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Selling Losers and Keeping Winners

How (Savings) Goal Dynamics Predict a Reversal of the Disposition Effect

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Selling Losers and Keeping Winners: How (Savings) Goal Dynamics Predict a Reversal of the Disposition Effect [1]

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Abstract: A well-documented behavioral pattern guiding individuals' investment decisions 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, as typically, individuals' losing investments continue to underperform while their winning investments continue to outperform. Using a goal-systemic framework, the present research identifies boundaries for the disposition effect by predicting the specific conditions under which individuals' susceptibility to this effect is reversed. Experimental results indicate that such conditions include situations when: (1) a superordinate (savings) goal is activated by a subtle prime, (2) overall progress towards a (savings) goal is negative, (3) investment opportunities have the capacity to serve alternative goals, such as self-expression, besides the maximization of financial returns, and (4) a superordinate savings goal with a clear end-state is looming close.

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1. INTRODUCTION

A well-documented behavioral pattern guiding individuals' investment choices is the disposition effect, which refers to the tendency to sell winning investments too early, while holding on to losing investments too long (Shefrin & Statman, 1985). The pervasiveness of the disposition effect is illustrated by its systematic presence in both lab settings as well as actual trading data. In this respect, Weber and Camerer (1998) were the first to establish the presence of the disposition effect in an experiment, whereas Odean (1998) was the first to demonstrate the disposition effect in an empirical study analyzing trading records at a U.S. brokerage firm. Grinblatt and Keloharju (2001), Feng and Seasholes (2005), and Chen et al. (2007) illustrated the international generalizability of the disposition effect. The widespread occurrence of the disposition effect is concerning because this bias often has negative wealth consequences for individuals. That is, the loser stocks that individuals hold on to typically continue to underperform, while the winner stocks they sell typically continue to outperform (Odean, 1998).

Considering the general prevalence of the disposition effect as well as its potentially negative wealth consequences for individuals, recent research has begun to recognize factors or conditions that might dampen or strengthen individuals' susceptibility to this effect. Mitigating factors identified so far include such variables as financial sophistication (Dhar & Zhu, 2006; Feng & Seasholes, 2005; Shapira & Venezia, 2001), investment experience (Chen et al., 2007; Da Costa et al., 2013; Feng & Seasholes, 2005), and whether individuals invest for themselves or on behalf of another person (Lee et al., 2008). An open question in the literature to date, however, is whether instead of the aforementioned socio-demographic factors, there exist more fundamental psychological factors or conditions that would systematically predict the *actual*

reversal of the disposition effect (instead of a mere dampening/strengthening effect), such that individuals would rather *sell* their losing investments and *hold on* to their winning investments.

Answering this question is both academically relevant and practically important. In the first place, no theory of consumption can be complete without a fundamental psychological understanding of why individuals manage their wealth in the ways they do (Campbell, 2006; Zhou & Pham, 2004). Considering the pervasiveness of the disposition effect in individuals' investment choices, 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, Lusardi, & Alessie, 2011; van Schie, Donkers, & Dellaert, 2012), identifying the conditions under which a reversal of the disposition effect is observed 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 present a goal-systemic framework as our theoretical lens. Goal systems theory studies how goals are interconnected in an individual's mind both with particular ways of achieving these goals as well as alternative goals (Kruglanski et al., 2002). As goals form a central determinant of an individual's financial behavior (Antonides, de Groot, & van Raaij, 2011; Loibl, Kraybill, & DeMay, 2011; Jeffrey, Onay, & Larrick, 2010), goal systems theory is particularly well-suited to building a theoretical framework that explains under which psychological conditions the disposition effect is reversed.

Indeed, we show that a goal-systemic framework is able to explain both the baseline disposition effect and its reversal in the parsimonious terms of (savings) goals and factors related to goal activation and progress (Kruglanski et al., 2002; Köpetz et al., 2012). In particular, our experimental results show that the disposition effect is reversed in situations in which a

superordinate (savings) goal is activated by a subtle prime (Fishbach & Dhar, 2005), situations when overall progress towards a (savings) goal is low (Touré-Tillery & Fishbach, 2011), situations in which investment opportunities can serve alternative goals, such as self-expression, besides maximizing financial returns (multifinality) (Köpetz et al., 2011, 2012), and situations in which a superordinate savings goal with a clear end-state is looming close (Kivetz et al., 2006).

Apart from increasing our understanding regarding the increasingly important topic of how households make financial decisions (see e.g., Campbell, 2006; Goldstein et al., 2008; He, Inmal, & Mittal, 2008; Jacoby et al., 2001; Johnson & Tellis, 2005; Johnson et al., 2005; Lee et al., 2008; Lynch, 2011; Morrin et al., 2002; Raghubir & Das, 2010; Townsend & Shu, 2010; Zhou & Pham, 2004), the present research contributes to the existing literature on the disposition effect as well as goal systems. We contribute to the literature on the disposition effect by theorizing and examining the boundary conditions of this effect, providing insight into the fundamental psychological conditions under which a reversal of individuals' tendency to sell their winning investments while holding on to their losing investments can be expected. By providing and testing a coherent theoretical framework identifying goal-related conditions governing individuals' susceptibility to the disposition effect, we extend prior work, which has mostly focused on the identification of socio-demographic variables mitigating individuals' susceptibility to this effect (Chen et al., 2007; Da Costa et al., 2013; Dhar & Zhu, 2006; Feng & Seasholes, 2005; Lee et al., 2008; Shapira & Venezia, 2001). We extend the goal systems literature by applying this theory to the novel context of individuals' investment choices. In particular, goal systems research has typically focused on individuals' rather straightforward, non-risky, and active day-to-day decisions, such as eating or exercising (Fishbach & Dhar, 2005; Zhang, Fishbach, & Dhar, 2007). In an investment context, however, choice outcomes are risky,

an individual has relatively little control over these outcomes, and decisions may include passive as well as active actions (i.e., the decision to hold on to a stock versus buying or selling a stock).

In the sections that follow, we first review related literature and formulate our hypotheses. We then present a series of experiments to test the hypotheses. We conclude with an overview of our contributions to prior research and a summary of promising future research opportunities. We begin with a review of goal systems theory since it is especially pertinent to our theorizing.

2. THEORETICAL FRAMEWORK

2.1 Goal Systems Theory

As its basic tenet, goal systems theory considers goals to be mental representations that are interconnected in an individual's mind with representations of means to attain the selected goals as well as alternative goals (Fishbach et al., 2003; Kruglanski et al., 2002, 2005; Zhang et al., 2007). As such, goals are seen to have not only motivational aspects but also cognitive aspects (Fishbach et al., 2004). The motivational aspects refer to the fact that goals represent desirable states of affairs, while the cognitive aspects mean that goals accord to the general principles that also govern other cognitive constructs, such as semantic networks, and activation and salience. Most notably, multiple means may be cognitively associated with each goal (i.e., equifinality), but each means can also be associated with several goals that it can possibly serve (i.e., multifinality) (Zhang et al., 2007; Köpetz et al., 2012). In the case of investing, equifinality is manifest in the fact that several alternative investments (e.g., different stocks) exist that individuals may associate with one and the same goal of gaining financial returns or savings. Multifinality is manifest, in turn, in situations where stocks of prestigious or socially responsible

companies may be associated with not only the goal of financial returns, but also with alternative goals, such as satisfying a need for self-expression (Aspara & Tikkanen, 2010; Lewis, 2001; Statman, 2004).

Deriving from its consideration of goals as motivational and cognitive constructs, goal systems theory fundamentally focuses on explaining the dynamics of how goals are activated, pursued, attained, and controlled in an individuals' mind—rather than assuming goals to be static motivations or universal characteristics that individuals either have or do not have (Köpetz et al., 2012). An important prediction of goal systems theory relates to the decreasing effect that perceived *progress in goal attainment* has on individuals' motivation to pursue that goal. In line with cybernetic models of self-regulation, an individual's progress towards a certain goal is predicted to provide a sense of goal attainment and therefore signal that less additional effort is needed to accomplish that goal (Fishbach & Dhar, 2005). At the same time, this feeling of goal progress motivates or liberates an individual to value and pursue alternative goals (Fishbach & Dhar, 2005; Koo & Fishbach, 2008; Laran & Janiszewski, 2008). Moreover, goal progress yields positive emotions, which decrease an individual's motivation to further invest in that goal, while failing to progress evokes negative feelings that motivate an individual to invest more effort in trying to attain the goal, to reduce those negative feelings (see Touré-Tillery & Fishbach, 2011).

Nevertheless, goal systems theory does not treat goal progress in absolute terms; the related dynamics also depend on how individuals *interpret* goal progress. For instance, if certain contextual conditions make individuals interpret goal progress as goal *commitment*, as opposed to goal attainment, their motivation to pursue that goal and other means serving that goal usually *increases* rather than decreases (see e.g., Fishbach et al., 2006; Touré-Tillery & Fishbach, 2011).

Moreover, goal systems theory recognizes that individuals may not be consciously aware of their goals and that situational cues or subtle primes can activate certain (background) goals without the individual's conscious awareness (Chartrand et al., 2008; Chun et al., 2011; Köpetz et al., 2012; Kruglanski & Köpetz, 2009). The type of focal goals also plays an important role. In particular, a goal's effects can be different depending on whether or not the goal has a clear, finite end-state (e.g., getting a new job) (Kivetz et al., 2006; Koo & Fishbach, 2010; Köpetz et al., 2012), or instead is a relatively ambiguous or continuous goal (e.g., being a healthy person).

2.2 Explaining the Baseline Disposition Effect with Goal Systems Theory

Based on the above discussion, the current research posits that the baseline disposition effect can be explained in terms of the basic properties of goal systems dynamics. Indeed, in terms of goal systems theory, the baseline disposition effect may be explained by the notion that a winning stock's good performance is considered to constitute progress towards an individual's tangible sub-goal of obtaining financial returns from that investment, whereas a losing stock's poor performance is considered a lack of progress on behalf of that investment. From the basic predictions of goal systems theory (Touré-Tillery & Fishbach, 2011), it can thereby 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 baseline disposition effect. This explanation presumes that individuals treat each investment as independently providing progress (or lack thereof) 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. This

assumption is supported by the literature on mental accounting (Thaler, 1985) and choice bracketing (Read, Loewenstein, & Rabin, 1999), which shows that individuals tend to think of their investment portfolios in terms of gains (vs. losses) on *individual* stock positions instead of the performance of the *overall portfolio* on the superordinate goal of accumulating savings.

Moreover, goal systems research has demonstrated so-called "licensing effects" (Khan & Dhar, 2006; Monin & Miller, 2001; Strahilevitz & Myers, 1998), whereby virtuous performance leads individuals to infer that sufficient progress has been made towards a virtuous goal—an inference which licenses them to relax their efforts with respect to the virtuous goal. Assuming the sub-goal of financial gains to be a virtuous goal, an investment with virtuous performance on that goal would license individuals to relax on that goal, allowing them to continue investing in the less virtuous (i.e., poorly-performing) stock and liberating them to pursue other goals, such as self-expression, with it (see e.g., Statman, 2004). Consistent with this reasoning, Jeffrey et al. (2010) suggest that goal attainment can serve as a "cushion" that allows individuals to take more risk. Generally, extant literature in finance has shown that besides the goal of obtaining financial gains, investment decisions can also be motivated by alternative goals, such as investing in companies with personally relevant products or located in one's home country (Aspara & Tikkanen, 2010; Morse & Shive, 2011). Indeed, some individuals might even be willing to sacrifice financial returns to obtain such expressive benefits (see Lewis, 2001; Statman, 2004).

2.3 How Goal Systems Theory Predicts a Reversal of the Disposition Effect

Aside from its ability to explain the baseline disposition effect in terms of goal progress and virtuous performance, goal systems theory also makes it possible to predict four specific conditions under which a *reversal* of the disposition effect can be expected.

First, we can expect that when the superordinate goal of financial savings is activated, an individuals' disposition to sell their winning stocks and hold on to their losing stocks is reversed. Namely, from a goal systems perspective, among the main reasons for the baseline disposition effect is individuals' tendency to focus on each stock's financial returns as contributing to their independent (sub-)goals. To the extent that an individual rather focuses on the active superordinate goal of savings, however, the good performance of the winning stock is not likely to be considered as goal progress or attainment, since the losing stock is still performing poorly, reducing overall progress. Thus, there should not be a decreased motivation to further invest in the well-performing stock. In addition, when a superordinate savings goal is activated, an individual's progress with attaining the financial returns sub-goal with the well-performing stock is likely to signal to the individual his or her commitment to the superordinate goal (Fishbach et al., 2006). The higher perceived instrumentality of the winning stock for the superordinate goal, as based on its past instrumentality (Köpetz et al., 2012; Zhang et al., 2007), may consequently increase an individual's interest in continuing to invest in that stock. We thus hypothesize:

H1: Situational activation of a superordinate savings goal (e.g., by a subtle prime) reverses individuals' disposition to sell their winning stocks while holding on to their losing stocks.

Second, we expect that a low overall progress toward the superordinate goal of financial savings also reverses the disposition effect. This is because an individual is likely to focus on the superordinate savings goal not only when it is situationally activated (H1) but also when overall progress is clearly poor or negative. That is, the good performance of one stock is not likely to signal goal attainment (cf. Fishbach et al., 2006; Kruglanski et al. 2002) if the other stock's bad performance reduces overall savings progress to be clearly negative. Moreover, poor overall

progress in financial terms is likely to reduce the aforementioned licensing effects, which potentially underlie the disposition effect. Hence, we hypothesize:

> **H2**: Negative overall progress toward a financial savings goal reverses individuals' disposition to sell their winning stocks while holding on to their losing stocks.

Third, we expect a reversal of the disposition effect when investments can serve other goals besides gaining financial returns—that is, when investments exhibit multifinality. This effect is expected because of the cognitive property of goals, whereby the activation of other goals may pull attentional resources away from a focal goal (Fishbach & Ferguson, 2007, Köpetz et al., 2012; Kruglanski & Köpetz, 2009). Therefore, the perceived goal attainment with the well-performing investments, which leads to the baseline disposition effect, should play a smaller role when investments also serve ulterior goals. Thus, a drive to satisfy ulterior goals, such as the desire to express oneself with an investment (Aspara & Tikkanen, 2010; Statman, 2004), is likely to partially eliminate the disposition effect. Moreover, work on licensing effects (Khan & Dhar, 2006; Monin & Miller, 2001; Strahilevitz & Myers, 1998) suggests it is easier to justify pursuing such ulterior goals when an investment is doing well in financial terms. We thus hypothesize:

> **H3**: Multifinality (e.g., investments serving self-expression *and* financial returns) reverses individuals' disposition to sell their winning stocks while holding on to their losing stocks.

Fourth, the presence of a savings goal with a clear and finite end state may eliminate or reverse the disposition effect. That is, apart from the basic prediction that goal progress decreases an individual's motivation to further invest in that goal, goal systems literature and related work also recognizes that if a goal has a clear end-state, and an individual is close to reaching that goal, goal progress can actually *increase* their motivation to make efforts to reach that goal (see

e.g., Kivetz et al., 2006; Touré-Tillery & Fishbach, 2011). This phenomenon is called the "goal-gradient hypothesis," which suggests that goals "loom larger" when they are closer to their end-state. Therefore, a superordinate savings goal with a clear end-state looming close is likely to *increase* instead of *decrease* an individual's interest in continuing to invest in a winning stock with high perceived instrumentality for the superordinate savings goal. Thus, we hypothesize:

H4: A superordinate savings goal with a clear end-state that is looming close reverses individuals' disposition to sell their winning stocks while holding on to their losing stocks.

3. EXPERIMENTS

We employ a series of experimental treatments to test the role of goal systems dynamics in reversing the disposition effect. In particular, we use four sub-experiments (A-D), each focusing on one factor or boundary condition expected to reverse the disposition effect, corresponding to hypotheses H1-4. The treatment groups of the four sub-experiments, exposed to their respective experimental factors, were contrasted with one common control group (receiving no treatment).

3.1 Method

3.1.1 Participants. One hundred and seventeen individuals following an advanced course in business administration at a large university in Finland participated in the experiment. All participants had at least basic finance knowledge and most had some investment experience. Prior work in finance has shown that Finland is a particularly appropriate country for conducting research on individuals' investment behavior because of the population's broad stock-market participation and relatively high level of financial knowledge (see Grinblatt and Keloharju (2000, 2001) and Grinblatt, Keloharju, and Linnainmaa (2011) for work on Finnish investors). Of the

participants, 59% (41%) were female (male), and the mean age was 21.6 years (SD = 2.76). Participants (N = 117) were assigned randomly to the control group (n = 23), treatment group A (n = 29), treatment group B (n = 22), treatment group C (n = 25), or treatment group D (n = 18).

3.1.2 Study design. All four sub-experiments involved the same within-subject factor 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 to consider. The sub-experiments were of the following design:

A: 2 (Stock Performance: Winner vs. Loser) x 2 (Superordinate Goal Priming vs. Control)

B: 2 (Stock Performance: Winner vs. Loser) x 2 (Negative Overall Progress vs. Control)

C: 2 (Stock Performance: Winner vs. Loser) x 2 (Multifinal Investment vs. Control)

D: 2 (Stock Performance: Winner vs. Loser) x 2 (Close Goal vs. Control)

The key dependent variable was participants' willingness to hold (vs. sell) the stock, analyzed as a function of the within-subject factor of Stock Performance and the between-subject treatment factor specific to each sub-experiment A-D (i.e., the corresponding treatment group contrasted with the control group).

3.1.3 General procedure. Participants were randomly assigned to one of the treatment groups A-D or the control group, and completed the experiments using a PC. To reduce the likelihood of demand effects and the possibility that participants would guess the purpose of the experiments, the experimental stimuli and tasks were interspersed between unrelated filler tasks and survey questions. When participants reached the part containing the present experimental stimuli, they first completed a scrambled sentence task. Except in the Superordinate Goal Priming treatment

group (A)—where the treatment consisted of priming participants with the superordinate goal of gathering savings—the scrambled sentence task used neutral (non-goal-priming) words. On the next page, in an ostensibly unrelated task, 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 being presented with this scenario, participants were asked about their willingness to hold vs. sell each of the two stocks. This question was followed by unrelated filler items. Then, a set of background questions pertaining to the 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.

3.1.4 Treatment Group A: *Stimuli and manipulations.* The ostensibly unrelated scrambled sentence task that preceded the presentation of the investment scenario was the key manipulation for the treatment Superordinate Goal Priming. The scrambled sentence task followed Srull and

Wyer's (1979) guidelines. Specifically, under the guise of a verbal proficiency assignment, 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 by using four of the five words. Consistent with earlier research (Chartrand & Bargh, 1996; Levesque & Pelletier, 2003; Srull & Wyer, 1979), prime words were included in 12 of the 15 sentences. Prime words in the superordinate savings-goal priming conditions 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," "extensive," "white," "idea," "ordinary," and "moves." As is common in these type of tasks, 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 other words and their ordering were identical across conditions.

After the scrambled sentence task, participants were presented with the investment scenario that included information on the performance of the two stocks (i.e., Stock Performance factor).

3.1.5 Treatment Group B: Stimuli and manipulations. For control reasons, the focal treatment of Negative Overall Progress was preceded by the same scrambled sentence task with neutral words as the Control group. The actual manipulation of Negative Overall Progress was realized by presenting participants an investment scenario where the combined investment 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 5,200 Euros and 200 Euros up from the initial 5,000 Euros"), the Negative Overall Progress condition replaced the 2,600 Euros with 2,400 Euros for both stocks. The current value of each investment was now said to be 2,400 Euros, "totaling 4,800 Euros (200

Euros down from the initial 5,000 Euros)." Otherwise, the scenario and investment tasks were identical to the Control condition.

3.1.6 Treatment Group C: *Stimuli and manipulations.* The manipulation of the Multifinal Investment treatment was achieved by adding the following sentence to the basic investment scenario, as described in the General Procedure:

> "*In addition to expecting fairly good financial prospects for both Companies X and Y, among your original reasons to invest in them was also the fact that you had the objective to express your identification with these companies and their products."*

We chose this particular manipulation because earlier research has shown that besides the goal of obtaining financial gains, individuals' investment decisions can also be motivated by the ulterior goal of investing in companies with personally relevant products or business, for self-expression purposes (see e.g., Aspara & Tikkanen, 2010; Lewis, 2001; Statman, 2004). Except for this additional sentence that suggested a multifinal investment purpose, the investment scenario of the Multifinal Investment condition was identical to that of the Control group. The treatment manipulation was also preceded by the same scrambled sentence task with neutral words.

3.1.7 Treatment Group D: *Stimuli and manipulations.* The treatment manipulation of Close Goal was achieved by altering the beginning of the investment scenario. Before the basic scenario, as appearing in the Control condition, participants in the Close Goal treatment 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 (the initial 5,000 Euros plus the returns of 200 Euros, as indicated by the rest of the scenario). Besides this explicit close-looming savings goal, the investment scenario of Close Goal treatment was identical to the Control condition, including the neutral-words scrambled sentence task preceding the manipulation stimuli.

3.1.8 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 seven-point scale, anchored at 1 = "I would definitively sell the company's shares" and 7 = "I would definitively hold the company's shares."

In the background questions section after the experimental task, we included control variables for gender, as well as for self-reported investment skills and experience. Gender tends to influence investment decision-making in general (Barber & Odean, 2001), while investment skills and experience are potential socio-demographic moderators of the disposition effect (Dhar & 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 been investing in the stock market at the time of the experiment.

4. Results

4.1 Superordinate Goal Priming. To test hypothesis H1, we performed a mixed, two-way ANCOVA of willingness to hold (vs. sell) each stock, with Stock Performance as the within-

subjects repeated-effect factor and Superordinate Goal Priming (vs. Control) as the between-subjects factor. Because we included covariates for participants' gender, investment skills, and investment experience, we report least squares means instead of conventional arithmetic means. Consequently, the reported means of the key dependent variable (willingness to hold vs. sell each stock) for the common control group will vary slightly across the four sub-experiments.

The analysis revealed a significant qualifying effect of Superordinate Goal Priming ($F(1, 50) = 5.17$, $p = .027$), in support of hypothesis H1 (see Figure 1). As expected, in the Control condition, participants' investment willingness reflected the baseline disposition effect: They were significantly more willing to hold on to the losing stock ($M = 4.92$) than the winning stock ($M = 4.05$) ($p < .05$). As predicted, however, Superordinate Goal Priming reversed this baseline disposition effect. That is, in the treatment condition, participants became more willing to hold on to the winning stock ($M = 4.72$) rather than the losing stock ($M = 4.20$). The results support hypothesis H1, suggesting that situationally activating a superordinate savings goal reverses individuals' disposition to sell their winning stocks and hold on to their losing stocks.

None of the control variables was significant ($p > .05$). Also, the interaction effects of the control variables and Stock Performance were insignificant ($p > .5$). These results suggest that the reversal of the disposition effect through superordinate savings-goal priming is not explained or confounded by individuals' gender, investment skills, or investment experience.

----------INSERT FIGURE 1 ABOUT HERE ----------

4.2 Negative Overall Progress. To test the qualifying effect of negative overall investment progress on the baseline disposition effect (H2), a similar mixed ANCOVA was conducted as above, now regarding the interaction effect of Stock Performance and the between-subjects

factor Negative Overall Progress (vs. Control). The analysis revealed a significant interaction effect between these factors ($F(1, 43) = 6.50$, $p = .015$), in support of hypothesis H2 (see Figure 2). Whereas in the Control condition, participants were significantly more willing to hold on to the losing stock ($M = 4.80$) rather than the winning stock ($M = 3.93$) ($p < .05$), in the Negative Overall Progress condition, participants were more willing to hold on to the winning stock ($M = 4.94$) rather than the losing stock ($M = 4.12$) ($p < .05$). Thus, negative overall portfolio returns reversed individuals' disposition to sell their winning stocks and hold on to their losing stocks.

Again, none of the control variables was significant ($p > .05$). Likewise, the interaction effects of the control variables and Stock Performance were insignificant ($p > .10$), suggesting that the reversing influence of negative overall investment progress on the disposition effect is not confounded by individuals' gender, investment skills, or investment experience.

----------INSERT FIGURE 2 ABOUT HERE ----------

4.3 Multifinal Investment. To examine whether a multifinal investment, which serves not only the financial gains goal but also alternative goals (such as self-expression), is a qualifier of the disposition effect (H3), we again performed a two-way mixed ANCOVA. The analysis revealed a significant interaction between Stock Performance and Multifinal Investment (vs. Control) ($F(1, 46) = 5.30$, $p = .026$), supporting hypothesis H3 (see Figure 3). Participants' higher willingness to hold on to the losing stock ($M = 4.86$) than the winning stock ($M = 3.99$) ($p < .05$) reversed in the Multifinal Investment condition, wherein participants became more willing to hold on to the winning stock ($M = 5.45$) than the losing stock ($M = 4.85$) ($p < .10$). That is, when investments are multifinal in serving other goals (such as self-expression) besides the financial

returns goal, individuals' disposition to sell their winning stocks and hold on to their losing stocks is reversed.

Consistent with the basic goal systems notion that the multifinality of a given means increases an individual's motivation to invest in that means (Köpetz et al. 2012), the main effect of Multifinal Investment was significant as well ($F(1, 43) = 5.13$, $p = .029$), with participants being more willing to hold on to both the winning and losing stocks in the presence of multifinality ($M = 5.15$) than in its absence ($M = 4.42$) ($p < .05$). The control variables were again insignificant ($p > .2$), as were the interactions of the control variables and the Stock Performance factor ($p > .15$).

----------INSERT FIGURE 3 ABOUT HERE ----------

4.4 Close Goal. The final analysis regarded the qualifying effect of a savings goal with a clear end-state looming close (H4). A two-way mixed ANCOVA revealed a significant interaction between Stock Performance and Close Goal (vs. Control) ($F(1, 39) = 4.07$, $p = .05$). That is, in support of hypothesis H4, participants' baseline higher willingness to hold on to the losing stock ($M = 4.79$) than the winning stock ($M = 3.92$) ($p < .05$) was reversed in the Close Goal condition (see Figure 4). Participants were now more willing to hold on to the winning stock ($M = 5.26$) than the losing stock ($M = 4.65$). This result suggests that when a superordinate savings goal with a clear end-state looms close, individuals' disposition to sell their winning stocks and hold on to their losing stocks is again reversed. None of the control variables nor their interactions with Stock Performance were significant ($p > .2$), again suggesting the absence of confounds.

----------INSERT FIGURE 4 ABOUT HERE ----------

5. DISCUSSION AND CONCLUSION

Our experiments examined how several psychological aspects of goal systems dynamics provide boundary conditions for the baseline disposition effect. Our theoretical premise was that the disposition effect may arise from individuals treating each investment to serve their own sub-goals of financial gains—meaning that a good (bad) performance of one of the stocks decreases (increases) motivation to continue investing in that stock. This effect is likely caused by the role of goal progress in decreasing individuals' motivation to invest effort in the sub-goal in question, and increasing their motivation to attain alternative goals (see Fishbach & Dhar, 2005, Fishbach et al., 2006; Koo & Fishbach, 2008; Laran & Janiszewski, 2008). At the same time, goal systems theory allowed us to hypothesize that several factors altering this basic goal pattern would reverse the disposition effect: (1) situational activation of a superordinate savings goal, (2) poor overall progress towards financial savings, (3) multifinality of investment opportunities, and (4) a savings goal with a clear end-state looming close. Indeed, the four sub-experiments of the present research confirmed each of these factors' ability to reverse the baseline disposition effect.

5.1 Contributions to Research

The present research contributes to both the specific literature on the disposition effect and the broad literature on goal systems dynamics in individual decision-making. With respect to the former, we provide a parsimonious theory that is able to explain both the existence and reversal of the baseline disposition effect in the terms of (savings) goals and factors related to goal activation and progress. Conceptually, our theoretical framework pertains most closely to the traditional mental accounting-based explanation of the disposition effect (Shefrin & Statman, 1985; Thaler, 1985), which points out that individuals tend to think of their investment portfolios

in terms of gains (vs. losses) on *individual* stock positions instead of the performance of their *overall portfolio* on the superordinate goal of accumulating savings and financial wealth. However, while previous research on mental accounting vis-à-vis the disposition effect has made this general point, it has not identified the *specific conditions* that may cause such mental accounting and thereby generate the disposition effect. The contribution of the present research is to identify and experimentally verify a coherent set of goal systems-related factors that predict under which precise conditions one can expect a reversal of individuals' mental accounting and thus of the disposition effect. In so doing, we also extend recent research on the disposition effect that has mainly focused on the exploration of socio-demographic factors that might mitigate the disposition effect, such as financial sophistication or investment experience (Chen et al., 2007; Da Costa et al., 2013; Dhar & Zhu, 2006 Feng & Seasholes, 2005; Lee et al., 2008; Shapira & Venezia, 2001). Rather than examining further individual-level socio-demographic variables, the present research provides a coherent theoretical framework consisting of fundamental psychological factors that can predict both the baseline disposition effect and its reversal.

The present research also extends the general goal systems research by applying goal systems theory to individuals' risky investment choices, whereby the outcomes of an individual's efforts are uncertain, an individual has relatively little control over these outcomes, and an individual's decisions may include passive as well as active actions. Goal systems research has typically focused on individuals' rather straightforward, non-risky, and active day-to-day decisions (see Fishbach & Dhar, 2005; Zhang et al., 2007). We show that the main factors identified in prior goal systems research also hold in this novel context, including superordinate goal activation, overall goal progress, multifinality, and closeness of goals with clear end states.

5.2 Implications for Practice

The present research offers several practical implications for individuals as well as for financial advisors working at financial services firms or at public policy organizations interested in facilitating individuals' wealth management or enhancing individuals' investment capabilities. Given that individuals' basic disposition or bias to sell their well-performing investments (while holding on to their poorly performing investments) typically has negative wealth consequences, practical ways to mitigate that bias are expected to improve individuals' investment and savings performance. To that end, individuals should in the first place be stimulated to focus on an overall financial savings goal (rather than separate sub-goals to obtain returns from each stock in their investment portfolios) and develop a regular savings habit (see Loibl, Kraybill, & DeMay, 2011). In this respect, financial advisors, policy makers, and investment firms may encourage individuals to make use of (online) decision support systems that put an explicit focus on overall financial savings goals and outcomes (see e.g., Goldstein et al., 2008; Looney & Hardin, 2009). Moreover, to the extent that ulterior investment goals (such as self-expression or social responsibility) are expected to play a role in individuals' investment choices, or to the extent that overall financial progress happens to be negative, individuals should be stimulated to pay explicit and active attention to these issues, rather than to ignore them. Indeed, the present research as well as prior studies (Townsend & Shu, 2010) suggest that calling explicit attention to the possible influence of such factors on one's decisions helps individuals overcome their adverse impact. Also, financial advisors or policy makers may help individuals to set clearly defined and not overly ambitious (i.e., relatively close) financial savings goals, as the presence of such goals mitigates individuals' disposition to sell their winning stocks and hold on to their losing stocks.

5.3 Limitations and Future Research

The experimental setup of the present research offers the advantage of allowing a clear identification of the fundamental psychological factors underlying the disposition effect without having to deal with the myriad of possible confounding effects associated with field studies. Nevertheless, the use of lab experiments also provides an obvious limitation. That is, 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 have been shown to predict actual behavior reliably (Parker & Fischhoff, 2005), it may not fully reflect individuals' real behavioral tendencies. Future research is called for to replicate our experimental results using a field study.

In terms of avenues of future research, follow-up work could address additional behavioral outcomes related to the disposition effect. Such work could, for instance, 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 (one of) these stocks, since the dynamics of "buy" decisions might be different from those of "sell" (or "hold") decisions (see e.g., Johnson et al., 2005; Shefrin & 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 (cf. Hens & Vlcek, 2011). Finally, future research could examine how individuals' willingness to liquidate both winning and losing investments and *spend* the investment returns are shaped by the goal systems-related factors that in the present research are proposed to reverse the disposition effect.

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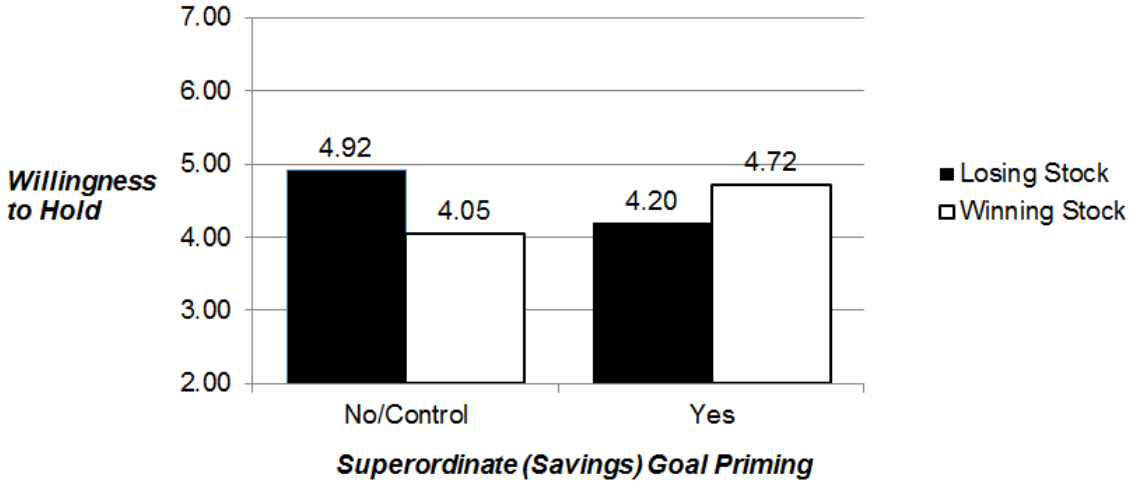
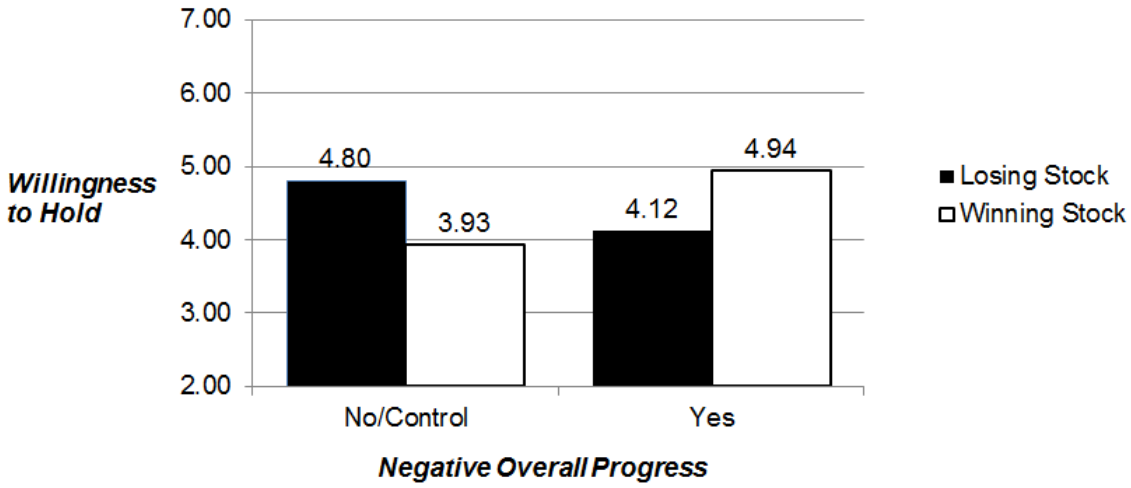
Figure 1. H1: The Reversal of the Disposition Effect by Superordinate Goal Priming



Note.

Reported numbers are least squares means obtained from the SAS MIXED procedure.

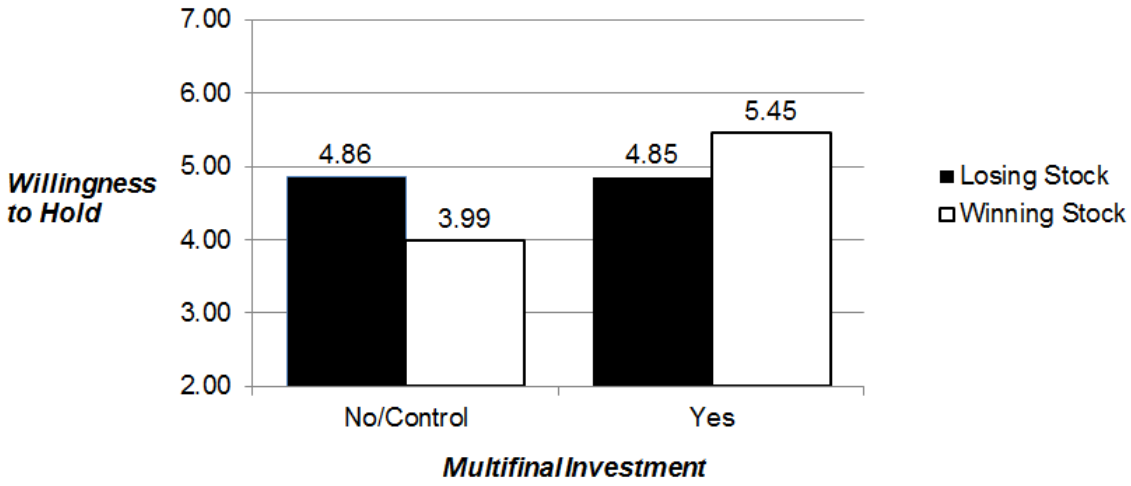
Figure 2. H2: The Reversal of the Disposition Effect by Negative Overall Progress



Note.

Reported numbers are least squares means obtained from the SAS MIXED procedure.

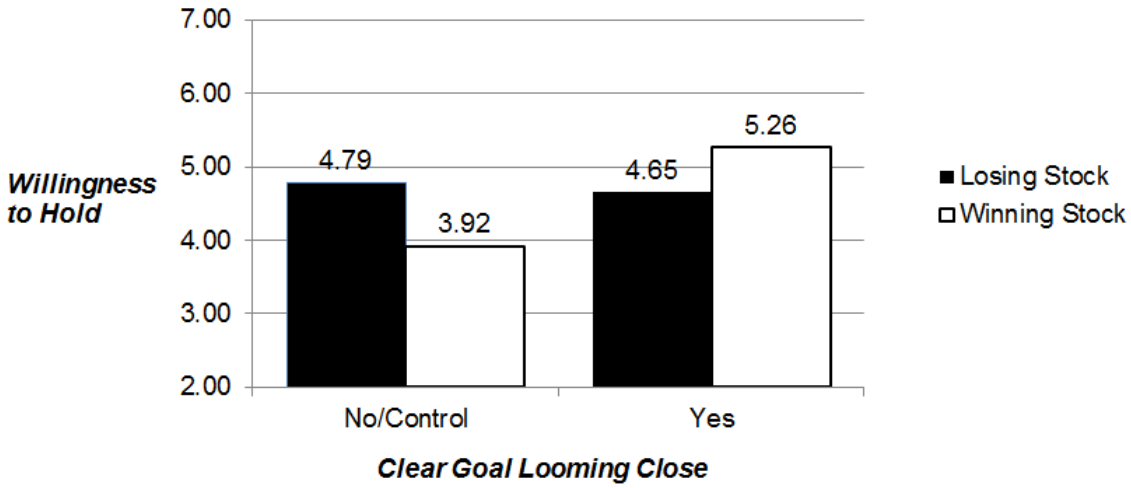
Figure 3. H3: The Reversal of the Disposition Effect by Multifinal Investment



Note.

Reported numbers are least squares means obtained from the SAS MIXED procedure.

Figure 4. H4: The Reversal of the Disposition Effect by Clear Goal Looming Close



Note.

Reported numbers are least squares means obtained from the SAS MIXED procedure.