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Do people turn to visible reminders of group identity under stress?

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Abstract

How do people cope with stress? Research suggests that people have a number of strategies, including turning to the groups to which they belong, increasing feelings of identification and affiliation. We examine a novel extension of this strategy: adopting to visible reminders of one's group identity. In two experiments (*N*s = 103 and 194), we explore whether students are more likely to use an artifact that displays their university identity in situations of high, compared to low, evaluative stress. In Experiment 1, students were more likely to choose a university branded pen (vs. an identical unbranded pen) to complete exam questions when their performance would be evaluated vs. not. In Experiment 2, we found the tendency to use a university branded pen in the face of evaluative stress emerged only among people who found the evaluation personally relevant. In addition, we present converging results from two observational studies suggesting that students are more likely to wear clothing that signals their university identity on exam days compared to control days. These findings suggest that people may turn to visible reminders of group membership when facing evaluative stress. Although we found no consistent evidence for a psychological mechanism underlying this effect, we speculate about theoretically relevant possibilities.

Keywords: social identity, group membership, identity display

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Do People Turn to Visible Reminders of Group Identity in Times of Stress?

How do people respond to stress? An extensive literature shows that people use a range of strategies to cope, but one of the most reliable responses involves turning to others for support (Cohen, 1992; House, Landis & Umberson, 1988). This is no surprise when considering the powerful positive effect of strong social connections on individual functioning (Jetten, Haslam, & Haslam, 2012; Lyubomirsky, King, & Diener, 2005; Watson, Clark, McIntyre, & Hamaker, 1992). Beyond everyday benefits, social connections seem to be particularly important in times of stress and have been found to protect well-being in even the most traumatic, tumultuous, and threatening life circumstances (Haslam & Reicher, 2006). Indeed, a growing body of research demonstrates that group memberships help people overcome adversity and rise to a myriad of challenges, even when people are merely thinking about (rather than physically being in the presence of) those groups (e.g., Jones & Jetten, 2011; Cruwys, South, Greenaway, & Haslam, 2015). Going beyond mental reminders of groups, in this research we questioned whether people may adopt *visual* reminders of groups to help them deal with stressful circumstances. Specifically, we tested a novel question: do people conspicuously display their group identity in times of stress, for example by wearing an item of clothing or using an implement that reminds them of their group membership?

The Benefits of Groups

Groups offer their members a variety of well-being benefits. In addition to providing their members with social support, groups give people a range of psychological resources that have positive impacts on mental, and even physical, health (Jetten et al., 2012). For example, group memberships—and the sense of social identification they afford—provide people with belonging and meaning, both of which are strong predictors of well-being (Baumeister & Leary, 1995;

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Haslam, Jetten, Postmes, & Haslam, 2009; Jones et al., 2011). Moreover, feeling part of a group imbues members with a sense of efficacy and control, motivating and empowering individuals to reach goals that they may not achieve otherwise (Greenaway, Cruwys, Haslam, & Jetten, 2016; Greenaway et al., 2015; Fritsche et al., 2013; Reicher & Haslam, 2006).

Providing evidence for their positive coping potential, research has shown that identifying with groups helps people deal with adversity. Group identification can soften the sting of rejection and protect well-being in the face of discrimination (Branscombe, Schmitt & Harvey, 1999). Feeling connected to groups and being reminded of those groups reduces self-reported and physiological stress and increases resilience in the face of novel challenging tasks (Haslam & Reicher, 2006; Jones & Jetten, 2011). Moreover, group identification has been found to protect health and well-being and prevent burnout in people with particularly challenging jobs, including bomb disposal experts, hospital workers, bar tenders, and theatre workers during demanding dress rehearsals and first performances (Haslam, O'Brien, Jetten, Vormedal, & Penna, 2005; Haslam, Waghorn, O'Sullivan, Jetten, & O'Brien, 2004).

It is clear from this literature that group memberships have a range of psychological benefits, particularly in challenging circumstances. As a result, people tend to turn to groups—bolstering ingroup identification and bias—when they experience threat (e.g., Castano, Yzerbyt, Paladino, & Sacchi, 2002; Fritsche et al., 2013; Greenaway, Louis, Hornsey, & Jones, 2014). This effect is most frequently documented in the form of self-reported group identification and affiliation. Yet, there may be other meaningful ways that people can draw on their group memberships in times of stress. In this paper we explore one such strategy: adopting visible reminders of their group identity by selecting, wearing, or using items that display visible cues referencing one's membership in a particular group (e.g., clothing, badges, tattoos). These visible

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reminders may have the dual benefit of reminding people of their own group membership—thus conferring associated well-being benefits—or signaling shared group membership to others—thus allowing people to draw on associated social support.

Theorizing and research suggest that people do adopt visible reminders of group identity in strategic ways. For example, classic work by Cialdini and colleagues (1976) investigated conspicuous displays of group identification in a phenomenon known as "basking in reflected glory" (BIRG-ing). This work showed that that students were more likely to wear clothing branded with their university identity when their sports team had won a big game or was ranked highly in the standings. In addition, people display visible indicators of group membership in times of stress as well as celebration. For example, Mead and colleagues (2011) found that students were more likely to purchase a university-branded wristband (compared to other, equally attractive items) after being rejected, compared to a control condition—an action that may signal an increased desire to affiliate. In addition, in the aftermath of the 9/11 terrorist attacks, Skitka (2005) found that more Americans displayed a national flag than before the attacks.

These findings can be interpreted through the lens of the social identity model of deindividuation effects (SIDE; Reicher, Spears, & Postmes, 1995), versions of which argue that people sometimes "perform" their social identities in strategic ways (Klein, Spears, & Reicher, 2007). This identity performance can take different forms, although one key method involves manipulating one's appearance by adopting physical displays, signals, or signs of group membership (Klein et al., 2007). Together, this literature suggests that people are likely to adopt visible reminders of group membership when emotions (positive *or* negative) run high.

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The Nature of Stress

Stress can take a variety of forms, although it is classically defined as "a relationship with the environment that the person appraises as significant for his or her well-being and in which the demands tax or exceed available coping resources" (Lazarus & Folkman, 1984, p.63). The nature of stress depends on people appraising a situation as demanding, meaning that the same situation may be interpreted by one person as stressful and by another person as un-stressful. That said, there are certain types of situations that reliably elicit stress, such as social-evaluative situations. These situations represent a potential threat to one's self-esteem and social approval, eliciting feelings of state anxiety (Avero & Calvo, 1999). This is the nature of the stress that forms the basis of the challenging Trier Social Stress Test (Kirschbaum, Pirke, & Hellhammer, 1993); a situation in which people deliver a speech and perform mental arithmetic in front of an audience (creating evaluation concerns).

In the present research, we manipulated evaluative stress by having participants complete an examination; a situation that reliably increases evaluative concerns in university students (Keogh & French, 2001; Zeidner, 1998). For some participants, we heightened these concerns in a *high evaluation* condition in which they were informed their examination would be graded. For other participants, we attempted to reduce these concerns in a *low evaluation* condition in which they were informed their examination would not be graded. Especially because the stress was elicited in the context of participants' university group membership (i.e., completing questions from the Graduate Record Examination), we reasoned that participants facing high evaluative stress might be particularly likely to turn to this group by displaying markers of this identity in order to help them cope under stress.

The Present Research

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We propose that just as people display visible markers of group identity when experiencing success, they may also do so when experiencing stress. To capture the behavioral nature of this effect, we sought to investigate this question using methods that do not rely solely on self-report measures (Baumeister, Vohs & Funder, 2007). We therefore tested whether students were more likely to adopt visible reminders of their university group identity by using university branded materials under exam conditions relative to non-exam conditions. We investigated this in two controlled experiments to test the causal evidence for our hypothesis. In both cases we hypothesized that people would be more likely to use a university branded pen when they faced high, compared to low, evaluative stress. In addition to this key behavioral measure, we included a range of self-report variables to assess potential psychological mechanisms of the effect.

Experiment 1

We first conducted an experiment in which participants completed an exam that was presented as either a high or low evaluation experience. We did this by leading people in the high evaluation condition to believe their exam would be graded and judged by the experimenter (heightening pressure to perform well), and leading people in the low evaluation condition to believe their exam would not be graded or judged by the experimenter (lowering pressure to perform well). While completing the exam, half of the participants were given the opportunity to select a reminder of their group identity by a target pen branded with the university name among a series of pens. The other half of participants chose from the same series in which the target pen did not feature the university name, and therefore did not offer an opportunity to select a reminder of group identity. We hypothesized that participants would be more likely to select the target pen in the high evaluative stress (vs. low evaluative stress) condition only when the pen

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displayed the university name. This experimental paradigm therefore represents a focused test of our hypothesis by including a comparison condition that allowed us to determine whether the group label on the pen *per se* (as opposed to the type of pen) is driving pen selection. We measured a range of self-report variables prior to and after the examination to determine whether changes in these constructs may be related to pen choice.

Method

Participants and Design

One hundred and twenty undergraduates participated in this study in exchange for course credit. Sixteen participants could not or chose not to complete the experimental procedure in the allotted time and were therefore excluded from analyses; these participants were equally distributed across conditions. One additional participant requested to have their data removed after debriefing. This left a final sample of 103 participants (72% female, $M_{age} = 19.52$, $SD = 3.47$).

The experiment utilized a 2 (evaluative stress: high vs. low) X 2 (identity display: present vs. absent) between-subjects design, with selection of the target vs. non-target pen as the key dependent variable. In addition, we assessed several emotional and cognitive self-report variables before and after participants completed the exam questions to assess their relationship with pen selection.

Procedure

Upon entering the lab, participants were informed that they would take part in a study on test-taking skills and performance, and would therefore complete several items from the Graduate Record Examination (GRE), an exam typically required by most programs for entry

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into graduate school. While preparing the paperwork, the research assistant randomly assigned participants to one of the two challenge conditions (described below).

While participants completed pre-GRE self-report measures, the research assistant—who was blind to the study hypothesis—prepared a GRE workstation with an exam booklet and three pens. We manipulated whether participants had the opportunity to display their group identity by presenting a target pen that either pictured the university logo on its side or not (described below). The research assistant surreptitiously noted pen selection as our dependent variable (0 = non-target pen, 1 = target pen). Participants completed the GRE test items and post-GRE self-report measures, and then were debriefed.

Materials and Measures

Evaluative stress manipulation. Participants in the *high evaluation* condition (coded as 1) were informed that the research assistant would grade the exam and therefore know how they performed. This condition was designed to raise the social stakes by making participants feel that their performance would be judged. Participants in the *low evaluation* condition (coded as 0) were informed that the research assistant would not grade the exam and therefore would not know how they performed. Thus, participants were led to believe that knowledge of their exam performance would be (un)known to an ingroup member (the research assistant was a senior undergraduate student). In reality, all exams were graded anonymously by a team of research assistants.

Identity display manipulation. We manipulated whether or not participants were able to select a reminder of their group identity while completing the GRE questions. Participants in the *display present* condition were presented with a target pen displaying the university name alongside two other Papermate pens. Participants in the *display absent* condition were presented

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with the same target pen without the university name alongside the two Papermate pens (see Figure 1). Pen location (i.e., closest to the participant, in the middle, or farthest from the participant) was counterbalanced across participants.

GRE. Participants were given ten minutes to select the best answer from five possible options for ten quantitative GRE questions (average number answered correctly $M = 4.44$, $SD = 2.46$).

Pre- and Post-GRE measures. Before the GRE we assessed *negative affect* using the negative affect subscale from the PANAS (α= .71; Watson, Clark & Tellegen, 1988) scored on a scale ranging from 1, *very slightly or not at all* to 5, *extremely*. We also assessed *university identification* (7 items, e.g., "I see myself as an SFU student"; α=.84; Ellemers, Spears, & Doosje, 1997), *performance anxiety* about the upcoming exam (6 purpose-designed items, e.g., "I am anxious about the GRE exam questions"; α=.73) on scales ranging from 1, *disagree strongly* to 7, *agree strongly*. In addition, we assessed *self-efficacy* (10 items, e.g., "I can usually handle whatever comes my way", α=.83; Schwarzer & Jerusalem, 1995) on a scale ranging from *1, not at all true,* to *4, exactly true.*[1]

After the GRE we assessed negative affect (α=.87), university identification (α=.95), performance anxiety (α=.85), and self-efficacy (α=.91) using the same scales as before, but now referring to recent performance when appropriate.

Results

Bivariate correlations, means, and standard deviations are displayed in Table 1.

Pen Selection

[1] We measured some other self-report variables in both experiments, but only analyze those that were measured both before and after GRE performance. A list of these variables and their results is available from the authors on request.

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Our key hypotheses concerned whether participants selected the target pen, which either featured a reminder of one's ingroup identity (in the display present condition) or did not (in the display absent condition). We expected that participants given the option of selecting a target pen with the group identity name (display present) would be more likely to select this pen in the high evaluation condition than the low evaluation condition. In contrast, we expected that participants given the option of selecting a target pen without the group identity name (display absent) would show no difference in pen selection in the high and low evaluation conditions. Thus, we predicted an interaction between evaluative stress and identity display condition in predicting selection rates.

Given the dichotomous nature of our dependent variable, we conducted a logistic regression to test our research question. Analyses revealed a non-significant marginal trend toward an interaction, $b = 1.63$, $SE = 0.90$, $p = .069$, odds ratio = 5.11 suggesting that pen selection might depend both on level of evaluative stress and opportunity to display group identity. Inspection of the simple effects revealed that when the identity display was absent, people were equally likely to select the target pen in the high evaluation (65%) and low evaluation (69%) conditions, $b = -0.18$, $SE = 0.59$, $p = .768$, odds ratio = 0.84. However, when the identity display was present, participants were significantly more likely to choose the target pen in the high evaluation condition (83%) than the low evaluation condition (54%), $b = 1.46$, $SE = 0.67$, $p = .031$, odds ratio = 4.29. This pattern of results is displayed in Figure 2, and suggests the effect observed in the display present condition was not due to perceptual features of the pen itself, but to the identity signal contained in the pen.

GRE Performance

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A 2 X 2 ANOVA revealed no significant main effect of evaluative stress, $F(1,99) = 0.75$, $p = .389$, $\eta_p^2 < .01$, or identity display, $F(1,99) = 0.60$, $p = .440$, $\eta_p^2 < .01$, and no significant interaction, $F(1,99) = 0.50$, $p = .481$, $\eta_p^2 < .01$, on performance on the GRE test questions.

Pre- and Post-GRE Measures

We performed a series of mixed ANOVAs with measure as a within-subjects variable and evaluative stress as a between subjects variable. This was done to determine whether evaluative stress condition predicted change in the self-report variables from prior to after completing the GRE.

Negative affect. A 2 (evaluative stress: high vs. low) X 2 (identity display: present vs. absent) X 2 (measure: pre vs. post) mixed ANOVA with measure as a within-subjects variable revealed only a significant main effect of measure, $F(1,98) = 7.36$, $p = .008$, $\eta_p^2 = .07$, such that negative affect was higher after completing the GRE ($M = 1.59$, $SD = 0.61$) than before ($M = 1.44$, $SD = 0.40$). The main effects of evaluative stress condition, $F(1,98) = 0.03$, $p = .856$, $\eta_p^2 < .01$, and identity display, $F(1,98) = 0.12$, $p = .730$, $\eta_p^2 < .01$, were non-significant, as were the evaluative stress x identity display, $F(1,98) = 0.65$, $p = .422$, $\eta_p^2 < .01$, evaluative stress x measure, $F(1,98) = 0.14$, $p = .712$, $\eta_p^2 < .01$, and identity display x measure two-way interactions, $F(1,98) = 0.36$, $p = .548$, $\eta_p^2 < .01$. The three-way interaction showed a non-significant marginal trend, $F(1,98) = 3.82$, $p = .053$, $\eta_p^2 = .04$, however, none of the follow-up simple effects approached significance, with p values exceeding .118.

Identification. A 2 (evaluative stress: high vs. low) X 2 (identity display: present vs. absent) X 2 (measure: pre vs. post) mixed ANOVA with measure as a within-subjects variable revealed only a significant main effect of measure, $F(1,88) = 219.41$, $p < .001$, $\eta_p^2 = .71$, such that group identification was lower after completing the GRE ($M = 4.40$, $SD = 1.10$) than before

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(*M* = 5.76, *SD* = 0.83). The main effects of evaluative stress condition, $F(1,88) = 0.08$, $p = .777$, $\eta_p^2 < .01$, and identity display, $F(1,88) = 0.32$, $p = .574$, $\eta_p^2 < .01$, were non-significant, as were the evaluative stress x identity display, $F(1,88) = 0.66$, $p = .420$, $\eta_p^2 < .01$, evaluative stress x measure, $F(1,88) = 0.18$, $p = .673$, $\eta_p^2 < .01$, and identity display x measure two-way interactions, $F(1,88) < 0.01$, $p = .928$, $\eta_p^2 < .01$. The three-way interaction was also non-significant, $F(1,88) = 0.21$, $p = .645$, $\eta_p^2 < .01$.

Performance anxiety. A 2 (evaluative stress: high vs. low) X 2 (identity display: present vs. absent) X 2 (measure: pre vs. post) mixed ANOVA with measure as a within-subjects variable revealed no significant main effects of measure, $F(1,97) = 0.20$, $p = .655$, $\eta_p^2 < .01$, evaluative stress condition, $F(1,97) = 0.01$, $p = .922$, $\eta_p^2 < .01$, or identity display, $F(1, 97) = 0.24$, $p = .627$, $\eta_p^2 < .01$. The evaluative stress x identity display, $F(1, 97) = 0.35$, $p = .555$, $\eta_p^2 < .01$, evaluative stress x measure, $F(1, 97) < 0.01$, $p = .973$, $\eta_p^2 < .01$, and identity display x measure two-way interactions, $F(1, 97) = 2.28$, $p = .134$, $\eta_p^2 < .01$, were all non-significant, as was the three-way interaction, $F(1, 97) = 0.52$, $p = .472$, $\eta_p^2 < .01$.

Self-efficacy. A 2 (evaluative stress: high vs. low) X 2 (identity display: present vs. absent) X 2 (measure: pre vs. post) mixed ANOVA with measure as a within-subjects variable revealed only a significant main effect of measure, $F(1,97) = 20.39$, $p < .001$, $\eta_p^2 = .17$, such that self-efficacy was lower after completing the GRE (*M* = 2.81, *SD* = 0.53) than before (*M* = 3.02, *SD* = 0.37). The main effects of evaluative stress condition, $F(1,97) = 1.63$, $p = .204$, $\eta_p^2 < .01$, and identity display, $F(1, 97) = 0.19$, $p = .661$, $\eta_p^2 < .01$, were non-significant, as were the evaluative stress x identity display, $F(1, 97) = 1.72$, $p = .193$, $\eta_p^2 < .01$, evaluative stress x measure, $F(1, 97) = 0.71$, $p = .403$, $\eta_p^2 < .01$, and identity display x measure two-way

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interactions, $F(1, 97) = 1.23$, $p = .270$, $\eta_p^2 < .01$. The three-way interaction was also non-significant, $F(1, 97) = 0.01$, $p = .942$, $\eta_p^2 < .01$.

Discussion

These results suggest that people may orient toward visible reminders of group identity in the face of stress. Although the omnibus interaction effect only trended towards significance, simple effects indicated that participants were more likely to select a pen that displayed their university identity under conditions of high evaluation compared to conditions of low evaluation. This finding cannot be accounted for by novelty: in all four conditions, the identity reminder present or absent pen was a novel option, but participants were only more likely to choose the target pen with the identity reminder present when evaluation was high rather than low. We found no evidence that identification, performance anxiety, or self-efficacy—measured prior to or after the GRE—were impacted by the manipulation in ways that might mediate behavioral pen selection.

Experiment 2

Experiment 2 was conducted to explore whether adoption of visible reminders of group identity under evaluative stress is exacerbated when the evaluation is personally relevant. In Experiment 2, we emphasized the importance of the GRE for graduate school entrance and asked participants whether they intended to pursue graduate studies. We reasoned that the tendency to select a visible reminder of group identity under stress (vs. not) would be shown by those for whom the task had high relevance (i.e., participants who intended to pursue graduate studies) but not by those for whom the task had low relevance (i.e., participants who had other plans after graduation). This is because evaluative experiences have been shown to have particularly strong effects when people feel the domain of evaluation is of high relevance (Tesser, 1988). Again, we

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measured a range of self-report variables prior to and after participants completed the GRE in order to test whether change in these variables was related to pen choice. This time we added a measure of fear of evaluation, reasoning that evaluative stress might heighten fear of evaluation, leading people to select a pen that reminds them of their group membership.

Method

Participants and Design

Two hundred and two undergraduates participated in this study in exchange for partial course credit. Eight of these participants were excluded from analyses because of experimenter error or failure to complete the study, resulting in a final sample size of 194 (70% female, M_{age}= 19.37, *SD*= 1.95).

The experiment utilized a between-subjects design (evaluative stress: high vs. low), with personal relevance (i.e., desire to attend graduate school) as an additional, measured independent variable. Selection of the university labeled pen (vs. identical but non-labeled pens) was the key dependent variable. In this study, identity display was not manipulated—the university labeled pen was always part of the available selection.

Procedure

Using a procedure similar to Experiment 1, participants were informed that they would take part in a study on test-taking skills and performance and would therefore complete ten items from the GRE. In this experiment we took care to highlight that scores on the GRE are critical for entry to most graduate programs—a fact we reasoned would raise the relevance of the exam for students hoping to complete graduate studies.

While preparing the paperwork, the research assistant randomly assigned participants to one of the two evaluative stress conditions (described below). While participants completed the

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pre-GRE self-report measures, a research assistant prepared a GRE workstation with an exam booklet and four pens in a short holder. Critically, two pens displayed the university name on the side and two pens identical in every other way except that they did *not* display the university name on the side. After completing the initial survey, participants were asked to move to the GRE workstation and select a pen for use during the exam. Our dependent variable was the pen participants used to complete the GRE, which was noted surreptitiously by the research assistant (1 = university label present, 0 = university label absent).

Materials and Measures

Personal relevance. We asked participants whether they wanted to attend graduate school (*yes*, *no*). The majority of participants reported wanting to attend graduate school (n_{yes} = 126; n_{no} = 75).

Evaluative stress manipulation. As in Experiment 1, participants in the *high evaluation* condition were informed that the research assistant would grade the exam and therefore know how they performed. Participants in the *low evaluation* condition were informed that the research assistant would not grade the exam and therefore would not know how they performed. Also as in Experiment 1, all exams were graded anonymously by a team of research assistants.

GRE performance. As in Experiment 1, participants were given ten minutes to select the best answer from five possible options for ten quantitative GRE questions (M = 4.01, SD = 2.00).

Pre- and Post-GRE survey. Before seeing the GRE questions, participants were asked to report the extent to which they felt *arousal* (24 items e.g., active, exhausted, weak, sluggish, tired, worn out; α=.92; low-arousal items were reverse scored; Anderson, Deuser, & DeNeve, 1995). Participants also reported their *university identification* (α=.90) and *performance anxiety* (α=.80), using the same measures as Experiment 1. In addition, we assessed *fear of evaluation*

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(12 items, e.g., "I worry about what other people will think of me even when I know it doesn't make any difference"; α=.91; Leary, 1983).[2] All items were scored on a scale ranging from 1, *disagree strongly* to 5, *agree strongly*.

After completing the GRE questions, participants completed the same measures of arousal (α=.90), university identification (α=.93), performance anxiety (α=.83), and fear of evaluation (α=.86), referring to past performance when appropriate.

Results

Bivariate correlations, means, and standard deviations are displayed in Table 2.

Pen Selection

We expected that participants would be more likely to select a pen that featured their university identity in the high evaluation condition than the low evaluation condition, but particularly when the evaluation was personally relevant (in this case, among participants who had a desire to go to graduate school). Thus, we predicted an interaction between evaluative stress and relevance in predicting pen selection rates.

A logistic regression revealed a non-significant marginal trend toward an interaction, b = 1.17, SE = 0.61, p = .058, odds ratio = 3.21, suggesting that pen selection might depend both on level and relevance of the evaluative stress. Inspection of the simple effects revealed that participants for whom the evaluation was not personally relevant showed no difference in target pen selection in the high evaluation (49%) and low evaluation (57%) conditions, b = -0.32, SE = 0.49, p = .513, odds ratio = 0.73. However, participants for whom the evaluation was personally relevant were significantly more likely to choose the target pen in the high evaluation condition

[2] We also measured self-efficacy and perceived social support from fellow university students, but due to a methodological oversight did not measure these variables following GRE performance and therefore do not include them in our main analyses.

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(67%) than the low evaluation condition (47%), $b = 0.85$, $SE = 0.37$, $p = .023$, odds ratio = 2.33. This pattern of results is displayed in Figure 3.

GRE Performance

A 2 (evaluative stress: high vs. low) X 2 (identity display: present vs. absent) ANOVA revealed no significant main effect of evaluative stress, $F(1,190) < 0.01$, $p = .980$, $\eta_p^2 < .01$, or identity display, $F(1,190) = 2.16$, $p = .143$, $\eta_p^2 = .01$, and no significant interaction, $F(1,190) = 0.02$, $p = .885$, $\eta_p^2 < .01$.

Pre- and Post-GRE Measures

Arousal. A 2 (evaluative stress: high vs. low) X 2 (grad school: yes vs. no) X 2 (measure: pre vs. post) mixed ANOVA with measure as a within-subjects variable revealed no significant main effects of measure, $F(1,190) = 1.52$, $p = .220$, $\eta_p^2 < .01$, or grad school, $F(1,190) = 0.90$, $p = .345$, $\eta_p^2 = .01$. but a significant main effect of evaluative stress condition, $F(1,190) = 2.72$, $p = .023$, $\eta_p^2 = .03$, such that participants reported feeling higher arousal in the low evaluation ($M = 3.24$, $SD = 0.57$) compared to the high evaluation condition ($M = 3.05$, $SD = 0.59$). The evaluative stress x grad school interaction was non-significant, $F(1,190) = 0.14$, $p = .705$, $\eta_p^2 < .01$, as was the measure x grad school interaction, $F(1,190) = 0.07$, $p = .800$, $\eta_p^2 < .01$. However, the evaluative stress x measure interaction showed a non-significant marginal trend, $F(1,190) = 3.12$, $p = .079$, $\eta_p^2 = .02$, which was driven by the fact that arousal was higher in the low evaluation condition ($M = 3.25$, $SD = 0.54$) compared to the high evaluation condition ($M = 3.00$, $SD = 0.59$) prior to completing the GRE, $F(1,190) = 9.37$, $p = .003$, $\eta_p^2 = .05$, but not after completing the GRE, $F(1,190) = 1.69$, $p = .195$, $\eta_p^2 < .01$. The three-way interaction was non-significant, $F(1,190) < 0.01$, $p = .947$, $\eta_p^2 < .01$.

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Identification. A 2 (evaluative stress: high vs. low) X 2 (grad school: yes vs. no) X 2 (measure: pre vs. post) mixed ANOVA with measure as a within-subjects variable revealed a significant main effect of measure, $F(1,190) = 15.34$, $p < .001$, $\eta_p^2 = .08$, such that identification was lower after completing the GRE ($M = 3.56$, $SD = 0.94$) than before ($M = 3.68$, $SD = 0.81$). The main effect of grad school was also significant, $F(1,190) = 4.70$, $p = .031$, $\eta_p^2 = .02$, with participants who reported wanting to go to grad school reporting higher identification ($M = 3.75$, $SD = 0.87$) than those who did not ($M = 3.48$, $SD = 0.85$). The main effect of evaluative stress condition was non-significant, $F(1,190) = 1.58$, $p = .210$, $\eta_p^2 < .01$. The evaluative stress x grad school, $F(1,190) = 0.09$, $p = .769$, $\eta_p^2 < .01$, evaluative stress x measure, $F(1,190) = 0.28$, $p = .598$, $\eta_p^2 < .01$, and grad school x measure two-way interactions were all non-significant, $F(1,190) = 1.58$, $p = .210$, $\eta_p^2 < .01$. The three-way interaction was also non-significant, $F(1,190) = 0.66$, $p = .418$, $\eta_p^2 < .01$.

Performance anxiety. A 2 (evaluative stress: high vs. low) X 2 (grad school: yes vs. no) X 2 (measure: pre vs. post) mixed ANOVA with measure as a within-subjects variable revealed no significant main effects of measure, $F(1,190) = 1.80$, $p = .182$, $\eta_p^2 < .01$, evaluative stress condition, $F(1,190) = 1.25$, $p = .266$, $\eta_p^2 < .01$, and grad school, $F(1,190) = 0.27$, $p = .602$, $\eta_p^2 < .01$. The evaluative stress x grad school, $F(1,190) = 0.23$, $p = .636$, $\eta_p^2 < .01$, evaluative stress x measure, $F(1,190) = 0.26$, $p = .610$, $\eta_p^2 < .01$, and grad school x measure two-way interactions, $F(1,190) = 1.77$, $p = .185$, $\eta_p^2 < .01$, were all non-significant, as was the three-way interaction $F(1,190) < 0.01$, $p = .966$, $\eta_p^2 < .01$.

Fear of evaluation. A 2 (evaluative stress: high vs. low) X 2 (grad school: yes vs. no) X 2 (measure: pre vs. post) mixed ANOVA with measure as a within-subjects variable revealed only a significant main effect of measure, $F(1,190) = 21.32$, $p < .001$, $\eta_p^2 = .10$, such that fear of

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evaluation was higher before completing the GRE (M = 2.99, SD = 0.79) than after (M = 2.76, SD = 0.77). The main effects of evaluative stress condition, $F(1,190) = 0.27$, $p = .602$, $\eta_p^2 < .01$, and grad school, $F(1,190) = 1.17$, $p = .280$, $\eta_p^2 < .01$, were non-significant, as were the evaluative stress x grad school, $F(1,190) = 0.08$, $p = .781$, $\eta_p^2 < .01$, evaluative stress x measure, $F(1,190) = 1.32$, $p = .252$, $\eta_p^2 < .01$, and grad school x measure two-way interactions, $F(1,190) = 0.38$, $p = .539$, $\eta_p^2 < .01$. The three-way interaction was also non-significant, $F(1,190) = 0.08$, $p = .781$, $\eta_p^2 < .01$.

Discussion

These results support the idea that people may sometimes orient towards visible reminders of group identity in times of evaluative stress. Importantly, these effects seemed to be limited to those who found the evaluation personally relevant. Once again, we found no evidence that the self-report variables were affected by the manipulation and so might mediate the effect of stress on pen selection behavior. Unexpectedly, while we detected a significant effect of evaluative stress on arousal, the effect was in the opposite direction than expected such that high evaluation condition produced lower arousal. Despite this inconsistent and largely isolated effect on a self-report variable, across two experiments we detected a consistent behavioral effect.

General Discussion

People have various techniques for coping with stressors. The present studies explored one novel way in which people may respond to stress: by adopting visible signs of group identity. Two experiments provided causal tests of this process. In Experiment 1, students were more likely to use a university branded pen to complete an exam when their performance would be evaluated vs. not. Experiment 2 found that this preference for identity display was present only for individuals who found the evaluation personally relevant. Taken together, the results

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suggest that people may conspicuously display group identity in times of stress, and suggest a new avenue of research into potential functions of this process.

Why Might People Display Visible Reminders of Group Identity?

There are several reasons why people may adopt visible reminders of group identity when experiencing stress. One possibility is that focusing on these reminders offers functional benefits in the form of improved performance. While this is an intriguing possibility, we found no support for this idea across the experiments. In Experiments 1 and 2, students who selected the university branded pen performed no better on the GRE questions than those who did not select the university pen. Thus, the tendency to display group membership does not appear to improve performance, or if it does, the impact may be very small and difficult to detect.

Another possibility is that people might engage in conspicuous identity displays in order to aid coping in times of stress. A large body of past research suggests that group identities protect well-being and aid coping efforts. For instance, reminders of group membership boost resilience (e.g., Jones & Jetten, 2011) and reduce negative affect (e.g., Cruwys et al., 2015). In addition, research shows that people often turn to groups when experiencing challenge, stress, and uncertainty (e.g., Castano et al., 2002; Fritsche et al., 2013; Grieve & Hogg, 1999; Hogg & Abrams, 1993). People may therefore display group membership in times of stress because it gives them internal coping resources (e.g., positive affect, efficacy) with which to respond.

Identity display in this study may have been exhibited as a function of the particular link between the evaluation and the identity in question. While past research has examined whether individuals strengthen group ties in response to group-based threats (e.g., threats to group status), we explored whether people adopt visible reminders of their group in response to a situation that may threaten *their own* membership in a group. While failing an exam does not guarantee

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expulsion from university for the majority of students, it may be interpreted as signaling 'unfitness' for membership in the university group. As such, this work aligns with research on symbolic self-completion, which suggests that people are more likely to advertise group relevant skills (e.g., musicians will highlight their extensive musical training) when they feel insecure about their role in the group than when they feel secure (Wicklund & Gollwitzer, 1982). Here, selecting a pen that highlights university identity may represent a similar process of advertising relevant group membership under conditions that may call that membership into question.

We do not mean to suggest that people will only orient toward visible reminders of group identities that 'match' the challenge domain. Critically, we did not include conditions in which people could choose objects that represent identities not related to the experienced challenge (e.g., national or gender identity). There may indeed be something particularly potent about matching the visible identity to the challenge domain, as predicted by symbolic self-completion theory (Wicklund & Gollwitzer, 1982). However, research on multiple group memberships suggests that it can be beneficial for individuals to maximize reminders of their ingroups, even if those groups are unrelated to the challenge at hand (e.g., Jones & Jetten, 2011; Cruwys et al., 2015). Thus, it is certainly plausible that people might adopt visible reminders of identities that are not relevant to an existing challenge, and that doing so might have psychological benefits.

Despite these plausible explanations, we found no direct evidence that these mechanisms were at play. The evaluative stress manipulation had no consistent effects on the self-report variables that may reflect these processes (e.g., affect, efficacy, identification), nor did we observe consistent correlations between these self-report measures and behavioral pen choice in either experiment. There are a number of reasons we may have failed to find effects on the potential process variables. One possibility is that engaging in identity display in times of

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challenge is an unconscious choice, and therefore the function served by such displays cannot easily be assessed using self-report measures. It may be worthwhile for future studies to find more unobtrusive ways of assessing potential mechanisms behind this effect. Another possibility is that we have not yet measured the "right" mediating variable. For example, future studies might investigate whether people adopt visible reminders of group identity under stress in the hope of eliciting support from fellow ingroup members. There is evidence that visible markers of shared social identity increase the offer of social support to ingroup members (Haslam, Reicher, & Levine, 2011). For example, people are more likely to offer help to someone in need if they are wearing the jersey of an ingroup soccer team than a rival team (Levine, Prosser, Evans, & Reicher, 2005). It seems plausible that adopting visible reminders of group identity may serve this signaling function, although it may be that such a mechanism is more likely to be detected through non-self-report means.

Observational Evidence

One may be tempted to think of pen choice in a laboratory experiment as a fairly esoteric indicator of identity display, with no corollary in real world behavior. In the interests of full disclosure, we will acknowledge that our interest in conducting these experiments was piqued by the findings of two observational studies in which we documented this process "in the wild". The first study was conducted in a regular social psychology class. Teaching assistants counted the number of students wearing university branded clothing—any item of clothing indicating the school name or logo—at the regular class and two weeks later counted the number of students wearing university branded clothing when handing in their exam. We compared the proportion of students wearing university branded clothing on control days with the proportion of students wearing university branded clothing on exam days using a *z* test for two population proportions.

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Of the 160 students present at the regular lesson, four (2.50%) wore university branded clothing. However, two weeks later at the final exam, more than twice as many students—15 of the 230 students present (6.50%)—wore university branded clothing. These percentages reflect a non-significant marginal trend, z=1.82, *p*=.070, indicating that the percentage of students wearing university clothing tended to be higher at the final exam than a regular class.[3]

This finding hinted at the possibility that students may orient toward visible reminders of group identity in the face of challenge, but without comparison to non-university branded clothing, we could not be sure that students were displaying university group identity *per se* during times of challenge. In a follow-up observational study, research assistants stood outside two separate lecture halls that would host final exams in two weeks and tallied the number of students wearing university branded clothing, the number of students wearing non-university branded clothing (clothing with brands not related to the university; e.g., a t-shirt or hat with a local sports team logo), and the total number of students present outside each class. Two weeks later on the day of the final exam, the research assistants repeated the coding procedure. On the control day, 25 of the 1422 observed students (1.80%) wore university branded clothing—a percentage that increased significantly on the exam day when 48 of the 1385 observed students wore university branded clothing (3.50%), $z = 2.84$, $p = .005$. On the control day, 24 of the 1422 observed students (1.70%) wore non-university branded clothing, which increased, but not

[3] It is unlikely that BIRG-ing is responsible for these findings. The study did not overlap with the university Gridiron football team season and while it did overlap with the university's basketball team season, the university team won the night before data collection on the control day and lost the night before the final exam. Thus, if BIRG-ing were influencing clothing choices, we would expect to see higher rates of university clothing on the control day, not at the final exam.

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significantly so, on the exam day when 33 of the 1385 observed students (2.40%) wore non-university branded clothing $z = 1.31$, $p = .190$.[4]

These findings provided an initial illustration of our hypothesis in that students appeared more likely to adopt visible reminders of group identity during times of high compared to low evaluative stress (i.e., under exam conditions vs. a regular class). This provides a complement to our experimental findings in suggesting the behaviors we have observed can occur when freely chosen, rather than when people are forced to choose between identity display and non-display. Naturally, there are a number of alternative explanations for the findings—chief among them that students may prefer more comfortable clothing such as sweatshirts during exams, and for many those sweatshirts will, by coincidence, happen to feature university-identifying information. We therefore interpret these observational findings with caution, but consider them an entertaining complement to our more tightly controlled experiments.

Limitations and Caveats

Naturally, our studies have a number of limitations that are useful to point out. The flaws in our observational studies—particularly the weak effects and inability to infer causality—are clear, which is why we used these illustrations as inspiration to conduct two controlled experiments. Nevertheless, the experiments themselves had some limitations, not least of which is the fact that the interactions in both experiments only trended towards significance, and may have been underpowered to detect effects of interest. Beyond this statistical issue, the experiments had a number of theoretical and methodological weaknesses, which we discuss here.

[4] There was a non-significant marginal trend toward a difference between the percentage of students wearing university branded and non-university branded clothing on exam days, $z = 1.69$, $p = .091$.

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First and foremost, we did not cleanly induce stress. We had all students complete GRE questions, which may have increased stress for *all* participants, given that examinations reliably increase anxiety (Zeidner, 1998). We attempted to heighten evaluative concern in one condition by informing participants their performance would be graded, and lower it in the other condition by informing participants their performance would not be graded. However, this addition to the stress manipulation did not influence negative affect or arousal in expected directions. We do note that the opportunity for experienced stress in both conditions makes for a particularly conservative test of our hypothesis, and would have worked against us observing differences in behavior across conditions. This gives us confidence in the observed findings, but we nevertheless recommend that future research manipulate stress more directly using established procedures, such as the Trier Social Stress Test (Kirschbaum et al., 1993).

Our measure of personal relevance in Experiment 2 may have been similarly flawed. While we interpreted desire to attend graduate school (vs. not) as a factor that would heighten evaluative concerns while completing the GRE questions, it is possible that this intention may co-vary with other individual differences that could explain the observed effects. For example, desire to attend graduate school may be correlated with need for cognitive closure (Webster & Kruglanski, 1994), which may similarly heighten evaluative concerns. Future work might attempt to manipulate personal relevance more directly, or assess and control for individual differences that may be confounded with interest in attending graduate school.

In addition to these methodological issues we note a number of theoretical ambiguities. For example, our design cannot identify whether or not it is important that the person conducting the evaluation is an ingroup member. Understanding whether this makes a difference will be important to identifying the potential mechanisms behind the identity display effect. If people are

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engaging in identity display in order to draw internal psychological resources from reminders of their group memberships, we would expect the effect to hold regardless of who is doing the evaluating. On the other hand, if people are engaging in identity display in order to signal shared identity and perhaps enlist social support as a result, we would expect the effects to emerge only when an ingroup member, not an outgroup member, is doing the evaluation. Given that both of our experiments manipulate stress by eliciting evaluative concerns regarding ingroup members, we are not able to differentiate between these two possibilities. Future research might therefore manipulate the audience in stressful situations in order to better investigate this issue.

We also observed an unexpected pattern of results whereby participants appeared less likely to choose the identity display in the low evaluation condition when it was present compared to absent. We speculate that participants' social identity as a student may have been particularly salient in the high evaluation condition, which could explain why they were most likely to choose the identity-relevant target pen in this condition. This may have meant that participants in the low evaluation condition were comparatively focused on their personal identity, which could explain why they appeared to selectively *not* choose to use the identity-relevant pen when it was presented. This suggests it may be valuable for future work to assess identity salience as a potential moderator of the identity display effect. We raise this tentative explanation with caution, however, as it requires further and direct testing.

Conclusions

Investigating when, where, and why people display visible evidence of group identity is a rich avenue for future research. The present work suggests that people may be more likely to do this in times of high, compared to low, evaluative stress. This research contributes to understanding of the ways in which social identity can be expressed and exhibited, and raises

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new directions for future research concerning how individuals might use group displays to aid themselves in times of stress.

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Table 1. *Bivariate correlations, means, and standard deviations (parentheses) in Experiment 1.*

	1	2	3	4	5	6	7	8	9	10	11	12
1. Stress	0.50 (0.50)	0.01	.14	-.09	.02	-.04	-.03	.03	-.07	.02	-.07	.01
2. Display		0.50 (0.50)	.01	-.04	-.02	.02	-.16	.08	.03	.04	.02	.02
3. Pen choice			0.64 (0.48)	.16	.03	-.09	.07	-.21*	.03	-.09	.08	-.21*
4. GRE score				4.44 (2.46)	-.01	-.03	-.04	-.05	-.40***	.11	-.69***	.28**
5. Pre NA					1.47 (0.42)	-.17	.19*	-.06	.50***	-.15	.03	.02
6. Pre ID						5.73 (0.82)	-.08	.29**	-.21*	.65***	-.11	.29**
7. Pre anxiety							4.24 (0.93)	-.32**	.07	.03	.12	-.10
8. Pre efficacy								3.04 (0.41)	-.04	.06	.01	.61***
9. Post NA									1.61 (0.59)	-.33***	.56***	-.43***
10. Post ID										4.32 (1.07)	-.26**	.36
11 Post anxiety											4.21 (1.45)	-.48***
12. Post efficacy												2.82 (0.55)

Note. Stress coded as 1 = high evaluation, 0 = low evaluation. Display coded as 1 = identity display present, 0 = identity display absent. Pen choice coded as 1 = target (identity-relevant) pen, 0 = non target pen. Pre variables were measured prior to GRE; Post variables were measured after GRE. NA = negative affect, ID = identification, anxiety = performance anxiety, efficacy = self-efficacy.

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Table 2. *Bivariate correlations, means, and standard deviations (parentheses) in Experiment 2.*

	1	2	3	4	5	6	7	8	9	10	11	12
1. Stress	1.51 (0.50)	-.06	.09	.01	-.22**	.07	.13	-.04	-.11	.06	.03	.03
2. Grad school		0.63 (0.48)	.06	-.09	-.04	.14*	-.03	.06	-.01	.15*	.07	.08
3. Pen choice			0.56 (0.50)	-.04	.02	.05	.11	.15*	.03	.07	.14	.14
4. GRE score				4.01 (2.00)	.01	-.10	-.07	.01	.19**	-.09	-.51***	-.16*
5. Pre arousal					3.12 (0.58)	.19**	-.38***	-.23**	.58***	.18*	-.10	-.07
6. Pre ID						3.69 (0.81)	-.16*	-.10	.06	.95***	.04	-.01
7. Pre anxiety							2.97 (0.76)	.44***	-.31***	-.15*	.44***	.43***
8. Pre fear								2.98 (0.80)	-.24***	-.08	.31***	.62***
9. Post arousal									3.17 (0.59)	.06	-.34***	-.23**
10. Post ID										3.60 (0.93)	.02	.02
11 Post anxiety											3.10 (0.90)	.60***
12. Post fear												2.76 (0.77)

Note. Stress coded as 1 = high evaluation, 0 = low evaluation. Grad school coded as 1 = yes, 0 = no. Pen choice coded as 1 = target (identity-relevant) pen, 0 = non target pen. Pre variables were measured prior to GRE; Post variables were measured after GRE. ID = identification, anxiety = performance anxiety, fear = fear of evaluation.

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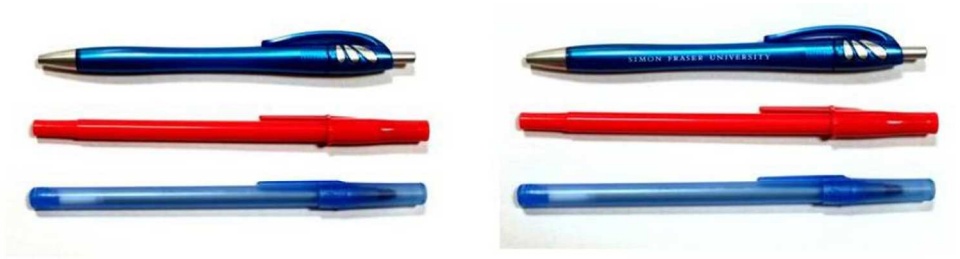


Figure 1. Pens presented to participants in Experiment 1. Participants in the display present condition were presented with the pens on the right, including the target pen displaying the university name. Participants in the display absent condition were presented with pens on the left, including an identical target pen without the university name.

85x22mm (300 x 300 DPI)

Author Manu

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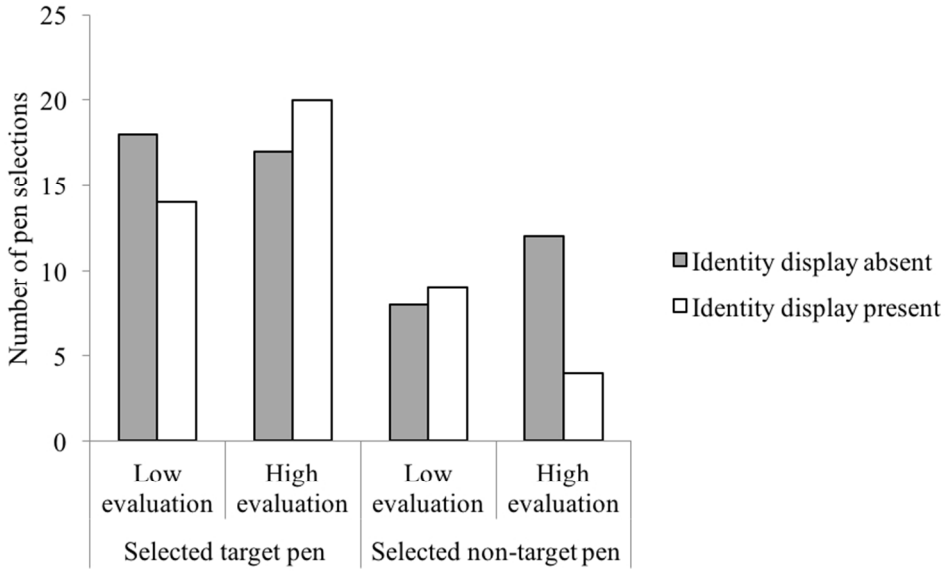


Figure 2. Number of participants selecting the target (and non-target) pen when the university label was present or absent in the low and high evaluation conditions.

79x47mm (300 x 300 DPI)

Author M

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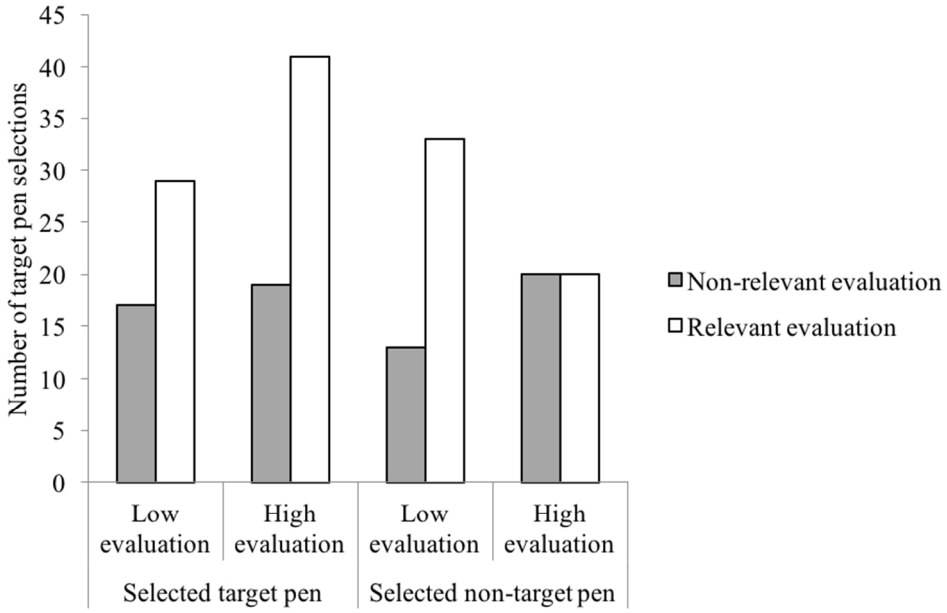


Figure 3. Number of participants selecting the university labeled pen as a function of stress condition and personal relevance.

80x51mm (300 x 300 DPI)

Author M

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