

**More Money, Less Intense Problems:
Financial Scarcity is Linked to Higher Distress Variability and Reduced Well-Being**

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Data and Code available under the following link: <https://osf.io/pjxfc/>

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Abstract

Prior research has found a relationship between income and affect, but its nature and form remain unclear. The current research provides an additional perspective on the varied findings from previous studies by shifting the focus away from *average* levels of affect, the predominant focus of prior research, to affect *variability*, i.e., an individual's fluctuations in affect over time. More specifically, we propose that (a) financial scarcity—i.e., low levels of income—is associated with greater affect *variability*, (b) that this relationship is specific to variability in *distress*, but not variability in other negative emotions or positive affect, and (c) that financial scarcity is related to the *intensity* of each distress episode, but not the *frequency* with which distress is experienced. We provide evidence for our hypotheses using two experience sampling studies—including a pre-registered replication—with 1,032 participants and 59,711 observations across two countries. Our analyses also reveal that perceived control statistically mediates the relationship between financial scarcity and distress variability, and that higher distress variability is subsequently associated with lower well-being. By shifting the focus from average affect to affect variability, the current research provides novel conceptual insights into the relationship between income and affect, and highlights an important use of money in the well-being of individuals: money may lessen the variability of distress by reducing the intensity of each distressing episode.

Keywords: income, distress, affect, well-being, happiness, variability

In a recent report published by the Federal Reserve, 25% of Americans reported experiencing financial hardship (Board of Governors of the Federal Reserve System, 2019). Being faced with financial scarcity can be challenging, as it is associated with a host of negative life outcomes, including higher morbidity (Lynch, Kaplan, & Shema, 2002; Smith, 1999), greater exposure to violence (Evans & English, 2002; Foster, Brooks-Gunn, & & Martin, 2007), and reduced life expectancy (Smith, Neaton, Wentworth, Stamler, & Stamler, 1996). Because these negative life outcomes should make people less happy, one would expect that income has a strong and robust relationship with affect.

However, while prior research generally agrees that income and affect are related, *how* and *why* income influences affect and well-being has been subject to widespread debate. Past studies have documented positive associations between income and subjective well-being (Stevenson & Wolfers, 2013), no correlation between income and happiness after a certain income level (Jebb, Tay, Diener, & Oishi, 2018; Kahneman & Deaton, 2010), and inverse associations between higher income and negative affect but no relationship with positive affect (Kushlev, Dunn, & Lucas, 2015). This heterogeneity in findings linking income and affect is reflected in Kahneman and colleagues (2006, p. 1908), who write that the “belief that high income is associated with good mood is widespread but mostly illusory.” As these varied findings highlight, research to date has provided conflicting accounts on how income and affect are related.

In the current research, we propose an additional theoretical and methodological perspective that brings the *variability* of affect into focus, in contrast to existing accounts which have primarily focused on *average* affect. That is, while prior research exploring the relationship between income and affect has primarily explored whether income is related to average levels of

affect, we here propose that the relationship between income and affect is also characterized by a temporal dimension that is captured by affect variability. More precisely, we suggest that individuals have needs and material desires which are often jeopardized by day-to-day events or hassles which low-income individuals cannot resolve with financial resources. Based on their unmet needs and desired, we propose, lower-income individuals will experience an increased variability in distress.

Given that frustrations are typically unforeseen and thus cannot be prevented (Almeida, 2005; Monat, Averill, & Lazarus, 1972), we further propose that this increased variability in distress for low-income individuals is likely driven by the increased *intensity* of each distressing episode rather than an increased *frequency* of distressing episodes (Schimmack & Diener, 1997). The financial resources available to high-income individuals may therefore only attenuate the intensity of each distressing episode but may not be related to the frequency with which individuals encounter distressing episodes.

As a result, while income and average levels of distress may be statistically related, our theory predicts that this relationship is driven by distress variability, such that income and average distress are no longer related when accounting for distress variability. That is, we suggest that low-income individuals do not necessarily experience higher baseline levels of distress on a day-to-day basis, but that they experience more intense spikes in distress. As a result, financial scarcity may be associated with higher average levels of distress, but this relationship, we propose, is driven by higher distress variability. The current research thus provides a novel conceptual perspective into the oft-debated relationship between income and affect by theoretically and methodologically focusing on affect variability.

To test our predictions, we conducted two experience-sampling studies measuring daily affect with 1,032 participants and 59,711 observations. Using this fine-grained data, we examined whether financial scarcity—i.e., an individual’s lack of financial resources—is related to the variability of distress that individuals experience, and whether the effects of variability are more important than those of average distress levels. We also tested whether the link between income and distress variability was driven by a higher intensity of each distressing episode, or by an increased frequency of distressing episodes. Furthermore, we explored one potential mediator of the relationship between financial scarcity and distress variability—perceived control—and whether this relationship subsequently predicted individuals’ subjective well-being (SWB). We subsequently outline our theory in more detail before discussing the two studies we conducted.

The Relationship Between Income and Affect

Several theories have been proposed to account for the relationship between income and affect, which have primarily focused on average levels of affect.¹ For example, one stream of research highlights that higher income allows individuals to better meet their needs, and thus income is positively associated with well-being; however, once individuals have met all their needs, higher income has a weaker effect on well-being (Veenhoven, 1991; Veenhoven & Ehrhardt, 1995). In support of this theory, one study finds a positive relationship between income and well-being, and this relationship was strongest for individuals with incomes below \$60,000 (Jebb et al., 2018). This perspective suggests that once individuals’ needs were met, income matters less for well-being.

¹ For the purposes of this research, we use the term “affect” to describe both emotions and moods. Affect can be broadly classified as positive or negative, but these are distinct dimensions; low positive affect does not necessarily correspond to high negative affect, and vice versa (Watson, Clark, & Tellegen, 1988). Discrete emotions can be mapped on to these dimensions; for example, distress, anger, and sadness are all related to negative affect, while joy, excitement, and happiness are related to positive affect.

A second perspective proposes that in addition to satisfying needs, individuals also use income to obtain things they desire, but not necessarily need (Diener & Oishi, 2000). In line with this theory, one study found a negative relationship between income and well-being (Graham & Pettinato, 2002), which may occur because people's material desires outpace their incomes. That is, even when people's incomes are objectively increasing, their desires may increase even more rapidly, leading to an overall decrease in well-being.

A third perspective suggests that relative income—not absolute income—is the key variable to understand how income and affect are related (Easterlin, 2003). From this viewpoint, individuals with objectively higher income experience reduced well-being if their peers are better-off than they are; on the other hand, individuals with objectively lower income experience increased well-being if they are relatively better-off than their peers. Consistent with this perspective, one study finds that relative income has a greater effect on happiness than absolute income (Ball & Chernova, 2008), a relationship that is stronger in areas with higher economic inequality where social comparisons are more frequent and detrimental to well-being (Cheung & Lucas, 2016). This perspective argues that what matters in the relationship between income and well-being is whether an individual's income is lower or higher relative to their peers.

Finally, a fourth perspective based on hedonic adaptation (also referred to as the “hedonic treadmill”) suggests that the relationship between income and affect only matters in the short-run (Brickman & Campbell, 1971; Frey & Stutzer, 2002). Specifically, this theory suggests that people only react to good and bad events briefly but quickly habituate to them, and subsequently return to their baseline level of affect. Hedonic adaptation therefore implies that changes in income will only temporarily increase or decrease individuals' affect and well-being, and that these changes will not persist over time. That is, this perspective suggests that income and well-

being are only weakly related because in the long-run, individuals become habituated to their environment no matter their income.

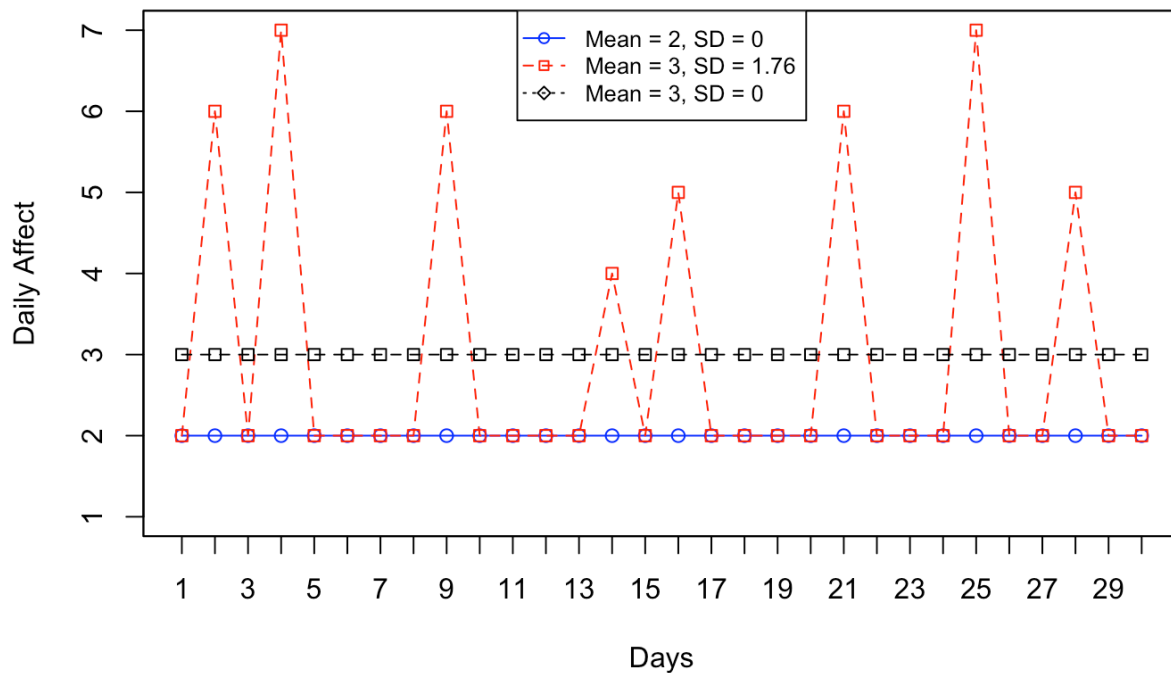
While these four theoretical perspectives have provided substantial advancement in our understanding of the association between income and affect, extant research presents empirical puzzles that prior theories only shed a partial light on. In the current research, we propose that one reason why prior research investigating the relationship between income and affect has been inconclusive is their restricted focus on average levels of affect (e.g., Kahneman & Deaton, 2010; Kushlev et al., 2015; Culbertson, Fullagar, & Mills, 2010; Eid & Diener, 1999), hampering our understanding of the potential link between income and affect variability.

Temporal Dimensions of Affect

Individuals who have lower levels of income often face financial scarcity, and thus lack the financial resources to resolve daily hassles compared to higher-income individuals who are in a position to use their income to overcome a variety of nuisances (Kushlev et al., 2015; Lachman & Weaver, 1998; Testa & Major, 2010; Thompson, Sobolew-Shubin, et al., 1993; Kraus, Piff, & Keltner, 2009). For example, consider how individuals with different financial resources may respond to their car breaking down, an unforeseen and rare occurrence likely to evoke distress. If an individual is financially secure, he or she has the ability to use their financial resources to get their car fixed quickly, and find suitable transportation substitutes (e.g., get a rental car or use taxis). Financially strained individuals, on the other hand, may not be able to afford the repairs right away, or may not be able to pay for substitute transportation. Thus, one's car breaking down would hit low-income individuals harder. However, we also expect that levels of distress will adapt over time and return to similar levels as someone with more financial resources. This example highlights why there could be mean differences in distress by income, but that this mean

difference is partly driven by greater distress variability (Arriaga & Schkeryantz, 2015; Bruehlman-Senecal & Ayduk, 2015; Teng & Chen, 2012).

This example illustrates an important distinction that has not been the focus of prior research exploring how income relates to affect: the temporal dimension of affect. That is, we focus here on affect *variability*, or fluctuations in individuals' emotional experience, typically operationalized as the standard deviation (*SD*) of within-person affect over time (Eid & Diener, 1999; Hepburn & Eysenck, 1989; Kuppens, Van Mechelen, Nezlek, Dossche, & Timmermans, 2007). While averages and variability of affect are commonly positively correlated, they also possess discriminant validity, such that two individuals may experience the same level of average affect but differ substantially in their affect variability (Fisher, Medaglia, & Jeronimus, 2018; Houben, Van Den Noortgate, & Kuppens, 2015; Jenkins, Hunter, Cross, Acevedo, & Pressman, 2018; Koval, Pe, Meers, & Kuppens, 2013; Timmermans, Van Mechelen, & Kuppens, 2010). Given the positive correlation between affect mean and variability, income may be statistically related to affect mean, but this relationship—we propose—is driven by the variability of affect, such that income is no longer related to average affect when controlling for affect variability (see Figure 1 for an illustrative depiction).

Figure 1**Same Average Affect but Different Affect Variability**

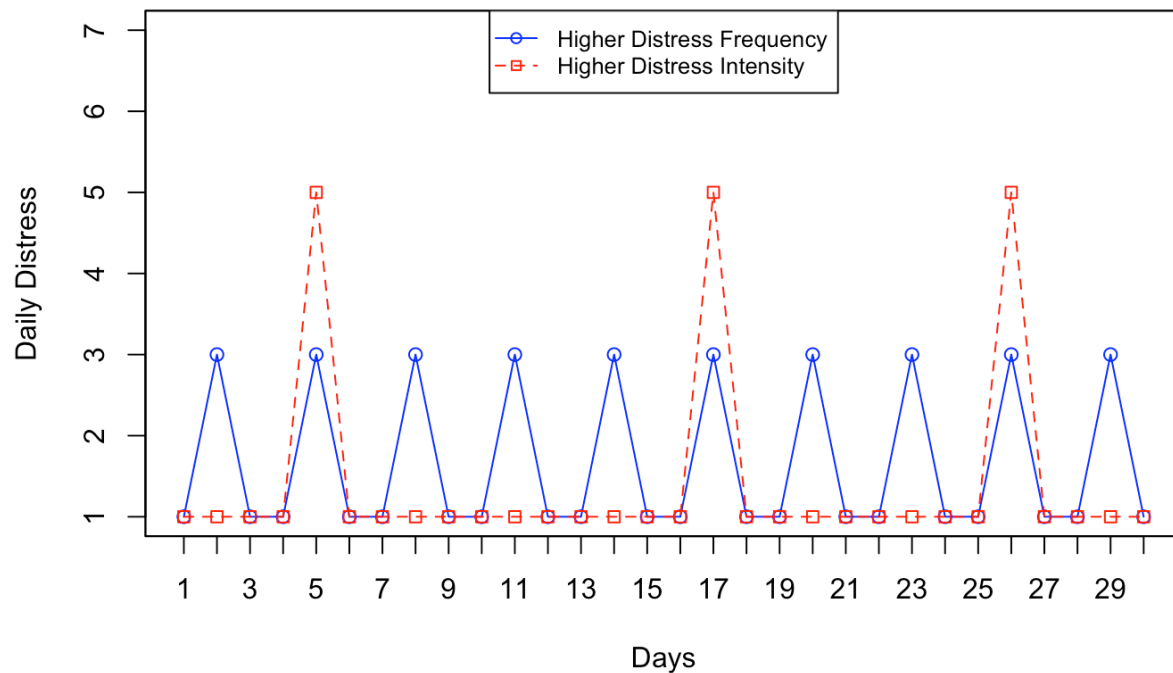
Note. Three simulated individuals reporting daily levels of affect over a 30-day time period. Blue line depicts a participant with low levels of affect, and black line depicts a participant with higher levels of affect. The red line depicts a participant with the same mean as the participant with the black line, but with higher affect variability.

The Relationship Between Financial Scarcity, Distress Variability, and Well-Being

We further propose that financial scarcity will be specifically related to an increased variability in distress, rather than variability in other (non-distress) negative emotions. This prediction is based on prior research which finds that unmet needs and desires—as they may arise when individuals are unable to use financial resources to resolve daily hassles—are particularly likely to prompt distress (Baumeister & Leary, 1995). In addition, financial scarcity has been linked with a diminished sense of control over daily stressors (Johnson & Krueger, 2006; Kraus et al., 2009), which is associated with increased distress, but not other negative emotions (Báñez, Blasco, Fernández-Castro, & Viladrich, 2009; Frazier, Mortensen, & Steward, 2005). The link from income, we thus propose, is specific to variability in distress.

In addition, momentary frustrations are likely to only temporarily increase the distress that individuals experience and are unlikely to influence average levels of distress in the long run. Consider that financially secure individuals may use money to resolve or even avoid these problems, thereby reducing the full force of each challenging situation they encounter (Benzeval, Stansfeld, & Thomas, 2007; Prawitz et al., 2006; Zhou, Vohs, & Baumeister, 2009). Individuals facing financial scarcity, on the other hand, cannot resolve momentary frustrations immediately, and therefore likely experience more intense distress. However, if the distress lingers over time, individuals will eventually find ways to diminish the distress, either by adapting to it (Easterlin, 2003; Frey & Stutzer, 2002) or by engaging in psychological or emotional coping mechanisms (Folkman & Lazarus, 1988). As a result, we propose that financial scarcity is related to increased distress variability, and that there will not be a relationship between income and average levels of distress after controlling for distress variability. Given the positive correlation between distress mean and distress variability, income may be related to mean distress, but we predict that this relationship will no longer be statistically significant after controlling for distress variability.

Finally, we further distinguish between two drivers of distress variability: frequency and intensity (Diener, Larsen, Levine, & Emmons, 1985; Schimmack & Diener, 1997). While intensity reflects the strength of the affect that an individual experiences, frequency refers to the amount of time in which one emotion or affective state predominates over others. Thus, increased distress variability may arise from more *frequent* distressing episodes, or from more *intense* levels of distress for each episode (see Figure 2 for an illustrative depiction).

Figure 2**Similar Distress Variability but Different Distress Intensity/Frequency**

Notes. Two simulated individuals reporting daily levels of distress over a 30-day time period. Blue line depicts participant with higher levels of distress frequency, and red line depicts participant with higher levels of distress intensity. Both participants have similar distress variability.

Because daily frustrations are often unpredictable, we propose that greater financial resources reduce the intensity of each distressing situation, but not the frequency of distressing situations that individuals encounter. Financially secure individuals may use their financial resources to reduce the extent of distress they experience for each challenging situation they encounter (Benzeval et al., 2007; Prawitz et al., 2006; Zhou et al., 2009), but they may be unable to avoid encountering the frustrations. We therefore suggest that financial scarcity is more likely to be related to heightened distress intensity than to distress frequency.

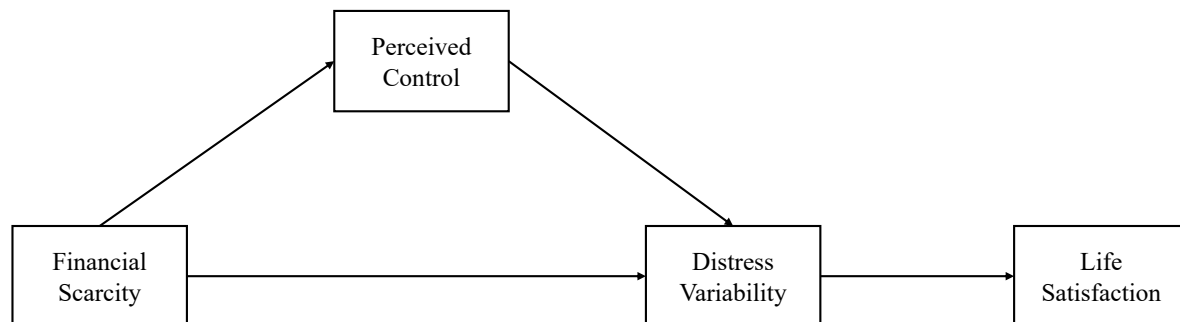
Taken together, we predict that greater financial scarcity will be associated with higher distress variability, which is driven by increased distress intensity and not higher distress frequency. Given the link prior research has found between financial scarcity and perceived

control, as well as between perceived control and distress (Johnson & Krueger, 2006; Kraus et al., 2009), we further propose that lower perceived control will mediate the relationship between financial scarcity and increased distress variability.

In terms of downstream consequences, we predict that financial scarcity will also be associated with lower life satisfaction. This prediction is built on two findings. First, prior research has shown that our purported mediator, perceived control, is associated with well-being (Gadermann & Zumbo, 2007; Gundelach & Kreiner, 2004; Johnson & Krueger, 2006). Second, other research has found that distress variability is associated with lower well-being (Houben, Noortgate, & Kuppens, 2015). Taken together, we propose that financial scarcity will be associated with higher distress variability and lower life satisfaction through reduced perceived control.

Figure 3 summarizes our key theoretical predictions, which we tested in two experience sampling studies with 1,032 participants and 59,711 observations, one of which was a pre-registered replication. We discuss the results of the main study in detail and present a summary of the replication study below, and offer a more thorough discussion of the replication in the Supplementary Online Materials. The data and code required to reproduce our analysis results is available on the Open Science Framework (<https://osf.io/pjxfc/>).

Figure 3
Theoretical Model



Note. Financial scarcity is associated with higher distress variability, in particular increased distress intensity (rather than distress frequency). This relationship is mediated by perceived control. Distress variability is in turn related to lower life satisfaction.

Study

This study tested our full theoretical model. Participants first indicated their monthly household income and perceived control, and then participated in a 30-day experience sampling study in which they responded to prompts assessing their daily affect once a day. In a subsequent survey, participants were asked to report their levels of subjective well-being.

Methods

Participants. We recruited 800 participants through an initial screening survey on Amazon’s Mechanical Turk. In the study description, we highlighted the longitudinal and intensive nature of the study, and only allowed individuals to participate if they agreed to respond to the survey throughout its various phases. The data was collected at four time points: Income was measured at T1, Perceived Control at T2, Distress Variability at T3, and Subjective Well-Being at T4. The final sample size was 522 (response rate: 65.25%), with 13,733 responses to the daily survey portion that formed part of T3.

Income (T1). Participants were asked to indicate their entire household income in the previous year with the following response options: “Less than \$10,000,” “\$10,000 to \$19,999,”

“\$20,000 to \$29,999,” “\$30,000 to \$39,999,” “\$40,000 to \$49,999,” “\$50,000 to \$59,999,” “\$60,000 to \$69,999,” “\$70,000 to \$79,999,” “\$80,000 to \$89,999,” “\$90,000 to \$99,999,” “\$109,000 to \$149,999,” “\$150,000 or more.” Each response was then recoded to the middle of the scale point, whereas for the last option we chose the same increment in midpoint as for the previous income level, i.e., \$175,000 (Cheung & Lucas, 2016). We followed conventions established by prior literature and used logged income (Diener, Ng, Harter, & Arora, 2010), although the results are virtually identical when using raw income.

Perceived Control (T2). One week after the end of T1, we measured perceived control through an eight-item scale (Kraus et al., 2009) with good reliability ($\alpha = .88$), which comprised the following items ranging from “strongly disagree” (1) to “strongly agree” (7): “I can do just about anything I really set my mind to,” “When I really want to do something, I usually find a way to succeed at it,” “Whether or not I am able to get what I want is in my own hands,” “What happens to me in the future mostly depends on me,” “There is little I can do to change many of the important things in my life” (reversed), “I often feel helpless in dealing with problems of life” (reversed), “What happens in my life is often beyond my control” (reversed), “I have little control over the things that happen to me” (reversed).

Distress Variability (T3). One week after the end of T2, we measured distress through 30 daily surveys administered on weekday evenings over six consecutive weeks. Participants were asked to respond to the question, “To what extent did you feel this way today?” with the following three options (drawn from Mackinnon et al., 1999), “upset,” “nervous,” and “distressed” on a scale ranging from 1 (not at all) to 7 (very much so; $\alpha = .85$), which were subsequently averaged. Following prior literature (Carstensen, Mayr, Pasupathi, & Nesselroade,

2000; Eid & Diener, 1999; Liu, Kim, Almeida, & Zarit, 2015; Röcke, Li, & Smith, 2009), we assessed distress variability by calculating the intra-individual standard deviation (*SD*) over time.

Subjective Well-Being (T4). One week after the end of T3, we measured subjective well-being with three items (Diener et al., 1985) on a scale ranging from “strongly disagree” (1) to “strongly agree” (7): “I am satisfied with my life,” “My life is going well,” and “In most ways my life is close to my ideal” ($\alpha = .93$).

Control Variables. Given prior research which has found that age and gender are related to affect variability (Houben, Noortgate, et al., 2015), we measured and subsequently controlled for age and gender of participants. We also calculated mean distress, mean positive affect, and positive affect variability as control variables. Positive affect was measured with the following five items (five-item PANAS short form; Mackinnon et al., 1999): “inspired,” “alert,” “excited,” “enthusiastic,” and “determined” ($\alpha = .86$).

Results

Table 1 depicts the bivariate correlations of study variables.

Table 1
Bivariate Correlations of Study Variables

	1	2	3	4	5	6	7	8
1. Distress Variability								
2. Logged Income	-.17***							
3. Perceived Control	-.24***	.14**						
4. Subjective Well-Being	-.31***	.22***	.52***					
5. Age	-.13**	.11*	.05	.03				
6. Female	.21***	-.06	-.06	-.05	.13**			
7. Average Distress	.46***	-.09*	-.48***	-.45***	-.20***	.05		
8. Average Positive Affect	-.20***	-.02	.36***	.49***	.11**	.00	-.27***	
9. Positive Affect Variability	.50***	-.05	-.01	-.03	-.14**	.17***	.08	-.16***

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

We first sought to provide evidence for the link between financial scarcity and distress variability. Analysis reveals that financial scarcity is associated with greater distress variability (b

= -.171, $SE = .043$, $p < .001$; see Table 2, Model 1). These results held when controlling for age and gender ($b = -.142$, $SE = .042$, $p < .001$; see Table 2, Model 2), mean distress ($b = -.114$, $SE = .038$, $p = .003$; see Table 2, Model 3) as well as mean positive affect and positive affect variability ($b = -.109$, $SE = .033$, $p = .001$; see Table 2, Model 4).

Table 2**Study 1: Financial Scarcity is Associated with Higher Distress Variability**

	Model 1	Model 2	Model 3	Model 4
(Intercept)	.002 (.043)	-.134 (.192)	-.342* (.174)	-.350* (.151)
Logged Income	-.171*** (.043)	-.142*** (.042)	-.114** (.038)	-.109** (.033)
Age		-.014*** (.004)	-.005 (.004)	.001 (.003)
Female		.437*** (.085)	.366*** (.077)	.205** (.068)
Mean Distress			.430*** (.039)	.407*** (.035)
Positive Affect Variability				.440*** (.034)
Mean Positive Affect				-.023 (.035)
Num. obs.	520	520	520	520
R ²	.029	.088	.262	.448
Adj. R ²	.027	.083	.257	.442

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

While the correlation between income and mean distress was statistically significant ($b = -.092$, $SE = .044$, $p = .037$), there was no effect of income on mean distress once the analysis also controlled for distress variability ($b = -.013$, $SE = .039$, $p = .734$). These results indicate that the link between income and mean distress is likely driven by the positive correlation between mean distress and distress variability ($r = .456$, $p < .001$), and thus is fully accounted for by distress variability. In addition, providing discriminant validity, we found that financial scarcity was not

related to positive affect variability ($b = .039$, $SE = .039$, $p = .316$) or mean positive affect ($b = -.053$, $SE = .044$, $p = .224$). That is, the effect of financial scarcity was unique to distress affect variability, and not affect variability more broadly, or mean distress or mean positive affect.

Decomposing Distress Variability into Frequency and Intensity. To deepen our understanding of the link between income and distress variability, we explored the two dimensions of distress variability—intensity and frequency—separately (Diener, Larsen, Levine, & Emmons, 1985; Schimmack & Diener, 1997). As described above, we expected that financial scarcity would only be related to heightened distress intensity, but not to the frequency of distress.

Following prior recommendations, we calculated the frequency of distress episodes by recoding the lowest response category to 0, and all other responses to 1, after which all responses were averaged within each participant (Schimmack, 2003; Schimmack & Diener, 1997). The intensity of distress was calculated by recoding the lowest response category to “NA” and subsequently averaging all responses within each participant. Given that the distress scale ranged from 1 to 7, the lowest response category we used to calculate frequency and intensity was “1” (Schimmack, 2003; Schimmack & Diener, 1997). As a result, this analysis also helps us overcome potential concerns about an overdispersion of the lowest value for distress in our sample.

Analyses reveal that financial scarcity was related to increased distress *intensity* ($b = -.131$, $SE = .041$, $p = .001$; see Table 3, Model 1), an effect that held when accounting for additional control variables (see Table 3, Models 2 and 3).

Table 3
Distress Intensity Predicted by Financial Scarcity

	Model 1	Model 2	Model 3
(Intercept)	-.017 (.041)	.026 (.189)	-.046 (.180)
Logged Income	-.131** (.041)	-.121** (.041)	-.118** (.039)
Distress Frequency	.376*** (.042)	.363*** (.043)	.372*** (.042)
Age		-.006 (.004)	-.000 (.004)
Female		.128 (.082)	.028 (.079)
Mean Positive Affect			-.119** (.040)
Positive Affect Variability			.257*** (.040)
Num. obs.	512	512	512
R ²	.154	.161	.246
Adj. R ²	.151	.155	.237

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

In contrast, financial scarcity was not significantly related to distress *frequency* ($b = .027$, $SE = .403$, $p = .499$), a result which was similar when accounting for additional control variables (see Table 4, Models 2 and 3).

Table 4
Distress Frequency Predicted by Financial Scarcity

	Model 1	Model 2	Model 3
(Intercept)	.031 (.040)	.610*** (.182)	.564** (.177)
Logged Income	.027 (.040)	.042 (.040)	.037 (.039)
Distress Intensity	.365*** (.041)	.345*** (.040)	.369*** (.041)
Age		-.016*** (.004)	-.017*** (.004)
Female		-.005 (.080)	.065 (.079)
Mean Positive Affect			-.115** (.040)
Positive Affect Variability			-.214*** (.041)
Num. obs.	512	512	512
R ²	.138	.163	.215
Adj. R ²	.134	.156	.206

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

These results highlight that financial resources are likely to reduce how distressing daily hassles are that individuals encounter but is not related to how frequently individuals experience distress.

Mediation by Perceived Control. Next, we aimed to test whether the relationship between financial scarcity and distress variability was mediated by perceived control. First, we found that financial scarcity was related to higher perceived control ($b = .142$, $SE = .043$, $p = .001$), which in turn was associated with increased distress variability ($b = -.243$, $SE = .043$, $p < .001$). Subsequent analyses reveal that the association between financial scarcity and increased distress variability was statistically mediated by lower perceived control ($[-.058; -.010]$; 10,000 bootstrapped iterations).

Serial Mediation on Life Satisfaction. Finally, we tested the full pathway from income to life satisfaction through both perceived control and distress variability. To do so, we first tested whether income predicted life satisfaction, and found a statistically significant and positive relationship ($b = .223$, $SE = .047$, $p < .001$). Next, we found a negative relationship between distress variability and life satisfaction ($b = -.305$, $SE = .045$, $p < .001$), which proved robust to the inclusion of mean distress, mean positive affect, and positive affect variability as control variables ($b = -.190$, $SE = .050$, $p < .001$). We subsequently tested the serially mediated indirect effect of income on life satisfaction through both perceived control and distress variability and found a statistically significant effect ($[-.056; .231]$; 10,000 bootstrapped iterations). Thus, financial scarcity is related to decreased life satisfaction through lower perceived control and higher distress variability.

Discussion

This study provides empirical support for the idea that (a) financial scarcity is associated with greater *variability* of affect, (b) this relationship is specific to variability in *distress* and not positive affect, (c) the relationship between income and average distress is driven by higher distress variability (i.e., occasional upward spikes in distress rather than consistently higher distress levels), (d) financial scarcity is related to the *intensity* of each distress episode, and not the *frequency* with which distress is experienced, (e) the link between financial scarcity and distress variability is statistically mediated by lower perceived control, and (f) that higher distress variability is subsequently associated with decreased life satisfaction. One limitation of the present study is that it does not distinguish between distress and non-distress negative affect, a distinction we further explore in the replication study.

Replication Study

In the Supplementary Materials, we report the results of a pre-registered replication testing the relationship between financial scarcity and distress variability in a sample of 510 participants based in the Netherlands who completed 45,978 daily affect measurements. Consistent with our main study, we find that lower income is related to increased distress variability ($b = -.212$, $SE = .043$, $p < .001$; see Table S2 Model 1), a relationship that proved robust when controlling for demographic variables ($b = -.139$, $SE = .055$, $p = .012$; see Table S2, Model 2), mean distress ($b = -.130$, $SE = .051$, $p = .011$; see Table S2, Model 3), and positive affect mean and variability ($b = -.112$, $SE = .045$, $p = .014$; see Table S2, Model 4).

Similar to the previous study, while logged income is correlated with mean distress ($b = -.106$, $SE = .047$, $p = .025$), this relationship is no longer statistically significant after controlling for distress variability ($b = -.060$, $SE = .044$, $p = .174$), indicating that the correlation between income and mean distress is driven in part by distress variability. This study also provides further evidence for the specificity of the link between financial scarcity and distress variability, showing that financial scarcity is not significantly related to positive affect variability (see Table S3) nor mean positive affect (see Table S5). In addition, in this study we also measured non-distress negative affect (with items including “dull” and “gloomy”) and find that financial scarcity is not related to non-distress negative affect variability (see Table S6). Hence, replicating our earlier findings, financial scarcity is uniquely related to distress variability.

We also explored the effect of financial scarcity on the two dimensions of distress variability, distress intensity and distress frequency. Replicating our earlier findings, we find that financial scarcity was associated with more *intense* distress ($b = -.117$, $SE = .038$, $p = .002$), but not with more *frequent* distress ($b = -.042$, $SE = .039$, $p = .278$). As in our main study, these

results highlight that financial scarcity is related to increased distress variability by attenuating the intensity of each distressing episode, rather than reducing the frequency of distressing episodes.

Taken together, the replication study provides further evidence for (a) the relationship between income and distress variability, (b) the specificity of this relationship to distress variability, and not non-distress negative affect variability, (c) that this association is driven by distress intensity, and not distress frequency, and (d) that the association between income and mean distress is accounted for by distress variability.

General Discussion

Across two experience sampling studies with 1,032 participants and 59,711 observations, we found that financial scarcity is associated with higher distress variability and lower life satisfaction, and that this association was statistically mediated by individuals' perceived control. This relationship remains statistically significant when controlling for average distress, positive affect, and positive affect variability. Our analysis also shows that financial resources are related to lower distress variability by buffering the intensity of each distressing episode, rather than reducing the frequency of distressing episodes. We did not observe this relationship for non-distress negative emotions (e.g., "dull" and "gloomy") in our replication study. In addition, while income and mean distress are correlated in both studies, we find that this relationship no longer holds when accounting for distress variability, highlighting the unique role of occasional spikes in distress as opposed to consistently higher levels of distress. The current research thus highlights the unique effect financial scarcity has on distress variability, and sheds novel insight into understanding how income relates to affect.

Theoretical Contributions

The current research makes several contributions to the literature. First, our results disentangle findings from prior studies exploring how income shapes affect (Jebb et al., 2018; Kahneman & Deaton, 2010; Kushlev et al., 2015; Stevenson & Wolfers, 2013) by leveraging the distinction between average affect and affect variability (Houben, Van Den Noortgate, et al., 2015; Koval et al., 2013; Kuppens et al., 2007). While income may not meaningfully alter *average* affect levels, financial scarcity appears to increase the *variability* of affect, and more specifically, distress variability rather than variability in non-distress negative affect or positive affect. Furthermore, we found that financial scarcity is associated with more *intense* distressing episodes, rather than a change in the frequency of distress. These results highlight that money may serve an important function: it can be used to reduce the intensity of each distressing episode when it arises.

Second, our work shows that individuals are particularly susceptible to higher distress variability during times of greater financial scarcity. Not only are low-income individuals more likely to be depleted of cognitive resources (Mani, Mullainathan, Shafir, & Zhao, 2013), our studies reveal that individuals facing financial scarcity are also more susceptible to distress variability, which subsequently may decrease their life satisfaction. Each individual day-to-day problem imposes a disproportionate negative pressure on low-income individuals who already face multiple stressors (Haushofer & Fehr, 2014; Mani et al., 2013; Shah, Shafir, & Mullainathan, 2015). As a result, attempts to reduce the intensity of daily frustrations that people face may improve the well-being of those at the bottom of the income distribution, for example through the provision of stronger social systems and community structures which have the

potential to serve as alternate means of buffering against unpredictably occurring distressing episodes (Hall, Zhao, & Shafir, 2014; Jachimowicz, Chafik, Munrat, Prabhu, & Weber, 2017).

Our results are also connected to two prior studies which found that higher income is associated with lower negative affect (Hudson, Lucas, Donnellan, & Kushlev, 2016; Kushlev et al., 2015). However, because both studies only measured affect at one time point, the authors could not disentangle average levels of negative affect from affect variability. We replicated this link between income and negative affect when conducting analyses predicting day-level distress in our data (i.e., nesting our analyses by participant and time), and find that higher income is associated with lower daily distress (*Main Study*: $b = -.067$, $SE = .032$, $p = .034$; *Replication Study*: $b = -.135$, $SE = .037$, $p < .001$). However, the longitudinal nature of our data revealed that income is not related to mean distress after accounting for distress variability. These analyses suggest that the previously reported associations between income and negative affect may have been driven by higher distress variability, rather than mean distress levels (Hudson et al., 2016; Kushlev et al., 2015).

Limitations and Future Directions

Our results should be interpreted in the light of several strengths and limitations. First, despite the richness and longitudinal nature of our data, our analysis remains correlational, which impedes conclusive claims about the causal relationship between income, perceived control, distress variability, and life satisfaction. Subsequent studies should replicate our analyses and further explore the causal link between income and distress variability, e.g., through studies with large-scale unconditional cash transfer programs (Haushofer & Shapiro, 2013) or by exploring potential shocks to the environment that may serve as instrumental variables (Wooldridge, 2012).

A second limitation of our studies is that they were conducted in Western, individualistic societies, the United States and the Netherlands. It is possible that the relationship between financial scarcity and distress variability may not apply equally to communal cultures where individuals are more able to resolve day-to-day problems through social support, rather than through money. For example, in more collectivistic cultures, individuals may be more likely to resolve daily hassles through a broader community network, which has access to higher social and financial resources (Hsee & Weber, 1999; Weber & Hsee, 1998). As a result, an individual's financial scarcity may be less strongly related to distress variability in collectivistic settings, a possibility future research could explore.

Finally, the current research did not explore what kind of daily hassles are distressing for low- and high-income individuals, leaving open the possibility that individuals may face different kinds of daily hassles depending on their income, and that each type of daily hassle may have a different distressing impact. While the current research focusses on the distress prompted by unresolved daily hassles, future research could more closely explore what kinds of daily hassles are particularly associated with distress to examine how financial resources could be used to alleviate them (i.e., extending the work by Kanner et al., 1981), which could further reveal how financial resources allow individuals to reduce the intensity of each distressing episode.

Conclusion

The current research offers a novel and additional perspective on the relationship between income and affect. While prior research has primarily focused on average affect levels, and found that income and affect are related, its findings remain inconclusive with regards to the nature and form of this relationship. Here, by focusing on the variability of affect, we find that financial resources play an important role in resolving daily hassles by reducing the intensity of each

distressing episode. As a result, our findings suggest that one function of money is to smoothen out the sharp edges of daily life.

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Replication Study

We here report the results of a pre-registered replication of the key focus of the current research, the link between financial scarcity and distress variability (<http://aspredicted.org/blind.php?x=zc62p3>). Participants first indicated their monthly household income and then participated in a 30-day experience sampling study in which they responded to prompts assessing their momentary affect three times each day.

Method

Pre-registration. The data were collected prior to the pre-registration by the fourth author and colleagues as part of a larger study (van der Krieke et al., 2016). Crucially, the first author, who conceived the idea and conducted the analyses, received access to the dataset only *after* the pre-registration.

We highlight two important differences between the pre-registration protocol and the analyses presented here. First, in the pre-registration protocol, we specify that the dependent variable is “negative affect variability” measured through the sum of the following negative affect items: “gloomy,” “anxious,” “nervous,” “irritable,” “dull,” and “tired.” In subsequent revisions, we focused our theory and research on variability in *distress* more specifically, rather than negative affect more broadly. As a result, we present analyses focusing on the variability in distress as measured through the items “anxious” and “nervous,” and distinguish between the effects of distress and non-distress negative affect (as measured through “dull,” “tired,” “irritable,” and “gloomy”).

Second, in the pre-registration protocol, we highlight that we would use income as the independent variable. This is an oversight, and instead, in the subsequently reported analyses, we followed conventions established by prior literature—and as in our main study—and used logged

income instead (Diener, Ng, Harter, & Arora, 2010). However, the results are virtually identical when using raw income. All other specifications in the pre-registration protocol were followed.

Participants. The sample was taken from the ongoing naturalistic study HowNutsAreTheDutch (Dutch: HoeGekIsNL), in which participants were invited by an open call to assess themselves via an internet platform on multiple health dimensions (www.hownutsarethedutch.com; for details on the study methodology and procedures, see van der Krieke et al., 2016; 2017). Before starting the study, all participants stated that they were at least 18 years of age, had a smartphone, were not engaged in shift work, did not anticipate a major disruption of daily routines within the study period, were aware that participation would be terminated if too many assessments were missed, and approved having their anonymous data used for research purposes. Following our pre-registered rules, we excluded participants for whom less than 10 daily surveys were available. The final sample comprised 510 people who completed 45,978 observations, were in majority female (81.0%) and on average 40.2 years old ($SD = 13.4$).

The Medical Ethical Committee of the University Medical Centre Groningen judged the study to be exempted from the Medical Research Involving Human Subjects Act (in Dutch: WMO) because it concerned a nonrandomized open study targeted at anonymous volunteers in the general public (registration no. M13.147422).

Measures

Income. Participants reported their monthly income (in Euro) via eight categories consistent with previous Dutch studies (Scholtens et al., 2015): “less than 750,” “751-1000,” “1001-1500,” “1501-2000,” “2001-2500,” “3001-3500” and “more than 3500.” For analysis purposes, we assigned the middle value of each category as the income for the individual. For

example, participants who responded that their income was “1501-2000” were assigned a value of 1750. Income was logged, as in our main study and in prior research (Diener, Ng, Harter, & Arora, 2010).

Distress Variability. We measured distress three times a day for 30 days as the sum of two items, each assessed on a scale from 0-100: “anxious” and “nervous” ($\alpha = .71$). Following prior literature (Carstensen et al., 2000; Eid & Diener, 1999; Liu et al., 2015; Röcke et al., 2009), we assessed distress variability by calculating the intra-individual standard deviation (*SD*) over time.

Control Variables. In our analyses, we also controlled for age, gender, whether participants were married, and education, all variables which have been shown to influence either income or subjective well-being (Diener, Emmons, Larsen, & Griffin, 1985). We also controlled for mean distress, as well as positive affect mean and variability, measuring positive affect (PA) reported three times a day for 30 days with the following items: “relaxed,” “energetic,” “enthusiastic,” “content,” “calm,” and “cheerful.” Following prior research, we calculated positive affect variability as the *SD* for positive affect across all time points within each participant (Houben, Van Den Noortgate, et al., 2015; Kuppens et al., 2007). In addition, and as described above, we calculate the mean and variability of non-distress negative affect (i.e., with the items, “dull,” “tired,” “irritable,” and “gloomy”).

Results

Table S1 depicts the bivariate correlations of the key study variables.

Table S1
Replication Study: Correlation Table

	1	2	3	4	5	6	7	8	9
1. Distress Variability									
2. Logged Income	-.21***								
3. Age	-.28***	.40***							
4. Female	.23***	-.11**	-.34***						
5. Education	.08	.10*	-.19***	.06					
6. Mean Distress	.43***	-.18***	-.23***	.08	.00				
7. Mean Positive Affect	-.29***	.15***	.18***	-.10*	.01	-.61***			
8. Positive Affect Variability	.41***	-.07	-.11*	.12**	-.07	-.01	.02		
9. Mean Non-distress Negative Affect	.30***	-.17***	-.24***	.11*	-.05	.82***	-.74***	-.05	
10. Non-distress Negative Affect Variability	.54***	-.14**	-.25***	.22***	-.03	.15***	-.21***	.64***	.25***

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

Following our pre-registered analysis plan, and replicating the results from the main study, we find that financial scarcity is related to increased distress variability ($b = -.212$, $SE = .043$, $p < .001$; see Table S2, Model 1). This relationship proved robust when controlling for additional demographic variables (age, gender, education, relationship status, and the number of household members; $b = -.139$, $SE = .055$, $p = .012$; see Table S2, Model 2) and mean distress ($b = -.130$, $SE = .051$, $p = .011$; see Table S2, Model 3). In an additional exploratory analysis, the effect of income on distress variability remained statistically significant when additionally controlling for mean positive affect and positive affect variability ($b = -.112$, $SE = .045$, $p = .014$; see Table S2, Model 4), as well as mean and variability in non-distress negative affect ($b = -.093$, $SE = .042$, $p = .028$; see Table S2, Model 5).

Table S2**Financial Scarcity is Associated with Greater Distress Variability (Replication Study)**

	Model 1	Model 2	Model 3	Model 4	Model 5
(Intercept)	-.000 (.043)	.568 (.984)	.324 (.909)	.260 (.809)	-.246 (.755)
Logged Income	-.212*** (.043)	-.139* (.055)	-.130* (.051)	-.112* (.045)	-.093* (.042)
Age		-.012** (.004)	-.006 (.004)	-.003 (.003)	-.002 (.003)
Female		.407*** (.116)	.411*** (.107)	.300** (.096)	.230* (.089)
Primary education		-.906 (1.169)	-.824 (1.079)	-.664 (.960)	-.208 (.892)
General secondary education		-.459 (1.003)	-.672 (.926)	-.730 (.824)	-.138 (.768)
Vocational education		-.671 (.969)	-.762 (.894)	-.917 (.796)	-.279 (.743)
Higher education		-.549 (.973)	-.602 (.898)	-.603 (.799)	-.032 (.746)
Bachelors degree		-.459 (.956)	-.593 (.882)	-.506 (.785)	.042 (.732)
Masters degree		-.396 (.955)	-.463 (.882)	-.399 (.785)	.111 (.732)
Married		.003 (.112)	.126 (.104)	.095 (.093)	.051 (.086)
Household Size		.015 (.037)	.011 (.034)	.021 (.030)	.024 (.028)
Distress Mean			.380*** (.040)	.369*** (.044)	.588*** (.058)
Positive Affect Mean				-.043 (.044)	-.108* (.048)
Positive Affect Variability				.406*** (.035)	.144** (.045)
Non-distress Negative Affect Mean					-.380*** (.070)
Non-distress Negative Affect Variability					.395*** (.047)
R ²	.045	.123	.255	.413	.496
Adj. R ²	.043	.103	.237	.396	.480
Num. obs.	510	510	510	510	510
RMSE	.978	.947	.874	.777	.721

Notes. Primary education refers to primary or preparatory vocational education (in Dutch: LTS, LEAO, LHNO, VMBO); General secondary education (in Dutch: MAVO, (M)ULO, MBO-kort, VMBO-t); Vocational education (in Dutch: MBO-lang, MTS, MEAO, BOL, BBL, INAS); Higher education (in Dutch: HAVO, VWO, Atheneum, Gymnasium, HBS, MMS); Bachelor degree (in Dutch: HBO, HTS, HEAO, en kandidaats) and Master degree (academic degree). * $p < .05$, ** $p < .01$, *** $p < .001$.

Exploratory analyses also provide discriminant validity, showing that financial scarcity is not related to positive affect variability (see Table S3; below), mean distress (see Table S4; below), mean positive affect (see Table S5; below), non-distress negative affect variability (see Table S6; below) and mean non-distress negative affect (see Table S7; below). Hence, replicating our earlier findings, financial scarcity is uniquely related to distress variability.

Decomposing Distress Variability into Frequency and Intensity. We next conducted exploratory analyses on the two dimensions of distress variability—intensity and frequency—separately (Diener, Larsen, Levine, & Emmons, 1985; Schimmack & Diener, 1997). Since the scale for distress ranged from 0-100, we set the lowest response category at one standard deviation below the mean, following prior recommendations (cf. Schimmack, 2003; Schimmack & Diener, 1997).

Replicating our earlier findings, we find that financial scarcity was associated with more *intense* distress ($b = -.117$, $SE = .038$, $p = .002$), but not with more *frequent* distress ($b = -.042$, $SE = .039$, $p = .278$). As in our main study, these results highlight that financial resources are more likely to be related to lower distress variability by attenuating the intensity of each distress episode, rather than reducing the frequency of distress episodes.

Table S3**Replication Study: Effect of Financial Scarcity on Positive Affect Variability**

	Model 1	Model 2	Model 3
(Intercept)	-.000 (.040)	-.028 (.939)	-.884 (.754)
Logged Income	.015 (.041)	.023 (.053)	.025 (.042)
Distress Variability	.419*** (.041)	.426*** (.043)	.144** (.045)
Age		.000 (.004)	.001 (.003)
Female		.088 (.112)	-.019 (.090)
Primary education		-.066 (1.117)	.474 (.892)
General secondary education		.256 (.957)	1.185 (.767)
Vocational education		.601 (.925)	1.427 (.741)
Higher education		.169 (.929)	1.110 (.745)
Bachelors degree		-.087 (.913)	.909 (.731)
Masters degree		-.050 (.912)	.907 (.731)
Married		.085 (.107)	-.052 (.086)
Household size		-.039 (.035)	-.023 (.028)
Positive Affect Mean			.033 (.048)
Distress Mean			.105 (.064)
Non-distress Negative Affect Variability			.641*** (.041)
Non-distress Negative Affect Mean			-.303*** (.071)
R ²	0.173	0.203	0.496
Adj. R ²	0.170	0.184	0.480
Num. obs.	510	510	510
RMSE	0.911	0.904	0.721

Notes. Primary education refers to primary or preparatory vocational education (in Dutch: LTS, LEAO, LHNO, VMBO); General secondary education (in Dutch: MAVO, (M)ULO, MBO-kort, VMBO-t); Vocational education (in Dutch: MBO-lang, MTS, MEAO, BOL, BBL, INAS); Higher education (in Dutch: HAVO, VWO, Atheneum, Gymnasium, HBS, MMS); Bachelor degree (in Dutch: HBO, HTS, HEAO, en kandidaats) and Master degree (academic degree). * $p < .05$, ** $p < .01$, *** $p < .001$.

Table S4**Replication Study: Effect of Financial Scarcity on Mean Distress**

	Model 1	Model 2	Model 3
(Intercept)	-.000 (.040)	.419 (.928)	.307 (.530)
Logged Income	-.096* (.041)	.032 (.052)	.026 (.030)
Distress Variability	.402*** (.041)	.396*** (.042)	.290*** (.029)
Age		-.012** (.004)	-.001 (.002)
Female		-.171 (.111)	-.079 (.063)
Primary education		.145 (1.103)	-.519 (.626)
General secondary education		.744 (.946)	.011 (.540)
Vocational education		.506 (.914)	-.010 (.522)
Higher education		.357 (.918)	-.031 (.524)
Bachelors degree		.533 (.901)	-.045 (.514)
Masters degree		.335 (.901)	-.010 (.514)
Married		-.324** (.106)	-.113 (.061)
Household size		.005 (.034)	-.036 (.020)
Positive Affect Mean			.027 (.034)
Positive Affect Variability			.052 (.032)
Non-distress Negative Affect Variability			-.229*** (.034)
Non-distress Negative Affect Mean			.816*** (.035)
R ²	0.187	0.222	0.752
Adj. R ²	0.184	0.203	0.744
Num. obs.	510	510	510
RMSE	0.903	0.892	0.506

Notes. Primary education refers to primary or preparatory vocational education (in Dutch: LTS, LEAO, LHNO, VMBO); General secondary education (in Dutch: MAVO, (M)ULO, MBO-kort, VMBO-t) ; Vocational education (in Dutch: MBO-lang, MTS, MEAO, BOL, BBL, INAS); Higher education (in Dutch: HAVO, VWO, Atheneum, Gymnasium, HBS, MMS); Bachelor degree (in Dutch: HBO, HTS, HEAO, en kandidaats) and Master degree (academic degree). * $p < .05$, ** $p < .01$, *** $p < .001$.

Table S5**Replication Study: Effect of Financial Scarcity on Mean Positive Affect**

	Model 1	Model 2	Model 3
(Intercept)	-.000 (.042)	.515 (.991)	.911 (.710)
Logged Income	.090* (.043)	.041 (.056)	.040 (.040)
Distress Variability	-.273*** (.043)	-.258*** (.045)	-.096* (.042)
Age		.008 (.004)	-.004 (.003)
Female		.003 (.118)	-.045 (.085)
Primary education		-.705 (1.178)	-.186 (.841)
General secondary education		-1.019 (1.010)	-.646 (.724)
Vocational education		-.837 (.977)	-.670 (.700)
Higher education		-.805 (.981)	-.772 (.703)
Bachelors degree		-.844 (.963)	-.622 (.690)
Masters degree		-.702 (.962)	-.705 (.689)
Married		.159 (.113)	.003 (.082)
Household size		-.068 (.037)	-.025 (.026)
Positive Affect Variability			.029 (.042)
Distress Mean			.049 (.060)
Non-distress Negative Affect Variability			-.006 (.047)
Non-distress Negative Affect Mean			-.750*** (.059)
R ²	0.093	0.112	0.552
Adj. R ²	0.089	0.091	0.538
Num. obs.	510	510	510
RMSE	0.954	0.953	0.680

Notes. Primary education refers to primary or preparatory vocational education (in Dutch: LTS, LEAO, LHNO, VMBO); General secondary education (in Dutch: MAVO, (M)ULO, MBO-kort, VMBO-t); Vocational education (in Dutch: MBO-lang, MTS, MEAO, BOL, BBL, INAS); Higher education (in Dutch: HAVO, VWO, Atheneum, Gymnasium, HBS, MMS); Bachelor degree (in Dutch: HBO, HTS, HEAO, en kandidaats) and Master degree (academic degree). * $p < .05$, ** $p < .01$, *** $p < .001$.

Table S6**Replication Study: Effect of Financial Scarcity on Non-distress Negative Affect Variability**

	Model 1	Model 2	Model 3
(Intercept)	.000 (.037)	1.498 (.864)	1.421* (.674)
Logged Income	-.028 (.038)	-.011 (.049)	-.011 (.038)
Distress Variability	.538*** (.038)	.509*** (.039)	.318*** (.038)
Age		-.007* (.003)	-.005 (.003)
Female		.161 (.103)	.086 (.081)
Primary education		-.497 (1.026)	-.738 (.800)
General secondary education		-1.252 (.880)	-1.373* (.687)
Vocational education		-1.192 (.851)	-1.451* (.664)
Higher education		-1.445 (.854)	-1.443* (.666)
Bachelors degree		-1.439 (.839)	-1.356* (.654)
Masters degree		-1.501 (.838)	-1.366* (.654)
Married		.151 (.098)	.092 (.077)
Household size		.004 (.032)	-.001 (.025)
Positive Affect Variability			.516*** (.033)
Positive Affect Mean			-.005 (.043)
Distress Mean			-.374*** (.055)
Non-distress Negative Affect Mean			.462*** (.061)
R ²	0.296	0.327	0.595
Adj. R ²	0.293	0.310	0.581
Num. obs.	510	510	510
RMSE	0.841	0.830	0.647

Notes. Primary education refers to primary or preparatory vocational education (in Dutch: LTS, LEAO, LHNO, VMBO); General secondary education (in Dutch: MAVO, (M)ULO, MBO-kort, VMBO-t); Vocational education (in Dutch: MBO-lang, MTS, MEAO, BOL, BBL, INAS); Higher education (in Dutch: HAVO, VWO, Atheneum, Gymnasium, HBS, MMS); Bachelor degree (in Dutch: HBO, HTS, HEAO, en kandidaats) and Master degree (academic degree). * $p < .05$, ** $p < .01$, *** $p < .001$.

Table S7**Replication Study: Effect of Financial Scarcity on Mean Non-distress Negative Affect**

	Model 1	Model 2	Model 3
(Intercept)	.000 (.042)	.542 (.971)	.104 (.470)
Logged Income	-.111* (.043)	.001 (.055)	-.001 (.026)
Distress Variability	.278*** (.043)	.255*** (.044)	-.148*** (.027)
Age		-.016*** (.004)	-.004 (.002)
Female		-.073 (.116)	.012 (.056)
Primary education		.703 (1.153)	.481 (.556)
General secondary education		.566 (.989)	.063 (.479)
Vocational education		.288 (.956)	.025 (.464)
Higher education		.086 (.960)	-.065 (.465)
Bachelors degree		.339 (.943)	.030 (.457)
Masters degree		.028 (.942)	-.089 (.456)
Married		-.227* (.111)	.010 (.054)
Household size		.057 (.036)	.026 (.017)
Positive Affect Variability			-.118*** (.028)
Positive Affect Mean			-.328*** (.026)
Distress Mean			.643*** (.028)
Non-distress Negative Affect Variability			.223*** (.030)
R ²	0.103	0.149	0.804
Adj. R ²	0.099	0.129	0.798
Num. obs.	510	510	510
RMSE	0.949	0.933	0.450

Notes. Primary education refers to primary or preparatory vocational education (in Dutch: LTS, LEAO, LHNO, VMBO); General secondary education (in Dutch: MAVO, (M)ULO, MBO-kort, VMBO-t) ; Vocational education (in Dutch: MBO-lang, MTS, MEAO, BOL, BBL, INAS); Higher education (in Dutch: HAVO, VWO, Atheneum, Gymnasium, HBS, MMS); Bachelor degree (in Dutch: HBO, HTS, HEAO, en kandidaats) and Master degree (academic degree). * $p < .05$, ** $p < .01$, *** $p < .001$.