

On the Observability of Purely Behavioral Sunk-Cost Effects: Theoretical and Empirical Support for the BISC Model

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Abstract


There is growing interest in whether and how sunk-cost effects for purely behavioral investments occur. In this article, we further discuss Cunha and Caldieraro's (2009) Behavioral Investment Sunk Cost (BISC) model and reconcile Otto's (forthcoming) results with the BISC model predictions. We also report new data from two unpublished experiments that are consistent with the BISC model, and discuss the conditions under which purely behavioral sunk-cost effects are likely to be observed.

Keywords: Sunk costs; Effort and decision; Cognitive psychology; BISC model; Behavioral sunk-cost effects; Sunk-cost effects

Sunk-cost effects have important implications for one's utility because when nonrecoverable investments influence a choice of new courses of action, they may prevent individuals from maximizing their well being. Although sunk-cost effects are well-documented for monetary investments, evidence supporting sunk-cost effects for purely behavioral investments is more scarce, despite Arkes and Blumer's (1985) prediction that such effects should occur for investments of money, time, and effort. Cunha and Caldieraro (2009) propose the Behavioral Investment Sunk Cost (BISC) model and provide evidence showing that BISC effects may operate under an effort-justification mechanism. Otto (forthcoming) fails to replicate the results of experiment 1 of Cunha and Caldieraro (2009) and argues that BISC effects may not be easily replicated. In this article, we further discuss the BISC model, reconcile Otto's (forthcoming) results with the BISC model predictions, and report new data from two unpublished experiments that support the BISC model.

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1 The BISC model predicts that the effort-induced increment in perceived utility of an ini-
 2 tial choice (the BISC value) increases as effort increases. Thus, BISC effects depend on the
 3 magnitude of the BISC value relative to the incentives to disregard this value (i.e., the
 4 opportunity cost of selecting another alternative). Fig. 1 shows that when the BISC value is
 5 not calibrated relative to the opportunity cost, equivalent magnitudes of sunk-cost effect
 6 should be observed across levels of effort: Either most individuals are likely to experience

LOW RESOLUTION FIG

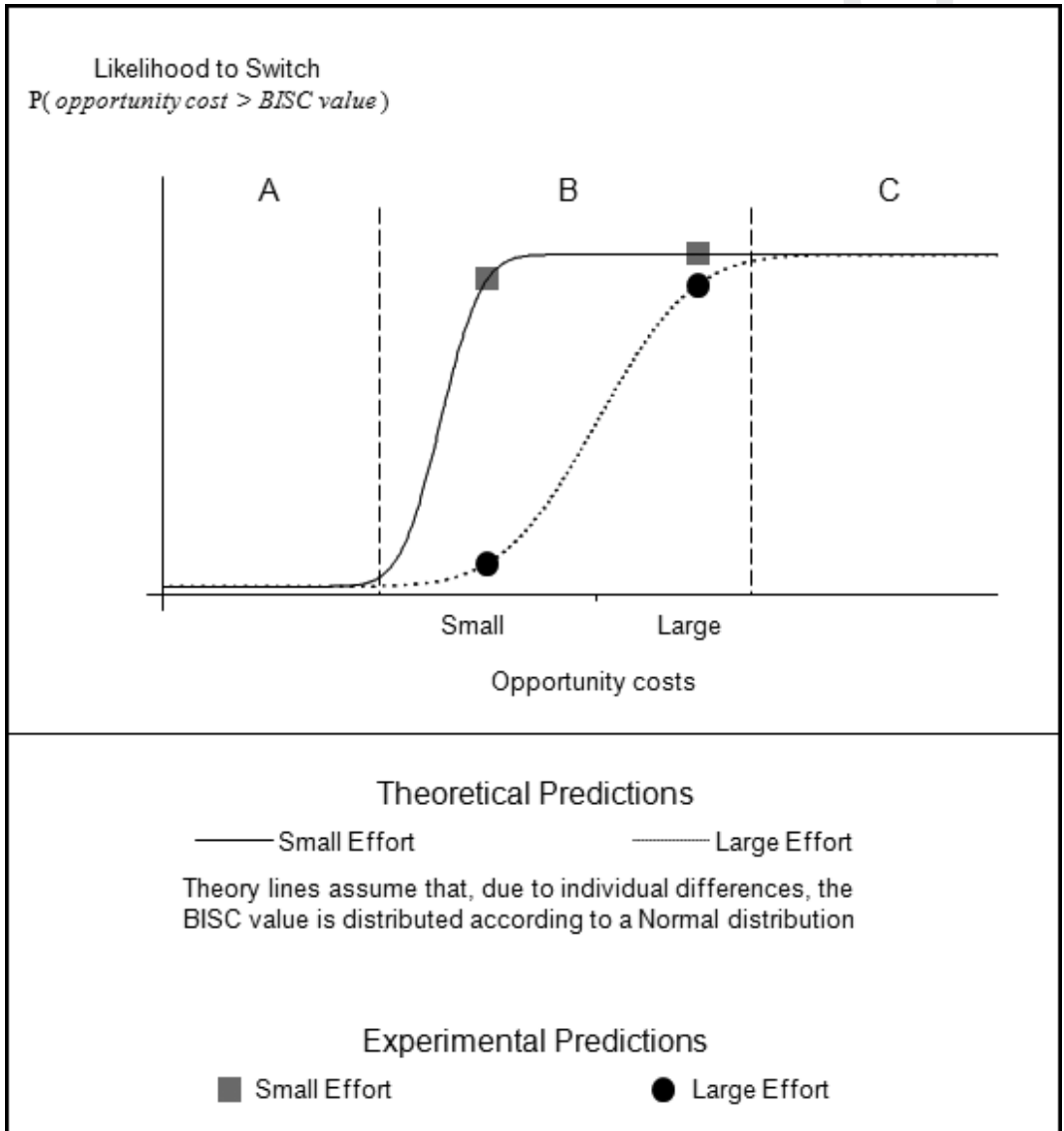


Fig. 1. Theory and experiment predictions.

1 sunk-cost effects or most individuals are unlikely to experience sunk-cost effects (regions A
2 and C of Fig. 1, respectively). However, when the opportunity cost is large enough to offset
3 smaller BISC values but not larger BISC values, one is likely to observe varying magnitudes
4 of BISC effects across levels of effort investment (region B of Fig. 1).

5 Otto's (forthcoming) experiments failed to capture differences in perceived satisfaction
6 with the initial choice as a function of effort, thus failing to activate the effort-justification
7 mechanism underlying the BISC model effect (a puzzling result given how well effort-justi-
8 fication is established in the literature of cognitive dissonance). Hence, it is not surprising
9 that Otto was not able to observe the BISC effects. In fact, his results are consistent with
10 region C of Fig. 1, which predicts no BISC effects because the opportunity cost offsets both
11 levels of effort investment (i.e., BISC values).

12 In Otto's (forthcoming) experiments, the predicted relationship between effort and satis-
13 faction is not statistically significant across effort conditions. However, it is encouraging to
14 see that, within the greater-effort condition in experiments 2 and 3, there was a positive cor-
15 relation between decision time and initial satisfaction. This suggests that the BISC value
16 operated within the greater-effort condition, and that the effort manipulation may not have
17 been optimally calibrated for the population of the experiments. It is possible that, among
18 other factors, the use of more meaningful choice scenarios, or of alternative measures to
19 capture the positive BISC value across different populations and contexts, may facilitate the
20 observability of BISC effects.

21 To further support the BISC model, we report two unpublished experiments. The first exper-
22 iment was similar to experiment 1 in Cunha and Caldieraro (2009) with the key difference that
23 the four attribute ratings were presented as digits (e.g., "7"; lesser effort) versus words (e.g.,
24 "seven"; greater effort). Participants were MBA students from Santa Clara University who
25 computed the average rating for eight products with the target product featuring a rating of 7.5.
26 The ratings for the low and high opportunity cost products were 7.6 and 8.2, respectively. The
27 second experiment was a variant of experiment 2 from Cunha and Caldieraro (2009). Partici-
28 pants were undergraduate business students from the University of Washington who made
29 actual choices of chocolate bars. Participants computed the overall value of chocolate bars by
30 adding the ratings of four attributes (creaminess, aftertaste, cocoa grade, and melting balance)
31 for 4 (lesser effort) versus 12 (greater effort) chocolate bars with the target bar featuring a rat-
32 ing of 31. The ratings for the low and high opportunity cost bars were 32 and 37, respectively.
33 At the end of the experiment, participants could choose between their initial choice of choco-
34 late bar and the opportunity cost bar (M&M's M'Azing or Hershey's chocolate bar, counter-
35 balanced daily). Measures were taken on 7-point scales with greater ratings indicating greater
36 perceived effort, satisfaction, and likelihood-to-switch (choice proportions in experiment 2).
37 Results, shown in Table 1, replicate the findings in Cunha and Caldieraro (2009).

38 We suspect that, relative to laboratory contexts, BISC effects may be more pronounced in
39 real life situations because of the greater meaningfulness of the choices and motivation to
40 invest effort. Consistent with this rationale, advertisers and manufacturers pay a premium for
41 placing their ads and their products in locations that can help consumers reach a decision after
42 considering a few options. This could be explained not only by the fact that processing of addi-
43 tional pieces of information is cognitively taxing, but also because once an individual finds a

Table 1

XXXXXXXXXXXX

	Greater Effort	Lesser Effort	Statistic	BF [log(BF)]
Experiment 1 (n = 63)				
Perceived effort	3.88 (1.73)	2.97 (1.52)	$t(61) = 2.22, p = .03$	0.12 [-2.12]
Initial satisfaction	5.24 (1.37)	3.83 (1.66)	$t(61) = 3.68, p < .001$	0.05 [-3.00]
Likelihood to switch (small opportunity cost)	4.29 (1.93)	5.57 (1.09)	$F(1,59) = 5.11, p = .03$	0.57 [-0.56]
Likelihood to switch (large opportunity cost)	5.88 (1.63)	5.50 (1.41)	$F(1,59) = 0.46, p = .50$	2.76 [1.02]
Interaction term			$F(1,59) = 4.36, p = .04$	
Experiment 2 (n = 178)				
Perceived effort	3.48 (1.59)	2.93 (1.44)	$t(176) = 2.42, p = .02$	0.26 [-1.35]
Initial satisfaction	4.99 (1.43)	4.52 (1.24)	$t(176) = 2.35, p = .02$	0.35 [-1.05]
Proportion who switched (small opportunity cost)	30.2%	71.4%	$\chi^2(1) = 14.23, p < .001$	<0.001 [<-100]
Proportion who switched (large opportunity cost)	71.7%	74.5%	$\chi^2(1) = 0.10, p = .75$	6.16 [1.82]
Interaction term			$\beta = 1.61, SE = 0.67,$ $Wald \chi^2(1) = 5.84, p = .02$	

Note. Values for the Greater and Lesser Effort conditions are the average ratings on a 7-point scale, unless data are choice proportions. Standard deviations for ratings are presented in parentheses. Bayes Factors (BF) and Log Bayes Factors computed according to the Savage-Dickey procedure using WinBUGS. Both the statistics and the Bayes Factors support the predicted differences in satisfaction with the choice (BISC value) and the hypothesized BISC effects.

satisfactory option, the attractiveness of slightly superior alternatives decreases as a function of the additional utility stemming from the effort invested in reaching an initial decision.

We stress that a condition for replication of BISC effects is that effort needs to be translated into incremental utility for the initial choice. As it can be inferred from our theorizing, perceptions of the BISC value and opportunity cost can easily vary across populations and contexts. Thus, lack of calibration between the BISC value and opportunity costs may lead to null effects. Nevertheless, we are confident that the BISC model is a parsimonious theory to investigate BISC effects, as evidenced by the experiments reported in this article and in Cunha and Caldieraro (2009). We encourage researchers to further develop manipulations and measures that accurately capture the BISC value.

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