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Fuming with Rage!

Do Members of Low Status Groups Signal Anger more than Members of High Status
Groups?

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Abstract

Owuamalam, Weerabangsa, Karunagharan, and Rubin (2016) found that Malaysians associate people in low status group with anger more than their higher status counterparts: the *hunchback heuristic*. But is this belief accurate? Here, we propose the alternative possibility that members of low-status groups might deliberately *suppress* anger to counter this stigma, while members of high-status groups might *disinhibit* their anger to assert their superiority. To test these propositions, we manipulated undergraduate students' relative group status by leading them to believe that provocative comments about their ingroup came from a professor (low-status condition) or a junior foundation year student (high-status condition). Using eye-tracking, we then measured their gaze durations on the comments, which we used as a physiological signal of anger: *dwelling* (Experiment 1). Results revealed that dwelling was significantly greater in the high-status condition than in the low-status condition. Experiment 2 conceptually replicated this pattern using a self-report method and found that the *suppression-disinhibition* effect occurred only when reputational concerns were strong.

Keywords: hunchback heuristic; anger; social identity and reputational concerns; stereotypes; eye-tracking.

Fuming with Rage!

Do Members of Low-Status Groups Signal Anger more than Members of High-status Groups?

The ability to accurately detect and respond to threat when interacting with other people is important. A key signal of threat during social encounters is anger (van der Schalk, et al., 2011). People who perceive that others are angry at them could initiate actions aimed at avoiding harm. They can either flee from the source of threat or, more critically, they can engage or *fight* back, often leading to fatal outcomes (e.g., the recent police shootings of Black men in the US; Craven, 2017). Hence, the question of how people perceive and interpret the threat induced emotion of anger has important theoretical and practical value.

One means by which people interpret others' anger may be via perceived social standing (Mondillon et al., 2005). Consistent with this view, Owuamalam, Weerabangsa, Karunagharan, and Rubin (2016a) proposed and found evidence for a *hunchback heuristic* showing that observers tend to associate members of low-status groups with anger and members of high-status groups with calm. The hunchback heuristic is based on the assumptions that observers believe that (a) members of low status groups tend to encounter frustration more than their higher status counterparts (cf. Berkowitz, 1989), and (b) members of high status are competent, which equips them with the capacity to overcome frustrating situations (Owuamalam et al., 2016a). Consequently, according to the hunchback heuristic, members of low-status groups should be more prone to anger than their higher status counterparts because the persistent experience of frustration *normalizes* (even legitimizes) the expression of anger for them relative to their competent higher status counterparts. Accordingly, observers expect members of low-status groups to be more likely to signal anger than members of high-status groups, presumably, even when the cause of frustration (or provocation) is held constant (Carlsmith, Wilson, & Gilbert, 2008). But, do members of

low-status groups *really* signal anger more than their higher status counterparts when exposed to the same provocation? It is one thing for observers to believe that they do and it is another thing for this perception to be an accurate reflection of reality. As we suggest below, it is quite possible that, in some case, the hunchback heuristic provides an inaccurate representation of the actual likelihood of signaling anger by members of high and low status groups (cf. Jussim, 2017).

A Suppression-Disinhibition Explanation Based on Social Identity Theory

There are several reasons to expect that members of low-status groups are, in fact, less likely to *signal* (though not necessarily *experience*) anger relative to members of high-status groups. One reason can be drawn from social identity theory (Tajfel & Turner, 1979). At the heart of social identity theory is the idea that people generally act in ways that serve their group interests. Accordingly, when people are mindful of their group image, they can resort to a variety of behaviors to enhance and/or protect this symbolic interest. This can either involve the use of collective action to protest the devaluation of one's ingroup (e.g., van Zomeren, Postmes, & Spears, 2008) or the use of socially creative strategies to manage one's negative social identity (see Owuamalam, Paolini, & Rubin, 2017; Owuamalam, Rubin, & Issmer, 2016b). Importantly, group members may be aware that, in some situations, expressions of anger may be perceived to be socially undesirable and potentially threatening to a positive group image. In this case, group members may deliberately *suppress* signals of anger in order to counter the anger stereotype and maintain a positive social identity (Hopkins et al., 2007; Owuamalam & Rubin, 2014; see also Croizet, Désert, Dutrevis, & Leyens, 2001 for a broader review of managing threatening stereotypes).

Evidence shows that people are generally aware of the stereotypes that outgroups have of their ingroup and that this awareness is true for members of both high-status groups (e.g., Vorauer, Main, & O'Connell, 1998) and low-status groups (e.g., Owuamalam &

Zagefka, 2011; Owuamalam & Zagefka, 2014). Importantly, members of low-status groups are aware of the specific lay stereotype associating their ingroup with the expression of anger (i.e. aggression, Sigelman & Tuch, 1997), and they readily activate these so-called meta-stereotypes during social encounters (see Lammers, Gordijn, & Otten, 2008). For these reasons, the anger stigma is likely to be particularly relevant when members of low-status groups are provoked, and they are most likely to react against this anger stereotype by suppressing their anger. Consistent with this reasoning, Hopkins et al. (2007) found that Scottish students who were concerned about the ‘tight-fisted’ stereotype often associated to their country behaved in the opposite direction to this stereotype by offering greater monetary assistance to outsiders (English charity) rather than to their countrymen (Scottish charity) in order to *counter* this unflattering stereotype (see also Owuamalam & Rubin, 2014).

On the other hand, people who belong to high-status groups do not suffer the stigma of anger proneness. Consequently, they are likely to be more forthcoming in signaling their anger, because they are less concerned that their group will incur reputational costs for doing so. Furthermore, signals of anger often reflect power and elevated social status (Tiedens, 2001), and those with a sense of high-status should more readily disinhibit the signals of this emotion in order display their superiority (see also Park et al., 2013, and Keltner, Gruenfeld, & Anderson, 2003 for a review). Consequently, we reasoned that signals of anger than is intended to display one’s superiority should be particularly visible when people in elevated positions are strongly concerned about their reputation.

It is important to note that our view is not that members of low-status groups would *experience* anger to a lesser or greater degree than their higher status counterparts. Rather, we argue that although observers may ordinary expect members of low-status groups to signal anger more than their higher status counterparts (Owuamalam et al., 2016a) that the reverse may be more plausible. This is because members of low-status groups have a greater dis-

incentive to *unbottle* their anger due to a need to manage their group reputation by disconfirming the anger stigma. On the other hand, members of high-status groups should have a greater reputational incentive to signal their anger in order to reassert their authority.

The Current Research and Hypotheses

If the hunchback heuristic reflects reality, and not just observers' expectations, then members of low-status groups should signal anger to a greater degree following provocation (a frustrating event) compared to members of high-status groups. If, on the other hand, the suppression-disinhibition hypothesis is correct, then members of low-status groups should *suppress* signals of their anger when provoked, while members of high status groups should be more *disinhibited* in their signals of this key emotion.

Unlike previous correlational explorations of the association between status and anger (e.g., Park et al., 2013), that are typically conducted with Western samples (e.g., Berdahl & Martorana, 2006; Plant, Shibley, Keltner, & Devine, 2000) we adopted an experimental approach in which members of high- and low-status groups in a non-Western sample (Malaysia) were exposed to the same type of provocation: (a) to be sure that the frustrating event on which their anger is based is held constant and, consequently (b) to be confident about the causal link between social status and anger expressions. We also went beyond the traditional self-report assessments of anger to use a novel psychophysical measure. Specifically, we assessed the signals of anger via differences in gaze duration and eye movements to and from sources of provocation.

Experiment 1

We adopted a mundane provocation paradigm developed by Hornsey, Oppes, and Svensson (2002) by exposing participants to negative comments about their ingroup. This approach allowed us to circumvent ethical issues that may otherwise arise from the use of more blatant techniques to arouse anger. The use of the mundane provocation paradigm is

similar to traditional operationalizations of provocation that use negative comments/feedback (e.g. Bushman, 2002), although we extended this approach to an intergroup context by making salient the group memberships of the sources of these comments.

We used a novel eye-tracking technique to track the amount of time that people attended to written negative comments about their social identity (i.e., gaze duration), as well as the number of times their eyes went back and forth to these comments (i.e., gaze counts). We termed these physiological reactions *dwelling*, reasoning that people may be more likely to dwell on negative criticisms when they are annoyed by such comments. We define dwelling as the degree to which people are cognitively and emotionally invested in (or engaged with) a frustrating event and/or provocative content.

Indeed previous studies have shown that the duration of gaze aversion (versus focus) on negative media content can be indicative of emotional reactions towards that message (Rimé, Finkenauer, Luminet, Zech, & Philippot, 1998). More specifically, Wilkowski, Robinson, Gordon, and Troop-Gordon (2007) have shown that extended gaze durations on provocative content can be used to distinguish people who are prone to anger from those who are less prone to this emotion. Consequently, we expected the extent to which people dwelt on negative comments to be positively related to anger. That is, the more people dwelt on the provocative comments, the angrier they should also report feeling. If the hunchback heuristic has a basis in reality, then members of low-status groups should dwell on the negative comments more than members of high-status groups. If, however, the suppression-disinhibition hypothesis is correct, then members of high-status groups should dwell on the negative comments more than their lower status counterparts.

Method

Participants and design. Sixty-four undergraduate students enrolled at British University in Malaysia, took part in this study (29 were men and 35 were women; $M_{\text{age}} =$

SOCIAL STATUS AND ANGER

20.11, $SD_{age} = 1.32$). Participants who volunteered to participate in a study on social attitudes and perception were either recruited via the School of Psychology's research participation scheme or elsewhere on campus. They were compensated with course credits or candies.

We used a between-subjects design in which participants were led to believe that provocative comments about their in-group came from either a professor ($n = 32$; men = 14, women = 18) or a foundation year student ($n = 32$; men = 15, women = 17). Social identity theory (Tajfel & Turner, 1979) proposes that people infer their group status relative to other groups either by engaging in downward or upward comparison (cf. Müssweiler, Rüter & Epstude, 2004). Hence, we reasoned that undergraduate students should feel a sense of their *lower status position* when the comparative situation involved a professor because, in this context, the students are likely to make an upward comparison. On the other hand, undergraduate students should feel a sense of their high group status when the comparative situation involves junior foundation year students because the comparative situation is downwards. The key dependent measure was dwelling, which we captured via gaze durations on the negative comments.

Apparatus, materials and procedure. To manipulate relative group status, we provided our undergraduate participants with a written biography of two fictitious characters (see Table 1). One of these characters was a university professor whose other attributes were manipulated to reflect his elevated social position relative to the average undergraduate student (see Table 1). The other character was a junior foundation year student whose biography was manipulated to emphasize the notion that the average foundation year student was inferior to the regular undergraduate student (see Table 1). Using this real-world status divide, while holding constant all else, we could capture specific effects that were tied to status while at the same time being closer to the intended phenomenon in the real world. After reading the biographies, participants completed a single-item measure of perceived

SOCIAL STATUS AND ANGER

status of the outgroup relative to the in-group on a 7-point scale (1 = *low-status*, 7 = *high-status*). We used this measure to test the effectiveness of our status manipulation (see flowchart in Figure 1a). Following this rating, participants moved to an adjacent computer where they could read a comment purportedly made by the individual whose biography they had just read.

Unbeknownst to participants, the adjacent computer (Tobii T60, with 17 inch TFT monitor) had a remote eye-tracking capability that recorded gaze duration (in milliseconds) and eye-movements to and from the Areas of Interest (AoI) on a vignette that was presented in the middle of screen. The AoIs were five negative comments contained in the vignette (see Figure 1). The eye tracker performs binocular tracking at a data sampling rate of 60 Hz and has high accuracy at 0.5° and drift compensation less than 0.3°. The gaze duration and frequency around the provocative AoIs captured what we refer to as *dwelling*.

To enhance precision in gaze capture, participants underwent a calibration protocol prior to reading the comments. This protocol involved participants reading a string of nonsensical texts that were placed at random locations on the screen and that were transmitted via another computer screen that only the experimenter could see. Participants were reassured that this procedure was intended to make sure that comments displayed properly on the screen. Following the calibration protocol, participants then read the negative comments presented in Figure 1b.

--Insert Figure 1 here--

To further enhance the precision of word gaze capture, we set the font size in our vignette to 14, double-spaced, with white letters on a dark-grey background. We created five AoIs comprising: “whiny,” “lack ambition,” “timid,” “arrogant”, and “spendthrift.” These words were based on a pilot study as being relevant to the current context of relations between undergraduate, their professors and juniors. If the prediction derived from the

hunchback heuristic is correct, then one would expect a hunchback effect to manifest on any of the negative characterizations of the in-group. In order to validate our physiological measurement of anger signals (dwelling), we further asked participants to indicate the extent to which they felt angry on a 7-point scale (3 = *very happy*, 0 = *neutral*, -3 = *very angry* [reverse coded]; $M = 0.23$, $SD = 0.64$). Using the happy/angry scale that was anchored on a neutral zero midpoint allowed us to more finely capture the emotion of interest. That is, scores above zero would unambiguously demonstrate that participants felt angry. Only those gaze durations and counts around the provocative comments which are then positively correlated with this anger scale would be deemed to capture dwelling.

Results

Preliminary analyses. To verify the effectiveness of our status manipulation, we conducted an independent t -test on the status manipulation check item. This test revealed that, as expected, participants in the high-status condition rated the outgroup as being significantly lower status (mean and standard error: $4.16 \pm .20$) than did participants in the low-status condition ($4.81 \pm .24$), $t(62) = 2.14$, $p = .036$, Cohen's $d = .54$, 95% $CI = [.036, 1.034]$. To establish that our dwelling measure tapped anger, we correlated gaze durations and counts on the negative comments with anger. This analysis found that only the gaze duration on the spendthrift item had a moderate-to-strong correlation with anger ($r = .34$, $p < .01$; see Table 2), consistent with a similar link between trait anger and gaze duration on negative messages found in previous studies (e.g. Wilkowski, et al., 2007). Consequently, our subsequent analysis focused on this spendthrift item.

Main analyses. To establish whether those participants who were primed with a sense of low social status dwelt on the spendthrift comment more than those with a sense of high social status, we compared the differences in their fixation duration with an independent t -test. Contrary to predictions based on the hunchback heuristic, but consistent with the

suppression-disinhibition hypothesis, results revealed significantly stronger dwelling on the spendthrift comment amongst participants in the high-status condition compared to those in the low-status condition, $t(62) = 2.93, p = .005$, Cohen's $d = .73$, 95% $CI = [0.184, 0.972]$ (see Figure 2). We further investigated whether this effect remained after controlling for gender, which is another indicator of social status given that women in this traditional Malaysian culture may be more submissive (cf. Gross & John, 2003). A main effect of status emerged even when gender was controlled for, $F(1, 61) = 8.78, p = .004, \eta_p^2 = .13$ (low-status $M = 897\text{ms}, SE = 135\text{ms}$ versus high-status, $M = 1461\text{ms}, SE = 135\text{ms}$).

--Insert Figure 2 here--

Given the novelty of our physiological measure, we followed up the previous analysis with an exploratory examination of the self-reported anger scores within the high- and low-status conditions. The results converged with the pattern of results that we obtained using our physiological measure: The anger scores of participants in the high-status condition were significantly higher than the neutral (zero) midpoint ($.31 \pm .11, p = .007$, Cohen's $d = .48$) – a point at which participants indicated being neither angry nor happy. In contrast, the anger scores of those in the low-status condition did not deviate meaningfully from the scale's midpoint ($.16 \pm .12, p = .170$, Cohen's $d = .25$).

Discussion

To summarize, Experiment 1 provided clear evidence against the accuracy of the hunchback heuristic and in support of a suppression-disinhibition explanation based on social identity theory. People with a sense of their low social status suppressed signals of the stigmatized emotion of anger, while those unconstrained by this stigma—people with a sense of high-status—disinhibited their anger. It is important to note however, that participants in the low and high-status conditions ostensibly *experienced* some degree of anger as indicated by dwelling scores that are sizably different from zero ($ps < .0001$). Even the effect sizes on

SOCIAL STATUS AND ANGER

the measure of anger suggests that some degree of anger was felt by those in the low-status condition (as reflected in the small effect size of .25, Cohen, 1992), although this was more subdued relative to the moderate effect-size in the high-status condition. Thus, our data do not suggest that members of low-status groups do not experience anger at all, only that they ostensibly subdue signals of this emotion relative to their higher status counterparts.

Lastly, Park et al. (2013) have suggested that interdependent cultures (such as Malaysia) are guided by cultural norms that permit only those in elevated positions to express their anger. Hence, the current findings could have reflected this cultural creed rather than evidence for the suppression-disinhibition hypothesis. To disentangle a cultural norm interpretation based on Park et al. (2013) from the suppression-disinhibition account based on SIT, we directly measured differences in reputational concerns amongst participants in the high and low status conditions of our next study. Assuming the suppression-disinhibition hypothesis is correct, then the anticipated status effects on signals of anger should be evident only when reputational concerns are strong, because it is only in this condition that the need to avoid reinforcing ingroup stigma amongst the low status should be strong. It is also in such conditions that the need to reassert one's superior social identity should be most influential amongst those in elevated positions. If this condition is not satisfied, then a cultural creed interpretation would become tenable. Thus, while the use of the Malaysian context in which anger privilege is supposedly given to those in elevated position offers a stringent test of the hunchback heuristic, the addition, in our next study of the auxiliary condition of reputational concerns (a) delineates the suppression-disinhibition account from the cultural norm thesis and, therefore, (b) offers a stringent test of the suppression-disinhibition hypothesis.

Experiment 2

Experiment 1 employed a novel eye-tracking method and showed, consistent with social identity theory, that a sense of low social status *decreased* the signal of anger while a

SOCIAL STATUS AND ANGER

sense of high-status *increased* it. Although we observed identical patterns even with a self-report measure, there might still remain skepticism over the reliability of our single-item measure of anger in Experiment 1. Hence, we used a multi-item measurement of anger in Experiment 2 in order to provide a more reliable assessment. In addition, we included an assessment of *calm* when people are exposed to negative comments about their group because the emotion of calmness more directly captures the *restraint* implied by the suppression hypothesis, and this is important because calm and anger can co-exist. That is, people who experience anger can choose to remain calm and restrain their anger (suppression) or to “lose their cool” and lash out at the source of provocation (disinhibition; for a similar argument; see Owuamalam et al., 2016a, p. 4).

A second problem with Experiment 1, especially with regards to our dwelling measure, was the difficulty in determining whether the patterns evident on that measure were due to suppression, disinhibition, or both. One way to untangle these effects is to demonstrate that people either suppress (low-status) or disinhibit (high-status) their anger when exposed to provocative comments in contrast to a condition in which they receive comments that are unlikely to arouse strong provocation (e.g., constructive comments; Hornsey & Imani, 2004). Thus, in Experiment 2, we manipulated comment type (provocative vs. constructive), reasoning that people with a sense of low-status should regulate their anger downwards (and their calm upwards) in ways that are not significantly different from how they might respond to constructive (weakly-provoking) comments about their ingroup (suppression hypothesis). In contrast, people with a sense of high status should report feeling angrier (and less calm) to comments about their ingroup that are provocative rather than constructive.

Finally, it is possible that the suppression-disinhibition effects shown in Experiment 1 could have resulted from motives other than the reputational costs and/or benefits of signaling anger. Indeed, a reasonable critic might argue that such reputational concerns are

unlikely to be active in a research paradigm that relies on momentary fixations on words on a computer screen that are measured unobtrusively in a private room. In response, we would point out that reputational concerns do not disappear in the absence of an audience, and that mere feelings of being observed can influence ostensibly anonymous behaviors (Bourrat, Baumard, & McKay, 2011; Kaley & Fessler, 2005). Participants in this study were also told to expect a discussion with the purported speaker of the comments they were exposed to, as a ruse for a different task that is unrelated to the current topic. Hence, participants knew that their responses to the speaker's comments could be potentially a topic of discussion, and previous studies have shown that such contexts are likely to enlist reputational concerns (Owumalam & Rubin, 2014). However, to be sure that reputational concerns were influential in the present research, we directly measured reputational concerns as a potential moderator of the suppression and disinhibition effects. We reasoned that both effects should be most visible when reputational concerns are *strong* (not *weak*) because it is under this condition that the need to manage one's social reputation should be greatest.

Method

Participants and design. One hundred and twenty-seven students at a British University in Malaysia took part in this experiment (64 men and 63 women, $M_{\text{age}} = 19.37$, $SD_{\text{age}} = 1.71$). Our design was a 2 (group status: high vs. low) x 2 (comment type: provocative vs. constructive) mixed-model design in which concern for in-group reputation was measured as a continuous moderator variable. Group status and comment type were between-subject factors, and anger and calm were the dependent variables. Group status was manipulated using existing social hierarchies as in Experiment 1. Comment type was manipulated by exposing participants either to provocative comments (as in Experiment 1) or to constructive comments about their social group (the added baseline condition). However,

this time the comments were tied to participant's Asian identity rather than to their student identity in order to enhance the generalizability of our findings to other intergroup contexts.

Stimuli, materials and procedure. The stimuli and materials for this experiment were presented in the following order.

Concern for in-group's reputation. This was measured using a three-item scale adapted from Hornsey and Imani (2004): "I care about how others perceive Asians;" "it is important for me that others have a positive view of Asians;" and "when I feel that someone has a negative view of Asians, I can get quite upset" (1 = *strongly disagree*, 7 = *strongly agree*). In this study, the scale's reliability was good, $\alpha = .83$, 95% $CI = [.774, .877]$.

Group status. This was manipulated in a similar way to the approach described in Experiment 1 (see Table 1). A previous pilot study from our lab has shown that Malaysians perceive Africans and Caucasians as respectively low and high in status relative to their Asian in-group (see also Owuamalam et al., 2016a). Accordingly, participants read a brief biography of an African or a Caucasian European prior to being exposed to comments that were purportedly made by these individuals. To reinforce this relative status manipulation, the fictitious biography for each speaker emphasized their low- or high-status credentials as depicted by their level of income and whether they resided in an affluent location (Bangsar in Kuala Lumpur) or a rundown, less affluent location (Taman Tasik in Semenyih; see Table 1).

Comment type. Participants were shown either provocative or constructive comments ostensibly made by the character depicted in the biography. Approximately 50% of the participants ($n = 63$) were randomly assigned to the provocative comments condition and the other 50% to the constructive comments condition ($n = 64$; see Table 3; and Table B1 for gender ratios). The effectiveness of this manipulation was established using a 5-item measure of perceived constructiveness of comments that was adapted from Hornsey and Imani (2004): "This speaker's comments about Asians were constructive"; "the speaker's comments were

SOCIAL STATUS AND ANGER

made in best interests of Asians”; “the speaker's statements about Asians were negative” (reverse scored); “the speaker's statements about Asians were unfair” (reverse scored); and “I think the speaker has direct experience of dealing with Asians to make such comments” (1 = *strongly disagree*, 7 = *strongly agree*; $\alpha = .80$, 95% $CI = [.743, .853]$, $M = 3.94$, $SD = 1.24$). This measure was completed after participants had read the criticisms.

--Insert Table 3 here--

Anger/calm. After reading the comments and providing their opinions about the constructiveness of the comments, participants indicated the extent to which they were angry (anger, disgust, offended and outraged) and calm (calm and at-ease). The emotions were presented in a random order on the computer screen and participants expressed how they felt on a 7-point scale (1 = *I do not feel this at all*, 7 = *I feel this very much*). Emotions relating to each of the two emotion types were averaged to form a single index (anger, $\alpha = .90$, 95% $CI = [.873, .928]$, $M = 3.39$, $SD = 1.55$; and calm, $r = .33$, $p < .0001$, $M = 3.94$, $SD = 1.30$). It is debatable whether anger and disgust should represent a single or different dimensions of moral emotions (Russell & Giner-Sorolla, 2011a, 2011b). Although our reliability analysis suggested that all of the items in the anger scale consistently tapped the underlying anger construct, its dimensionality remained questionable. For this reason, we followed up our reliability analysis with a factor analysis using a varimax rotation. This analysis revealed a unidimensional structure for the four items on the anger scale that explained a sizeable proportion of the observed variance in the overarching construct (78%; all factor loadings $\geq .85$). In addition, when we performed a confirmatory factor analysis that assumed that anger and disgust represented two moderately related but different dimensions, we found the unidimensional model to be superior to the alternative bidimensional approach (see Appendix A). Hence, we retained our unidimensional treatment of the four items on the anger scale as a result.

Results

Comment type manipulation check. To establish that the comment types were different in terms of their constructiveness, we analyzed the extent to which participants perceived the comments to be constructive using a 2 (comment type: provocative vs. constructive) x 2 (group status: low vs. high) between-subjects ANOVA. We included group status in this analysis in order to examine whether the comments were provocative (constructive) to the same degree in the high- and low-status conditions. There was a significant main effect of comment type on the perceived constructiveness of the comments, $F_{(1, 123)} = 41.92, p < .0001, \eta_p^2 = .25$. Participants perceived the comments to be significantly less constructive in the provocative comment condition (mean $\pm$ standard error: $3.31 \pm .14$) than in the constructive comment condition ($4.55 \pm .13$). This effect was not qualified by group status, $F_{(1, 123)} = 2.78, p = .098, \eta_p^2 = .02$. That is, the strength of the provocation of the comments across the two comment type conditions were similar for participants in the high-status and low-status conditions (see Appendix B, Table B1).

Main analyses. We computed a 2 (group status: high vs. low) x 2 (comment type: provocative vs. constructive) MANCOVA that included concern for in-group reputation as a moderating covariate and anger and calm as dependent variables. The use of a MANCOVA allowed us to adjust for the covariance between the two dependent variables. The univariate model results are presented in Table 4. First, the main effect of status on self-reported anger was not significant (see Table 4): That is, contrary to both the hunchback stereotype and suppression-disinhibition hypotheses, participants in the low-status condition did not signal anger to a greater or lesser degree compared to those in the high-status condition. However, this null evidence could have arisen because the *motive* and *type of comments* that participants were exposed to were not considered. Indeed, when we examined the group

SOCIAL STATUS AND ANGER

status x comment type x reputational concern interaction we found this to be significant as expected (see Table 4).

--Insert Table 4 here--

We decomposed this interaction by estimating the marginal means for the simple effect of comment type within each group status condition when concern for in-group reputation was either high ($M+1SD$) or low ($M-1SD$). As expected, the key effects emerged when concern for in-group reputation was high (see Figure 3). Consistent with the suppression hypothesis, there was a significant *suppression* effect in relation to anger ($F_{(1, 119)} = 1.08, p = .302, \eta_p^2 = .01$) and calm ($F_{(1, 119)} = 0.45, p = .506, \eta_p^2 < .01$) amongst participants in the low-status condition, but only when concern for their group's reputation was high. As Figure 3 shows, reports of anger (and calm) in the low-status condition were not meaningfully higher (or lower) in the provocative comment condition relative to the constructive comment condition.

--Insert Figure 3 here--

In contrast, there were significant *disinhibition* effects in relation to anger ($F_{(1, 119)} = 18.66, p < .0001, \eta_p^2 = .14$) and calm ($F_{(1, 119)} = 18.83, p < .0001, \eta_p^2 = .14$) amongst participants in the high-status condition, but only when reputational concerns were also *high*. As Figure 3 shows, participants in the high-status condition calibrated their emotional expressions in ways that signaled their annoyance with the provocative comments. As in Experiment 1, we further investigated whether both the interactive effect of status, comment type and reputational concerns on anger and calm remained even after controlling for gender. Reassuringly, the inclusion of gender as a covariate made no measurable difference to the status x comment type x reputational concern effect on anger, $F(1, 118) = 4.43, p = .037, \eta_p^2 = .04$; and calm, $F(1, 118) = 9.92, p = .002, \eta_p^2 = .08$.

SOCIAL STATUS AND ANGER

We also observed a similar group status x comment type x reputation concern interaction effect when the multi-item anger scale was substituted with the unambiguous single item measure of anger, $F(1, 119) = 4.06, p = .046, \eta_p^2 = .03$. Indeed, we found identical simple effects on the single-item anger to those that we found on the multi-item measure: this was true for the low-status condition ($\bar{d} = .60, SE = .58, p = .303, 95\% CI = [-.544, 1.734]$) and the high-status condition ($\bar{d} = 2.35, SE = .60, p < .001, 95\% CI = [1.172, 3.529]$).

Discussion

Experiment 2 conceptually replicated the evidence from the eye-tracking study, but extended that previous finding in two important ways. Firstly, and consistent with the suppression-disinhibition hypothesis, but contrary to the hunchback heuristic, we found a suppression effect amongst those with a sense of low-status, and a disinhibition effect amongst those with a sense of their elevated position. Secondly, consistent with the suppression-disinhibition hypothesis, these findings were moderated by group reputational concerns.

General Discussion

According to Owuamalam et al. (2016a), people associate members of low-status groups with anger and members of high-status groups with calm. However, this lay expectation may not be consistent with actual status-group differences in the expression of these emotions. Indeed, following social identity theory, members of low-status groups have the greatest motivation to *suppress* their anger, in order to manage a positive group reputation and social identity, and members of high-status groups have the greatest incentive to express anger in order to assert their superiority (see also Tiedens, 2001). The present evidence provides support only for this latter suppression-disinhibition hypothesis and not the hunchback heuristic.

Our findings are similar to the evidence typically found in both the Western (Tiedens, 2001) and the Eastern (e.g. Park et al. 2013) cultures. However, we extend these previous findings in several important ways. First, we demonstrated that the anger signals often expected of people in positions of power is not restricted to organizational contexts (cf. Tiedens, 2001) or to situations in which social hierarchy is operationalized using an objective criterion (such as socioeconomic status – cf. Park et al. 2013). Second, we provide evidence for a novel social identity explanation for the suppression-disinhibition effect by directly demonstrating that reputational concerns moderate the extent to which high and low status group members signal their anger. Finally, we demonstrated the key effects using traditional self-report measures *and* a novel physiological eye-tracking technique.

To be clear, we are not suggesting that the experience of anger is only limited to those in elevated positions or even that it will *always* be more visible for them. Situations may arise in which members of low-status groups may be more vocal about their anger. For example, members of low-status groups might be more forthcoming with their anger in situations where attainment of group goals is illegitimately hindered and they either feel that they do not have anything to lose by venting their frustration (Scheepers, Spears, Doosje, & Manstead, 2006) or that signaling their discontent could in fact advance their interests (van Zomeren et al., 2008). Furthermore, even if the current findings are similar to those typically reported in Western cultures (e.g., Tiedens, 2001), we are mindful that our results may be limited to our non-representative Malaysian sample and/or undergraduate university students (see also Henrich, Heine, & Norenzayan, 2010). Hence, future investigations should (a) more directly delineate the conditions under which members of high- versus low-status groups are more (or less) likely to signal their anger and (b) aim to replicate and extend the current findings using other groups, in other countries, as well as (c) aim for more representative samples.

A key strength of the current research is the novel use of eye-tracking to generate insights about the emotional states of actors in a dynamic social interaction. Opportunities abound to extend the basic principles underlying our approach to more theoretically complex questions. For example, it is entirely possible that in Experiment 1 participants who were manipulated to feel high in status were angered by the spendthrift comment because it suggests that they are *unwise* (i.e., incompetent) with their finances. In other words, such comments directly challenge the stereotypical expectation of competence from those in elevated positions which then intensified their rage (Yzerbyt, 2016). Thus, the opportunity arises for future eye-tracking extension to our design, to manipulate the number of warmth-related and competence-related comments in the vignette and to then examine whether people in high-status positions are more/less sensitive to the competence-related provocation relative to warmth-related provocation.

It is possible to argue that the dwelling effects in relation to the spendthrift comment in Experiment 1 arose only because our Malaysian participants did not fully understand the meaning of the word or because it took longer to process a seemingly unfamiliar word (Raney, Campbell, & Bovee, 2014). This argument is problematic on several fronts. Firstly, English is the language of instruction at the private British University in which the study was conducted and, the local Malaysian students are required to meet a high level of proficiency in the language to gain entry into this selective institution (acceptable scores on the International English Language Testing System, is normally 6.5, with no elements below 6.0). Second, we found in a pilot study that the spendthrift comment featured as part of the meta-stereotypes of students at the institution where the study was conducted. Hence, they clearly understand what it meant, and they expected their professors to view them along those lines given their privileged background. Third, even if the delay in gaze duration could have been explained by word novelty, then this delay should not have systematically varied across

SOCIAL STATUS AND ANGER

high and low-status conditions as we observed. Finally, gaze duration on unfamiliar expressions tend to hover around 300 - 500 milliseconds (Raney et al., 2014) while the gaze duration on the spendthrift comment was 1,179 milliseconds, significantly greater than Raney et al.'s estimate ($ps < .001$). In short, the fact that we were also able to observe a positive correlation between the gaze duration on spendthrift and anger suggests (a) that the meaning of the word was not lost on our participants and, consequently (b) that the extended gaze duration signals of anger.

Finally, although the current interest was on relative (rather than absolute) social position, it is possible to speculate that undergraduate students are not ordinarily exposed to chronic frustration in the manner that certain stigmatized low-status groups might be. Thus, the use of this demographic may not be particularly sensitive to the more chronic sense of frustration assumed by the hunchback heuristic. Future studies could aim to address this potential limitation by using other chronically disadvantaged lower status groups.

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SOCIAL STATUS AND ANGER

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Appendix A

It is possible that disgust and offended are only tangentially related to anger and outrage and, therefore, these items should not be merged together. Indeed, our anger scale may only tap general negativity rather than anger *per se*. To investigate this issue, we constructed a measurement model in which disgust and offended versus anger and outrage were specified to load on to two different latent factors that were only moderately related to each other, and we compared the fit of this bi-dimensional model with a unidimensional model in which all four items tapped the underlying emotion of anger. Note that, to interpret the unidimensional model as indicating “anger,” the strongest loading item on the latent anger factor should be the “anger” item.

In the two factor model, we fixed the covariance of the two latent factors to .45 to reflect a moderate/modest relationship (Cohen, 1988). Using a maximum likelihood estimation, results from the analysis showed that a unidimensional factor ($\chi^2_{[2]} = 0.94$, $p = .626$, $CFI = 1.00$, $RMSEA < .001$, $SRMR = .007$, $AIC = 1706.03$) fit the data extremely well, and anger was the top loading factor (see Figure A1). Meanwhile, the constrained two factor model did not fit the data adequately by all conventional indices of model fitness, ($\chi^2_{[2]} = 90.56$, $p < .00001$, $CFI = .722$, $RMSEA = .590$, $SRMR = .301$, $AIC = 1795.66$), $\Delta AIC = 89.63$ (see Figure A2). Note that differences in AIC values that are equal to or greater than 3 are considered to be meaningful. Thus, this additional analysis supported the view that (a) our one dimensional treatment of the scale was superior to a bi-dimensional structure, and (b) anger unites the one dimensional latent factor.

Appendix A contd.

Figure A1. Unidimensional model of anger (Experiment 2). Reported are standardized estimates are reported.

Figure A2. Two-factor model of anger and, disgust and offended (Experiment 2).

Appendix B

Table B1.

The Effect of Comment Type on Perceived Constructiveness in Each Status Group.

	Comment Type	
	Provocative [m vs. w]	Constructive [m vs. w]
Low-status	3.43 _a (.19) [13 vs. 18]	4.35 _b (.19) [15 vs. 16]
High-status	3.19 _a (.19) [19 vs. 13]	4.75 _b (.19) [17 vs. 16]

Note. In parenthesis are standard errors while means are outside parenthesis. For rows and columns numbers sharing the same subscript are not statistically different ($ps \geq .142$), while those with dissimilar subscripts differ ($ps < .010$). Numbers in square brackets represent gender ratios [m = men, w = women].

SOCIAL STATUS AND ANGER

Table 1.

Speaker Biographies used in Manipulating a Sense of High and Low Social Status.

	High Status Condition	Low Status Condition
<i>Experiment 1</i> (<i>N</i> = 64)	Danny Ng spends a lot of his leisure time Broga. Danny is a foundation year student who is interested in writing articles in his spare time. Danny shares a room with 4 other foundation year students in a cheap accommodation Taman Tasik Semenyih. Danny's savings, like the typical foundation year student, is 30% lower than that of an average undergraduate student in Malaysia. Danny's spending power, like other foundation year students, is also much less than that of most undergraduate students. (<i>n</i> = 32)	Professor Daniel Murdoch spends a lot of his leisure time visiting international museums. He is an expert migrant worker who likes to write articles in his spare time. Professor Murdoch lives in an affluent area in Bangsar like other high profile academics in Malaysia. Professor Murdoch's savings, like the university lecturer, is more than 30% higher than that of an average undergraduate student. Professor Murdoch's spending power, like other high profile academics, is also much higher than that of most undergraduate students. (<i>n</i> = 32)
<i>Experiment 2</i> (<i>N</i> = 127)	Danny Murdoch grew up in a small village in East Africa. Danny is an unemployed migrant who is not particularly interested in writing articles during his spare time. Danny shares a room with 4 other Africans in a cheap accommodation in Taman Tasik Semenyih. Danny's savings, like the typical African, is 30% lower than that of an average Asian. Not surprising, Danny's spending power, like other Africans, is much less than that of most Asian people. (<i>n</i> = 62)	Mr. Daniel Murdoch is a typical Caucasian who grew up in Western Europe. He is an expert migrant worker who likes to write articles in his spare time. Mr. Murdorch lives in an affluent area in Bangsar like other Caucasians in Malaysia. Danny's savings, like the typical Caucasian, is more than 30% higher than that of an average Asian. Danny's spending power, like other Caucasians, is also much higher than that of most Asians.” (<i>n</i> = 65)

Note. We used “Danny” (without a title), in the low-status condition in order to de-formalize the fictitious character.

SOCIAL STATUS AND ANGER

Table 2.

Correlations between Gaze Duration / Frequency on the Five AoIs and Anger.

	1	2	3	4	5	6
1. Spendthrift	—	.41**	.18	.19	.29*	.34**
2. Whiny	.06	—	.33**	.34**	.01	.23 [†]
3. Timid	-.003	.21 [†]	—	.26*	.13	-.08
4. Lack ambition	.09	.32**	.18	—	-.09	.002
5. Arrogant	.24 [†]	-.13	.20	-.10	—	-.18
6. Anger	.21 [†]	.12	-.17	-.03	-.12	—
Means (standard deviation)						
Gaze duration (msecs)	1179 (835)	449 (387)	584 (519)	1050 (677)	780 (764)	.23 (.64)
Gaze frequency (count)	5.75 (3.25)	1.97 (1.37)	2.56 (1.52)	5.67 (3.26)	3.75 (2.41)	

Note. [†], *, ** are respectively $p \leq .10$; .05; .01. Correlation coefficients above the diagonal relate to fixation duration (Pearson's r), while those below the diagonal relate fixation frequencies (Spearman's ρ).

Table 3.

Comment Type Manipulation

	Comment Type	
	Provocative	Constructive
<i>N</i> = 127	When I think of Asians... erm, I think of them as being quite primitive and poorly educated bunch of people - their written and spoken English is simply awful.... Frankly, erm... I'd say they are generally lazy and incompetent... erm... I also think they could benefit from further education to improve their living standards...! (<i>n</i> = 63)	When I think about Asians...erm I think they are normally very polite and friendly people. But at times Asians are less knowledgeable and left behind. Frankly... erm, I wish Asians could benefit from further enhancements in various aspects of today's living... erm... like technology and creativity in order to improve their living standards... (<i>n</i> = 64)

SOCIAL STATUS AND ANGER

Table 4.

MANCOVA Results for Status x Comment Type x Concern for in-group reputation Interaction Effect on Anger and Calm.

	<i>F</i> -ratio	Two-tailed <i>p</i>	η_p^2
	Anger/Calm	Anger/Calm	Anger/Calm
Status	1.76 / 0.01	.187 / .915	.02 / <.001
Comment type (CT)	1.37 / 4.00	.244 / .048	.01 / .03
Concern for in-group reputation (CIR)	16.75 / 1.31	<.001 / .255	.12 / .01
Status*CT	2.98 / 8.43	.087 / .004	.02 / .07
Status*CIR	0.61 / 1.41	.436 / .238	.005 / .01
CIR*CT	4.76 / 7.66	.031 / .007	.04 / .06
Status*CT* CIR	4.66 / 10.20	.033 / .002	.04 / .08
<i>N</i> = 127, <i>df</i> = 1, 119			

Note. Analysis for anger here uses the multi-item scale.

SOCIAL STATUS AND ANGER

(a)

When I think of undergraduate students, I think of them as being fairly **whiny**. They generally **lack ambition**, seldom make plans for life beyond university. If you asked me, I'd say they are quite **timid** too and feel life should revolve around them, erm, what's the word, **arrogant**...? Most are **spendthrifts** who cannot use their parents' money wisely!

(b)

Figure 1. (a) Flowchart for Experiments 1 and 2. In Experiment 2 the timing of the comment vignette was determined by the participants. (b) Vignette containing the provocative comments that were presented via the Tobii eye-tracker. The five AoIs are enclosed in rectangles.

SOCIAL STATUS AND ANGER

Figure 2. The effect of status on dwelling, in terms of gaze duration (in milliseconds). Error bars are standard errors.

****** $p < .010$

SOCIAL STATUS AND ANGER

Figure 3. Self-reported anger and calm when reputational concern is high. Error bars are standard errors.

*** $p < .001$