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Cut your losses and let your profits run: How shifting feelings of personal responsibility reverses the disposition effect☆

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ABSTRACT

The disposition effect refers to individuals' tendency to sell their winning investments too early, while holding on to their losing investments too long. This behavioral bias has negative consequences for individuals' wealth, because losing investments usually continue to underperform, while winning investments typically continue to outperform. The present research demonstrates that shifting feelings of personal responsibility can reverse individuals' susceptibility to the disposition effect. In particular, results from three experiments indicate that the disposition effect is reversed when (i) prior investment gains are attributed to external factors while prior investment losses are attributed to individuals' own faults, (ii) individuals invest someone else's money instead of their own, and (iii) when individuals have an alternative, socially oriented investment goal, such as self-expression besides a financial gains goal. The results have implications for financial service professionals, such as financial advisors.

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1. Introduction

Individuals currently face an increasing self-responsibility for making such consequential financial decisions as investing for their retirement (van Rooij et al., 2011). In taking on this responsibility, however, they suffer from behavioral biases that limit their investment success (Shefrin, 2007). In this regard, the disposition effect, as first studied by Shefrin and Statman (1985), is probably the most pervasive bias, and is systematically observed in both lab settings (Weber and Camerer, 1998) and field studies (Odean, 1998). The disposition effect refers to individuals' tendency to sell their winning investments too early, while holding on to their losing investments too long. As the losing investments that individuals hold on to typically continue to underperform, while the winning investments they sell typically continue to outperform (Odean, 1998), the disposition effect negatively affects individuals' wealth.

Recent research has started to identify conditions that qualify individuals' susceptibility to the disposition effect.

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Mitigating factors identified so far include financial sophistication (Dhar and Zhu, 2006), investment experience (Chen et al., 2007), whether individuals invest for themselves or on behalf of another person (Lee et al., 2008), whether individuals invest in non-delegated assets like individual stocks or delegated assets like mutual funds (Chang et al., forthcoming), the salience of information on an investment's purchase price (Frydman and Rangel, 2014), and whether individuals own a stock through their own choice or not (Summers and Duxbury, 2012). What is missing, however, is an examination of more fundamental social and psychological conditions that would systematically predict a reversal of the disposition effect, such that individuals would rather sell their losing investments and hold on to their winning investments.

To examine such social and psychological factors, we focus presently on the observation that the disposition effect is, at least partly, determined by individuals' feelings of personal responsibility regarding the causes of their investments' past performance. Indeed, the seminal work of Shefrin and Statman (1985) loosely noted – albeit did not theorize in detail – that the emotions related to one's losses vs. gains might be related to the decision-making context (e.g., whether one is investing the money professionally or not). We are unaware of any study, however, that would examine the framing of a decision's personal responsibility as a moderating condition that may eliminate or reverse the disposition effect. In this regard, the studies closest to ours are Lee et al. (2008), who show in one of their experiments that the disposition effect is reduced when individuals are requested to imagine investing as an agent for someone else—and Shapira and Venezia (2001) and Chu et al. (2014), who show that professional investors are less susceptible to the disposition effect than non-professional investors. None of these studies, however, identifies empirically a clear set of boundary conditions that actually *reverses* (rather than merely attenuates) the disposition effect, or theoretically explicates how personal responsibility (and the related attributional considerations) would explain this reversal.

To address this gap in the current literature, we theorize and test the role of three factors related to personal responsibility in reversing individuals' susceptibility to the disposition effect: (i) personal responsibility in terms of the attributed cause of an individual's prior gains and losses (self-caused vs. externally caused), (ii) personal responsibility related to the source of money invested (own money vs. other people's money), and (iii) personal responsibility connected with having alternative, socially-oriented goals, such as self-expression besides a financial gains goal.

Regarding these three boundary conditions pertaining to personal responsibility, we briefly detail our predictions in the following. With respect to personal responsibility in terms of the attributed cause of prior gains and losses (i), a large body of consumer research shows that individuals naturally attribute good events or successes to themselves, while they tend to attribute bad events or failures to external/social causes (e.g., Folkes, 1988; Hoffmann and Post, 2014 and Mizerski et al., 1979). Accordingly, we propose that the baseline disposition effect occurs partly because of individuals' feeling that they are responsible for a winning investment, and not responsible for a losing investment. These attributions lead to a willingness to sell the winning investment (to achieve mental closure for one's personal, winning investment choice), and a willingness to hold on to the losing investment (to hope luck will turn for a bad investment one does not feel personally responsible for). If this is indeed the case, we expect that the disposition effect will be reversed when reversing this causal attribution—that is, when individuals are led to believe that the winning investment performed well because of external events while the losing investment performed poorly because of their own fault (H1a).

Regarding personal responsibility due to the source of money invested (ii), Lee et al. (2008) speculated that a possible explanation for the attenuation of the disposition effect when people invest other people's money is that they feel more "accountable" (Tetlock, 1992). Continuing this line of thinking, we theorize that individuals who invest other people's money are likely to feel more responsible for the performance of an investment. This feeling of responsibility is expected to lead to making more "rational" decisions that are more in line with the normative recommendations from standard finance, which in the context of the present paper means being less susceptible to the disposition effect. Thus, we expect that having individuals imagine that they invest someone else's money instead of their own also reverses the disposition effect (H1b)—similarly as suggesting that a winning investment performed well because of external events while a losing investment performed poorly because of their own fault (per H1a).

Finally, considering personal responsibility due to the presence of alternative investment motivations (iii), it can be noted that individuals often have alternative investment goals besides a financial gains goal. These include the goal to express oneself socially with an investment in a company whose products are likeable or socially desirable, for instance (see Aspara and Tikkanen, 2010; Hoffmann and Broekhuizen, 2009 and Statman, 2004). We expect that having such an ulterior, self-expressive goal may also reverse the attributions of responsibility related to the winning and losing investments. Specifically, if an individual had an ulterior self-expressive goal to make an investment that ends up performing well financially, she is *less* likely to feel responsible for this financial success (because she made her initial choice partly based on the ulterior, non-financial, goal). In turn, when the individual had an ulterior self-expressive goal to make an investment that ends up performing financially poorly, she is *more* likely to feel responsible for the loss—feeling that her very *self*-expression goals indeed led her to fail financially. Thus, we expect a reversal of the disposition effect when individuals are guided by alternative goals such as self-expression when making their investment decisions (H1c).

The following three experiments each test one of these options how personal responsibility can reverse the disposition effect (H1a–c).

2. Experiments

Three experiments (A–C) test the role of personal responsibility in reversing the disposition effect. Each

experiment focuses on a different aspect of personal responsibility, 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-seven individuals following a course in business administration at a large university in Finland participated in the experiment. All participants had at least a basic level of finance knowledge; many had some personal investment experience. Of the participants, 57.7% (42.3%) were female (male), the mean age was 21.5 years (SD = 2.49 years). Participants ($N = 97$) were assigned randomly to the control group ($n = 23$), treatment group A ($n = 22$), treatment group B ($n = 25$), or treatment group C ($n = 25$).

2.1.2. Study design

All experiments involved the same within-subject factor Past Investment 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 investment, analyzed as a function of the within-subject factor Past Investment Performance and the between-subject treatment factor specific to each of the experiments A–C (i.e., Attributed Cause of Prior Gains and Losses, Source of Money Invested, Self-Expressive Investment Goal).

2.1.3. General procedure

Participants used PCs to complete the experiments. To avoid demand effects and the possibility that participants guessed the purpose of the experiments, unrelated filler tasks were interspersed between the experimental stimuli and tasks. When participants reached the part with the current experimental stimuli, they were offered an investment scenario:

> "*One year ago, you started investing 5000 Euros of your savings in the stock market. At that time, you bought shares of two companies: shares of Company X (for 3000 Euros) and shares of Company Y (for 2000 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 3000 to 2600 Euros.*
>
> • *During the one year that you have owned the shares of Company Y, the value of your investment has risen from 2000 to 2600 Euros.*
>
> • *Thus, the current value of both shares is 2600 Euros, totaling 5200 Euros (200 Euros up from the initial 5000 Euros that you invested in the stock market).*"

After reading this scenario, the participants were asked about their willingness to hold vs. sell each of these two investments. This question was followed by unrelated filler items. Then, a set of background questions pertaining to some control variables was asked. Finally, the participants were subjected to a funnel debriefing aimed to find out whether they guessed the experiment's purpose or any links between the tasks. 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 Attributed Cause of Prior Gains and Losses was the addition of one sentence to the baseline scenario (described above), immediately after the description of each investment's performance. Specifically, for the losing investment, participants were told that "*This drop (in investment value) was mostly your own fault, because you had not noticed, when making your investment decision, that the company had just given a result warning for the current year*".[1] For the winning investment, participants were told that "*This increase (in investment value) was mostly due to the fact that unexpected developments in the market environment favored this company's business*". Note that this manipulation represents a complete reversal of individuals' usual tendency to attribute winning performance internally and losing performance externally (cf. Folkes, 1988; Hoffmann and Post, 2014 and Mizerski et al., 1979).

2.1.5. Treatment group B: Stimuli and manipulations

The manipulation of Source of Money Invested was realized by altering one sentence in the baseline scenario to reflect that participants were not investing their own money, but someone else's money. In particular, at the beginning of the scenario we replaced "*One year ago, you started investing 5000 Euros of your savings in the stock market*" with "*One year ago, you became the manager of the savings of your student association. As the savings manager, you decided to invest 5000 Euros of the association's savings in the stock market*".

2.1.6. Treatment group C: Stimuli and manipulations

The manipulation of Self-Expressive Investment Goal was realized by adding the following sentence to the basic investment scenario:

> "*In addition to expecting fairly good financial prospects for both Companies X and Y, among your original reasons to invest in these companies was also the fact that you are enthusiastic about the companies' great and innovative products. In other words, besides getting financial returns, you also had the objective to support the companies by investing in their stock.*"

[1] According to the efficient market hypothesis, the impact of a result warning should be immediately incorporated in the share price. Thus, if markets are fully informationally efficient, not noticing the fact that the company had just given a result warning would theoretically not be a mistake by the hypothetical investors in this scenario, as the price that the shares were purchased at would incorporate all past information and announcements. In reality, however, markets are often not fully informationally efficient (Shefrin, 2007) and students similar to those in the sample indicated they thought it was a mistake to have missed the result warning news, supporting our manipulation.

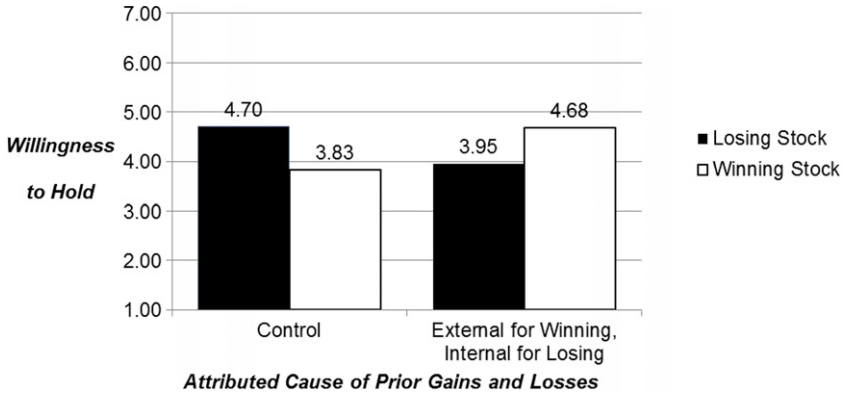

Fig. 1a. H1a: Reversal of disposition effect by Attributed Cause of Prior Gains and Losses. *Note*. Reported numbers are least squares means obtained from the SAS MIXED procedure.

As investing as an individual investor in a company's stock does not directly support the company in the sense that it receives the invested money or that there is any market impact, the above sentence mainly indicated to students how they were emotionally invested in the company.

2.1.7. Measures

We measured the dependent variable, willingness to hold (vs. sell) each investment, by asking after the investment scenario: "*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*". We included measures for participants' gender, and their self-reported investment skills and experience as control variables. 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). Consistent with Hoffmann and Broekhuizen (2009), we measured skills by asking participants "*How would you describe your abilities as an investor?*", 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*". As in Hoffmann and Broekhuizen (2010), we measured experience by asking participants how many years they had been investing.

3. Results

3.1. Attributed Cause of Prior Gains and Losses

To test hypothesis H1a, we performed a mixed, two-way ANCOVA of willingness to hold (vs. sell) each investment, with Past Investment Performance as the within-subjects factor and Attributed Cause of Prior Gains and Losses (vs. Control) as the between-subjects factor. Because we included covariates for gender, investment skills, and investment experience, we report least squares means obtained from the SAS MIXED procedure instead of conventional arithmetic means. Accordingly, the means of the control condition will vary slightly across the experimental conditions. Results of ANOVAs (without the covariates) are consistent with the reported ANCOVA results and are available upon request.

In the ANCOVA of willingness to hold the investment by Past Investment Performance, Attributed Cause of Prior Gains and Losses has a significant qualifying effect ($F(1, 43) = 5.53$, $p < 0.05$). This result is in support of hypothesis H1a. In the Control condition, participants' investment willingness reflected the disposition effect. That is, they were more willing to hold on to the losing investment ($M = 4.70$) than the winning investment ($M = 3.83$) ($p < 0.05$). But, as predicted by hypothesis H1a, when the performance of the winning investment was externally attributed, and the performance of the losing investing was internally attributed, the disposition effect was reversed. That is, in this treatment condition, participants exhibited a higher willingness to hold on to the winning investment ($M_{\text{winner}} = 4.68$) than the losing investment ($M_{\text{loser}} = 3.95$) ($p < 0.10$). See Fig. 1a. The main effects of Past Investment Performance and Attributed Cause of Prior Gains and Losses were not significant, nor were the control variables or the interaction effects of the control variables and Past Investment Performance.

3.2. Source of Money Invested

To test the qualifying effect of the source of money invested on the disposition effect (H1b), a similar ANCOVA was conducted as above, now regarding the interaction effect of Investment Performance and the between-subjects factor Source of Money Invested (vs. Control). A significant qualifying effect was revealed for Source of Money Invested ($F(1, 46) = 4.60$, $p < 0.05$), in support of hypothesis H1b. In the Control condition, participants' investment willingness reflected the disposition effect: They were more willing to hold on to the losing investment ($M = 4.84$) than the winning investment ($M = 3.97$) ($p < 0.05$). Yet, when participants were told that they were investing other people's money, the disposition effect was reversed, as participants exhibited a higher willingness to hold on to the winning investment ($M_{\text{winner}} = 4.59$) than the losing investment ($M_{\text{loser}} = 4.15$). See Fig. 1b.

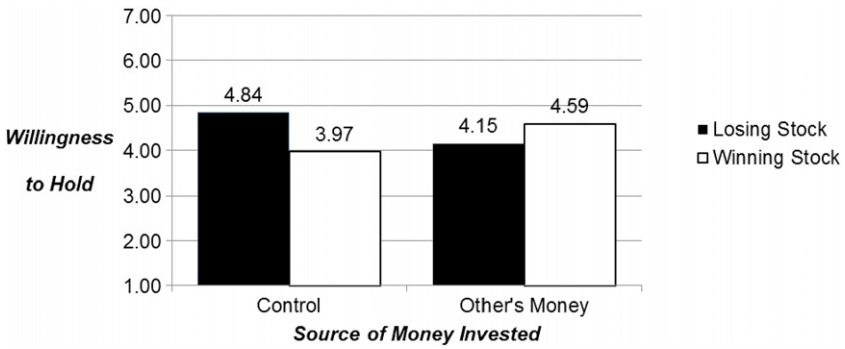

Fig. 1b. H1b: Reversal of disposition effect by Source of Money Invested. *Note*. Reported numbers are least squares means obtained from the SAS MIXED procedure.

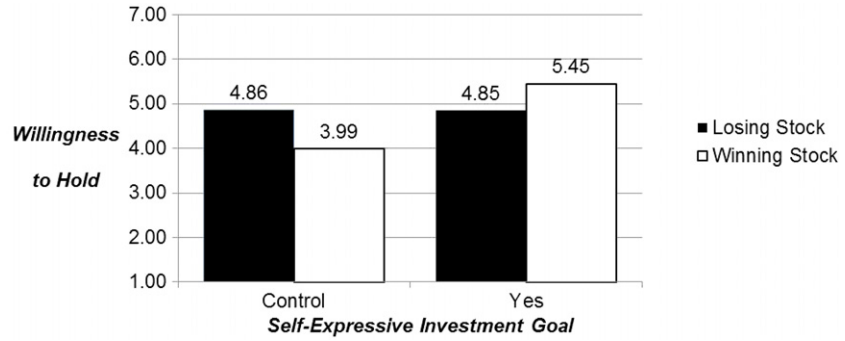

Fig. 1c. H1c: Reversal of disposition effect by Self-Expressive Investment Goal. *Note*. Reported numbers are least squares means obtained from the SAS MIXED procedure.

Again, the main effects of Past Investment Performance and Source of Money Invested were not significant, nor were the control variables or the interaction effects of the control variables and Investment Performance.

3.3. Self-Expressive Investment Goal

To test the qualifying effect of alternative, social investment goals such as self-expression on the disposition effect (H1c), a similar ANCOVA was conducted as above, now regarding the interaction effect of Past Investment Performance and the between-subjects factor Self-Expressive Investment Goal (vs. Control). Self-Expressive Investment Goal had a significant qualifying effect ($F(1, 46) = 5.30, p < 0.05$), supporting hypothesis H1c. Again, in the Control condition, participants' investment willingness reflected the disposition effect, as they were more willing to hold on to the losing investment ($M = 4.86$) than the winning investment ($M = 3.99$) ($p < 0.05$). As predicted, when participants were asked to imagine having an alternative investment goal (i.e., self-expression) besides a financial gains goal, the disposition effect was reversed. That is, in the Self-Expressive Investment Goal condition, participants had a higher willingness to hold on to the winning investment ($M = 5.45$) than the losing investment ($M = 4.85$). See Fig. 1c. In this experiment, the main effect of Self-Expressive Investment Goal was also significant ($F(1, 46) = 5.13,\ p < 0.05$), with participants being more willing to hold on to both the winning and losing investments in the presence of the self-expressive goal ($M = 5.15$) than in its absence ($M = 4.42$) ($p < 0.05$). This is intuitive, because if an individual has several goals for an investment (instead of just the financial gains goal), the willingness to hold the investment should be higher. The control variables were again insignificant, as were the interactions of the control variables and Past Investment Performance.

4. Discussion and conclusion

4.1. Contributions to research

The current research contributes to both the general literature on behavioral finance and household finance as well as the specific literature on the disposition effect and individuals' investment choices. As individuals are increasingly self-responsible for making such consequential financial decisions as managing their retirement wealth (van Rooij et al., 2011), there is a growing interest in how individuals actually make such decisions and the behavioral biases that might hamper their effectiveness in doing so (Goldstein et al., 2008; He et al., 2008; Johnson and Tellis, 2005; Morrin et al., 2002; Zhou and Pham, 2004). In this regard, the disposition to sell winning investments too early and hold on to losing investments too long (Shefrin and Statman, 1985) is a deeply-ingrained behavioral bias that can have substantial negative wealth consequences for individuals. As such, it is important to identify factors or conditions that can mitigate or even reverse the disposition effect, and the current research identifies three

such conditions related to personal responsibility. In particular, we find that individuals are more willing to hold on to their well-performing investments and sell their poorly-performing investments when (i) the cause of the poorly-performing investments is attributed to their own fault (instead of an external cause), when (ii) they are investing other people's money (instead of their own), and when (iii) they have an alternative social investment goal such as self-expression besides a financial gains goal. With a few noteworthy exceptions (see e.g., Aspara and Hoffmann, 2015 and Lee et al., 2008) the existing literature in (behavioral) finance has been relatively silent on the psychological or social factors that might lead individuals to overcome their susceptibility to the disposition effect. The present research contributes to filling this void in the literature on financial decision-making by individuals.

4.2. Implications for practice

Because the disposition effect typically has negative wealth consequences (cf. Odean, 1998), practical ways to mitigate this bias could improve individuals' investment performance. Considering our results, the most actionable factor is related to individuals' attribution regarding their investment gains and losses. That is, individuals have a natural tendency to attribute successes to themselves, while attributing failures to external factors (Folkes, 1988; Hoffmann and Post, 2014; Mizerski et al., 1979). When this attribution is reversed, however, by telling individuals that their gains were the result of favorable market conditions, while their losses were the result of their own faults, the disposition effect is mitigated or reversed. Of course, financial advisors cannot honestly tell their clients that all their winning investments were due to luck and all their losing investments were the clients' fault. However, when counseling their clients and providing advice, financial advisors are advised to stress the importance of market factors vs. personal investment skills in driving investment returns and increase their clients' awareness of individual investors' natural tendency to be overconfident (Barber and Odean, 2001) and overestimate their investment aptitude (Hoffmann and Post, 2014).

4.3. Limitations and future research

As every study, the present paper has some limitations, which provide promising avenues for future research. First, although we identify three conditions that reverse individuals' susceptibility to the disposition effect, and these conditions are all hypothesized to relate to feelings of personal responsibility (and the internal vs. external causal attributions therein), the results as such do not provide information whether the mechanisms of responsibility were exactly the same across the three manipulations. Second, although an experiment has the advantage of a clear identification of the social and psychological factors underlying the disposition effect without suffering from the confounding effects that are typically associated with field studies, lab experiments also have some general limitations. Most importantly, while the current study's dependent variable likely reflects individuals' *intentions* to sell vs. hold on to their winning or losing investments and previous research found such intentions to predict actual behavior reliably (Parker and Fischhoff, 2005), the dependent variable as measured may not always coincide with individuals' *actual behavior* regarding their investments. To overcome this limitation, future research using a field study is stimulated to replicate our experimental findings.

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