

# Selling losers and keeping winners: How (savings) goal dynamics predict a reversal of the disposition effect

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**Abstract** A well-documented behavioral pattern in consumer financial decision making is the disposition effect, which refers to the tendency to sell winning investments too early while holding on to losing investments too long. This bias has negative wealth consequences, because typically, individuals' losing investments continue to underperform while their winning investments continue to outperform. Using a goal-systemic framework, the present research indicates that individuals' susceptibility to the disposition effect can be reversed by activating a superordinate (savings) goal. Experimental results indicate that three effective ways to activate a superordinate (savings) goal, and thereby reverse the disposition effect, are as follows: (1) subtly prime it with goal-related words, (2) prime it by making an overall portfolio loss salient, and (3) prime it by explicitly mentioning a goal with a clear-end state.

**Keywords** Consumer financial decision making · Disposition effect · Goal systems theory · Investment decisions · Savings goals

## 1 Introduction

A well-documented behavioral pattern in consumer financial decision making is the disposition effect, which refers to the tendency to sell winning investments too early, while holding on to losing investments too long (Shefrin and Statman 1985). The

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pervasiveness of the disposition effect is illustrated by its systematic presence in both lab settings (Weber and Camerer 1998) and actual trading data (Odean 1998). The widespread occurrence of the disposition effect is concerning because it has negative wealth consequences: Odean (1998) finds that the loser stocks individuals hold on to continue to underperform, while the winner stocks they sell continue to outperform.

Recent research begins to recognize factors or conditions that dampen or strengthen the individuals' susceptibility to the disposition effect. Mitigating factors identified so far include such socio-demographic variables as financial sophistication (Dhar and Zhu 2006; Feng and Seasholes 2005; Shapira and Venezia 2001), investment experience (Chen et al. 2007; Da Costa et al. 2013; Feng and Seasholes 2005), and whether individuals invest for themselves or on behalf of another person (Lee et al. 2008). An open question, however, is whether there exist more fundamental psychological factors or conditions that would systematically predict an actual reversal of the disposition effect.

Answering this question is academically relevant and practically important. First, no theory of consumption can be complete without a fundamental psychological understanding of why individuals manage their wealth in the ways they do (Zhou and Pham 2004). Considering the pervasiveness of the disposition effect in consumer financial decision-making, identifying the psychological conditions under which this effect is reversed helps complete our understanding in this regard. Moreover, considering the population's aging demographics and individuals' increasing self-responsibility for building up retirement wealth (Van Rooij et al. 2011), identifying the conditions under which the disposition effect is reversed can have positive wealth consequences for individuals.

The present research is one of the first systematic attempts to define boundaries for the disposition effect. To this end, we develop and test a theoretical framework based on goal systems theory (Fishbach and Dhar 2005; Köpetz et al. 2012; Zhang et al. 2007a). As goals are a key driver of an individuals' financial behavior (Antonides et al. 2011), goal systems theory is well-suited to building a framework that explains which psychological conditions reverse the disposition effect.

Apart from increasing our understanding regarding the increasingly important topic of how consumers make financial decisions (Aspara and Tikkanen 2010; He et al. 2008; Hoffmann and Broekhuizen 2010; Johnson and Tellis 2005; Johnson et al. 2005; Lee et al. 2008; Raghubir and Das 2010; Townsend and Shu 2010; Zhou and Pham 2004), the present research contributes to the literature on the disposition effect and goal systems. By constructing and testing a coherent theoretical framework identifying goal-related conditions governing individuals' susceptibility to the disposition effect, we extend aforementioned work, which has focused on socio-demographic variables mitigating individuals' susceptibility to this effect. In turn, we extend the goal systems literature by applying this theory to investment choices. Goal systems research has focused on straightforward, non-risky, and active day-to-day decisions, such as eating or exercising (Fishbach and Dhar 2005; Zhang et al. 2007a). In an investment context, however, choice outcomes are risky, individuals have little control over these outcomes, and decisions include passive and active actions (i.e., the decision to hold on to a stock vs. buying or selling a stock).

As to our theoretical framework, goal systems theory considers goals to be mental representations that are interconnected with representations of means to attain the selected goals (Fishbach et al. 2003; Zhang et al. 2007a, b). Goal systems theory focuses on explaining the dynamics of how goals are activated, pursued, attained, and controlled in an individuals' mind (Köpetz et al. 2012). An important prediction is the

negative effect of perceived progress in goal attainment on individuals' motivation to pursue that goal. Progress towards a certain goal provides a sense of goal attainment and signals that less additional effort is needed to accomplish it (Fishbach and Dhar 2005). Correspondingly, failure to progress evokes negative feelings that motivate individuals to invest more efforts in trying to attain the goal to reduce the negative feelings (Touré-Tillery and Fishbach 2011). Goal systems theory does not treat goal progress in absolute terms; the related dynamics depend on how individuals interpret it. If contextual conditions make individuals interpret goal progress as goal commitment instead of goal attainment, their motivation to pursue that goal and other means serving that goal increases rather than decreases (Fishbach et al. 2006).

In terms of goal systems theory, the disposition effect may be explained by the notion that a winning stock's good performance constitutes progress towards an individual's sub-goal of obtaining financial returns from that investment, whereas a losing stock's poor performance is interpreted as a lack of progress. From the basic predictions of goal systems theory (Touré-Tillery and Fishbach 2011), it can thus be expected that positive progress and emotions related to the former investment decrease an individual's motivation to continue to pursue returns with that investment, while badly progressing pursuits with the latter investment motivate an individual to devote more effort to pursuing returns with it—supporting the disposition effect. This explanation presumes that individuals treat each investment as independently providing progress towards the independent sub-goals of obtaining financial returns from each one of them, rather than viewing these stocks as jointly serving one and the same superordinate goal of maximizing financial savings. The literature on mental accounting supports this assumption (Thaler 1985).

Extending this notion based on goal systems theory, we presently theorize the conditions under which a reversal of the disposition effect can be expected. In particular, we expect that activating a superordinate goal of financial savings reverses an individuals' disposition to sell their winning stocks and hold on to their losing stocks. Activating a superordinate savings goal leads an individual to reframe investing from “one goal per investment” (financial return goal for each stock) to “one goal for all investments” (superordinate savings goal). Consequently, the focus shifts from goal progress in the “one goal per investment” (financial return) frame to means instrumentality in the “one goal for all investments” (superordinate savings goal) frame. In the “one goal for all investments” (superordinate savings goal) frame, investors reject means that are not instrumental to the superordinate savings goal (losers) and accept means that are instrumental to the superordinate savings goal (winners). Additionally, activating a superordinate savings goal might encourage individuals to think about their portfolios more abstractly, which reduces their sensitivity to losses (Trope and Liberman 2010). This attenuates the individuals' tendency to hold on to a losing stock to avoid the pain of realizing a loss (Shefrin and Statman 1985). Finally, when a superordinate savings goal is activated, progress with attaining the financial returns sub-goal with the well-performing stock is likely to signal commitment to the superordinate savings goal (Fishbach et al. 2006). The higher perceived instrumentality of the winning stock for the superordinate goal (based on past experience) increases individuals' interests in continuing to invest in that stock (Köpetz et al. 2012).

There are many different ways to activate a superordinate savings goal, which are thereby likely to reverse the disposition effect. We focus on three such ways. First, we

expect that subtly priming individuals by means of a scrambled sentence task (Srull and Wyer 1979) that includes words related to a superordinate savings goal (e.g., patience, wealth accumulation, and savings) will activate a superordinate savings goal and thus reverse the disposition effect (H1a). Second, we expect that a prime which increases the salience of an individual's overall portfolio performance may activate a superordinate savings goal and thus reverse the disposition effect (H1b). In particular, as losses loom larger than gains (Kahneman and Tversky 1979), we expect a manipulation in which overall progress toward the superordinate savings goal is negative to be particularly effective. Third, we expect that explicitly indicating to individuals the presence of a savings goal with a clear-end state looming close will activate a superordinate savings goal and thus reverse the disposition effect (H1c). Indeed, the “goal-gradient hypothesis” suggests that goals “loom larger” when they are closer to their end state (Kivetz et al. 2006). The following three experiments each test one of these options to activate a superordinate savings goal and reverse the disposition effect.

## 2 Experiments

We use three experiments (A–C) to test the role of activating a superordinate savings goal in reversing individuals' susceptibility to the disposition effect. Each experiment focuses on a different way to activate a superordinate savings goal, corresponding to hypotheses H1a–c. The treatment groups of the three experiments, exposed to their respective experimental factors, are contrasted with one common control group (receiving no treatment).

### 2.1 Method

#### 2.1.1 Participants

Ninety-two individuals following a course in business administration at a large university in Finland participated in the experiment. All participants had finance knowledge and most had investment experience. Finland is an appropriate country for conducting research on investment behavior because of the population's broad stock market participation and high level of financial knowledge (Grinblatt and Keloharju 2000). Of the participants, 59.8 % (41.2 %) were female (male), the mean age was 21.6 years. Participants ( $n=92$ ) were assigned randomly to the control group ( $n=23$ ), treatment group A ( $n=29$ ), treatment group B ( $n=22$ ), or treatment group C ( $n=18$ ).

#### 2.1.2 Study design

All experiments involved the same within-subject factor stock performance addressing the disposition effect, exposing participants to a scenario where they had one well-performing (winning) stock investment and one poorly performing (losing) stock investment. The key dependent variable was the willingness to hold (vs. sell) each stock, analyzed as a function of the within-subject factor stock performance and between-subject treatment factor specific to experiments A–C (i.e., priming with words, salient portfolio loss, explicit close goal).

### 2.1.3 General procedure

Participants completed the experiments using a PC. To avoid demand effects and the possibility that participants guessed the experiments' purpose, the experimental stimuli and tasks were interspersed between unrelated filler tasks. When participants reached the part containing the present experimental stimuli, they first completed a scrambled sentence task. Except in the priming with words treatment group (A), the scrambled sentence task used neutral (non-goal-priming) words. Next, participants were presented an investment scenario:

*One year ago, you started investing 5,000 Euros of your savings in the stock market. At that time, you bought shares of two companies: shares of company X (for 3,000 Euros) and shares of company Y (for 2,000 Euros). Since then, the share price developments of these companies have been the following:*

- *During the one year that you have owned the shares of company X, the value of your investment has dropped from 3,000 to 2,600 Euros.*
- *During the one year that you have owned the shares of company Y, the value of your investment has risen from 2,000 to 2,600 Euros.*
- *Thus, the current value of both shares is 2,600 Euros, totaling 5,200 Euros (200 Euros up from the initial 5,000 Euros that you invested in the stock market).*

After this scenario, participants were asked about their willingness to hold vs. sell each of the two stocks. Unrelated filler items followed this question. Then, a set of background questions pertaining to several control variables was asked. Finally, participants were subjected to a funnel debriefing designed to find out whether they noticed any links between the tasks or the purpose of the experiment. None of the participants indicated that they had done so.

### 2.1.4 Treatment group A: stimuli and manipulations

The key manipulation for the treatment priming with words was a scrambled sentence task that preceded the presentation of the investment scenario. The scrambled sentence task followed Srull and Wyer's (1979) guidelines. Participants were shown 15 scrambled sentences, each comprising five words. Participants were requested to unscramble the words of each sentence and form a grammatically correct sentence using four of the five words. Prime words were included in 12 of the 15 sentences. Prime words in the priming with words condition related to patience, wealth accumulation, and savings. Examples are "large," "conservative," "worthwhile," "amount," "patient," "expectation," "solid," "earning," "grows," "plans," and "thrifty." In the control group, we used neutral words like "back," "white," "idea," "ordinary," and "moves." Two grammatically correct sentences could be constructed from each set of words, in both the prime and neutral conditions. Except for the prime words, all words and their ordering were identical across experimental conditions.

### 2.1.5 Treatment group B: stimuli and manipulations

The manipulation of salient portfolio loss was realized by presenting participants an investment scenario where the combined (overall) return of the two stocks was

negative. Thus, whereas the control condition presented the stock of “company X” to have dropped from 3,000 to 2,600 Euros and “company Y” to have risen from 2,000 to 2,600 Euros (“totaling to 5,200 Euros and 200 Euros up from the initial 5,000 Euros”), the salient portfolio loss condition replaced the 2,600 Euros with 2,400 Euros for both stocks. The current value of the total investment was now “4,800 Euros (200 Euros down from the initial 5,000 Euros).”

### 2.1.6 Treatment group C: stimuli and manipulations

The treatment manipulation of explicit close goal was achieved by altering the beginning of the investment scenario. Before the basic scenario, participants were told that:

*A year ago, you started investing 5,000 Euros of your savings in the stock market. At that time, you decided that your overall goal would be to increase your savings to 5,400 Euros by 2013, by getting investment returns on your initial 5,000 Euros.*

Thus, participants had to imagine a savings goal with a clear-end state, 5,400 Euros, looming close to the 5,200 Euros they already gathered (initial 5,000 Euros plus returns of 200 Euros, as indicated by the rest of the scenario).

### 2.1.7 Measures

The dependent variable, willingness to hold (vs. sell) each stock, was measured by asking: “If you were in the above situation, how likely would you be to sell or hold company X/Y’s shares?” Responses were recorded on a 7-point scale, anchored at 1=“I would definitively sell the company’s shares” and 7=“I would definitively hold the company’s shares.” As control variables, we included measures for participants’ gender, as well as for their self-reported investment skills and experience. Gender influences investment decision-making in general (Barber and Odean 2001), while investment skills and experience are potential socio-demographic moderators of the disposition effect (Dhar and Zhu 2006; Chen et al. 2007). Following Hoffmann and Broekhuizen (2010), investment skills were measured by asking “How would you describe your abilities as an investor?” which was anchored at 1=“my abilities are considerably weaker than those of an average investor” and 5=“my abilities are considerably better than those of an average investor.” Consistent with Hoffmann and Broekhuizen (2010), investment experience was measured by asking participants how many years they had already been investing at the time of the experiment.

## 3 Results

### 3.1 Priming with words

To test hypothesis H1a, we performed a mixed-model, two-way ANOVA of willingness to hold (vs. sell) each stock, with stock performance as the within-subjects repeated-effect factor and priming with words (vs. control) as the between-subjects

factor.<sup>1</sup> The ANOVA of participants' willingness to hold (vs. sell) a stock reveals no main effect for stock performance (losing vs. winning) ( $F(1, 50)=0.31, p>0.50$ ) or priming with words ( $F(1, 50)=0.20, p>0.05$ ). However, priming with words has a significant qualifying effect on willingness to hold the losing vs. winning stock ( $F(1, 50)=4.77, p=0.038$ ), supporting H1a. In the control condition, participants' investment willingness reflected the disposition effect: they were more willing to hold on to the losing ( $M=4.83$ ) rather than the winning stock ( $M=3.96$ ) (Fig. 1a). Priming with words reversed this disposition effect: participants were now more willing to hold on to the winning ( $M=4.79$ ) rather than the losing stock ( $M=4.28$ ).

### 3.2 Salient portfolio loss

To test the qualifying effect of a salient portfolio loss (H1b), similar ANOVAs were conducted regarding the interaction effect of stock performance and the between-subjects factor salient portfolio loss (vs. control). The ANOVA revealed no main effect of stock performance ( $F(1, 43)=0.01, p>0.90$ ) or salient portfolio loss ( $F(1, 43)=0.10, p>0.70$ ). However, we found a significant interaction effect between these factors ( $F(1, 43)=6.21, p=0.017$ ), in support of H1b. Whereas in the Control condition, participants were more willing to hold on to the losing ( $M=4.83$ ) rather than the winning stock ( $M=3.96$ ) (Fig. 1b), in the salient portfolio loss condition, they were more willing to hold on to the winning ( $M=4.91$ ) rather than the losing stock ( $M=4.09$ ).

### 3.3 Explicit close goal

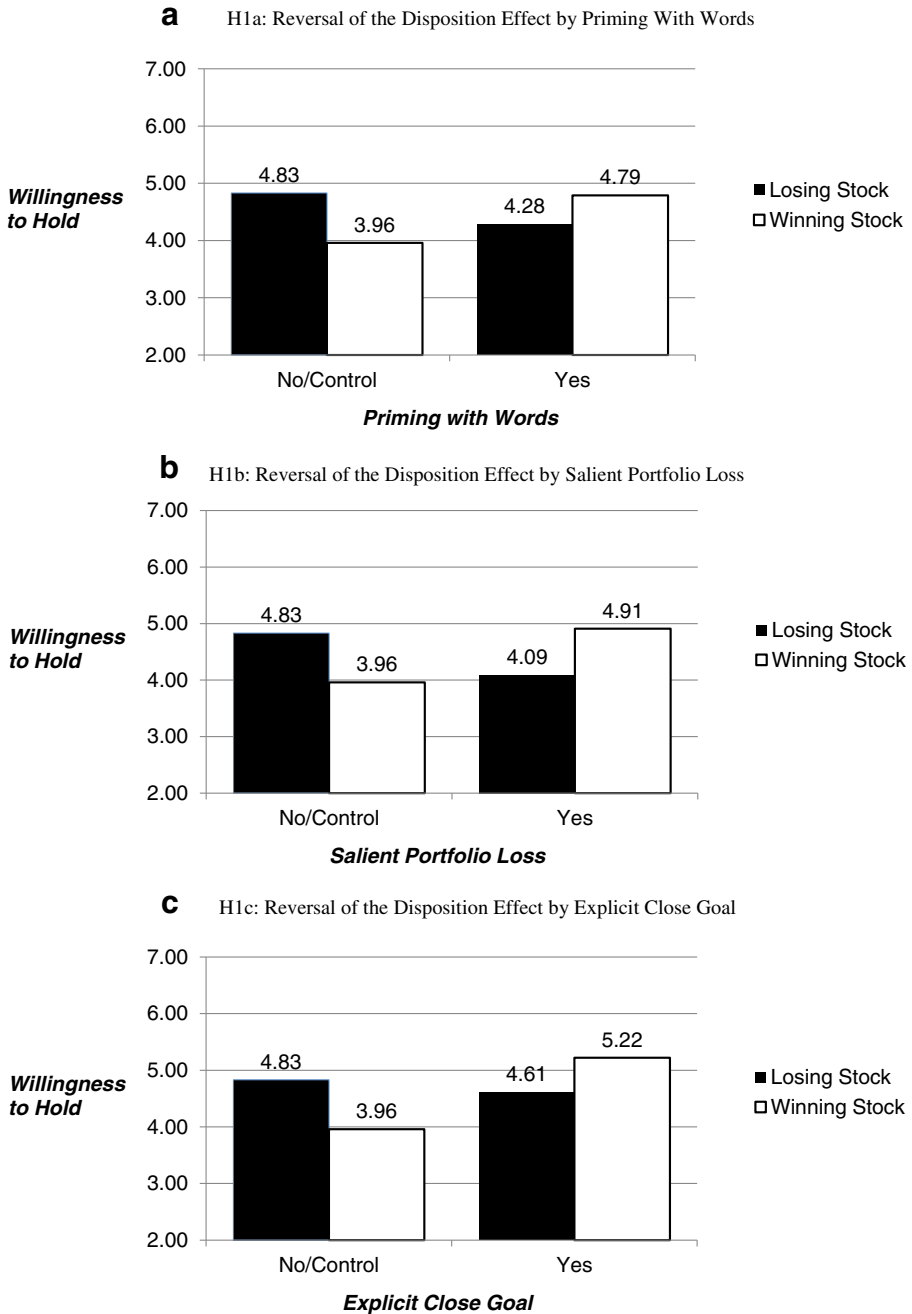
The final analysis regarded the qualifying effect of an explicit and close savings goal (H1c). There were no significant main effects for stock performance ( $F(1, 39)=0.12, p>0.70$ ) or explicit close goal ( $F(1, 39)=1.96, p>0.15$ ) in the ANOVA, but the interaction between stock performance and explicit close goal was significant ( $F(1, 39)=3.90, p=0.06$ ), in support of H1c. Participants' higher willingness to hold on to the losing ( $M=4.83$ ) rather than the winning stock ( $M=3.96$ ) (Fig. 1c) was reversed in the explicit close goal condition. Participants were now more willing to hold on to the winning ( $M=5.22$ ) rather than the losing stock ( $M=4.61$ ).

## 4 Discussion and conclusion

### 4.1 Contributions to research

The present research contributes to the specific literature on the disposition effect and the broad literature on goal systems dynamics. With respect to the former, we provide a parsimonious theory that explains both the existence and reversal of the disposition effect in terms of (savings) goals and factors related to goal activation and progress. Conceptually, our theoretical framework pertains most closely to the mental accounting-based explanation of the disposition effect (Shefrin and Statman 1985; Thaler 1985).

<sup>1</sup> ANCOVAs that include gender, investment skills, and investment experience as covariates yield similar results.



**Fig. 1** **a** H1a: reversal of the disposition effect by priming with words. **b** H1b: reversal of the disposition effect by salient portfolio loss. **c** H1c: reversal of the disposition effect by explicit close goal

Previous research, however, has not identified the *specific conditions* that may shape such mental accounting and thereby generate the disposition effect. The present research identifies and experimentally verifies a coherent set of goal systems-related factors that



predict under which conditions one can expect a reversal of individuals' mental accounting and the disposition effect. We also extend research that has focused on the exploration of socio-demographic factors mitigating the disposition effect, such as financial sophistication or investment experience. Finally, we extend general goal systems research by applying goal systems theory to risky investment choices. While existing research has focused on straightforward, non-risky, and active day-to-day decisions, we show that key factors of goal systems theory are also relevant in this novel context.

#### 4.2 Implications for practice

Given that individuals' basic disposition or bias to sell well-performing investments (while holding on to poorly performing investments) typically has negative wealth consequences, practical ways to mitigate this bias are expected to improve their investment and savings performance. To that end, individuals should be stimulated to focus on an overall savings goal. In this respect, financial advisors and policy makers may encourage them to make use of (online) decision support systems that put an explicit focus on overall financial savings goals and outcomes. In this regard, the “distribution builder” developed by Goldstein et al. (2008) could be a useful tool.

#### 4.3 Limitations and future research

The experimental setup of the present research offers the advantage of a clear identification of the fundamental psychological factors underlying the disposition effect without having to deal with the possible confounding effects associated with field studies. Nevertheless, the use of lab experiments also provides a limitation. While the dependent variable in the present research is likely to reflect individuals' *intentions* to sell vs. hold on to their winning or losing stocks and such intentions predict actual behavior reliably (Parker and Fischhoff 2005), it may not fully reflect an individuals' *actual behavior*. Future research could replicate our experimental results with a field study.

Follow-up work could also address additional behavioral outcomes related to the disposition effect. Such work could study whether the factors reversing the disposition effect when individuals are selling vs. holding a stock similarly affect their willingness to invest more money into these stocks, since the dynamics of “buy” decisions might differ from those of “sell” (or “hold”) decisions (Johnson et al. 2005; Shefrin and Statman 1985). Another interesting question is whether the same goal systems-related factors that influence individuals' decisions to sell versus hold on to the stocks already in their portfolios also influence their willingness to invest in other stocks.

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