

Zooming Into Stereotype Threat: Does Self-Observation Shape Creativity and Gender
Dynamics?

by

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Abstract

Stereotype threat, the fear of confirming a negative stereotype about one's social group, can hinder performance in evaluative contexts. This study examined whether visual access to the self, as provided by the self-view feature on Zoom, increases women's sense of being viewed through the lens of their gender (i.e., metaperceived gender salience) and thus triggers stereotype threat in mixed-gender exchanges involving creative problem-solving. Mixed-gender dyads ($N = 186$) including one male and one female participant completed the Alternate Uses Task (Guilford, 1967) online over Zoom under one of two conditions: self-view on or self-view off. Contrary to predictions, self-view did not significantly influence female participants' creative performance, metaperceived gender salience, or perceptions of the importance or diagnosticity of the creativity task. Given limited statistical power for detecting attenuated interactions (Sommet et al., 2023), exploratory simple effects analyses were conducted probing effects of self-view condition on female versus male participants irrespective of whether the gender $\times$ condition interaction was significant. These analyses revealed that women in the self-view condition exhibited significantly greater risk aversion than those in the no self-view condition ($\eta p^2 = .02$), whereas this was not the case for men ($\eta p^2 = .00$). Further, men ($\eta p^2 = .02$) but not women ($\eta p^2 = .00$) perceived their partner as significantly less innovative in the self-view as compared to no self-view condition. These findings suggest that self-observation alone may not be sufficient to affect creative performance in online interactions, but it may nonetheless affect other judgments and decision-making in a manner disadvantageous to women. The present study contributes to understanding the conditions under which self-observation in online environments may impact social identity processes, and highlights the need for further research examining when online interactions may create disadvantages for women.

Keywords: stereotype threat, group membership salience, gender, creativity, self-observation

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Introduction

In social settings, individuals frequently represent both their personal identities and the broader identities of the groups to which they belong. This dual representation becomes particularly salient in performance contexts where individuals fear being judged not only as themselves, but as members of their social group. They may in particular fear confirming negative stereotypes of their group, a phenomenon known as stereotype threat (Steele, 1997). This threat has been shown to undermine performance across a range of domains (Steele & Aronson, 1995) and can be associated with any variety of group memberships. This experience is not merely cognitive but deeply emotional, as it elicits stress, anxiety, and self-regulatory depletion that interfere with executive functioning, attentional control, and task engagement of the disadvantaged group (Casad & Bryant, 2016; Schmader et al., 2008). Conversely, the counterpart of a disadvantaged group can also be affected through a phenomenon known as stereotype lift, in which the mere awareness (explicit or implicit) of a negative stereotype about an outgroup can enhance or boost performance (Walton & Cohen, 2003). Additionally, self-evaluations can be threatened when comparisons are made with individuals who perform well (von Hippel et al., 2011). Thus, making comparisons with those affected by stereotype lift can result in more negative self-evaluations. Furthermore, a study conducted by Flanagan (2017) examining female business students revealed that stereotype threat affected their self-rankings of management skills as well as their perceptions of how others would evaluate them. This suggests that the fear of being negatively stereotyped can distort self-evaluations.

Historically, stereotype threat research has concentrated on domains such as mathematics, science, general academic testing (e.g., SAT, GRE), and working memory assessments (Davies, et al., 2005; Murphy et al., 2007; Nguyen & Ryan, 2008; Schmader & Johns, 2003; Steele &

Aronson, 1995). These studies often examined performance in relatively decontextualized or impersonal settings where participants worked alone or in the absence of the target outgroup. For example, Schmader and Johns (2003) placed participants in same-gender groups to investigate whether stereotype threat affects women's working memory capacity when the task was framed as a measure of mathematical ability. Additionally, Murphy et al. (2007) ran participants individually to explore the cognitive and physiological effects of social identity threat on women. These controlled settings help to clarify internal mechanisms of stereotype threat, but may underrepresent the social and interpersonal dimensions of the experience. Steele et al. (2002) emphasized the "concrete, real-time threat of being judged and treated poorly in settings where a negative stereotype about one's group applies," suggesting that stereotype threat is not solely about internal performance pressures, and that metaperception, the belief about how one is perceived by others, is embedded in the core definition. The Multi-Threat Framework (Shapiro & Neuberg, 2007) further advances this view, identifying distinct stereotype threats that vary by the source (self, ingroup, outgroup) and target (self or group) of evaluation. These include concerns about being personally judged (own reputation threat), harming one's group's image (group reputation threat), and internalizing stereotypes (self-concept threat). Therefore, while empirical work has often emphasized individual performance outcomes, the theoretical landscape has always incorporated metaperceptual elements.

Triggers of Stereotype Threat

Alongside conditions that bring stereotypes to mind and high-stakes performance circumstances, situations that heighten awareness of one's social identity in a given context can also trigger stereotype threat (Schmader & Hall, 2014). This heightened group member salience is more likely when an individual is outnumbered or is the sole representative of a group, a

condition is known as solo status. Solo status has been shown to heighten social identity salience and performance pressure (Sekaquaptewa & Thompson, 2003). For example, Logel et al. (2009) found that women in engineering performed worse on problem-solving tasks when working in male-majority groups compared to female majority groups. These findings emphasize the importance of social composition in group settings and highlight how subtle contextual cues can shape performance outcomes. Enhanced group membership salience can also be triggered by the presence of outgroup members, especially if they are in the majority and exhibit behaviours that are distinct from the ingroup. Certain contexts or tasks closely associated with a particular group identity can also accentuate this sense of group membership, as can others who explicitly reference one's group identity (e.g., by commenting on age or gender in a professional setting or asking about ethnic background before an interview). Social identity theory (Tajfel & Turner, 1979) is well-established framework that identifies such triggers.

Visual Access to the Self and Group Membership Salience

In contemporary digital environments, the experience of group membership salience may be exacerbated by near-constant visual access to the self. Specifically, the self-view feature in video conferencing platforms may lead individuals to focus on how they appear to others and, potentially, how others are reacting to their visible distinctive group memberships. That is, because of people's enduring investment in knowing and managing how they are viewed by others and avoiding rejection (e.g., Leary et al., 1995), their thoughts might quickly turn to how others are reacting to visible distinctive group memberships when they see themselves in the midst of social interaction. In particular, they might imagine that these group memberships stand out and are particularly prominent to others (metaperceived group membership salience). For individuals who belong to negatively stereotyped groups, this might have compounding effects.

The visual feedback loop of being seen while seeing oneself might intensify concerns about how one is being evaluated by others, especially in mixed-group settings. Preliminary research has suggested that such visual cues can exacerbate social anxiety by heightening focus on physical appearance (Russell et al., 2024). Thus, self-observation may induce group membership salience to trigger stereotype threat in relevant contexts.

Creativity

Creativity is the ability to generate novel and useful ideas and a measure of divergent thinking, and is recognized as a cornerstone of innovation, leadership, and complex problem solving (Guiford, 1967; Huang et al., 2022). Additionally, creative idea generation has been linked to inhibitory control, which is an executive function (Benedek et al., 2014; Camarda et al., 2018). Inhibitory control allows individuals to suppress dominant but unoriginal ideas that come to mind automatically, so that more deliberate and creative reasoning can be engaged (Cassotti et al., 2016). Research has shown that mental fixation on conventional solutions often limits creative problem solving, and that the ability to inhibit these intuitive yet unhelpful associations is essential for generating more original responses (Adamson, 1952; Duncker, 1945; German & Barrett, 2005). For example, in tasks such as the Alternate Uses Task (Guilford, 1967), individuals must inhibit common or learned associations in order to explore less typical, more innovative solutions. Further, it has been found that brain regions associated with inhibitory control show increased activation during creative problem-solving (Kleibeuker et al., 2013). While there has been substantial research done on the effects of stereotype threat on executive functions, the majority of executive functioning tasks used are working memory tasks (Dong et al., 2022; Johns et al., 2008; Schmader & Johns, 2003).

Gender Stereotypes of Creativity

Creativity is also a domain in which gender stereotypes persist, as some research suggests that masculine traits are more strongly associated with creativity compared to feminine traits (Luo et al., 2023), and men are typically perceived to be more creative, ingenious, innovative, and brilliant than women (Bian et al., 2017; Furnham et al., 2002; Proudfoot et al., 2015). For example, Proudfoot et al. (2015) found that when men and women produced identical creative work, men were nonetheless judged as more creative. Male executives were also rated by supervisors as more innovative than corresponding female executives. Moreover, men's behaviour was seen as more creative when it conformed to masculine traits such as risk-taking, but the same behaviour did not enhance women's perceived creativity. Thus, for women, participating in a creativity task, especially in the presence of a male peer, may trigger stereotype threat as they face the burden of stereotypes suggesting that men are inherently more innovative, risk-taking, and brilliant. Importantly, creativity tasks in the workplace often involve more than just generating ideas in isolation. They frequently require collaborative discussion and social and evaluative feedback, all of which may intensify concerns about being judged through the lens of negative stereotypes, thereby amplifying performance pressure. The resulting performance pressure may hinder creative fluency, flexibility, elaboration, and originality, all of which are components of divergent thinking (Guilford, 1967).

Current Study

The current study sought to extend stereotype threat research into a creativity and digital context by examining how visual access to the self on online platforms affects metaperceived group membership salience and creative performance. In a dyadic creativity task conducted over Zoom, participants (one male and one female per dyad) were randomly assigned to either a self-

view enabled or self-view disabled condition. This manipulation allowed for a direct test of whether visual access to the self amplifies the experience of stereotype threat among women in mixed-gender creative settings. Before starting the task, all participants read a short passage about the importance of creativity, innovation, and problem-solving in the workplace. After the task, participants answered a series of questions on Qualtrics assessing gender salience, perceived task importance and diagnosticity, and risk aversion.

I predicted that female participants in the self-view condition would show decrements in creative performance relative to those in the no self-view condition. In contrast, male participants were predicted to show no differences or perhaps improvement in performance across conditions (H1). Furthermore, I hypothesized that self-view would increase metaperceived gender salience for female more so than male participants, as being in a stigmatized group can amplify group membership salience (Frey & Tropp, 2006) and may also increase sensitivity to identity salience triggers such as self-observation (H2). Additionally, I predicted that self-view would decrease perceived importance in performing well on the task and having creative ability for female but not male participants, as a form of disidentification with the creativity domain when under stereotype threat (H3). I also predicted that self-view would decrease perceived task diagnosticity of creative ability for female but not male participants (H4). Drawing on findings by Carr and Steele (2010), I further hypothesized that female participants would exhibit greater risk aversion by favouring low-risk and low-reward options, especially when self-view is enabled, as a downstream consequence of increased metaperceived gender salience. No such effects were expected for male participants (H5). Additional outcomes such as impressions and metaperceptions of creativity and gender pressure (i.e., participants feeling pressured to perform

well due to their gender) were examined on an exploratory basis to assess whether social perceptions might be affected by self-observation, even if creative performance was not.

Method

Participants

The target sample size was 200 useable dyads, guided by Brysbaert's (2019) recommendation for a minimum detectable effect size of $d = .4$ in psychological research. Notably, an effect size of $d = .4$ is comparable to the average effect size observed in social psychology ($d = .43$). A total of 208 dyads (104 dyads per condition) including one male and one female introductory psychology student participated. Of these participants, the average age was 19.54 years old ($SD = 4.26$), ranging from 15-54. The majority of participants identified as White (34.54%), followed by Black (23.19%), Southeast Asian (17.39%), South Asian (14.01%), East Asian (8.25%), Middle Eastern (6.28%), Indigenous (6.04%), Hispanic (1.93%), and Other (0.24%). Participants were recruited from introduction to psychology courses via Sona, received partial course credit for completing the study, and one dyad received a \$100 cash prize for having the highest total creativity. Due to incomplete sessions, dyad members being previously acquainted, recruitment error, failure to understand task instructions, and cheating, 22 dyads were excluded from final analyses, thus lowering the total dyad number to 186.

Procedure

This study involved a between-pairs self-observation manipulation, with participants' gender as a within-pairs factor. Participants were paired in dyads consisting of one male and one female participant. All sessions took place over Zoom, with each dyad randomly assigned to either the self-view or no self-view condition. Within each dyad, the participants were assigned to different waiting rooms and lab rooms to ensure that they do not meet before the exchange

over Zoom. In the self-view condition, webcams were turned on and the self-view feature was activated, replicating standard video conferencing conditions. In the no self-view condition, the researcher turned off the self-view feature prior to beginning the call. Webcams were still on and the participants still saw each other but not themselves. This manipulation was configured prior to the participants' arrival, and was intended to test whether visual access to one's own image increases metaperceived gender salience and triggers stereotype threat-related performance outcomes.

To begin the session, each participant was informed that they were participating in a study examining "problem solving with others". After providing informed consent they, in their separate rooms, were directed to read a brief printout of a passage emphasizing the importance of creativity in modern professional and academic environments. This passage was intended to set the stage for stereotype threat in female participants, and possibly stereotype lift for male participants:

"Creativity and innovation are increasingly recognized as essential skills in today's extremely competitive world. Employers across industries rank creative thinking as one of the most sought-after abilities, often placing it above formal qualifications: The ability to come up with an ingenious idea and dare to take risks can be more valuable than specific training or knowledge. Further, from problem-solving in the workplace to driving innovation in science and technology, the capacity to think creatively and generate novel ideas is a key predictor of good leadership and long-term career success."

Proudfoot et al. (2015) emphasized the rising importance of creativity as a key attribute in the workforce, and the associations between masculinity and creativity/ingenuity. Thus, this passage

aimed to heighten the salience of creativity as a valued trait, thereby creating an evaluative context in which stereotype threat may be activated among women, particularly in mixed-gender pairs.

Following the passage, the researcher helped each participant join the Zoom call, and they were instructed to greet each other and introduce themselves. Participants then engaged in the Alternate Uses Task (AUT; Guilford, 1967). The AUT is a task measuring creativity, in which participants are asked to generate alternative uses for common, simple items. For this study, four common items were used (e.g., a brick, a paperclip, a shoe, and a butter knife), presented as a printed photo held up by the researcher, one at a time in a randomized order. The items are based on the study by Silvia et al. (2008), as well as example items drawn from online resources (Bonk, n.d; Creative Huddle, n.d.). Each participant viewed the items simultaneously with their partner. Participants were prompted to generate as many alternative uses as possible for each item, and had 3 minutes (12 minutes total) to do so, as that is a standard amount of time in AUT studies for participants to generate between 4 to 8 ideas for each item (Hass, 2018). During this phase, they worked independently and remained muted on Zoom. All responses were entered directly into the Zoom private chat, where only the participant sending the message and the researcher could see the contents. Participants were asked to send a practice message in the private chat before submitting responses to ensure that their partners did not see their message. The experimenter mostly used the Zoom chat to communicate with participants.

Once the initial idea generation stage was complete, participants were then asked to choose their best idea for each item, and to rate the creativity of the four chosen ideas from 1-100. This was still all done independently via the private chat function while muted, so as to

preserve the visual display over Zoom that contained the experimental manipulation. Participants had 5 minutes to complete this second stage.

Next, participants unmuted their microphones and took turns sharing their ideas for each item with their partner. They were then prompted to collaborate and select what they believed was the best idea from their combined responses for each item, and were asked to indicate the chosen ideas and the creator for each one in the regular Zoom chat. They had up to 15 minutes to come to a mutual decision on all four items. Participants were informed that the dyad obtaining the highest creativity score across all four items, determined by independent raters using the creativity rubric, would win a cash prize. This was intended to add an incentive for optimal performance and collaboration. An analysis of persuasion-relevant outcomes was conducted from this aspect of the data for a separate project (i.e., not part of this thesis).

After the collaboration stage, the researcher ended the Zoom call, and participants completed an open-ended measure on Qualtrics by briefly describing their thoughts and feelings during the task. This was to potentially capture subtle cognitive processes linked to gender salience. The participants then completed a measure assessing group membership salience with items adapted from Yip (2005). They were asked to indicate how salient they thought a series of identities and characteristics (with gender as the target identity) were to their partner (metaperceived salience) and to themselves (personal salience). All responses were recorded on a 7-point Likert scale, with 1 indicating *Not at All Salient* and 7 indicating *Extremely Salient*. The other identities and characteristics (e.g., age, ethnic background) were included to obscure my focus on gender and to index specificity of any enhanced salience to the visible and distinctive group membership of gender.

Perceived task importance and diagnosticity were assessed with questions about whether participants saw the creativity task as important and as a good measure of their creativity. For importance, participants rated how important it was to them to perform well in the creativity task and how important creative ability was to them in general. The two-item scale demonstrated acceptable internal consistency for female participants ($\alpha = .67$) and lower internal consistency for male participants ($\alpha = .52$). For perceived diagnosticity, they rated whether the task accurately assessed their creativity, and whether they believed they were more creative outside of the task. The two-item scale demonstrated acceptable internal consistency for both female ($\alpha = .72$) and male participants ($\alpha = .67$).

Perceptions of creativity were measured with three questions about whether participants saw their partner as creative, innovative, and brilliant (perceptions of others), and whether they thought their partner saw them as creative, innovative, and brilliant (metaperceptions). For the perceptions of others, the three-item scale had good internal consistency for female participants ($\alpha = .84$) and male participants ($\alpha = .85$). For metaperceptions, the three-item scale also had good internal consistency for female ($\alpha = .88$) and male participants ($\alpha = .80$).

Gender pressure was assessed with questions about whether participants felt pressure to perform well because of their gender, whether they were worried that their performance might reflect poorly on their gender, and whether they were worried their gender would influence how others viewed their performance. The three-item scale demonstrated excellent internal consistency for female ($\alpha = .92$) and male participants ($\alpha = .84$).

Risk aversion was measured with six hypothetical financial decision-making scenarios adapted from Porcelli and Delgado (2009). For each scenario participants chose between a low-risk, low-reward option (e.g., 80% chance to win \$20) and a high-risk, high-reward option (e.g.,

20% chance to win \$80). Responses were coded such that the low-risk option received a score of 0, and the high-risk option received a score of 1. Scores were then averaged across the six scenarios to create a mean risk aversion score, with higher scores indicating a greater proportion of risky choices and therefore lower risk aversion.

Finally, creative performance was assessed across four dimensions: fluency, elaboration, flexibility, and originality. Fluency was defined as the number of alternative uses generated, elaboration as the amount of meaningful detail provided, flexibility as the range of distinct categories represented in participants' ideas, and originality as the rarity of the categories. Higher scores on each dimension indicated better performance. At the participant level, fluency was calculated by summing the total number of ideas generated across the four AUT items. Elaboration was calculated by summing the total number of meaningful words used to describe each participant's ideas. A word was considered meaningful if it described a specific action, location, purpose, goal, or otherwise contributed to the overall context of the idea. Flexibility was assessed by first assigning each idea to a category based on its intended use. For example, using a shoe as a soup bowl and using a shoe as a jewellery box would both be classified within the CONTAINER category, despite being two unique ideas. Each coder independently developed their own category list and assigned each idea to a category. Flexibility was then calculated by summing the number of unique categories represented among each participant's ideas. Originality was calculated at the item level (i.e., brick, paperclip, butter knife, and shoe) based on the frequency that each category appeared across participants' responses. Categories that appeared $\leq 1\%$ of the time received 2 points, categories that appeared $> 1\%$ but $\leq 5\%$ of the time received 1 point, and categories that appeared $> 5\%$ of the time received 0 points. The originality score for each participant was then calculated by summing the points assigned to the

categories represented in their ideas. This coding scheme was informed by the procedure used by Alhashim et al. (2020). Fluency, elaboration, flexibility, and originality are dimensions commonly used to capture creativity (Silvia et al., 2008; Park et al., 2016).

Results

Creativity

Coder Reliability

Two independent coders evaluated each alternative use idea generated by the participants during the AUT. Responses were coded for fluency, elaboration, flexibility, and originality. Interrater reliability was assessed using Cronbach's alpha for each creativity dimension separately for each AUT object (brick, paperclip, butter knife, and shoe) for male and female participants. Overall, inter-rater reliability was moderate to excellent across creativity dimensions and objects (see Table 1). Reliability was lower for originality ratings, but improved with standardization of each coder's ratings. Accordingly, results for standardized ratings are reported. The coders' ratings for each dimension were averaged.

Table 1

Cronbach's Alpha Values for Each Creativity Dimension

Creativity Dimension	Male Brick	Male Paperclip	Male Butter knife	Male Shoe	Female Brick	Female Paperclip	Female Butter knife	Female Shoe
Fluency	.95	.96	.96	.98	.98	.98	.96	.99
Elaboration	.91	.88	.84	.91	.91	.90	.92	.89
Flexibility	.94	.87	.86	.92	.91	.90	.87	.92

Originality	.74	.67	.72	.66	.85	.69	.77	.69
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The assumptions of normality and homogeneity of variance were assessed for all dependent variables. Normality was assessed using Shapiro-Wilk tests, and homogeneity of variance was assessed using Levene's test. The assumptions were met for all analyses.

Fluency

An Analysis of Variance (ANOVA) with dyads as the unit of analysis, gender (female vs. male) as a within-dyads factor, and condition (self-view vs. no self-view) as a between-dyads factor revealed no significant main effects or interaction between gender and condition on fluency scores. The overall mean for fluency was $M = 18.58$ ($SE = 0.48$).

Elaboration

No significant main effects or interaction were apparent on the elaboration dimension. The overall mean for elaboration was $M = 49.28$ ($SE = 1.40$).

Flexibility

Akin to the previous dimensions, no significant effects were observed. The overall mean for flexibility was $M = 14.60$ ($SE = 0.31$).

Originality

Finally, ANOVA revealed no significant effects on the originality dimension. The overall mean for originality was $M = 0.12$ ($SE = 0.14$). Therefore, the prediction that female participants in the self-view condition would exhibit lower creative performance than those in the no self-view condition, whereas male participants would show little or no effect of self-view (H1), was not supported.

Metaperceived Gender Salience

As no significant effects were observed on metaperceived gender salience, the prediction that self-view would increase metaperceived gender salience for female participants more than for male participants (H2) was not supported. The overall mean for metaperceived gender salience was $M = 3.81$ ($SE = 0.10$).

Perceived Importance of Task

An ANOVA revealed no significant main effects or interaction on participants' perceived importance in performing well on the AUT. The overall mean for task importance was $M = 5.60$ ($SE = 0.06$). Thus, the prediction that self-view would reduce the perceived task importance for female but not male participants (H3) was not supported.

Perceived Task Diagnosticity

An ANOVA revealed no significant effects on participants' perceptions of the diagnosticity of the creativity task. The overall mean for task diagnosticity was $M = 4.17$ ($SE = 0.07$). As a consequence, the hypothesis that self-view would reduce perceived task diagnosticity for female but not male participants (H4) was not supported.

Perceptions of Creativity

An ANOVA detected a significant main effect of gender on metaperceptions of creativity $F(1, 184) = 4.71, p = .03, \eta^2 = .03$. Across conditions, male participants believed that their partner viewed them as more creative ($M = 4.11, SD = 1.08$) than female participants believed their partner viewed them ($M = 3.85, SD = 1.21$). The analysis did not reveal a significant gender x condition interaction $F(1, 184) = 0.02, p = .89, \eta^2 = .00$. For perceptions of the other, no significant main effects or interactions were observed. The overall mean was $M = 4.82$ ($SE = 0.06$).

Because gender x condition interactions were generally weak and nonsignificant across outcome measures, simple effects analyses were conducted for all outcome variables, and those exhibiting significant simple effects of condition for male or female participants are reported. Such simple effects analyses indicated a significant effect of condition on impressions of innovation among male participants.¹ Specifically, male participants rated their female partner as less innovative in the self-view condition ($M = 4.53$, $SE = 0.13$) than in the no self-view condition ($M = 4.90$, $SE = 0.13$), $F(1, 184) = 4.22$, $p = .04$, $\eta^2 = .02$. No significant difference between conditions was observed for female participants, $F(1, 184) = 0.00$, $p = .95$, $\eta^2 = .00$, $M_s = 4.96$ ($SE = 0.13$) and 4.97 ($SE = 0.13$) for the self-view and no self-view conditions respectively; for the interaction, $F(1, 184) = 2.04$, $p = .16$, $\eta^2 = .01$. Although male and female participants did not differ in their ratings of their partner's innovativeness in the no-self view condition, $F(1, 184) = 0.13$, $p = .72$, $\eta^2 = .00$, male participants rated their female partner as less innovative than female participants rated their male partner in the self-view condition, $F(1, 184) = 5.65$, $p = .02$, $\eta^2 = .03$.

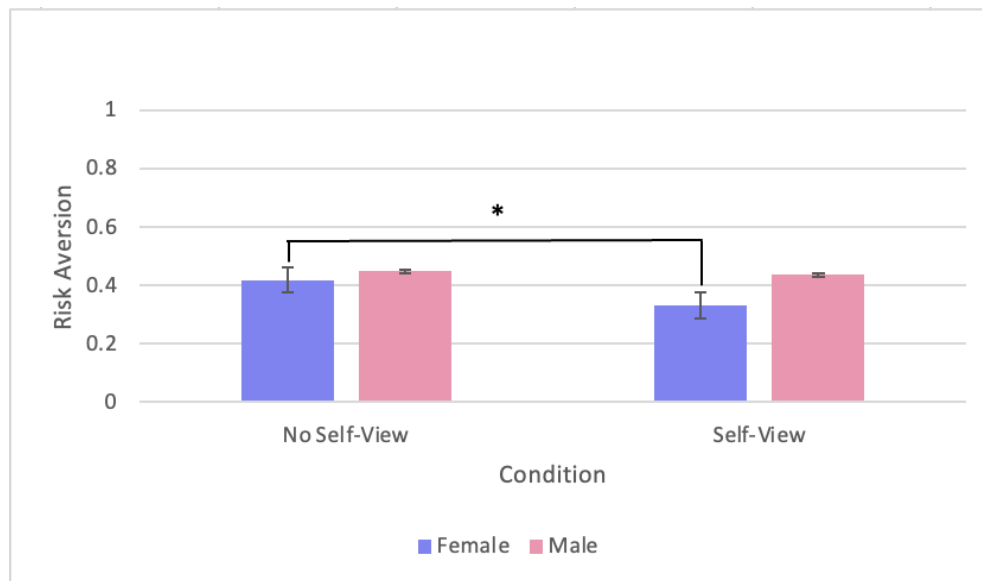
Gender Pressure

An ANOVA revealed a significant main effect of gender on gender pressure $F(1, 184) = 17.80$, $p < .001$, $\eta^2 = .09$. Across conditions, female participants felt more pressure to perform well on the task due to their gender ($M = 2.57$, $SD = 1.73$) compared to male participants ($M = 1.91$, $SD = 1.27$). The analysis did not reveal a significant gender x condition interaction, $F(1, 184) = 0.35$, $p = .55$, $\eta^2 = .00$.

¹ In these exploratory analyses, I examined innovation, brilliance, and creativity judgments separately given that they might be differentially related to gender stereotypes.

Risk Aversion

An ANOVA detected a significant main effect of gender on risk aversion $F(1, 184) = 5.54, p = .02, \eta^2 = .03$. Across conditions, male participants took bigger risks ($M = 0.44, SD = 0.29$) than female participants ($M = 0.37, SD = 0.28$), indicating that female participants were more risk-averse. The analysis did not reveal a significant gender x condition interaction, $F(1, 184) = 1.69, p = .20, \eta^2 = .01$. Nevertheless, because this interaction was central to a primary hypothesis, simple effects analyses were examined. Female participants were significantly more risk-averse in the self-view condition ($M = 0.33, SE = 0.03$) than in the no self-view condition ($M = 0.42, SE = 0.03$), $F(1, 184) = 4.36, p = .04, \eta^2 = .02$, whereas no significant difference between conditions was observed for male participants, $M_s = 0.44 (SE = 0.03)$ and $0.45 (SE = 0.03)$ for the self-view and no self-view conditions respectively, $F(1, 184) = 0.06, p = .80, \eta^2 = .00$. Male and female participants did not differ significantly in the no self-view condition, $F(1, 184) = 0.55, p = .46, \eta^2 = .00$. In contrast, in the self-view condition, female participants were significantly more risk-averse than male participants, $F(1, 184) = 6.68, p = .01, \eta^2 = .04$. Thus, the hypothesis that self-view would increase risk aversion for female but not male participants (H5) is only partially supported.

Figure 1*Effect of Gender on Risk Aversion*

Note. Standard error bars indicated.

* $p < .05$.

Discussion

The present study examined whether visual access to one's own image during an online interaction increases metaperceived gender salience and, in turn, triggers stereotype threat for women in a creativity domain. It was predicted that women in the self-view condition would exhibit lower creativity, greater metaperceived gender salience, reduced perceptions of task importance and task diagnosticity of creative ability, and greater risk aversion than women in the no self-view condition. Contrary to these predictions, self-view did not significantly produce the predicted downstream effects. The only finding consistent with the main hypotheses was that simple effects testing indicated that female participants were more risk-averse in the self-view condition than in the no self-view condition, whereas no such condition difference emerged for male participants. However, the interaction here did not reach statistical significance. Additional

analyses of more exploratory dependent measures revealed that male participants evaluated their female partner as less innovative in the self-view as compared to no self-view condition, even though there were in fact no effects on creativity; women showed no such effect. There were no effects on metaperceptions of innovation for women or men. Possibly, the effects on innovation impressions reflect some form of stereotype boost for men that manifest in their looking down on their female partner, though this is highly speculative given that parallel results were not evident on judgments of creativity or brilliance.

Creativity and Stereotype Threat

The primary hypothesis that self-view would impair women's creativity was not supported. Across all four creativity dimensions (fluency, elaboration, flexibility, originality), women performed similarly regardless of whether they could see themselves during the Zoom interaction. Likewise, men showed little difference across conditions. These findings suggest that merely viewing one's own image may not be sufficient to impact creative performance in mixed-gender interactions. Furthermore, stereotype threat effects tend to emerge when evaluative pressure and stereotype relevance are particularly salient (Steele & Aronson, 1995; Schmader et al., 2008). Although participants were read a passage emphasizing the importance of creativity before completing the task, this passage may not have been powerful enough to activate stereotypes regarding gender and creativity. Alternatively, the stereotype that women are less creative may not have been broadly held by our participants.

Gender Salience

Self-view also did not increase metaperceived gender salience. Participants who could see themselves did not believe that their gender was more salient to their partner than participants who could not see themselves. This finding is noteworthy because it challenges the

proposed mechanism underlying the study. The theoretical rationale suggested that self-view would increase attention to visible social identities, thereby increasing concern about how one is perceived by others. However, one possible explanation for the null finding is that participants may have devoted little attention to their own video feed once the task began. Because participants were actively generating ideas throughout the AUT, which was potentially quite engaging and cognitively demanding and also involved focusing on pictures of objects, attentional resources may have been directed toward the task rather than toward monitoring their appearance or imagining how they were viewed by their partner.

Task Importance and Diagnosticity

Self-view similarly failed to influence participants' perceptions of the importance of the task or its diagnosticity of creative ability. This suggests that participants generally interpreted the AUT similarly across conditions and did not disengage from the creativity domain as predicted. Previous research has demonstrated that stereotype threat can lead individuals to disidentify from domains in which they feel negatively stereotyped (Steele, 1997). The absence of this effect may indicate that female participants did not perceive creativity as a domain in which they were personally vulnerable to negative evaluation. Although it is suggested that creativity is stereotypically associated with masculinity (Proudfoot et al., 2015), this may not be widely internalized among undergraduate students in our sample or may not have been sufficiently activated in the present context.

Risk Aversion

Although the experimental manipulation produced few effects, a gender difference emerged for risk aversion. On the Risk Aversion Scale (Adapted; Porcelli & Delgado, 2009), women selected significantly fewer high-risk options than men across both conditions. Since the

overall gender x condition interaction was not significant, these findings do not provide strong support for the prediction that self-view would increase female participants' risk-taking behaviour. However, simple effects showed that female participants in the self-view condition selected fewer high-risk options than women in the no self-view condition. This pattern is consistent with the hypothesized effect of self-view on women's risk aversion, although it should be interpreted cautiously given the absence of a significant interaction. One possibility is that the study was underpowered to detect an interaction of this form (see Sommet et al., 2023): Because the predicted effect involved a condition difference among female participants but little or no condition difference among male participants, detecting the interaction would require greater statistical power than was available in the present sample.

Limitations

Several limitations should be considered when interpreting these findings. First, the AUT may not represent a sufficiently evaluative context to elicit stereotype threat. During the idea generation stage, ideas were generated privately and submitted directly to the female experimenter rather than being discussed publicly. Consequently, opportunities for social evaluation during this stage were relatively limited. Additionally, the sample consisted entirely of undergraduate students completing a brief laboratory task. Stereotype threat may be more pronounced in professional or educational contexts in which creativity has more immediate consequences for achievement or career outcomes. Lastly, although the study initially recruited 208 dyads, our exclusion criteria reduced the final sample to 186 dyads, which falls below the intended recruitment target of 200 dyads. Therefore, the study had less statistical power than originally planned, which increases the possibility of type II error. It is therefore possible that

small effects of self-view on creativity or stereotype threat-related outcomes were present but went undetected.

Future Directions

Future research should continue to examine the conditions under which self-view influences performance in online interactions. One potential direction would be to investigate performance on tasks that are more explicitly associated with innovation and brilliance. It is possible that creativity, as operationalized in this study, is not especially vulnerable to gender-based stereotype threat, whereas tasks that are more readily perceived as assessing innovation or brilliance may elicit stronger effects. Additionally, future research should consider the extent to which creativity is central to individuals' self-concepts, as stereotype threat may be more likely to emerge when performance is tied to an identity that participants view as personally important. Likewise, examining the centrality of gender identity may help to explain variability in responses to self-observation. Although outside the scope of the present study, exploratory findings suggested that the effects of self-observation were moderated by the strength of participants' gender identification, indicating that self-view may have a greater impact on individuals when gender is a more central aspect of their identity. Exploratory analyses of corollary outcomes not part of this thesis also suggested that self-observation may influence interpersonal processes that vary by gender such as assertiveness and persuasion. Researchers could explore whether self-view exerts a stronger influence on these behaviours than on creative performance itself.

Conclusion

The present study represents an attempt to examine whether self-view during an online interaction contributes to stereotype threat by increasing metaperceived group membership salience in a mixed-gender creativity context. Given that the hypotheses were largely

unsupported, the findings suggest that visual access to one's own image alone may be insufficient to impact women's creative performance. However, the observed effects on risk aversion suggest that self-view may still influence aspects of women's behaviour in ways that could be disadvantageous in evaluative or collaborative contexts. Tentative results for men's impressions of their female partner's innovation also suggest a disadvantage to women associated with self-observation. Although these effects should be interpreted with caution given the absence of significant interactions and the need for greater statistical power, they highlight the importance of further examining how online self-observation may affect women's versus men's judgments and decision-making. This study helps to clarify the conditions under which online self-observation may or may not influence creative performance and social identity processes, while identifying important directions for future researcher examining broader consequences of self-observation in online interactions.

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Appendix A

Consent Form

**Informed Consent**

Study Title:	Problem Solving With Others
Principal Investigator:	Dr. Jacquie Vorauer, Professor, Department of Psychology 1 (204) 474-8250; email: Jacquie.Vorauer@umanitoba.ca
Co-Investigator:	Jasmine Chen, Master's Student, Department of Psychology 1 (204) 474-6936; email: chenj25@myumanitoba.ca
Research Assistant:	Carly Klassen, Master's Student, Department of Psychology
Contact Information:	1 (204) 474-6936; email: socrelns2@umanitoba.ca
Conflicts of Interest and Undue Influence:	The investigators do not have any conflicts of interest in this research.

You are being invited to participate in a research study. This consent form, of which you can have a copy to keep, is only part of the process of informed consent. If you would like more details about anything mentioned here, or information not included here, feel free to ask any of the people named above. Please take the time to read this document and any accompanying information carefully. It is very important that you understand:

- what is being asked of you
- what the risks and benefits of participation are
- how the information you provide will be used and stored

Purpose of the Study

This research examines how people work together to solve problems with others.

Study Procedures

In this study, you will be paired with another participant, and the two of you will be asked to complete a series of individual and collaborative problem solving activities. These activities will be done online over Zoom on computers in our lab. You will then be asked to answer some questions about your current thoughts, feelings, and reactions in a Qualtrics survey. The study should take about 50 minutes.

Study Risks

This study is minimal risk, meaning that the risks are no greater than what you might encounter in your daily life. It is possible that you might find collaborating with someone new a bit uncomfortable, but we don't expect this discomfort to be greater than what you sometimes experience in your everyday life.

Study Benefits

There are no direct benefits to you by participating in this study, but you will be contributing to psychological knowledge and have the chance to learn firsthand about psychology research at the University of Manitoba.

Compensation

You will receive two experimental credits for your participation.

Use and Storage of Information

All the information you provide as a participant in this study is confidential which means we as researchers must keep it safe. We will do our best, however, it is not possible to guarantee absolute confidentiality. Your answers to questions in this study are collected by ZoomTM and QualtricsTM. Risks to confidentiality of your survey responses are minimal and are similar to those associated with many e-mail and social media websites such as Outlook and Facebook. We will only share your personal information if required through court order or law. Further, we ask that you do not disclose any information about what happens during your exchange with the other participant to any outside parties. The other participant will be asked to do the same. However, this is not something that we can guarantee.

The SONA system automatically gives us access to your name and contact information, but we will delete this information as soon as data collection is complete (not later than August 31, 2026) and all experimental credits have been granted. The survey and collaborative task data will then be anonymized and recorded by your arbitrary participant number only. All data will be stored on OneDrive and downloaded for statistical analysis on password-protected computers in a locked laboratory room in the Duff Roblin building and the Principal Investigator's password-protected computers.

The portion of the study conducted over Zoom will be video recorded. Recordings will be kept completely confidential and will only be accessible to those directly involved in this research project (i.e., the Principal Investigator, Co-Investigator, the experimenter, and research assistants in the lab). Anyone who accesses the recordings, which will be stored with your arbitrary participant number only, will be required to sign a confidentiality agreement. The recordings will be stored on OneDrive and may also be downloaded onto the Principal Investigator's password-protected computers and password-protected computers in a locked laboratory room in the Duff Roblin building. The recordings will be retained for at least five years after publication in case they are needed to address queries from interested researchers. We estimate they will be destroyed by August 2033.

Anonymized data may be shared outside of the University of Manitoba with researchers, other organizations, and/or made publicly available. The information is being shared for further analysis or testing, as part of the research study, and/or because it is required by a funder or journal.

Dissemination

The study results will be shared through journal publications and presentations in relevant academic fields and a summarized report of the study results to be sent to interested participants. The results will also be reported in a master's thesis submitted to the University of Manitoba.

Withdrawing

Your participation in this research study is voluntary. You can choose to do only the activities and/or answer only the questions that you are comfortable with. You may withdraw from the study for any reason. You do not have to explain why. You will not be penalized in any way and you will still receive your experimental credit. If you decide to opt out of the study after completing only part of the study, please advise the experimenter before you leave. If you wish to withdraw your data please notify us within two days after your participation.

Summary of Results

At the end of the study, you will be automatically directed to a webpage explaining the study in further detail. An aggregated summary of the results will be available by August 2026; please email Jacquie.Vorauer@umanitoba.ca to request the summary be sent to you if you are interested.

Questions or Concerns

Designated University of Manitoba personnel may check that this study is being done safely and properly. To do this, they may review the research records. This study has been reviewed and approved by a Research Ethics Board at the University of Manitoba. However, this does not mean that participation is risk-free. If you have questions about your rights as a research participant, you may contact the Office of Human Research Ethics at humanethics@umanitoba.ca or (204) 474-7122. If you have any questions, concerns, or complaints about this study, you may contact any members of the research team listed on the first page or the Office of Human Research Ethics.

Consent

By participating in this study, I agree that:

- I have read the above information
- I have had the opportunity to ask and have answered all of my questions
- I understand what is being asked of me
- I will be taking part in a research study
- I may freely stop or leave the research study activities at any time
- My information may be shared outside the University of Manitoba
- I do not waive my legal rights by participating in the study

Notice Regarding Collection, Use, and Disclosure of Personal Information

Your personal information is being collected under the authority of The University of Manitoba Act. The University of Manitoba is committed to preserving your right to privacy. The information you provide will be used by the University to support our research. Your personal information will not be used or disclosed for other purposes, unless permitted by The Freedom of Information and Protection of Privacy Act or The Personal Health Information Act. If you have any questions about the collection of personal information: Ph: 204-474-9462 or Email: fippa@umanitoba.ca

I agree to participate in this study.

Participant's Signature

Researcher and/or Delegate's Signature

Date

Appendix B

Open-Ended Thought Listing

The following questions ask about your thoughts and perceptions during your exchange with the other participant. Please remember that there are no right or wrong answers to any of the questions. We are simply interested in learning about your thoughts and feelings, whatever they may be. All of your responses will be kept completely confidential.

Please take a couple of minutes to briefly describe the thoughts and feelings that were on your mind during your interaction in the space provided:

Appendix C

Metaperceived Group Membership Salience Scale (adapted; Yip, 2005)

Think about all of the identities and characteristics that make up who you are. Which of those do you think were prominent or salient to THE OTHER PARTICIPANT during your exchange? In other words, which do you think “stood out” or were the most noticeable and important to them?

Please rate each of the following in terms of how prominent or salient you think it was to **the other participant** during your exchange.

1	2	3	4	5	6	7
Not at all salient						Extremely salient

Your...

ethnic background

gender

age

nationality

social class

personal values

physical attractiveness

Note. These will be presented in random order.

Appendix D

Personal Group Membership Salience Scale (adapted; Yip, 2005)

Think about all of the identities and characteristics that make up who you are. Which of those do you think were prominent or salient to YOU during your exchange? In other words, which do you think “stood out” or were the most noticeable and important to them?

Please rate each of the following in terms of how prominent or salient you think it was to **you** during your exchange.

1	2	3	4	5	6	7
Not at all salient						Extremely salient

Your...

ethnic background

gender

age

nationality

social class

personal values

physical attractiveness

Note. These will be presented in random order, and Metaperceived/Personal Group Membership

Scales will be counterbalanced

Appendix E

Task Importance and Diagnosticity Scale

How important was it to you to do well in the creative problem-solving task?

1	2	3	4	5	6	7
Not at all						Extremely

How important is it to you in general to have creative ability?

1	2	3	4	5	6	7
Not at all						Extremely

The creative problem-solving task did not provide an accurate assessment of my creative ability.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

I feel I am more creative outside of the creative problem-solving task I did in this study.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Appendix F

Perceptions of Creativity Scale (Metaperceived)

Please indicate **how you think the other participant sees you** by indicating your agreement with each of the following items:

The other participant thinks I am creative.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

The other participant thinks I am innovative.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

The other participant thinks I am brilliant.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Appendix G

Perceptions of Creativity Scale (Other)

Please indicate **how you see the other participant** by indicating your agreement with each of the following items:

The other participant is creative.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

The other participant is innovative.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

The other participant is brilliant.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Appendix H

Gender Pressure Scale

Please indicate how much you agree or disagree with each of the below statements, based on how you felt during the task.

I felt pressure to perform well because of my gender.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

I worried that my performance might reflect poorly on my gender.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

I worried that my gender might influence how others would view my performance.

1	2	3	4	5	6	7
Strongly Disagree						Strongly Agree

Appendix I

Risk Aversion Scale (Adapted; Porcelli & Delgado, 2009)

We are now interested in learning more about your personal preferences. The next questions ask about different kinds of decisions that people sometimes have to make. Specifically, we are interested in your preferences regarding which kinds of opportunities to earn money are most desirable. For the following six questions, please indicate which one of the two hypothetical options provided is more appealing to you. There is no right or wrong answer to these: Please make your decisions very quickly and just go with your immediate reaction.

1.

Option A) 80% chance to earn \$20.00

Option B) 20% chance to earn \$80.00

2.

Option A) 60% chance to earn \$30.00

Option B) 30% chance to earn \$60.00

3.

Option A) 90% chance to earn \$40.00

Option B) 45% chance to earn \$80.00

4.

Option A) 40% chance to earn \$10.00

Option B) 10% chance to earn \$40.00

5.

Option A) 45% chance to earn \$30.00

Option B) 15% chance to earn \$90.00

6.

Option A) 50% chance to earn \$50.00

Option B) 25% chance to earn \$100.00

Appendix J

State Self-Esteem Scale

The below questions ask about what you are thinking at this moment. There is, of course, no right answer for any statement. The best answer is what you feel is true of yourself at this moment. Please answer all of the items, even if you are not certain of the best answer. Again, answer these questions as they are true for you RIGHT NOW. Select the number that best describes how you currently feel.

1	2	3	4	5	6	7
Not at all						Extremely

1. I feel confident about my abilities.
2. I am worried about whether I am regarded as a success or failure.
3. I feel satisfied with the way my body looks right now.
4. I feel frustrated or rattled about my performance.
5. I feel that I am having trouble understanding things that I read.
6. I feel that others respect and admire me.
7. I am dissatisfied with my weight.
8. I feel self-conscious.
9. I feel as smart as others.
10. I feel displeased with myself.
11. I feel good about myself.
12. I am pleased with my appearance right now.

13. I am worried about what other people think of me.
14. I feel confident that I understand things.
15. I feel inferior to others at this moment.
16. I feel unattractive.
17. I feel concerned about the impression I am making.
18. I feel that I have less scholastic ability right now than others.
19. I feel like I'm not doing well.
20. I am worried about looking foolish.

Appendix K

Demographics

We now ask you to provide some basic demographic information.

Please indicate your age in years: _____ years

Your Gender (please select one):

Male

Female

or, I identify my gender as (please specify) _____

With which ethnic or racialized backgrounds do you identify? (select all that apply)

- Black, Black Canadian, African, Afro-Caribbean, or Caribbean, etc.
- East Asian (e.g., Chinese, Japanese, Korean, etc.)
- Indigenous (e.g., First Nations, Inuit, Métis, American Indian, Native American, etc.)
- Middle Eastern or Arab (e.g., West Asian, North African, etc.)
- Hispanic, Latino, Latina, Latinx, or Latin American (e.g., Caribbean, Central American, South American, etc.)
- Pacific Islanders (e.g., Polynesian, Native Hawaiian, Samoan, Tongan, Tahitian, etc.)
- South Asian (e.g., Indian, Pakistani, Sri Lankan, Bengali, etc.)
- Southeast Asian (e.g., Cambodian, Filipino, Laotian, Malaysian, Thai, Vietnamese, etc.)

- White
- Another identity or identities (please specify) _____
- Choose not to answer

Were you born in Canada? Yes No

If no:

Where were you born? _____

Please indicate how long you have lived Canada: _____ years

What is your nationality? _____

Please indicate the language you first learned at home in childhood from the list below.

English

German

French

Punjabi

Cantonese

Tagalog

Mandarin

Spanish

Italian

Other (please specify: _____)

Had you ever met the other participant before the session today? Yes No

If Yes, please explain how well you know each other:

Have you ever participated in a study before that involved interacting over Zoom? If so, please describe it in the space below.

Appendix L

Experimenter Procedures Script

Experimenter Script

[some deviations are inevitable in the natural flow of interaction and depending on participants' responses and need for clarification, but this general script will be followed as closely as possible; lab rooms may change based on changes to space assignments]

Retrieve Participant 1 (male P) from 500-level waiting room (P505)

Bring to 506F1 lab room. P sits at table and you stand.

Have participant read through informed consent and sign:

Please read through this informed consent and sign if you agree. While you do that, I am going to go collect the other participant and take them to their room. I will be back in a few minutes. I will ask that you please keep your cellphone away for the duration of the study.

Retrieve Participant 2 (female P) from 200-level waiting room (P204)

Bring to 519J lab room. P sits at table and you stand.

Have participant read through informed consent and sign:

Please read through this informed consent and sign if you agree. While you do that, I am going to go help the other participant. I will be back in a few minutes. I will ask that you please keep your cellphone away for the duration of the study.

Return to Participant 1 (P506F1)

Confirm they understand the informed consent and signed it.

Thank you!

Instructions:

OK, so next step is to do the problem-solving activities, which involve creativity. Before we get going I want to give you some context for why we are doing this and a general explanation of the task you will be doing. *[have printed copy of first part; leave on table]*

Creativity and innovation are increasingly recognized as essential skills in today's extremely competitive world. Employers across industries rank creative thinking as one of the most sought-after abilities, often placing it above formal qualifications. The ability to come up with an ingenious idea and dare to take risks can be more valuable than specific training or knowledge. Further, from problem-solving in the workplace to driving innovation in science and technology, the capacity to think creatively and generate novel ideas is a key predictor of good leadership and long-term career success. The creative problem-solving task you will be doing in this study involves generating alternative uses for common, simple items.

You'll do some of this on your own, and some together with the other participant in this session. Afterwards we will ask that you complete a survey. The problem-solving component will be over Zoom. *[Turn on camera]* Now that I have turned your camera on and the other participant can see you, it is **very** important that you do not change any of the settings on the computer. I will join the Zoom meeting once everyone is set up and will explain everything as we go. I will mainly be communicating using the chat function when we are over Zoom, so

please watch for messages. In the meantime please just wait quietly. I have to give these instructions to the other participant as well. You will receive a prompt to unmute yourself when it is time to start.

Do you have any questions? *[Answer any questions the participant has. Adjust camera if needed]*

Return to Participant 2 (P519J)

Confirm they understand the informed consent and signed it.

Thank you!

Instructions:

OK, so next step is to do the problem-solving activities, which involve creativity. Before we get going I want to give you some context for why we are doing this and a general explanation of the task you will be doing. *[have printed copy of first part; leave on table]*

Creativity and innovation are increasingly recognized as essential skills in today's extremely competitive world. Employers across industries rank creative thinking as one of the most sought-after abilities, often placing it above formal qualifications: The ability to come up with an ingenious idea and dare to take risks can be more valuable than specific training or knowledge. Further, from problem-solving in the workplace to driving innovation in science and technology, the capacity to think creatively and generate novel ideas is a key predictor of good leadership and long-term career success. The creative problem-solving task you will be doing in this study involves generating alternative uses for common, simple items.

You'll do some of this on your own, and some together with the other participant in this session. Afterwards we will ask that you complete a survey. The problem-solving component will be over Zoom. *[Turn on camera]* Now that I have turned your camera on and the other participant can see you, it is **very** important that you do not change any of the settings on the computer. I will join the Zoom meeting once everyone is set up and will explain everything as we go. I will mainly be communicating using the chat function when we are over Zoom, so please watch for messages. In the meantime please just wait quietly. You will receive a prompt to unmute yourself when it is time to start.

Do you have any questions? *[Answer any questions the participant has. Adjust camera if needed]*

In Experimenter lab room (on Zoom)

Press record.

If camera direction is drastically off, privately message participant to adjust.

Own camera off to start.

Unmute participants.

Begin by typing in chat:

Hello! Can you both please confirm that your Zoom settings are unchanged since I set you up (apart from unmuting)? *[help participants as needed]*

And please each introduce yourself? [*introductions*] Thanks!

The task you will be doing in this study involves generating alternative uses for common, simple items. I will hold up a picture of each of four items in turn. For each one, you will have three minutes to generate as many alternative uses as you can think of. You will be muted for this stage and send your answers to me via the private chat function. Just to make sure that you know how to use this function, can you each please send a message saying “hello” to me only, using the private chat?

[*check that they are using the function correctly*]

Great, thanks! So we are about to begin. I will hold up a picture and you will have three minutes to enter all of your ideas via the private chat to me. You can start as soon as I hold up the picture and I will tell you when to stop and press send. Send all of your ideas for each item in ONE chat message. Do you have any questions?

[*answer any*]

I will now mute you and show you the first picture. [*mute participants; turn on own camera to display item*]

Here’s the first one, start typing now [*hold up first picture; time for three minutes*]

That’s three minutes. Please send your answers to me via the private chat now.

Here’s the second one, start typing now [*hold up second picture; time for three minutes*]

That’s three minutes. Please send your answers to me via the private chat now.

Here’s the third one, start typing now [*hold up third picture; time for three minutes*]

That’s three minutes. Please send your answers to me via the private chat now.

Here’s the fourth one, start typing now [*hold up fourth picture; time for three minutes*]

That’s three minutes. Please send your answers to me via the private chat now.

[*experimenter camera is turned off now*]

The next step is for you to choose what you think is your best idea for each item and type that idea in the private chat to me. *These ideas that you choose will eventually be shared with the other participant.* You can just number them 1 to 4 for each of the four items. Please rate what you think of each idea on a scale from 1 to 100, where 100 is the best and 1 is the worst. I’ll paste the format to follow for doing this into the chat. Please send your answers to me via the private chat now.

Now it is time to discuss your ideas with one another. For each one, I’ll put the idea that each of you chose into the chat. You can then decide between the two of you what you consider to be the best of those two ideas and enter it in the chat. It has to be one of those two. You will have four minutes for this, then we’ll do the same with the next one. The dyad achieving the highest creativity score across all four items, determined by independent raters, will win a cash prize of \$50 each.

Do you have any questions?

[*answer any*]

I'll send the ideas for the first item now and unmute you [*unmute*]. You can begin now. Remember to enter what you consider to be the best of those two ideas into the chat. Then we'll do the next item. [*1-minute warning at 3 minutes*]

I'll send the ideas for the second item now. You can begin. Again enter what you consider to be the best of those two ideas into the chat. [*1-minute warning at 3 minutes*]

I'll send the ideas for the third item now. You can begin. Again enter what you consider to be the best of those two ideas into the chat. [*1-minute warning at 3 minutes*]

I'll send the ideas for the fourth item now. You can begin. Again enter what you consider to be the best of those two ideas into the chat. [*1-minute warning at 3 minutes*]

You've reached the end of the task! I will end the Zoom call now, and come by each of your rooms to help you with the next step, which is to answer some questions on Qualtrics.

End Zoom call. Go back to P506F1 and then P519J:

You are now asked to complete a survey in the web browser.

Enter the passcode ("questions") for the participant.

You may leave once you have completed the survey. Instructions on how to leave Duff Roblin are printed out in the room. If you need me before leaving, instructions are also listed on how to get to my room.

Once you have completed the survey, I'll make sure to administer 2 course credits within the next week. Thank you so much for your participation! And please remember not to share the details of the study with others.