

Gender and risk taking: in need of replication, structure and common sense

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Abstract

The paper aims at introducing theoretical background and indicating field-specific issues that can affect the replicability of studies related to sex/gender¹ differences in risk-aversion. A starting point was our recent study (Adamus, Dudeková 2018) which failed to replicate any of the effects observed by the original authors (Carr, Steele 2010). Briefly discussing previous studies, the paper concludes that with its mixed results, risk-aversion seems a natural candidate for a replication study. In this exercise, we also followed the call by scholars to investigate the issue of gender identity more thoroughly to avoid reification of negligible, trivial or non-existent effects. To secure highest quality, data collection for the present study is currently being outsourced to an external agency.

1 The replicability challenge

The study on risk-aversion has already a very long tradition that goes back to the '50s of the previous century. However, only with the development of behavioural and experimental economics providing innovative and interdisciplinary tools for studying the phenomenon, it flourished. Currently, there are numerous risk-elicitation methods (REMs) ranging from questionnaires, actual and hypothetical lotteries to experiments often providing us with inconsistent results. It means that not only the size of an individual's risk-aversion differs but also her relative position to others within the same sample changes when different REMs measured attitudes toward risk. In other words, an individual can be more risk-averse than another one when her attitude is being elicited with one method but not when using a different REM. Even subtle and seemingly unimportant changes in the context of the study can affect its outcomes significantly (Pedroni et al. 2017).

With the recent challenge posed by attempts to replicate the results of previous studies in areas such as medicine or genetics (Freese, Peterson 2017), it cannot be surprising that many findings within social sciences

raise concerns. Studies by Camerer et al. (2016; 2018) give us a hint about the situation within the experimental economics. The authors managed to replicate about 60% of effects of studies published in the most respectable journals (*American Economic Review*, *Quarterly Journal of Economics*, *Nature* and *Science*). The new effect sizes, however, were usually only 66% of the original one. None of the studies they attempted to replicate was related to risk-aversion, leaving an open space for others to contribute to the field.

2 Women and risk-taking

The issue of sex/gender differences in risk-attitudes itself proved to be equally controversial as the replicability of results. Soon after studies on risk-aversion had become widespread, it became apparent that men and women have different attitudes toward risk. Numerous scholars claimed that women are systematically more risk-averse and, as a consequence, less rational in their economic decisions (Eckel, Grossman 2008; Croson, Gneezy 2009; Charness, Gneezy 2012). Recently, however, these findings are being questioned from various perspectives. Not only the results proved to be mixed and inconclusive (Nelson 2018), but also it was shown that risk-aversion of both men and women could be affected by factors, such as culture, single-sex or coeducational learning environment or even salivary testosterone (Booth, Cardona-Sosa, Nolen 2014; Henrich, McElrath 2002; Apicella et al. 2008). Finally, it has been demonstrated that the magnitude of differences between men and women can be related to the REMs used in a study (Csermely, Rabas 2016; Filippin, Crosetto 2016). All these should encourage us to reflection that possibly our beliefs about sex/gender differences in risk-aversion require more detailed scrutiny. It seems likely that biological sex should no longer be perceived as a predictor of behaviour although there are already studies implying that (self-assigned) gender identity play a substantial role in shaping risk-attitudes (Meier-Pesti, Penz 2008). Scrupulous meta-analyses in various areas believed to be sex/gender sensitive showed that differences are often inflated or exaggerated (Hyde 2005). Furthermore, most traits are distributed between

¹ We use the construct "sex/gender differences" to avoid premature conclusion that only one group of factors, either biological or social, is responsible for an individual's risk-aversion.

men and women, meaning that there is no single psychological trait recognised only among representatives of one biological sex (Hyde et al. 2018). In the context of risk-aversion itself, Nelson (2018) introduced a similarity index indicating that men and women are considerably more similar in their risk-preferences than they are different.

3 Conclusion

The plurality of methods and approaches accompanied with the volatility of findings makes the issue of women's risk-aversion an ideal candidate for replication. It is also an excellent litmus test for robustness of many sex/gender differences generally recognised as true or even self-evident, opening up space for detailed scrutiny and verification. As the experience shows, scientific findings (even those published in the most respectable journals), ought to be taken with sufficient caution and scepticism. On the other hand, however, even done with most care, replications can fail for various reasons, including systematic and random errors, unintentional differences between samples and conditions, false positive and false negative effects (Freese, Peterson 2017). Therefore, it is important to remember that a failure does not necessarily mean the results were red herrings. Replications never meant to be a witch-hunt but rather a quest for better, robust, more reliable and possibly also more context-conscious social sciences. If, after all, some axioms fall down when brought into the limelight, it is only for the sake of scientific progress itself. Replication studies instead of being judgemental, should help us identifying good practices, controlling research quality, increasing transparency with the ultimate goal of producing knowledge and raising public trust in science and scientists (Nature 2014, p. 7).

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References

Adamus, M., Dudeková, K. (2018). Gender Stereotypes and Risk-Taking: a replication study on stereotype threat and financial decision-making. In *Kognice a umělý život XVIII*. Sborník příspěvků. Brno: Flow, z.s., 1-2.

Apicella, C., Dreber, A., Campbell, B., Gray, P., Hoffman, M., Little, A. (2008). Testosterone and

financial risk preferences. *Evolution and Human Behavior*, 29, 384-390.

Booth, A., Cardona-Sosa, L., Nolen, P. (2014). Gender differences in risk aversion: Do single-sex environments affect their development? *Journal of Economic Behavior and Organization*, 99, 126-154.

Camerer, C. et al. (2016). Evaluating replicability of laboratory experiments in economics. *Science*, 351(6280), 1433-1436.

Camerer, C. et al. (2018). Evaluating the replicability of social science experiments in *Nature* and *Science* between 2010 and 2015. *Nature: Human Behaviour*, 2, 637-644.

Carr, P.B., and Steele, C.M. (2010). Stereotype threat affects financial decision making. *Psychological Science*. 21(10): 1411-1416.

Charness, G., Gneezy, U. (2012). Strong Evidence for Gender Differences in Risk Taking. *Journal of Economic Behavior and Organization*, 83, 50-58.

Croson, R., Gneezy, U. (2009). Gender Differences in Preferences. *Journal of Economic Literature*, 47(2), 1-27.

Csermely, T., Rabas, A. (2016). How to reveal people's preferences: Comparing time consistency and predictive power of multiple price list risk elicitation methods. *Journal of Risk and Uncertainty*, 53(2-3), 107-136.

Eckel, C., Grossman, P. (2008). Men, Women and Risk Aversion: Experimental Evidence. *Handbook of Experimental Economics Results*, 1(113), 1061-1073.

Filippin, A., Crosetto, P. (2016). A Reconsideration of Gender Differences in Risk Attitudes. *Management Sciences*, Article in Advance, 1-23.

Freese, J., Peterson, D. (2017). Replication in Social Science. *Annual Review of Sociology*, 43, 147-165.

Henrich, J., McElreath, R. (2002). Are peasants risk-averse decision makers? *Current Anthropology* 43(1), 172-181.

Hyde, J. (2005). The Gender Similarity Hypothesis. *American Psychologist*, 60(6), 581-592.

Hyde, J., Bigler, R.S., Joel, D., Tate, C.C., van Anders, S.M. (2018). The Future of Sex and Gender in Psychology: Five Challenges to the Gender Binary. *American Psychologist*, 1-23.

Meier-Pesti, K., Penz, E. (2008). Sex or gender? Expanding the sex-based view by introducing masculinity and femininity as predictors of financial risk-taking. *Journal of Economic Psychology*, 29, 180-196.

Nature. (2014). Journals unite for reproducibility. *Nature*, 515, 7.

Nelson, J. (2018). *Gender and risk-taking. Economics, evidence, and why the answer matters.* Routledge: New York.

Pedroni, A., Frey, R., Bruhin, A., Dutilh, G., Hertwig, R., Rieskamp, J. (2017). The risk elicitation puzzle. *Nature: Human Behaviour*, 1, 803-809.