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The Effects of Ingroup Threat on The Anchoring and Adjustment Heuristic

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THE EFFECTS OF INGROUP THREAT ON THE ANCHORING AND ADJUSTMENT

HEURISTIC

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science

at Virginia Commonwealth University

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Abstract

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ANCHORING AND ADJUSTMENT HEURISTIC

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Since its introduction in 1974, the anchoring and adjustment heuristic has been a topic of interest within the field of decision making. Although much work has examined factors that affect the process of the anchoring and adjustment heuristic, very little has been studied about the self-processes that may influence how individuals anchor. More specifically, self and ingroup motivations have yet to be explored. This research sought to identify whether an individual's magnitude of adjustment from an anchor can be affected by either an enhancement or threat of the individual's ingroup. I hypothesized that ingroup enhancing information would induce a smaller magnitude of adjustment from an experimenter-provided anchor and ingroup threatening information would induce a larger magnitude of adjustment from the anchor. I also hypothesized that ingroup identification would have a moderating effect on the relationship between type of anchor and magnitude of adjustment. The first study sought to establish the effect using Virginia Commonwealth University (VCU) students, using VCU as the ingroup. The second study sought to replicate these findings in novel groups in order to more rigorously test the hypotheses. Results suggested that whether an anchor is high or low affects how an individual adjusts from the anchor. There is also evidence that whether or not one's ingroup is reflected by the anchor affects adjustment from the anchor. The hypothesized moderation effects did not emerge.

The Effects of Ingroup Threat on The Anchoring and Adjustment Heuristic

Suppose that an individual was told that the length of the Mississippi River was 2,348 miles long. Afterward, they were asked to estimate the length of the James river in Richmond, Virginia. Assuming that they know that the Mississippi River is one of the largest rivers in the world, they would likely adjust their estimate to be much smaller in length. This phenomenon whereby people use a cognitive heuristic to aid in their decision-making is called the anchoring and adjustment heuristic (Kahneman & Tversky, 1974). Specifically, anchoring and adjustment is used when an individual is asked to make a judgement of a value under uncertainty and uses a previously known or presented value (anchor) to "adjust" their answer away from the anchor. Since the conception of this effect, there has been no work examining the role of self-relevant factors in the adjustment process. My research seeks to explore how these self-relevant factors, specifically ingroup bias and threat, can act as motivating factors in adjustment.

A Two System Model

The use of heuristics, like the anchoring and adjustment heuristic, can be best understood through the lens of a two-system model known as dual process theory (Watson & Evans, 1974). Dual process theory conceptualizes thinking and decision-making in two systems: System 1, which is fast, automatic, intuitive, and unconscious, and System 2, which is slower, effortful, controlled, and conscious. Stanovich and West (2000) used these systems to categorize and label different cognitive processes. When there is a decision to be made, System 1 creates a highly accessible impression which will control the decision unless System 2 modifies or overrides that decision. These systems are described more in more detail by the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1981) of persuasion. In this model, System 1 is comparable to the peripheral route of persuasion, where unconscious and intuitive judgements about the

presentation of an argument, not necessarily the content. System 2 is comparable to the central

route of persuasion where more complex analysis of an argument occurs. For example, suppose

that an individual is presented with two speakers discussing an identical topic. One speaker is

confident and attractive but presents a weak argument. The other speaker is not quite as attractive

but is knowledgeable and presents a stronger argument. Through the peripheral route, the

individual's System 1 would likely believe the first speaker because of the positive impression

made by their attractiveness and confidence. The second, more knowledgeable speaker would be

more appealing to the central route of persuasion, which may only be activated if the topic and

attitude were more central in importance (Petty & Cacioppo, 1984). In sum, the deliberate

control of System 2 would be much more analytical of the actual argument than System 1.

Because people often make decisions quickly, they do not always rely on deliberate

processes whereby they can thoughtfully gather, consider, and evaluate information. Thus, in

cases where individuals are asked to estimate unknown answers, they engage in mental shortcuts

called heuristics. These heuristics exist mainly in System 1 but can also include parts of System

2. Heuristics take an individual's intuition from System 1 and use reasoning from System 2 to

formulate the final answer.

The Anchoring and Adjustment Heuristic

Although there are several types of heuristics, my research focuses specifically on the

anchoring and adjustment heuristic. This heuristic operates by having individuals use either a

self-generated value or a previously provided and typically arbitrary number (anchor) to estimate

the answer. For example, Kahneman and Tversky (1974) asked participants to provide the

percentage of African nations in the United Nations. Participants then spun a "wheel of fortune"

that included the numbers 0-100. Once the wheel had stopped, participants were asked to

indicate whether the percentage was higher or lower than the number spun and to estimate the true values by moving upward or downward from the given value. Although the number that they viewed from the wheel of fortune had nothing to do with the judgment they were asked to make, the number acted as an anchor on which they could use it to inform their estimate. In another example, Ariely, Lowenstein, and Prelec (2003) had participants to write down the last two digits of their social security number before asking participants how much they would be willing to pay for a series of items presented to them. Participants with higher social security numbers were shown to pay an average of $40 more than those with lower social security numbers.

Types of Anchors

In cases in which individuals are not given anchors, estimates can also be generated from an individual's own knowledge base. For example, imagine that an individual was asked the question "When was the U.S. Constitution signed?" Though the answer is 1788, many people might respond somewhere close to the year 1776. This is because participants know that the Declaration of Independence was signed in 1776, therefore the signing of our Constitution must have occurred after the United States declared itself an independent nation. Thus, even though a specific anchor is not given, participants use their own information, received through various experiences.

Aside from the larger categories of given and self-generated anchors, research has also focused on more nuanced categories of anchors. For example, intuitive anchors are synonymous with self-generated anchors in that the anchors are created from previous knowledge. Although individuals know these anchors are inaccurate, they still use them to reach the correct value. Intuitive anchoring involves high elaboration as it involves not only considering the true value

but drawing upon earlier knowledge and experience. For this reason, intuitive anchoring is not

performed when individuals do not have the availability or cognitive capacity (Epley & Gilovich,

2005).

Another type of anchor utilizes the Best-and-Worst Case strategy (Epley & Gilovich,

2009). As its name suggests, individuals either anchor upon the best-case-scenario or the worst-

case-scenario. In the best case, individuals tend to fall into planning fallacy (Beuhler, Griffin, &

Ross, 1994), in which tasks tend to take longer than estimated. This occurs because although the

best-case scenario is the most accessible outcome, the most accessible outcome is not the most

likely event (Morewedge, Gilbert, & Wilson, 2005). Moreover, individuals tend to focus more on

their good intentions rather than past patterns (Koehler & Poon, 2006). On the other hand, worst-

case scenarios can also become anchors. For example, Rozenweig et al. (2009) found that when

participants are informed of a plane crash, they tend to estimate much higher casualties but when

they are motivated to be more accurate, they adjust much closer to the actual value.

A third anchoring process includes the use of incidental anchors. These anchors are

numbers that are encountered in the real world that effect an individual's perception. Critcher

and Gilovich (2008) found that participants were more willing to spend more at a restaurant

named Bistro 97 than they were at Bistro 17. Although the number in the name of the bistros had

nothing to do with the actual pricing of the menu, the number in the name of the bistro served as

an anchor for the price of the food. The perception of anchors is also affected by environmental

suggestion. In anchoring and adjustment research, the experimenter tries not to suggest that the

anchor is the right answer, but in everyday life such as suggested values such as a suggested

sentence from a lawyer (Englich & Mussweiler, 2001) seem credible and therefore seem like the

correct value. Lastly, anchors can be affected by magnitude priming in which a general sense of

large or small can be primed. When asked to reproduce lines of either 1-inch or 3.5-inches,

participants made higher estimates of the target value (Oppenheimer et al., 2008).

Individuals also tend to use themselves and their own experience, or self-information, as

an anchor when making judgements about others (Holyoak & Gordon, 1983). For example,

Kruger (1999) explored how the Above Average Effect and anchoring and adjustment interact.

In the above average effect, people view themselves as having more positive traits than the

average person (Alicke & Govorun, 1995). In a series of studies, when participants were asked to

compare themselves with their peers along different domains varying in difficulty, they based

their judgements on their own skills rather than the comparison group. Kruger also noted that in

this egocentric process, individuals tend to underweight the abilities of their comparison group

and that this may be due to the abilities of the comparison group being relatively unknown, thus

linking this egocentric weighing of skills to the anchoring and adjustment process.

Individuals Adjustment from a Given Anchor

The mechanism behind these incorrect estimates may explained by the Selective

Accessibility Model (Strack, 1992). This model suggests that anchoring effects are mediated by

an increase in accessibility of the anchor that is consistent semantic knowledge. For example, if

an individual were to be asked if the average temperature last summer was higher than 90

degrees prior to being asked what the actual average temperature was, they would likely bring to

mind higher temperatures in recent summers.

In order for the information that is made accessible by the anchor to be effective, it must

both be applicable and representative. Information that is activated, but not applicable to the

characteristics of the anchor is less likely to be used in the formulation of an estimate

(Mussweiler & Strack, 1997). Similarly, accessible information must be representative. That is,

information must be closely related to the anchor in order to be used in the judgement of the estimate (Strack, 1992).

Extending from the selective accessibility model, Mussweiler and Strack (1999) found that participants seemed to solve comparative tasks by testing the possibility that the anchor is, in fact, the target value (i.e., the value participants are asked to determine after receiving the anchor). For example, if an individual was asked if there were more or less than five Star Wars movies, they would consider whether the answer was actually five before making their estimate.

Likewise, Janiszewski and Uy (2008) showed that the precision of the anchor provided can also influence estimates. In five experiments, more precise anchors (e.g., 587) caused individuals to adjust less than those that appeared to be rounded (e.g., 500).

Regardless of the type of anchor or how it is presented, individuals adjust insufficiently. As a result, individuals often estimate inaccurate numerical estimates (Epley & Gilovich, 2006). Earlier work suggested that insufficient adjustment is caused by satisficing, a process in which an individual stops adjusting when they believe they have reached a plausible value rather than continuing to what they would believe the most accurate answer is (Quattrone, 1982; Quattrone, Lawrence, Finkel, & Andrus, 1981).

The Self

The aim of this research is to seek out other self-driven factors that underly the anchoring and adjustment process as research and literature on the subject is sparse at best. Self-concept is not a singular experience and can be conceptualized as three different parts: the individual self, the relational self (e.g., the self in particular dyadic relationships, such as a romantic relationship), and the collective self (e.g., group identities, such as ethnicity or occupation) (Sedikides et al. 2013).

My focus is on the potential influence of a group or collective identity and how maintaining or enhancing its positivity might influence adjustment from an anchor. Membership in groups may be defined based on characteristics like gender, nationality, or mutual interests such as aerial arts and reading science fiction. When a person believes themselves to be a member of a group, that group is then defined as the person's ingroup. Individuals typically have a host of ingroups based on a physical characteristic and/or interest. Groups that a person does not feel that they are a part of are called outgroups.

Self-Protection and Self-Enhancement

From the previous paragraphs, it is evident that the cognitive processes and nuances have been extensively studied. However, there has been little attention paid to how non-cognitive factors, like one's self-concept and identity, can impact adjustments. Thus, it is possible that motivation to maintain a positive self may help explain how self-processes can influence adjustments from an anchor. Maintenance of the self is motivational, meaning that people defend (self-protection; Sedikides, Green, Saunders, Skowronski, & Zengel, 2016) and augment (self-enhancement; Sedikides, 1993) themselves in various ways in order to maintain a positive view of themselves. Self-protection and enhancement can be achieved by seeking flattering feedback and disparaging the source of negative feedback and even more complicated processes such as selective memory (Sedikides et al, 2016). A common self-protection tactic, the "sour grapes effect" (Kay, Jimenez, & Jost, 2002), occurs when an individual disparages a task or activity in which they were not successful. For example, consider an exercise enthusiast who decides to try yoga and struggles through the class. They then disparage the class, arguing that yoga is boring and inferior to other forms of exercise.

Ingroup Bias and Ingroup Threat

Because an individual's ingroup is a large part of their identity, they use it to help define their collective self. Indeed, Social Identity Theory (Tajfel & Turner, 1979) suggests that individuals strive for a positive self, with their self-concept being partly drawn from group membership. As a result, individuals tend to enhance and protect their ingroup as they would themselves. This, in part, is because individuals strive to maintain positive group identities. Thus, people make favorable evaluations to their own groups as opposed to outgroups, resulting in ingroup bias (Turner, 1975). Ingroup bias has been shown to increase under existential threat (e.g., Harmon-Jones et al., 1996) such as mortality salience (Castano et al., 2002). This increase in bias in reaction to threat regarding their ingroup may be more pronounced in individuals who have a stronger identification with their ingroup (Crocker & Luhtanen, 1990; Grant, 1993; Verkuyten & Nekuee, 1998). My research seeks to tie these important issues of the self to the cognitive process of the anchoring-and-adjustment heuristic.

Overview of Study 1

The goal of this study was to explore how ingroup processes affect the anchoring and adjustment heuristic. This research bridges two areas that have been separate: intuitive judgments such as heuristics, and self-processes. Indeed, research examining the anchoring and adjustment heuristic has been almost entirely focused on "cold" cognitive processes; almost no work has examined the role of social, affective, and motivational processes. Relatedly, much of the work on anchoring and adjustment has involved random facts and values that may not have much relevance to the self. However, many everyday judgments relate to the self and these judgements may be affected by self-processes such as self enhancement. In other words, anchoring may also be influenced by maintaining a positive group identity. To test this question, participants were presented with college ranking information about either their own academic

institution, Virginia Commonwealth University (VCU) or a fictional university, Turlington State

University (TSU). Using a between-subjects design, participants were randomly assigned to

either an Ingroup (VCU) or Outgroup (TSU) condition, then they viewed information that either

enhanced their ingroup by providing an anchor to reflect a high college ranking or an anchor that

threatened the reputation of their ingroup by reflecting lower college rankings. Likewise,

participants viewing the outgroup viewed information about the fictional Turlington State

University with anchors that described the outgroup positively or negatively. Participants were

then asked to estimate the actual rankings for the institution and complete a series of

questionnaires that assess ingroup-self overlap, attitudes about their ingroup, self-esteem, and

self-presentation.

The hypotheses for Study 1 were:

- **Hypothesis 1**: When shown an anchor that threatens the reputation of one's ingroup (i.e.,

    a low anchor), individuals would adjust more from the given anchor than those who are

    shown the same anchor about an outgroup.

- **Hypothesis 2**: When shown an anchor that enhances the reputation of one's ingroup (i.e.,

    a high anchor), individuals would adjust closer to the given anchor and adjust less than

    those who are shown the same anchor about an outgroup.

- **Hypothesis 3:** Those who are shown an anchor that supports the reputation of their

    ingroup will adjust closer to the anchor than those who are shown an anchor that

    threatens the reputation of their ingroup. That is, the pattern of adjustment will support a

    higher ranking for the ingroup.

- **Hypothesis 4**: Ingroup identification would moderate the magnitude of adjustment from

    the anchor. I hypothesized that individuals who feel that their ingroup is more central to

their sense of self would show a larger magnitude of adjustment away from the anchor when shown information that threatens their group and those that are shown information that enhances their group would adjust even closer to the anchor.

Methods

Study 1a

In order to assess the values of the anchors that would be used in Study 1b, a pilot study was conducted to better understand students' estimation of each institutions ranking without an anchor.

Participants

Eighty-two participants were recruited both through Virginia Commonwealth University (VCU)'s SONA System and in VCU's library. Data was collected using both online and paper questionnaires. All participants were undergraduate students at VCU.

Method

Participants were first asked about their knowledge of college ranking systems and asked to estimate the rankings of Virginia Commonwealth University and a fictional university, Turlington State University (TSU), compared to other colleges and universities in their respective states. In the case of VCU, participants were truthfully told that there are 171 institutions within Virginia. For the fictional TSU, participants were told that there were 173 institutions in its respective state[1]. After providing rankings, participants were asked how important college rankings were to them. For a complete list of questions, see Appendix A.

Results

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[1] No specific state was used to describe TSU. This was done so as to not influence students' estimations of its rank.

In order to determine the anchors to be used in the subsequent study, the means and

quartiles of both the VCU and TSU estimates were taken. The mean estimate for VCU's rank

was 42.89 ($SD = 35.80$) and the mean estimate for TSU's rank was 70.95 ($SD = 46.87$). Results

revealed that the upper quartile for the estimates of VCU's rank was 75 and the lower quartile

was 12. For TSU, the upper quartile was 100 and the lower quartile was 27.25. TSU's upper and

lower quartiles were used as the high and low anchors for the Study 1b. This is to ensure that

both university estimates would be included within participants' estimates for Study 1b. Thus,

the anchors used in Study 1b were 30 in the low anchor conditions and 100 in the high anchor

conditions.

Study 1b

Method

Participants

An a priori power analysis with a conservative power estimate of a small effect size

(Cohen's $d = .30$) revealed that 144 participants would be needed for adequate power (G-Power

3.1; Faul, Erdfelder, Buchner, & Lang, 2007), 158 undergraduate students enrolled in

introductory psychology courses at Virginia Commonwealth University were recruited through

the SONA[2] system. Twenty participants' data were excluded because they did not follow

instructions properly and did not adjust from the given anchor in the right direction, leaving 138

participants (mean age = 18.98 years).

Of the participants, 82.7% identified as women,15.8% identified as men, and one

individual identified as transgender. In terms of racial diversity, 36% of participants were White,

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[2] SONA is an online program that allows individuals from multiple psychology courses to participate in research in exchange for partial course credit.

28.9% were Black/African American, 20% of participants were Asian, 2.2% were Native

American, and 0.7% were Pacific Islander.

Design

Participants were randomly assigned to one of four conditions using a 2 (Group: Ingroup,

Outgroup) x 2 (Anchor: High, Low) between-subjects design. Because I sampled VCU students,

the ingroup condition included information related to VCU. Participants in the ingroup condition

viewed ranking information about VCU, whereas those in the outgroup condition viewed ranking

information about a fictional university, Turlington State University. A fictional university was

used as the control to lessen the possibility of confounding biases that may affect how

participants responded. For example, if a participant had negative feelings toward a real

university because their application to that university had been rejected, they may have

responded with lower rankings as a result of their dislike of the university rather than as a

response to the given anchor. The anchor factor included two levels – low and high. Participants

in the low anchor condition were presented with a low ranking that suggested that the group

described performed poorly, whereas the high anchor condition viewed information that

suggested their group had high prestige.

Procedure

This study was conducted completely online using Qualtrics software through VCU's

SONA System. After providing informed consent, participants provided their student

classification and how many years they had been at VCU. A complete questionnaire can be

found in Appendix B.

Afterward, participants were shown a description of the college rating system and an

explanation for how institutions earn their rankings. The description was as follows:

A top American business magazine releases an annual ranking of 4-year colleges and universities every year. This annual ranking is broken down by state so that each institution is ranked against other institutions in the same state.

Participants were then asked to complete the anchoring activity, with information from Study 1a providing the anchors. Participants in the high anchor (i.e., an anchor that positively reflects the ingroup or outgroup) condition were told that the institution had been ranked higher than 30 out of 171 among the colleges and universities in the institution's state. Participants in the low anchor conditions were told that the institution about which they were shown information was ranked higher than 100 out of 171among the colleges and universities in the institution's state. Participants in both conditions were then asked to estimate the actual rank of the university. After completing the anchoring activity, participants were asked their opinions of VCU or TSU (depending on their condition) and whether they were aware of college ratings. For a complete description of the manipulations, see Appendix C.

Participants then completed a series of randomized questionnaires to measure traits potentially related to their rankings, including: The Rosenberg Self Esteem Scale (SES; Rosenberg, 1989), Single-Item Narcissism Scale (SINS; Konrath, Meier, & Bushman, 2014), Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1999), the Self-Affirming and Defensiveness subscales of the Self-Enhancement and Self-Protection scale (Hepper, Gramzow, & Sedikides, 2010), and Self-Concept Clarity Scale (SCC; Campbell et al., 1996). After completing these scales, participants completed the Inclusion of Ingroup in the Self (IIS; Tropp & Wright, 2001) and modified versions of the Ingroup Identification Measure (Hall & Crisp, 2008) and Social Identification Questionnaire (Easterbrook & Vignoles, 2012). These scales were asked last to minimize reactivity from participants and prevent them from realizing the true

hypothesis. Finally, Participants were asked to complete an open-ended question to assess their understanding of the study's purpose.

Materials

Student Information Questionnaire. As shown on Appendix B, Participants were asked to respond to questions regarding what year they started attending VCU, how many years they have attended VCU, their student classification, and their major.

Trait Measures

Self-Esteem. The Rosenberg Self Esteem Scale (SES; Rosenberg, 1989) is a 10-item scale that assesses an individual's self-esteem. Sample items include "I feel that I have a number of good qualities" and "I take a positive attitude toward myself." Respondents rate each item on a 4-point scale (1 = Strongly Disagree, 4 = Strongly Agree). For a complete description, see Appendix D.

Narcissism. Single-Item Narcissism Scale (SINS; Konrath, Meier, & Bushman, 2014) is a well-validated, one item scale to assess narcissism, Participants were given a short definition of a narcissist and are asked to respond to the following statement; "To what extent do you consider yourself a narcissist?" on a 7-point scale (1 = not very true of me, 7 = very true of me). For the full measure, see Appendix E.

Social Desirability. Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1999) is a 40-item scale designed to assesses an individual's feelings about social desirability. It is composed of two subscales – Self-Deception Enhancement and Impression Management. Sample items from the Self-Deception Enhancement and Impression Management subscales include "I am a completely rational person" and "Once in a while I laugh at a dirty joke",

respectively. This scale utilizes a 7-point Likert-type scale (1 = Totally Disagree, 7 = Totally

Agree). For the full measure, see Appendix F.

Self-Enhancement and Protection. The Self-Affirming Reflections and Defensiveness

subscales of the Self-Enhancement and Self-Protection scale (Hepper, Gramzow, Sedikides,

2010) was used to assess how individuals react to statements that affirm the self and defend

against attacks to the self. The Self-Affirming Reflections subscale consists of six items while

the Defensiveness subscale consists of 18 items. Respondents are asked to consider if the

patterns and thoughts described in the items are activities that they engage in and how typical

these actions are of them. Sample items from the Self-Affirming Reflections subscale include "In

times of stress, thinking about your positive close relationships and loved ones" and "When you

do poorly at something, reminding yourself of your values and what matters to you." The

Defensiveness subscale includes items such as "Revising very little for a test or going out the

night before an exam or appraisal at work, so that if you do poorly, it would not mean you are

incompetent." Respondents use a 6-point Likert-type scale (1 = Not at all characteristic of me" 6

= Very characteristic of me). For the full measure, see Appendix G.

Self-Concept Clarity. Self-Concept Clarity Scale (SCC; Campbell et al., 1996) assesses

the extent to which an individual's beliefs about their self are clear, stable, and internally

consistent. The scale is comprised of 12 items including "My beliefs about myself often conflict

with one another" and "Even if I wanted to, I don't think I would tell someone what I'm really

like." Responses are measured on a 5-point Likert-type scale (1 = Strongly Disagree, 5 =

Strongly Agree). For the full measure, see Appendix H.

Ingroup Identification Measures

Self-Ingroup Overlap. Inclusion of Ingroup in the Self (IIS; Tropp & Wright, 2001). The

IIS was designed to assess the degree to which an individual's ingroup is included in their self.

Respondents are asked to circle one of seven images of overlapping circles best describes the

interaction between their sense of self and their ingroup. For the full measure, see Appendix I.

Ingroup Identification. Two measures were modified for the uses of this study. The

Ingroup Identification Measure (Hall & Crisp, 2008) is a 4-item measure that assesses how much

an individual identifies with their ingroup. Original items were modified to focus on the Virginia

Commonwealth University community as the ingroup, for example, "I identify strongly with

other VCU students." For the full measure, see Appendix J.

Social Identification. The Social Identification Questionnaire (Easterbrook & Vignoles,

2012) is a 7-item measure designed to capture the degree to which an individual identifies with

their social group as well as how they feel about their social group. Items were modified to

reflect the VCU community with items such as "How central or marginal is being a student at

VCU to your sense of who you are?" All items are rated on an 11-point scale (0 =

Never/Extremely Marginal/Extremely Unhappy, 5 = Sometimes/Intermediate/Neutral, and 10 =

Extremely Often/Extremely Central/Extremely Happy). For the full measure, see Appendix K.

Demographic Questionnaire. Participants were asked to respond to questions regarding

their age, gender identity, racial identity, and ethnic identity.

Results

Calculation of Magnitude of Adjustment

In order to calculate the magnitude of adjustment from the anchor, the mean adjustment

from each condition was subtracted from the corresponding anchor. For example, if a participant

was in the ingroup condition viewing the low anchor (100) and they estimated that VCU's rank

was ranked 80, their magnitude of adjustment would be 20. Participants who viewed an anchor

that positively portrayed their ingroup (VCU) adjusted an average of 12.18 higher than the

anchor of 30 ($SD = 8.08$) while those who viewed an anchor (i.e., 100) that negatively portrayed

their ingroup adjusted an average of 57.57 points higher than the anchor ($SD = 26.49$). On the

other hand, those who viewed an anchor that negatively portrayed the outgroup (i.e., 100)

adjusted a mean of 44.97 points away from the anchor ($SD = 27.11$) while those who viewed an

anchor that positively reflected the outgroup (i.e., 30) adjusted a mean of 10.71 points higher

than the anchor ($SD = 7.56$).

Anchoring Effects

In order to ensure that there was an anchoring effect, the mean estimate of each anchor

level (low and high) were compared. Participants that were in the high anchor condition (i.e., an

anchor of 30) estimated a mean rank of 18.72, whereas those who were in the low anchor

condition (i.e., an anchor of 100) estimated a mean rank of 48.12 (See Table 1). Mean estimate

significantly differed between the two anchors $t(136) = 8.37, p < .001, d = 1.46$. Taken together,

these results confirm that that the anchoring effect was successfully replicated.

Table 1

Mean Estimate by Anchor

Anchor	N	Mean	Std. Deviation
Low (100)	73	48.12	27.33
High (30)	65	18.72	7.87

The Effects of Anchor, Group, and Their Interaction

A two-way between-groups analysis of variance (ANOVA) was conducted to explore the

effects of ingroup threat on the magnitude of adjustment away from an anchor. Participants were

randomly assigned to one of four conditions with the independent variables being the type of

anchor (negatively or positively reflecting the respective group) and type of group (ingroup or outgroup). There was a significant main effect of the type of anchor $F(1, 138) = 133.60$, $p <$ .001, partial $\eta^2 = .50$: when the anchor was described as high (positively portraying the group) or low (negatively portraying the group) affected how much higher individuals adjusted from the anchor (see Table 2). There was also a significant main effect of group $F(1, 138) = 4.49$, $p = .04$, partial $\eta^2 = .03$: when the anchor was associated with the ingroup or outgroup affected how far participants adjusted higher than the anchor (see Table 3). There was no significant interaction between the type of anchor and group, $F(3,138) = 2.28$, $p = .13$, partial $\eta^2 = .02$, suggesting that the adjustment from the anchor was not affected uniquely by both the type of group and type of anchor (see Table 4).

Table 2

Mean adjustment by anchor

Anchor	Mean	N	Std. Deviation
Low (100)	51.88	73	27.33
High (30)	11.28	65	7.87
Total	32.75	138	28.90

Table 3

Mean adjustment by group

Group	Mean	N	Std. Deviation
Ingroup	35.77	77	30.20
Outgroup	28.95	61	26.93
Total	32.75	138	28.90

Table 4

Mean magnitude of adjustment by condition

Group	Anchor	Mean	Std. Deviation
Ingroup	Low (100)	57.58	26.49
	High (30)	12.19	8.08
Outgroup	Low (100)	44.97	27.12
	High (30)	10.07	7.56

Testing the Hypotheses with a More Focused Approach

In order to take a closer look at how anchor and group effect the magnitude of adjustment, a series of independent samples t-tests was performed to directly test of my hypotheses. Hypothesis 1 was tested by comparing the mean magnitude of adjustment from a negative anchor (low anchor) between the ingroup and outgroup conditions. The mean adjustment from the anchor was significantly different between the ingroup and outgroup conditions, $t(71) = 2.00$, $p = .049$, $d = .47$. Hypothesis 1 was supported, as those who viewed an anchor that negatively portrayed their ingroup adjusted higher from the anchor than those who viewed an anchor that negatively portrayed their outgroup.

Hypothesis 2 examined whether those who were given an anchor that reflected the ingroup positively would adjust closer to the anchor than when given the same information about an outgroup. This was not supported, $t(63) = 1.08$, $p = .29$, $d = .27$.

Finally, an independent samples t-test was conducted to test whether participants who were given an anchor that reflected their ingroup positively adjusted closer to the given anchor than participants who were given an anchor that reflected a negative status. Hypothesis 3 was supported, $t(10.34) = 9.99$, $p < .001$, $d = 2.32$.

Ingroup Identification as A Moderator

In order to test the hypothesized moderation effect of ingroup identification on the relationship between type of anchor and magnitude of adjustment from the anchor, Hayes' (2018) PROCESS macro (Model 1) was used to generate 5,000 bootstrapped confidence intervals of the conditional effect. Ingroup identification was determined using an average of the three measures of ingroup identification - the Inclusion of Ingroup in the Self (IIS; Tropp & Wright, 2001), Ingroup Identification Measure (Hall & Crisp, 2008), and the Social Identification Questionnaire (Easterbrook & Vignoles, 2012). The condition to which participants were assigned negatively predicted how much they adjusted from the anchor (B = -10.62, $p < .001$). Ingroup identification did not significantly predict how they adjusted from the anchor (B = .81, $p = .79$). The relationship between type of anchor and how far an individual adjusts from an anchor was not significantly moderated by ingroup identification (B = -3.7, ΔR^2 = .01, $F(1, 134) = 1.51$, $p = .221$). The fact that ingroup identification was not a moderator in the relationship between the type of anchor viewed and the adjustment away from the anchor says that the extent to which an individual identifies with their ingroup does not affect the anchoring an adjustment process.

Exploratory Analyses

In addition to the previously discussed analyses, an overall correlation analysis was conducted to explore how different trait measures may have correlated with magnitude of adjustment and what other patterns emerged from the trait measures (see Table 5). Several significant correlations emerged. As expected, the measures of ingroup identification were highly correlated, suggesting that they were consistent in measuring the same concept. Most relevant to this research, self-enhancing and self-protective behaviors were negatively correlated with magnitude of adjustment: the more an individual engaged in these behaviors, the less the

adjusted from the anchor $r(75) = -.18$, $p = .04$. Self-concept clarity was marginally correlated

with the magnitude of adjustment, such that those higher in self-concept clarity adjusted less than

those who have lower self-concept clarity, $r(75) = -.17$, $p = .05$. Trait self-esteem was highly

negatively correlated with ingroup identification, $r(75) = -.24$, $p = .01$. This suggests that those

who are higher in self-esteem may feel less of a need to identify with their ingroup. Social

desirability correlated with ingroup identification measures such that individuals seeking to be

socially desirable identified more strongly with their ingroup than those who did not, $r(75) = .21$,

$p = .01$. A relationship between social desirability and self-esteem was also present, reflecting

that those who seek to be socially desirable tend to have lower trait self-esteem $r(75) = .20$, $p =$

.02. Self-concept clarity was very highly correlated with self-enhancement and self-protection,

showing that those who have a clear sense of themselves are more likely to engage in self-

enhancing and self-protecting behaviors $r(75) = -.18$, $p = .04$. The strongest association observed

was that between self-enhancing and self-protecting behaviors and self-concept clarity $r(75) =$

$.99$, $p < .001$.

A correlational analysis was run for only the participants in the ingroup condition to

better understand what self-related traits were correlated with how much they adjusted from the

given anchor. Most notably, those who were in the ingroup condition showed significant

negative correlations between ingroup identification and self-esteem, $r = -.34$, $p < .001$ (See

Table 6). That is, those with higher self-esteem had lower ingroup identification. As this study

would benefit from more participants, these results are likely underpowered and need further

data collection in order to obtain the most accurate responses.

Table 5

Correlation of Trait and Outcome Measures

	1	2	3	4	5	6
Magnitude of Adjustment	-					
Ingroup Identification	.07	-				
Self-Enhancement	**-.18***	.10	-			
Social Desirability	.09	**.21***	.01	-		
Self-Concept Clarity	**-.17***	.08	**.99****	-.01	-	
Self-Esteem	-.11	**-.24****	-0.05	**-.20***	-.00	-

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 6

Ingroup Correlations

	1	2	3	4	5	6
Magnitude of Adjustment	-					
Ingroup Identification	.21	-				
Self-Enhancement	-.20	0.14	-			
Social Desirability	.12	**.29***	.01	-		
Self-Concept Clarity	-.20	.12	**.99****	-.02	-	
Self-Esteem	-.09	**-.34****	-.05	-.22	-.02	-

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Discussion

In Hypothesis 1, I predicted that individuals who were given an anchor that negatively reflected the reputation of their ingroup would adjust farther from an anchor than those who were given an anchor that negatively reflected the reputation of their outgroup. Hypothesis 3 stated that those who saw an anchor that positively reflected their ingroup would adjust closer to the anchor than those who saw information that negatively reflected their ingroup. Both of these

hypotheses were supported. In Hypothesis 2, I predicted that that were given an anchor that positively reflected their ingroup would adjust more than those who were given an anchor that positively reflected an outgroup. This was not supported. Hypothesis 3 predicted that participants who viewed a positive anchor that pertained to their ingroup would adjust less than those who viewed an anchor that portrayed their group negatively. This hypothesis was found to be supported. Taken together, this suggests that some anchors may serve as a threat to one's collective self. As with other threats to the self, if an individual learns that their ingroup is not rated as highly as they may like to believe, they may engage in self-enhancing behaviors. In this case, individuals compensate by adjusting to a value that enhances the reputation of the collective self. In short, the anchoring and adjustment heuristic is not simply a cold, cognitive process: the magnitude of adjustment is amenable to motivational and/or emotional processes.

Hypothesis 2 examined whether those who were given an anchor that reflected the ingroup positively would adjust closer to the anchor than when given the same information about an outgroup. This hypothesis was not supported. That is to say, those who viewed an anchor about their ingroup adjusted more than those who viewed an anchor about their outgroup. This finding may indicate that individuals will go to greater lengths to enhance their ingroup regardless of how an anchor, even a positive one, portrays their group.

Limitations

Although Hypothesis 3 is supported by these findings, this difference may be due to the fact that those in the high anchor condition (30) simply did not have as much room to adjust as those in the low anchor condition (100). This result may also only reflect the main effect of type of anchor found in the two-way analysis of variance.

Explaining the Lack of Moderation Effects

Interestingly, the results from Study 1b did not support Hypothesis 4, that there would be a moderation effect of ingroup identification. In other words, how strongly someone identified with their in-group did not influence how much individuals adjusted away from an anchor that represents their ingroup. Even though previous research has shown that individuals who identify most with their ingroup show more ingroup bias, the effect of the anchor found in these studies is not influenced by how much an individual identifies with their ingroup. It is possible that the ingroup of being a student at VCU was not a powerful enough social identity to elicit the proposed effects.

Several associations emerged in trait measures and magnitude of adjustment within the entire sample. Firstly, there was correlation between self-enhancing and self-protecting behaviors and how much an individual adjusted from the anchor. Specifically, the more of these behaviors an individual engages in, the less they adjusted from the anchor. Future research in self factors in the adjustment process will focus more on these behaviors in order to understand what underlying traits and mechanisms lie behind this connection. Self-concept clarity was also negatively correlated with adjustment. It is possible that this connection is driven by higher understanding of one's self outside of group identity, thus removing motivation from adjustment. Self-esteem and ingroup identification were strongly negatively correlated both in the overall analysis and specifically in the correlational analysis of the participants in the ingroup condition. This is surprising as the Balanced Identity Framework (Greenwald et al., 2002), a well-established framework, directly connects self-esteem and ingroup identity. Within this framework, ingroup identification leads to higher self-esteem. This negative correlation implores future research. Self-esteem was also linked to social desirability. This association also conflicts with past research, which has only found weak associations between the two (Huang, 2013).

These findings may reflect that those who have higher self-esteem may not feel the need to be socially desirable as such social transgressions may not have as much of an effect on high self-esteem individuals. The strongest correlation in this study was between self-enhancing and self-protective behaviors and self-concept clarity. These two factors were nearly perfectly correlated which may be indicative that the measures used for the respective variables were measuring similar concepts. Possibly, if other measures were used, such collinearity may not have emerged.

Taken together, these results suggest that if an anchor is related to an individual's ingroup, it will influence how far they will adjust from the given anchor. An important question remains whether any type of group, newly formed or already established, can influence how an individual chooses to anchor to a given value. In other words, do individuals only react strongly to anchors when it is an established group with which they identify, or can similar effects be observed in novel ingroups?

Overview of Study 2

The goal of Study 2 was to replicate the findings of Study 1b in the context of a novel and arbitrary ingroup. Using the same theoretical and methodological frameworks as Study 1b, Study 2 explored how similar group processes may emerge in novel groups. By using novel groups, the hypotheses of Study 1b may be more robustly tested by removing any possible confounds that may be present in previously formed groups. Stated differently, existing group identities such as a school identity, may have particular characteristics that also influence judgments. I propose utilizing a new and arbitrary group identity will enable a stronger test of my hypotheses.

Minimal Group Paradigm

Social Identification Theory suggests that ingroup context shape nearly all social cognition (Tajfel & Turner, 1979). Social cognition is not only affected by established ingroups such as racial and ethnic groups but can also be affected by arbitrarily defined ingroups. Historically, this has been manipulated via the minimal group paradigm (Tajfel, 1970). In the paradigm, Tajfel, Billig, Bundy, & Flament (1971) found that participants favored their own group when being asked to distribute money, even when the individual had been assigned to their group arbitrarily. For example, may have been assigned a group based on their taste in art (Tajfel, Billing, Bundy, & Flament, 1971), random assignment (e.g. Petersen & Blank, 2003; Harstone & Augostinos, 1995), and even a coin flip (Billing & Tajfel, 1973).

More recently, in vivo behavioral tracking (IBT; Halberstadt et al., 2016) was used to explore how this phenomenon occurs in real time. Jackson et al. (2019) gave participants either yellow or blue name tags in order to create minimal groups. They used IBT to track how participants moved in a large open area when told to create their own groups and found that participants with the same color name tags tended to group together, increasingly so in subsequent trials. Their work suggests that not only does ingroup preference occur with novel groups, the preference grows stronger over time.

In addition to strengthening self-reported attitudes and behavior, the minimal group paradigm has also been shown to shift implicit, or automatic, evaluations about the ingroup and outgroup. Implicit evaluations occur quickly, like System 2 in dual processing theory, and can occur even without awareness. Xiao and Bavel (2019) assigned participants to novel groups and later in the experiment switched the participant's provided ingroups. Using implicit and self-report measures, they found that participants implicit preferences quickly adapted to information regarding their former group and current group. These findings are particularly impressive given

that implicit attitudes are known to be much slower and resistant to change than explicit

attitudes, thus showing the profound effect of the minimal group paradigm. Though the minimal

group paradigm has been well studied, there have been a few criticisms offered (CITATION).

Because previous research has shown that two, and not more than two, groups create the

strongest effect for the minimal group paradigm (Harstone & Augoustinos, 1995), participants

were told that they have been randomly assigned to the Yellow Team where they were

competing against the Green Team in a subsequent task. Participants were told that their score

the task contributed to the overall Yellow Team score. After completing the task, participants

were shown either an anchor that positively reflects their ingroup performance or an anchor that

negatively reflects their ingroup performance. Participants were also be presented with anchors

that describe the outgroup as positively or negatively. Participants were then asked to estimate

the actual score for their team and complete the same measures as in Study 1b.

The following hypotheses were tested and are identical to Study 1 hypotheses:

- **Hypothesis 1**: When shown an anchor that threatens the reputation of one's novel

  ingroup (i.e., a low anchor), individuals would adjust more from the given anchor than

  those who are shown the same anchor about an outgroup.

- **Hypothesis 2**: When shown an anchor that supports the reputation of one's novel ingroup

  (i.e., a high anchor), individuals would adjust closer to the given anchor and adjust less

  than those who are shown the same anchor about an outgroup.

- **Hypothesis 3:** Those who are shown an anchor that supports the reputation of their

  ingroup will adjust closer to the anchor than those who are shown an anchor that

  threatens the reputation of their ingroup.

- **Hypothesis 4:** Self-enhancement would moderate the magnitude of adjustment from the anchor. Individuals who, at a trait level, are more likely to engage in self-enhancement would show a larger magnitude of adjustment away from the anchor when shown information that threatens their group and those that are shown information that enhances their novel ingroup would adjust even closer to the anchor.

Methods

Participants

As in Study 1b, participants were undergraduate students in introductory psychology classes at Virginia Commonwealth University recruited through the SONA system. Based on previous social identity and minimal group paradigm literature (Xiao & Van Bavel, 2019), this research anticipated a modest Cohen's $d = .3$. An a priori power analysis revealed that 126 participants were needed for adequate power (G-Power 3; (G-Power 3.1; Faul, Erdfelder, Buchner, & Lang, 2007) and 150 participants were recruited. Sixty-five participants' data were excluded because they did not follow instructions properly and did not adjust from the given anchor in the correct direction[3], leaving 85 participants (mean age = 21.70 years). Of the participants, 36.5% of participants identified as men, 60.0% identified as women, 1.3% identified as transgender, and 1.2% identified as non-binary. In terms of racial diversity, 47.6% identified as White, 16.7% identified as Asian, 16.7% identified as Black or African American, 1.2% identified as Native Hawaiian or Pacific Islander. Additionally, 11.9% of participants were multiracial and 6.0% preferred not to report their race.

Design

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[3] This refers to providing an estimate lower the given anchor rather than higher than the given anchor. over the given anchor. For example, some participants were told that their team earned over 75 points. Adjusting in the wrong direction would be providing an estimate below 75, such as 65, rather than 85 which would be in the correct direction.

Participants were randomly assigned to one of four conditions using a 2 (Group: Ingroup, Outgroup) x 2 (Anchor: High, Low) between-subjects design. In this study, participants were told that they have been randomly assigned to be a member of the Yellow Team (i.e., ingroup) and that they were competing against the Green Team (i.e., outgroup). The second factor included either a low or high anchor for their team's score to elicit either a negative or positive team performance. The high anchor presented the group as high-performing whereas the low anchor is meant to present the group as low-performing.

Procedure

As with Study 1b, I recruited participants via the SONA system; the study was conducted online. Participants were told that the study examined teamwork and competition and that they were going to compete on a team with two other players against another team of three participants. In order to make participants believe that there were other people in their session of the experiment, they were shown a screen that indicated how many participants had joined. This screen showed a participant joining every few seconds, and once the screen showed that all participants had been added, it automatically advanced to the screen that explained how the groups would be decided after 3 seconds. They were then told that they would be assigned to either the Yellow Team or the Green Team depending on the result of a random number generator. All participants received the number 4 and were told that since their number was even, they were assigned to the Yellow Team. Once assigned to their team, participants were then shown the following information about the point system of the word game that they would complete as a part of the competition:

*Please complete the following word task comprised of 15 items. Each item is worth 2 points, making a **perfect individual score worth 30 points**. Each team gets a base of 10 points.*

*Each of the **Yellow** team members' scores will contribute to the overall score team score, making a **perfect team score worth 100 points**. You will not be shown your individual score. Each participant will have 5 minutes to complete this task.*

After receiving these instructions, participants completed a 25-item Remote Associates Test (RAT; Mednick, 1968). Participants then completed the anchoring activity as well as several questionnaires.

Anchoring Activity

In the anchoring activity, participants in the high anchor (positively reflects the ingroup) condition were told that their team earned an overall score of above 70. Participants in the low anchor condition were told that their team earned an overall score of above 30. Participants in each condition were then asked to estimate the actual score. See Appendix M for a complete description of the anchoring activity.

Questionnaires

Participants were also asked to complete the same series of randomized trait questionnaires (e.g., self-enhancement) and ingroup identification measures utilized in Study 1b as well as the demographic questionnaire utilized in Study 1b.

Measures

Verbal Task

Remote Associates Test. The Remote Associates Test (RAT; Mednick, 1968) was used as the activity in which participants are told that each correct answer increases their team's (and ingroup) score by one point. This scale was originally used to measure creativity but was not used for any trait measures in this study. Respondents are asked to identify the word that

connects a series of three word. An example item is "cream/skate/water" with the correct answer

being "ice" (ice cream, ice skate, ice water). For the full activity, see Appendix O.

Trait Measures

Self-Esteem. The Rosenberg Self Esteem Scale (SES; Rosenberg, 1989) is a 10-item scale

that assesses an individual's self-esteem. Sample items include "I feel that I have a number of

good qualities" and "I take a positive attitude toward myself." Respondents rate each item on a

4-point scale (1 = Strongly Disagree, 4 = Strongly Agree).

Narcissism. Single-Item Narcissism Scale (SINS; Konrath, Meier, & Bushman, 2014) is a

well-validated, one item scale to assess narcissism, Participants are given a short definition of a

narcissist and are asked to respond to the following statement; "To what extent do you consider

yourself a narcissist?" on a 7-point scale (1 = not very true of me, 7 = very true of me).

Social Desirability. Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1999)

is a 40-item scale designed to assesses an individual's feelings about social desirability. It is

composed of two subscales – Self-Deception Enhancement and Impression Management.

Sample items from the Self-Deception Enhancement and Impression Management subscales

include "I am a completely rational person" and "Once in a while I laugh at a dirty joke",

respectively. This scale utilizes a 7-point Likert-type scale (1 = Totally Disagree, 7 = Totally

Agree).

Self-Enhancement and Protection. The Self-Affirming Reflections and Defensiveness

subscales of the Self-Enhancement and Self-Protection scale (Hepper, Gramzow, & Sedikides,

2010) was used to assess how individuals react to statements that affirm the self and defend

against attacks to the self. The Self-Affirming Reflections subscale consists of six items while

the Defensiveness subscale consists of 18 items. Respondents are asked to consider if the

patterns and thoughts described in the items are activities that they engage in and how typical these actions are of them. Sample items from the Self-Affirming Reflections subscale include "In times of stress, thinking about your positive close relationships and loved ones" and "When you do poorly at something, reminding yourself of your values and what matters to you." The Defensiveness subscale includes items such as "Revising very little for a test or going out the night before an exam or appraisal at work, so that if you do poorly, it would not mean you are incompetent." Respondents use a 6-point Likert-type scale (1= not at all characteristic of me, 6 = very characteristic of me).

   Self-Concept Clarity. Self-Concept Clarity Scale (SCC; Campbell et al., 1996) assesses the extent to which an individual's beliefs about their self are clear, stable, and internally consistent. The scale is comprised of 12 items including "My beliefs about myself often conflict with one another" and "Even if I wanted to, I don't think I would tell someone what I'm really like." Responses are measured on a 5-point Likert-type scale (1 = Strongly Disagree, 5 = Strongly Agree).

Demographics

   Demographic Questionnaire. Participants were finally asked to respond to questions regarding their age, gender identity, racial identity, and ethnic identity.

<div align="center">

Results

</div>

Calculation of Magnitude of Adjustment

   In order to calculate the magnitude of adjustment from the anchor, the absolute value of the mean adjustment from each condition was subtracted from the corresponding anchor[4]. In this study, there was an issue of participants not following directions properly. Many participants

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[4] The calculation of magnitude of adjustment in Study 2 different the calculation in Study 1 as higher numbers reflect a higher score in Study 2 while lower numbers reflect a higher ranking in Study 1.

adjusted in the opposite direction the instructions indicated (e.g. a participant estimates 48 when told that their team had earned over 75 points). These estimates were still subtracted from the anchor to result in a negative magnitude of adjustment.

Participants who viewed information that positively portrayed their ingroup (Yellow Team) adjusted an average of 27.76 points higher than the anchor ($SD = 36.43$) while those who viewed information that negatively portrayed their ingroup adjusted an average of 33 points lower than the anchor ($SD = 20.87$). On the other hand, those who viewed the positive anchor about their outgroup (Green Team) adjusted a mean of 29.33 points higher than the anchor ($SD = 27.11$) and those who viewed the negative anchor adjusted an average of 34 points lower than the anchor.

Anchoring Effects

In order to detect the presence of anchoring effects, the mean estimate of each anchor level (low and high) were compared. Participants that were in the high anchor condition (75) estimated a mean of 81.46, 6.46 points from the anchor, whereas those who were in the low anchor condition (25) estimated a mean score of 46.13, 16.13 points from the anchor (See Table 7). As in Study 1, mean estimate significantly differed between the two anchors $t(83) = 14.79$, $p < .001$. Taken together, these results confirm that these anchors successfully replicated the anchoring effect.

Table 7

Mean Estimate by Anchor

Anchor	N	Mean	Std. Deviation
High (75)	37	81.46	4.71
Low (25)	48	46.13	13.91

The Effects of Anchor and Group on Adjustment

A two-way between-groups analysis of variance was conducted to investigate the effects of ingroup threat on the magnitude of adjustment away from an anchor, specifically within the context of the minimal group paradigm. As in Study 1, participants were randomly assigned to one of four conditions with the independent variables being the type of anchor (negatively or positively reflecting the performance of the respective group) and type of group (ingroup vs. outgroup). Participants were all told that they would be competing on the Yellow team (the novel ingroup) and against the Green team (novel outgroup). Consistent with Study 1 there was a significant main effect of the type of anchor $F(1,83) = 36.52$, $p < .001$, partial $\eta^2 = .31$, suggesting that participants adjusted to different degrees depending on whether the anchor was low or high. There was no main effect of group $F(1,83) = .83$, $p = .36$, partial $\eta^2 = .01$, thus failing to support hypothesis that there would be a different in adjustment between adjustment in participants who viewed an anchor regarding their ingroup and outgroup. There was also no interaction between the type of anchor and group, $F(1,83) = .92$, $p = .34$, partial $\eta^2 = .01$ reflecting that the adjustment from the anchor was not affected uniquely by both the type of group and type of anchor (See Table 8).

Table 8

Mean adjustment from anchor by condition

Anchor	Group	Mean	Std. Deviation
Low Anchor (25)	Ingroup	18.68	13.98
	Outgroup	23.19	13.78
High Anchor (75)	Ingroup	6.50	3.68
	Outgroup	6.41	5.82

Testing the Hypotheses with a More Focused Approach

In order to directly test my hypotheses, a series of independent samples *t*-tests were performed. Hypothesis 1 was tested by comparing the mean magnitude of adjustment from a negative anchor (low anchor) between the ingroup and outgroup conditions. The mean adjustment from the low anchor (e.g., exposure to a threatening the status of the group) was not significantly different between the ingroup and outgroup conditions, $t(46) = -1.12$, $p = .27$, $d = .32$.

Hypothesis 2, that those who were given an anchor that reflected the group positively would adjust less than when given the same information about an outgroup. This hypothesis was not supported $t(35) = 0.06$, $p = .96$, $d = .02$. Therefore, participants who viewed an anchor positively reflecting their ingroup adjusted similarly to those who viewed the same anchor about an outgroup.

Finally, an independent samples *t*-test revealed that revealed that individuals who read a positive anchor about their ingroup adjusted less than those who received a negative anchor about their ingroup, $t(24.16) = 12.23$, $p < .001$, $d = 2.32$. Thus, Hypothesis 3 was supported.

Self-Enhancement as A Moderator

The hypothesized moderation effect of self-enhancing and self-protecting behaviors on the relationship between type of anchor and magnitude of adjustment from the anchor. Hayes' (2018) PROCESS macro (Model 1) was used to generate 5,000 bootstrapped confidence intervals of the conditional effect. The condition to which participants were assigned did not predict how much they adjusted from the anchor ($B = .63$, $p = .92$). Self-enhancing and self-protecting behaviors did not significantly predict how they adjusted from the anchor ($B = 2.06$, $p = .71$). The relationship between type of anchor and how far an individual adjusts from an

anchor was not significantly moderated by self-protecting and self-enhancing behaviors ($B =$

1.13, $\Delta R^2 = .00$, $F(1, 80) = .77$, $p = .58$).

Exploratory Analyses

   In addition to the previously discussed analyses, a correlational analysis was conducted to

explore how different trait measures may have correlated with magnitude of adjustment and what

other patterns emerged from the trait measures (see Table 9 for details). The only significant

correlation that emerged was between the magnitude of adjustment and self-concept clarity.

Those higher in self-concept clarity adjusted closer to the anchor, $r(85) = -.24$, $p = .03$. The

same effect was found in Study 1. In the ingroup correlational analysis, there were no significant

correlations found between the self-related trait measures and the magnitude of adjustment (See

Table 10). As with Study 1, these results are underpowered and would be more definitive with

more data.

Table 9

Correlation of Trait and Outcome Measures

	1	2	3	4	5
1. Self-Enhancing and Self-Protecting	-				
2. Social Desirability	-.01	-			
3. Self-Esteem	-.06	.18	-		
4. Self	-.09	.01	-.17	-	
5. Magnitude of Adjustment	-.05	.01	.05	**-.24***	-

*Correlation is significant at the 0.05 level (2-tailed).

Table 10

Ingroup Correlations

	1	2	3	4	5
1. Self-Esteem	-				
2. Self-Continuity	0.21	-			
3. Social Desirability	0.13	**.345***	-		
4, Self-Enhancing and Self-Protecting	-0.245	-0.297	-0.152	-	
5. Magnitude of Adjustment	-0.203	-0.143	-0.039	0.285	-

* Correlation is significant at the 0.05 level (2-tailed).

Discussion

In Hypothesis 1 of this study, I predicted that individuals who were given an anchor that negatively reflected the reputation of their ingroup would adjust farther from an anchor than those who were given an anchor that negatively reflected the reputation of their outgroup. In Hypothesis 2, I predicted that that were given an anchor that positively reflected their ingroup would adjust less than those who were given an anchor that positively reflected their outgroup. Hypothesis 3, that those who saw an anchor that positively reflected their ingroup would adjust closer to the anchor than those who saw information that negatively reflected their ingroup. Out of those three hypotheses, only Hypothesis 3 was supported, reflected in a main effect of anchor type. There was no interaction, showing that there was not a unique effect of both type of anchor and group on how much a person adjusts from an anchor. Hypothesis 4, that self-enhancement would moderate the findings, was not supported. These findings support the results of Study 1 in suggesting that if an anchor is related to the perception of an individual's ingroup, it will influence how they adjust from the anchor.

Limitations

This study had two major limitations, one being an issue with the anchor values and the other being the minimal groups possibly not eliciting ingroup effects. Although Hypothesis 3

was supported by the findings, this difference in adjustment between high and low anchors in the ingroup condition may be due to the fact that those in the high anchor condition (75) did not have as much room to adjust as those in the low anchor condition (25). This result may also simply reflect the main effect of type of anchor found in the two-way analysis of variance.

The other major limitation to this study is that the novel ingroup likely did not show the same effect as a more deeply ingrained ingroup, such as a racial group or political party. Although the minimal group paradigm is a long-held paradigm, it has been criticized as being an oversimplification of more complex processes (Schiffmann & Wicklund, 1992). Major criticisms include not taking other psychological factors into account such as self-esteem and self-enhancement and the assumption that individuals will adopt any identity (Schiffmann & Wicklund, 1992). There are also several moderators that affect an individual's adherence to novel ingroup that have not necessarily been taken into consideration such as self-esteem (Peterson & Blank, 2003), group status (Rechl, 1998), and group identity salience (Leonardelli & Brewer, 2001). In addition to these issues, most minimal group research has been done using majority White, college-aged samples, thus bringing the paradigm's generalizability into question.

General Discussion

Findings

Two experiments examined the possible effects of ingroup threat on the anchoring adjustment heuristic. This effect was first studied using students at Virginia Commonwealth University with the VCU community serving as the ingroup. A fictional outgroup, Turlington State University was used as a control in Study 1. College rankings provided the support or denigration of the ingroup. Participants were either shown an anchor that positively or negatively

reflected their ingroup or outgroup. Analyses showed that whether the anchor was positive or negative affected how participants adjusted from the anchor. Whether the anchor was about the ingroup or the outgroup also affected how participants adjusted from the anchor. Ingroup identification did not serve as a moderator in the relationship between type of anchor and magnitude of adjustment.

In this study, support or denigration of the ingroup was represented with the amount of points each team earned in the game. As with Study 1b, the level of the anchor (positive or negative) significantly affected the magnitude of adjustment from the anchor. Results did not reveal a significant effect of the group that the anchor represented, nor was there a significant interaction between group and level of anchor. The proposed moderation of self-enhancing behaviors on the relationship between anchor presented and magnitude of adjustment was not significant.

These results suggest that the magnitude of the anchor presented effected how much an individual adjusts from an anchor, though only Study 1b supports the idea that an anchor tied to one's identity affects the adjustment process. Assuming that the effect of the subject of the anchor exists, it is possible to reason that Study 2 did not yield the same results as Study 1 because the ingroup effects of the minimal group paradigm were not strong enough to elicit the proposed effect. Past research has shown replicability issues with the paradigm, with ingroup bias not being elicited by the novel ingroup (Carini, 2000). Perhaps more ingrained groups, such as political parties and sports fans, would exhibit a stronger effect.

Interesting patterns emerged within the trait measures collected. Both self-concept clarity and self-enhancement and self-protection behaviors were negatively correlated with how much an individual adjusted from the anchor. This suggests that higher one's self-concept clarity and

the more self-enhancing and protecting behaviors they engage in, the less they deviated from the anchor. As there is not much existing work on self-protection and enhancement, self-concept clarity, and the anchoring and adjustment heuristics, future work could examine these factors more fully.

A negative correlation between self-esteem and ingroup identification was also uncovered. This finding does not align with the previously established Balanced Identity Framework (Greenwald et al., 2002) which posits that ingroup bias leads to identification, then leading to high self-esteem. It could be that this negative correlation is a result of the chosen ingroup, VCU. That is to say, individuals may not have as closely identified with VCU as had a more specific group been chosen that reflects their self-concept.

Though I examined correlations between in-group and out-group conditions, my studies were under powered. Thus, recruiting additional participants, particularly for Study 1b, may yield more substantial findings.

Limitations

Studies 1a and 1b

In Study 1a, the participants were asked to estimate the state-wide rank of the two schools, Virginia Commonwealth University and Turlington State University. The results of this pilot showed that participants estimated VCU to be ranked much higher than TSU and these results were used to determine the anchors used in Study 1b. The difference in average ranking may have not been as unbiased and diagnostic as I had hoped due to the fact that the estimations of each university were not counter-balanced. All participants were asked to rank VCU before they ranked TSU. This may have caused participants to use their estimate of VCU's ranking as an anchor to estimate TSU's ranking. Similarly, the adjustment from the anchors in Studies 1a

and 1b may have been due to the fact that participants were familiar with VCU but unfamiliar with TSU. Due to this familiarity, participants may have ranked VCU higher simply because it's a well-known university and assumed that TSU was not a high-performing university because they had never heard of the school or any of its accolades.

Study 2

As discussed in the previous section, only an arbitrarily defined ingroup was examined in this study and the minimal group paradigm has several shortcomings. Groups that are more important to an individual's self-concept may show a more pronounced effect. For example, a future study may choose to examine one's adjustment to anchors related to political identification and beliefs. When faced with statistics that pertain to political issues, an individual may perceive them differently depending on their party. For example, if a conservative individual viewed a statistic such as "Over 45% of Virginians are in favor of gun control", they may estimate the true percentage to be much higher than 45% than would a liberal in favor of gun control.

The difficulty of the Remote Associate's Task (RAT; Mednick, 1968) may have affected the rankings in that participants felt that they did not perform well on the task and assumed that their teammates also did not perform well. This could be due to how individuals tend to anchor on their own performance to postulate how other individuals performed on the task (Kruger, 1999). Especially if participants were displaying the "better-than-average effect" in which individuals assume that they have performed better than their peers. Even if participants displayed the "worse-than-average" effect, they could still believe that their peers had only done marginally better than them or even scored points whereas the participant did not. If this was the case, they may have assumed that they did not do well, therefore, their teammates must have

performed even worse. A question asking participants how they believed they performed on the task would have leant insight on how their perception of their performance could have influenced their estimates.

Overall

Both studies were under-powered, as several participants had to be dropped due to noncompliance with the directions given. These participants estimated outside of the range suggested by the instructions (e.g. being told that VCU was ranked above 100 and then estimating that VCU was ranked 158 or being told that the Yellow team earned over 75 points and estimating that the team earned 60 points). It is possible that the wording of the instructions may have caused this issue and should have been piloted at the beginning of these studies. Due to the loss of several participants, both Study 1b and Study 2 would benefit from additional recruitment to increase power to detect a small effect.

Another issue that may have affected results is the fact that individuals were limited in their estimation. The high and low anchors allowed for varying degrees of adjustment. Those in high anchor conditions had fewer integers to use as estimates than those in the low anchor conditions, possibly causing the difference in magnitude of adjustment in the high and low anchor conditions rather than any effects of the anchor.

As with most psychology studies, these studies also suffered from a fairly young mean age, with the mean age of participants in Study 1 being 18.98 and Study 2 being 21.70. Even if the hypothesized effects were found, they may not generalize to other age groups. For example, group identity and understanding likely varies through the lifespan. In young children, these effects would not be observed simply because they may not have developed these understandings of group identities.

Future Directions

Most immediately, future work could examine the same hypotheses of this work but with methods that address the limitations of these studies. A different presentation of the anchor could mitigate issues with non-adherence to the directions. Using Study 1's protocol as an example, participants asked if they believed that VCU was ranked higher or lower than a particular rank and then asked to estimate its actual rank. The threatening and enhancing anchors could be presented using a wheel as with the original Kahneman and Tversky experiment (1974). With bi-directional instructions, participants would not be able to adjust in the wrong direction.

The possible effects of self and group processes on the anchoring and adjustment heuristic should also be explored in different age groups and cultural groups should also be examined. Though this effect may be present in adulthood where one's self-concept is more developed, it may not work in the same manner in developing children and adolescents. If this effect is truly generalizable, it should be present in all stages of development where ingroup processes are present. Moreover, considering more central identities such as race, gender, and political party should also be examined. Whereas this program of research explored lightly bound and novel ingroups, these more central identities may lend to stronger results and have greater real-world implications.

Applications

The findings of this research could lend more insight on ingroup and outgroup functions that may be the driving mechanisms behind disparities within communities, especially in the United issues such as racial disparities in pain treatment and punishment of students in public schools where students of color are more likely to be suspended than their White counterparts.

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Appendix A

1. Please rate how you feel about Virginia Commonwealth University/ Turlington State

University?

- o   Strongly Dislike

- o   Dislike

- o   Neutral

- o   Like

- o   Strongly Like

2. Before participating in this study, were you familiar with college ratings?

- o   Yes

- o   No

3. Before participating in this study, were you familiar with Virginia Commonwealth

   University/ Turlington State University's ranking?

- o   Yes

- o   No

Appendix B:

Student Information Questionnaire

1. Please select your student classification

    o   Freshman

    o   Sophomore

    o   Junior

    o   Senior

2. How many years have you been a student at VCU?

    o   1

    o   2

    o   3

    o   4

    o   5

    o   6

    o   7+

Appendix C

Study 1 Manipulation

Manipulations by Condition in Study 1

A top American business magazine releases an annual ranking of 4-year colleges and universities every year. This annual ranking is broken down by state so that each institution is ranked against other institutions in the same state.

Ingroup High Anchor Condition

There are **171** colleges and universities in VA. With 1 being the best institution and 171 being the worst institution in VA, VCU is ranked in the **top 30**. **What do you think VCU's actual rank is**? (Please respond with a whole number)

Ingroup Low Anchor Condition

There are **171** colleges and universities in VA. With 1 being the best institution and 171 being the worst institution in VA, VCU is ranked in the **top 100**. **What do you think VCU's actual rank is?** (Please respond with a whole number)

Outgroup High Anchor Condition

There are **171** colleges and universities in the state where Turlington State University is located. With 1 being the best institution and 171 being the worst institution in the state, TSU is ranked in the **top 30**. **What do you think TSU's actual rank is?** (Please respond with a whole number)

Outgroup Low Anchor Condition

There are **171** colleges and universities in the state where Turlington State University (TSU) is located. With 1 being the best institution and 171 being the worst institution in the state, TSU is ranked in the **top 100**. **What do you think TSU's actual rank is?** (Please respond with a whole number)
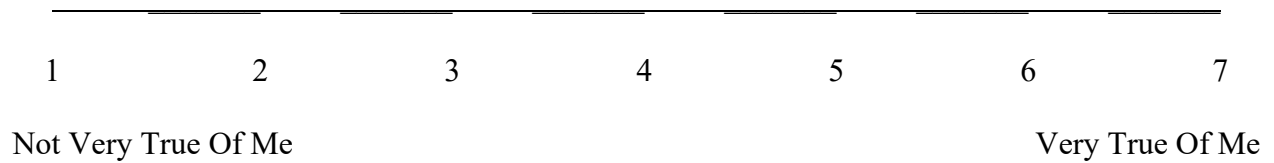
Appendix D:

Rosenberg Self Esteem Scale

Below is a list of statements dealing with your general feelings about yourself. Please indicate

how strongly you agree or disagree with each statement. (1=Strongly Agree, 2=Agree,

3=Disagree, 4=Strongly Disagree)

1. I feel that I am a person of worth, at least on an equal plane with others.

2. I feel that I have a number of good qualities.

3. All in all, I am inclined to feel that I am a failure.

4. I am able to do things as well as most other people.

5. I feel I do not have much to be proud of.

6. I take a positive attitude toward myself.

7. On the whole, I am satisfied with myself.

8. I wish I could have more respect for myself.

9. I certainly feel useless at times.

10. At times I think I am no good at all.

Appendix E:

Single-Item Narcissism Scale

To what extent do you agree with this statement: "*I am a narcissist*." (<u>Note:</u> The word

"narcissist" means egotistical, self-focused, and vain.)

1	2	3	4	5	6	7

Not Very True Of Me   Very True Of Me

Appendix F:

Balanced Inventory of Desirable Responding

Using the scale below as a guide, write a number beside each statement to indicate how much

you agree with it.

+	+	+	+	+	+	+
1	2	3	4	5	6	7

Totally Disagree   Neutral   Totally Agree

_____ 1. My first impressions of people usually turn out to be right.

_____ 2. It would be hard for me to break any of my bad habits.

_____ 3. Many people I meet are rather stupid.

_____ 4. I have not always been honest with myself.

_____ 5. I always know why I like things.

_____ 6. When my emotions are aroused, it biases my thinking.

_____ 7. Many people think that I am exceptional.

_____ 8. I am not a safe driver when I exceed the speed limit.

_____ 9. I am fully in control of my own fate.

_____ 10. It's hard for me to shut off a disturbing thought.

_____ 11. I never regret my decisions.

_____ 12. I sometimes lose out on things because I can't make up my mind soon enough.

_____ 13. The reason I vote is because my vote can make a difference.

_____ 14. People don't seem to notice me and my abilities.

_____ 15. I am a completely rational person.

_____ 16. I rarely appreciate criticism.

_____ 17. I am very confident of my judgments

_____ 18. I have sometimes doubted my ability as a lover.

_____ 19. It's all right with me if some people happen to dislike me.

_____ 20. I'm just an average person.

_____ 21. I sometimes tell lies if I have to.

_____ 22. I never cover up my mistakes.

_____ 23. There have been occasions when I have taken advantage of someone.

_____ 24. I never swear.

_____ 25. I sometimes try to get even rather than forgive and forget.

_____ 26. I always obey laws, even if I'm unlikely to get caught.

_____ 27. I have said something bad about a friend behind his/her back.

_____ 28. When I hear people talking privately, I avoid listening.

_____ 29. I have received too much change from a salesperson without telling him or her.

_____ 30. I always declare everything when asked by police or customs officials.

_____ 31. When I was young I sometimes stole things.

_____ 32. I have never dropped litter on the street.

_____ 33. I sometimes drive faster than the speed limit.

_____ 34. I never read sexy books or magazines.

_____ 35. I have done things that I don't tell other people about.

_____ 36. I never take things that don't belong to me.

_____ 37. I have pretended to be sick to get out of work or school.

_____ 38. I have never damaged a library book or store merchandise without reporting it.

_____ 39. I have some pretty awful habits.

_____ 40. I don't gossip about other people's business.

Appendix G:

Self-Enhancement and Self-Protection Strategies Scale - Defensiveness and Self-Affirming

Reflections Subscales

In this set of questions, we will list particular <u>patterns of thought, feeling, and behavior</u> that people engage in during the course of everyday life.

For each pattern, we will ask you to consider whether it is something that you yourself engage in, and how much it is <u>characteristic</u> or <u>typical</u> of you.

To what extent is this characteristic or typical of you?

Response scale: 1 (not at all characteristic of me) to 6 (very characteristic of me)

1. Thinking of yourself as generally possessing positive personality traits or abilities to a greater extent than most people

2. Thinking of yourself as generally possessing negative personality traits or flaws to a lesser extent than most people

3. Thinking that groups you belong to are generally much better than groups you don't belong to (e.g., sports teams or supporters, universities)

4. Putting down or criticizing groups that you don't belong to (e.g., a rival sports team or university)

5. Working out the kind of person you are by examining your intentions (e.g., "I am considerate because I think about how I can help others"), but working out other people only by examining their behavior (e.g., "She must be considerate because she helped a friend with his work")

6. Associating yourself with people who are successful –but not more successful than you

7. Remembering hardships that you had to overcome in order to be really successful

8. Thinking about how you have grown and improved as a person over time; how much more good/honest/skilled you are now than you used to be

9. Believing you have control over chance events (e.g., thinking you are more likely than others to throw a 6 on a dice, thinking your personally chosen lottery numbers are more likely to win than "lucky dip" numbers)

10. When you do poorly at something or get bad grades, thinking it was due to the situation, not your ability (e.g., the exam questions were unfair or too difficult)

11. When you do poorly at something or get bad grades, thinking it was due to bad luck

12. When you do poorly at something or get bad grades, thinking that the situation or test was uninformative or inaccurate (e.g., thinking the exam was badly designed, or thinking "that can't be right")

13. When you do poorly at something or get bad grades, thinking hard about the situation and feedback until you find something wrong with it and can discount it

14. When you do poorly at something or get bad grades, playing down the importance of that ability or area of life

15. When a group you are part of does well, thinking that you contributed to the success more than other members

16. Defining your moral standards to fit your actions (e.g., believing that it's ok to cheat in a game of cards, keep the extra change the cashier mistakenly gave you, or gossip about an acquaintance, because...)

17. When you do poorly at something, reminding yourself of your other strengths and abilities

18. In times of stress, reminding yourself of your values and what matters to you

19. In times of stress, thinking about your positive close relationships and loved ones

20. Revising very little for a test, or going out the night before an exam or appraisal at work, so that if you do well, it would mean you must have very high ability

21. Revising very little for a test, or going out the night before an exam or appraisal at work, so that if you do poorly, it would not mean you are incompetent

22. Leaving work until the last minute (and often not getting it done) to avoid the implications of doing poorly

23. Telling other people that you expect to do even more badly than you really expect to do (e.g., in work or a sporting event)

24. Forging friendships with people who are nearly, but not quite as high as you in ability or achievement

Appendix H:

Self-Concept Clarity

Please indicate how strongly you agree or disagree with each statement. (1=Strongly Agree,

2=Agree, 3=Disagree, 4=Strongly Disagree)

1. My beliefs about myself often conflict with one another.

2. On one day I might have one opinion of myself and on another day, I might have a different opinion.

3. I spend a lot of time wondering about what kind of person I really am.

4. Sometimes I feel that I am not really the person that I appear to be.

5. When I think about the kind of person I have been in the past, I'm not sure what I was really like.

6. I seldom experience conflict between the different aspects of my personality.

7. Sometimes I think I know other people better than I know myself.

8. My beliefs about myself seem to change very frequently.

9. If I were asked to describe my personality, my description might end up being different from one day to another day.

10. Even if I wanted to, I don't think I would tell someone what I'm really like.

11. In general, I have a clear sense of who I am and what I am.

12. It is often hard for me to make up my mind about things because I don't really know what I want.

Appendix I:

Modified Ingroup Identification Measure

Please indicate how strongly you agree or disagree with each statement.

1 = Not at All, to 9 = Very Much So

Modified

1. I identify strongly with other VCU students.

2. Being a VCU student is an important part of who I am.

3. I feel strong ties with other VCU students.

4. I feel a sense of solidarity with other VCU students.

Appendix J:

Modified Social Identification Questionnaire

Please indicate how strongly you agree or disagree with each statement.

All questions are rated on an 11-point scale ranging from 0 to 10 with 0 = never/extremely marginal/extremely unhappy, 5 = sometimes/intermediate/neutral, and 10 = extremely often/extremely central/extremely happy

1. How loyal do you feel toward VCU?

2. How often do you show or tell people you are a student at VCU in your everyday actions?

3. How central or marginal is being a student at VCU to your sense of who you are?

4. How happy or unhappy do you feel about being a student at VCU?

5. How often do you think about the fact that you are a student at VCU?

6. How much do you like people to know you are a student at VCU?

Appendix K:

Inclusion of Ingroup in Self (IIS) Questionnaire

Please circle the picture below that best describes your relationship.
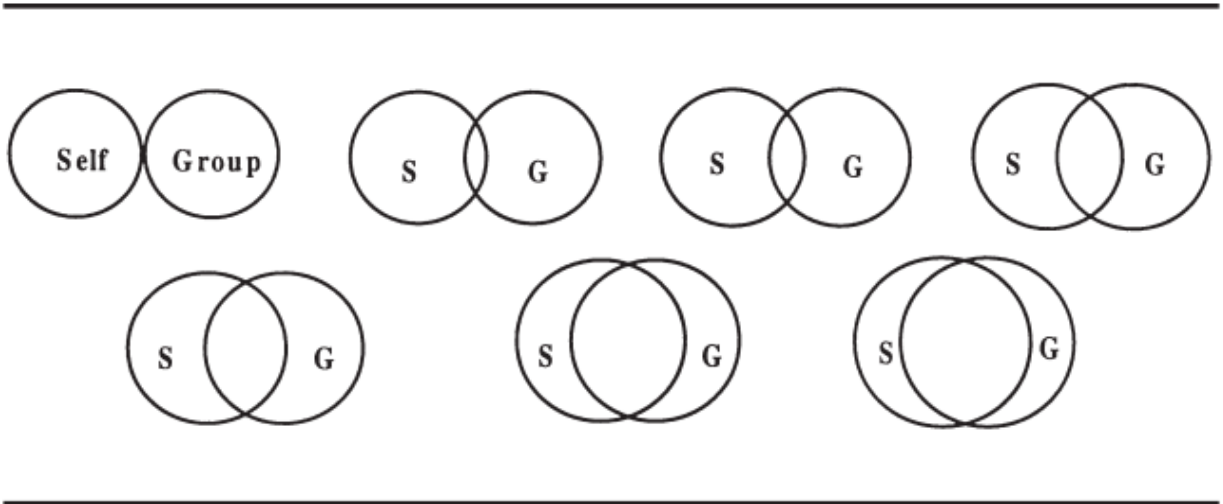
Appendix L:

Final Open-Ended Question

What do you think was the actual purpose of this study?

Appendix M

Remote Associates Test

Look at the three words and find a fourth word that is related to all three.

Example: What word is related to these three words?

paint; doll; cat

The answer is "**house**": house paint, dollhouse, and house cat.

1. call; pay; line

2. end; burning, blue

3. man; hot; sure

4. stick; pal; ball

5. bleu; cake; cottage

6. man; wheel; high

7. motion; poke; down

8. line; birthday; surprise

9. wood; liquor; luck

10. house; village; golf

11. plan; show; walker

12. key; wall; previous

13. bell; iron; tender

14. water; youth; soda

15. base; snow; dance

16. stop; kart; slow

17. up; book; charge

18. tin; writer; my

19. leg; arm; person

20. weight; out; pencil

21. spin; tip; shape

22. sharp; tick; tie

23. out; band; night

24. cool; house; fat

25. back; go; light

Appendix N

Manipulations by Condition

Ingroup High Anchor

"In this game, the Yellow Team has earned over 70 points out of a possible 100 points. How many points do you think your team actually earned in this game?"

Ingroup Low Anchor

"In this game, the Yellow Team has earned over 30 points out of a possible 100 points. How many points do you think your team actually earned in this game?"

Outgroup High Anchor

"In this game, the Green Team has earned over 70 points out of a possible 100 points. How many points do you think your team actually earned in this game?"

Outgroup Low Anchor

"In this game, the Green Team has earned over 30 points out of a possible 100 points. How many points do you think your team actually earned in this game?"

Vita

Mattie V. Hedgebeth was born July 8th, 1994 in Annapolis, Maryland. She grew up in Prince

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