

AN EXTENSION OF THE EGO-DEFENSIVE MODEL TO INCLUDE  
COLLECTIVE SELF-ESTEEM

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## **ABSTRACT**

People desire to maintain positive self-esteem; however, some messages contain information that can directly conflict with the positive image we hold of ourselves or our social groups. Ego-defensive attitudes, attitudes that protect individuals from threats to identity, are hard to measure, due to their subconscious nature. To measure ego-defensive attitudes, Lapinski and Boster (2001) conceptualized the ego-defensive model, which maps the process by which individuals respond to counterattitudinal messages on topics in which they are heavily ego-involved. Although originally the model was tested with a threat to personal self-esteem, the current study will provide an additional test of the ego-defensive model and extend existing research by testing the model with an issue that challenges collective self-esteem: esteem derived from social identity, and more specific to this study, attachments to gender identity. Findings were not consistent with the entirety of the ego-defensive model: contrary to predictions, negative thoughts were negatively associated with instances of message discounting, and source derogation was not associated with overall attitudes towards the message. However, results indicated a strong positive relationship between message discounting and source derogation, as predicted. Those with high collective self-esteem in the threat condition responded with more positive thoughts and less negative thoughts relative to those with low self-esteem. Collective self-esteem was found to have a buffering effect, such that those high in collective self-esteem participated less in message discounting and source derogation, and have more overall positive attitudes towards the message.

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## INTRODUCTION

People harbor a natural desire to maintain positive self-esteem (Vaughan-Johnston et al., 2022). However, some messages contain information that can directly conflict with the positive image we hold of ourselves; this could be a dedicated student receiving a college rejection letter, a job applicant being turned down by a potential employer, or even a die-hard sports fan hearing that their team didn't make the playoffs. Though all of these messages have the potential to challenge a belief that contributes positively to self-esteem, our brains combat this potential loss of self-esteem with *ego-defensive attitudes*, or attitudes that protect individuals from threats to identity. Derived from Katz's (1960) functional theory of attitudes, ego-defensive attitudes are used by the message receiver when the brain detects that an incoming message conflicts with an existing value or attitude (positive self-image), and corrects this discrepancy by undergoing effortful cognitive processes (Martiny & Kessler, 2014; Martiny & Rubin, 2016). For the job applicant facing numerous rejections, this might mean disparaging the groups who they believe are stealing jobs from people like them. The ego-defensive process has implications for our social group membership as well. People desire to maintain positive evaluations of the social groups of which we are members (Tajfel, 1974; Abrams & Hogg, 1988; Ellemers, 1993). Group members that perceive threats to their social group status might rely on ego-defensive attitudes to reject challenging messages, therefore mitigating any losses to self-esteem.

The ego-defensive model (Lapinski & Boster, 2001) provides the theoretical and methodological framework for this study. Ego-defensive attitudes have been conceived by Lapinski and Boster (2001) as a causal process, carried out cognitively, and perhaps subconsciously, to protect self-esteem from counter-attitudinal messages about highly ego-involving issues. Although previously Lapinski and Boster (2001) tested the ego-defensive

model with an issue connected to personal self-esteem, the current study will extend existing research by testing the model with an issue connected to collective self-esteem; esteem derived from social identity. Collective self-esteem threats can occur in numerous everyday contexts. At any time, people can be in competition for prestige or resources, such as competition for employment during the hiring process. This conflict can be oversimplified into group competition when competitors are recognized only by their group memberships, leading to a potential loss of collective self-esteem. In this study, male and female participants will react to messages which are expected to be perceived as threatening to their group membership, more specifically, their gender identity. We expect that participants will react according to the ego-defensive model in response to the group-threatening message, compared to a message that is non-threatening. In addition, we expect that participants who gain more collective self-esteem from their gender (social identity) are more likely to feel threatened by the group-threatening message, than participants who gain less self-esteem through their gender.

This study aims to provide a further test of the ego-defensive model, a means for which to measure and understand how our defense attitudes function, and understand how these attitudes affect how a threatening message and source are evaluated by the receiver. People are exposed to messages daily which may support or contradict attitudes and beliefs important to their self-concept. In these instances, ego-defensive attitudes may impact information processing and lead to biased judgements or prejudiced attitudes (Katz et al., 1956; Stotland et al., 1959), including negative attitudes towards minority groups (Rye & Goldszmidt, 2023; Barron, 2008). For this reason, it is important to gain a greater understanding of how ego-defensive attitudes impact our attitudes. In addition, extending the ego-defensive model will provide more clarity on the nature of intergroup dynamics, focusing on how attachments to group membership moderates

participant's likelihood to respond according to the ego-defensive model; in other words, providing us with a better understanding of how messages we encounter day to day might be perceived as threatening if counter-attitudinal to important group memberships.

## LITERATURE REVIEW

The ego-defensive function of attitudes originated from Katz's (1960) functional approach to attitudes, based on the fundamental idea that it is necessary to understand the psychological needs which our attitudes fulfill before we can understand the strategies a receiver may use to understand and respond to messages about those attitudes. Katz's original model for the functional theory of attitudes has been expanded upon by a number of scholars, including Gregory Herek, who molded Katz' original work into his own neo-functional theory of attitudes (1986). Herek (1986) separates attitudes into two categories: *symbolic*, fitting into one's longstanding values and views of society, and *utilitarian*, a practical assessment of an attitude object's utility. Unlike utilitarian attitudes, which function to minimize consequences and maximize rewards, symbolic attitudes' functions are carried out by the expression of that attitude, and are used to define or clarify matters related to self and identity. Likewise, some symbolic attitudes protect individuals from threats to their identity, such as messages that challenge or undermine self concept; Herek called these *defensive attitudes*, but they are also known as *ego-defensive attitudes*. This attitude function was understood by Lapinski and Boster (2001) as "attitudes (which) serve to protect cognitions central to the self-concept from messages that challenge, or attack, them," (p. 315).

Festinger (1957) found that people experience negative arousal when forced to hold two attitudes which are inconsistent with one another. This effect is only compounded when the attitudes are more important to the individual (Carpenter, 2019) or if the inconsistent attitude reduces consistency in one's self-esteem, or consistency with one's self-concept (Rokeach, 1968). Among many things, this inconsistent message could undermine a person's view of themselves as a good person, a rational person, or challenge the positive evaluation of a group membership

which they hold. People prefer that self-defining attributes (i.e. personal identity, social identity) remain positive, and prefer not to attach negative attributes to their self concept or identity (Vaughan-Johnston et al., 2022; Ellemers, 1993). Message resistance occurs to maintain consistency within our beliefs when a message or persuasive attempt introduces a dissonant idea (Fransen et al., 2015). This can occur when the incoming message is compared to existing beliefs, and discrepancies are noted, keeping the target from wanting to hold both beliefs simultaneously. Likewise, ego-defensive attitudes are held to mitigate inconsistent information which may undermine our self-esteem or identity. According to Fransen et al., “a reluctance to change may be caused by an unwillingness to change, but also by a desire to stay the same... the latter is more specific, and may occur primarily for beliefs that are important, and perhaps even central to one’s self” (2015, p. 5).

Ego-defensive attitudes have been studied in different contexts. Past research has studied how dismantling ego-defensive attitudes can reduce bias (Katz et al., 1956; Stotland et al., 1959). In an early study of ego-defensive attitudes related to racial bias, Katz et al. (1956) created messages designed to challenge ego-defensive attitudes, and found that information which provides insight on the nature of bias was effective at reducing bias. However, this material was significantly less effective with subjects high in ego-defensiveness. Additionally, research supports that ego-defensive attitudes are a strong predictor of attitudes central to self-concept and identity (Vaughan-Johnston et al., 2022), a strong predictor of negative attitudes towards minority groups (Rye & Goldszmidt, 2023; Barron, 2008), and, when targeted, can increase the persuasive power of propaganda (Shen, 2022).

This attitude function is difficult to study due to its complex nature. Consider that in some cases, message reception can fail due to active attempts to disregard the incoming

information, using motivated resistance strategies (Fransen et al., 2015). However, it is argued that ego-defensive attitudes reject messages with resistance strategies that may function at a subconscious level; these cannot be considered active strategies, as the subject is not necessarily aware of the cognitive process taking place and are therefore unable to report it using conventional self-report or explicit measures. In addition, thinking about attitude function is unpalatable for most people (Rye & Goldszmidt, 2023), who dislike thinking about why they hold the attitudes they have, and find it distasteful to admit that their beliefs could come from anything but their own morals (e.g., *social-expressive function*, attitudes expressed to gain acceptance from important referent groups). In their 2023 study, Rye and Goldszmidt call for more covert measures of the ego-defensive function to be developed after they found that people mostly reported attitudes based on the *value-expressive function*, or attitudes in congruence with our key beliefs, and were unwilling to admit to use of the social-expressive and ego-defensive function (also see Pedersen et al., 2000). In a review of functional attitude theory, Carpenter et al. (2012) expressed their disappointment over the notable lack of studies which target the ego-defensive function of attitudes. Lapinski and Boster's (2001) solution to this complex problem was to conceptualize the ego-defensive process as a causal process, rather than as a single variable (see Appendix A for flow chart of ego-defensive model).

Lapinski and Boster's (2001) model of the ego-defensive function of attitudes maps the process by which individuals respond to counterattitudinal messages on topics in which they are heavily ego-involved. A message that elicits an ego-defensive attitude will contain information that challenges one's self-concept. In Lapinski and Boster's model, an ego-threatening message was conceptualized as, "a message that is both attitudinally discrepant, or counterattitudinal, and highly ego-involving." (p. 315) These messages should invoke cognitive turmoil by attacking

self-esteem, and/or group self-esteem. For example, men might view themselves to be supportive of women, and yet believe that only men should be the bread-winners in the family. When confronted with a message that shows the inconsistency of these beliefs, the individual will process the information in a way that protects their sense of self and identity, and not forsake their view of themselves as a “good man.” Pereira et al. (2018) found that when participants are made aware of their own discriminatory behavior, threat to self-esteem is mitigated with justification for discrimination. Rokeach (1968) stated that people want to be logical thinkers, but the desire for self-esteem consistency is great and will overrule the desire to remain logical. When a message conflicts with one’s self-concept, a person will engage in a biased processing that protects their self-concept from dissonant information. In this way, ego-defensive attitudes are measured through the response mechanisms they incite, rather than through self-report.

The Lapinski and Boster (2001) study exposed highly ego-involved sources to a counterattitudinal stimulus, and examined the resulting process set in motion by the need to protect oneself from the message. The ego-defensive model predicted that the ego-involved participants in their study would react to the message according to the following process. 1) More negative thoughts (e.g. counterarguments) and less positive thoughts directed towards the message. 2) A message that induces more negative thoughts than positive thoughts is expected to result in message discounting (calling message quality into question), or disregarding. 3) If the message is discounted, it is expected that attacks on the source of the message will occur, calling into question the trustworthiness and credibility of the source of the message. 4) Finally, it can be expected that the process laid out in the model will conclude in recipient attitudes towards the message content. The more the recipient engages in negative attitudes, message discounting, and

source attacks, the less likely it will be that the recipient will be persuaded by the message or comply with and recommendations by the source.

Among other conceptualizations of self, ego-defensive attitudes may also be used to protect one's social identity, or "that part of an individual's self-concept which derives from his knowledge of his membership of a social group (or groups) together with the emotional significance attached to that membership" (Tajfel, 1974, p. 292). While Lapinski and Boster's original test of the ego-defensive model focused on threats to self-concept, the current study expands on the existing research by testing the ego-defensive model on messages that threaten collective self-esteem, which is derived from one's important group memberships. According to Tajfel (1974), group membership is desired when being part of the group contributes to the positive aspects of one's identity, also referred to as *collective self-esteem* (also called social self-esteem, Rubin & Hewstone, 1998; and group self-esteem, Ellemers et al., 1999). Individuals desire to have high collective self-esteem, and are motivated to protect the positive distinction of their group to enhance their self-esteem, very similar to one's motivation to protect self-concept.

### **Threats to Collective Self-Esteem**

Carpenter (2019) stated there is no clear reason why the concept of ego-involvement should not also include social identity, since people strive to maintain positivity in group membership just as they strive to maintain a positive self-concept. As an example, Boston Red Sox fans want their team to win when they go head-to-head with the Yankees, because it means they are members of a group that is superior to the other. This victory is all the sweeter if they engage in some general mocking of the other team, outlining all the ways the other team is inferior to their own. This is a relatively harmless example of group dynamics, however, these dynamics become more problematic within the context of demographic or cultural groups.

Within the context of gender, we might see the higher status group (men) communicating about traits, roles, or other objects commonly associated with women, in a negative way.

People organize their social environment using group memberships to create and define one's own place in society (Tajfel, 1974), including their group's relative hierarchical position compared to other groups. *Collective self-esteem* is the value we place on our social groups and how they contribute to our positive self-worth. It makes sense that collective self-esteem is typically higher for high-status groups as compared to low-status groups (Ellemers et al., 1999), and it can be increased by engaging in downward social comparison (comparing your group to a lower-status group) and out-group derogation (Abrams & Hogg, 1988; Rubin & Hewstone, 1998). A study by Vaughan-Johnston et al., (2021) found that extroverts, who are more likely to have strong ties to social groups and engage in frequent social activity, are more likely to engage in downward social comparison to increase their general self-esteem.

People desire to gain self-esteem through their group memberships, and group members are motivated to protect the positive distinction of their groups in order to maintain positive identity. Since people want their social group to be well-evaluated compared to other groups to bolster self-esteem, people that are part of a less positively evaluated group will likely attempt to leave that group (Tajfel, 1974). One study (Williams & Wittig, 1997) found that self-identification as a feminist had more to do with positive evaluation of the group rather than sharing beliefs of the feminist movement. According to Tajfel (1974), individuals who are part of a disadvantaged ingroup will take steps to improve the status of their social group if they are unable or unwilling to shed their group membership. However, one group achieving a high status can be perceived as threatening to a second, comparable group. In situations where group status is threatened, groups will exert cognitive energy to protect their collective self-esteem (Hogg,

2016; Blanz et al., 1998), as holding these beliefs simultaneously may decrease the potential for a high-status group to engage (consciously or unconsciously) in downward social comparison, thus removing one way they increase collective self-esteem. A study by Ellemers (1993) found that when group boundaries are permeable, high status groups want to protect their position, and indication that they may lose their positive distinction results in increased in-group identification, or stronger likelihood of seeing oneself as more similar to in-group members and less similar to out-group members (Turner & Reynolds, 2012).

In this way, social identity theory and its successors suggest that intergroup conflict is part of the relationship between social groups (Hogg, 2016), and intergroup behavior includes a struggle for relative group prestige (Ellemers, 1993). Tajfel and Turner theorized this relationship would exist specifically in cases where social identity is internalized as important to self-concept, when social identity (group membership) is more salient than personal identity within the interaction, and when facing competition from a relevant comparison group (Tajfel & Turner, 2004).

Some research has studied how strength of group ties, including reliance on group self-esteem, can moderate reactance in the face of group threat. In their research on social identity and self-esteem, Abrams and Hogg (1988, 1990) studied self-esteem gained through direct group competition, and predicted that engaging in outgroup derogation increases collective self-esteem, and threats to group status will motivate outgroup derogation (see meta-analysis by Aberson et al., 2000). Martiny and Rubin (2016) postulate that, “group members who have high collective self-esteem experience a large discrepancy when negative intergroup comparison outcomes are made salient and, consequently, they are especially motivated to restore their positive view of the in-group (p. 24).” Some studies have found data consistent with the claim that initial levels of

group self-esteem can predict outgroup derogation when group identity is threatened (Branscombe & Wann, 1994; Crocker & Luhtanen, 1990). One study found that high group identification coupled with a reduction of group self-esteem predicted likelihood to participate in outgroup derogation (Branscombe & Wann, 1994). This study also found that outgroup derogation, following a threat to collective self-esteem, can mitigate the negative impact of the threat on collective self-esteem. A study by Matby and Day (2003) examined self-esteem threat in a gendered context by exposing male participants to an identity threat by a female research confederate. Men who began the study with high self-esteem, and reported high positive attitudes towards men before the threat, reported significantly higher positive attitudes toward men following the threat.

The literature suggests that people high in collective self-esteem will be more likely to respond in congruence with the ego-defensive model to a message that threatens collective self-esteem. This message should be perceived as threatening to their group's relative social standing. As stated earlier, *collective self-esteem* is the positive value placed on ingroup membership, which contributes positively to our self-concept. With our study population, that would be the self-esteem gained from being a man or woman, and sharing an ingroup with other men or women. According to Luhtanen and Crocker (1992), collective self-esteem includes the perception of yourself as a valuable ingroup member, personal judgements about your social group, perceptions of how others judge your social group, and the influence your group has on your own self-concept. While personal self-esteem is thought to moderate the use of self-serving bias, Luhtanen and Crocker (1992) say that collective self-esteem may be an important moderator of ingroup bias, and other ingroup level strategies. Crocker and Luhtanen (1990)

found that collective self-esteem moderated subjects' responses to threats to social identity, as opposed to personal self-esteem.

Lapinski and Boster (2001) conceptualized a message that will trigger the ego-defensive model to be both ego-involving and counterattitudinal. Lapinski and Boster (2001) tested their model on a sample of college students who viewed themselves as 'serious students' and presented them with a counterattitudinal message that threatened their identity as a serious student. They were then exposed to a message that suggested they were not, in fact, serious students by describing "good" academic behaviors which far outstripped their current behaviors. Students were found to be highly ego-involved in being a serious student. Consistent with the model, these highly ego-involved students were more likely to respond with the production of counterarguments, discounting of the message, and derogation of the source of that message. The students in the threatening message condition reported a substantial number of negative thoughts and very few positive thoughts; the effect was reversed in the non-threatening message condition. The prevalence of positive or negative thoughts had an effect on the extent the message was discounted by participants, then impacted the extent to which the source of the message was derogated. Lapinski and Boster found that negative attitudes, message discounting and source derogation occurred when a salient aspect of self-concept was threatened. This study intends to test that same model when collective self-esteem is threatened.

Though not tested in its entirety, researchers have tested parts of the ego-defensive model proposed by Lapinski & Boster (2001). A study on intention to purchase counterfeit items (Sharma & Chan, 2017) found that the ego-defensive attitude function was related to the production of negative evaluations (negative attitudes) of counterfeit purchases, and adding involvement level into the model helped to explain a greater amount of variance in purchase

intentions. A study on political fact checking found that perceptions of message credibility (message discounting) moderated the likelihood to accept the corrected information (attitude change; Garret & Weeks, 2013), when the misinformation correction was counterattitudinal. In a synthesis of ego-defensive research on counterattitudinal messages, Carpenter (2019) described other research consistent with the Lapinski-Boster (2001) model; ego-involved recipients of counterattitudinal messages will be more critical of messages (in comparison to pro-attitudinal messages), and be more critical of the source (Klaczynski & Gordon, 1996). One study of counterattitudinal messages, found that ego-involvement was negatively correlated with perceptions of the source's expertise, and ego-involved sources showed less attitude change (Sereno, 1968).

In the current study, the ego-defensive model will be tested with a sample of college-age men and women, and will additionally aim to understand how the process is moderated by collective self-esteem. Ego-defensive attitudes protecting social identity will be investigated within the context of gender<sup>1</sup> group membership, more specifically, men and women responding to a message which gives evidence that the *other* gender is more prepared to enter the workforce post college graduation (i.e, that men are more prepared than women, or that women are more prepared than men). This message is considered a *group threatening message*; a message that is likely to be threatening to one's relative group status. This message should be counter-attitudinal for participants, highly counter-attitudinal for participants with high collective self-esteem associated with their gender identity, and ego-involving for college-age students (Zhuang et al., 2017, May). Participants exposed to the group-threatening message should be more likely to

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<sup>1</sup> Gender, as referred to in this paper, is the socially constructed characteristics of men/boys and women/girls (World Health Organization, 2023). Though gender is related to sex, it is not the same thing as sex, which refers specifically to biological characteristics. When this paper refers to men and women, it is referring to people that identify as either gender, regardless of biological sex.

react to the message in a manner consistent with the ego-defensive model than participants who are exposed to the non-threatening message (in this instance, a message which indicates that their *own* gender is better prepared to be successful post-graduation than the other). Evidence suggests that participants' responses to the group-threatening message can predict the attitudes that follow (Festinger & Carlsmith, 1959), each step of the ego-defensive model following a simple causal chain. Exposure to a group-threatening message is predicted to generate more negative thoughts (e.g., counter arguments) and fewer positive thoughts than exposure to the non-threatening message (Abelson, 1968). These thoughts generated by the group-threatening message are then expected to impact the extent to which the message is discounted. As negative thoughts increase, message discounting is expected to increase. This should occur to a lesser extent for the non-threatening message, which will generate fewer negative thoughts. Message discounting will then lead to source derogation, as the participant seeks reasons to discredit the source's competence or trustworthiness rather than accept the threatening information. The more participants discount the message, the more they are predicted to derogate the source of the message. Lastly, the model posits that the more the audience of the message derogates the source, the more negatively they should evaluate the message overall, and the less likely they will be to accept the recommendations of the message. The following hypotheses are proposed comparing a message that is group threatening to non-threatening:

*H1: A group threatening message will result in greater numbers of **negative thoughts** and fewer positive thoughts than a message that is non-threatening.*

*H2: A greater number of negative thoughts and fewer positive thoughts will result in greater **message discounting**.*

*H3: Message discounting will result in more instances of **source derogation**.*

*H4: Source derogation will result in more **overall negative attitudes**.*

Lapinski & Boster (2001) predicted a simple, causal chain and the data were consistent with the model. This study will complicate this model and predict that collective self-esteem will moderate the effects of the message such that participants with high collective self-esteem (i.e., a greater portion of their self-esteem is derived from group membership) are more likely than participants with low collective self-esteem to view the group-threatening message as a challenge to the status of their ingroup, therefore magnifying the effects of the ego-defensive model with even more negative thoughts and less positive thoughts about the message. As indicated by the model, the production of more negative and less positive attitudes will likely initiate all subsequent stages of the model, including more instances of message discounting, source derogation and overall negative attitudes, as a result of high collective self-esteem. Although the group-threatening message should be viewed as more threatening than the non-threatening message for all participants, men and women with high collective self-esteem should be *more* affected than men and women with low collective self-esteem. The following hypothesis and research question are proposed:

*H5: The effect of group threatening messages will be moderated by collective self-esteem such that people with high collective self-esteem will have a greater number of negative thoughts and fewer positive thoughts than people with low collective self-esteem.*

Due to the nature of the ego-defensive model causal chain, there is reason to question whether the predicted interaction of collective-self esteem and group threatening messages has an effect on all subsequent variables in the model, such as message discounting, source derogation, and attitudes towards career success. Therefore, the following research question is proposed:

*RQ1: Will collective self-esteem moderate the effects of threatening messages on message discounting, source derogation, and overall attitudes towards the message?*

Intergroup conflict exists between relevant comparison groups, including situations where a lower-status group takes steps to increase their group status, thus threatening the relative status of a higher-status group (Tajfel & Turner, 2004). Women in the United States are considered a lower-status group as compared to men, who are well documented in earning more money and occupying higher-status jobs compared to women (US Census Bureau, 2021). One study found a negative correlation between attitudes towards men and attitudes towards women in a sample of men (Maltby & Day, 2003), meaning that the more men hold other men in positive regard, the more they are likely to view women in a negative light. In addition, support for pro-social action that benefits women can be found more readily among women than among men (Rolfes-Haase & Swers, 2022; Dolan, 1997; Burn et al., 2000; Williams & Wittig, 1997; Glick & Fisk, 1996). Finally, there is reason to expect that men feel threatened by challenges to their masculinity, as research has found that men respond to masculinity threats with signs of increased anxiety and aggressive thoughts. This same relationship was not found in women when femininity was threatened (Vandello et al., 2008). The following research question is proposed:

*RQ2: Are the effects of group threatening messages different for men and women?*

## **METHOD**

### **Overview**

This study design utilized a pretest-posttest experiment in which participants were randomly assigned to read either a group-threatening or non-threatening message about gender differences in college preparation for the workforce. Collective self-esteem, thoughts about the messages, message discounting, source derogation, attitudes, and discrete emotions were measured via self-report after message exposure.

### **Participants**

Participants in this study ( $N = 249$ ) were male ( $n = 80$ ) and female ( $n = 169$ ) undergraduate students. Twenty-nine participants were removed from the final pool, 17 for failing at least one attention check, 10 for failure to complete the second part of the study, and two for not identifying as male or female, and therefore not fitting within the planned analysis for this study. Participants who completed this study through use of the Michigan State University Communication Department SONA pool ( $n = 192$ ) were given course credit for participation. Participants who completed this study through the Michigan State University Department of Advertising and Public Relations paid research pool ( $n = 59$ ), were given \$6 for study completion. Independent sample t-tests showed that these two samples showed no significant difference on any study variables, therefore, these samples were treated as one for all analysis.

### **Procedure**

The study was conducted as two online surveys using the Qualtrics platform. In the first survey, participants were asked to complete a series of questionnaires assessing their ego-

involvement in career success and attachment to their group identity (gender) through two measures of collective self-esteem.

The second survey asked participants to respond to a written message that was made to look like an OpEd article. Participants were instructed to read the article carefully and evaluate it. Participants were randomly assigned into one of two message conditions: a message stating that female undergraduate students were more prepared to enter the workforce than male undergraduate students, or a message stating that male undergraduate students were more prepared to enter the workforce than female undergraduate students. These messages were designed to be non-threatening or group-threatening based on participant gender.

Immediately after exposure to the message, participants were instructed to complete a thought-listing task, followed by evaluating the message itself and the source of the message. Then, participants take a questionnaire rating their overall attitudes towards the content of the message. Finally, participant emotions were measured.

### **Instrumentation**

Scale reliability was examined by first testing inter-item correlation and looking at item contributions to scale reliability. Once items were removed that did not contribute significantly to scale reliability, overall alpha was estimated. Scale items that were found sufficiently reliable were summed, so that higher values indicated more of each variable. Each of the following measures used a seven-point scale.

### ***Ego-Involvement***

Measured using five items modified from Lapinski and Boster (2001) on a Likert-type scale, ranging from “Strongly disagree” to “Strongly agree.” Scale items were modified to measure participant’s ego-involvement in being successful in their career, including items such

as, “I place high value on having a successful career.” and “I see myself as career-focused.”

These scores were averaged, and reverse coded as indicated, so that higher scores indicate more ego-involvement. This scale was found to be sufficiently reliable ( $\alpha = .87$ ).

### ***Collective Self-Esteem***

Measured using Luhtanen and Crocker (1992) Collective Self-Esteem (CSE) scale, originally developed as a global, collective self-esteem scale, designed to fit within social identity theory’s understanding of group self-esteem. Past studies have found sufficient variance in the scale to identify instances of covariance with other variables (Crocker & Luhtanen, 1990; Foels & Tomcho, 2005; Zhang, 2005). Scale items measure four subscales of collective self-esteem as conceptualized by Luhtanen and Crocker, and validated by exploratory factor analysis: membership esteem, “I am a worthy member of this group I belong to,” private collective self-esteem, “In general, I’m glad to be a member of this group I belong to,” public collective self-esteem, “In general, other people respect this group that I am a member of,” and importance of identity to one’s self-concept, “In general, belonging to this group is an important part of my self-image.” This study used a version of the Collective Self-Esteem Scale that was altered slightly to measure collective self-esteem from a specific group. In this version “the social groups I belong to” are changed to “this group” in scale items, and participants will be asked to think about their gender identity group membership prior to responding to study items.

This scale consists of 16-items on a Likert-type scale, from “Strongly disagree,” to “Strongly agree.” Our final analysis used only 11 items to improve inter-item correlations within the scale. Scores are averaged across all items, with higher scores indicating higher collective self-esteem. This scale was found to be sufficiently reliable ( $\alpha = .88$ ).

### ***Negative Thoughts***

Measured through a thought-listing task, in which participants were asked to list all thoughts they had while reading the message (with each unique thought on a separate line). Positive and negative thoughts are coded, positive thoughts being those that positively evaluate or support the source or content of the message, or general thoughts consistent with the message; negative thoughts are those that negatively evaluate or oppose the source or content of the message, or thoughts inconsistent with the message. Participants will be asked to code their own thoughts directly after this task; first labeling thoughts as message relevant or message irrelevant, then labeling message relevant thoughts as either supporting the message (positive), opposing the message (negative), or neutral. Overall scores are calculated by subtracting the number of negative thoughts from the number of positive thoughts for each participant. Higher scores showing a tendency towards positive thoughts and negative scores displaying more negative thoughts towards the message.

### ***Message Discounting***

Measured through a set of nine semantic differential items (e.g., The points made in this message are “important/not important,” “relevant/ irrelevant”) taken from Lapinski and Boster’s (2001) study. Scores will be calculated such that higher numbers indicate more message discounting. Standardized item  $\alpha = 0.91$ .

### ***Source Derogation***

Measured through a set of five semantic differential items, asking participants to evaluate the source of the message (e.g., The source of this message is “intelligent/stupid,” “reasonable/ absurd”) taken from Lapinski and Boster’s (2001) study. Higher scores indicated a higher occurrence of source derogation. Standardized item  $\alpha = .93$ .

### ***Attitudes***

To measure attitudes towards career success, this study will use a modified version of a five-item scale used by Lapinski & Boster (2001). This 7-point Likert-type scale includes items such as, “It is important to have a successful career,” and “I place a strong emphasis on excelling in my career.” Higher scores indicate more positive attitudes towards career success. One item was cut from analysis to improve scale reliability ( $\alpha = .82$ ).

### ***Exploratory Variables***

To understand the emotional responses to the messages, six emotions were measured in this study: ashamed, guilty, angry, mad, satisfied, and proud. For each emotion, the participants were asked, “How well do the following adjectives describe your feelings about this message?” Higher scores indicate feeling more of that emotion.

### **Message Design**

Two OpEd messages were created for the purposes of this experiment. Participants were told they were evaluating an article written by a MSU masters student studying journalism, prior to the student sending it to a local news outlet. Both messages focus on undergraduate student preparedness for the workforce post-graduation. This topic was chosen because male and female undergraduate students in a pilot study were found to be highly ego-involved in having a successful career post graduation. One message stated that female undergraduate students are better prepared than male undergraduate students to be successful in the workforce post-graduation (expected to be perceived as group-threatening to men and non-threatening to women). The second message articulates the opposite; that male undergraduate students are more prepared than female students to find workforce success post-graduation (expected to be perceived as group-threatening to women and non-threatening to men). Other than the stance

taken by each message, differences between OpEd articles was minimized by keeping formatting, source of the message, and length the same. Message qualities that have been found to impact source derogation, such as source effects (e.g., source credibility) and message effects (e.g., argument quality, message-sidedness, number of arguments), were controlled between the two message conditions.

### ***Pilot Studies***

Prior to conducting the experiment, two pilot studies were administered on two separate samples, independent from our final study sample. The pilot studies were designed to determine whether our group-threatening message was ego-involving and counterattitudinal to our study sample. It also functioned to provide a preliminary assessment of the main study scales, measure message believability, and discrete emotional response to the message.

Pilot study 1 ( $N = 86$ ) showed that participants in our study sample were highly ego-involved in having a successful career post-graduation, with mean ego-involvement falling significantly higher than the midpoint of the scale,  $M = 4.09$ ,  $SD = 0.59$ ,  $t(20) = 8.46$ ,  $p < .001$ . Pilot study 1 tested two messages about gender diversity in the workforce: one encouraged employers to prioritize gender-diversity in the hiring process, and the other encouraged hiring practices solely based on skills alone. A control condition, with no message, was also included, to measure participant attitudes without message influence. However, a 7-point scale measuring attitudes toward gender diversity in the workforce showed that male participants in our control condition fell above the scale midpoint ( $M = 4.4865$ ,  $SD = 1.21296$ ,  $t(36) = 2.44$ ,  $p < .02$ ) and that the topic was not counter-attitudinal. Therefore, a second pilot study was conducted, testing a new set of messages.

In Pilot 2, messages were tested with a small sample ( $N = 23$ ) of students from two local universities. This pilot tested our final study messages on student success post-graduation. Participants were randomly assigned to either a group-threatening message, non-threatening message, or a control, no message, condition. Message believability and discrete emotional response were measured in this pilot. According to an independent sample t-test, message believability for participants was not found to be significantly different in the group-threatening ( $M = 4.67, SD = 1.19$ ), and non-threatening ( $M = 5.20, SD = 0.38$ ) message conditions,  $t(9) = .95, p = .37$ . Independent sample t-tests showed that discrete emotional responses across message conditions were only significantly different for one emotion – ashamed –  $t(9) = -2.46, p = .04$ . All other measured emotions (guilty, mad, angry, satisfied, proud), were not found to have significant differences across message conditions.

The second pilot study focused on testing whether the message, which stated that female students are more prepared than male students to be successful post-graduation, was group-threatening to male participants. In the control group ( $n = 16$ ), men on average disagreed with the following statement: “In today’s population of college students, women are more prepared than men to have a successful career post-graduation.” The mean for male participants ( $M = 2.67, SD = 1.63$ ) in the control condition was found in a single sample t-test to be significantly different than the midpoint of the scale [ $t(5) = -2.00, p = .05$ ], showing that this topic is counterattitudinal for our study sample.

In the control group ( $n = 16$ ), women responded to a one-item measure that matched the topic of the group-threatening message: “In today’s population of college students, men are more prepared than women to have a successful career post-graduation.” The mean for female participants ( $M = 4.00, SD = 1.63$ ) in the control condition was found in a t-test to be at the

midpoint of the scale,  $t(5) = 0$ ,  $p = .5$ . Because the sample size for the second pilot was small and the means in the right direction, data collection commenced for the full study.

## RESULTS

### Preliminary Analysis

Messages were conceptualized as ego-threatening if they were both highly ego-involving and counter attitudinal (Lapinski & Boster, 2001). The OpEd message stating that men are better-prepared than women to have a successful career post college was designed to be threatening to female participants; the OpEd message stating that women are better prepared than men to have a successful career post college was designed to be threatening to male participants. In our analysis, the variable “threat” was created, as shown in Table 1. The study conditions, threat ( $n = 124$ ) and no-threat ( $n = 125$ ) will be used in all subsequent analysis.

On average, participants were highly ego-involved in having a successful career post-graduation (see Table 2). Mean ego-involvement across participants fell above the midpoint of the scale,  $t(249) = 29.22, p < .001$ . Mean collective self-esteem fell above the midpoint of the scale (see Table 2) for both men, [ $t(79) = 15.98, p < .001$ ] and women [ $t(168) = 35.94, p < .001$ ], and women were found to have significantly higher collective self-esteem compared to men,  $t(247) = -2.54, p = .01$ . In addition, participant-reported emotions were different by threat condition. Participants in the threat condition reported feeling significantly more mad, angry and ashamed than people in the non-threat condition, while participants in the no threat condition reported feeling significantly more satisfied and proud (See Table 3). All emotions were significantly different than the midpoint of the scale across conditions.

### Tests of Hypotheses and Research Questions

Participants could list up to 10 thoughts; the mean number of thoughts listed by participants was  $M = 5.3$ ,  $SD = 2.95$ , the Median was 5, and the Mode was 10. In Hypothesis 1, it was expected that the message, regarded as threatening for each gender, would lead to a greater

number of negative thoughts than the non-threatening message. The data were not consistent with this prediction. No significant differences were found in the number of negative thoughts produced in the message threat condition compared to the message no-threat condition,  $t(247) = .37, p = .71$ . In both the threatening [ $t(123) = 9.73, p = <.001$ ], and non-threatening [ $t(124) = 9.92, p = <.001$ ] conditions, the mean number of negative thoughts is significantly greater than zero (see Table 4).

It was expected that the message, regarded as threatening for each gender, would result in less positive thoughts than the non-threatening message. The data were not consistent with this prediction. No significant differences were found in the number of positive thoughts produced [ $t(247) = -1.22, p = .225$ ], in the message threat condition compared to the message no-threat condition. In both the threatening [ $t(123) = 11.409, p = <.001$ ] and non-threatening [ $t(124) = 11.13, p = <.001$ ] conditions, the mean number of positive thoughts is significantly greater than zero (see Table 4).

It was predicted that there would be a substantial number of negative thoughts and few positive thoughts in the threatening message condition, and few negative thoughts but numerous positive thoughts in the non-threatening message condition. Therefore, it was expected that the thought index (positive - negative thoughts) for participants in the threat condition would sum to a substantial negative number, and for the participants in the no-threat condition, a substantial positive number. The data were not consistent with this prediction. In both the threat condition [ $t(123) = 0.98, p = .165$ ] and no-threat condition [ $t(124) = -0.56, p = .579$ ], means were not significantly different from zero (see Table 4), or significantly different from each other [ $t(247) = -1.09, p = .276$ ]. Thus, the data were not consistent with Hypothesis 1.

It was predicted that a greater number of negative thoughts and fewer positive thoughts will result in greater message discounting. The thought index was found to have a significant positive correlation with message discounting ( $r = 0.38, p < .01$ ), meaning that more positive thoughts were correlated with more instances of message discounting. Indeed, the number of negative thoughts had a negative correlation ( $r = -0.20, p < .01$ ) and positive thoughts had a positive correlation ( $r = 0.34, p < .01$ ) with message discounting. The data were not consistent with Hypothesis 2 (see Table 5).

It was predicted that message discounting would be associated with greater source derogation. The data were consistent with this prediction. Message discounting was found to have a significant positive correlation to source derogation ( $r = 0.79, p < .01$ ), meaning that more instances of message discounting were correlated with more instances of source derogation (see Table 5). Therefore, the data were consistent with Hypothesis 3.

For the final step of the model, it was predicted that source derogation would result in more overall negative attitudes towards the message topic, career success. The data were not consistent with this prediction. The relationship between source derogation and attitudes towards career success was not significant, though it did fall in the predicted direction ( $r = -.08, p = .228$ , see Table 5).

It was predicted in Hypothesis 5 that collective self-esteem would moderate the effect of group-threatening messages such that people with high collective self-esteem will have a greater number of negative thoughts and fewer positive thoughts than people with low collective self-esteem. A moderation analysis was conducted to examine whether collective self-esteem moderates the relationship between threat and the thought index (positive - negative thoughts). The main effects for threat and collective self-esteem, and the interaction term (collective self-

esteem  $\times$  threat) were included in the regression model to test for moderation. The main effect for collective self-esteem was ( $\beta = -.152, p = .10$ ); the main effect for threat was ( $\beta = -.93, p = .05$ ), such that people in the threat condition reported significantly fewer negative thoughts than people in the no threat condition. The interaction term was significant, but not in the direction predicted,  $\beta = 1.01, p = .03$ . This means that people with high collective self-esteem in the threat condition responded with more positive and less negative thoughts. People with low collective self-esteem in the threat condition responded with more negative and less positive thoughts.

Research Question 1 asked if collective self-esteem moderated the effects of the messages on message discounting, source derogation and attitudes towards the message. Collective self-esteem had a significant main effect on message discounting ( $\beta = -.274, p = .002$ ) so that those with higher collective self-esteem engaged in less message discounting. There was no significant main effect for threat ( $\beta = -.494, p = .26$ ). The interaction between collective self-esteem and threat did not have a significant effect on message discounting ( $\beta = .80, p = .069$ ).

Collective self-esteem had a significant main effect on source derogation ( $\beta = -.343, p < .001$ ) so that those with higher collective self-esteem engaged in less source derogation. There was no significant main effect for threat ( $\beta = -.453, p = .293$ ). The interaction between collective self-esteem and threat did not have a significant effect on source derogation ( $\beta = .758, p = .08$ ).

Collective self-esteem had a significant main effect on attitudes towards career success ( $\beta = .324, p < .001$ ) so that those with higher collective self-esteem had more positive attitudes towards career success. There was no significant main effect for threat ( $\beta = -.184, p = .675$ ). The interaction between collective self-esteem and threat did not have a significant effect on attitudes towards career success ( $\beta = .186, p = .673$ ). Thus, the effects of the messages were not

moderated by collective self-esteem and the effects of collective self-esteem appear to reduce ego-defensive outcomes and enhance positive attitudes.

Research Question 2 asked if the effects of group-threatening messages are different for men and women. To answer this question, male and female participant data was analyzed separately for each step of the ego-defensive model.

Male participants in the threatening condition were found to list significantly more negative thoughts [ $t(78) = 2.29, p = .012$ ] and significantly less positive thoughts [ $t(78) = -1.67, p = .050$ ], than male participants in the no-threat condition (see Table 6). The interaction between collective self-esteem and message on thoughts was not significant for men ( $p = .28$ ). A significant difference was found between the thought index of male participants in the threat and no-threat conditions [ $t(78) = -2.92, p = .002$ ], with male participants in the threat condition having significant negative numbers, and male participants in the no-threat condition having significant positive numbers (see Table 6). This was not the case for female participants. Female participants in the threat condition were found to list significantly more positive thoughts [ $t(167) = -2.70, p = .004$ ] and significantly less negative thoughts [ $t(167) = 1.92, p = .028$ ] than female participants in the no-threat condition. A significant difference was also found between the thought index of female participants in the threat and no-threat conditions [ $t(167) = -3.31, p < .001$ ], with female participants in the threat condition having significant positive numbers, and female participants in the no-threat condition having significant negative numbers (see Table 6). The interaction between collective self-esteem and message on the thought index was significant for women,  $\beta = -1.61, p = .003$  but the effect was such that women with high CSE with a threatening message reported greater positive than negative thoughts.

Men in the threat condition were not significantly different than men in the no-threat condition to participate in message discounting,  $t(77) = -1.58, p = .06$ . On the other hand, women in the threat condition were significantly *more* likely to participate in message discounting than women in the no-threat condition,  $t(164) = -7.68, p < .001$  (see Table 7). No significant differences were found between men in the threat condition and no-threat condition to participate in source derogation,  $t(77) = -1.37, p = .09$ . On the other hand, women in the threat condition were significantly *more* likely to participate in source derogation than women in the no-threat condition,  $t(165) = -7.53, p < .001$  (see Table 7).

No significant differences existed between men in the threat condition and in the no-threat condition on attitudes toward career success,  $t(77) = -.57, p = .286$ . No significant differences existed between women in the threat condition, or in the no-threat condition, on attitudes toward career success,  $t(167) = -.013, p = .495$  (see Table 7).

### **Post Hoc Analysis**

Gender differences between reported discrete emotions were measured as a post hoc analysis. Significant differences were found between men in the threat condition and no-threat condition on reporting feeling mad, angry and guilty. Men in the no-threat condition reported feeling *more* mad, angry and guilty than men in the threat condition. Significant differences were found between women in the threat condition and no-threat condition on all measured emotions (ashamed, guilty, mad, angry, satisfied and proud). Women in the threat condition reported feeling more mad, angry, ashamed, and guilty than women in the no-threat condition. Women in the no-threat condition reported feeling more proud and satisfied than women in the threat condition (See Table 8).

## DISCUSSION

The goal for this study was to test the ego-defensive model on a sample of college-aged students, adding collective self-esteem as a moderator. Although it was expected that the message predicted to be threatening for each gender, would lead to a greater number of negative thoughts and less positive thoughts than the non-threatening message, which would in turn lead to more message discounting, source derogation, and more overall negative attitudes towards the message; overall, the data were not consistent with this model.

Though more negative than positive thoughts were expected in response to the group-threatening message, the data were not consistent with this prediction, as the relationship was not found to be significant across the sample. However, significant differences in negative and positive thoughts were found when genders were analyzed separately. It was found that women in the threat condition produced significantly more positive thoughts (than women in the no threat condition), and women in the no threat condition produced significantly more negative thoughts (than women in the threat condition). This was not consistent with our prediction. On the other hand, male participants thought listing *did* match our predictions, as men in the threat condition had significantly more negative thoughts (than men in the no-threat condition) and men in the no threat condition had significantly more positive thoughts (than men in the threat condition).

For both men and women, the thought index was positively associated with message discounting, meaning that those with more positive thoughts were more likely to discount the message. Though participants in the threat condition were significantly more likely to participate in message discounting and source derogation (which had a significant positive relationship), this

was only true for female participants. Male participants, on the other hand, showed no significant differences in message discounting and source derogation by threat condition.

Source derogation was not correlated with attitudes towards career success, but interestingly, positive thoughts *did* have a significant positive relationship with attitudes; meaning that participants who listed more positive thoughts were *more* likely to have positive attitudes toward the message topic. Career success attitudes were not associated with any other variable in the ego-defensive model. It is expected that smaller effect sizes will be found at the end of the ego-defensive model causal chain. It would be fruitful to see if a larger sample might help us to detect any relationships of a smaller effect size.

Additionally, men reported feelings *more* mad, angry and guilty in response to the no-threat condition, compared to men in the threat condition, while women in the threat condition reported feeling more mad, angry, ashamed, and guilty than women in the no-threat condition. For women, mad and angry were the only emotions to fall above the mean of the scale in the threat condition. It would be fruitful to learn more about anger's role in the ego-defensive model, as both an outcome of the ego-defensive process, or a moderator within the causal chain.

The data from the message discounting, source derogation, and discrete emotional response measures suggest that women were generally more threatened than men by the group-threatening message. To understand why, there are some important factors to consider:

It is likely that women are generally perceived to be better students than men (Voyer & Voyer, 2014) and despite our pilot results, it may be the case that our message was not believed by our sample. Male participants may have perceived the message which stated that male students are better prepared than female students to succeed post-graduation (expected to be non-threatening), to not be very realistic. Therefore, the purportedly male non-threatening message

could have appeared false when compared to participant's existing perceptions about student preparedness, accounting for the lack of significant differences in message discounting and source derogation. Participant thoughts provide some evidence that this could be the case. One participant stated that they, "find it hard to believe that women skip class more than men." On the other hand, the opposite message (women are better-prepared than men to succeed post-graduation) was likely perceived as more realistic to both male and female participants. One male participant stated that, "women take their education more seriously." Though no differences in message believability were found in the pilot study, the small sample ( $N = 23$ ) could have kept those differences from being detected, due to lack of statistical power.

Alternatively, women in this sample were found to have significantly higher collective self-esteem compared to the men in this sample (though collective self-esteem fell above the midpoint for both genders). Past research would suggest that those with higher collective self-esteem would have a greater need to mitigate threats to group identity (Branscombe & Wann, 1994; Crocker & Luhtanen, 1990), as these individuals would feel greater cognitive discrepancies when exposed to negative intergroup comparisons (Martiny & Rubin, 2016). This difference in strength of ties to group identity could provide an alternate explanation for the differences found in men and women's tendency to participate in message discounting and source derogation, and women reporting feeling more mad and angry in response to the group-threatening message. Interestingly, past studies have found men to be susceptible to threats to their masculinity, but did not find this relationship in women when femininity was threatened (Maltby & Day, 2003; Vandello et al., 2008). Future research could focus further on gender identity, to better understand how people react when messages threaten group identities and the

scenarios or circumstances in which these group memberships are salient (e.g., high prestige group or low prestige group).

The interaction between collective self-esteem and threat was found to moderate the effect of group-threatening messages such that people with high collective self-esteem in the threat condition responded with more positive and less negative thoughts. People with low collective self-esteem in the threat condition responded with more negative and less positive thoughts. This was the opposite of the predicted direction. Additionally, the interaction was not found to significantly modify message discounting, source derogation, or attitudes towards career success. However, collective self-esteem did have a significant main effect on message discounting, source derogation, and attitudes towards career success, such that people high in collective self-esteem were less likely to participate in message discounting and source derogation, but more likely to have positive attitudes towards career success. Thus, the effects of the messages were not moderated by collective self-esteem and the effects of collective self-esteem appear to reduce ego-defensive outcomes and enhance positive attitudes. These findings are opposite from what we would expect to find. Based on social identity theory literature, it was expected that higher collective self-esteem would make the receiver more susceptible to threats to social identity (Martiny & Rubin, 2016; Branscombe & Wann, 1994; Crocker & Luhtanen, 1990). However, our data suggests that these individuals were *less* vulnerable to identity threats, contrary to our hypotheses.

As the Luhtanen and Crocker CSE scale includes subscales for membership esteem, the perception of yourself as a valuable ingroup member, and private collective self-esteem, personal judgements about your social group, it may be that participants that scored higher in this scale were more secure in their social group, and therefore, less concerned by the threatening message.

As such, collective self-esteem may have a buffering effect, protecting those with high collective self-esteem from attacks to group identity, therefore making them less likely to engage in message discounting and source derogation, and resulting in more positive attitudes towards the message content.

Additionally, Luhtanen & Crocker (1992) found that collective self-esteem was moderately correlated with personal self-esteem, or the overall evaluative attitude towards the self (Rosenberg, 1965); this could mean that participants high in collective self-esteem were also high in personal self-esteem. Research on personal self-esteem shows mixed findings in how high or low self-esteem could impact how people respond to threats, self-esteem loss, negative emotions and negative feedback. Some research shows that high self-esteem individuals are more reactive to threats to self-esteem and will use strategies to regain self-esteem post-threat, including responding with unrealistically positive appraisals about the self (Roth et al., 1986) and risky goal setting (Baumeister et al., 1993). Other studies suggest that those high in personal self-esteem suffer less emotional distress when they encounter negative feedback (Brown, 2010), and are less likely to feel anxious or depressed (Greenburg et al., 1992; Sharma & Agarwala, 2014).

Within the context of this study, this could mean that participants with high self-esteem experienced *less* cognitive dissonance when exposed to the group-threatening message than those with low self-esteem, therefore making them *less* likely to seek out self-esteem maintenance strategies, such as message discounting and source derogation, and resulting in more positive attitudes towards the message content. Additionally, Crocker & Schwartz (1985) found that low personal self-esteem individuals are more likely than those with high personal self-esteem to display outgroup bias. Therefore, it may be that those with high self-esteem were more likely to use self-esteem maintenance strategies *besides* outgroup derogation, such as using

a direct remedial response to address the source of the self-esteem threat (Nussbaum & Dweck, 2008). As such, it is possible that after reading the threatening message, participants high in self-esteem took steps to better prepare themselves to enter the workforce in order to address the threat to self-esteem (e.g., attending a workshop, studying for a test).

The interaction (collective self-esteem x threat) did not moderate the ego-defensive model as predicted; rather than finding that collective self-esteem boosts the effect of ego-defensive attitudes, instead, we found that collective self-esteem diminished the effect of ego-defensive attitudes. It may prove fruitful to continue to test the effects of self-esteem (personal and collective) on the ego-defensive model, to better understand the role of self-esteem as a buffer against messages that are perceived to be threatening to personal or group identity.

### **Limitations**

One possible limitation was in having participants self code their thoughts, which may have impacted overall study findings. The Lapinski & Boster (2001) study used coders to determine thought relevance and valence. In this study, participants were provided instructions for coding their own thoughts, and did so directly after the thought listing activity. Ego-defensive attitudes are thought to not be generally accessible to those who hold them, operating primarily at a subconscious level. Having participants code their own thoughts could have had the unintended effect of turning ego-defensive attitudes, a typically unconscious process, into a conscious one, by providing time to self-reflect on the valence of their thoughts towards the message. This procedure could also have unintentionally stoked participant emotions and/or caused self-coded thoughts to be influenced by biased judgements or response distortions—evasions or distortions in self-reports, potentially to gain social approval or avoid social disapproval (Himmelfarb, 1993). Additionally, participants with strong attitudes toward the

message might be more likely to code their thoughts at either extreme (positive or negative; Himmelfarb, 1993), whereas an external, unbiased coder may have identified more neutral thoughts. This is a strong possibility, as participants reported being highly ego-involved in obtaining career success post-graduation. The ego-defensive model is meant to be an unconscious process followed to protect against threats to self-esteem. When an element of introspection is introduced at the start of the causal chain, it may have had an impact on each subsequent link of the chain.

Additionally, asking participants to label their message relevant thoughts as positive, negative, or neutral, was likely not specific enough for the purposes of this study; thought valence might have been perceived as positive or negative relative to the participants existing attitudes, beliefs, or biases, rather than relative to the message content. Instead, it may have been more helpful to have participants label their message-relevant thoughts as supportive, contrary, or neutral to the message, which may have better served the needs of this study.

An additional possible limitation of the study is that there was a named source of the message, that was likely interpreted as a female source. This would likely be perceived as an ingroup member for women and an outgroup member for men. This could have shaped message response. Future research could test for differences in ego-defensive outcomes in response to ingroup and outgroup message sources.

It was difficult to recruit a large sample of male participants for this study. Only about 32% of our participants were men, which led to less statistical power to detect possible effects of the group-threatening message. Future replications would benefit from a larger, national sample rather than relying solely on student participants. Research suggests that men are highly susceptible to threats to their masculinity (Maltby & Day, 2003; Vandello et al., 2008), so a

larger sample size of men may be better suited for initial research to understand the relationship between collective self-esteem and the ego-defensive model, specifically when gender is the group membership of interest.

Finally, a number of participants failed one of the three attention checks, 17 in total; additionally, 10 were removed for failure to complete part two of the study: 27 participants in total were cut from final analysis due to inattentiveness or lack of motivation to complete the study in its entirety. This suggests that participants may have required different incentives in order to complete a study with their full attention. This could mean making compensation contingent on passing attention checks and full study completion.

## **Conclusion**

In conclusion, the data was not consistent with the ego-defensive model, except in the case of message discounting and source derogation, which had a strong positive relationship. The interaction between threat and collective self-esteem had a significant effect on the thought index, such that participants with high collective self-esteem in the threat condition responded with more positive and less negative thoughts. However, the interaction did not have an effect on subsequent stages of the model. Additionally, collective self-esteem was found to have a strong main effect on steps of the model, including a negative effect on message discounting and source derogation, and a positive effect on career success attitudes. Thus, the effects of collective self-esteem appear to reduce ego-defensive outcomes and enhance positive attitudes, appearing to act as a buffer against threats to group identity.

The data also strongly indicates that only women were threatened by the purportedly group-threatening message, as only women reported feeling significantly more mad and angry in the threat condition. Additionally, women were more likely to participate in message discounting

and source derogation when exposed to a group-threatening message, whereas men showed no significant differences in these variables between message conditions.

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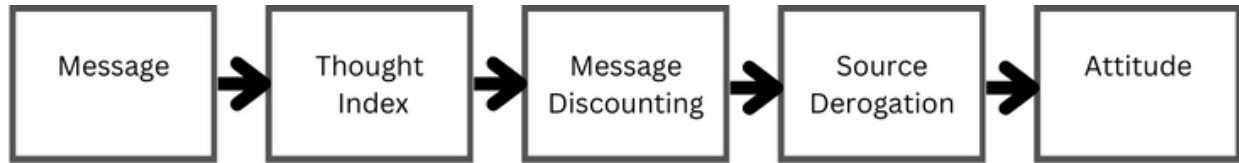
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## APPENDIX A: TABLES & FIGURES

**Figure 1**

*Predicted path model of the ego-defensive process*



**Table 1**

*Creation of the Variable, Threat*

|       | “Women are better prepared than men...” | “Men are better prepared than women...” |
|-------|-----------------------------------------|-----------------------------------------|
| Women | No-threat                               | Threat                                  |
| Men   | Threat                                  | No-threat                               |

*Note.* Threat was created using message condition and participant gender.

**Table 2**

*Ego-Involvement and Collective Self-Esteem by Gender*

|                                             | All participants          | Men                       | Women                     |
|---------------------------------------------|---------------------------|---------------------------|---------------------------|
| Ego-Involving                               | $M = 5.85$<br>$SD = 1.00$ | $M = 5.87$<br>$SD = 1.02$ | $M = 5.86$<br>$SD = 1.00$ |
| Collective Self-Esteem (Luhtanen & Crocker) | $M = 5.92$<br>$SD = .82$  | $M = 5.73$<br>$SD = .97$  | $M = 6.01$<br>$SD = .73$  |

*Note.* Measured on a 7-point scale, where higher numbers indicate greater levels of the variable.

**Table 3***Differences in participant-reported emotions, by study condition.*

|           | Threat                     | No-threat                  | Independent samples t-test |
|-----------|----------------------------|----------------------------|----------------------------|
| Mad       | $M = 3.86$<br>$SD = 2.06$  | $M = 2.70$<br>$SD = 1.60$  | $t(244) = -4.96, p < .001$ |
| Angry     | $M = 3.91$<br>$SD = 2.00$  | $M = 2.68$<br>$SD = 1.62$  | $t(246) = -5.34, p < .001$ |
| Guilty    | $M = 2.80,$<br>$SD = 1.59$ | $M = 2.44,$<br>$SD = 1.50$ | $t(245) = -1.88, p = .06$  |
| Ashamed   | $M = 3.09$<br>$SD = 1.68$  | $M = 2.45$<br>$SD = 1.45$  | $t(246) = -3.19, p = .002$ |
| Satisfied | $M = 2.69$<br>$SD = 1.61$  | $M = 4.48$<br>$SD = 1.48$  | $t(246) = 9.05, p < .001$  |
| Proud     | $M = 2.75$<br>$SD = 1.67$  | $M = 4.66$<br>$SD = 1.61$  | $t(246) = 9.2, p < .001$   |

*Note.* Measured on a 7-point scale, where higher numbers indicate greater levels of the variable.

**Table 4**

*Variables of the Ego-Defensive Model, separated by study condition.*

|                                     | Threat                    | No-Threat                  |
|-------------------------------------|---------------------------|----------------------------|
| Negative Thoughts                   | $M = 1.66$<br>$SD = 1.92$ | $M = 1.77$<br>$SD = 1.99$  |
| Positive Thoughts                   | $M = 1.91$<br>$SD = 1.87$ | $M = 1.64$<br>$SD = 1.65$  |
| Thought Index<br>(Pos-Neg thoughts) | $M = .23$<br>$SD = 2.66$  | $M = -0.13$<br>$SD = 2.57$ |
| Message Discounting                 | $M = 3.67$<br>$SD = 1.29$ | $M = 2.92$<br>$SD = 1.01$  |
| Source Derogation                   | $M = 3.51$<br>$SD = 1.41$ | $M = 2.68$<br>$SD = 1.14$  |
| Attitudes towards Career Success    | $M = 6.08$<br>$SD = 0.84$ | $M = 6.12$<br>$SD = 0.71$  |

*Note.* All variables were measured on a 7-point scale. Higher numbers indicate greater levels of the variable. In the thought index, positive numbers indicated more positive thoughts than negative; negative numbers indicate more negative thoughts than positive.

**Table 5***Correlation Table for Model Independent and Dependent Variables*

|                          | Threat        | Negative Thoughts | Positive Thoughts | Thought Index  | Message Discounting | Source Derogation | Career Success Attitudes | Collective Self-Esteem |
|--------------------------|---------------|-------------------|-------------------|----------------|---------------------|-------------------|--------------------------|------------------------|
| Threat                   | 1             | -.023             | .077              | .069           | <b>.309**</b>       | <b>.311**</b>     | -.023                    | -.061                  |
| Negative Thoughts        | -.023         | 1                 | .012              | <b>-.739**</b> | <b>-.198**</b>      | <b>-.181**</b>    | .075                     | .020                   |
| Positive Thoughts        | .077          | .012              | 1                 | <b>.665**</b>  | <b>.343**</b>       | <b>.302**</b>     | <b>.129*</b>             | .007                   |
| Thought Index            | .069          | <b>-.739**</b>    | <b>.665**</b>     | 1              | <b>.379**</b>       | <b>.340**</b>     | .031                     | -.010                  |
| Message Discounting      | <b>.309**</b> | <b>-.198**</b>    | <b>.343**</b>     | <b>.379**</b>  | 1                   | <b>.787**</b>     | -.075                    | <b>-.179**</b>         |
| Source Derogation        | <b>.311**</b> | <b>-.181**</b>    | <b>.302**</b>     | <b>.340**</b>  | <b>.787**</b>       | 1                 | -.077                    | <b>-.252**</b>         |
| Career Success Attitudes | -.023         | .075              | <b>.129*</b>      | .031           | -.075               | -.077             | 1                        | <b>.351**</b>          |
| Collective Self-Esteem   | -.061         | .020              | .007              | -.010          | <b>-.179**</b>      | <b>-.252**</b>    | <b>.351**</b>            | 1                      |

*Note.* \* indicated correlation is significant at .05 level; \*\* indicates correlation is significant at .01 level

**Table 6**

*Thought means by study condition and gender.*

|                   | Male: Threat               | Male: No-threat           | Female: Threat            | Female: No-threat          |
|-------------------|----------------------------|---------------------------|---------------------------|----------------------------|
| Positive thoughts | $M = 1.04$<br>$SD = 1.00$  | $M = 1.60$<br>$SD = 1.93$ | $M = 2.41$<br>$SD = 2.06$ | $M = 1.66$<br>$SD = 1.54$  |
| Negative Thoughts | $M = 2.13$<br>$SD = 2.29$  | $M = 1.17$<br>$SD = 1.07$ | $M = 1.42$<br>$SD = 1.63$ | $M = 2.00$<br>$SD = 2.21$  |
| Thought Index     | $M = -1.09$<br>$SD = 2.39$ | $M = 0.43$<br>$SD = 2.19$ | $M = 0.99$<br>$SD = 2.52$ | $M = -0.34$<br>$SD = 2.69$ |

*Note.* Higher numbers indicate greater levels of the variable. In the thought index, positive numbers indicated more positive thoughts than negative; negative numbers indicate more negative thoughts than positive.

**Table 7**

*Message Discounting, Source Derogation and Career Success Attitudes, by gender and study condition.*

|                          | Male: Threat              | Male: No-threat           | Female: Threat            | Female: No-threat         |
|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| Message Discounting      | $M = 2.97$<br>$SD = .96$  | $M = 3.35$<br>$SD = 1.15$ | $M = 4.06$<br>$SD = 1.29$ | $M = 2.75$<br>$SD = .90$  |
| Source Derogation        | $M = 2.77$<br>$SD = 1.03$ | $M = 3.13$<br>$SD = 3.13$ | $M = 3.94$<br>$SD = 1.42$ | $M = 2.50$<br>$SD = 1.03$ |
| Career Success Attitudes | $M = 6.00$<br>$SD = .76$  | $M = 6.10$<br>$SD = .71$  | $M = 6.13$<br>$SD = .88$  | $M = 6.13$<br>$SD = .72$  |

*Note.* Measured on a 7-point scale, where higher numbers indicate greater levels of the variable.

**Table 8***Differences in participant-reported emotions, by gender and message condition*

|           | Men:<br>Threat            | Men: No-<br>threat        | Mean<br>differences<br>(Men) | Women:<br>Threat          | Women:<br>No-threat       | Mean<br>differences<br>(Women) |
|-----------|---------------------------|---------------------------|------------------------------|---------------------------|---------------------------|--------------------------------|
| Ashamed   | $M = 2.47$<br>$SD = 1.46$ | $M = 2.97$<br>$SD = 1.56$ | $t(78) = -1.49$<br>$p = .14$ | $M = 3.44$<br>$SD = 1.71$ | $M = 2.25$<br>$SD = 1.36$ | $t(166) = -5.05$<br>$p < .001$ |
| Guilty    | $M = 2.44$<br>$SD = 1.46$ | $M = 3.03$<br>$SD = 1.58$ | $t(78) = -1.72$<br>$p = .09$ | $M = 3.01$<br>$SD = 1.63$ | $M = 2.20$<br>$SD = 1.41$ | $t(165) = -3.45$<br>$p < .001$ |
| Mad       | $M = 2.38$<br>$SD = 1.54$ | $M = 3.21$<br>$SD = 1.56$ | $t(76) = -2.35$<br>$p = .02$ | $M = 4.71$<br>$SD = 1.83$ | $M = 2.51$<br>$SD = 1.58$ | $t(166) = -8.38$<br>$p < .001$ |
| Angry     | $M = 2.36$<br>$SD = 1.38$ | $M = 3.23$<br>$SD = 1.57$ | $t(78) = -2.64$<br>$p = .01$ | $M = 4.80$<br>$SD = 1.74$ | $M = 2.46$<br>$SD = 1.60$ | $t(166) = -9.09$<br>$p < .001$ |
| Proud     | $M = 3.78$<br>$SD = 1.59$ | $M = 3.66$<br>$SD = 1.51$ | $t(78) = .34$<br>$p = .73$   | $M = 2.16$<br>$SD = 1.41$ | $M = 5.06$<br>$SD = 1.47$ | $t(166) = 12.97$<br>$p < .001$ |
| Satisfied | $M = 3.69$<br>$SD = 1.64$ | $M = 3.89$<br>$SD = 1.47$ | $t(78) = -.56$<br>$p = .58$  | $M = 2.13$<br>$SD = 1.30$ | $M = 4.71$<br>$SD = 1.43$ | $t(166) = 12.16$<br>$p < .001$ |

*Note.* Measured on a 7-point scale, where higher numbers indicate greater levels of the variable.

## APPENDIX B: QUESTIONNAIRE & STIMULI

### **Ego-Involvement (modified from Lapinski & Boster, 2001)**

*The following questions will ask you about the value you place on career success. Please answer as completely and honestly as possible.*

1. I place high value on having a successful career.
2. Having a successful career is very important to me.
3. I see myself as career-focused.
4. I value being a good employee.
5. Being career-focused is central to how I see myself.

### **Collective Self-esteem (Luhtanen & Crocker, 1992; modified)**

\* indicates reverse-coded item; highlighted items were cut from final analysis to improve scale reliability

*This study will ask you questions about attachment to your gender identity, as in the gender with which you identify, which can be separate from biological sex. Please select the answers that most accurately reflect your experience.*

### ***Membership***

1. I am a worthy member of this group I belong to
2. I feel I don't have much to offer this group I belong to\*
3. I am a cooperative participant of this group I belong to.
4. I often feel I am a useless member of this group\*

### ***Private***

5. I often regret that I belong to this group.\*
6. In general, I'm glad to be a member of this group

7. Overall, I feel that this group I belong to is not worthwhile\*
8. I feel good about this group I belong to.

### ***Public***

9. Overall, this group is considered good by others.
10. Most people consider this group, on average, to be more ineffective than other social groups\*
11. In general, other people respect this group that I am a member of
12. In general, other people think that this group I am a member of is unworthy\*

### ***Identity***

13. Overall, my membership to this group has little to do with how I feel about myself\*
14. This group I belong to is an important reflection of who I am
15. This group I belong to is unimportant to my sense of what kind of person I am\*
16. In general, belonging to this group is an important part of my self-image

### **Message Stimulus**

*On the following page, you will be shown an OpEd article written by a MSU masters student, who plans to submit their article to a local media outlet in East Lansing. The OpEd article states opinions on the workforce preparedness of local college graduates. Your role in this study is to read the message carefully and evaluate the article using the questions to follow.*

### **Group Threatening: Women; Non-Threatening: Men**

**OpEd – Men are better-prepared than women to have a successful career post college.**

March 5, 2024 - BY MAYA PETERS

The main function of college is to prepare students to pursue a successful career, both through classwork, and other career-readiness training programs. Colleges and universities offer numerous resources that students can take advantage of to help them excel in the workforce post graduation.

However, all students are not taking advantage of these options equally. Data shows that men are three times more likely to utilize campus resources for career success. This suggests that men are more prepared to enter the workforce than their female classmates.

About 6.3 million people are unemployed and there are more US Americans searching for work than there are jobs available. Out of all the college graduates that will be entering the workforce in the next couple of years, it is likely that male job candidates will be selected to fill more of these job openings, as research has found that men are better prepared to have a successful career after college, compared to women.

Recent data has found that men, while attending college for their bachelor's degree, are more likely to take advantage of career-preparation training, and are more likely to engage in desirable workplace behaviors.

Research has shown that men are more likely than women to take advantage of networking opportunities while attending college, including career fairs, professional social events, and meetings with professors. This has been found to lead to positive communication and leadership outcomes for men, including better group project management skills.

Men are also more likely to engage in practice job interviews and resume building workshops, allowing them to create a better first-impression when meeting with potential employers.

In addition, men are more likely to demonstrate behaviors in the classroom that reflect desirable workplace behaviors. This includes better attendance and punctuality compared to women. Data has found that men are less likely to cut class.

A recent study has also shown that men are less likely to turn in late work and more likely to engage in productive note-taking behaviors.

All together, this data shows that male job applicants are better prepared to join the workforce and begin a successful career post-graduation.

In conclusion, hiring is a complex process where the employer is required to assess applicant skills and fit within the workplace culture, in order to find the best candidate. If an employer wants to find the best candidate that will bring valuable skills and competencies to the work environment, data shows that the male job candidates entering the job market in the upcoming years will be better prepared to fill this position than their female counterparts.

## **Group Threatening: Men; Non-Threatening: Women**

### **OpEd – Women are better-prepared than men to have a successful career post college.**

March 5, 2024 - BY MAYA PETERS

The main function of college is to prepare students to pursue a successful career, both through classwork, and other career-readiness training programs. Colleges and universities offer numerous resources that students can take advantage of to help them excel in the workforce post-graduation.

However, all students are not taking advantage of these options equally. Data shows that women are three times more likely to utilize campus resources for career success. This suggests that women are more prepared to enter the workforce than their male classmates.

About 6.3 million people are unemployed and there are more US Americans searching for work than there are jobs available. Out of all the college graduates that will be entering the workforce in the next couple of years, it is likely that female job candidates will be selected to fill more of these job openings, as research has found that women are better prepared to have a successful career after college, compared to men.

Recent data has found that women, while attending college for their bachelor's degree, are more likely to take advantage of career-preparation training, and are more likely to engage in desirable workplace behaviors.

Research has shown that women are more likely than men to take advantage of networking opportunities while attending college, including career fairs, professional social events, and meetings with professors. This has been found to lead to positive communication and leadership outcomes for women, including better group project management skills.

Women are also more likely to engage in practice job interviews and resume building workshops, allowing them to create a better first-impression when meeting with potential employers.

In addition, women are more likely to demonstrate behaviors in the classroom that reflect desirable workplace behaviors. This includes better attendance and punctuality compared to men. Data has found that women are less likely to cut class.

A recent study has also shown that women are less likely to turn in late work and more likely to engage in productive note-taking behaviors.

All together, this data shows that female job applicants are better prepared to join the workforce and begin a successful career post-graduation.

In conclusion, hiring is a complex process where the employer is required to assess applicant skills and fit within the workplace culture, in order to find the best candidate. If an employer

wants to find the best candidate that will bring valuable skills and competencies to the work environment, data shows that the female job candidates entering the job market in the upcoming years will be better prepared to fill this position than their male counterparts.

### **Thought Listing**

*Below, list any thoughts that come to mind about the message you just read. Please provide one thought per box, starting with box 1.*

For each thought listed:

- Label the following thought as relevant, or irrelevant to the OpEd message you had previously read.
- Label the following thought as positive, negative or neutral:

### **Message Discounting (Lapinski & Boster, 2001)**

*Think about the OpEd message you just read and rate the message using the following adjectives below by indicating where you believe it falls between the two opposing terms on a scale.*

*(Example, if you think the message was equally rational and irrational, you would choose the circle in the center of the scale)*

\* indicates reverse-coded item

1. Not Important - Very Important
2. Relevant - Irrelevant\*
3. Insignificant - Significant
4. Intelligent - Stupid\*
5. Useless - Useful
6. Rational - Irrational\*
7. Illogical - Logical

8. Absurd - Reasonable
9. Critical - Trivial \*

**Source Derogation (Lapinski & Boster, 2001)**

*The author of the message you read was a MSU graduate student named Maya Peters. Think about the author of the OpEd message you just read. Rate the author of the message, using the adjectives below by indicating where you believe she falls between the two opposing terms on a scale. (Example, if you think the author was equally rational and irrational, you would choose the circle in the center of the scale)*

\* indicates reverse-coded item

1. Intelligent - Stupid \*
2. Intellectual - Ignorant \*
3. Absurd - Reasonable
4. Illogical - Logical
5. Rational - Irrational \*

**Attitudes towards Career Success (Lapinski & Boster, 2001; modified)**

*The following questions will ask you about your attitudes toward career success. Please answer as completely and honestly as possible.*

\* indicates reverse-coded item; highlighted items were cut from final analysis to improve scale reliability

1. It is important to have a successful career
2. It is essential to perform well in job interviews.

3. I respect those who dedicate themselves to their jobs.
4. I place a strong emphasis on excelling in my career.
5. It is stupid for people to spend a lot of time on their career.\*

### **Emotional Responses**

*How well do the following adjectives describe your feelings?*

1. Ashamed.
2. Guilty.
3. Angry.
4. Mad.
5. Satisfied.
6. Proud.