

Dear Prof. Vuorre,

We are pleased to resubmit our manuscript “Do Scarcity-Related Cues Affect the Sustained Attentional Performance of the Poor and the Rich Differently?” [Prior title: Scarcity-Related Cues and the Poor’s Cognitive Performance] to PCI: RR.

We would like to thank you and the reviewers for the constructive comments and helpful suggestions, which we believe have greatly improved our manuscript.

Below, we reproduce the comments of the review team in normal typeface, followed by our point-by-point response in bolded text. Texts quoted from the manuscript are in bold and italics. To support the review process, we have uploaded two versions of the updated manuscript to the OSF page, one file with the revised manuscript, and one file where all changes are tracked. Additionally, we have uploaded the updated materials to the OSF page and shared a link to the source code of the SART adaptation.

We hope that our revision effectively addresses the review teams’ concerns and look forward to your response. Please let us know if there is any other information we can provide to support our revision.

With kind regards,

Peter Szecsi on behalf of the author team

Response to Recommender

Dear authors, thank you for submitting “Scarcity-Related Cues and the Poor’s Cognitive Performance: Stage 1 Registered Report” for evaluation at PCI: RR. I received two reviews from area experts, both of whom recommended several improvements. I am pleased to invite a revision with accompanying responses in which you can address the reviewers’ comments. My decision will depend on how you address each of the reviewers' concerns and suggestions.

Thank you for the overall positive evaluation of our work and the opportunity to revise and resubmit our manuscript. Reflecting your and the reviewers’ suggestions, we listed our point-by-point response to all comments below.

I would like to see you pay particular attention to the following points:

1. Ensuring that you have sufficient evidence that your priming manipulation works in eliciting scarcity related cognitions irrespective of any downstream effects those might have on cognitive performance.

Thank you for the suggestion. Although the primary goal of our paper is to establish whether the presence of scarcity-related cues affects cognitive performance, we agree that gaining evidence about how scarcity-related cues affect the mental life of our participants (the effectiveness of the priming manipulation) would provide valuable insights into why (or why not) we find downstream effects on cognitive performance. That is, assessing the effect of our manipulation (the presence of scarcity-related cues) on the mental state of participants would help us learn more about the potential underlying mechanisms behind the effect.

Therefore, following your suggestion, we have now added three measures corresponding to the two most widely discussed mechanisms that can potentially lead to lower attentional performance.

First, we will ask participants whether they had thoughts regarding scarcity or abundance while solving the SART, as described in the manuscript:

“Scarcity-Related Thoughts. Participants will be asked to indicate whether, while completing the SART, they experienced any thoughts about their financial situations that they fear they would encounter (“Yes”, “No”).

Abundance-Related Thoughts. Participants will be asked to indicate whether, while completing the SART, they experienced any thoughts about their financial situations that they wish they would encounter (“Yes”, “No”).” (p. 17)

Second, we will ask about participants’ degree of momentary financial worrying with the modified version of the first item on the Financial Anxiety Scale (Archuleta et al., 2013) Participants will be asked to indicate on a Likert scale ranging from 1 (“Completely disagree”) to 7 (“Completely agree”) how much they agree with the statement “I currently feel anxious about my financial situation.”

Additionally, we have amended the analytic plan with two additional analyses that investigate whether the presence of cues in the scarcity condition meaningfully influence scarcity-related thoughts or anxiety:

“To test whether participants assigned to the scarcity condition experienced elevated levels of financial worrying, we will fit ordinal logistic regression models with the same parameters that we will use in the primary analysis. Additionally, we will repeat the same robustness analysis as described for the primary analysis, with two differences: we will not use different outcome measures, and we will not apply winsorisation on the outcome measure.” (p. 32.)

“To test whether participants assigned to the scarcity condition had scarcity-related thoughts more frequently, we will fit three binomial logistic regression models with the same parameters that we will use in the primary analysis. With the first model, we will investigate if the effect of the experimental manipulation on the likelihood of thinking about any type of scarcity-related cues is moderated by the Poverty Index. With the second model, we will test whether absolute cues were more likely to evoke thoughts about scarce financial situations than relative or control cues. With the third model, we will investigate whether relative cues were more likely to evoke thoughts about desired financial situations than absolute or control cues. Additionally, for each model, we will repeat the same robustness analysis as described for the primary analysis, with two differences: we will not use winsorisation nor different outcome measures.” (pp. 32-33.)

2. Better explaining why the sustained attention measure is most appropriate.

We have now rewritten the following paragraphs of the manuscript to clarify our choice regarding SART.

“We opted to investigate SICI by focusing on sustained attention for two main reasons. First, attention is at the core of the mechanisms in theories describing SICI (Mani et al., 2013; A. K. Shah et al., 2012, 2018; Zhao & Tomm, 2018). Second, we expect that contrary to higher-level cognitive performance measures (e.g., IQ tests), by measuring sustained attention, we could more sensitively assess the subtle influence of scarcity-related cues and even detect brief lapses of attention.

To measure sustained attention, we will ask participants to complete the Sustained Attention to Response Task (SART, Robertson et al., 1997). SART is a frequently used and validated tool to investigate attentional performance, attentional lapses, and mind wandering (e.g., Seli, 2016). For our study, we adapted the original design of Robertson et al. (1997) in jsPsych (de Leeuw, 2015). The SART has one property that makes it the ideal choice of measurement tool for sustained attention for our design. Unlike similar tasks where sustained attention is fundamental, such as the Flanker or Stroop tasks, which were primarily used in the literature to measure cognitive performance (e.g., J. Dang et al., 2016; Mani et al., 2013; Plantinga, 2014), here participants only need to use one button, simplifying task instructions and making it easy to complete it using smart devices, rendering it ideal for online data collection.” (pp. 13-14.)

In addition, I have some smaller recommendations:

1. I think the term "poor" in the title and elsewhere is not useful; you are examining how poverty index moderates the association, instead of focusing only on individuals low on that index.

We modified the title following your suggestion. The new title of our manuscript is “Do Scarcity-Related Cues Affect the Sustained Attentional Performance of the Poor and the Rich Differently?”. We also modified the abstract to reflect these changes.

2. Consider making the online tasks (SART) and their source code available to readers.

Thank you for the suggestion. We uploaded the source code of SART to GitHub and included the following sentence in the *Data and Code Availability* section.

“The source code of the utilised SART and instructions for running it are available on GitHub at https://github.com/mibognar/behavlab_sart/tree/1.1” (p. 33.)

3. Explain the SART scoring in more detail for readers who might not have prior experience with it.

Thank you for the suggestion. We added a *Sustained Attention Measures* subsection to the manuscript, where we detail the scoring of the SART as follows:

“Accuracy. We will categorise participants’ responses in the go and no-go trials in different ways. A trial will be coded as missed (“0”) if the button is pressed in no-go trials or not pressed in go trials. The trial will be coded as correct (“1”), if the button is not pressed go trials or pressed in no-go trials. For the analysis, we will aggregate this variable on the participant level for go and no-go trials separately, resulting in two count variables ranging from 0 to 80 (go trials) and 0 to 10 (no-go trials). We will utilise trial-level data for the outlier exclusion in the robustness analysis.

Response Time. In go trials, we will measure the time passed between the appearance of digit stimuli and the button press made in response in milliseconds.” (pp. 15-16.)

4. Better explain the role of AIC in the analyses; it is not clear if any AIC difference is treated as meaningful and then used in decision-making. On my reading it does not appear to add value above and beyond $p < \text{or} > .05$.

Thank you for this comment. We agree that model comparison, including the use of AIC, is not necessary to test our hypothesis. We deleted these steps from the analytic plan.

Reviewer 1 - Ernst-Jan de Bruijn

Review Registered Report

The proposed study aims to investigate the varying effects of financial scarcity-related cues on cognitive performance (sustained attention) among poor and non-poor individuals. The primary focus of the study involves conducting a comprehensive online experiment involving 3000 Hungarian respondents to test this hypothesis. In addition, the authors intend to perform

exploratory analyses to gain a more thorough understanding of the heterogeneity in treatment effects across various populations and the role of different types of financial scarcity-related cues.

Overall, the proposal provides a detailed description of the hypothesis, experimental design, and methods to be employed. However, several key aspects require attention and refinement to strengthen both the study's design and its theoretical framework. I recommend incorporating the following comments to improve the setup of the study.

Main comments

1. Definition and measures of financial scarcity

Financial scarcity is commonly defined as 'having less than you feel you need', aligning with the subjective poverty definition rather than absolute or relative ones (see Hageaars & De Vos, 1988). Given this definition, the study's conceptualization raises some issues:

- The authors employ a poverty index encompassing measures of absolute objective, absolute relative, and subjective poverty. It's essential to clarify why this approach is chosen over focusing solely on subjective poverty, as commonly used in scarcity literature.

Thank you for the suggestion. We agree that financial scarcity is predominantly defined as a form of subjective scarcity. However, in most theoretical works, scarcity theory was tested by only testing whether objective indicators of poverty moderate the effect of scarcity-related cues. Consequently, we have no way of predicting which dimensions of poverty will moderate the effect of scarcity-related cues. We opted to test our hypothesis on the proposed Poverty Index to mitigate this uncertainty. Note, however, that we measure subjective relative financial status to gain a more nuanced view about the subjective perceptions of one's own financial status.

We added the following sentences to the *Poverty Index* subsection of the *Data Preparation for the Analyses* section to clarify the need of using the index:

“While financial scarcity is conceptualised in the literature as a multidimensional measure (e.g., subjective vs. objective, and relative versus absolute (Hageaars & de Vos, 1988), in most empirical investigations of SICI, absolute objective scarcity was measured, and tested whether it moderates the effect of scarcity-related cues on cognitive performance (Bruijn & Antonides, 2022). To match the applied methods with the theoretical predictions, we aim to utilise absolute objective poverty, absolute subjective poverty, and relative subjective poverty in testing our hypothesis. Given the limited evidence in the literature, we believe this will enable us to have a more sensitive test of our hypotheses.” (p. 23.)

- Regarding financial scarcity priming, the authors utilize cues related to both absolute and relative scarcity. The rationale behind this choice (compared to cues related to subjective financial scarcity) should be provided, or consideration should be given to adjusting the cues to focus solely on subjective scarcity.

Thank you for the suggestion and showing that our manuscript needed further clarification.

We agree that the experience of subjective scarcity is at the core of our investigation. In our design, we want to test whether scarcity-related cues impact cognitive performance because they affect the salience or the feeling of subjective financial scarcity experienced by the participants.

From this perspective, the methodological question is what kind of words would affect the subjective feeling of scarcity. In our design, we build on the fact that words can be relatively directly related to absolute (the financial state of having insufficient resources to meet basic needs) or relative financial scarcity (e.g., one's perceived low financial status in comparison to their peers). We assume that words belonging to each of these categories have the potential to induce feelings of subjective financial scarcity in the participants.

We will explore the differential effect of these two types of cues and discuss the results in the *Discussion* after obtaining the data.

2. Outcome measure and mechanisms

The study focuses on sustained attention as outcome measure for cognitive performance. This raises three concerns.

- Given that the study focuses only on a single dimension of cognitive performance, I think that the scope should be adjusted to sustained attention as outcome rather than cognitive performance. Adjustments to the title, abstract, and introduction are necessary if the authors concur.

Thank you for pointing this out. We completely agree, and we modified the manuscript accordingly. The new title is “*Do Scarcity-Related Cues Affect the Sustained Attentional Performance of the Poor and the Rich Differently?*”, and now in the abstract we describe our goal as “(...) *to reveal the extent absolute scarcity (poverty) and relative scarcity (abundance) related cues affect the sustained attentional performance of the poor in online contexts, (...)*”.

- The theoretical underpinnings regarding how scarcity affects sustained attention require improvement, particularly in describing the specific effects of scarcity-induced cues on sustained attention. Incorporating recent literature on this topic, see De Bruijn & Antonides (2022) and Haushofer & Salicath (2024) for overviews, would enhance the theoretical framework.
- I doubt whether scarcity-induced cues deteriorate sustained attention for individuals facing scarcity. According to scarcity theory, two mechanisms might be at play: Tunneling and cognitive load (Mullainathan & Shafir, 2013; De Bruijn & Antonides, 2022). In the introduction section of the protocol, the authors mainly focuses (implicitly) on cognitive load as mechanism predicting that scarcity-induced cues may deteriorate sustained attention. However, scarcity theory also predicts that scarcity might improve attentional focus under specific conditions. The authors should address whether both mechanisms are at play and whether that changes the theoretical predictions.

Thank you for highlighting this gap in our theoretical review in the introduction. We now updated the corresponding part of the introduction:

“Most theoretical accounts agree that financial worries of lower-income individuals lead to a decline in attentional performance, which in turn deteriorates higher-level cognitive performance as well (Mani et al., 2013; A. K. Shah et al., 2012, 2018; Zhao & Tamm, 2018). Theories suggest that this effect is driven by two main factors: increased attentional tunneling (i.e., increased attention on scarcity-related cues) and increased cognitive load (i.e., the mental capacity of poorer people decreases to a greater extent) (De Bruijn & Antonides, 2022; Haushofer & Salicrú, 2024). While the increasing cognitive load harms performance in all tasks, tunneling literature suggests that performance is improved in tasks where attention needs to be allocated to find scarcity-related cues, while declines when the cues are unrelated to scarcity (Wickens & Alexander, 2009).” (p. 2.)

Since the goal of participants in SART is to detect cues unrelated to scarcity, the tunneling literature would predict that tunnelling activated by the scarcity-related cues would impede attentional performance in the SART, which matches the theoretical predictions driven the increased cognitive-load.

3. Appropriateness of online setting

I have concerns whether the online setting is appropriate for the priming experiment. I refer to the comments of Shah et al. (2023) on a replication study executed by O’Donnell et al. (2023). Given this debate, the authors should justify why an online experiment is appropriate for their study and incorporate measures to check the validity of the experimental design in online settings.

Thank you for raising this question. We agree that there is a considerable difference between experiments conducted in online and offline settings, especially regarding potential differences in the quality (validity) of the responses. To ensure the reliability of the findings, we applied several measures:

1. We adjusted the wording of our manuscript, to reflect that our findings are likely going to be generalisable to online settings. After data collection, we will discuss this limitation in the discussion of the manuscript as well.
2. We include an attrition analysis and an attention check that help us evaluate the validity of our results.

“One-sided group comparisons between the experimental and control conditions will be used to test whether participants with worse financial backgrounds are more likely to quit the experiment early in the scarcity condition. If assumptions of normality and variance homogeneity hold quit the experiment early or get excluded due to inattentiveness or poor performance in the scarcity condition, Poverty Index, adjusted household income, and subjective financial status will be compared using independent samples t-tests. Kurtosis and skewness outside of -10 to 10 and -3 to 3 , respectively, indicate normality violation. Brown-Forsythe test will assess variance homogeneity. If assumptions are violated, Mann-Whitney test will be used. MacArthur scale scores will

also be compared using Mann-Whitney test. Bonferroni correction will be applied to control for the family-wise error rate. We will repeat this analysis with both sets of exclusion criteria.” (p. 32.)

“Attention Check. To identify inattentive survey respondents, we will ask participants the following question: “This question is designed to test participants’ attentiveness. To demonstrate that you are paying attention, please do not answer this question. If you have accidentally selected an option, you can unclick your answer.”. This item is a modified version of the item used by Paas and Morren (2018).” (p. 19)

3. Finally, we would like to note that as demands for strong cognitive performance in online settings significantly rose in the post-COVID era (e.g. online exams, interviews), we think investigating simply the SICI in an online setting has its own merit, even if we cannot be sure that the results generalise to offline settings.

Additional comments based on the five Stage 1 criteria

1A. The scientific validity of the research question

The research question is: Do financial-scarcity-related cues deteriorate disproportionately the cognitive performance of poor individuals?

- The research question should avoid subjective terms like ‘disproportionately’ to enhance objectivity.

Thank you for this suggestion. We reworded the research question and now use ‘to a greater degree’ instead of ‘disproportionately’.

- Given the inclusion of separate experimental conditions for absolute and relative scarcity cues, consider formulating a hypothesis that addresses potential differences between these conditions.

Thank you for your suggestion. We would like to respectfully decline. The theories that were formulated in the literature do not distinguish between cues related to relative and absolute scarcity (Mani et al., 2013; Shah et al., 2012, 2018; Zhao & Tamm, 2018). Only empirical investigations restricted themselves to investigating the effects of absolute cues. Therefore, we are not aware of a theory that would grant us the opportunity to formulate a hypothesis that addresses the difference between the absolute and relative scarcity conditions. However, we would like to highlight that we address the potential differences in the effect of relative and absolute cues in the explorative analysis.

1B. Logic, rationale, and plausibility of the proposed hypotheses

See above. While the difference between absolute and relative scarcity-related cues is acknowledged, no specific hypothesis is proposed. Consider either formulating a separate hypothesis or reducing the emphasis on this distinction in the paper.

Again, thank you for this suggestion. We would prefer to keep the focus of the manuscript unchanged, given that there is no theoretical or empirical work that we know of that we could

build on in this regard. However, for this exact reason, we believe that our exploratory work could provide an important addition to the literature.

1C. Soundness and feasibility of the methodology and analysis pipeline

Some minor comments:

- inconsistencies between the stated number of experimental groups (Hypothesis: two experimental conditions) and the experimental design (Figure 1: Three experimental conditions) need clarification.

Thank you for pointing this out! We modified Figure 1 by adding the label ‘Subcondition’ to the three subconditions.

- The survey incorporates questions related to financial scarcity. According to the experimental design, half of the participants have to answer these questions prior to the experimental part; the other half afterwards. I think that answering these questions before may affect the experimental part. As a consequence, I recommend to consider shifting the survey-part to the end of the experiment.

Thank you for the suggestion. We changed the procedure accordingly.

- The measure for subjective volume of financial debt may not be an ideal measure. For example, households with own houses usually have high debts (mortgages), but the experienced burdens of these debts are small given the type of debt (secured). An alternative might be the subjective measure of debts used by Lusardi et al. (2018) and De Bruijn & Antonides (2020).

Thank you for this suggestion. We replaced the debt measure to the one used by Lusardi and Mitchell (2017), as follows.

“Subjective Volume of Financial Debt. Following Lusardi and Mitchell (2017), we will ask participants to indicate their perceptions regarding the degree of their indebtedness on a 5-point Likert scale ranging from 1 (“Completely disagree”) to 5 (“Completely agree”). We will Helmert code this variable in the analysis.” (p. 17.)

- Clarify the rationale for using a continuous measure for poverty (Poverty Index) compared to binary measures typically used in previous studies.

Thank you for this comment! Indeed, (unfortunately) it is customary to dichotomise the poverty measure, however, such practice lowers the statistical power of the study and causes the loss of information on individual differences. For a more detailed explanation and example, see for example, Wicherts and Scholten’s (2013) comment on the influential Mani et al. (2013) paper.

The proposed sample size is well-supported by a power analysis and seems to be realistic.

1D. Clarity and degree of methodological detail

The Stage 1 protocol provides sufficient detail to ensure reproducibility and protect against research bias.

1E. Sufficient outcome-neutral conditions

Pre-specification of data quality checks in the protocol demonstrates a commitment to ensuring outcome-neutral conditions.

Reviewer 2 - Leon Hilbert

1A. The scientific validity of the research question(s).

The research question is valid.

One comment I have is that the authors state that null-findings could potentially show that scarcity theory is (partially) wrong. Here, I think it is important to consider that the operationalization of financial scarcity in this experiment might also lead to null findings. Priming financial scarcity has been found to be somewhat unreliable (O'Donnell et. al., 2021; but see Shah et al., 2023 and O'Donnell et al., 2023). Being primed with scarcity related cues in the context of an experiment might be fundamentally different from experiencing financial scarcity in real life. Nevertheless and in line with the authors argument, the chosen priming manipulation is one that is predominantly employed in experimental research on financial scarcity. Thus, finding out more about whether this manipulation has an effect on cognition for the poor (or not) in a highly powered RR has value for the field. I just want to caution that null-findings might be caused by a potential methodological issue (that is common in the literature) instead of an incorrect theory.

Thank you for this insightful suggestion! We agree that a potential null finding would not be sufficient evidence against the detrimental effect of scarcity on cognitive performance. We claim that a potential null result would mean that the presence of scarcity-related cues might not be sufficient to induce differential detrimental effects between the sustained attentional performance of the poor and the rich in an online setting. We modified the 'Theory that could be shown wrong by the outcomes' column of Table 1 to clarify the potential consequences of our findings as follows:

“Scarcity theory, partially. Specifically, the prediction that textual cues related to scarcity impede cognitive performance in general.” (Table 1)

- O'Donnell, M., Dev, A. S., Antonoplis, S., Baum, S. M., Benedetti, A. H., Brown, N. D., ... & Nelson, L. D. (2021). Empirical audit and review and an assessment of evidentiary value in research on the psychological consequences of scarcity. *Proceedings of the National Academy of Sciences*, 118(44), e2103313118.
- Shah, A. K., Zhao, J., Mullainathan, S., & Shafir, E. (2023). A scarcity literature mischaracterized with an empirical audit. *Proceedings of the National Academy of Sciences*, 120(26), e2206054120.

- O'Donnell, M., Nelson, L. D., & Moore, D. A. (2023). Reply to Shah et al. & Lynch et al.: In defense of replication. *Proceedings of the National Academy of Sciences*, 120(26), e2304251120.

1B. The logic, rationale, and plausibility of the proposed hypotheses, as applicable.

The logic, rationale, and plausibility of the proposed hypothesis is good.

1C. The soundness and feasibility of the methodology and analysis pipeline (including statistical power analysis or alternative sampling plans where applicable).

Strengths

- The authors aim to conduct a highly powered study that would be sufficient to detect smallest effect sizes of interest.
- The authors clearly describe which outcomes would result in acceptance or rejection of the hypotheses would be accepted.
- The analysis plan of the authors also allows them to properly distinguish between absence of evidence for an effect and evidence of absence for an effect.

Potential improvements

- To control for order effects, the authors suggest to have half of the participants first do the survey questions and then the experimental manipulation, and the other half the other way around. I would think that the questions about demographics and objective household finances could all be asked at the end of the study, as responses to those are unlikely to be affected by the prior procedure, but they might affect responses themselves when presented earlier. Instead of potentially biasing half of the responses and then correcting for it, I would suggest to bias none.
- The same might be argued for subjective measures of financial scarcity, but I think the choice is less clear. The authors use a control condition to avoid that any financial cues induce a “scarcity mindset” (which I support). However, filling in these scales might also induce scarcity related thoughts and thereby reduce cognitive function. I am wondering whether it might be better to move all these measures to the post experimental stage. There are always pros and cons for each chosen order, but I think having the main DV unaffected might be worthwhile to prioritize. I could be convinced otherwise.

Thank you for raising this issue. We completely agree, that completing the questionnaire might affect participants in the control condition, reducing the impact of the experimental manipulation. We also agree, that shielding the dependent variable from potential confounds should be prioritised over the subjective scarcity measures. We have now changed the procedures accordingly. We now ask all participants to complete the questionnaire after participating in the SART. Note that due to this change we made major modifications to the attrition analysis section. As we will not have socioeconomic data on half of the participants who leave the experiment after the manipulation, but before the end of the SART, we will

not be able to fit binomial models to test whether indicators of financial status are effective in predicting who will leave the experiment early. Instead, we opted to do the following analysis:

“One-sided group comparisons between the experimental and control conditions will be used to test whether participants with worse financial backgrounds are more likely to quit the experiment early in the scarcity condition. If assumptions of normality and variance homogeneity hold, Poverty Index, adjusted household income, and subjective financial status will be compared using independent samples t-tests. Kurtosis and skewness outside of -10 to 10 and -3 to 3 , respectively, indicate normality violation. Brown-Forsythe test will assess variance homogeneity. If assumptions are violated, Mann-Whitney test will be used. MacArthur scale scores will also be compared using Mann-Whitney test. Bonferroni correction will be applied to control for the family-wise error rate. We will repeat this analysis with both sets of exclusion criteria.” (p. 32.)

- I would rephrase the “Instructional Manipulation Check” to “Attention Check”. From prior experience, make sure that participants can “unclick” their response. Otherwise, this might lead to many participants habitually clicking something, only to realise that they cannot undo this when they fully comprehended the question.

Thank you for this very useful suggestion! We renamed the check and made sure that participants will be able to unclick their response. Additionally, we added a sentence to the question to let participants know that they can unclick their answer.

“This question is designed to test participants' attentiveness. To demonstrate that you are paying attention, please do not answer this question. If you have accidentally selected an option, you can unclick your answer.” (p. 19.)

- I think it might be good to also control for recruitment method, as participants either receive monetary compensation for participating or not, and the authors affect this to be correlated with certain relevant demographic and financial variables.

Thank you for raising this excellent point! We will include whether the participant received any compensation as a control variable and modified the analysis plan accordingly. We added the following paragraph describing the participant pool variable.

“Received Compensation. We will record if the participant received any compensation (“Yes”, “No”). For details regarding the different compensation structures, see the Subject Recruitment section. (p. 19.)

Note, that this change slightly modified the results of the power analysis; now the power of our planned analysis is sufficient to detect an effect size not smaller than 0.14 Cohen's d .

1D. Whether the clarity and degree of methodological detail is sufficient to closely replicate the proposed study procedures and analysis pipeline and to prevent undisclosed flexibility in the procedures and analyses.

- Yes

1E. Whether the authors have considered sufficient outcome-neutral conditions (e.g. absence of floor or ceiling effects; positive controls; other quality checks) for ensuring that the obtained results are able to test the stated hypotheses or answer the stated research question(s).

- While I appreciate the validation of the experimental and control stimuli, I am missing a manipulation check. Showing these cues does not automatically guarantee that scarcity related thoughts were properly invoked, which would be needed to find a hypothesized effect of financial scarcity on cognitive performance. I would like to see a manipulation check that in the case of null findings, might help our understanding whether it could be explained by a weak manipulation or incorrect theory.

Thank you for the suggestion. Although the primary goal of our paper is to establish whether the presence of scarcity-related cues affects cognitive performance, we agree that gaining evidence about how scarcity-related cues affect the mental life of our participants (the effectiveness of the priming manipulation) would provide valuable insights into why (or why not) we find downstream effects on cognitive performance. That is, assessing the effect of our manipulation (the presence of scarcity-related cues) on the mental state of participants would help us learn more about the potential underlying mechanisms behind the effect.

Therefore, following your suggestion, we have now added three measures corresponding to the two most widely discussed mechanisms that can potentially lead to lower attentional performance.

First, we will ask participants whether they had thoughts regarding scarcity or abundance while solving the SART, as described in the manuscript:

“Scarcity-Related Thoughts. Participants will be asked to indicate whether, while completing the SART, they experienced any thoughts about their financial situations that they fear they would encounter (“Yes”, “No”).

Abundance-Related Thoughts. Participants will be asked to indicate whether, while completing the SART, they experienced any thoughts about their financial situations that they wish they would encounter (“Yes”, “No”).” (p. 17)

Second, we will ask about participants’ degree of momentary financial worrying with the modified version of the first item on the Financial Anxiety Scale (Archuleta et al., 2013). Participants will be asked to indicate on a Likert scale ranging from 1 (“Completely disagree”) to 7 (“Completely agree”) how much they agree with the statement “I currently feel anxious about my financial situation.”

Additionally, we have amended the analytic plan with two additional analyses that investigate whether the presence of cues in the scarcity condition meaningfully influence scarcity-related thoughts or anxiety:

“To test whether participants assigned to the scarcity condition experienced elevated levels of financial worrying, we will fit ordinal logistic regression models with the same parameters that we will use in the primary analysis. Additionally, we will repeat the same robustness analysis as

described for the primary analysis, with two differences: we will not use different outcome measures, and we will not apply winsorisation on the outcome measure.” (p. 32.)

“To test whether participants assigned to the scarcity condition had scarcity-related thoughts more frequently, we will fit three binomial logistic regression models with the same parameters that we will use in the primary analysis. With the first model, we will investigate if the effect of the experimental manipulation on the likelihood of thinking about any type of scarcity-related cues is moderated by the Poverty Index. With the second model, we will test whether absolute cues were more likely to evoke thoughts about scarce financial situations than relative or control cues. With the third model, we will investigate whether relative cues were more likely to evoke thoughts about desired financial situations than absolute or control cues. Additionally, for each model, we will repeat the same robustness analysis as described for the primary analysis, with two differences: we will not use winsorisation nor different outcome measures.” (pp. 32-33.)

2. Other comments

A minor thing: I find the label of “abundance” for the relative scarcity condition a bit confusing. I understand that this relates to the abundance of others and not the own abundance. Maybe this could be clarified in the labelling.

Thank you for your suggestion. We have amended the explanation of the experimental cues in the Stimuli in the Scarcity Salience Condition subsection.

“The stimuli have been selected using mixed methods. Our goal was to create words associated with absolute (related to the lack of money, poverty) and relative financial scarcity (related to things that are not necessary for getting by but might be desired and unattainable due to financial constraints, abundance).” (p. 10.)

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