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The Effect of the Economic Situation on Time and Risk Preferences: Does Financial Literacy Matter?

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In two studies (N_1 = 430; N_2 = 500) on a general Slovak population (50.3% female; age = 39.8 ± 11.7 years), we tested a structural model outlining the effects of one's economic situation and its subjective perception on time and risk preferences (in tasks with hypothetical rewards), with financial literacy serving as a mediator of these relationships. Even after respecifying the model, mostly weak or inconclusive relationships were observed. We further tested the time stability of time and risk preferences. On a sample of 224 participants who completed both waves (one year apart), we observed moderate correlations in the preferences even after controlling for income change. We argue that both time and risk preferences in monetary choices appear to be stable traits and are only marginally related to one's economic situation or financial literacy. Further investigation on the effectiveness of financial literacy in shaping economic preferences is needed.

Key words: economic situation, time-discounting, risk preference, financial literacy

Introduction

Low socioeconomic situation is often associated with myopic and risk-averse economic behavior (e.g., preference for a small immediate reward instead of waiting for a bigger one; preference for a safe over a risky payment; Griskevicius et al., 2011; Haushofer & Fehr, 2014; Jachimowicz et al., 2017). A recurrent preference for an immediate benefit over a future advantage could be contributing to poverty perpetuation (Haushofer & Fehr, 2014; Kraay & McKenzie; 2014). A closer examination reveals that the bivariate relationships between financial situation and economic

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preferences (in this case time and risk preferences as they are closely related to economic outcomes) at the individual level are usually small (e.g., Carvalho et al., 2016a; Carvalho et al., 2016b; Falk et al., 2015; Reimers et al., 2009). Besides the psychological factors such as stress or negative affect (Adamkovič & Martončik, 2017; Haushofer & Fehr, 2014), this relationship could be shaped by one's financial literacy (i.e., one's financial knowledge and ability to process economic information and make sensible economic decisions; see, Lusardi & Mitchell, 2014). Despite some opposing evidence (Fernandes et al., 2014; Meier & Sprenger, 2013), financial literacy is generally deemed to optimize financial decisions and, importantly, could be learned and fostered (CFPB, 2019; Gathergood, 2012; Grohmann, 2018; Hastings et al., 2013; Lusardi et al., 2017). Thus far, a surprisingly small number of studies have combined directly the economic situation, financial literacy, and time and risk preferences. To the best of our knowledge, the only empirical papers on this topic (Bover et al., 2018; Lührmann et al., 2018; Mudzingiri et al., 2018) found that higher financial literacy slightly decreases time-discounting. If financial literacy indeed mediates the effect of the economic situation on financial preferences (i.e., despite being poor, a person with higher financial literacy will make economically more rational choices), it could suggest a substantial shift in policymaking and intervention programs. In contrast to directly alleviating poverty, policies could aim to optimize people's financial decisions, making the fight against poverty perpetuation more effective.

In the present study, we aim to extend this work and explore the relationships between the constructs (objective economic situation, subjective economic situation, financial literacy, time-discounting, and risk preference). We investigate the fit of a model in which financial literacy mediates the effect of the economic situation on time and risk preferences. We further examine the mediation effects of financial literacy. Finally, we explore the time stability of time-discounting in monetary choices.

A Rationale for the Suggested Model

Based on the existing evidence provided below, we propose the following model (see Figure 1): The objective financial situation affects its subjective perception (Gasiorowska, 2014; Maison et al., 2019) and directly influences financial literacy (Herd et al., 2012; Grohmann et al., 2015). At the same time, conditional on the objective economic situation, there is no causal pathway between the subjective economic situation and financial literacy (i.e., subjective perception of the financial situation per se is unlikely to affect financial literacy[1]). Both the objective situation and its subjective evaluation can potentially regulate the financial decision-making process (Lusardi & Mitchell, 2011). That is, if one is short of money, or, perhaps even more importantly, feels being short of money (Liu et al., 2013), he/she will discount more and be risk-averse when a reward is involved but more willing to take risks in situations of potential loss (e.g., Carvalho et al., 2016b; Griskevicius et al., 2011; Haushofer & Fehr, 2014; Tanaka et al., 2010). The perpetual experience of the low financial situation can impair financial literacy/financial management skills as one has had fewer possibilities and almost no need to self-educate

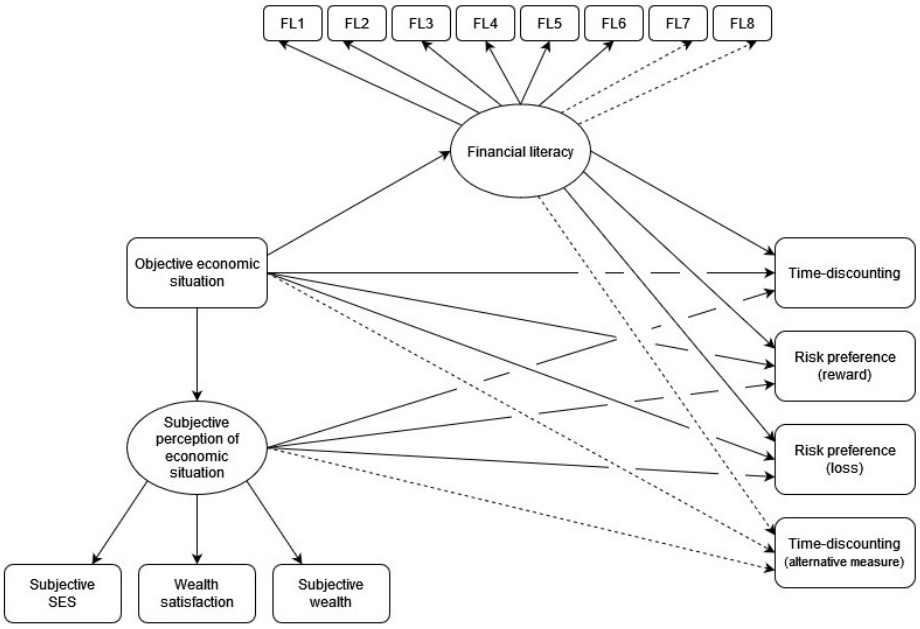
[1] Note that in the proposed model, the objective economic situation serves as a common cause of subjective perception of the economic situation and financial literacy. As all these variables are assumed to affect time/risk preferences also directly, a reader can notice that the model contains another mediation – subjective perception of the economic situation mediates the effect of the objective economic situation on time and risk preferences. Testing this, however, is beyond the scope of the present paper. As we have made all the data and analytic code freely available, an interested reader could easily calculate these relationships.

or improve in such abilities (Grohmann et al., 2015). It is then financial literacy that can lead a person to make economically (ir)rational or (un)favorable decisions (Beckmann, 2013; Hilgert et al., 2003; van Rooij et al., 2012), in this case operationalized as time and risk preferences. It is important to highlight the fact that the relationship between the economic situation and time and risk preferences might be subjected to too many confounding or moderating factors. In the present design, given the available data, we control for several variables (negative affect, perceived stress, self-control, working memory, general delay of gratification tendency, cognitive reflection, frugality, spendthrift/tightwad, and perceived reliability of the environment; the last three variables were only available in the confirmatory dataset).

Methods

Data Collection, Participants, and Power Analysis

We tested the proposed model against two datasets – exploratory (N_1 = 430; female = 50.7%) and confirmatory (N_2 = 500; female = 50%). Two hundred and twenty-four participants completed both waves of data collection – the time interval between the data collections was one year. The data comes from bigger data collections that were conducted for the purposes of the research grant APVV-15-0404. The participants were recruited via a local Slovak agency specializing in data collection and market research. All the materials were administered online, and each par-



Note. Dashed lines represent relationships estimated only in the second dataset.

Figure 1 Conceptual visualization of the tested (respecified) model.

ticipant provided an informed consent. After completing the study, participants received compensation in the form of credits that could be spent on various products offered by the agency. The data comprised Slovak adults in a productive age (ranging from 18 to 60 years; age = 40.05 ± 11.88 and 39.57 ± 11.47 years). The sample selection was based on a representative quota for gender, age group, and region.

After an initial screening for careless responders (see Curran, 2016), we excluded 11 participants from the exploratory and 14 participants from the confirmatory dataset. We omitted one additional participant from the confirmatory dataset as the majority of their responses were missing due to a technical error. Other than that, there was no missing data, as the request entry utility was employed in the administration process. The resulting sample sizes were 419 participants for the exploratory and 485 participants for the confirmatory dataset.

The initial sample size was determined by the financial constraints of the research team. Both samples had sufficient statistical power to detect even small effects (r = .20 was considered the smallest effect size of interest). RMSEA-based power analysis (α = .05; *Ha RMSEA* = .08; *H0 RMSEA* = .04) of the proposed structural model showed more than 99% power to detect a causally misspecified model. A preregistration of the study can be found at https://osf.io/7gczq/.

Measures

The following part provides a short overview of the focal measures used in the data collections. A description of all materials (with written permission from the authors when relevant) are available at https://osf.io/tac5z/.

Economic situation. The objective economic situation was measured as the monthly household net income equivalized in accordance with a slightly revised OECD modification scale (Hagenaars et al., 1994). The subjective economic situation was measured by three indicators: the MacArthur scale of subjective social status (Giatti et al., 2012); wealth satisfaction index (developed by the authors; ω = .92 for both datasets; example of an item: "How satisfied are you with your monthly income?"); one's own perception of poverty/wealth ("You consider yourself as: 1 = poor, 5 = neither poor nor rich, 9 = rich"). *Financial literacy.* Six and eight items, focused primarily on financial knowledge adapted from a seminal paper by Lusardi (2008), were used to assess financial literacy in the exploratory and confirmatory sample, respectively (two advanced items were added to the second data collection due to relatively high proportion of correct answers observed in the exploratory dataset; example of an item: "Let's say you have 200 dollars in a savings account. The account earns 10 percent interest per year. How much would you have in the account at the end of two years?"). The reliability estimates were ω = .81 and .78 for the exploratory (6-items) and the confirmatory dataset (8-items), respectively. *Time and risk preferences.* Time and risk preferences were assessed using the Staircase Time and Staircase Risk modules by Falk et al. (2018). The measures contain items involving hypothetical trade-offs between a smaller immediate reward and a larger but more distal/risky reward (example of an item: "Would you prefer 100 euro today or 154 euro in 12 months?"). A similar procedure (the amount of money was reduced to half and the scoring system was reversed) was utilized to assess risk preference when a loss is involved. To see how well the results replicate using different measures of time discounting, the 27-Item Monetary Choice Questionnaire (Kaplan et al., 2016) was included in the second data

Table 1 *Descriptive statistics*

	Exploratory dataset				Confirmatory dataset			
	Mean	SD	Skew	Kurtosis	Mean	SD	Skew	Kurtosis
Income	5.61	2.95	1.34	3.90	6.06	3.28	1.44	4.68
SES	5.03	1.69	-0.13	-0.02	4.75	1.60	0.04	-0.12
ECO	2.92	0.78	-0.16	-0.15	2.87	0.79	-0.14	-0.45
Wealth	4.64	1.41	-0.64	0.65	4.66	1.45	-0.57	0.68
FL	3.75	1.60	-0.28	-0.85	4.29	1.88	-0.15	-0.68
TD	18.23	10.70	-0.42	-1.31	17.45	10.91	-0.31	-1.46
RR	8.66	7.48	1.36	1.34	8.75	6.74	1.09	0.85
RL	21.56	7.70	-0.75	0.53	22.02	7.00	0.23	0.23
TD2	-	-	-	-	0.03	0.06	2.74	6.73

Note. N_{exp} = 419, N_{conf} = 485; Abbreviations: Income = equivalized household income in euros per month (objective economic situation); SES = subjective perception of socioeconomic status (range 1-10; a higher number indicates higher status); ECO = subjective perception of financial situation (range 1-5; a higher number indicates higher satisfaction); Wealth = perception of own wealth (range 1-9; a higher number indicates more wealth); TD = time-discounting (range 1-32; a higher number indicates lower time-discounting); RR = risk preference when reward is involved (range 1-32; a higher number indicates higher risk preference); RL = risk preference when loss is involved (range 1-32, a higher number indicates higher risk preference); TD2 = second measure of time-discounting (number indicates the rate of discounting).

collection (example of an item: "Would you prefer 69 euro today or 85 euro in 91 days?"). In both data collections, the time/risk preference questionnaires preceded the financial literacy measure. The descriptive statistics for these measures can be found in Table 1.

Analysis

We first tested the hypothesized structural model against the exploratory dataset. At this point, any model misspecifications were carefully studied and addressed if theoretically justifiable. Then, we fitted the respecified model to the confirmatory dataset to establish how well the (changes to the) model cross-validates. All the latent models were estimated in R package lavaan (Rosseel, 2012) using the WLSMV fit function, while explicitly modeling the ordered nature of the endogenous indicators. The models were seen as falsified based on a significant value of the χ^2 test statistics (see Ropovik, 2015). We assessed the global model fit using the scaled approximate fit indices (*CFI*, *TLI*, *RMSEA*, and *SRMR)*. A matrix of residuals was used to examine the local sources of model misspecification. To assess the degree of comparative evidence for the target structural coefficients, we also calculated the approximate Bayes factors. The estimated *BF*s were based on the model selection/information criteria approach as proposed by Wagenmakers (2007). Apart from *BF*, we also estimated the respective posterior probability of each of these parameters. Posterior probability refers to the probability of the parameter not being zero (as opposed to the probability of the data under the null). The estimation of posterior probability assumed a 1:1 prior odds of H_0 and H_a being true, respectively.

To examine how well financial literacy mediates the relationship between the objective

financial situation and time/risk preferences, we computed indirect and total effects. Additionally, to inspect the stability of time and risk preferences in time, we correlated the three economic preference measures in participants who took part in both data collections.

The entire analytic pipeline (data handling and analyses) reported in this paper is fully reproducible. The data, R code, and analytic outputs are freely available at https://osf.io/amwq3/.

Differences between the Exploratory and the Confirmatory Dataset

To summarize, there were three differences between the datasets: 1) the confirmatory dataset contained two additional financial literacy items; 2) the confirmatory dataset included a second time-discounting measure (27-IMCQ); 3) the confirmatory dataset included three additional covariates, namely frugality, spendthrift/tightwad, and perceived reliability of the environment.

Deviations from the Preregistration Protocol

The present paper contains three deviations from the preregistration document. 1) Although financial literacy had more than five items, we decided not to make parcels of them but to model every item instead; 2) Instead of running several models with a different configuration of covariates, we included all covariates in one model, making the results more robust; 3) Due to an error in the scoring procedure biasing the results, we did not analyze the measure of time-discounting in situations of loss.

Results

Bivariate correlations between all focal constructs are available in Table 2.

Exploratory Model Testing

When fitting the model against the exploratory dataset, the chi-square test indicated a beyond-chance deviation of the hypothesized model from the observed data, with $\chi^2(115) = 222.89$, $p < .001$, and the following approximate fit indices: *CFI* = .94, *TLI* = .93, *RMSEA* = .05, 95% CI [.04, .06], *SRMR* = .07. Although the upper bound of *RMSEA* did not exceed .08 (which would indicate a poorly fitting model), the result of the χ^2 *test* and the values of other fit indices warranted the need to look for

Table 2 *Bivariate correlations for the economic situation measures, time and risk preferences, and financial literacy*

	Income	SES	FL	TD	TD2	RR	RL
Income	-	.51	.26	.08	-.02	.18	-.07
SES	.41	-	.20	.09	-.06	.24	-.13
FL	.27	.15	-	.16	-.16	.09	-.12
TD	.17	.16	.25	-	-.49	.02	-.02
TD2	-	-	-	-	-	-.03	.00
RR	.15	.12	.16	-.01	-	-	-.30
RL	-.02	-.10	-.12	-.07	-	-.26	-

Note. Correlations for the exploratory dataset are presented below the diagonal and correlations for the confirmatory dataset are presented above the diagonal. Reported are the correlations between the latent constructs. The scoring of TD is reversed compared to TD2, in which higher scores represent lower time-discounting. Abbreviations: see Table 1.

model misspecifications. A detailed examination of the residual matrix, modification indices, and bivariate correlations indicated that the data did not substantiate the formulation of economic preferences as a unitary construct. We then modeled time and risk preferences as separate variables. The respecified model showed the following fit to the data: $\chi^2(97) = 160.93$, $p < .001$; *CFI* = .97, *TLI* = .95, *RMSEA* = .04, 95% CI [.03, .05], *SRMR* = .06. The improvement in fit was significant $\Delta\chi^2(18) = 61.96$, $p < .001$. The model showed a good approximate fit but was still disconfirmed by the χ^2 test. However, as there was no obvious theoretically justifiable modification and none of the suggested misspecifications seemed too serious, we decided not to adjust the model any further.

Regarding the parameter estimates, we observed the following results. The objective economic situation predicted its subjective perception well (β = .41) and was also weakly linked to financial literacy (β = .16). However, the objective economic situation did not have any direct effect on time and risk preferences, with βs of -.04, .08, and -.09. The effects of subjective economic status on the three economic preferences were of a similarly low magnitude. The path coefficients to time-discounting, risk preference when a reward is involved, and risk preference when a loss is involved were .18, .05, and -.12, respectively. Lastly, the model included paths from financial literacy to time and risk preferences. Here, financial literacy has the strongest link to time-discounting, with β = .28. The paths to risk preferences when a reward and a loss is involved yielded β estimates of .20, and -.06, respectively. Only the former two estimates were significant and can be interpreted as weak to moderate.

Confirmatory Model Testing

Overall, the fit of the model was almost identical to the fit in the exploratory dataset (note that due to the inclusion of additional covariates and TD measure, the model has more degrees of freedom): $\chi^2(170) = 276.11$, $p < .001$; *CFI* = .96, *TLI* = .94, *RMSEA* = .04, 95% CI [.03, .04], *SRMR* = .06. Most of the substantial residuals were between the indicators of financial literacy.

For the confirmatory dataset, the observed pattern of parameter magnitudes is mostly similar to the results of the exploratory phase. The objective economic situation showed a strong link to its subjective perception (β = .53), a weak link to financial literacy (β = .17) and no connection to time-discounting (β = -.05) or risk preferences when a reward (β = .01) and a loss (β = .02) is involved. The effects of subjective perception of the economic situation on time (β = .10) and risk preferences when a loss is involved (β = -.10) were a bit weaker than in the exploratory dataset. On the other hand, the effect of the subjective perception of the economic situation on risk preference when a reward is involved was stronger (β = .24). With respect to the structural effects emanating from financial literacy to time and risk preferences, all the effects were rather small (βs = .13, .01, and -.16) and either supported the null hypothesis or were inconclusive. The regression estimates, *BFs* and posterior probabilities are available in Table 3.

As can be seen from both phases, the only reliable and relatively strong effect was that between objective and subjective economic status. The structural relationships between the other constructs were rather unstable and small overall. The present results highlight the fact that theory building based on variable (and thus noisy) estimates of rather small sizes rest on shaky ground. In the present study, two of the paths associated with a posterior probability of .89 and .95 in the exploratory dataset dropped markedly in the confirmatory dataset, with a posterior prob-

Table 3 *Standardized regression coefficients, p-values, BFs and posterior probabilities for regression estimates in the respecified models*

Path	*β*	*p*	BF_{10} (Posterior)	*β*	*p*	BF_{10} (Posterior)
SES ~ Income	.41	<.001	3e+13 (1)	.53	<.001	2e+25 (1)
FL ~ Income	.16	.011	14.36 (.94)	.17	.004	7.11 (.88)
TD ~ Income	-.04	.545	0.05 (.05)	-.05	.374	0.06 (.06)
TD ~ SES	.18	.001	7.96 (.89)	.10	.080	0.12 (.11)
TD ~ FL	.28	.003	19.87 (.95)	.13	.078	0.62 (.38)
RR ~ Income	.08	.201	0.07 (.07)	.01	.903	0.06 (.06)
RR ~ SES	.05	.284	0.07 (.07)	.24	<.001	9.96 (.91)
RR ~ FL	.20	.028	0.56 (.36)	.01	.854	0.05 (.05)
RL ~ Income	.09	.124	0.17 (.14)	.02	.793	0.05 (.04)
RL ~ SES	-.12	.016	0.29 (.23)	-.10	.077	0.11 (.10)
RL ~ FL	-.06	.465	0.05 (.05)	-.16	.020	0.23 (.19)
TD2 ~ Income	-	-	-	-.13	.012	0.13 (.11)
TD2 ~ SES	-	-	-	.15	.007	0.08 (.08)
TD2 ~ FL	-	-	-	.15	.034	1.34 (.57)

Note. Abbreviations: see Table 1.

Table 4 *Indirect and total effects for financial literacy as a mediator between the objective economic situation and time and risk preferences*

	Exploratory dataset						**Confirmatory dataset**					
Outcome variable	Indirect effect	SE	*p*	Total effect	SE	*p*	Indirect effect	SE	*p*	Total effect	SE	*p*
TD	.06	.03	.042	.05	.06	.405	.03	.02	.103	-.01	.06	.879
TD2	-	-	-	-	-	-	-.03	.02	.067	-.03	.07	.633
RR	.04	.03	.111	.09	.06	.166	.00	.01	.805	.04	.06	.558
RL	.00	.02	.880	.10	.06	.064	-.02	.02	.195	-.02	.06	.698

Note. Abbreviations: see Table 1.

ability of .11 and .38. On the other hand, a path showing only .07 posterior probability in the exploratory data increased to .91 in the confirmatory data. Although all other paths were reliably cross-validated, it points to the importance of empirical syntheses and acknowledging the uncertainty inherent in studying subtle population-level effects of this kind.

Mediating Role of Financial Literacy

Running a robust mediation analysis, we found that financial literacy does not play a substantially significant role in mediating the effect of the objective economic situation on time/risk preferences. Across the two datasets, the indirect effects ranged from -.03 to

.06 and the total effects ranged from -.03 to .10, with all but one of the estimates being non-significant. The specific estimates and the corresponding *p*-values are reported in Table 4.

Stability of Time and Risk Preferences

In the sample of the participants (N = 224) who completed both data collections, we correlated the scores of the time/risk preference measures from the first data collection with the scores obtained in the second data collection. The observed correlation coefficients were moderate (time-discounting = .41; risk preference when a reward is involved = .42; risk preference when a loss is involved = .44) and all significant at the .001 level. The coefficients have remained moderate (rs > .40) even after controlling for income change, suggesting that both time and risk preferences are stable in time.

Discussion

In the present study, we tested a model in which financial literacy mediates the effect of the financial situation on time and risk preferences and took a closer look at the relationships between these variables. The results have highlighted two main points. First, based on the χ^2-statistics, the proposed structural model was disconfirmed by the data despite the approximate fit indices showing a (very) good fit. We argue that the depicted causal mechanism of how the financial situation affects time and risk preferences through financial literacy might miss some minor systematic factors. Indeed, the results, and particularly those related to financial literacy, should be viewed with caution. Second, the obtained regression estimates, as well as the indirect and total effects, were mostly weak or inconclusive.

The time stability of time/risk preferences (rs > .40) and the minor effects of the economic situation and financial literacy on these preferences suggest that the way people deal with delaying gratification or uncertainty in financial decisions is only marginally determined by their objective economic situation, its subjective perception, or financial knowledge. A person's current time and risk preferences can be considered as a combination of an individual's stable personality characteristics (Odum, 2011; Frederick et al., 2002; Frey et al., 2017; Meier & Sprenger, 2015; Pedroni et al., 2017) and temporary inclinations driven by actual needs, shocks, or crises (e.g., Bickel et al., 2016; Giuso et al., 2018; Haushofer et al., 2013). The financial preferences do not seem to be affected by a stable economic situation or a slow gradual change in it (Dohmen et al., 2016; Sahm, 2012). Even though the design of the study does not allow to uncover what exactly causes the variations in the preferences, these results corroborate the evidence that time and risk preferences are time-stable.

Although it is generally accepted that financial literacy enhances economic behavior (e.g., Gathergood, 2012; Grohmann, 2018; Hastings et al., 2013; Lusardi et al., 2017), the observed effects of financial literacy on one's time and risk preferences corroborate the evidence of only small effects between the constructs (Fernandes et al., 2014; Meier & Sprenger, 2013; Mudzingiri et al., 2018). This extends also to financial education and its effect on economic preferences. For example, DeHart et al. (2016) found a significant, yet small effect of how participating in financial education courses reduces delay discounting. Likewise, Stolper and Walter (2017) reviewed that the far transfer of financial literacy education on economic outcomes is very

limited[2]. It might be that the positive effect of financial education is visible on self-reported financial behavior but not on objective financial outcomes (Zhu, 2019). In this context, the statement by Fernandes et al. (2014, p. 1872) that the "causal role of financial literacy might need revisiting" appears to be on point.

The observed stability of time/risk preferences and the weak effects of financial literacy might, at first glance, suggest that the current efforts to enhance economic behavior (i.e., interventions focused on increasing financial literacy, especially financial knowledge) might have taken a wrong direction. Although this seems plausible, before making such a conclusion, the generalizability of the results should be taken into account (see Yarkoni, 2021). Each of the constructs (economic situation, time/risk preferences, financial literacy) used in the present study could be conceptualized/operationalized in different ways (Flake et al., 2021). Therefore, more research covering different operationalizations of the constructs is needed, especially when such data could affect policies. For instance, measuring the skill component of financial literacy instead of financial knowledge (Consumer Financial Protection Bureau, 2019) or usage of experience-based rather than description-based financial preferences measures (Hertwig, 2015) could produce different outcomes and result in different narratives. Further research is needed to examine what interventions on which aspects and operationalizations of financial literacy are the most effective for enhancing financial well-being. Alternatively, it seems that there are other variables such as time perspective (Zimbardo et al., 2017) or education in general (Kim et al., 2018), which go beyond financial literacy and have a more pronounced effect on people's economic behavior. Nonetheless, if accumulated for long enough, even small effects can be consequential in the long-run (see Funder & Ozer, 2019), and as such, particular caution should be applied when considering the effectiveness of any intervention.

There are several caveats of this study. 1) The financial decisions were bound to hypothetical rewards. There is mixed evidence as to whether a hypothetical reward can be considered an equivalent substitute for a real incentive (see Xu et al., 2016). It is important to test how people deal with real incentives especially when considering also the financial situation. However, considering the very limited budgets for conducting highly-powered research with sufficiently high incentives, this is often not feasible in practice. 2) Other limitations are related to the concept of financial literacy and its measurement. Although the author herself differentiates between basic and advanced questions (Lusardi, 2008) and discusses several distinct aspects of financial literacy (e.g., knowledge, abilities, attitudes, and behavior), the measure only focuses on financial knowledge (which is also common practice in research on financial education; Fernandes et al., 2014). From this perspective, we highly recommend focusing future research also on skill components and attitudes towards finances, or financial management in general (Consumer Financial Protection Bureau, 2019; Pham et al., 2012; Topa et al., 2018).

Economic behavior plays a crucial part in financial well-being. Together with its psychological determinants, it is likely to be one of the main causes of poverty perpetuation. Fostering more rational financial decision-making thus should be one of the focal tasks for policymakers all over the world. However, it still remains a challenge how to do so effec-

[2] Of course, some interventions are more effective than others. For a recent review of effective financial education programs see a report by CFPB (Consumer Financial Protection Bureau, 2019).

tively and more (especially longitudinal) data is needed.

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