versus sadness.

Income and Emotional Well-Being

Contrary to popular belief, happiness and sadness are not diametric opposites of each other. Indeed, theorists have argued that sadness and happiness are related but distinct emotional states, each characterized by a distinct pattern of features (e.g., expression, physiology, and antecedent events; Ekman, 1992). More generally, previous research has shown that positive and negative affect are related but independent components of subjective experience (e.g., Watson, Clark, & Tellegen, 1988). Particularly relevant to the present research are previous findings showing that positive versus negative components of emotional experience have different relationships to various demographics other than income. Age and education, for example, are stronger predictors of negative affect than positive affect (Crawford & Henry, 2004; Mroczek & Kolarz, 1998). In short, because happiness is not simply the absence of sadness, or vice versa, income may have a different relationship to each of those emotions.

Some evidence suggests that the amount of money people earn may have little bearing on how happy people feel on an average day. Using ESM in a convenience sample of 340 U.S. workers, Kahneman, Krueger, Schkade, Schwarz, and Stone (2006) found no relationship between income and moment-to-moment happiness. Similarly, using the DRM in a sample of 740 women in Columbus, Ohio, the same researchers found a weak and nonsignificant relationship between income and daily happiness. Other studies using similar fine-grained measurements of emotional well-being have suggested, however, that income does predict daily emotional experience when negative feelings are also taken into consideration. In the Princeton Affect and Time Survey (PATS; Krueger et al., 2009), researchers found that as compared to people with lower income, people with higher income spent less of their time in an emotional state in which the average of their feelings of

sadness, pain, and stress exceeded their feelings of happiness (Krueger et al., 2009). Taken together, this pattern of findings suggests that while income may have little bearing on happiness, income may be related to experiencing less daily negative emotions such as sadness.

Why might the size of people's paycheck matter more for lowering sadness than for increasing happiness? Part of the answer may lie in how wealth shapes people's appraisals of the negative events in their lives. Specifically, to the extent that having more money provides more options for dealing with adversity, wealthier people may feel a greater sense of control than poorer people when difficult situations arise. Coming home to discover a leak in the roof, for example, may be an annoying, but easily resolved stressor for a well-off individual; in contrast, someone who could not afford to have the problem fixed right away might be plagued by this problem for months. The greater difficulty in dealing with such misfortunes may make poor people feel a lack of control over the vicissitudes of life, with greater consequences for sadness than for happiness. Research has indeed shown that poorer individuals feel less control over their environment than richer individuals (Johnson & Krueger, 2006; Kraus, Piff, & Keltner, 2009), and both theory and research suggest that lower sense of perceived control over negative events elicits greater sadness (Bandura, 1977; Frijda, 1986; Lazarus, 1991; Roseman, Antonious, & Jose, 1996; Scherer, 1988). In contrast, greater perceived control over negative events has no bearing on feelings of joy—a conceptually similar state to happiness (Roseman et al., 1996). Thus, to the extent that greater wealth predicts greater perceived control over life's misfortunes, wealth should have a stronger effect on sadness than on happiness. Surprisingly, no large-scale study using fine-grained measures of daily well-being has ever directly examined whether richer people tend to feel less sad than their poorer counterparts.

The Present Research

To examine the unique relationships of income to happiness and sadness, we analyze data from the 2010 wave of the ATUS. The survey utilized a streamlined version of the DRM (Krueger et al., 2009) to allow the measurement of daily happiness and sadness over the phone in a large cross section of the U.S. population ($N = 12,291$). This data set enabled us to explore the relationship between income to happiness versus sadness with the best available measures of daily well-being in a large-scale national survey.

Method

Participants

We analyzed data from a large cross section of the U.S. population from the 2010 wave of the ATUS (Hofferth, Flood, & Sobek, 2013). The U.S. Census Bureau conducts the ATUS by first selecting a large and diverse set of U.S. households, which approximates a nationally representative sample (full information about the methodology of the ATUS, including

sampling strategy, is available at <http://www.bls.gov/tus/home.htm>). Next, households with Hispanic and Black members, as well as households with children, are oversampled in order to improve estimates for those groups. For each household, a designated person aged 15 or older is selected randomly to participate. Of a total of 13,260 respondents in the 2010 wave, 969 provided no data on household income and/or all of the well-being measures; thus, our final sample size consisted of 12,291 respondents.¹

Procedure and Measures

Household income was measured on a 1 (*Less than \$5,000*) to 16 (*More than \$150,000*) scale.² Two to five months later, participants were asked detailed questions about a day in their lives. As in the original DRM developed by Kahneman, Krueger, Schkade, Schwarz, and Stone (2004), respondents were asked to reconstruct what they did on the previous day, episode by episode. Overall, 50% of respondents were assigned to reconstruct a weekend day (25% for Saturdays and Sundays), and the other 50% to reconstruct a weekday (10% for each weekday); this allows estimates to be equally influenced by people's experiences on weekends and weekdays. Respondents reconstructed all activities from 4 a.m. on the previous day to 4 a.m. on the day of the interview, which took place over the phone. Respondents described what they were doing in their own words, and these descriptions were later coded by at least two independent coders into one of a wide range of activity categories. To simplify our presentation of the results, in this article we organized the activity codes into 1 of the 13 different activities based on a list of common daily activities used in the original DRM (Kahneman et al., 2004).³

After reconstructing their day, participants were asked to rate how happy and sad they felt (0 = *not at all* and 6 = *very*) during each of three randomly selected activities⁴ that had occurred during their day; other dimensions of subjective experience such as stress, pain and fatigue were also measured, but are beyond the scope of the current investigation. Because our main goal was to examine the relationship between income and each emotion at the person level, we calculated each participant's average score for each well-being measure, across the three activities.

Results

We found that wealthier individuals reported feeling less sad, $r = -.15$, $p < .001$, 95% confidence intervals (CIs) $[-.16, -.13]$ but no more or less happy, $r = .00$, *ns*, 95% CI $[-.02, .02]$ than poorer individuals. These results show that the relationship between income and daily sadness is about as strong as the well-established relationship between income and life satisfaction (e.g., $r = .13$ in Diener & Oishi, 2000; for a review, see Diener & Biswas-Diener, 2002). In contrast, income had no bearing on people's daily happiness. The difference in the relationships between income to happiness versus sadness is particularly striking, given that happiness and sadness were

measured during the same activities and were negatively correlated ($r = -.34$, $p < .001$).

We found no evidence for a linear relationship between income and happiness, but could this relationship be characterized by a curvilinear function? Income may, for example, be related to greater happiness for poorer people, who may need more money to meet their basic needs, but have no effect on the happiness of richer people. To explore this possibility, we predicted happiness from income and the square of income. Despite our large sample size, we found that the square of income was not significantly related to happiness ($\beta = -.07$, $p = .09$) and accounted for only .02% of the variance in happiness. Thus, we find little evidence for a curvilinear relationship between income and happiness. The curvilinear relationship between income and sadness was also nonsignificant ($\beta = .02$, $p = .59$), with only .002% of the variance in sadness accounted for by the squared income term. In short, while income was linearly related to sadness, income was not meaningfully related to happiness either linearly or curvilinearly.

Alternative Explanations

Demographics. To consider possible alternative explanations for the observed relationships between income and happiness versus sadness, we ran additional regression analyses controlling for a range of core demographics. We found that the overall pattern of relationships between income and these emotions could not be reduced to the effects of age, sex, marital and employment status, education, ethnicity,⁵ and presence of a child under 18 in the household (see Table 1). Specifically, the relationship between income and happiness remained statistically nonsignificant, whereas the relationship between income and sadness remained significant, with its effect size remaining in the range of small effects (Cohen, 1998, 1992). These findings are consistent with previous research on income and well-being, which shows that controlling for other demographics leaves a small but significant direct relationship between income and life satisfaction (Marks & Fleming, 1999; Tomes, 1986; for a review, see Diener & Biswas-Diener, 2002). In short, even after controlling for a large set of other demographics, we find a small but robust direct relationship between income and sadness, but no relationship between income and happiness.

Stress. Another reason why poorer people experience greater sadness may be that having low income makes people feel more stressed. To be sure, the relationship between low income and elevated stress has received a great deal of empirical support (for a review, see Shea, 2014). Could this already established effect of low income on stress account for the relationship between income and sadness that we observed? Although stress was strongly related to sadness ($r = .59$, $p < .001$) and modestly related to income ($r = -.04$, $p < .001$), regression analyses showed that the relationship between income and sadness remained largely unchanged after controlling for stress ($\beta = -.13$, $p < .001$). The relationship of income

Table 1. Regressions Analyses for Happiness and Sadness Predicted by Income and Controls.

	Happiness		Sadness	
	Without Controls	With Controls	Without Controls	With Controls
R^2	.00	.02	.02	.03
Income	.00	.01	-.15***	-.09***
Age		.06***		.06***
Sex		.04***		.02*
Married		.08***		-.02†
Education		-.05***		-.04***
Employed		.02*		-.03**
Child under 18		.03**		-.03*
Race: Black		.05***		.00
Ethnicity: Hispanic		.05***		.05***

Note. Numbers are standardized regression coefficients (betas). Sex: *male* = 1, *female* = 2; Married: *married* = 1, *not married* (i.e., being divorced, never married, or widowed) = 0; Employed: *employed* = 1, *unemployed* = 0; Children under 18 in household: *present* = 1, *not present* = 0; Race: *Black* = 1, *not Black* = 0; Ethnicity: *Hispanic* = 1, *not Hispanic* = 0; Education is measured in years of completed education. A detailed table with each demographic control added separately is available as an online supplementary material.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2. Activities Ranked by Relationship of Income to Activity Frequency.

Activity	Income–Frequency Relationship
Commuting	.17*** [.15, .18]
Work	.15*** [.13, .17]
Taking care of children	.12*** [.10, .13]
Shopping	.09*** [.08, .11]
Exercising/recreation	.09*** [.07, .10]
Eating/drinking	.08*** [.06, .10]
Socializing	.03** [.01, .04]
Housework	.00 [-.02, .02]
Relaxing	-.02*** [-.04, -.01]
On the phone (calls only)	-.04*** [-.06, -.02]
Preparing food/drink	-.04*** [-.05, -.02]
Religious	-.07*** [-.09, -.06]
Watching TV	-.10*** [-.12, -.08]

Note. Relationships are expressed as bivariate correlations. Numbers in brackets are 95% confidence intervals. Activities are ranked by their association to income.

* $p < .05$. ** $p < .01$. *** $p < .001$.

to sadness, therefore, could not be reduced to the already established effect of low income on stress. Controlling for stress also did not change the relationship between income and happiness ($\beta = -.01$, $p = .20$).

In sum, after accounting for a number of alternative explanations, we find consistent evidence that income is more relevant for predicting individuals' daily sadness than for predicting their daily happiness.

Effects of Daily Time Use

If the association between income and sadness could not be reduced to stress and relevant demographics, what, then, could explain the direct relationship between income and sadness? One possibility is that richer and poorer people differ in how they spend their time. People with less money, for example,

may spend more time engaging in activities that evoke sadness and less time in activities that reduce sadness. If this is the case, we should find that income predicts how often people engage in at least some daily activities. Consistent with this possibility, correlational analyses showed that wealthier and poorer people differed in how often they engaged in 12 of the 13 common daily activities (Table 2). Compared to wealthier people, poorer people reported, for example, spending less time exercising and engaging in recreational activities.

But, do these observed differences in daily time use account for the association of income to sadness? To address this question, we ran a regression analysis predicting sadness from income, while simultaneously controlling for how often people engaged in all 13 common daily activities. Contrary to the possibility that time use accounts for the relationship between income and sadness, we found that this relationship changed little after controlling for time use ($\beta = -.15$ with no controls vs. $\beta = -.13$ with controls). Controlling for time use also had no effect on the null relationship between income and happiness ($\beta = .00$, both with controls and no controls). Furthermore, controlling for time use after first accounting for eight demographic factors (shown in Table 1) had no effect on the relationships of income to either happiness ($\beta = .01$) or sadness ($\beta = -.09$). Of course, it is still possible that other activities not included in the ATUS, such as duration and quality of sleep (Lauderdale et al., 2006; Mezick et al., 2008), could at least partially explain why wealth predicts lower sadness, but not any more happiness. Overall, however, our analyses indicate that the associations of income to happiness and sadness have surprisingly little to do with how high- versus low-income individuals spend their time.

Activity-Specific Associations

Differences in time use could not account for the negative association between income and sadness, suggesting that poorer people may experience more sadness than wealthier people

Table 3. Income Predicting Well-Being Outcomes by Activity.

	N	Sadness	Happiness
All activities		-.15*** [-.16, -.13]	.00 [-.02, .02]
Individual activities			
Commuting/traveling	6,831	-.13*** [-.15, -.10]	.01 [-.02, .03]
Eating/drinking	5,184	-.16*** [-.19, -.14]	.02 [-.01, .05]
Watching TV	2,833	-.16*** [-.20, -.13]	.05* [.01, .09]
Preparing food/drink	2,723	-.14*** [-.18, -.10]	.01 [-.03, .05]
Work	2,168	-.08*** [-.12, -.04]	-.01 [-.06, .03]
Relaxing	1,982	-.11*** [-.15, -.06]	.02 [-.02, .07]
Taking care of children	1,548	-.09*** [-.14, -.04]	-.02 [-.07, .03]
Housework	1,499	-.12*** [-.17, -.07]	-.07* [-.12, -.02]
Shopping	1,414	-.08*** [-.14, -.03]	-.01 [-.07, .04]
Socializing	1,402	-.13*** [-.18, -.08]	-.01 [-.06, .05]
Exercising/recreation	577	-.10*** [-.18, -.02]	-.02 [-.10, .07]
Religious	417	-.11* [-.21, -.01]	.08 [-.02, .18]
On the phone (calls)	389	-.02 [-.12, .09]	-.08 [-.18, .02]

Note. Relationships are expressed as bivariate correlations. Numbers in brackets are 95% confidence intervals. Activities are ordered by number of participants who reported activity.

* $p < .05$. ** $p < .01$. *** $p < .001$.

regardless of what they are currently doing. If this is the case, poorer individuals should experience more sadness even while engaged in the same activities as their wealthier counterparts (e.g., commuting may be associated with more sadness for poorer individuals). Consistent with this possibility, higher income was associated with lower sadness during all thirteen daily activities (Table 3). In addition, mirroring the overall null relationship between income to happiness, income was not related to happiness within most daily activities (Table 3). Overall, this pattern of results suggests that poorer people feel sadder than wealthier people because income predicts greater sadness throughout the day regardless of what people are doing.

Discussion

Using the most sophisticated measures of emotional well-being in a large-scale survey of the American population, we found that wealthier individuals reported less sadness but no more happiness during their daily activities. Our findings showed that the relationship of income to sadness, but not to happiness, was about as strong as the well-established positive relationship between income and life satisfaction (Diener & Biswas-Diener, 2002). The associations of income to sadness and happiness could not be reduced to the effects of other relevant variables like stress and a wide range of demographics, including age, education, race, and employment status. In addition, in line with previous research (Krueger et al., 2009), these relationships could not be accounted for by differences between rich and poor people in their daily time use. Specifically, while richer people differed from poorer people in how frequently they engaged in various daily activities, controlling for these differences did not change the associations of income to happiness or to sadness. Furthermore, these associations were

remarkably consistent during diverse activities, from commuting to socializing.

If time use, stress, and demographic factors could not account for our findings, why does higher income predict lower sadness but no more happiness? This lack of evidence for a role of a wide range of probable explanations highlights the possibility that wealthier people feel less sad at least in part because wealth can make people feel more in control over negative events (Johnson & Krueger, 2006; Kraus et al., 2009). To the extent that perceived control is associated with feeling less sadness but not more happiness (Roseman et al., 1996), the association between wealth and perceived sense of control could at least partially explain why wealth predicted lower sadness but not higher happiness. Because the available data in the ATUS did not allow us to empirically examine the probable role of perceived sense of control, however, future research should explicitly examine whether this proposed theoretical mechanism can explain the link between wealth and lower sadness.

Still, given that sadness and happiness are negatively correlated, it might be surprising that we found no trace of a relationship between income and happiness. This finding, however, dovetails with recent theory and research showing that wealth may undermine people's ability to savor positive events, largely canceling out the happiness benefits of higher income. According to the *experience-stretching hypothesis* (Gilbert, 2006; Parducci, 1995; Quoidbach, Dunn, Petrides, & Mikolajczak, 2010), the abundant positive life experiences that wealth provides may actually dampen the emotional benefits people reap from more mundane daily pleasures. Consistent with this possibility, Quoidbach, Dunn, Petrides, and Mikolajczak (2010) found that wealthier individuals reported a lower proclivity to savor everyday positive events—and this detrimental effect of wealth on savoring partially counteracted the positive relationship between wealth and happiness (as measured by the Subjective Happiness Scale; Lyubomirsky & Lepper, 1999). In sum, despite the link between income and decreased sadness, higher income may provide little net benefit for happiness because wealth undermines savoring of positive emotional experiences.

Finally, given the correlational nature of our findings, it is also possible that the relationship between income and sadness may be due to negative effects of dispositional sadness on earning potential. In support of this reverse causal possibility, both theory and research suggest that sadness is associated with putting less effort into attaining desirable outcomes (Roseman 1994; Roseman et al., 1996). People who are predisposed to feel sad may, for example, be less likely to maintain the effort necessary to find a better paying job. In addition, recent experimental work has shown that when people are induced to feel sad, they make financial decisions that prioritize smaller monetary gains in the short term over larger monetary gains in the long term. As a consequence, these individuals earn less money as compared to people who are not induced to feel sad (Lerner, Li, & Weber, 2013). Notably, these two causal perspectives—that feeling sad leads to earning less and that earning less leads

to feeling sad—are not mutually exclusive and suggest a possible feedback loop: Sadness leads to earning less, which in turn results in greater sadness.

In conclusion, the present findings provide the first evidence that the emotional advantage of higher income may lie in buffering people against sadness rather than boosting happiness. Our findings could enrich future research and theory on income and well-being by underscoring the importance of considering the association of income to emotional outcomes other than happiness. More broadly, our research suggests the need for a revision to the age-old question of whether money buys happiness. Although causality cannot be inferred from correlational data, the present findings point to the possibility that money may be a more effective tool for reducing sadness than enhancing happiness.

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Notes

1. This sample remained substantively unchanged from the full American Time Use Survey (ATUS) sample in terms of a range of basic demographics, including median household income = \$40,000–\$49,999; median education = 13 years; mean age = 46.41; and 56.1% women.
2. Each point on the income scale represents an increasingly broader income category and therefore no log transformation was required.
3. The full list of activities used by Kahneman and colleagues consisted of 16 activities. However, the ATUS survey does not include well-being measures for two of those activities—napping/sleeping and intimate relations—and treats using a computer or being on email as a secondary activity. Thus, we only had 13 rather than 16 activity categories.
4. Due to a programming error by the U.S. Census Bureau, the last eligible activity of the respondent's day was excluded from the selection for the well-being questions. One of the most common activities people engaged at the end of the day was watching TV, and therefore episodes of watching TV are underrepresented (Bureau of Labor Statistics, 2014).
5. In order to provide accurate estimates for the two largest minorities in the United States, the ATUS oversamples Blacks and Hispanics. Thus, we report detailed statistics controlling for being Black or being Hispanic. Controlling for other minorities (e.g., Asian and Native American) also did not account for the observed relationships of income to happiness and sadness.

Supplemental Material

The online appendices are available at <http://spps.sagepub.com/supplemental>.

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