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### “How I think you are investing” : Gendered, social metacognitive influences on consumers’ investing perspectives

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## **“How I think you are investing”: Gendered, social metacognitive influences on consumers’ investing perspectives**

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Marketplace social metacognition concerns how consumers think about other consumers in the marketplace and how those others make decisions. We apply this perspective to the consideration of gender stereotypes in relation to investing decision scenarios involving potential gains and losses, as suggested by prospect and house money investing theories. In an experimental study of 84 business school students we find that target-investor order of gender presentation (i.e., the gender of an imagined investor with either a male or female presented first) was more predictive than one’s own gender in terms of both amounts invested and investing processes engaged in by male as opposed to female target-investors across gain and loss scenarios. Our findings suggest possible revisions in relating gender stereotype theory to both social metacognition and behaviorally diagnostic investing information.

**Keywords:** Social metacognition; Gender stereotypes; Gender salience; Prospect theory; House money theory.

Thinking about and buying what other people are investing in seems to be a driving influence in stock market investing and trading; yet it also may induce biases which impede sound decisions (Shiller, 2011). One theoretical

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perspective which might explain such phenomena concerns marketplace metacognition. It parallels metacognition theory in general and includes not only consumers' beliefs about their own mental processes, but also those about others', particularly in the context of persuasion knowledge and the marketplace (Wright, 2002). To explore such social marketplace metacognitions we examine gender stereotyping in relation to behavioral decision theories of investing. The main research issue concerns the relative effects of gender-stereotyped social metacognitions, one's own gender, and behaviorally diagnostic gain-loss information on investing perceptions of target-males and females.

## CONCEPTUAL OVERVIEW

### Social metacognition and gender stereotypes

Metacognition is a reflexive process in which one is aware of one's own awareness or thinks about one's own thinking. It is also a social process in that it involves understandings derived from one's social environment such as in forming models of the mind about what others may think and making related social stereotypic judgments—social metacognition (Jost, Kruglanski, & Nelson, 1998). We may apply this perspective in terms of social metacognitive and social stereotypic accounts of different marketplace segments of people, such as males and females (Jost et al., 1998; Sczesny & Kühnen, 2004). Social role theory suggests that such stereotypes are driven by perceptions of the roles men and women play in society (Eagly, 1987). Moreover, such stereotypes are implicated in social judgments about others' attitudes and behaviors (Hepburn & Ortiz, 1982; Krueger & Rothbart, 1988; Locksley, Rasinski, Crocker, & Hastie, 1985).

In this paper we build on these ideas of social metacognition and stereotypes and connect them to the idea that metacognition in general is related to decision making. As Lipshitz and Pras (2005) note, there is a metacognitive component to decision making, of which varying levels of reflective and self-referencing awareness are parts (cf. Thaler, 1987). Here we emphasize social metacognition as a possible factor which impacts consumers' understandings of how people in an often stereotyped category (e.g., gender) make investing decisions. In general, gender is a social stereotypic variable such that males are seen as agentic while females are seen as communal (Sczesny & Kühnen, 2004) and which, when made salient, may impact task perceptions and performance (Crisp, Bache, & Maitner, 2009; Jamieson & Harkins, 2010; Lee, Kim, & Vohs, 2011). As suggested by social identity theory, gender identity is also reflexively constructed in two aspects: gender as represented in the gender of another person and one's own gender as a basis for social comparison (Oswald & Lindstedt, 2006; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987).

Further, gender perceptions may be moderated contextually (Croson & Gneezy, 2009; Eagly & Wood, 1999). Priming gender contextually can make it salient and people often react both in terms of one's own gender and the gender of the person in comparison scenarios (cf. Gould & Weil, 1991; Maldonado, Tansuhaj, & Muehling, 2003; Szczesny & Kühnen, 2004). For example, Gould and Weil (1991) found males'(females') perceptions of giving to same(opposite) sexed people varied more(less). Thus there is a reflexive, social comparison effect of one's own gender as a self-knowledge anchor for metacognitive expectations about gender (cf. Jost et al., 1998). However, there are also situational effects which invoke gender stereotypes that are held across genders, such that contextualized lay theories of mind may dominate such reflexivity, according to Mendoza-Denton, Park, and O'Connor (2008). Indeed, they found that, while there were situational differences in perceptions of target-gender (i.e., stereotypes), there were no participant-gender differences in these perceptions.

### INVESTING, GENDER, AND SOCIAL METACOGNITION

In integrating social metacognition with investment decision making we consider Behavioral Decision Theory-related prospect theory (PT). Prospect theory predicts that individuals "double down" after losing money; that is they make riskier investments to make up for their losses but turn more cautious after making money (Kahneman & Tversky, 1979). Cumulative prospect theory further suggests that people make decisions based on frames and reference points established by prior outcomes (Tversky & Kahneman, 1992; Weber & Zuchel, 2005). In the present research it is predicted that people will respond differently to prior gains or losses even though the probabilities of current investment success are not dependent on those outcomes.

Considering research on gender differences in risk and investing, males have been found to take more investing risks than females and to be less loss averse (Anthes & Most, 2000; Barber & Odean, 2001; Byrnes, Miller, & Schafer, 1999; Schmidt & Traub, 2002) although a study in Vietnam finding no gender differences suggests such effects are not universal (Tanaka, Camerer, & Nguyen, 2010). Gender has also been found to moderate investment decisions such that males with greater(less) perceived investing capability would take more(less) investing risks while females did not differ (He, Inman, & Mittal, 2008). However, as Darvaula (2007) notes, findings of gender differences are not consistent in economic experiments. In summary, while inconsistent, there are significant gender differences in investing behavior per se.

Such differences may present themselves as gender stereotypes (Nofsinger & Varma, 2009), and the use of such stereotypic information about investors

may interact with the use of behaviorally diagnostic information (Krueger & Rothbart, 1988; Locksley, Borgida, Brekke, & Hepburn, 1980; Rasinski et al., 1985). Thus it is theorized that gain–loss sensitivity will be moderated by social metacognition regarding a target-investor's gender. Prior research on gender stereotyping related to risk suggests that women are perceived as more risk averse than men (Daravula, 2007; Siegrist, Cvetkovich, & Gutscher, 2002). In one study partly related to investing, Mendoza-Denton et al. (2008, p. 973) found that in work and sport situations, such as “in a conversation about what is happening on Wall Street”, target-males were perceived to be more assertive than females.

## STUDY OVERVIEW AND HYPOTHESES

The main research issue in this paper concerns the relative effects of gender-stereotyped social metacognitions, one's own gender, and behaviorally diagnostic gain–loss information on perceptions of investing by target males and females. We investigate how perceptions of target-others' investments may be moderated in social metacognition contexts, i.e., when people are asked to model investment decisions in gender-oriented, social comparison contexts. While the accuracy of such modeling can be problematic, i.e., linking the judgment of a subject and a target person's criteria related to that judgment (e.g., Kenny & Winquist, 2001), here we only consider social metacognitions involving perceptual judgments. Thus, while our research is informed by prior gender stereotype research, we examine the perceptual judgments of target-investors which likely, but may not always, involve stereotype categorization. Thus, while we do not assess how such investors might actually invest and possible related biases, we do assess social metacognitions associated with recognized gender stereotypes. We propose two hypotheses to test based on the forgoing theoretical development.

The first hypothesis (H1a) concerns the gender of other investors in relation to commonly held stereotypes. Men stereotypically are thought to be more risk seeking than women (Daravula, 2007; Eckel & Grossman, 2002; Siegrist et al., 2002) and this will be reflected in the investment amounts study participants will accord them, i.e., more risk seeking leads to more investment.

- H1a: When investor-gender is made salient, a male(female) investor will be accorded higher(lower) investing amounts.

Considering the perceptions of target-investor gender versus one's own gender (H1b), it is thought that people will assess the risks others might take as a result of their own feelings, i.e., risk-as-feelings (Hsee & Weber, 1997; Siegrist et al., 2002). In that case, males(females) would reflect upon themselves as being male(females) when assessing other

males'(females') investments. They might also make social comparisons between themselves and members of the opposite gender when assessing those individuals. However, in doing so they may rely on stereotypes that are useful when evaluating an abstract other, whether that other is of one's own or opposite gender (Siegrist et al., 2002). Following Mendoza-Denton et al. (2008), it seems likely that participant-gender effects will be dominated by stereotype effects. Therefore it is predicted that both genders will share similar perceptions of investor-gender.

- H1b: Regardless of one's own gender, when investor-gender is made salient, a male(female) investor will be accorded higher(lower) investing amounts.

As noted above, research suggests that both stereotypic and behaviorally diagnostic information are applied in making inferences (e.g., Krueger & Rothbart, 1988; Neberg & Fiske, 1987). In this regard, prospect theory indicates that aspects of framing, such as gain-loss variation scenarios, may impact perceptions of gendered target-investors as Nofsinger and Varma (2009) show. In a study of risk scenarios they found that in gain scenarios more females than males chose riskless choice, while in loss scenarios fewer females chose certain loss than males, thus following prospect theory predictions more so than males. While they studied one's own gender as a factor, they suggest their findings are typical of both genders, hence stereotypical. The finding that males made riskless choices less in gain situations may imply that they followed a house money approach (Ackert, Narat Charupat, Church, & Deaves, 2006; Massa & Simonov, 2005; Thaler & Johnson, 1990) in which more is invested in gain situations (the house's money) and withheld in loss situations. Here we directly assess these stereotypes in terms of target-investors, as well as behaviorally diagnostic gain-loss information.

- H2: There will be a loss or gain amounts invested  $\times$  female-male target-investor order of presentation interaction with differences in amount invested between female and male target-investors such that female (male) target-investors appearing first in order of presentation will trigger risk seeking(risk avoidance) in the face of losses and risk avoidance(risk seeking) in the face of gains.

## METHOD

### Participants

A total of 84 business school students at a Northeastern U.S. university, of whom 50 were female and 34 were male and who ranged in age from 18 to 53, participated in this study for course credit. Most had little investing

experience with 86.9% being at below the midpoint of 5 on a 9-point scale assessing investing experience. It is important to include investing experience when assessing investing decisions (Nofsinger & Varma, 2009). Nonetheless, the topic of investing decisions is relevant to them in terms of the business school environment and their future careers.

### Procedures and manipulations

The study involves two hypothetical target-investors, a female, Sue, and male, James. These names are used to represent gender-stereotypic, categorical information; no other individuating information about them is given (cf. Neuberger & Fiske, 1987). Participants are also placed in counterbalanced gain or loss scenarios such that four dependent variables were within-participants, involving the two gains for the female and male investors before two losses for them or the reverse (see Appendix A). The two manipulated independent variables were target-investor order (either a male or female was presented first in order) and gain-loss order (either a gain or loss was presented first). The odds of a potential gain given are the same for either of the two prior periods' conditions of either a 50% gain or loss: a 20% chance of gaining 20% or more, a 20% chance of losing 20% or more or a 60% chance of a result between losing or gaining 20% (see Appendix B). It should be noted that counterbalancing served the purpose of accounting for incidental order effects but is not meant to remove or exclude theoretical order effects as hypothesized in H2. Thus, to evaluate the theoretical order effects in terms of both gain-loss order and target-investor order, we counterbalance to separate incidental from theoretical order effects. In particular, counterbalancing was done for target-investors so that participants who saw both the gain conditions for both male and female targets first later saw both loss conditions for both gender targets and vice versa.

Other questions concern investing likelihood, focus on gains or losses, gender awareness in each scenario, decision making based on one's own knowledge of investing versus gender, an open-ended question about their decisions, what they thought the study purpose was, and demographic (age, gender, income) and investment experience questions. The inclusion of experience has been found to attenuate risk-taking differences (Olsen & Cox, 2001; Dwyer, Gilkeson, & List 2002) and thus should afford more conservative hypothesis tests.

## RESULTS

### Manipulation checks

*Gain-loss manipulation check.* Participants were asked, "How focused do you think s/he would be on gains and losses in this decision?" Their choices



were on a 9-point scale from “More Concerned about Losses” to “More Focused on Gains.” A 2 (gain-loss) MANOVA was run with the four focus-on-loss-or-gain variables as dependent. There was a significant overall effect,  $F(4, 75) = 2.732, p = .035$ . The results were due to differences in focus-times 1 and 2. For focus-time 1,  $F(1, 78) = 9.851, M_{\text{loss first}} = 6.816, M_{\text{gain first}} = 5.429, p = .002$ , and for focus-time 2,  $F(1, 78) = 6.933, M_{\text{loss first}} = 7.000, M_{\text{gain first}} = 5.857, p = .010$ . When a loss occurred first, participants responded with a greater focus on gains than when a gain occurred first. Similar results obtained when a 2 (gain-loss)  $\times$  4 repeated focus-on-loss-or-gain variables as dependent MANOVA was run,  $F(1, 78) = 8.212, M_{\text{loss first}} = 5.934, M_{\text{gain first}} = 5.006, p = .005$ , with a significant effect for the focus  $F(3, 76) = 12.979, p = .000$ , but not for focus  $\times$  gain-loss,  $p > .05$ . In either case, when there was a loss first, participants responded with a greater focus on gains than when a gain was first.

*Male-female target-investor order manipulation check.* A MANOVA was run with target-investor order as the independent variable (either a male or female target-investor is presented first) and the four investments for the four times in order as dependent. There was a significant overall effect,  $F(4, 74) = 6.913, p = .000$ . The results were due to differences in amounts for times 2 and 4. For amount time2,  $F(1, 74) = 9.345, M_{\text{amount female target-investor first time2}} = \$6031.60, M_{\text{amount male target-investor first time2}} = \$5429, p = .003$ , and for amount time4,  $F(1, 74) = 4.810, M_{\text{amount female target-investor first time4}} = \$5714.41, M_{\text{amount male target-investor first time4}} = \$4159.46, p = .031$ . Participants changed the amounts invested in the two periods such that when the female(male) was first, they accorded the target male(female) higher(lower) investments.

*Confound checks.* To corroborate whether gender was used as a cue, participants were asked on a 9-point scale concerning whether their own investing knowledge (lower scored) or gender was an important investing factor (higher scored), i.e., “Whatever investment decision you imagine Sue(James) made, what was most important in your evaluation?” A MANOVA was run with target-investor order (male or female first) as the independent variable and with the four knowledge-of-investing/gender variables as dependent. There was a significant overall effect,  $F(4, 74) = 7.743, p = .000$ . This effect was due to knowledge-of-investing/gender time-2,  $F(1, 77) = 14.856, p = .000, M_{\text{female target-investor first}} = 4.409, M_{\text{male target-investor first}} = 2.571$ , and knowledge-of-investing/gender time-4,  $F(1, 77) = 10.201, p = .002, M_{\text{female target-investor first}} = 4.318, M_{\text{male target-investor first}} = 2.8$ . When the female target-investor was first(second) in these two measures, participants attributed their investment evaluation more(less) to gender as an investing factor. When participant-gender was included, target-investor

order remained significant  $F(4, 72) = 6.843, p = .000$ , but neither participant-gender nor the participant-gender  $\times$  target-investor order interaction was significant,  $p > .05$ .

Separately, we took the total amounts invested by the male and female target-investors across gains and losses—i.e., (fe)male total = (fe)male loss plus (fe)male gain—subtracted the female total from the male total, and correlated this result with the sum of the four knowledge-of investing/gender variables, Cronbach's  $\alpha = .82$ . The significant correlation,  $r(81) = .327, p = .003$ , suggested that participants who reported relying more on gender as important projected larger target-investor amount differences. These results taken together suggest both that the target-investor order manipulation impacted the use of gender in the investment assessment task and further that the higher reported use of gender impacted task results as well.

## Hypotheses Tests

To assess the social metacognitive effects, several analyses were conducted to test the hypotheses.

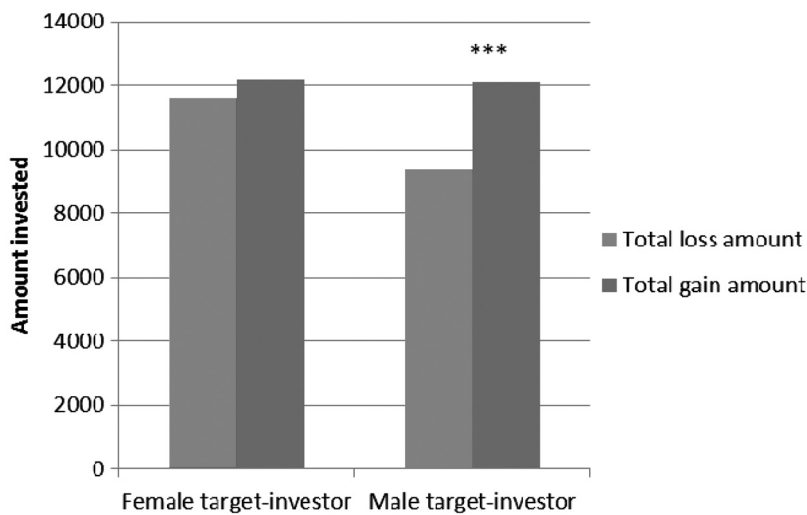
*Test of H1a and H1b.* To test H1a, that when investor-gender is made salient, a male(female) investor will be accorded higher(lower) investing amounts, the two target-male rounds of investments were summed across gains and losses, as were those for the two target-female rounds. A paired  $t$ -test was conducted between these two total amounts. Participants accorded the male target-investor a greater investment total than the female target-investor,  $t(79) = -4.687, p = .000, M_{\text{female target-investor total}} = \$10,715$  vs  $M_{\text{male target-investor total}} = \$11,988.75$ , supporting H1a.

To test H1b, that one's own gender would make no difference in according investment higher investment amounts to target-males than to target-females, a 2 (participant-gender)  $\times$  2 (repeated: the two total amounts as dependent variables for male and female target-investor) mixed MANOVA was run. The results indicate that, while the differences accorded the male and female target-investors reported above are upheld,  $F(1, 78) = 20.201, p = .000, M_{\text{female target-investor total}} = \$10,715$  vs.  $M_{\text{male target-investor total}} = \$11,988.75$ , there are no significant gender main or interaction effects,  $p > .05$ . Thus H1b is supported regarding the relative target-investor amounts (male and female total amounts) and participant-gender effects. Further support was found when the second investment amount out of the four queried was considered because it represents a possible change in amount was the dependent variable in a 2 target-investor order (male or female first)  $\times$  2 participant-gender  $\times$  2 gain-loss order. Only target-investor

order was significant  $F(1, 76) = 8.495$ ,  $p = .005$ ,  $M_{\text{female target-investor second investment amount}} = \$6674.36$  vs  $M_{\text{male target-investor second investment amount}} = \$4863.51$ . These findings of no gender effect are also supported in the fuller analysis in the next section.

*Test of H2.* To test H2, that is that there would be a loss or gain amounts invested  $\times$  female-male target-investor order of presentation interaction, a mixed between/within-participants MANOVA was run by looking at the four target-investor amounts as dependent, i.e., female-gain, male-gain, female-loss, and male-loss amounts invested) with the first three factors as between-participants factors and the latter two as within-participants factors: 2 (gain-loss order: gain(loss) first)  $\times$  2 (target-investor order: (female(male) target-investors first)  $\times$  2 (participant-gender)  $\times$  2 (within-participants gain-loss amount: loss(gain) amount invested)  $\times$  2 (within-participants target-investor amounts: male(female) target-investor amounts) with experience, income, and age as covariates. Support for H2 is found in the significant gain-loss amount  $\times$  target-investor order interaction,  $F(1, 62) = 4.208$ ,  $p = .044$ , as well as qualifications by higher-order interactions as discussed further below. There were also significant effects for gain-loss order,  $F(1, 62) = 5.984$ ,  $p = .018$ , gain-loss amount,  $F(1, 62) = 6.095$ ,  $p = .016$ , gain-loss amount  $\times$  target-investor amount,  $F(1, 62) = 4.573$ ,  $p = .036$ , gain-loss order  $\times$  gain-loss amount  $\times$  target-investor amount,  $F(1, 62) = 5.539$ ,  $p = .022$  and target-investor order  $\times$  gain-loss order  $\times$  gain-loss amount  $\times$  target-investor amount,  $F(1, 62) = 4.546$ ,  $p = .037$ . All other effects were not significant,  $p = ns$ .

The gain-loss amount  $\times$  target-investor order interaction was further examined by gain(loss) total amounts (male gain(loss) plus female gain(loss)) invested as dependent variables in a mixed between/within-participants design: 2 (target-investor order)  $\times$  2 (gain-loss-order: gain(loss) first)  $\times$  2 (participant-gender)  $\times$  2 (repeated loss-gain amounts as dependent: losses(gains) summed) with experience, income, and age as covariates. There was a significant target-investor order  $\times$  gain-loss total amounts interaction,  $F(1, 62) = 4.208$ ,  $p = .044$ , as well as a significant main effect for gain-loss order,  $F(1, 62) = 5.893$ ,  $p = .018$ . The interaction was examined in several additional  $t$ -tests. A simple  $t$ -test revealed a significant difference for target-investor order on total loss amount,  $t(79) = 2.136$ ,  $p = .036$ ,  $M_{\text{female first loss total}} = \$11604.65$ ,  $M_{\text{male first loss total}} = \$9176.32$ , but not total gain amount,  $t(81) = -.003$ ,  $p = .999$ ,  $M_{\text{female first gain total}} = \$12102.22$ ,  $M_{\text{male first gain total}} = \$12105.26$ . This partially supports H2 on losses that females(males) first in order of presentation trigger a loss averse, risk seeking (risk avoidance) response when faced with losses but not differential risk avoidance(risk seeking) in the face of gains.



**Figure 1.** Total loss or gain amounts thought to be invested by target-investor order (i.e., when a male or female is presented first). \*\*\* $p = .000$ .

This result is further explained by two pairwise  $t$ -tests. As shown in Figure 1, the total loss amount invested for target-investor order when the female was first did not differ from the total gain amount invested,  $t(43) = -0.817$ ,  $p > .05$ ,  $M_{\text{loss-total}} = \$11604.65$ ,  $M_{\text{gain-total}} = \$12176.74$ , but this was not true for target-investor order when the male was first,  $t(37) = -2.734$ ,  $p = .010$ ,  $M_{\text{loss-total}} = \$9370.27$ ,  $M_{\text{gain-total}} = \$12081.08$ . For the female target-investor, participants were about equal in their assessment but when the male was first, participants projected greater gain than loss investment amounts. Female target-investors were held to signal loss aversion (risk seeking) in the loss condition but also similar investing for the gain condition. The male investor signaled a house money reaction of lower(higher) risk seeking in the face of losses(gains), as well as greater volatility in investment amounts. It should be noted that these results do not mean more was thought to be invested for the target-female than male or contradict our findings for H1a, but rather that the presence of one or the other first signaled different sums for both genders across the loss-gain conditions; e.g., for (fe)male target-investor first the two loss amounts for both genders are summed, as are the two gain amounts. Altogether, these results partially support H2 in the perceptions of male and female target-investors for gain-loss amounts. Additionally, the non-significant effect of participant-gender on target-investor gain-loss amounts further supports H1b, that it does not affect these target-investor perceptions.

### Corroborating evidence

We further evaluated the two significant interactions about which no predictions were made. The significant target-investor amount-invested  $\times$  gain or loss amount-invested  $\times$  gain-loss-order interaction indicates participants thought in the loss-order condition that female target-investors would invest less than male target-investors in gain-amounts,  $t(37) = -2.576$ ,  $p = .014$ ,  $M_{\text{female target-investor gain-amount}} = \$6013.16$  vs  $M_{\text{male target-investor gain-amount}} = \$7210.53$  but there were no differences in the loss amounts,  $p = ns$ . However, there were significant differences between the male and female target-investor in the gain first order-condition, both for their gain-amount  $t(44) = -2.216$ ,  $p = .032$ ,  $M_{\text{female target-investor gain-amount}} = \$5313.33$  vs  $M_{\text{male target-investor gain-amount}} = \$5844.44$  and loss-amount,  $t(41) = 4.532$ ,  $p = .000$ ,  $M_{\text{female target-investor loss-amount}} = \$3916.67$  vs  $M_{\text{male target-investor loss-amount}} = \$5238.10$ . In all cases of difference, female(male) target-investors were seen to invest less(more).

We examined the four-way target-investor order  $\times$  gain-loss order  $\times$  gain-loss amount  $\times$  target-investor amount interaction by dividing the sample by target-investor order. For the female target-investor first in order, there was a main effect for target-investor amount,  $F(1, 41) = 15.050$ ,  $p = .000$ ,  $M_{\text{female target-investor amount}} = \$5591.56$  vs  $M_{\text{male target-investor amount}} = \$6266.50$  and a significant three-way interaction,  $F(1, 41) = 9.698$ ,  $p = .003$  which replicates the total sample interaction. For the male target-investor first in order, there were only separate main effects for the target-investor,  $F(1, 35) = 7.183$ ,  $p = .011$ ,  $M_{\text{female target-investor amount}} = \$5157.44$  vs  $M_{\text{male target-investor amount}} = \$5705.80$  and gain-loss amounts,  $F(1, 35) = 7.727$ ,  $p = .009$ ,  $M_{\text{loss-amount}} = \$4730.81$  vs  $M_{\text{gain-amount}} = \$6132.44$ . These results suggest additional support for male target-investors being granted higher investments while for female target-investors there is a more nuanced interaction-contextualization (cf. Croson & Gneezy, 2009).

### Test of an alternative explanation

Overall total invested across the four scenarios (up to \$10,000 per scenario) offered a contrast. Looking at female/male target-investor order  $\times$  gain-loss order  $\times$  participant-gender with the experience, income, and age covariates, there were no significant effects other than a gain-loss main effect  $F(1, 62) = 5.893$ ,  $p = .018$ ,  $M_{\text{loss first overall-total}} = \$25.383.06$  vs  $M_{\text{gain first overall-total}} = \$20,259.79$ . This indicates that the distribution of investments by female-male target-investor order within the total invested changed, rather than the total invested itself.

## DISCUSSION

The present research has demonstrated that behavioral decision theory might be augmented by considering social metacognitive influences; that is, how people think investments differ depending on who makes them. Thus, while inferences about investing decisions differed in their own right—i.e., when losses(gains) were first, participants made larger(smaller) investments—how they perceive male–female target-investors is another inferential input to their decision making. Moreover, it is not one's own gender per se that is diagnostic, as it is a generalized social metacognitive understanding of both how much and by what processes (e.g., prospect versus house money theory predictions) men and women might invest. Thus, while we must caution that our results regarding participant-gender have a limitation in terms of the null hypothesis stating and testing of H1b (see, for example, Gallistel, 2009 and Krueger, 2001 on various theoretical perspectives concerning the null hypothesis), we nonetheless find support for the idea that gender is made salient as an influence variable, not so much in terms of one's own gender (Gould & Weil, 1991; Sczesny & Kühnen, 2004), as in terms of target-gender social metacognitions. We thus show that it is not a focus on oneself of one's own gender but rather gender salience in terms of others' target-gender that differentiates investment perceptions. This result goes beyond prior research on others' target-gender (Daruvala, 2007; Eckel & Grossman, 2002) in that we found no participant-gender effect.

Moreover, while Croson and Gneezy (2009) indicate that women's decisions may be more context-dependent than men's, it appears that when considering the gender of others, the context (i.e., gain or loss scenarios) as an influence on investing perceptions is shared across the two genders, consistent with the findings of Mendoza-Denton et al. (2008) in a different context. Our findings also go beyond prior research where the context for investor-gender was not varied by within-participants gain and loss outcome scenarios (Daruvala, 2007; Eckel & Grossman, 2002; Siegrist et al., 2002) as it was here. Thus our research, which looks at stereotypic target-investors, finds that unlike the findings by Nofsinger and Varma (2009) regarding participant-gender, women were thought to be more cautious not only after gains, but also after losses when compared to men. Men, on the other hand, were perceived to act in a way more consistent with the house theory of investing, i.e., they were seen to make larger(smaller) investments after gains(losses). While it is a limitation that we do not examine all the reasons consumers might view males and females differently, it is a potential contribution to spur social metacognition research which considers these two divergent theoretical perceptions of gendered-investing. Both context, as reflecting task-based, behaviorally diagnostic information, and social metacognitive gender-perceptions interact to produce these results.

Another limitation is that we did not examine the accuracy of participants' social metacognitions although in certain respects they do match some previously reported gender-stereotypic investing and related perceptions (e.g., Mendoza-Denton et al., 2008; Nofsinger & Varma, 2009). However, our results also extend or challenge prior gender-stereotype findings, as reported above. Moreover, as prior research indicates mixed results with respect to gendered economic-investing differences (Darvaula, 2007), we cannot claim that the social metacognitions we report accurately reflect actual gendered-based investing. Thus whether people's perceptions accurately match everyday reality of target-investors or are truly stereotypic biases should be examined in future research (Kenny & Acitelli, 2001; Kenny & Winquist, 2001; Krueger & Rothbart, 1988; Marks & Miller, 1987; Ross, Greene, & House, 1977). In either case though, if differences are found, they introduce bias because gender should not be relevant to investing decisions. In this paper, while we did not assess the accuracy of stereotypes, the evidence of women signaling risk seeking relative to men in the face of both gains and losses, as well as men's house money approach, does suggest that the current gender stereotypes based on past research may need to be revisited, if not revised.

There also are limitations in how the investing task was primed, framed, and incentivized (Camerer & Hogarth, 1999; Holt & Laury, 2002). Imagining what others might do, as studied here, represents but one type of task. For example, another consideration is posing one's own investments against those of others. Also, investing studies incorporating real investments, incentives, and/or different participants, including more experienced investors and other social stereotypes—e.g., age and (sub)cultural groups—might differ from the present research. Further, joint investment scenarios with target-gender mixes of females and males making joint decisions versus individuals should be examined. In addition, acting on behalf of someone else as a broker, for instance, may lead to different decisions. Future research might frame studies in terms of some or all these task dimensions.

While in many respects the repeated-measures design used here provides key information, there are also limitations in terms of possible conditioned responses over time. While counterbalancing and the persistence of expected differences in the face of this limitation are significant, other designs might be considered; e.g., participants might be told about an investor's investment decision and then later be told who the investor was, such as a (fe)male, and asked her perceptions about that investor (Clark, Wegener, Briñol, & Petty, 2009). Here we framed such information simultaneously (loss–gain, target–investor) although the design did allow for gender salience to emerge over time through four rounds. But different framing might highlight stereotyping differently.

Still another element involves differences in explicit and implicit attitudes toward male and female investors. It seems likely that the present research



included both in that, even for explicit responses, implicit responses may also be simultaneously involved and under certain conditions converge with explicit ones (Frieze, Wänke, & Plessner, 2006). Thus a direct Implicit Association Test (IAT) test might be useful to test further for differences (Frieze et al., 2006). In this case we would expect the implicit test to converge with at least some of the explicit results found here, especially the finding that males will be perceived to invest more, but others may differ.

In closing, the present research, while limited in many respects as discussed above, provides some direction for future research with respect to gendered (and perhaps other) social metacognitions and decision making. For example, they may also be reflected in persuasion and influence processes such that a male(female) spokesperson indicates more(less) investing or trading, as well as variations reflecting prospect and house money theories. Future research might also relate these processes to other gender-stereotype dimensions, such as the agentic-communal characteristic (Szesny & Kühnen, 2004). We find that metacognitive perceptions of both how much and by what processes men and women invest should be further examined in future research. While these perceptions may reflect either stereotypic or more accurate accounts of gender and investing or both, they are reflective of how social metacognitions interact with behaviorally diagnostic task-information.

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## APPENDIX A

### Order of manipulations

JG SG JL SL  
 JL SL JG SG  
 SG JG SL JL  
 SL JL SG JG

J = James, S = Sue, G = gain, L = loss

## APPENDIX B

### Experimental manipulation

Assume that during the last year, a stock investor named James (Sue) invested in a stock mutual fund and made a Gain (Loss) of 50% on his(her) investment. This year (s)he has \$10,000 of new money to invest for one year. Assume there are no trading and no tax consequences. James (Sue) is considering investing in another stock mutual fund where stock market analysts give the following odds of success:

- (a) a 20% chance of gaining 20% or more
- (b) a 20% chance of losing 20% or more
- (c) a 60% chance of a result between losing or gaining 20%

What is the amount of money you think he (she) is willing to invest in this fund, keeping in mind that you have up to \$10,000 to invest?

\$ \_\_\_\_\_