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Social Comparison in an academic scenario: Self-esteem in competitive and non-competitive
people

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Abstract

Previous research has provided evidence that self-esteem decreases during an upward social comparison. The current study explored the possibility of a personality dimension on this phenomenon. The objective of the experiment was to test if there was an interaction between the scenario of social comparison and competitiveness, and how these factors influenced levels of self-esteem. 58 participants played a game in which they could choose if they wanted to compete or cooperate, and then they took a self-esteem survey to measure their reaction to the success, mediocrity, or failure of a classmate. We predicted that a competitive person would become more discouraged and have lower self-esteem in reaction to a classmate's success. A cooperative person, on the other hand, would have lower self-esteem upon learning about the failure of a classmate, and would have comparatively higher self-esteem if they had heard that their classmate was successful. Although the results of the study trended in the direction of our hypothesis, the results were not statistically significant. However, there was evidence supporting that competitive people have higher self-esteem than cooperative people, regardless of the news that they received about the academic performance of their classmate.

Social Comparison in an academic scenario: Self-esteem in competitive and non-competitive people

Because humans are inclined to assess their thinking and performance, they make comparisons to other people (Wood, 1989). Without the presence of objective yardsticks in which to measure their opinions and abilities, individuals rely on social comparisons to evaluate themselves (Morse & Gergen, 1970). This inclination may aid in decision-making, gaining inspiration, making social connections, regulating emotions, and evaluating the self (Vogel, Rose, Roberts, & Eckles, 2014).

There are two notable types of social comparison. When an individual is comparing themselves with someone they believe to be superior to them, they are making an upward social comparison. When an individual is comparing themselves with someone they believe to be inferior to them, they are making a downward social comparison (Vogel et al., 2014; Wood, 1989).

Upward and downward social comparisons are capable of influencing self-esteem. Self-esteem is an individual's assessment of him or herself; it can be positive or negative and involve evaluations of worthiness and competence. Levels of self-esteem can form over a long period of time and be a stable personality trait. However, there is also evidence that it is a fluid state and levels of self-esteem are contingent on particular situations and contexts (Vogel et. al, 2014).

Studies that examined the influence of social media and delinquency support the claim that social comparison influences self-esteem. Facebook users who made frequent upward social comparisons reported having lower self-esteem compared to people who made less upward social comparisons (Feinstein et. al., 2013; Vogel et al., 2014). In research done on downward social comparison, studies indicate that individuals with friends who engaged in delinquent

behavior (i.e. did not themselves engage in delinquent behavior but associated with people who did) showed higher levels of self-esteem, and delinquents themselves reported lower levels of self-esteem (Jang & Thornberry, 1998).

Social comparison may not influence self-esteem in the same way for all people. Personality traits may change the way that individuals perceive others, and it may affect the degree in which their self-esteem fluctuates. Different levels of participants' self-consistency influenced the fluctuation of their self-esteem when they observed a confederate in an experiment (Morse & Gergen, 1970). When the participants were in the presence of "Mr. Clean," a confederate who appeared to be successful and highly desirable, they reported having lower levels of self-esteem. On the other hand, exposure to "Mr. Dirty," a confederate who was less together and undesirable, boosted participants' self-esteem. Furthermore, participants who scored high on the self-inconsistency measure were more likely to have extreme fluctuations in self-esteem for either condition, i.e., their self-esteem would plummet after observing Mr. Clean or their self-esteem would soar after seeing Mr. Dirty. Individuals who scored lower on the self-inconsistency measure were less sensitive to the social comparison and their self-esteem was more stable.

Existing evidence supports the claim that different types of people react to situations in different ways. With the findings of previous studies in mind, a research question for the current study congealed: Would competitive people react differently than cooperative people in a situation of academic social comparison?

Self-esteem is important in everyday life; how one feels about oneself can affect one's actions or decisions in relation to academics, work, relationships, etc. In regards to the connection between self-esteem and competitiveness, further research could reveal if certain

types of people are well suited for certain types of activities. For example, a more competitive athlete might be better than a less competitive one, but an athlete who is not cooperative may not value the accomplishments of teammates. In an academic setting, some types of students may be encouraged by the achievement of their peers, whereas others lose self-confidence when classmates are successful. This knowledge could influence teaching strategies and classroom dynamics to improve student performance. Some individuals may pursue goals using social comparison as a springboard; they may make upward social comparisons and strive to improve themselves in ways that make them more similar to people they admire (Wood, 1989).

The objective of the current research was to test how comparing oneself to a peer influences levels of self-esteem in an academic setting. We measured how competitive inclinations correlated with self-esteem. We then tested if upward and downward social comparison (e.g., a classmate acing a test versus a classmate failing a test) affected self-esteem levels in different ways in different types of people. Our prediction was that upward social comparison decreases self-esteem in competitive people more than non-competitive people in an academic situation. We expected that the self-esteem score would be higher for competitive people in the downward social comparison condition than the self-esteem score for competitive people in the upward social comparison condition. We predicted that the opposite would true when pertaining to individuals who were less competitive (i.e., people more inclined to cooperate than compete): self-esteem for cooperative people would be highest in the upward social comparison condition and lowest in the downward social comparison condition.

Method

Participants

Participants were Arcadia University students, particularly students in psychology classes with a research requirement that could be satisfied by participating in experiments. This group was selected as a convenience sample. Participants were primarily recruited using the Sona web system, which granted students course credit for participating in psychology studies. A few participants were recruited from word-of-mouth, and participants recruited in this way received the same description of the study when invited to participate as that which was shown to participants recruited through Sona.

There were a total of 59 individuals who participated in the current study, 20 which were male and 39 which were female. One male was excluded from the study because the materials were not properly administered to him. From the remainder of the 58 participants, the age range was 18 – 33 years old, with the average age of 20.328 years old. There were 47 White participants, 1 Black participant, 5 Latino participants, 2 Asian participants, and 3 participants who identified as “Other” when asked to specify their ethnicity. All participants were randomly assigned to an academic condition: 18 participants were in the successful grade condition, 19 participants were in the average grade condition, and 21 participants were in the failure grade condition.

Design

The current study contained two predictor variables. One predictor variable was the behavioral measure of competitiveness (i.e., selecting the option to either cooperate or compete), and the other was the academic condition (i.e., a scenario describing the success, mediocrity, or failure of a classmate). The academic condition was the independent variable that we manipulated. Our dependent variable was the self-esteem score, which was a continuous measure. Our experiment was a 2 x 3 factorial design for competitiveness and academic

condition, and we hypothesized that there would be an interaction between them when examining levels of self-esteem.

Materials

The Prisoner's Dilemma. We edited the Prisoner's Dilemma matrix (Tucker 1983), and we created our own variation that included "Compete" and "Cooperate" columns. We put this in the context of playing with a partner who was in another room and told participants there was an opportunity to earn candy depending on what they chose. To indicate their choice, participants either checked "Compete" or "Cooperate." This became our competitiveness measure (see Appendix A).

Academic condition. Participants received a short narrative written in second person point of view. It described a classroom setting on a day when the professor was handing back an exam; a classmate receives the test grade first. The outcome differed for each condition: the classmate scores in the top 10% range of the class, the classmate scores the class mean, or the classmate scores in the bottom 10% range of the class (see Appendix B).

State Self-Esteem Scale. The State Self-Esteem Scale contains 20 items (Heatherton, 1991). Participants rate on a 1 to 5 scale how much a statement applies to them (1= Not at all; 5 = Extremely). The questionnaire contains items covering performance self-esteem, social self-esteem, and appearance self-esteem. An example of an item on the questionnaire is: "I feel confident about my abilities." Some items are reverse-scored (see Appendix C).

Candy. We needed an incentive when the participants played the modified Prisoner's Dilemma game (which was our competitiveness measure). Since most people like candy, we hoped participants would be motivated to win it. Regardless of what the participants chose on the

competitiveness measure at the beginning of the experiment, we offered them two pieces of candy at the end of the study.

Procedure

After the participants were given the consent form to sign, they received a packet containing the rest of the materials. Experimenters read from a script explaining the materials of the study, which was deceptively named “Mood and Decision Making.” The first item from the packet was a game participants played using the edited matrix of the Prisoner’s Dilemma, which served as the competitiveness measure (see Appendix A). The experimenters explained to participants that they were paired up with someone else also participating in the game. If they (the subject) chose to cooperate in the game, then both participants could get one piece of candy, but there was a risk of getting no candy if their partner had chosen to compete. If they (the subject) chose to compete, it is possible that they could get two pieces of candy, but this put their partner at risk for getting no candy if their partner chose to cooperate. If both parties competed, then nobody would be awarded any candy. Participants indicated if they wanted to cooperate or compete by checking a column on the left side of the matrix. In reality, the subject was not paired with anyone and played the game solo.

Afterwards, participants read one of three academic scenarios (see Appendix B). They were instructed to reflect on the short narrative written in second person. Participants received one of the following conditions regarding a peer’s performance on a test: their classmate scored in the top 10% range of the class, their classmate scored the class mean, or their classmate scored in the bottom 10% range of the class (see Appendix B).

Lastly, the participants completed the State Self-Esteem Scale (see Appendix C). Following the 20 questionnaire items that assessed participant's self-esteem on a 1 to 5 scale, there was a short section containing demographical questions including gender, ethnicity, and age. After participants completed the questionnaire, they notified the experimenter and were debriefed on the true purpose of the experiment. They learned that they were the only one playing the game and were informed that we wanted to convince them that they had a partner so we could get a competitiveness measure. Finally, all participants were offered the maximum reward of two pieces of candy regardless of the decision they made in the game.

Results

Testing the hypothesis

To test if upward social comparison decreases self-esteem in competitive people more than cooperative people in an academic situation, we conducted a Univariate Analysis of Variance. The results of this test revealed the mean self-esteem score for competitive people in the condition when a classmate is successful ($M = 77.857$, $SD = 11.127$), when a classmate is average ($M = 78.000$, $SD = n/a$, $N = 1$), and when a classmate is unsuccessful ($M = 79.857$, $SD = 9.5119$). In addition, the results of this test revealed the mean self-esteem score for cooperative people in the condition when a classmate is successful ($M = 74.545$, $SD = 11.166$), when a classmate is average ($M = 68.611$, $SD = 14.059$), and when a classmate is unsuccessful ($M = 67.357$, $SD = 13.159$). Please see Table 1 and Figure 1.

We examined if there was an interaction between academic condition and competitiveness on overall self-esteem scores, and our results were $F(2, 606) = .606, p = .549$, indicating no statistical significance.

Exploratory analyses:

Additional findings from our data included correlations that were statistically significant. There were notable differences on how certain types of people scored on the State Self-Esteem Scale. The mean score of cooperative people on the self-esteem scale was 67.721 ($SD = 1.999$), whereas the mean score of competitive people on the self-esteem scale was 78.800 ($SD = 2.488$). To obtain these measures, we ran an independent samples T test: $t(56) = -2.455, p = .017$. Please see Figure 2.

There were also statistically significant differences in competitiveness when examining gender. The frequency of males competing was 8 out of 19 who participated. The frequency of females competing was 7 out of 39 who participated. For these measures, we ran a test using a Chi-Square: $X^2(1, N = 58) = 3.888, p = .049$.

Discussion

We did not find statistically significant results supporting our initial hypothesis, which stated that competitive people would be discouraged and have lower self-esteem upon learning about the success of a classmate, more so than a cooperative person would. However, the data does trend in the direction of our prediction, which was that there would be an interaction between self-esteem scores and academic condition among cooperative and competitive people (see Figure 1). On average, people who elected to compete have a higher self-esteem score for a downward social comparison (i.e., when the classmate receives a low grade) compared to self-esteem scores for an upward social comparison (i.e., when the classmate receives a high grade) ($M = 79.857; M = 77.857$). In contrast, people who elected to cooperate have a lower self-esteem score for a downward social comparison compared to self-esteem scores for an upward social comparison ($M = 67.357; M = 74.545$). However, despite these differences in mean self-esteem scores, our data was not statistically significant.

Although there was inadequate evidence to support our hypothesis, we did run some exploratory analyses that yielded interesting findings. We found statistically significant differences between competitiveness and self-esteem (see Figure 2). Competitive people showed statistically higher levels of self-esteem than cooperative people, indicating that perhaps high levels of self-esteem make them a confident competitor. They may believe that their ability is adequate and that they have a good chance of beating another person in an activity. Competitive people may also be less concerned with how others judge them, so they may be less self-conscious and therefore less likely to engage in pro-social cooperative behavior, such as sharing a candy reward with a partner.

We also found statistical significance between gender and the inclination to compete. From our sample, males competed 42.105% of the time while females only competed 17.949% of the time. This may be the result of social pressures for men to be more assertive, or it could also be the biological factors that influence behavior, such as testosterone levels that regulate aggressive behavior or the natural selection inclination to compete for mates.

Although our hypothesis was not supported by substantial evidence, there are still applications for our findings. Upward social comparison, particularly with people who were competitive, generally has the effect of diminishing self-esteem. For example, repetitive upward social comparisons made on Facebook led to rumination and then, ultimately, depression (Feinstein et. al, 2013). Perhaps taking a more cooperative attitude on situations, such as “we’re all in this together” or “we’re a team,” could help reduce the negative effects of upward social comparison.

The current study is also relevant to academics and goal-setting: if some individuals are inspired by the success of others to do better themselves, then upward social comparison could

be a very motivational and beneficial (Wood, 1989). While some people might be discouraged by upward social comparisons, some benefit from them. Certain personalities may be inclined to aspire because they witnessed the success of others. This trait has important implications for personal and academic settings, and further research is needed to find if this reaction to upward social comparison is innate or learned.

The limitations of the current study include several criticisms. It had a very small sample size, with only one person in the compete-average grade category. It also contained a self-report measure for self-esteem. There may also have been a lack of poignancy in manipulation measure, since skimming a short story on a classmate's test performance may not have sparked significant social comparison inclinations in participants. Lastly, the means of obtaining the competitiveness measure required deception; many participants did not seem convinced that they were actually playing against an unseen partner in the Prisoner's Dilemma game.

The current study may also contain room for alternative explanations for the results. The validity of the self-esteem measure may not solely assess the participant's state of self-worth shortly after an instance of social comparison, but rather, it could reflect pity for the classmate in the condition of failure. These scores could reflect sympathy rather than participants' own self-esteem.

Future studies could explore these aspects a context which is closer to real-life experiences. Not only would this increase the external validity, but it would make for more convincing deception and more poignant manipulation. If more time and resources were available, participants could play the Prisoner's Dilemma game with an actual confederate who the participants witness walking into an adjacent room, and as a result they would find the game more believable. In addition, the academic condition could be more than reading a short story. It

could be a video depicting the success, meritocracy, or failure of a classmate on the test. Even more effective would be an in-person observation of these conditions; a participant could complete a simple worksheet that the experimenter collects for grading, and then when participants sit in a waiting room, they see a confederate receiving a graded version of their worksheet that matches one of the three academic conditions.

In addition to making modifications to the procedure of the study, future research could also take new directions. The domain in which specific personality traits predict behavior is a fascinating interaction to explore. In the study by Morse and Gergen (1970), the experiment yielded significant results for an interaction between self-consistency and social comparison with Mr. Clean or Mr. Dirty, as assessed by a self-esteem measure. Evidence exists that there are interactions between certain personalities and certain situations; certain people behave in a different way contingent on a trait they may have and the situation they are in. As the current study shows, certain personality traits may cluster together, such as self-esteem and competitiveness. Having a better understanding of how personality and situation interact may result in making better predictions about certain individuals, such as how they manage social comparisons. From there, people can use their understanding of those individuals to help them seek resources and environments in which they can flourish.

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Appendix A

Instructions:

Please check one of the lines on the left side of the table to indicate your choice. The center boxes explain possible outcomes.

The participant you have been paired with is making their choice on a separate sheet of paper in a different room. After you hand in this sheet, we will compare results and give you the according amount of candy at the end of the experiment.

		Cooperate	Compete
<input type="checkbox"/> Cooperate <input type="checkbox"/> _____		If you Cooperate and they Cooperate, you both receive one piece of candy.	If you Cooperate and they Compete, they receive two pieces of candy, and you receive none.
		If you Compete and they Cooperate, you receive two pieces of candy, and they receive none.	If you Compete and they Compete, neither of you receive any candy.
<input type="checkbox"/> Compete <input type="checkbox"/> _____			

Please check one box to indicate your choice.

Appendix B

Your classmate Alex sits next to you in lecture. The class begins with the professor returning a big test that everyone took a few days ago. Before discovering your grades, you and Alex had a brief conversation where you find out that you both spent the same amount of time studying and preparing for this test.

The professor declares that grades for this test varied widely. Alex receives the test score before you do. It turns out that

[Condition 1]

Alex scored in the top 10% range of the class, one of the top grades.

[Condition 2]

Alex scored in the bottom 10% range of the class, one of the lowest grades.

[Condition 3]

Alex scored the class mean, one of the average grades.

Appendix C

This is a questionnaire designed to measure what you are thinking at this moment. There is of course, no right answer for any statement. The best answer is what you feel is true of yourself at the moment. Be sure to answer all of the items, even if you are not certain of the best answer. Again, answer these questions as they are true for you **RIGHT NOW**.

1. I feel confident about my abilities.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

2. I am worried about whether I am regarded as a success or failure.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

3. I feel satisfied with the way my body looks right now.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

4. I feel frustrated or rattled about my performance .

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

5. I feel that I am having trouble understanding things that I read.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

6. I feel that others respect and admire me.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

7. I am dissatisfied with my weight.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

8. I feel self-conscious.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

9. I feel as smart as others.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

10. I feel displeased with myself.

1	2	3	4	5
Not At All	A Little Bit	Somewhat	Very Much	Extremely

11. I feel good about myself.

1 2 3 4 5
 Not At All A Little Bit Somewhat Very Much Extremely

12. I am pleased with my appearance right now.

1 2 3 4 5
 Not At All A Little Bit Somewhat Very Much Extremely

13. I am worried about what other people think of me.

1 2 3 4 5
 Not At All A Little Bit Somewhat Very Much Extremely

14. I feel confident that I understand things.

1 2 3 4 5
 Not At All A Little Bit Somewhat Very Much Extremely

15. I feel inferior to others at this moment.

1 2 3 4 5
 Not At All A Little Bit Somewhat Very Much Extremely

16. I feel unattractive.

1 2 3 4 5
 Not At All A Little Bit Somewhat Very Much Extremely

17. I feel concerned about the impression I am making.

1 2 3 4 5
 Not At All A Little Bit Somewhat Very Much Extremely

18. I feel that I have less scholastic ability right now than others.

1 2 3 4 5
 Not At All A Little Bit Somewhat Very Much Extremely

19. I feel like I'm not doing well.

1 2 3 4 5
 Not At All A Little Bit Somewhat Very Much Extremely

20. I am worried about looking foolish.

1 2 3 4 5
 Not At All A Little Bit Somewhat Very Much Extremely

Please complete the following:				
Gender:	Male	Female	Other:	_____
Ethnicity:	White	Black	Latino	Asian Other:_____
Age:	_____			

Table 1:

Descriptive Statistics

Dependent Variable: SelfEsteemScore

AcademicCondition	Cooperate1Compete2	Mean	Std. Deviation	N
Top Grade	Cooperate	74.545	11.1657	11
	Compete	77.857	11.1270	7
	Total	75.833	10.9450	18
Bottom Grade	Cooperate	67.357	13.1594	14
	Compete	79.857	9.5119	7
	Total	71.524	13.2726	21
Average	Cooperate	68.611	14.0593	18
	Compete	78.000	.	1
	Total	69.105	13.8319	19
Total	Cooperate	69.721	13.1064	43
	Compete	78.800	9.6377	15
	Total	72.069	12.8635	58

Figure 1:

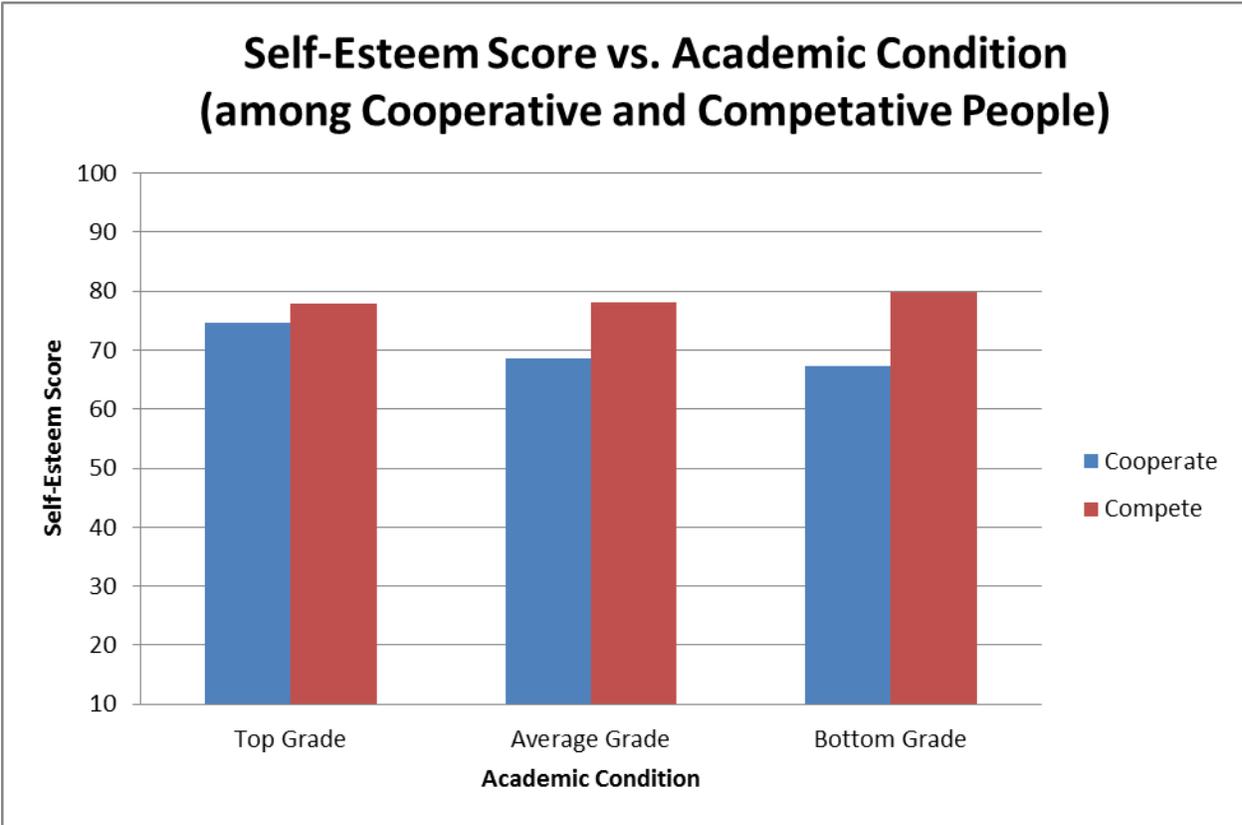


Figure 2:

