Scarcity Undermines Pleasurable Thinking

Sherry Jueyu Wu*

Anderson School of Management

University of California Los Angeles

Nathan N. Cheek

Department of Psychology

Princeton University

Eldar Shafir

Department of Psychology

Princeton University

Authors' note:

*Corresponding author. The study was approved by Princeton University Institutional Review Board. Datasets and experimental stimuli can be found on our anonymized OSF page [https://bit.ly/3ccjcHd]. The replication code (in R) and Inquisit Web programs will be publicly available on our OSF page upon publication.

Abstract

Thinking for pleasure, including fantasies and imagination, can be a source of joy and relaxation, and an escape from everyday adversity. People intuitively expect those in poverty to be more motivated and better able to find joy in positive daydreaming than those who are well-off. Yet, thinking for pleasure also requires focus and cognitive control. We argue that persistent financial concerns can impair directed pleasurable thinking. We first establish a correlation between financial concerns and self-reported difficulty in mindful thinking in everyday life (Study 1). In two subsequent experiments (Studies 2-3), we provide participants with pleasurable thinking experiences accompanied by lexical decision tasks. We find that perceived financial scarcity leads to faster responses to money related stimuli, slower responses to stimuli related to the pleasurable experience, and to a less positive subjective experience. Financial scarcity appears to undermine the poor's ability to enjoy the little imagination that leisure can bring.

Word count = 150

Statement of Relevance

People intuitively expect those in poverty, who have less access to other forms of welcome escape, to be more motivated and better able to find pleasure in imagination and fantasy. In three studies with over 600 participants, we find that the those who are financially-constrained are actually less likely and less able to engage in thinking for pleasure. Activated financial concerns among the poor, not the rich, caused more finance-related intrusive thoughts and impaired the ability to focus on and derive joy from pleasant thinking experience. The effects endured over multiple experimental trials. Financial scarcity appears to undermine the poor's ability to enjoy the little imagination that leisure can bring. Pleasurable thought, joyful as it is, may be a less effective tool for escape from present adversity among those who are persistently reminded of the financial scarcity in their daily lives.

Word count = 141

Scarcity Undermines Pleasurable Thinking

Thought can be a source of great joy, relief, and escape. Plato described thinking as "the talking of the soul with itself," and Bertolt Brecht considered thinking "one of the greatest pleasures of the human race" (Plato, ca. 370 B.C.E./2000; Brecht, 1934). Whether savoring favorite memories, daydreaming about future activities, or fantasizing about different worlds, people find it both meaningful and gratifying to engage in thinking for pleasure (McMilllan, Kaufman, & Singer, 2013; Westgate, Wilson, & Gilbert, 2017; Wilson, Westgate, Buttrick, & Gilbert, 2019). When the present moment is good, well-being can come from focusing on the here and now and avoiding unwanted and distracting thoughts (Csikszentmihalyi, 1990). The 13th century Persian poet, Rumi, advised to "look past your thoughts, so you may drink the pure nectar of this moment." Consistent with that old insight, more recent work on "flow" has documented the optimally satisfying feeling that comes from complete engagement in a creative and mindful activity (Csikszentmihalyi, 1990).

Perhaps even more importantly, when the present moment is not so good, thinking for pleasure offers an opportunity to escape from stress or pain. Some forms of thinking, like fantasies and daydreams, can help reduce stress and avoid unpleasant anxieties (McMilllan, Kaufman, & Singer, 2013; Wilson, Westgate, Buttrick, & Gilbert, 2019). Indeed, daydreaming and imagination can be effective tools in momentarily escaping an unpleasant present — positive fantasies can even increase momentary pain tolerance (Hekmat, Staats, & Staats, 2016). Engagement in various forms of escapism, from fantasy to feel-good media, has been shown to increase during stressful economic times (Brinkley, 1999; Hershfield & Alter, 2019).

Given the potentially palliative effects of thinking, focusing on pleasant moments during hard times, including through fantasy and imagination, may constitute a particularly compelling

adaptive strategy, particularly for those who experience recurring preoccupations and increased anxiety and may have less access to other forms of welcome escape. In fact, people intuitively expect those in poverty to be more motivated and better able to find joy through fantasy and imagination. A significant majority of participants we surveyed ($N = 165$) thought that the poor were more likely than the rich to "enjoy imagining a beach vacation," more likely to "enjoy generally using their imagination," and more likely to "immerse themselves in fantasy to distract themselves from the present or the future" (p's $< .001$ in all cases; see Supplemental Material). Supporting this intuition, previous research has shown that people are better able to enjoy thinking when they are motivated to do so (Alahmadi et al., 2017).

Yet, thinking for pleasure requires more than motivation. Crucially, it also requires concentration and cognitive control—the effortful direction of attention to the intended topic of imagination or fantasy and away from other, distracting thoughts and concerns (Westgate et al., 2017; Wilson et al., 2019). The ability to direct one's thoughts toward a particular focus and maintain engagement in that line of thought is one element of the multidimensional construct of mindfulness (Bergomi et al., 2013; Bishop et al., 2004), a practice that has gained attention as its benefits for physical and mental health have become clear (for reviews, see Carmody et al., 2008, and Shapiro et al., 2009, and references therein). Of note, people of lower socioeconomic status report engaging in mindfulness practices less often than people of higher socioeconomic status (Olano et al., 2015).

The strains of poverty, it has been argued, create a scarcity mindset, wherein distracting financial concerns impose added cognitive load and impede cognitive and executive function (Mullainathan & Shafir, 2013; Mani, Mullainathan, Shafir, & Zhao, 2013). Although a scarcity mindset can have the benefit of focusing attention where it is most immediately needed, such as

on impending expenses or other urgent decisions, it undermines the direction of attention and cognitive resources to other topics and to more discretionary decisions (Shah et al., 2012). Although it may intuitively appear that people in poverty will be more invested in finding pleasure through thinking and immersing themselves in positive daydreaming, we propose instead that persistently intrusive financial concerns characteristic of scarcity may actually undermine attempts at such mindful engagement.

We tested this hypothesis in three studies. Study 1 examined whether individuals who feel more financially constrained report having more difficulty mindfully focusing on the "here and now" without distraction. Studies 2 and 3 investigated whether everyday financial concerns might impede the ability of the poor, but not the rich, to immerse themselves in pleasurable imagination in an experimental setting. If scarcity impedes mindfulness, we hypothesize, then those experiencing distracting financial constraints should be less able to attend to and enjoy a pleasurable task requiring mindfulness when reminded of the difficulties of making ends meet.

Study 1

Method

Participants. We aimed to recruit 225 participants through Amazon Mechanical Turk to achieve a final sample size of at least 200, which provides 80% power to detect the average effect size in social psychology with an alpha of .05 (Richard, Bond, & Stokes-Zoota, 2003). To be included in the analyses, participants had to pass two instructional manipulation checks (Oppenheimer, Meyvis, & Davidenko, 2009) and to indicate that they had not responded randomly. In total, 224 participants completed the study, of whom 209 met the inclusion criteria. Demographic information about participants in all studies is available in Supplemental Material.

Materials.

Mindfulness. Participants answered eight questions (Cronbach's alpha = .90) concerning their ability to mindfully direct their attention in everyday life. These questions were taken from existing mindfulness questionnaires (Bergomi, Tschacher, & Kupper, 2013; Brown & Ryan, 2003; Feldman, Hayes, Kumar, Greeson, & Laurencaeu, 2007) and were selected specifically to tap the ability to focus on the present and pay attention to one's surroundings without being distracted or preoccupied with other concerns. Sample items include "I find it difficult to stay focused on what's happening in the present," "I am preoccupied by the future," and "I find it difficult to pay attention to the 'here and now' and to concentrate on that which currently happens." All items were rated on a Likert scale from 1 (strongly disagree) to 7 (strongly agree), with higher numbers indicating greater perceived difficulty in maintaining mindfulness.

Financial Status. Socioeconomic status and poverty are complex, multidimensional constructs that can be conceptualized, operationalized, and measured via both subjective and objective approaches (Kraus & Stephens, 2012). To tap the full range of financial status, we administered six measures that distinguish the poor from the rich. *Perceived financial constraint* was measured with a three-item scale ("How tight is your daily budget?"; "How concerned do you feel about your financial situation these days?"; "How money-constrained do you feel overall these days?"; Cronbach's alpha = .95). Items were rated on a 7-point Likert scale that ranged from 1 (not at all) to 7 (extremely), with higher numbers indicating greater perceived financial constraint.

Participants also reported several more objective measures, including their annual personal income on 10-point scale consisting of income bins ranging from "$10,000 or less" to "above $170,000;" their total annual household income on this 10-point scale, and their household size; household income was then calculated, in line with the OECD (2008)

equivalence transformation, by dividing the midpoint of participants' household income bin (or $170,000 for the highest bin) by the square root of household size. Finally, we log-transformed both personal and household income to reduce skew. Participants also reported their *subjective social status* on a 10-point ladder representing their perceived status in American society (Adler, Epel, Castellazzo, & Ickovics, 2000). Finally, participants reported whether or not they were *financially independent* (yes or no).

Results

Table 1 shows the correlations among the reported measures. Participants who scored higher on the *perceived financial constraint* scale also reported greater difficulty in being mindful, $r = .36$, $p < .001$. Reported mindfulness was not significantly related to other SES variables, which were generally related to each other.

Discussion

The subjective experience of financial scarcity appears to undermine people's ability to mindfully direct their thoughts to the present, though our correlational design does not warrant causal conclusions. Study 1 thus provides preliminary evidence that the subjective perception of financial constraints impedes the mindful direction of thoughts, and that the financially-constrained self-report this limitation. As discussed above, reduced ability to mindfully focus one's attention and inhibit distracting thoughts, in turn, can undermine success at and the pleasure derived from focused thinking (e.g., Westgate et al., 2017). The next two studies tested this possibility.

Table 1: Correlations among measures from Study 1

	1	2	3	4	5	6
1. Difficulty Being Mindful	--					
2. Perceived Financial Constraints	.36***	--				
3. Personal Income	.03	-.29***	--			
4. Household Income	-.02	-.34***	.57***	--		
5. Subjective Status	-.03	-.35***	.49***	.54***	--	
6. Financial Independence	.04	.04	-.35***	-.04	-.03	--

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

Study 2

Method

Participants. Participants were community members recruited at the Museum of Science and Industry in Chicago. All participants self-identified as native English speakers. We aimed to recruit around 200 participants based on the feasibility of data collection with a desired time period. 219 participants (100 female, 114 male; mean age = 42 years) participated in Study 2. We excluded participants ($n = 13$) whose accuracy score in the lexical decision task was below 50% (results remain unchanged including those participants). The final sample was comprised of 206 participants (95 females, 107 males; mean age = 41 years). This sample encompasses a diverse (mostly single) income range, with median household income of $10,001 to $30,000 (min = $10,000 or less, max = $170,001 or above; mean of $30,001 to $50,000).

Experimental Procedure. Participants were randomly assigned into a *scarcity* condition ($N = 106$) or a *control* condition ($N = 100$). In the *scarcity* condition, participants were presented with four hypothetical scenarios describing typical everyday financial challenges (see Supplemental Material; for similar methods, see, e.g., Shah et al., 2012, 2018). For example,

"Imagine that your car is having some trouble, and requires a $1,500 service. Unfortunately, your auto insurance will only cover 10% of the cost. Your options are: pay in full, take a loan, or take a chance and forego the service… How would you go about making this decision? Would it be an easy or a difficult decision for you to make?" The scenarios, describing familiar financial concerns, were designed to trigger money-related rumination among participants who were financially stressed, while being less likely to do so among participants who were financially comfortable. In the *control* condition, participants were presented with four hypothetical scenarios concerning non-financial, political issues (see Supplemental Material). The length and readability of the scenarios were comparable across conditions.

After considering either the finance-related or the control scenarios, participants went through three mindful imagination sessions, each lasting 30 seconds. We modeled these sessions after a popular relaxation technique, "guided imagery," said to draw on people's "ability to visualize and daydream." According to its proponents, "It's easy to practice whenever and wherever you are. All you have to do is imagine a peaceful scene in your mind. It works best if you incorporate as many sensory details as possible: what you see, hear, feel, smell, and taste. So you're not just thinking it—you're living it. When you engage your imagination in this way, your body and your nervous system will respond as if you're actually there." (https://www.helpguide.org/meditations/guided-imagery-meditation.htm). Participants were shown high-quality full-screen images of natural scenes, such as a secluded beach (or, in Study 3, also a lush forest; see Supplemental Material), and were asked to imagine spending some time experiencing and interacting with that scene: "For the next 30 seconds, visualize your experiences around the ocean. What do the waves sound like? What does the sand feel like? What do you see? What do you hear? What do you feel? Just try to relax and not think about

anything other than an ocean." Participants were also instructed, whenever they noticed their mind wandering away, to "simply try to bring your mind back to the scene." In the first, "preparation" segment, participants were asked to practice engaging in mindful thought by simply clearing their mind and trying to relax while viewing a picture of a blue sky. In the second segment (the first mindfulness session), participants were instructed to think about and visualize their experiences around a beach, while viewing slowly changing images of beaches and oceans on the computer screen. In the last segment (a second mindfulness session), participants viewed a blue sky and were instructed to think about anything but money. Thus, each segment presented a guided thinking exercise requiring mindful direction of one's thinking.

Dependent Measures. Immediately following each mindfulness session, we assessed participants' success in the session using a lexical decision task as a behavioral measure. We also gauged their subjective experience via two self-report questions.

***Lexical Decision Task*.** Immediately following each mindfulness session, participants completed a lexical decision task in which they were presented with words and nonword decoys and had to decide, as fast as they could, whether each letter string was an English word or not. Each word presentation was preceded by an asterix in the middle of the screen, which appeared 2 seconds after response to the previous word had been entered. In addition to an equal number of randomly presented nonwords, three categories of English words were presented in random order: money-related words (e.g., "loan," "expensive," "dollar"), neutral words (e.g., "lamp," "package," "truck"), and scene-related words (e.g., "sea," "wave," "water" for the ocean scene). In the *control* condition, words related to politics (e.g., "campaign," "liberal," "vote") were included. An indication of participants' success in the mindfulness session is their ability to focus on the scene-related experience, which we capture here by how fast they responded to the

scene-related words (e.g., "wave" and "sand" for the ocean scene) in the lexical decision task immediately following the 30-second mindfulness session.

Subjective Experience. Immediately following each mindfulness session, participants' subjective experience was measured via two items: "How enjoyable and relaxing was this part of the study?" and "To what extent did your mind wander away from what you were supposed to imagine?" on a 9-point Likert scale (1 = "not at all" to 9 = "extremely").

Financial Status. At the end of the study, participants answered a demographic survey that included the same financial scarcity measures as in Study 1. Because perceived financial constraint was the main variable related to self-reported mindfulness, we focus on this measure (alpha = 0.85) as a means of testing the effects of scarcity on the mindful direction of thought.

Results

We computed participants' average reported subjective financial constraints (mean = 5.52, median = 5.6, *SD* = 1.37, range = [1, 7]) and defined "rich" and "poor" through a median split on this variable. (We also computed reported household incomes and defined "rich" and "poor" through this variable; for full results see the Supplementary Material.)

We consider "mindfulness" to be the ability to focus, with minimal distractions, on the presented beach (or forest) scene. We capture it here by how fast participants were able to respond to beach-related words (e.g., "wave" and "sand") in the lexical decision task immediately following the 30-second mindfulness session. For each participant, we checked for reaction times (RTs) that were 3 standard deviations above or below the participant's mean RT, and found none, which suggests participants were attentive and consistent. We then normalized RTs within each participant so that they range from -1(shortest reaction time or fastest) to +1 (longest reaction time or slowest; Whelan, 2008; Coman, Manier, & Hirst, 2009).

In the *control* condition, after presentation of the politics scenarios, the poor and the rich were equally fast in responding to beach-related words (M_{poor} = -0.36, SD_{poor} = .40, M_{rich} = -0.50, SD_{rich} = .26; B = -0.02, SE = .03, p = .49), equally fast in responding to money-related words (M_{poor} = -0.20, SD_{poor} = .30, M_{rich} = -0.25, SD_{rich} = .27; B = 0.01, SE = 0.02, p = .54), and equally fast in responding to politics-related words (M_{poor} = -0.25, SD_{poor} = .50, M_{rich} = -0.10, SD_{rich} = .49; B = -0.05, SE = .03, p = .16), across all three sessions. The same level of mindfulness was exhibited by poor and rich in all sessions of the control condition.

In the *scarcity* condition, in contrast, after contemplation of the financial scenarios, we observed lower mindfulness among the poor, across both mindfulness sessions. Following the financial scenarios, the poor on average identified money words significantly faster than did the rich (M_{poor} = -0.43, SD_{poor} = .18, M_{rich} = -0.35, SD_{rich} = .18; B = -0.03, SE = .01, p = .019), suggesting greater lingering activation of finance-related concepts among the poor. On the other hand, the poor responded slower to beach-related words than did the rich (M_{poor} = -0.40, SD_{poor} = .36, M_{rich} = -0.52, SD_{rich} = .30; B = .03, SE = .02, p = .09), suggesting lower engagement in the mindful contemplation of the beach scene (see Figure 1). There were marginally significant interaction effects between perceived financial constraint and condition on decision speed related to money and beach (B = .04, SE = .02, p = .08; B = -0.06, SE = .03, p = .10). The rich were uninfluenced by condition, whereas the poor identified money-related words faster and beach-related words slower after financial concerns had been activated. There were no differences in decision delay between the rich and the poor for the control words or the non-words.

Finally, in the last segment, in which participants were asked to think about anything but money, the poor identified money-related words significantly faster than did the rich (M_{poor} = -0.78, SD_{poor} = .34, M_{rich} = -0.47, SD_{rich} = .37; B = -0.09, SE = .03, p = .0006). There was a

significant interaction effect between perceived financial constraint and experimental condition on decision speed with money related words (B = 0.12, SE = .04, p = .002). The poor responded to money-related words significantly faster only after financial concerns had been activated, while in the control condition the rich and the poor responded equally fast.

The above behavioral results were consistent with participants' self-reported experiences. The poor rated the mindfulness sessions as significantly less enjoyable than the rich in the *scarcity* condition (M_{poor} = 5.33, SD_{poor} = 2.14, M_{rich} = 6.27, SD_{rich} = 1.82; B = -0.39, SE = .14, p = .007), but not in the *control* condition (M_{poor} = 6.07, SD_{poor} = 2.25, M_{rich} = 6.10, SD_{rich} = 2.07; B = -0.02, SE = .16, p = .89). There was a marginally significant interaction between perceived financial constraint and condition on the perceived enjoyableness of the sessions (B = 0.37, SE = .21, p = 0.08). There was no difference in self-reported levels of mind wandering between rich and poor across conditions (in the *scarcity* condition: M_{poor} = 3.77, SD_{poor} = 2.01, M_{rich} = 3.81, SD_{rich} = 1.82; B = .11, SE = .14, p = .43; In the *control* condition: M_{poor} = 3.37, SD_{poor} = 1.89, M_{rich} = 3.56, SD_{rich} = 2.05, p = .99; B = -0.002, SE = .14, p = .59).

Interestingly, as in Study 1, we did not observe significant differences in mindfulness or self-reported enjoyment when "poor" and "rich" were determined by effective income levels. This suggests that the impediment to mindfulness caused by financial distraction might be better captured by participants' perceived financial constraint than by their objective income level (see Supplemental Material for details). The predictive advantage of perceived over objective economic constraints is consistent with several other findings, ranging from self-rated health status (Cialani et al., 2020) and financial satisfaction (Grable et al., 2013), to consumer behavior (Hamilton et al., 2019) and retirement satisfaction (Donnelly et al., 2019).

Study 3

Study 2 provided suggestive evidence that when financial concerns are salient, the financially-constrained are less able to submerge themselves in an otherwise enjoyable imagined experience, such as envisioning a walk on the beach. In Study 3, we replicated Study 2's procedure with one variation: In the first session, instead of simply asking participants to clear their mind and relax, we presented an additional mindful experience—we had them think about a walk in the forest. Study 3 thus replicated the previous study with an expanded set of pleasant mindfulness sessions.

Method

Participants. Study 3 included 236 community members from downtown Chicago (109 female, 126 male; mean age = 39). We aimed to recruit around 200 participants based on the feasibility of data collection within a desired time period. All participants self-identified as native English speakers. Following the same criteria as in Study 2, we excluded 19 participants whose accuracy score in the lexical decision task fell below 50%, (results are unchanged when including these participants). The final sample consisted of 217 participants (103 females, 113 males; mean age = 38 years), encompassing a diverse income range, with median household income of $30,001 to $50,000 (min = $10,000 or less, max = $170,000 or above), and mean of $30,001 to $50,000.

Experimental Procedure. Study 3 replicated the experimental design of Study 2 with an expanded set of stimuli. Participants were randomly assigned to a *scarcity* condition ($N = 125$) or a *control* condition ($N = 92$). In the first mindfulness session, participants were presented with changing images featuring lush autumn forests and were instructed to think about and visualize their experiences around a forest. The rest was as in Study 2: In the second mindfulness session,

participants were instructed to think about and visualize their experiences around a beach, while viewing slowly changing images of beaches and oceans, and in the last mindfulness session, participants viewed a blue sky and were instructed to think about anything but money.

As in Study 2, immediately after each session, participants completed a lexical decision task involving equal numbers of randomly presented money-related words, neutral words, scene-related (forest or ocean) words, (with politics-related words added in the *control* condition), and nonwords. Following each mindfulness session, participants reported the enjoyableness of the session as well as the extent to which they felt their mind wandering away from the scenes they were trying to focus on. At the end of the study, participants answered a demographics survey.

Results

In the *control* condition, following the political scenarios, the poor and the rich reacted equally fast to money-related words (M_{poor} = -0.30, M_{rich} = -0.27, SD_{poor} = 0.20, SD_{rich} = 0.24; B = .007, SE = .02, p = 0.67) and equally fast to politics-related words (M_{poor} = -0.14, M_{rich} = -0.19, SD_{poor} = .27, SD_{rich} = .22; B = -0.01, SE = .02, p = .52). See Figure 2.

As before, we gauge "mindfulness," or the ability to engage in pleasurable thinking, by the speed with which participants were able to respond to scene-related words (e.g., "wood" and "grass" for the forest scene; "wave" and "sand" for the ocean scene) in the lexical decision task immediately following each mindfulness session. In the *control* condition, following the political scenarios, the poor and the rich responded equally fast to the forest-related words in the forest session (M_{poor} = -.27, SD_{poor} = .45, M_{rich} = -.37, SD_{rich} = .33; B = .05, SE = .03, p = .08), to beach-related words in the beach session (M_{poor} = -0.32, SD_{poor} = .37, M_{rich} = -0.29, SD_{rich} = .45; B = .02, SE = .03, p = .60), and to both combined (M_{poor} = -0.29, SD_{poor} = 0.28, M_{rich} = -0.33, SD_{rich} = 0.27; B = .03, SE = .02, p = .10).

In contrast, following the financial scenarios in the *scarcity* condition, the poor identified money-related words significantly faster than did the rich across all the mindfulness sessions (M_{poor} = -0.43, M_{rich} = -0.30, SD_{poor} = .27, SD_{rich} = .25; B = -0.04, SE = .01, p = .007). Similarly, in the last session, where participants were asked to think about anything but money, the poor identified money-related words significantly faster than did the rich (M_{poor} = -0.54, SD_{poor} = .52, M_{rich} = -0.33, SD_{rich} = .44; B = -0.06, SE = .02, p = .019). There was a significant interaction between perceived financial constraint and condition on the decision time of money-related words (B = .04, SE = .02, p = .047). The rich were uninfluenced by conditions, whereas the poor reacted significantly faster to money words in the *scarcity* condition.

In contrast to the *control* condition, following the financial scenarios, the poor exhibited lower mindfulness, as measured by reaction times in identifying scene-related words: They responded significantly slower than the rich to forest-related words in the forest session (M_{poor} = -0.15, SD_{poor} = .76, M_{rich} = -0.31, SD_{rich} = .36; B = .07, SE = .03, p = .025), significantly slower to beach-related words in the beach session (M_{poor} = -0.25, SD_{poor} = .40, M_{rich} = -0.48, SD_{rich} = .36; B = .06, SE = .02, p = .0026), and significantly slower to both combined (M_{poor} = -0.20, SD_{poor} = .42, M_{rich} = -0.39, SD_{rich} = .23; B = .07, SE = .02, p = .00029). There was a significant interaction between perceived financial constraint and condition on response delay to scene-related words (B = 0.26, SE = .12, p = .017). The rich were uninfluenced by conditions, whereas the poor responded slower to beach- and to forest-related words in the financial *scarcity* condition compared with the *control* condition.

As before, differences were observed when “poor” and “rich” were defined according to perceived financial constraint rather than effective income levels (see Supplementary Materials). Relying on the former yields a behavioral pattern largely consistent with participants’ self-

reported experience. While there was no difference in self-reported task enjoyableness between the rich and poor across conditions (M_{poor} = 5.96, SD_{poor} = 2.02, M_{rich} = 6.19, SD_{rich} = 1.86; B = -0.15, SE = .10, p = .13, in the *scarcity* condition; M_{poor} = 6.46, SD_{poor} = 2.07, M_{rich} = 5.89, SD_{rich} = 2.34, p = .33; B = 0.31, SE = .16, p = .09, in the *control* condition), the poor reported significantly higher levels of mind wandering than the rich in the *scarcity* condition (M_{poor} = 4.13, SD_{poor} = 2.06, M_{rich} = 3.73, SD_{rich} = 1.77; B = .27, SE = .10, p = .007), but not in the *control* condition (M_{poor} = 3.86, SD_{poor} = 2.08, M_{rich} = 4.20, SD_{rich} = 2.33; B = .24, SE = .17, p = .15).

General Discussion

Do the poor, as predicted by most naïve respondents, mindfully direct their thoughts so as to enjoy imagination better and more contentedly than the rich? The present research suggests no. In contrast to lay intuitions, the poor were *less* able and *less* likely to mindfully direct their attention toward enjoyable fantasies. The cognitive burden of perceived financial constraint, as elicited in the scenarios immediately preceding the invitation to imagine a pleasurable scene, undermined the ability to think pleasurably and effectively precisely among those who reported feeling such financial constraint. This pattern extends previous research to reveal how scarcity can impede cognitive ability not only for logical tasks and for cognitive control, but also when it comes to more subjective experiences like mindfulness and pleasurable thinking.

To what extent will the present findings generalize to other contexts? There are, most likely, cross-cultural differences in the extent to which people seek and enjoy thinking for pleasure (e.g., Buttrick et al., 2019). Different contexts may also produce different pressing concerns. In countries that offer universal health care, for example, doctor appointments are likely to generate lesser financial concerns than in places, like the US, where lower-income patients often have no insurance coverage (Shah et al., 2018). Whatever their source and nature

across cultural contexts, however, we suspect that pressing concerns are likely to interfere with people's ability to find pleasure in thinking.

Of course, intrusive thoughts need not always be financial. Having a sick child at home will likely intrude on mindfulness, and scarcity concerns beyond money may arise around resources such as time, when those who are financially comfortable feel a nagging sense of "time poverty" (Giurge et al., 2020; Mullainthan & Shafir, 2013). While the present research has focused on the mental experience of the poor, future research may examine a broader range of stressors that impact individuals' motivation and ability to engage in pleasurable thinking.

Importantly, while the present research reveals constraints in low-income people's engagement in pleasurable thinking, it also reveals a misconception among lay people that the opposite is true. This may arise from widespread cultural narratives highlighting imagination as a coping strategy for those in poverty—for example, Tevye sings about what life would be like "If I Were A Rich Man" in *Fiddler on the Roof* (Bock et al., 1965), and George and Lennie find solace in imagining having "a little house and a couple of acres an' a cow and some pigs and…" in *Of Mice and Men* (Steinbeck, 1965, pp. 16-17). Our work suggests that such pleasurable thinking may not, after all, offer an escape for the poor—but, ironically, *believing* that it does may offer an escape of sorts for those who are better off. Believing that the poor are better able than oneself to find pleasure in the simple—and cost-free—act of thinking may alleviate some discomfort in imagining the suffering of others, and may help maintain belief in a just world. Those in poverty might be suffering materially, so the reasoning may go, but at least they have a rich inner world of imagination in which to find escape and pleasure. Future research can explore the potentially system-justifying nature of this misconception, along with related stereotypes

about people in poverty that help preserve a sense of justice and fairness (Furnham & Gunter, 1984; Hunt & Bullock, 2016).

The painful irony of our results is clear. Whereas the poor have more limited options than the rich, they may also be more limited in their ability even briefly to imagine alternative realities. Along with the persistent burdens that it imposes, scarcity appears to undermine even the potential relief or possible pleasure that imaginative thinking could bring. Prominent theories of well-being highlight leisure as a "core ingredient for overall well-being" (Newman, Tay, & Diener, 2014, p. 555): perceived financial constraints appear to undermine people's ability to enjoy the little pleasurable thinking that leisure can bring.

Figure 1. Study 2 results. Participants' average decision time to words related to money and ocean, as a function to their condition assignment (scarcity vs. control condition) and their financial constraint (poor vs. rich). Error bars represent 95% confidence intervals.

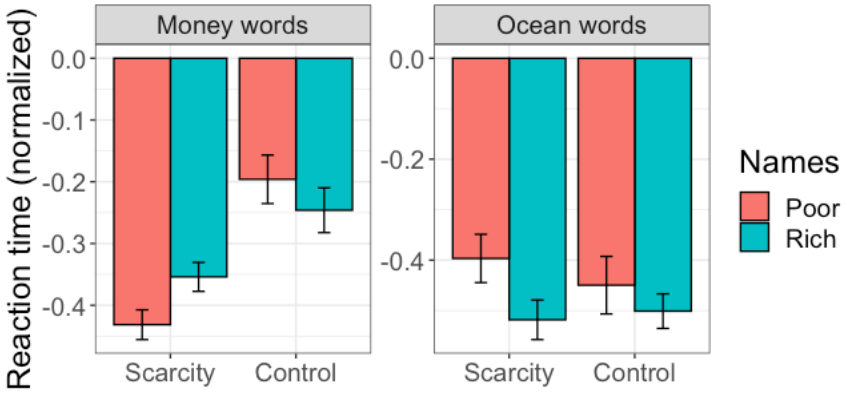
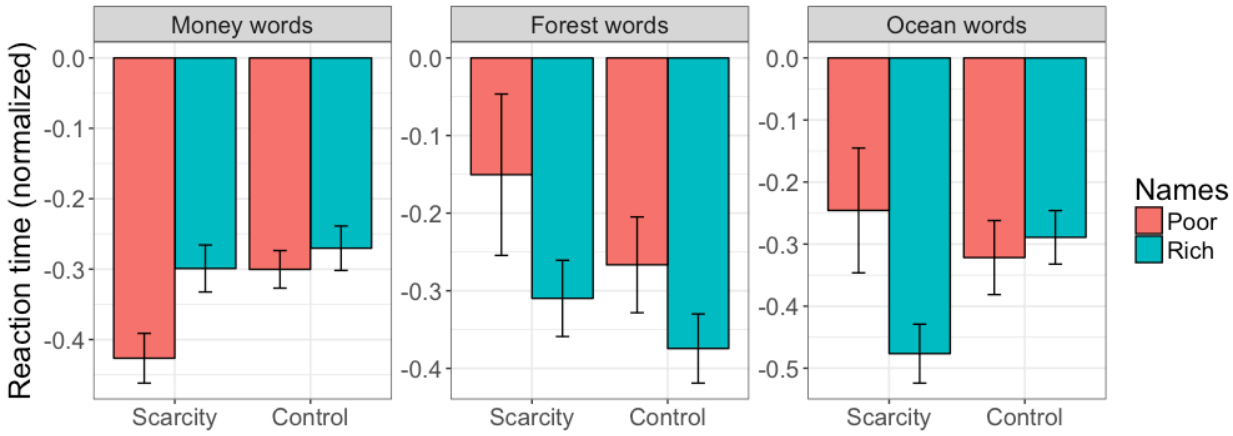


Figure 2. Study 3 results. Participants' average decision time to words related to money, forest, or ocean, as a function to their condition assignment (scarcity vs. control condition) and their financial constraint (poor vs. rich). Error bars represent 95% confidence intervals.



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