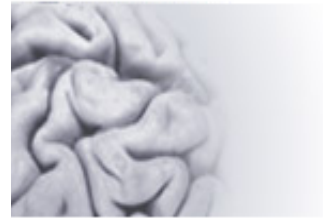




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Overbidding at Auctions

The Influence of Competitiveness and Regulatory Focus

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Abstract

In this paper, the prediction was tested that participants who score high on *social competitiveness* and have a *promotion focus*, are more prone to overbidding than participants that score lower on these scales. Within auctions, people pay on average around 15% above the price for a product compared to when they would have bought it for a fixed price, generally called *overbidding*. There are two main emotional responses that try to explain this irrational behaviour—the *frustration of losing* and the *joy of winning* responses. Over 300 participants completed an online bidding experiment (auction) where they bid for fictitious products (ranging in value between \$5-10 USD) against 9 other online players for two rounds. Bids of all participants were compared with the theoretically predicted Nash Equilibrium of \$7.5 USD; bids above \$7.5 USD were interpreted as overbidding. During the auction, participants received either positive or negative feedback about their bids. The social competitiveness and regulatory focus of all participants were measured. However predicted, participants with a high score on social competitiveness were *not* more prone to overbidding than participants with low scores on social competitiveness. Also, the scores on social competitiveness did not correlate with the regulatory focus of participants. Giving participants *negative* feedback about their bids did result in overbidding, consistent with the *frustration of losing* response. Giving participants *positive* feedback about their bids did *not* result in overbidding, *not* confirming the joy of winning response.

Overbidding at Auctions: The Influence of Competitiveness and Regulatory Focus

The rise of the Internet, a marketplace where consumers can search for product with low search costs, independent of time and space (Ockenfels, Reiley, & Sadrieh, 2006), has changed the way in which products or services are bought. The manner in which products can be sold on the Internet is extensive: sites like Vakantievelingen.nl provide trips to customers via an online auction mechanism. This way, consumers must compete live with other online bidders, where the highest bidder wins (and pays for) the trip. Online auction winners pay on average around 15% more than the same trip is actually worth, generally called overbidding (Ariely & Simonson, 2003). A reason for this overbidding could be the social interaction component of the auction, which increases the excitement of auctions (Stern, Royne, Stafford, & Bienstock, 2008). In line with this explanation, research suggests that giving feedback about the performance of a bidder (such that their previous bids were losing bids) activates the tendency to overbid (Dufwenberg & Gneezy, 2002; Cooper & Fang, 2008). Evidence like this supports the proposed impact of social factors (since the bidding environment encompasses multiple persons) on overbidding.

Studies show various psychological (emotional and cognitive) processes influence behaviour in auctions. The social nature of auction games may lead to various emotional responses that may cause people to overbid. Myers (2004) defines an emotion as "a subjectively experienced state that is characterized by a particular, conscious experience and generally accompanied by physiological arousal and expressive behaviour" (p. 500). Two well-studied emotional responses that try to explain overbidding in auctions are the *joy of winning* and the *frustration of losing* responses. However, there is evidence for both processes in the literature. In a study in which participants did an estimation task (Dohmen, Falk, Fließbach, Sunde, & Weber, 2011), researchers found results in support of the *joy of winning* emotion. They found that brain areas associated with reward activated when participants

outperformed other human opponents in the estimation task. This suggests that merely outperforming someone (without actually gaining something with monetary value) creates a positive sensation. It is probably the *social competition* that explains the brain activations associated with reward. Conversely, Delgado, Schotter, Ozbay, and Phelps (2008) also looked at the neural reward circuitry in the brain to try to explain overbidding at auctions, and found results in support of the *frustration of losing* emotional response. While no actual loss of money was present in their study, the brain areas associated with loss were activated when participants lost against their opponents. The mere anticipation of an unpleasant feeling led participants to increase their bids. Respondents reacted strongly to receiving negative feedback (hearing that you lost a bid) about their performance, a *frustration of losing* response.

While the *joy of winning* and *frustration of losing* emotional responses are well studied; less is known about the influence of more stable personality characteristics on bidding behaviour. For example, extravert people can behave very differently in crowds than introverts do (Hendrick & Brown, 1971). Underlying personality characteristics like *competitiveness* and *regulatory focus* (prevention versus promotion focus) could explain differences in risky behaviour (Boyd & Nicolo, 2005). In turn, taking risk in an auction (bidding more for a product than it might be worth for example) could be a more dominant response by people who have a competitive personality. For example, when the real price of a product is not known in an auction, a bidder can take a risk to bid more and try to win the good, thereby risking paying more for the good than it is actually worth. People who are competitive by nature could display more of these risky behaviours than people who are less competitive in nature. A better understanding of these personality characteristics will help designing effective and high quality auctions mechanisms that can be used to sell thousands of products to thousands of buyers.

Of course it is also possible to receive feedback that you performed well in an auction game. In this scenario, people can experience *perceived ownership* of the item that is auctioned. Perceived ownership, originally called *the endowment effect* (Thaler, 1980), refers to the phenomenon that individuals value a commodity more if one owns the item. Later, Ariely and Simonson (2003) found that individuals within auction games could develop a psychological ownership of a commodity, later called the *pseudo-endowment effect*. Losing something that already is perceived as owned is expected to feel worse. To avoid this unpleasant feeling, people may overbid in an auction game to be sure that the item is theirs.

Concluding, on one hand, there is the *joy of winning* emotional response, which entails a pleasant feeling when you outperform someone else or you win a product. On the other hand there is the *frustration of losing* emotional response, which entails an unpleasant feeling when you are being outperformed or someone else wins the product. There is a possibility that these two emotions can coexist, one can feel delighted when *winning* a product and beating their opponents, while at the same time feeling frustrated when *losing* a product or getting beaten by their opponents. Other than these two emotions, different personality characteristics might influence bidding behaviour. Two personality characteristics (competitiveness and regulatory focus) are analysed within a social decision making context to learn more about their influence on bidding behaviour and their relation to the two emotional responses.

Auctions

Before moving on to the personality characteristics, some background information about auctions is given. Auctions are an old and widely used method for acquiring goods, (Cassidy, 2007). Many variations on auctions have been invented, but we will focus on four standard auction types: the ascending-bid, the descending-bid, the first-price sealed-bid, and the second-price sealed-bid.

In the *ascending-bid* auction, the price is successively raised until only one bidder

remains who will pay the final price. Bidders will keep pushing the price until no one bids a price that is higher than the previous one. The last bidder that stands pays the last stated price. With the *descending-bid* auction, this process is quite the same, but now the price for the good will start at a very high price, and will drop in price automatically. The first person that agrees with the price that is stated at that moment wins the auction and will have to pay the final price. One must wait as long as possible to receive the best price for their good, but waiting too long will possibly result in someone else winning the price.

First- and second-price auction are somewhat different, because here each bidder independently submits a single bid, without seeing other peoples' bids. The good is sold to the person that made the highest bid. In this case, the information that is shown to people is crucial with regards to future bids that are placed (Dufwenberg & Gneezy, 2000). In their experiment about information disclosure in auctions, there were three conditions: Full-feedback (all bids from all players), semi-feedback (only the winning bids) and no-feedback (no feedback at all), which led to very different bidding schemes. In the full-feedback condition, participants tried to *signal* by placing higher bids than theoretically expected, trying to increase the payout by luring the opponent away from the Nash equilibrium¹: the best decision that can be made in an auction game. Without receiving feedback, their bids were closer to the theoretically expected Nash equilibrium. However, without the possibility that participants can "signal" their bidding strategies to their opponents, participants assumed that the decisions of their opponents remained unchanged, pushing their bids closer to the "ideal" value—the Nash equilibrium.

Personality characteristics

Why are some people more prone to taking risk than other people? Could there be differences in personality characteristics that drive people to take risk, like they do in auctions? Perhaps it could be that certain personalities are more prone to experience joy of

winning instead of frustration of losing. Also, people can differ in degree of social competitiveness, possibly resulting in different bidding behaviors. A person who is highly competitive is perhaps more likely to focus on *winning* a competition, or beating an opponent. This focus on winning could cause this person to *overbid* since this person could experience a more extreme *frustration of losing* emotion than a person who is less competitive (Astor, Adam, Jähning, & Seifert, 2013). Two personality characteristics are assessed: *social competitiveness* and *regulatory focus strategy*. Both characteristics will be explained in light of social decision-making.

Competitiveness

In a classic study by Leon Festinger (1954), he hypothesized that every human organism has a drive to evaluate his or her opinions and abilities. People evaluate their opinions and abilities by comparing themselves with the opinions and abilities of other people. This is the foundation of social competitiveness. People evaluate their performance based on the performance of others. He found that you are also more likely to compare yourself with others that are similar to you. Additionally, Horney (1937) described social competitiveness as: "an indiscriminate need by individuals to compete and win (and to avoid losing) at any cost as a means of maintaining or enhancing feelings of self-worth" (p. 32). Within an auction, feedback about someone's performance can trigger an emotional response. This emotional response could differ for people who are highly competitive compared to people who are not competitive at all. A more extreme emotional response, like the frustration of losing response could cause people to overbid.

Regulatory focus strategies

Regulatory focus theory focuses on peoples' perceptions in a decision-making process. The theory examines the relationship between a person's motivation, a set goal and the way this person tries to achieve this goal (Higgins, 2000). In short, two types of regulatory focus

strategies can be distinguished: *promotion focus* and *prevention focus* (Higgins, 1997).

Promotion focused people tend to be motivated to achieve pleasure and aim at achieving positive outcomes, while prevention focused people tend to minimize negative outcomes.

People with a salient promotion focus are motivated to focus on achievement and on maximizing gains. In contrast, people with a salient prevention focus tend to focus more on safety and minimizing losses (Brockner & Higgins, 2001).

Within a social decision-making context, individuals with a promotion focus tend to focus on what they could gain and try to maximize the potential gains. These promotion-focused people will be likely to take more risk in achieving these goals, possibly resulting in *overbidding*. In contrast, an individual with a prevention focus will focus on avoiding losses, and will try to minimize the risk of losing assets. This prevention focus will cause individuals to take less risk in a social decision making context, decreasing the likelihood of overbidding.

Hypothesis

As shown by Dufwenberg and Gneezy (2000), feedback about the performance of participants can change the bidding strategies and subsequently lead to *overbidding*. In this study, one either receives positive ("you are 1st"), negative ("you are 10th") or moderate feedback ("you are 4th or 7th") about their performance. Also, all participants receive feedback after each bid they place, which is either positive ("you won this bet") or negative ("you lost this bet"). It is predicted that the *frustration of losing* response (triggered by negative feedback) will cause participants to *overbid* (bidding above the \$7.50 USD Nash equilibrium). At the same time, it is predicted that the *joy of winning* response (triggered by positive feedback) will also cause participants to overbid (Ariely & Simonson, 2003). However, the effect of the *negative* frustration of losing response is predicted to have a bigger effect than the *positive* joy of winning response due to the *positive-negative asymmetry effect*—negative events weighing greater than positive events (Taylor, 1991). So it is

predicted that the (stronger) frustration of losing response will cause participants to *overbid* more than participants who will experience a (less intense) joy of winning response.

With regards to the personality characteristics, it is predicted that participants who score *high* on social competitiveness also have a *promotion* focus. Conversely, participants who score *low* on social competitiveness have a *prevention focus*. When it comes to overbidding, participants with a *high* score on social competitiveness and who have a promotion focus are expected to *overbid*, due to a more extreme experience of the frustration of losing- or joy of winning response. Conversely, participants who score *low* on social competitiveness and have a prevention focus are *not* expected to overbid because they would experience a *less* extreme emotional response.

By studying these two personality characteristics, we learn more about the environmental influences on the corresponding emotional responses and their bidding behaviour. By learning more about what factors play a role when it comes to online auctions, one can design an auction game which best suits their target audience. This study sheds light on the relation between feedback conditions and how social competitiveness and regulatory focus influence overbidding in auctions.

Method

Participants

Via Amazon's Mechanical Turk, 303 participants were recruited (170 men, 133 woman, mean age = 33,6 years, age range = 19 - 69). Thirteen participants were excluded from the data because they had a standard deviation of 0 between all their bids. Although their time spent on each bidding screen could not be checked, we suspected that these participants walked through the bidding game without making thoughtful choices about their bids. Participants received \$3 USD for about 15 minutes of their cooperation. Additionally, twenty participants received a \$5 USD bonus (randomly assigned).

Materials

Qualtrics (Online survey software and insights program) was used to make an online experimental study (auction game). Participant with a desktop computer, laptop or other device that was connected to the Internet, did the experiment online.

Measures

All participants needed to bid for a fictitious good that randomly changed in value between \$5-10 USD. The bid the participant could place had no minimum or maximum. All bids were rounded up into two decimals (\$7.12 USD for example). Each participant bid against one of nine other players for two rounds. Neither the participant nor the opponent knew the real value of the fictitious good. In total 18 bids from each participant were saved, 9 from each round. Participants could either win or lose against the bid of the opponent. After placing a bid against an opponent, the participant received feedback if they won or lost their bid against their opponent. This process was repeated until the participant played against all nine opponents in the first round. After nine successive bids against nine successive opponents, participants learned their rank compared to their opponents (see manipulations for more information). After the participants learned (not the case for the control conditions) about their performance, they bid again against the same nine opponents in round two. All bids were then compared with the stated \$7.50 USD Nash equilibrium.

At the end of all biddings, 10 questions (7 point Likert scale) were administered to measure *social competitiveness* with the hypercompetitive attitude scale (HAS) (Ryckman, Hammer, Kaczor, & Gold, 1990). Another 10 questions (7 point Likert scale) were administered to measure *regulator focus* with the regulatory focus strategies scale (RFSS) (Ouschan, Boldero, Kashima, Wakimoto, & Kashima, 2007). Example question social competitiveness scale: "Winning in competition makes me feel more powerful as a person". Example question regulatory focus scale: "To achieve something, you need to be optimistic"

(promotion focus question).

Manipulations

All participants were randomly placed into twelve groups (eight experimental and four control groups). Participants in experimental groups 1-8 received different feedback about their performance. We gave feedback by presenting a ranking list based on their performance in round one. On this list, we presented all names and Avatar's (more on this in the procedure section). The rank of the participant was highlighted. Participants in the first and second group received feedback that they were rank 1 out of the total 10 players. The participants in the third and fourth group received feedback that they were ranked 4th. Group five-six received feedback that they were ranked 7th and group seven-eight received feedback that they were ranked 10th.

The number of wins and losses for the nine bids against the opponent needed to be realistic, so their ranking made sense for the participant (it would not be logical to be ranked first when you lost 6 out of 9 bids). Therefore, the 1st and 4th rank participants won six times and lost three times. The 7th and 10th rank participants won only three times and lost six times. Also, the order of wins and losses differed for the first and second round, this way the participants would not recognize a pattern. For each ranking, the first bid was either a *win* or a *loss*. We did this to see if a first outcome would have an effect on the participant's future biddings. In total this made four different rankings where each rank had two different first outcomes—making a total of eight different groups.

We needed four control groups to control for these eight different manipulations. Two conditions groups for the difference in wins and losses participants received in each round. Although the control groups did not receive feedback about their ranking, the number of wins and losses in each round had to be comparable for both the 1st and 4th rank participants as for the 7th and 10th rank participants. On top of this, the first outcome was either positive or

negative (a win or a loss), so there were two extra groups to control for this manipulation.

Procedure

All participants who met our set criteria (minimum age 18) on Amazon's Mechanical Turk received a link to the online Qualtric experiment. The first screen they saw contained a short introduction about the auction game. When they clicked "continue", they saw a screen where the participant entered a username and chose an avatar out of 6 available avatars. Avatars (pictures of different computer generated human faces) were chosen because they enhanced the feeling that participants play against real opponents instead of a computer. The faces had emotional neutral expressions so the faces did not influence any kind of behaviour of the participants. Research shows that faces provide information that is interpreted consistently by perceivers. Also, research shows that these social judgments from faces are made rapidly without much mental effort (Todorov & Uleman, 2003).

On the next screen, participants saw the general instructions in text about the rules of the bidding game. *"You will bid for a fictitious good that ranges in value between \$5-10 USD in ten successive rounds. You will have to place a bid against nine individual players. You do not know the exact value of the good, and the opponent also does not know the exact value of the good. Each time you place a bid against one individual player, you can either win or lose against the bid of your opponent. The bids from you and your individual opponent will be compared and the one with the highest bid will win. Try to win as much as bids as possible, you will be paid \$5 USD based on your performance. Good luck."* When the participants pressed "continue", a trial bidding screen appeared with the username and avatar of the opponent, a bidding field where the participant could enter their bid and a "place bid" button. The participant was asked to place a bid and press the button "place bid" to try it out one time. A note was added that the biddings in this trial would not have any effect on the performance of the real auction game. After the participant placed the bid, they received the following

feedback: *"You won the bid!"* After this screen, a screen with four questions about the auction game was presented: *"1. What is the range of the value of the fictitious good? 2. Against how many other players do you have to bid against? 3. You will win a bid when a) your bid is higher than the bid of your opponent b) your bid is closest to the value that is assigned to the item. 4. You will win \$5 USD based on a) your overall performance (number of wins against opponents) b) when you make the closest bid to the real assigned value of the item."*

Participants needed to answer these four questions to make sure they understood the general rules of the auction game. The participants could only proceed if the correct answers were given.

We showed the participant's own username and avatar on the bidding screen. The participants filled in their bids and received feedback (*"You won the bid!"* or *"You lost the bid."*) on their bids. After nine successive bids against nine individual players we showed them the ranking screen. Their own username and avatar was highlighted on the place according to the group that they were assigned to. At the bottom of the ranking page, they read the text: *"Thank you for bidding, please bid again against all nine individual players"*. Now the participant needed to place another nine successive bids against all nine players.

After the second time the participant bid against the nine opponents, the participant was thanked for his or her time and effort and asked to fill in some questions before receiving their final ranking score. We now presented the 20 social competitiveness- and regulatory-focus questions (questions are attached). After filling in all questions, the participants saw a debriefing screen where they were thanked for their cooperation. Also, they were told that they did not bid against real opponents and that their ranking was pre-determined. Participants were then told that the bonus they would get based on their performance would actually be left out to chance. They pressed the button "Bonus", and had a 6.7% chance of receiving the \$5 USD bonus (20 out of 303 participants).

Finally, participants were asked to fill in their sex, birth year, nationality, highest education, religion and marital status. After this the participant was thanked for their cooperation and the experiment ends.

Data analysis

The \$7.50 USD Nash equilibrium was subtracted from the mean bids from each round to compare them. After this, all means from round one were subtracted from round two. This way, all positive scores indicated *overbidding*. A 3 (feedback type: extreme, moderate, none) x 2 (first outcome: win, loss) x 2 (overall outcomes: more wins, more losses) ANOVA was computed to investigate the influence of feedback on *overbidding*.

To investigate the influence of the personality characteristics on *overbidding*, only the most extreme participants were included in the analysis. All participants that scored within 1 standard deviation from the mean were excluded. This way only the participants with extreme scores on *social competitiveness* and *regulatory focus* were added in the analysis. First, correlations between social competitiveness, regulatory focus and the dependent variable were computed to see if participants who scored high on social competitiveness also had a *promotion* focus and participants who scored low on social competitiveness had a *prevention* focus. Second, we computed independent sample t-tests to see whether participants who had extreme (high or low) scores on social competitiveness and the regulatory focus variables had different bidding strategies.

Additionally, independent sample t-tests were done with all participants, without participants being excluded from the data. All scores *beneath* the mean scores on social competitiveness and regulatory focus were compared with all scores *above* the mean. There will be participants who score very close to the means (and therefore have small differences), but in this way all participants are taken into account in the analysis.

Results and Discussion

We computed a 3 (feedback type: extreme, moderate, none) x 2 (first outcome: win, loss) x 2 (overall outcomes: more wins, more losses) between subjects ANOVA to analyze the data. The dependent variable was the degree of overbidding; the bids of the participants were compared to the Nash Equilibrium—which was set to \$7.5 USD. The feedback types were extreme if the participants were either in the 1st or 10th rank, moderate when they were ranked 4th or 7th and none for the control conditions.

A Kolmogorov-Smirnov test for the dependent variable was significant ($p < .001$), however all groups were > 15 , so the F test was robust against this violation. The Levene's test of equality of error variances also was significant ($p = .001$), however the biggest group divided by the smallest groups was < 1.5 , so the F test was again robust for this violation. There were four participants (outliers) with a standardized residual > 3.0 . No relations could be found between the outliers. None of the outliers have been removed because their influence on the data was not big (all Cook's D 's $< .11$).

The ANOVA showed to main effects: *first outcome*, $F(1, 11) = 6.997, p = .009$ and *overall outcomes*, $F(1, 11) = 19.153, p < .001$. The effect size adjusted for the population of the overall model was $\eta p^2 = .10$. No significant main effect of *feedback type* was found, $F(2, 11) = .998, p = ns$. A possible explanation can be that people became *insensitive* to their overall ranking when they already got positive or negative feedback about their performance after each bid by hearing if they won or lost. So basically participants already knew how they performed in the bidding game.

Descriptive statistics for the first main effect *first outcome* showed that participants who *won* their first bid had a higher mean difference between their bids and the Nash Equilibrium ($M = .45, SD = .58$) than participants who *lost* their first bid ($M = .24, SD = .75$). A possible explanation for these results could be that participants that *won* their first bid

against their first opponent got a *joy of winning* response. This response had an effect on the participant's next bids. Alternatively, perhaps participants who won their first bid experienced a *pseudo-endowment effect*—the experience that a product is already owed. This experience could have triggered participants to *overbid* (Ariely & Simonson, 2003). Descriptive statistics for the second main effect *overall outcomes*, showed that participants who got negative feedback about their bids had a higher mean difference and thus show more *overbidding* ($M = .51$, $SD = .80$) than participants who got positive feedback about their bids ($M = .18$, $SD = .46$). These results are consistent with a *frustration of losing* response—people raise their bids to avoid losing the social competition. Repeatedly hearing that you lost against your opponents (6 out of 9 times for the fail conditions) caused participants to raise their bids above the stated \$7.5 USD Nash equilibrium. Participants who heard that they won a lot from their opponents (6 out of 9 times for the win conditions) were less prone to overbid. Participants in this latter condition may think that their current strategy is working out for them, so they do not have to change their bids (at least not a lot).

Next to the two main effects, the ANOVA showed a significant interaction effect between *first outcome* and *overall outcomes*, $F(1, 11) = 8.341$, $p = .004$. Figure 1 shows the estimated marginal means. There was a significant difference in means between participants who *won their first bid* and got negative feedback for most of their bids ($M = .71$, $SD = .59$) compared to participants who *lost their first bid* and got negative feedback for most of their bids ($M = .29$, $SD = .93$), $t(147) = 3.263$, $p = .001$. A possible explanation for this effect could be that if participants *win* their first bid, a *joy of winning* response is triggered. When later on in the bidding round, they *lose* most of the other bids (and get negative feedback); the *frustration of losing* response has extra effect on the bidding strategies of participants—resulting in overbidding. Between all participants who *won* their first bid, participants had a significant difference in means when they got *negative* feedback ($M = .71$, $SD = .59$)

compared to participants who got *positive* feedback ($M = .17, SD = .40$), $t(147) = -6.387, p < .001$, indicating a stronger effect of the *frustration of losing* response than the *joy of winning* response. Participants who *lost* their first bid did not show a significant difference between participants who got negative ($M = .19, SD = .51$) and who got positive feedback ($M = .29, SD = .93$), $t(143) = -.849, p = ns$.

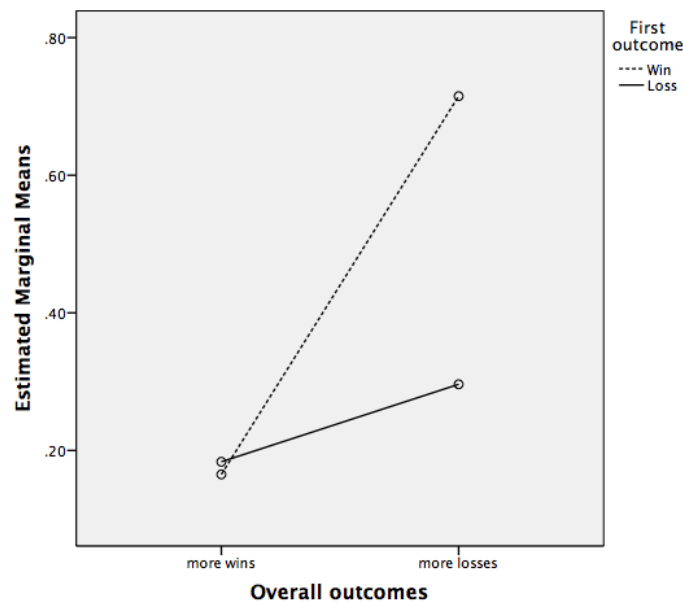


Figure 1 Interaction effect between the variables first outcome (win or lose) and overall outcomes (more wins or more losses).

With regards to the personality characteristics, it was predicted that participants with a *high* score on social competitiveness also had a promotion focus (and participants with a low score on social competitiveness would had a prevention focus). Unfortunately, none of the predicted correlations between the variables were significant. To see whether participants who had extreme scores on the personality scales (standard deviation below -1 or above 1) behaved differently in an auction, independent sample t-tests were computed. None of the participants who had extreme scores for either the competitiveness- or regulatory focus scales showed a significant difference in bidding strategies. Also, when all participants were taken into account, by splitting all participants by the mean scores on *social competitiveness* and

regulatory focus, no significant results were found between the groups.

General discussion

Researchers that explain overbidding at auctions described two main motives: The *joy of winning* (Dohmen, Falk, Fliessbach, Sunde, & Weber, 2011) and the *frustration of losing* (Delgado, Schotter, Ozbay, & Phelps, 2008) responses. One may feel excited when winning an auction, and the *social competition* of an auction can boost this feeling when you compete against others. On the other hand, one may feel frustrated losing an auction in a social competitive setting when receiving negative feedback about their performance (even when no real monetary losses are present). However both motives (or hypothesis) can coexist. Within this study evidence is found for the *frustration of losing* hypothesis.

Participants showed more *overbidding*—bidding more for a product than this product is actually worth—when they got more negative feedback compared to participants who received more positive feedback. In this case, the Nash Equilibrium was \$7.5 USD because the price is unknown and varied between \$5-10 USD. In this case however, it can be argued that participants were not aware that a bid of \$7.5 USD is the best thing to do, and that a bid above is seen as overbidding. To better test this phenomena overbidding in future, a fixed price can best be given for a product. In this case, when participants bid above the value of this article, overbidding is way clearer presented and participants themselves will be aware that they overbid—like in a real life situation.

There are a few more topics that need to be addressed in light of the results of this study. First, because the condition *overall outcome* was added—where some groups got more negative or positive feedback than other groups, it was not possible to compare results between the 1st, 4th, 7th, 10th and the control conditions for *feedback type*. Because of this, only a distinction could be made between groups who got extreme feedback (placed 1st or 10th), moderate feedback (4th or 7th) or no feedback (control conditions). Unfortunately, no

significant results were found. However this could be explained by the main effect that had been found for *overall outcome*. Participants *knew* how they performed, because they got either positive or negative feedback after each trial. This could have blocked the effect of the ranking page (*feedback type*). Luckily, the feedback that was given after each bid resulted in higher biddings from the participants so the *frustration of losing* hypothesis holds stand.

Second, no correlations were found between the scales (social competitiveness- and regulatory focus) and the dependent variable. The questionnaire for social competitiveness and regulatory focus were both valid and reliable, nevertheless, no differences were found between participants who differed in that sense. One possibility could be that there do not exist any differences in bidding strategies between people who are more or less competitive and have a promotion or prevention focus. Another possibility can be that people can both be competitive and *not* competitive at the same time in different scenarios. A third and final possibility could be that the questions that were taken from the scale lost their validity because not all the questions were used from the scale. The original scale had 26 questions, and only 10 of them were taken to measure social competitiveness (with regards to the time). However, for the regulatory focus scale, 10 out of 16 questions were used in the experiment, so one should expect to (partly) retain its validity.

Third, 13 participants were excluded from the data because they did not change their strategy during the 18 total bids during the auction. Obviously, this could be a strategy too, but it could also be that these participants went through the auction as quickly as they could. The time spent on each bidding screen was analyzed, and indeed it seems that the people who had a standardized difference of 0 of their bids did not spend a lot of time on each bidding page.

Last, the online auction game was outsourced with Amazon's Mechanical Turk, a program that is only accessible for participants from the United States. It could be that

participants from other places in the world would behave differently in the auction game.

However, different ethnicities are represented in the data, resulting in a heterogeneous group of participants. Thereby, no differences in results were found when the different ethnicities were analyzed separately, so even when the participants were more homogeneous, this would probably not have an effect on the data and results.

Selling products via online auction mechanisms is popular. People feel aroused when buying products this way. However, this comes with a cost: people often *overbid* and pay more for a product than this product is worth. A *frustration of losing* seems the dominant response that causes people in spending more than they originally thought they would.

Business people could make clever use by emphasizing the fact a person is losing while participating in an auction game. This way the *frustration of losing* response is best used to make people even pay more for products than they originally would. Despite no effects of social competitiveness or regulatory focus were found on the bidding behaviour of participants, future research on the influence of personality characteristics could still be useful. More information about characteristics of people who, in the first place attend auction games, and in the second place, are vulnerable for overbidding, could be very fruitful.

The number of Internet users keeps rising; so it is possible for entrepreneurs to sell their products in more creative ways (O'cass & Fenech, 2003). The availability of online mechanisms will therefore rise in society. Thereby, trough research like this, we learn more about what drives people to participate in (online) auctions. As such, research targeting these mechanisms will aid in the construction of more thoughtful sales strategies involving auctions. As a society however, we have to protect those who are most vulnerable to the influences of these sales strategies. The availability of credit cards and payment programs in combination with auction mechanisms could harm people. The Internet is a place where

people feel anonymous, enhancing the dangers these dangers (Kennedy, 2006). As a society we should try to protect those who could have trouble protecting their selves.

Endnotes

¹ Game theorists use the Nash equilibrium to choose a strategy to maximize their outcome and efficiency when playing against others in an interactive games.

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Attachment 1 HAS (hyper-competitiveness attitude scale) and RFSS (regulatory focus strategies scale).

HAS questionnaire:

1. Winning in competition makes me feel more powerful as a person.
2. I find myself being competitive even in situations which do not call for competition.
3. I do not see my opponents in competition as my enemies. (R)
4. I compete with others even if they are not competing with me.
5. Success in athletic competition does not make me feel superior to others. (R)
6. Winning in competition does not give me a greater sense of worth. (R)
7. When my competitors receive rewards for their accomplishments, I feel envy.
8. I find myself turning a friendly game or activity into a serious contest or conflict.
9. It's a dog-eat-dog world. If you don't get the better of others, they will surely get the better
10. I do not mind giving credit to someone for doing something that I could have done just as well or better . (R)

*(R) question need to be recoded.

Regulatory focus strategy scale:

1. To avoid failure, it is important to keep in mind all the potential obstacles that might get in your way. (PRE)
2. The worst thing you can do when trying to achieve a goal is to worry about making mistakes. (PRO)
3. To achieve something, one must be cautious. (PRE)
4. To achieve something, you need to be optimistic. (PRO)
5. To achieve something, one must try all possible ways of achieving it. (PRO)
6. Being cautious is the best policy for success. (PRE)
7. If you want to avoid failing, the worst thing you can do is to think about making mistakes. (PRO)
8. Being cautious is the best way to avoid failure. (PRE)
9. To achieve something, it is most important to know all the potential obstacles. (PRE)
10. Taking risks is essential for success. (PRO)

*(PRO)=Promotion focus item, (PRE)=prevention focus item.