Over the past ten years, scarcity has been investigated in terms of how it changes people’s way they think and behave. Scarcity relates to having less than people feel they need and can be experienced in various contexts – lack of money, food, time or even company of others (Shahir & Mullainathan, 2013). Previous research suggested that not having enough resources – money – can create a cognitive load which leads to decreased cognitive performance (Shah et al., 2012). Thus, scarcity may lead to a greater engagement and focus on particular problems and in turn lead to neglect of other issues. For example, poorer people tend to make worse financial decisions which can be because they focus on solving their financial problems that they are facing in that moment, disregarding the ones they might run into later (Shah et al., 2012). In the following paper, we focus on one particular scarcity context – money.

Mani et al. (2013) argued that being poorer may impose the cognitive load which hinders cognitive capacity. Researchers devised a laboratory experiment that took place in local shopping mall. Participants were asked about their annual household income, were induced with thoughts about their possible financial hardships by reading hypothetical financial scenarios (vignettes) and performed Raven’s IQ test (three trials) and Stroop test to measure cognitive functions. They were randomly assigned to either “hard” financial condition (scenarios that included relatively high costs) or “easy” financial condition (scenarios that included relatively low costs). Mani et al. (2013) used a median split to assign participants to income groups: poor and rich. Those poorer scored lower in cognitive function tasks under the “hard” condition than those who were richer. The authors suggest the effects should not be limited only to economic resources. Rather, they argued that this is a general way of human resource judgment.

However, some question the reliability of presented claims. Wicherts and Scholten (2013) argued that using median split to analyse the income was unnecessary as such practice is not only linked to lower power and possible loss of individual differences information but also it is unable to indicate nonlinear relations (MacCallum et al, 2002). By performing linear regression analysis on the original data using a mean-centred income they investigated interactions between the income and financial scenario. There was no significant interaction found. Additionally, Wicherts and Scholten (2013) raised some concerns about ceiling effects, most likely caused by short measures of cognitive functions. More recently, O’Donnell et al. (2021) attempted to replicate Mani et al’s. (2013) study. They indicated it was largely underpowered (only 6%). Replication had higher power (32%), but effect sizes were almost negligible, comparing to the original (Cohen’s d between 0.88 and 0.94). O’Donnell et al. (2021) estimated that to obtain 80% power sample size would have to reach 13,500 participants – Mani et al’s. (2013) sample size was 101. In the present article, we aim to replicate Mani et al’s. (2013) study fixing some issues pointed out above.

Replication of Mani et al. (2013) study is important for few reasons. Firstly, some theoretical propositions have been made, where researchers from different areas tried to build up on the original findings. To our knowledge, the only replication failed to corroborate the original results. A successful replication could provide some ways forward in understanding how people treat general resources in the area of judgement and decision making psychology. Secondly, if the claims are true, they could have important implications for policies regarding poverty, e.g. programs that aim to bring people out of the poverty would have to be redesigned to meet participants needs.

This is why, we hope to replicate the results of Mani et al. (2013) experiment. We aimed to demonstrate IQ reduction among poor people presented with the large expense scenarios. Thus, their IQ scores should be the lowest among all tested groups. We followed the procedure, materials and statistical analysis used in the original study. Our sample was similar, but bigger to increase statistical power. However, we used different IQ test and omitted Stroop test. Lastly, due to Covid-19 pandemics, we were forced to conduct the experiment online. Despite those differences, we believed they did not have a large impact on the overall results.

Ref:

MacCallum, R., Zhang, S., Preacher, K. and Rucker, D., 2002. On the practice of dichotomization of quantitative variables. *Psychological Methods*, 7(1), pp.19-40.

Mani, A., Mullainathan, S., Shafir, E., & Zhao, J. (2013). Poverty Impedes Cognitive Function. *Science*, *341*(6149), 976-980. doi: 10.1126/science.1238041

Mullainathan, S., & Sharif, E. (2013). *Scarcity*. Allen Lane.

O’Donnell, M., Dev, A., Antonoplis, S., Baum, S., Benedetti, A., Brown, N., Carrillo, B., Choi, A., Connor, P., Donnelly, K., Ellwood-Lowe, M., Foushee, R., Jansen, R., Jarvis, S., Lundell-Creagh, R., Ocampo, J., Okafor, G., Azad, Z., Rosenblum, M., Schatz, D., Stein, D., Wang, Y., Moore, D. and Nelson, L., 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).

Shah, A., Mullainathan, S., & Shafir, E. (2012). Some Consequences of Having Too Little. Science, 338(6107), 682-685. doi:10.1126/science.1222426

Wicherts, J. M., & Scholten, A. Z. (2013). Comment on “Poverty Impedes Cognitive Function.” Science, 342(6163), 1169-1169. https://doi.org/10.1126/science.1246680