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We explore budget waste coming from inconsistent choices triggered by "hot" and "cold" evaluations, as well as, the overall budget waste across both types of evaluation. We find that budget waste coming from "hot and "cold evaluations is comparable, but the overall waste of budget across the two types of evaluation is significantly higher.

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A Dual-Process Model of Economic Rationality: 
The Symmetric Effect of Hot and Cold Evaluations on Economic Decision Making

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EXTENDED ABSTRACT

A lot of research has linked economically irrational behavior to inconsistent choices triggered by dual-processing system, often referred to as hot and cold systems (Dhar and Gorlin, 2012). The hot system is relatively automatic, quick and effortless, whereas the cold system is more deliberate, slow and effortful. Previous research has investigated the role of both systems in choice inconsistencies; however, some important questions remain unanswered: How severe are choice inconsistencies triggered by both types of judgment? Can such inconsistencies lead to a significant waste of money?

Literature findings on this matter are not clear. Several studies suggest that utility loss from suboptimal choices can stem from behavior triggered by the hot system, as various behaviors that can be viewed as suboptimal, such as lack of self-control and hyperbolic discounting, are attributed to the hot system (Wertenbroch 2003). On the other hand, a stream of research has shown that the cold system can have a negative impact on decision quality, as cognition can act as a form of distraction which can pull attention away from the most relevant information, and as such lead to inconsistent behavior (Lee et al. 2009). Last, some studies suggest that waste of budget does not necessarily result from a specific system, but rather from a potential discrepancy between types of processing and/or decision situations (Read and Loewenstein 1995).

However, none of the above studies has used a direct measure of severity of inconsistent choices involving conditions with different price regimes and budget restrictions. We do precisely that by employing a measure capturing the severity of choice inconsistencies, and translating this into budget loss. In two experiments we conduct an investigation of the severity of inconsistent choices (coming from behaviors triggered by the two systems) by using the General Axiom of Revealed Preferences (GARP) and Afriat’s Index to examine choice behavior in terms of efficient budget use (Harbaugh et al. 2001).

In study 1, participants (n=138) were invited to come to the lab to complete a task designed to capture the severity of inconsistent choices. To be able to calculate Afriat’s Index we created a revealed preferences task. The task included 12 sequential choice problems, with each choice problem consisting of four products: two vice, relatively tasty but not so healthy products and two virtue, relatively healthy but not so tasty products. The prices of the products differed for every choice problem. Participants were asked to indicate the quantities they wanted from each product given the different price regimes and their budget (10 tokens). As a manipulation of hot and cold system we varied the visceral state hunger (Loewenstein 1996), which resulted in three conditions. In the experimental condition, participants completed the choice task once hungry (hot) and once satiated (cold system; order counterbalanced), while in the control conditions the participants were asked to complete the choice task both of the times hungry (hot control condition) or satiated (cold control condition). In all conditions, the measurements were separated by one week. For every participant, we measured the relative vice and virtue consumption and the Afriat’s Index for each session as well as the overall Afriat’s Index of the two sessions.

A paired samples test showed that in the experimental condition, respondents chose more grams of vice products when hungry (M_vice=211.99, SD=72.81) than when satiated (M_satisfied=177.87, SD=82.20; t(66)=3.90, p<0.001), whereas they chose fewer grams of virtue products when hungry (M_vice=119.87, SD=70.38) than when satiated (M_satisfied=149.52, SD=79.20; t(66)=3.49, p=0.001). In the control conditions none of the differences were significant. Additionally, we compared the differences between vice choices in the two sessions across conditions and did the same for virtues. The comparison showed that the difference in both vice and virtue choices for the two sessions was significantly larger in the experimental condition than in the two control conditions (combined) (t_(136)=3.884, p=0.001; t_(control)=0.006; t_(136)=3.312, p=0.036). This validates our manipulation.

Comparing the Afriat’s indices resulting from choices in both sessions in the experimental condition, we found that the difference was insignificant (M_vice=0.972, SD=0.081; M_satisfied=0.966, SD=0.054; Wilcoxon Z=-0.826, p=0.409). These results indicate that the proportion of the budget wasted was small and similar for both types of judgments (cold versus hot). We also calculated the overall Afriat’s index for the two sessions (different types of judgments). Specifically, we randomly picked six observations from each session dataset for each respondent. This yielded a dataset consisting of 12 observations per individual that allowed us to calculate an overall, cross-judgment Afriat’s index that was directly comparable to the separate, within session indices. We repeated the same procedure 200 times and calculated the average of the overall Afriat’s index for every respondent. The overall index was significantly lower (M_overall=0.93, SD=0.077) than the indices of each session respectively (Z=3.836, p<0.001 for hot; Z=3.169, p=0.002 for cold). The difference between the indices in both cold and hot control condition were all insignificant. Additionally, we calculated the absolute difference between the overall Afriat’s index on the one hand and both separate Afriat’s indices (which we averaged) on the other in all conditions, and compared these differences across conditions. We found that the difference (d_overall =0.031) in the experimental condition was significantly larger than in the two (pooled) control conditions (d_control=0.006; t_(136)=3.312, p=0.001).

The second study confirms the results of study 1 by using a different manipulation of the two systems (cognitive load; e.g. Shiv and Fedorikhin 1999) and incentivizing participants to maximize the utility of their budget (participants were told that they would receive one of their choices after the end of each session).

To conclude, we conducted two studies to investigate whether one of the systems (hot vs. cold) leads to budget wasting behaviors coming from inconsistencies. We show that budget waste resulting from behaviors triggered by either hot or cold system is low and comparable, but that overall budget waste across the two systems is significantly higher.

REFERENCES


