

Limited Cognitive Ability and Time Preferences: Two Survey Experiments

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Abstract

Based on two RCT web experiments, we add new insights on how time preference relates to the limited nature of cognitive ability. In the first experiment study, we compare time preferences that are elicited from SS-LL intertemporal choices in two different formats a la Magen et al. (2014, *PNAS*): a usual hidden-zero format, in which non-reward consequences of each choice are not explicitly indicated (e.g., Would you prefer (A) JPY 10,000 today or (B) JPY 11,000 in a year), and an explicit-zero format, in which the non-reward consequences are made explicit (e.g., Would you prefer (A) JPY 10,000 today and JPY 0 in a year or (B) JPY 0 today and JPY 11,000 in a year). Our survey data support two hypotheses: (i) participants' choices in the hidden-zero format tend to reveal present bias, whereas those in the explicit-zero format do not; and (ii) participants' time preferences elicited in the hidden-zero format are associated with their self-reported tendency of misbehaving, like unhealthy behavior (obesity, lifestyle-related diseases), over-borrowing, and addictive consumption (gambling, smoking, drinking), whereas elicited time preferences for the explicit-zero format do not predict misbehaving. The results have helpful implications for designing better discounting experiments and for architecting public policy.

In the second experiment study, we examine how acute mental stress affects time preferences. To do so, participants in the randomly selected treatment group are told to first respond to stressful questions (question set S) regarding recent negative experiences, personal complex, and perceived stress for the past one month, where acute stress increases occurring due to these unpleasant questions are quantified by measuring differences in Spielberger's state anxiety inventory scores after and before the stress task. The participants are next asked to respond to intertemporal and risky choice questions (question set C). The data are shown to support our hypothesis that in the treatment group, larger increases in state anxiety lead to stronger present bias, whereas no such association is observed for the control group, in which the order of the question sets is reversed, i.e., participants respond to question set C, before responding to the stress-inducing question set S. This result implies that acute stress exaggerates present bias.