# THE HUNCHBACK HEURISTIC:

# DO PEOPLE ASSOCIATE ANGER WITH LOW STATUS AND CALMNESS WITH HIGH STATUS?

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## Abstract

This thesis proposes the existence of a 'hunchback heuristic' (HBH): a tendency to associate members of low status social groups with anger and related behaviours, and members of high status social groups with calmness. A series of experiments were conducted to investigate the existence, boundary conditions, effects and interactions of this novel construct.

Chapter 3 presents three experiments aimed at demonstrating the existence of the HBH, using both direct and indirect measures. The results of this series of experiments provide strong evidence of the expression of the HBH on both the explicit and implicit levels. The second experiment (Chapter 3, Study 1) further demonstrates that the HBH occurs at both inter-group and intra-group levels, and the third (Chapter 3, Study 2) highlights the cumulative effect of multiple co-occurring status hierarchies on the HBH's expression.

Chapter 4 reports two experiments which explore the effect of social identity motives and system legitimacy on the HBH, using a novel minimal groups paradigm through which participants are assigned positions in a constructed status hierarchy. The findings of these two experiments (Chapter 4, Studies 1-2) show that social identity motives have only a limited effect on the HBH, which is further constrained by system legitimacy. Both experiments also demonstrate the independence of the HBH from other biases with clear evidence of its expression under minimal conditions.

Chapter 5 describes a single cross-cultural experiment (Chapter 5, Study 1) which examines the possibilities of a) a cultural component to the HBH and b) frustration playing a role in mediating its activation and expression. The results of this study indicate that the HBH is not affected by cultural differences, and also showcases

preliminary evidence that frustration may mediate the relationship(s) between status, anger, and calmness in the HBH.

The overall findings of this thesis point to a real and robust HBH effect, such that low status social groups are consistently associated with anger, and high status social groups with calmness, on both explicit and implicit levels of association. The HBH holds true across intergroup and intragroup status hierarchies, as well as across cultures; however, it appears constrained by system legitimacy, following Spears et al.'s (2001) social reality constraint model. The findings also indicate that the HBH may be mediated by frustration.

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# Do People Associate Anger with Low Status and Calmness with High Status?

In a December 2016 interview with Oprah Winfrey, then-First Lady of the United States of America Michelle Obama discussed her experience of being labelled "angry" while on the campaign trail on behalf of her husband, Barack Obama. She remarked: "You think, 'that is so not me.' But then you sort of think, 'Well, this isn't about me. This is about the person or people who write it.'"

Mrs. Obama's comments indirectly reference the stereotype of the "Angry Black Woman" (Ashley, 2014; Childs, 2005), whereby Black women are expected to be angrier and more aggressive, compared to White women or White persons in general. The "Angry Black Woman" stereotype is one of the stereotypes most frequently applied to Black women: it is found in multiple forms of popular media, both fictional and non-fictional (Kretsedemas, 2010; Tyree, 2011; Walley-Jean, 2009). This anger stereotype is not isolated to Black women (see also Elsamar et al., 1999): stereotypes associating certain social groups (often from a disadvantaged background) with anger and aggression abound. Hispanic/Latin American women, for example, are stereotyped as "Spicy Latinas" (Merskin, 2007), which paints them as emotionally volatile, verbally aggressive, and easily roused to anger. Beyond race, the elderly and adolescents (groups which are low in socioeconomic power compared to career-age adults) are often stereotyped as being aggressive, irrational, unreasonable, cantankerous, and angry (Cuddy et al., 2005; Meshel & McGlynn, 2004; Robinson et al., 2008).

One commonality exists between the foregoing social categories: Each of them (Black women, Hispanic/Latin American women, adolescents, and the elderly) are groups that have historically been marginalised, or that occupy a minority status in society. That is, these groups tend to have relatively less social power, lower average

wealth and income, and are especially vulnerable to exploitation and violence (Human Rights Watch, 2017; Pfeffer et al., 2013; Rowland & Carnegie, 2011; Sullivan et al., 2015; Williams et al., 2010). Furthermore, representations of these groups in mass media are often stereotypically negative (Bufkin & Long, 2002; Lauzen et al., 2008).

### 1.1 The Hunchback Heuristic

Given the foregoing observation, I propose the existence of a generic tendency to associate low social status groups with anger, and the opposite tendency to associate high social status groups with calmness. These twin propositions are termed the hunchback heuristic, which is rooted in a West African lay belief that those afflicted with "mkpu-mkpu azu" (Igbo expression for, "hunchback") are prone to anger, due to frustration arising from accumulated negative experiences of their previous life. Corollaries of this hunchback heuristic are evident in other societies too: the Canadian French "avoir une crotte sur le cœur" (lit. "to have dirt on the heart"), the Chinese 愤恨不平 [fèn bù ping] (lit. "resentment of injustice"); and the Indo-Malay idiom "sakit hati" (lit. "ill heart") all describe similar lay beliefs associating low social status and emotional outbursts. Below, I present a definition of social status that underpinned the current investigation.

#### 1.1.1 *Social Status*

Much of the literature investigating phenomena related to social status relies on indices which synthesise various objective measures of status, such as education level, occupation, income, or occupational prestige, into a single, overall measure of social status (e.g. Nakao & Treas's Socioeconomic Index, 1994). These indices, however, focus heavily on markers of economic status, and largely ignore intersections with

dimensions of social status based on non-economic factors, such as race and gender (see Diemer & Ali, 2009, for a comprehensive review). Alternate approaches, such as the Social Class Worldview Model (Liu et al., 2004), have attempted to address these shortcomings by considering individuals' self-identification with social groups and categories, as well as their subjective perceptions of the hierarchical relationships between social groups. However, despite the commendable effort to account for non-economic social factors, this increase in subjectivity has the ironic side-effect of making direct comparisons difficult, due to the highly individualised nature of subjective perception and self-identification.

Thus, rather than generating an all-inclusive index of social status, I chose instead to focus my investigations on a variety of social status indicators (e.g., skin colour, physical size, or prestige accorded to some groups relative to others). This approach meant that I was able to capture many of the numerous ways in which subjective social status has been operationalised in the literature (see Diemer et al. 2013 for a comprehensive review), as well as considering the suggestion that subjective status measures tend to elicit a more persistent effect on behaviour (Owuamalam et al., 2016). In short, I use the term social status here to refer either to a historical or a temporary sense of privilege, where one group is better regarded than a comparable other.

### 1.1.2 *Anger and Aggression*

A further definition that is relevance to the current investigation is the distinction drawn herein between anger and aggression.

Appraisal theories of emotion posit that anger results from the perception that one - or one's group - have been the victims of injustice (Averill, 1982, as cited in Shuman et al., 2017), which subsequently leads to the emotional goal of redressal, or

correcting the injustice perpetrated against oneself or one's ingroup (Carver & Harmon-Jones, 2009). This redressal may take the form of confrontation or attacks against the perceived originator of the perceived injustice (Roseman et al., 1994) - that is, aggressive behaviour.

Based on this understanding, one might assume that anger and aggression are inexorably linked; however, empirical evidence suggests this is not necessarily the case. Although it is true that anger has been found to encourage aggressive retaliation and violent action (Cheung-Blunden & Blunden, 2008; Halperin, 2008), it has also been found to lead to reconciliation and improved relations in the long-term, as well as to foster support for compromise during negotiations (Fischer & Roseman, 2007; Halperin et al., 2011). Thus, although there is undoubtedly a connection between anger and aggression, it is far from a one-to-one relationship.

In the current programme of research, therefore, I define anger and aggression as two discrete but phenomena, treating anger as an emotional *state*, which may or may not be expressed externally, whereas aggression is treated as an emotional *behaviour*, which may or may not be the external expression of anger.

But, what evidence (however indirect) already exists to support the thesis that members of low social status groups are associated with anger while their higher status counterparts are associated with calmness?

### 1.2 Indirect Empirical Evidence for the Hunchback Heuristic

Evidence from the literature is inconclusive: some report patterns that are supportive of the hunchback heuristic, whereas others do not. For example, within the racial context of the historically marginalised Blacks in the United States of America, Hugenberg and Bodenhausen (2003) had European-American [sic] participants watch short computer-generated movies where White and Black target faces morphed from a

happy expression to an angry expression. Participants were then asked to press a response key when they judged the target face was beginning to display anger. Results showed that participants who scored high in implicit prejudice readily judged Black target faces as displaying anger at a significantly earlier point in the movie, compared to those who scored lower in implicit prejudice. Interestingly, this readiness to associate target faces with anger did not emerge when the target faces were White.

In a similar study, Hutchings and Haddock (2008) presented White British participants with (computer-generated) happy, angry and neutral Black, White and racially ambiguous target faces, and asked participants to categorise the emotion displayed as happy, angry or neutral. Participants were also asked to rate the intensity of the emotion that they perceived and to categorise target faces as either Black, or White. Results indicated that participants who scored higher in implicit prejudice were more likely to categorise racially ambiguous angry faces as Black, and to judge them as displaying more intense anger, compared to racially ambiguous angry faces categorised as White. These findings demonstrate that Black people might be more readily associated with anger than White people, although it is difficult to assume a generic tendency beyond implicitly prejudiced individuals.

Other investigations into face recognition and the cognitive processing of emotions also show similar biases in their results, across various experimental modalities. For example, using an emotion identification task, where European-American [sic] participants were asked to categorise the emotion displayed by a (computer-generated) Black or White target face as ‘happy’ or ‘angry’, Hugenberg (2005) found that response latencies were significantly shorter for angry Black faces compared to happy Black faces, as well as angry White faces. Meanwhile, response latencies for happy Black faces were significantly longer, compared to happy White

faces. Ackerman et al. (2006) found that their White participants showed better recognition accuracy for angry Black targets, in terms of both high correct hit rates and low false alarm rates, compared to both neutral Black targets and angry White targets. Furthermore, Shapiro et al. (2009) showed that White participants who saw an angry Black face first, tended to judge a subsequent neutral Black face to be more threatening, compared to a neutral White face presented after an angry White face. Although these cases relate to a specific inter-racial context, the preponderance of the evidence ostensibly corroborates the hunchback heuristic and, importantly, occurred even when implicit racial prejudice was considered.

However, the evidence is neither strong nor straightforward beyond the context of race, and this observation complicates the proposal of a generic hunchback heuristic, highlighting the possibility that its expression may be altered by interaction with other factors. For example, several studies conducted within organisations indicate that anger displays are more likely to be expected of those with high rather than low social status. In the organisational context, at least, the display of anger appears to confer high status on the angry person (Tiedens, 2000), especially in relation to negative situations, such as work-related mishaps and communication failures (Tiedens et al., 2001). Similarly, high status individuals have been shown to be more likely to express anger towards low status individuals, than the reverse (Muller et al., 2012). These examples suggest that relative power – such as position in a workplace hierarchy – may have a shielding effect, whereby higher status individuals are conferred the privilege of being able to express anger towards their subordinates without facing negative repercussions – such as a general association between high status and anger – as suggested by the work of Kimberly Taylor (Taylor, 2004; Taylor & Risman, 2006).

Other studies indicate that gender, too, could complicate the anger-status association even further: low status males have been shown to be more likely to express anger, compared to low status females (Domagalski & Steelman, 2007) and, interestingly, angry faces in general seem to be more likely to be perceived as male (Becker et al., 2007). These findings appear to reflect traditional gendered norms of emotion, whereby although women are generally expected to be more emotionally volatile and more likely to express strong emotion, while men are generally expected to be calm, rational, stoic, and restrained (Kelly & Hutson-Comeaux, 1999; Hutson-Comeaux & Kelly, 2002), in the specific case of anger, these norms are reversed: men are more strongly associated with anger, aggression and violence, whereas women are more strongly associated with passivity, submissiveness and restraint (Plant et al., 2000).

Another factor which contributes to the mixed evidence regarding the relationship between anger and social status, and which may potentially interact with the hunchback heuristic, is cultural differences between sample populations, whether it be in an organisational context or broader society. One theoretical account that explores the relationship between culture, social status, and anger is Park et al.'s (2013) cultural moderation hypothesis.

### 1.3 The Cultural Moderation Hypothesis

The cultural moderation hypothesis (Park et al., 2013) assumes that anger expression may be a consequence of two things: the experience of frustration or the privilege given to specific people to exert authority. Park et al. linked these two causes of anger to social status by positing that:

a) Anger expression is more likely for low social status individuals due to frustration because they are more likely to experience frustrating

circumstances than their higher status counterparts do. This frustration mechanism suggests a negative link between social status and anger expression.

b) Anger expression is more likely for high social status individuals because they are more likely to have the privilege that comes with social power to wield authority whereas their lower status counterparts do not. This authority-privilege mechanism suggests a positive link between social status and anger expression.

Park et al. (2013) proposed that it is culture that decides whether the frustration or authority-privilege mechanism determines anger attributions to people who are high or low in social status. According to Park et al., the pursuit of personal fulfilment is regarded as paramount in Western, individualistic societies, and individuals who find that opportunities to achieve personal goals are scarce or obstructed in some way should be more likely to experience frustration. This state of mind should then make it more (not less) likely for such individuals to express anger. It is often more difficult for people in low status positions to get their way in life, at least relative to their higher status counterparts, and therefore, Park et al. reasoned that in Western individualistic societies, low social status individuals may , due to frustrating life events, be more likely to express anger than their privileged counterparts.

Conversely, in Eastern, collectivistic societies, where interdependence with others is prized and the individual's position within a community or social group is considered most valuable, expression of anger is generally condemned, due to its negative repercussions on interpersonal relationships. That is, the expression of anger could disrupt social harmony, and this disruption is frowned on in societies that value social connectivity and community. However, the proscription of anger expression in

interdependent cultures is assumed to be non-universal, and individuals in higher (but not lower) social positions are often granted the privilege to vent their anger (Taylor & Risman, 2006). The display of anger can be used to enforce cooperation and compliance to collective ideals, and so this privilege is reserved only for those people with the authority to lead (i.e., those in elevated social positions).

The cultural moderation thesis differentiates between objective and subjective social status, proposing that in the individual-focused West, the predicted effects would be more pronounced when social status is assessed subjectively (i.e. an individual's personal assessment of their social position), whereas in the community-oriented East, the predicted effects would be more apparent when social status is assessed objectively (i.e., individual social position as perceived by society-at-large). Park et al. (2013) argued that in the West, personal attributes and appraisals of the self are emphasised over indirect or reflected appraisals, and therefore subjective appraisals of status, such as individuals' personal appraisal of their competence in the workplace, are prioritised over objective appraisals of status, such as said individual's actual position in the workplace hierarchy. In Asian cultures, by contrast, due to the emphasis on community and interdependency, reflected (and objective) appraisals of the self by society and one's peers are valued over individual and subjective appraisals, and thus objective appraisals of status are prioritised over subjective appraisals (Cohen et al., 2007; Cohen & Hoshino-Browne, 2007; Curhan et al., 2013), and thus objective social status as determined by social consensus matters more than an individual's subjective opinion on their social rank.

### 1.3.1 *The Evidence*

Park et al. tested the culture moderation hypothesis using participants' self-reports of real incidents of anger expression, taken from nationally representative

samples in a Western, individualistic society (the USA) and an Eastern, collectivistic society (Japan). They found, as predicted, that high social status predicted anger expression in the Eastern sample, while low social status predicted anger expression in the Western sample. Thus, the cultural moderation hypothesis may be one potential explanation for the mixed pattern of associations between anger and social status discussed earlier.

However, the evidence for Park et al.'s cultural moderation thesis is based on a single study, with a single example of individualistic and collectivistic cultures. Hence, it is difficult to regard this single piece of evidence as conclusive, given the sweeping generalisations that it makes about societies that are culturally independent versus interdependent in general. Recall too that several studies discussed earlier (e.g. Tiedens, 2000; Tiedens et al., 2001; Muller et al., 2012) which were all conducted in the West, showed evidence of an association between high social status and anger: a trend which is the inverse of Park et al.'s predictions. Furthermore, Park et al.'s (2013) measures of social status were both specific and general. It is specific because objective social status was calculated as a function of the individual's educational and occupational achievements, but general because subjective social status was defined as an individual's personal assessment of their standing within "their own community" (p. 4), with no pre-determined parameter on what 'community' entailed. This latter measure is problematic because an individual may belong to multiple communities, with their standing or position differing in each, such that they may be high status in one community and low status in another. For example, a janitor who is a skilled amateur basketball player may have high status within the amateur basketball community but low status in his workplace community. Thus, it is difficult to draw precise comparisons between individuals' subjective statuses with such broadly defined parameters. It is also

difficult to attribute differences in the pattern of results in the Western and Eastern samples to culture when the operationalisation of status differed in both samples to begin with.

### 1.3.2 *Cultural Moderation of the Hunchback Heuristic?*

Though the cultural moderation hypothesis deals in expressions rather than expectations of anger, it is not difficult to extrapolate from Park et al.'s reasoning to posit that under the cultural moderation hypothesis, individualistic cultures should have higher expectations of anger from low status groups because they would be more likely to express anger, while in collectivistic cultures expectations of anger would be higher for the more anger-expressive high status groups. That is, the cultural moderation hypothesis suggests the possibility that the hunchback hypothesis may only hold true in individualistic Western cultures, and not collectivistic Eastern cultures. Nevertheless, it would be incautious to completely dismiss the hunchback heuristic as a psychological reality, as a closer look at Park et al.'s methods shows that only reports of actual expressions of anger were measured. That is, the study concerned participants' ratings of their own anger, and not the expectations of third parties concerning anger from high and low status groups/individuals.

Furthermore, although expectations may in fact mirror actual encounters of anger expressions from high and low status groups/individuals, given that stereotypes can accurately represent reality (Jussim, 2017a), it is also entirely possible that people might hold opinions that do not have any basis in fact, as demonstrated by a growing body of research investigating the phenomenon of 'fake news', i.e. the spread of misinformation through social media and partisan media platforms (e.g. Jardina & Traugott, 2019; Nyhan et al., 2013; Taber & Lodge, 2006). Demonstrating the potential mismatch between expectations and actual behaviour, Owuamalam and Rubin (2017)

found that low status groups may sometimes be motivated to disconfirm stereotypes associating their ingroup with anger by, for example, suppressing expressions of this emotion, so as to launder their social image (cf. Kunda & Oleson, 1995; Petkanopoulou, et al., 2018; Phelan & Rudman, 2010; Rudman & Phelan, 2008).

Thus, although Park et al.'s (2013) findings provide some support for an association between social status and anger, they do not provide conclusive support for or against the existence of the proposed hunchback heuristic. The current research program therefore seeks not only to establish the existence of the hunchback heuristic, but also to examine whether or not its manifestation is impacted or varied by culture, and if so, whether or not this variation aligns with the predictions of the cultural moderation hypothesis.

### 1.4 The Flip-side of Anger? Social Status, Restraint, and Calmness

Another factor potentially at play in Park et al.'s (2013) culturally differential outcomes regarding anger expression is the relative value placed on self-control and restraint in Eastern societies vs. Western societies. Eastern societies greatly prize the qualities of self-control and restraint; practicing and embodying self-control is a key facet of multiple Eastern philosophies - such as Buddhism (Keown, 2013), and Confucianism (Yip, 2003) - and outward displays of emotion are often frowned upon (Kitayama, 2001). By contrast, in Western cultures, while self-control and restraint are valued traits, they are by no means as central and important as they are in the East (Trommsdorff, 2012).

However, across both East and West, self-control and restraint have historically been associated with class and social position. For example, the "stiff upper lip" demanded of the British upper class in the Victorian era (Stanworth, 1980), and the similar expectations of self-control found in modern Japan and China (Kitayama, 2001)

both regard restraint in interpersonal interactions as a sign of "good breeding" (Stanworth, 1980; Trommsdorff, 2012). Indeed, this may contribute to the association of calmness and high status: it is admittedly difficult to discern between restraint and calmness from an external perspective, and the two emotional states may easily be confused. Thus, it is possible that the association of self-control and restraint with higher social class and position may be linked to the hunchback heuristic's proposed association between high social status and calmness.

While the evidence in the foregoing discussions provides some support for the existence of a hunchback heuristic associating low social status with anger, evidence for the complementary thesis associating high social status with calmness is virtually non-existent as far as I am aware. It is entirely possible that this dearth of evidence for a status-based calmness attribution might be because researchers assume calmness to be the mirror opposite of anger and therefore, an investigation that addresses anger naturally provides answers for the inverse of this emotion.

The weakness in the above reasoning, however, is that it relies on a definition of calmness which positions it as an antonym of anger (i.e., suggesting that calmness and anger are opposite emotions which cannot coexist). In truth, however, calmness is difficult to pin down and quantify, being essentially an absence of overt emotional display as opposed to a distinct emotion on its own, and as such could very easily coexist with any number of emotions (even anger). One could be conceivably ‘calmly furious’, or on the other end of the emotional valence spectrum, ‘serenely joyful’.

For these reasons, forgoing an investigation into the status basis for calmness expectations, on the grounds that it is the mirror opposite of anger, might be potentially misguided. Thus, the current research programme places equal emphasis on establishing empirical evidence for both propositions of the hunchback heuristic, i.e., an

association between low social status and anger, as well as an association between high social status and calmness.

### 1.5 Intergroup Processes: Social Status, Social Identity, and Social Reality

Given that the theorised links between low social status and anger, and high social status and calmness, are predicated on differential expectations based on membership in groups of different status, it is entirely possible, therefore, that group loyalties and interests may play a role in the attribution of anger to status ingroups and outgroups. A major perspective which may be useful in unpacking the ways in which social category memberships might influence anger/calmness attributions is the social identity approach (Tajfel et al., 1971; Tajfel & Turner, 1979).

First formulated in the 1970s as a theory of intergroup relations by Henri Tajfel and his graduate student John Turner, social identity theory has been extensively researched, revised and expanded upon in the decades since (see Hogg et al., 2017, or Hornsey, 2008, for comprehensive overviews). Initially, social identity theory posited a straightforward binary compartmentalisation of the self into social identity (the self as defined by attributes and attitudes shared with other members of a group) and personal identity (the self as defined by unique, personal, idiosyncratic traits and relationships; Tajfel & Turner, 1979). More recent formulations propose four types of identity: person-based social identity (self-concept inclusive of internalised group attributes, e.g. "artist" or "dancer"); relational social identity (self-concept in relation to specific members of the group, e.g., "mother" or "brother"); group-based social identity (equivalent to the original definition of social identity, e.g. "English" or "Arsenal supporter"); and collective identity (social action-oriented self-concept as a member of the group, e.g. "feminist" or "libertarian"; Brewer, 2001; Chen et al., 2006). The social identity approach posits that the interaction between, and the activation of these

compartmentalised self-identities impact individuals' cognition, attitudes, and behaviour during both interpersonal and intergroup interactions.

### 1.5.1 *Group-based Emotions, Ingroup Bias, and The Social Reality Caveat*

Of the various branches and sub-branches of theory that comprise the social identity approach, two major aspects are most relevant to my research questions. The first of these is the recently developed intergroup emotions theory (Mackie et al., 2000), which posits that when the social or group-identified self is salient, individuals appraise and react emotionally to events at the group rather than the individual level, regardless of the personal impact of the event. The second is the intergroup relations proposition that members of any given social group are motivated to maintain a positive social image of their ingroup, employing various strategies to achieve this goal (Hogg & Abrams, 1988; Tajfel & Turner, 1986). These two aspects of the social identity approach have potentially significant implications for the theorised relationships between social status and expectations of anger and calmness.

First, if individuals may react to events that affect their ingroup as though the event affects them personally even when there is no personal impact, and if such group-based emotions affect group-oriented behaviour – i.e. interactions within the ingroup or with outgroups (Garcia-Prieto et al., 2007) – then it may be possible that expectations of specific emotions from certain groups may be modulated by group membership. Second, social identities are sources of positive evaluation, which has important implications for the ways that people feel about themselves as individuals. Hence, the yearning for a positive social evaluation (or image) can determine the extent to which individuals accept or resist labels that paint their social identities in a positive or negative light.

This is because social groups provide people with a sense of belonging, and a valued group satisfies a further need for a positive self-esteem (i.e. in terms of reputation and prestige). Accordingly, concerns about social image often act as crucial catalysts for group-interested behaviours (Tajfel, 1981). Hence, people may be motivated to render a positive valuation of their status ingroups (with regards to anger and calmness) in order to bolster (or maintain) a positive social image, especially when their group is accorded low social status. Indeed, both classic (e.g., Tajfel et al., 1971) and contemporary studies on intergroup relations consistently reveal that people tend to favour ingroups, and to sometimes disparage outgroups (e.g. Didonato, Ulrich & Krueger, 2011; Schiller et al., 2014; cf. Brewer, 1999) - even when the social category information presented to them is arbitrary (i.e. based on minimal categorisation - see Tajfel et al., 1971). Following the same logic, any given social group may also be motivated to encourage or amplify such negative associations with a competing outgroup, as this can help to maximise their ingroup's social image in comparison. This reasoning suggests that it is possible that members of low social status groups may actively or passively resist labels associating their status-ingroup with the negative emotion of anger, whereas members of high status groups may emphasise an association between anger and the low status outgroup, to maximise their social advantage in this regard at least.

It is important to note, however, that this behaviour may be subject to constraints imposed by social reality (Spears et al., 2001): that is, the degree to which members social groups can manage or manipulate its social image may be restricted by the objective truth of their position in society. According to Spears et al.'s 'social reality caveat', these constraints are strongest when the social groups in question are distinct and discrete, with no overlap and clearly defined difference, and when their relative

positions in the societal hierarchy is either legitimate or based on objective fact. Thus, social groups whose relatively low social position is perceived to be justifiable may struggle to resist negative associations that are (or are perceived to be) grounded in reality/facts.

### 1.5.2 *Social Identity Motives and the Hunchback Heuristic*

Applying this reasoning to the application of the hunchback heuristic suggests that under conditions of legitimate, objective and justifiable hierarchy, low status social groups may find it difficult to resist an association of their status ingroup with anger. However, when the legitimacy of the inter-status divide is questionable, such as when status hierarchies are subjectively ascribed, then it is entirely possible that resistance to an association between their low status ingroup and anger might be a likely outcome. For members of high status groups, the social reality caveat may lead them to both accept the association of their status ingroup with calmness, as well as reinforcing the association of the low status outgroup with anger to enhance and emphasise their distinctness and position in the social hierarchy. In short, the size of the proposed hunchback heuristic is likely to be more visible amongst people in elevated status groups relative to people in lower status group.

I may thus find that people resist the application of the hunchback heuristic if they are led to believe that they share category membership with the low status target being evaluated, because in such situations, the negative attributes of 'anger' and 'aggressiveness' could be detrimental to the perceiver's (collective) self-esteem. This calculation may not be a concern for perceivers who are themselves high in status, because their interests are protected by a valuation system that attributes the positive emotion of calmness to their status ingroup, and the negative emotion of anger to lower-status outgroups. Furthermore, taking Spears et al.'s social reality caveat into

account, one might expect members of low status groups to resist or counter the application of the hunchback heuristic to their status-ingroups only when the differences between the low status and high status groups are neither clear-cut (e.g., when status is based on subjective ranking) nor legitimate. This is because, in these situations, it may be difficult for members of low status groups in particular to promote views of their ingroup that are based on a questionable and thus possibly illegitimate valuation system. In contrast, when the status hierarchy is based on an objective criterion and is thus legitimised, it may become difficult for members of low status groups to justify their opposition to unfavourable judgments that come with their devalued position, such as the association with anger that is predicted by the hunchback heuristic. This 'reality check', therefore, could result in the passive acceptance of the association of anger with low status groups and calmness with high status groups (see Owuamalam, Rubin, & Spears, 2018).

However, although plausible, these additional constraints to the potential link between social status and anger/calmness association has never been empirically examined before. Thus, a third aspect of the current research program is an investigation into the potential interactions of social identity motives with the hunchback heuristic, by examining how people apply and express the hunchback heuristic under conditions where they share group membership with the individual being appraised, as well as exploring the potential impact of the legitimacy of the status hierarchy.

### 1.6 Overview of the Current Research Programme

While some evidence supports an association between low social status and anger (e.g. Ackerman et al, 2006; Shapiro et al, 2009), others point to an association between high status and anger (e.g. Tiedens, 2000; Tiedens, Ellsworth & Mesquita,

2001); similarly, the paucity of direct evidence examining a connection between high or low status and calmness leaves that possibility wide open. These differences could have resulted from different investigatory approaches or measurements (as in Tiedens et al., 2000, or Muller et al., 2012), but it could also be due to culture, as Park et al. (2013) makes clear. Hence, the failure to isolate a generic tendency in the link between social status and anger/calmness attribution could not have been because such associations do not exist, but because issues around method, culture and the reality of the social context in which previous evidence was obtained constrains a clear and convincing demonstration.

Thus, in the next chapter (Chapter 2), I discuss the investigatory approach in this investigation and how it builds from, as well as addresses, the methodological shortcomings of previous investigations. Specifically, I detail the development of novel protocols for three phases of this research programme with respect to: a) validating the existence of the hunchback heuristic b) testing the conditions that amplify or attenuate its use, and; c) contrasting the hunchback heuristic with existing models.

Chapter 3 presents a pilot study and two studies that are already published, which I conducted to establish the existence of the hunchback heuristic. Each of these studies tests the hunchback heuristic under a different status context and aimed to demonstrate its generalisability across multiple status contexts. The pilot study seeks to establish preliminary evidence that associations between low status and anger and high status and calmness do in fact exist; Studies 1 and 2 attempt to further substantiate the empirical evidence for these associations using both direct and indirect measures, investigating the manifestation of the hunchback heuristic in an intra-group status context and in the presence of co-occurring status contexts, respectively.

Chapter 4 showcases two further studies examining the relationship between the hunchback heuristic and social identity motives, using a novel adaptation of the minimal group paradigm. Here, I test the hunchback heuristic under minimal conditions designed to impose certain (reality) constraints on observers who are themselves low (or high) in social status, based on the assumptions that I derived from the social identity perspective. The key question here was to establish whether members of low status groups accept or resist the hunchback heuristic when it is applied to their social ingroup, and to isolate the social conditions under which both mechanisms are possible. Studies 3 and 4 attempt to address this question using a novel anagram protocol which manipulates participants' perception of their skill in solving anagrams and the resulting status hierarchy. I also manipulated the legitimacy of the ranking protocol through which participants were assigned skill/status rankings to explore the potential susceptibility of the hunchback heuristic to social reality constraints.

Chapter 5 presents a cross-cultural study, contrasting the hunchback heuristic against Park et al.'s (2013) cultural moderation hypothesis. In particular, this study drew samples from the USA and Japan—the same cultures in which Park et al.'s investigation was conducted—using the novel adaptation of the minimal groups paradigm developed in Chapter 4. The key issue here was to determine whether anger/calmness *expectation* follow Park et al.'s cultural moderation hypothesis, as well as exploring the viability of the underlying mechanism proposed by Park et al. To address this question, I used an adaptation of the minimal group paradigm used in Studies 3 and 4.

Finally, Chapter 6 summarises and discusses the key findings presented in the preceding empirical chapters and outlines the theoretical and practical implications of the hunchback heuristic, with potential avenues for future research.

# 2

# Methodology

The data collection methods I used in this investigation varied depending on the specific research question but were fundamentally grounded in established protocols. Specifically, I adopted modified versions of the classic Implicit Association Test (IAT; Greenwald et al., 1998) and minimal groups (Tajfel et al., 1971) paradigms, as well as an adaptation of Hess et al.'s (2004) facial expression judgment paradigm to test for an *implicit* and *explicit* association between anger/calmness judgements and social status. Below, I outline the distinction between direct and indirect measures, noting the advantages and the disadvantages of each approach. These considerations informed the modifications that I made to the above paradigms to accommodate the specific demands of this research programme.

## 2.1 Measuring Cognitive Associations and Stereotypes: Direct vs. Indirect Instruments

Cognitive associations and stereotypes are *psychological* phenomena, which unlike *physical* phenomena, cannot be directly observed by the naked eye; however, they can be assessed using a variety of instruments designed to tap into them. These instruments may be broadly categorised into two major types: direct and indirect instruments.

### 2.1.1 *Direct Instruments*

Direct instruments take the form of questions or statements posed *directly* to the participant, with the participant then given the choice of providing either unstructured responses – i.e. they are free to respond however they wish – or structured responses, often by choosing one or more of multiple response options presented to them, or by

selecting one of many possible ratings presented on a numerical scale with labelled end-points (Likert scale). Hence, direct instruments are advantageous, in that a carefully phrased statement and response options can cut through ambiguity, by eliciting a relatively precise and direct answer.

However, direct instruments are vulnerable to context effects related to demand characteristics. Minor details such as the type of response scale used, the multiple-choice options provided, and even the labelling of endpoints, can subtly alter how participants comprehend, and therefore respond to, direct instruments (see Schwartz, 1994, 1999, 2007 for more extensive discussions). They are also susceptible to social desirability effects, whereby participants respond in ways that they believe the socially acceptable response should be (Nederhof, 1985; Paulhus, 1991). For example, in a study on underreporting of energy intake, Tooze et al. (2004) found that social desirability – i.e., the desire to appear as though they were not consuming excessive calories over the daily requirement – was among the best predictors of underreporting for both men ($R^2$ = .25) and women ($R^2$ = .22). The possibility of social desirability effects impacting participant responses is particularly relevant to this investigation of the hunchback heuristic, because anger is socially sanctioned and therefore an undesirable attribute to be associated with. Furthermore, it is precisely because anger attribution is socially undesirable that people may be forced to temper reports of associating anger to low status groups in particular, given the normative protection of such group from criticism (Jeffries et al., 2012). Hence, an approach that incorporates indirect measurements (in addition to direct measurements) may be helpful and could provide convergent validation as well.

### 2.1.2 *Indirect Instruments*

Indirect instruments are performance-based, taking the form of various tasks intended to tap into participants' automatic (even nonconscious) cognitions (Fazio & Olson, 2003). Indirect instruments operate on the principle that participants' automatic cognition will influence their performance on said tasks, and therefore inferences about participants' cognition may be *indirectly* drawn from performance on these tasks. Indirect instruments often employ response time as a proxy measure, based on two principles:

1. *response facilitation,* in which exposure to a stimulus also facilitates responses to related stimuli, thus providing a measure of association; and
2. *response competition,* where stimuli containing multiple features in conflict inhibits response time, thus providing a measure of response compatibility (Wittenbrink & Schwarz, 2007).

Because indirect measures are assumed to tap into nonconscious cognition, they are frequently used in social psychological research in cases where explicit measurements may potentially increase chances of deliberate response distortion by participants. Among the most popular indirect instruments are the Go/No Go Association Task (GNAT; Nosek & Banaji, 2001), which uses signal detection theory and participants' error rates to infer patterns in automatic cognition; the Extrinsic Affective Simon Task (EAST; De Houwer, 2003), which uses participants' response latency and response accuracy to do the same; and the Implicit Association Test (IAT; Greenwald et al., 1998), which is discussed in further detail below.

Although indirect instruments are often assumed to be relatively free of the influence of social desirability bias, context effects, and deliberate response control, there are sometimes exceptions to this rule. For example, Blair et al. (2001), had

participants imagine counter-stereotypic mental images prior to administering a variety of indirect instruments. These authors found that the outcomes of indirect instruments can be manipulated through the deliberate use of mental imagery, and that this mental imagery exercise dampened the results of the indirect instruments. Thus, both direct and indirect instruments feature unique advantages and disadvantages, which is why I combined both approaches in the current study.

## 2.2 Developing an Appropriate Methodology

Given the novelty of the hunchback heuristic, I carefully weighed the merits and demerits of direct and indirect instruments that have so far been used in related research. Below, I describe the approaches I adapted in different phases of the current research, and how I adjusted traditional protocols to better suit my purposes.

### 2.2.1 *Phase 1: Demonstrating the Existence of the Hunchback Heuristic*

The first and primary question underlying the current research was to establish whether or not people associate low social status groups with anger and high social status groups with calmness. Previous research (e.g., those on racial or gender-based prejudice) have often used a *direct* measurement approach to address this type of question; thus, the aim here was to mirror that approach.

**2.2.1.1 Direct Instrument: Self-Report Items.** The intention was to tap participants' expectations of anger and calmness from high status and low status social groups as directly as possible, without alerting participants to the true purpose of the experiment. To do so, I drew inspiration from the work of Ursula Hess and colleagues on the interaction between emotion perception in facial expressions and gendered emotion stereotypes (see Hess et al., 2004, Study 1).

Hess et al. (2004) presented participants with black-and-white drawings of male and female faces based on exemplars from Matsumoto's (1988) Japanese and Caucasian Facial Expressions of Emotion database. The drawings included facial expressions of happiness, sadness, anger and disgust, as well as a neutral expression, with the intensity of emotion displayed ranging from 0% (neutral) to 100% (intense). These drawings were presented to participants in random order, including both male and female versions of each emotion expression, following which they were asked to judge and rate the intensity with which each drawing expressed each of the following emotions: anger, contempt, disgust, fear, happiness, sadness, and surprise. Ratings were provided using colour-gradient scales shifting from white to dark grey, with the lighter end indicating lower intensity (white = "not at all") and the darker end representing greater intensity (dark grey = "very intensely"). The results of this study found that female faces expressing anger and sadness were rated more intensely angry and more intensely sad compared to male faces expressing the same emotions with the same intensity, but male faces expressing happiness were rated more intensely happy than female faces expressing happiness with the same intensity, suggesting a gender effect in the perception of the intensity of facial expression of emotions.

This approach provided the basis for my initial foray into the question of the existence of the hunchback heuristic, because the responses elicited in this context ostensibly represent participants' judgements in a relatively unambiguous manner. Thus, I adapted this approach, making three modifications to the stimulus to suit the current intention:

First, Hess et al. (2004) investigated differences in perception of facial expressions by gender. To operationalise status using this approach, I used exemplars of racial groups with clear-cut social status connotations. I used this context not only

because the status connotations were relatively straightforward, but also to maximise the comparability of the patterns that I might uncover to previous studies of anger/threat attributions that are grounded in race.

Second, Hess et al. (2004) were interested in participants' ratings of the emotional expressions of targets presented to them, and therefore used exemplars displaying emotions through their facial expressions. Here, I was primarily interested in participants' *expectations* of anger/calm with respect to the targets presented them for response, based on existing *stereotypes* about the racial groups to which the exemplars belong. Exemplars with neutral facial expressions therefore provided the best chance to detect expectations that are rooted in stereotypes alone.

Finally, I used a standard 7-point Likert scale to collect participants' ratings (e.g., 1 = *not at all angry-looking*, 7 = *very angry-looking*), to obtain more precise measurements, instead of the more ambiguous colour-gradient rating scale used by Hess et al. (2004).

**2.2.1.2 Indirect Instrument: Cognitive Probe Task (CPT).** To complement the more explicit measurement described above (and to enhance convergent validity), I also adopted a more subtle (even indirect) cognitive probe task, adapted from Greenwald et al.'s (1998) classic Implicit Association Test (IAT): a long-established tool to examine implicit attitudes and biases (see: Baron & Banaji, 2006; Fazio & Olson, 2003; de Jong et al., 2001; Phelps et al., 2000; Teachman et al., 2003).

The classic IAT paradigm functions on a simple premise that the current adaption incorporated: the stronger the association between a category and a concept, the faster participants will respond when the two are paired together. The task itself consists of seven task blocks in which participants ostensibly sort stimuli into one or another of two presented categories - and in subsequent blocks, one or another of two

presented pairs of category and concept. Participants are asked to respond to all trials in all the blocks as quickly and as accurately as possible. The reasoning behind the IAT protocol assumes that participants will respond faster and more accurately if the category-concept pair assigned to a given key is more strongly associated, allowing the experimenter to capture their implicit attitudes. Following the completion of all seven blocks, participants' response latencies are subjected to a series of algorithmic transformations, producing a score known as the *D*-measure (see Greenwald et al., 2003 for details). The *D*-measure represents the association strength between categories and concepts and may vary in value between +2 and -2.

It is important to note that the usefulness of the IAT in measuring implicit attitudes, especially those predictive of prejudice and/or discrimination, continues to be a matter of spirited debate. Critics of the IAT have highlighted that as a diagnostic tool for detecting unconscious prejudices held the participant, the IAT is far from an ideal instrument. For example, Blanton et al. (2006) pointed out that the IAT's algorithm does not account for variation in individual 'general processing speed', i.e. that different people respond to stimuli at different rates, while findings by Brendl et al. (2001) and Rothermund and Wentura (2004) suggest that participants' level of familiarity with the stimuli and categories used in the IAT could also affect their performance. Other studies have found that participants' performance on the IAT may be significantly influenced by manipulations as mild as mere exposure to an experimenter belonging to one of the categories used (Lowery et al., 2001) or asking participants to reflect on an admirable exemplar of a given category (Dasgupta & Greenwald, 2001), suggesting that the IAT may be a measure of prejudice as a state, rather than a trait. The IAT is also known to produce discrepancies in effect sizes depending on the modality of the stimuli used, with the Picture-IAT (P-IAT), which uses image stimuli, producing smaller effect sizes

compared to the Word-IAT (W-IAT), which uses text stimuli (Foroni & Bel-Bahar, 2009). Blanton et al. (2008, as cited in Foroni & Bel-Bahar, 2009) further note that while the IAT's D-measure assumes that a score of zero indicates 'neutrality' in preference, there is little empirical basis for this assumption. Greenwald and co. have, in fact, stressed the IAT is not an absolute measure but a relative one (Greenwald et al., 1998; Pinter & Greenwald, 2005) - a position contrary to the very construction of the IAT scoring algorithm.

However, despite the dispute on whether or not the IAT is suitable as a measure of implicit prejudice, there is a general consensus even amongst critics of the IAT that it is useful in measuring cognitive associations, which lie at the heart of the current investigation (see Arkes & Tetlock, 2004; Blanton & Mitchell, 2011; Fiedler et al., 2006; Oswald et al., 2013; Rubinstein & Jussim, 2019; Uhlmann et al., 2006). In short, my use of the cognitive probe task is not to uncover discrimination or prejudice, but to determine whether people spontaneously associate anger with low social status and calmness with high social status.

For my investigation into the hunchback heuristic, therefore, my categories were low and high status groups, whereas the concepts to be associated with these categories were anger and calm. That is, to verify that the proposed association between status and calmness/anger judgements exist, one should find that participants respond faster when low status is paired with anger or when high status is paired with calmness in hunchback-congruent pairings. Here, I followed the example set by Becker et al. (2007), who used the IAT with a similar category-concept configuration to assess the associations between anger/happiness and masculinity/femininity. However, as I did not seek to determine the strength of my hypothesised associations, but only to

demonstrate their existence, I adopted a modified CPT protocol that focused only on response latencies.

### 2.2.2 *Phase 2: Investigating (Dis-)Abling Conditions for the Hunchback Heuristic*

Here, I sought to examine conditions which potentially enable, disable, or even reverse the activation of the hunchback heuristic. In considering potential factors that might influence the activation and expression of the hunchback heuristic, my first point of focus was the effect of *social identity*. The reason for this focus was that social *status* is a social identity, and as such, can exert influence on cognition, attitudes and behaviour, as is often reported in the vast literature on social identity effects. For example, past research has shown that merely being categorised in some way (e.g., as rich [high status] or poor [low status]) can influence the way that people react to others who either belong (ingroup) or do not belong (outgroup) to the same social categories (e.g., Greenaway et al., 2015; Otten & Moskowitz, 2000).

One way of addressing this issue might be to use pre-existing social status hierarchies to investigate how people might attribute anger to targets from status-ingroups versus targets from status-outgroups. For example, Domagalski and Steelman (2007) recruited full-time and part-time employees and asked them to report instances where they had expressed various forms of anger in the presence of a) a supervisor and/or b) a subordinate over the preceding three months of employment. Their goal was to examine how gender and organisational status influenced the expectation of anger in the workplace, even if inferred from actual expressions. Although this approach of using pre-existing status hierarchies is expedient, it potentially lacks finer control over possible confounding factors, such as culture and intragroup social norms. For example, different workplaces may have different organisational cultures, which may in turn affect employees' behaviour and attitudes (e.g., Farrell, 2005). These reasons were

precisely why I turned to Tajfel et al.'s (1971) classic minimal groups paradigm for inspiration.

The minimal groups paradigm examines social identity effects under minimal conditions. That is, it creates a baseline condition stripped of the potential influence of culture and pre-existing (or historical) social relationships. In the classic demonstration of this approach, Tajfel et al. (1971) separated participants into two groups ostensibly based on their preference for one of two styles of painting; however, group assignment was completely random. Hence, Tajfel et al. were able to test whether the mere knowledge of being lumped into one group or the other influenced behaviour. This distinction is especially important because, in this context, culture or historical proclivities are unlikely to play a role in this newly acquired group memberships. Participants were then asked to distribute points between the other participants in the experiment, using a points-distribution matrix (see Figure 2.1).

**Figure 2.1**

*Points Distribution Matrix Used in Tajfel et al. (1971)'s Minimal Groups Paradigm*

*Booklet for Group Preferring Klee*

**These numbers are rewards for:**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Member no. 74 of Klee group | 25 | 23 | 21 | 19 | 17 | 15 | 13 | 11 | 9 | 7 | 5 | 3 | 1 |
| Member no. 44 of Kandinsky group | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 |

**Please fill in below details of the box you have just chosen:**

| | |
|---|---|
| Reward for member no. 74 of Klee group: | **21** |
| Reward for member no. 44 of Kandinsky group | **17** |

Note: *Adapted from Tajfel and Turner (1979).*

This was carried out in the following manner:

- Each rating participant was given an 18 page booklet, containing one matrix per page.

- Each matrix consisted of two rows of numbers, ranging from -25 to +25. The top row of numbers represented points to be allocated to one participant, while the bottom row represented points to be allocated to another.
- These rows were divided into 14 top/bottom number pairs; the difference in value between the top and bottom number ranged from 1 to 37. The rows were labelled with a code number representing each participant, as well as each participants' group membership, as shown in Figure 2.1.
- The other participants could both share the rating participant's group membership (i.e. both ingroup members), both not share the rating participant's group membership (i.e. both outgroup members), or only one could share the rating participant's group membership, while the other was from the 'other' group (i.e. one ingroup member, one outgroup member).
- Participants were instructed to choose only one top/bottom number pair of the 14 options available for each page of the booklet.

This task acted as a measure of the extent to which participants would favour either the ingroup or the outgroup in their point allocation. These authors observed that the arbitrary categorisation of participants into one group or the other was enough to elicit point allocations favouring the ingroup. Subsequent variations on the minimal groups paradigm have also recorded discernible attitudinal/behavioural biases that were largely consistent with the classic study (Perreault & Bourhis, 1999; Gaertner & Insko, 2000), even when participants were only required to imagine a hypothetical group division (Rubin et al., 2010).

When applied to the context of the hunchback heuristic, therefore, the minimal groups approach offers a unique opportunity to test the hunchback heuristic in isolation from other, potentially confounding stereotypes. In addition, the 'blank slate' social status hierarchy that a minimal groups paradigm offers has the potential to accommodate other manipulations (e.g. the introduction of external 'interference' or environmental/cultural factors as moderators of the hunchback heuristic). Having already established the hunchback heuristic in Phase 1, the flexible, accommodating nature of the minimal groups paradigm therefore made it ideal for Phase 2 of my investigation, where I focused on factors that could influence the activation or inhibition of the hunchback heuristic.

**2.2.2.1 A Previous Adaptation in Anger-Related Research.** Muller et al. (2012) offered a useful template for creating such a minimal 'blank slate' status hierarchy, in a series of studies measuring how perceptions of rank affected participants' willingness to commit aggression. They manipulated participants' perception of rank relative to an ostensible 'partner' using a distractor task (the illusory conjunction task), where participants were always given false feedback on their performance, as well as a fixed higher or lower score for their partner, prior to an implicit measure of readiness to direct aggression at the ostensible partner.

Two different tasks were used to measure willingness to commit aggression. In Studies 1 and 2, participants were told they would be performing a competitive reaction time task, where they would essentially be racing against an ostensible partner to press a button faster, and that the 'loser' of each trial would be subjected to a blast of noise. Participants were then asked to set the duration and volume of the noise that a losing opponent would be subjected to; a 'no-noise' option was also made available.

In Study 3, Muller et al. (2012) told participants they were studying impression formation, and had participants fill out a 'food preference form' and write an essay about a particularly nice day in their life. The form and the essay were ostensibly to be exchanged with a 'partner' in order to form an impression. However, when the essay was returned to the participant, ostensibly after being reviewed by the 'partner', the evaluation was always negative, with a handwritten note reading "Poor writing, middle school level"; the purpose of this manipulation was to anger the participant. Willingness to commit aggression was then measured using an adaptation of Lieberman et al.'s (1999) hot sauce paradigm: participants received their 'partner's' 'food preference form', which always indicated a strong dislike of spice and salt. They were then informed that they were to drink a sweet beverage that their 'partner' would prepare, while their partner would drink a tomato juice beverage, which they would be in charge of preparing. Participants were offered the option of adding hot sauce and salt to the tomato juice beverage, if they so desired. Subsequently, the amount of hot sauce and salt added to the tomato juice beverage was measured and standardised to provide a measure of aggression readiness.

Muller et al. (2012) explicitly informed participants that the two tasks were unrelated, so as to uncouple ranking from the aggression readiness task. Here, however, the potential influence of rank perception was not integral to the research question, whereas my research questions require the explicit linking of status/ranking hierarchy to participants' expectations of anger and calmness from the targets. In my minimal conditions experiment, therefore, I created a novel status hierarchy by subjecting participants to a puzzle-solving task. Once participants completed the puzzle-solving task, they were presented with a score and informed that they had been sorted into one of three groups: unskilled solver (i.e., low status), average solver (median status), and

skilled solver (i.e., high status). To reinforce the status hierarchy, participants were also presented with (fictitious) information concerning the future life and career prospects of people who belong to any of the three skill groups. The efficacy of this reinforcement was validated by two manipulation check items, which asked participants to rate the social status of unskilled solvers and skilled solvers. Participants were then asked to rate two fictitious participants, one of high status and one of low status, on how likely they and others like them were to experience a range of emotions, including the key hunchback heuristic emotions of anger and calmness. The reasoning behind the median status group was that while the ratings provided by high status and low status participants may be influenced by ingroup favouritism, median status participants should not identify with either group being rated. Thus, ratings by median status participants should more clearly demonstrate evidence that the hunchback heuristic is not merely an artefact of social identity effects.

### 2.2.3 *Phase 3: Exploring the Potential Cultural Underpinnings of the Hunchback Heuristic*

The third phase of this research programme explored the possibility of cultural influence on the activation and expression of the hunchback heuristic. Due to the dearth of cross-cultural studies examining status-based judgments, I mainly drew from Park et al. (2013), which examined cross-cultural variation in the relationship between social status and anger expression.

Park et al.'s (2013) research revealed that, while *low* social status may be associated with anger expression in individualistic cultures, with the relationship mediated by frustration, *high* social status was associated with anger expression in collectivistic cultures, with the relationship mediated by perceived authority. As the hunchback heuristic is concerned with expectations, rather than expressions of anger

and calmness, I considered the possibility of a similarly culturally-divergent pattern in expectations of anger as well.

Park et al. (2013) drew their data from subsets of two large, nationally-representative surveys: the 2004 Midlife in the United States II (MIDUS II) survey, sampling from across the USA, which they categorised as an *individualistic* culture; and the 2008 Midlife in Japan (MIDJA) survey, sampling from the Tokyo metropolitan area, which they categorised as a *collectivistic* culture. They also used two distinct social status measures: an *objective* status measure, compiled by indexing two objective markers of status (i.e., education and occupational ranking); and a *subjective* status measure, measured by presenting respondents with the image of a 10-rung ladder (1 = lowest, 10 = highest; Goodman et al., 2001) and asking participants to choose which rung best represented their standing within their own community. The definition of community in Park et al.'s investigation was left open for the respondents to define as they wished. Anger expression, meanwhile, was measured using the Anger-Out subscale of Spielberger's (1996) Anger Expression Inventory. Park et al. also measured two potential mediator variables: frustration (ratings of level of frustration over the last 30 days); and authority (an 8-item scale concerning workplace decision-making authority; Bosma et al., 1997).

To conduct a similar cross-cultural investigation of the hunchback heuristic effect, therefore, I decided to similarly recruit an individualistic cultural sample from the USA, using the online participant recruitment website Prolific.ac, as well as a collectivistic cultural sample from Japan, recruited via collaboration with a native researcher. However, I found Park et al.'s (2013) measures of objective and subjective social status to be less than ideal, because they carried the risk of introducing either a) a confounding status context in the case of their objective status measure, or b) statistical

noise due to the lack of specificity in the definition of 'community' in the case of their subjective status measure. Hence, to manipulate social status, I chose instead to use the minimal group paradigm, with a relatively simpler and more straightforward operationalisation of social status compared to the approach used by Park et al. Taking into account potential validity issues that might arise from language comprehension concerns, considering that one of my sample populations was from a non-English-speaking nation (Japan), I relied on the assistance of an experienced native Japanese research collaborator to translate my minimal groups paradigm, while also cross-validating the translation using Google Translate.

# 3

# Establishing the Existence of the Hunchback Heuristic

*Based on:*

Owuamalam, C. K., Weerabangsa, M. M., Karunagharan, J. K., & Rubin, M. (2016). Chip on the shoulder? The hunchback heuristic predicts the attribution of anger to low status groups and calm to high status groups. *Cogent Psychology, 3*: 1210998.

The key assumptions underlying the hunchback heuristic are that people expect members of low status groups to be more prone to anger, while members of high status groups are expected to be mostly calm. The evidence for these propositions, so far, have been largely indirect (see also Chapter 1 for a similar discussion). Thus, the initial goal was to provide a direct test of the existence of this heuristic, and to do so using both explicit and implicit association tasks, to be confident about the convergent validity of the proposed phenomenon. Specifically, three studies tested the hypotheses that:

H1. Members of low status social groups would be perceived to be angrier (and less calm) compared to their high status counterparts.

H2. Assuming H1 is true with respect to explicit measurements, then people should also be quicker in associating members of low status groups with anger and members of high status groups with calmness at the implicit level of measurement.

## 3.1 Pilot Study

To operationalise low and high status, I took advantage of pre-existing status differentials between Blacks and Whites, where Black people are often positioned lower in terms of socioeconomic status, compared to White people (Hardaway & McLoyd, 2009). I chose this context because it allows for a more direct comparison with previous studies concerning the anger/aggression stereotype (Hugenberg, 2005; Hugenberg &

Bodenhausen, 2004; Shapiro et al., 2009; see also a discussion of the methodological limitations in previous research in Chapter 2).

### 3.1.1 Method

#### 3.1.1.1 *Design and Participants*

Choosing to recruit a minimal sample for this initial exploratory study, I recruited twenty Malaysian students (7 male; $M_{age}$ = 19.60, $SD$ = 2.01) from the University of Nottingham's Malaysia Campus via convenience sampling. I used a within-subjects design, with status (as defined by race) examined as the independent variable, and perceptions of anger on emotionally neutral faces of Black and White targets as the dependent variable.

Two secondary dependent variables linked to anger, perceptions of aggressiveness and perceptions of dangerousness (Denson et al., 2011; Denson et al., 2009), were also included to cross-validate patterns that emerge on the anger measure. That is, one might expect to find similar patterns of results for anger and its correlates, because different operationalisations of an underlying construct should theoretically yield similar patterns of results (see Owuamalam et al., 2019, pg. 14-15, for a similar argument). Hence, demonstrating that the two correlates of anger (perceived threat or dangerousness and aggression) also produce effects that are consistent with those reported for anger, should generate greater confidence with regards to the existence of the hunchback heuristic.

#### 3.1.1.2 *Stimuli and Apparatus*

Thirty-two male faces (16 Black, 16 White) were selected from the 'neutral expression' subset of the Park Aging Mind Laboratory online face database (Minear & Park, 2004). Faces with a neutral expression were selected because it was important to

assess how people might judge them based on the status dimension alone, rather than the perceived intensity of their facial expressions. I also chose to restrict the stimuli to male faces only to eliminate interference from cross-sex effects (cf. Hess et al, 2004). The faces that were used as stimuli in this study were age-matched between the two racial groups (ranging from 18 and 44 years).

#### 3.1.1.3 *Procedure*

The experiment was conducted in a laboratory setting using a standard computer desktop and keyboard. Participants were informed that the study was investigating social perceptions and attitudes, and that they would be able to withdraw at any point, prior to obtaining their informed consent. They were then asked to rate each of the faces that were presented to them via a computer screen according to their first impressions. Each of the thirty-two faces was presented once; participants were asked to rate each face as quickly as possible, but no time limit was imposed.

Participants rated each face on four seven-point Likert scales: the three key variables of perceived anger (1 = *very calm-looking*; 7 = *very angry-looking*), perceived aggressiveness (1 = *not at all aggressive-looking*, 7 = *very aggressive-looking*), and perceived dangerousness (1 = *not at all dangerous-looking*, 7 = very *dangerous-looking*), as well as a dummy variable of perceived attractiveness (1 = *not at all attractive-looking*, 7 = *very attractive-looking*). Presentation order of the faces was randomised for each participant to eliminate potential order effects. On completion, participants were given a full debriefing, inclusive of further information about the subject under investigation and an opportunity to further discuss any questions they might have with the experimenters. Following the debriefing, they were reminded that they could request that their data be withdrawn from the study at any point and dismissed.

### 3.1.2 Results and Discussion

Indices of perceived anger, perceived aggressiveness, and perceived dangerousness were obtained by separately averaging participants' ratings for Black and White targets. Descriptive statistics and correlations for these indices are given in Table E1 in Appendix E.

A repeated-measures MANOVA comparing the perceptions of Black and White targets with regards to the emotions of interest found a significant multivariate main effect of status based on race, $\lambda = .496$, $F(3, 17) = 5.75$, $p = .007$, $\eta^2_p = .504$. Consistent with the hunchback heuristic, a univariate probe of this effect, Bonferroni-corrected to an $\alpha$ of 0.016, revealed that Black targets were perceived to be significantly more angry-looking ($M = 4.17$, $SD = 0.85$), more aggressive-looking ($M = 4.38$, $SD = 0.60$) and more dangerous-looking ($M = 4.51$, $SD = 0.59$) compared to White targets ($M_{angry\text{-}looking} = 3.50$, $SD = 0.71$, $p = .003$, $\eta^2_p = .387$; $M_{aggressive\text{-}looking} = 3.88$, $SD = 0.67$, $p = .001$, $\eta^2_p = .44$; $M_{dangerous\text{-}looking} = 3.89$, $SD = 0.63$, $p < .001$, $\eta^2_p = .49$).

One important limitation in the current study was the fact that the key emotions of anger and calmness were regarded and measured as a continuum, despite the possibility that individuals can be both angry and calm at the same time. That is, one might be inwardly angry but outwardly calm (i.e., 'cold fury'), and this is important especially in light of the current use of facial cues. Hence, in the next study, participants' perceptions of anger and calmness was decoupled, using a more controlled experimental paradigm that included an implicit task, and with a much larger sample.

## 3.2 Study 1

This study was designed with three aims in mind. First, to directly tap into participants' perceptions of calmness, as I did for anger in the pilot study. Second, to test

whether the hunchback heuristic is also a reality at the implicit, unconscious level, beyond the explicit evidence reported in the pilot study. And, finally, to test the generalisability of the hunchback heuristic in a different inter-status context.

To address the first aim, I decoupled the bipolar calm-to-angry scale used in the pilot study into two separate seven-point Likert scales. This modification allowed the direct testing of the twin propositions of the hunchback heuristic regarding anger and calmness attributions. To address the second aim, I used a cognition probe task (CPT) to investigate the ease with which concepts tied to either anger or calmness are activated when observers are exposed to targets that are high and low in social status, based on an adaptation of the classic Implicit Association Task (IAT; Greenwald et al., 1998). This cognition probe task was designed to tap the unconscious manifestation of the hunchback heuristic, using response latency data to infer association strength. A shorter response latency implies a stronger and more automatic association between the attributes being examined (i.e., anger and calmness) and the social categories being presented (i.e., high versus low status groups). Hence, to find supportive evidence for the hunchback heuristic, one should observe shorter response latencies for a hunchback-congruent attribute-category pairing (i.e., anger/low status or calmness/high status) compared to a hunchback-incongruent pairing (i.e., anger/high status or calmness/low status).

To address the third aim, I capitalised on variations in skin colour within the Indian Malaysian ethnic group, a characteristic that affects the perception of social status within this demographic (Sandhu, 1993): lighter-skinned Indian Malaysians are generally regarded as being higher in status in Malaysian society compared to darker-skinned Indian Malaysians. This distinction originates from the association of darker skin tones with uneducated South Indian labourers, who were brought to then-British

Malaya by the British Raj to work in menial outdoor jobs with sustained exposure to sunlight. Meanwhile, lighter skin is associated with wealthier, English-educated professionals from North India who immigrated to British Malaya in pursuit of business and commercial interests.

Furthermore, because more attractive individuals are generally associated with positive status-defining qualities (e.g. they are perceived as more trustworthy and more successful than less attractive people, aka halo effect; see: Nisbett & Wilson, 1977), I reasoned that a target's attractiveness could also present another status dimension beyond the current interests on skin colour. Indeed, demonstrating that status cues based on both skin colour and attractiveness produce the intended 'hunchback effects' would provide stronger convergent validation of the existence of the hunchback heuristic. For this reason, participants' ratings of the targets' physical attractiveness, which was included as a dummy variable in the pilot, were also measured and analysed.

### 3.2.1 Method

#### 3.2.1.1 *Participants*

A statistical power analysis was performed for sample size estimation using G*Power 3.1. Given the moderate effect size found in the pilot study ($\eta^2_p$ = .504), effect size was set to a conservative estimate of $d_z$ = 0.3, with $\alpha$ = .05 and power = 0.80. The projected sample size needed with this effect size was $N$ = 90, and this was my ultimate recruitment goal. However, I fell short of this target due to time constraints, recruiting only 80 Malaysian Chinese participants (41 male; $M_{age}$ = 20.89, $SD$ = 1.575) from the student body of the University of Nottingham's Malaysia Campus via convenience sampling. I recruited Malaysian Chinese participants specifically to minimise the risk of ingroup biases and familiarity effects affecting the findings.

#### 3.2.1.2 *Face Stimuli*

I generated 16 images of dark- and light-skinned Indians online using the search term "Indian faces". The categorisation of the two Indian subgroups based on skin tone (8 dark-skinned, 8 light-skinned) was then carried out by a trained research assistant of Indian origin. The images were then photo-edited into a flat grey background and "dressed" in plain black t-shirts to standardise clothing (Figure 3.1).

**Figure 3.1**

*Examples of Light-Skinned (top row) and Dark-Skinned (bottom row) Targets (Study 1)*



**3.2.1.2.1 Status Manipulation Check.** To validate the hypothesised skin colour/status relationship, I recruited 30 Malaysian students (10 male; $M_{age}$ = 21.13, *SD* = 2.45) to provide ratings of perceived status for each of the 16 images on a 7-point scale (1 = *low status*, 7 = *high status*). Results of a paired-samples *t*-test confirmed my status assumptions: light-skinned Indians were perceived as higher in status (*M* = 4.34, *SD* = .68) than dark-skinned Indians (*M* = 3.39, *SD* = .78), $t(29) = -6.338$, $p < .001$, Cohen's $d = 1.157$.

#### 3.2.1.3 *Word Stimuli*

I generated three types of word stimuli for use in the CPT paradigm: probe word stimuli (for measuring association strength), name stimuli (for use in practice trials), and filler stimuli (for disguising the true purpose of the experiment). Probe word stimuli were selected from the University of South Florida free association, rhyme and word fragment norms (Nelson et al., 2004) and matched for association strength with their respective target emotions of anger (10 associated words; Appendix A) and calmness (10 associated words; Appendix A). Ten filler items that are not associated with anger or calmness were also chosen from Nelson et al. (2004). The probe words were selected on two criteria: a) they had a minimum forward association strength (i.e. probability of eliciting the target word in a free association exercise) of 5%, and b) they were not direct synonyms of the target words. This latter criterion was set to minimise the risk of participants guessing the purpose of the experiment.

Name stimuli were generated by two research assistants of Indian origin who were familiar with the naming conventions of the two ethnic subgroups. In addition, I used 10 control name stimuli of Chinese origin taken from the Cantonese Name Generator by SCC Overton (Overton, 2013) as filler items (Appendix A).

#### 3.2.1.4 *Design and Procedure*

The experiment was conducted in a laboratory setting in two parts, using a standard computer desktop and keyboard: first, the cognition probe task (CPT), followed by a self-report rating task. Due to concerns that presenting the self-report rating task first might influence participants' implicit associations by introducing salience asymmetry (Rothermund & Wentura, 2004), the CPT was always completed prior to the rating tasks. Participants were informed that they were to take part in an experiment on explicit and implicit associations, provided with an outline of the

experimental protocol, and informed that they could choose to withdraw at any point before obtaining their informed consent.

**3.2.1.4.1 CPT Protocol.** I used a 2 (Hunchback congruity: congruent vs. incongruent) x 2 (Probe: Anger vs. Calm) completely within-subject design. I use the term "hunchback congruity" here to indicate whether the category/attribute pairings align with the twin propositions of the hunchback heuristic, i.e., if the low status category (in this study, dark-skinned targets) is paired with the attribute of anger while the high status category (in this study, light-skinned targets) is paired with the attribute of calmness.

The attributes in the CPT were the emotion probes of "anger" and "calm", and the categories were high status and low status, represented by a darker-skinned Indian face and a lighter-skinned Indian face, respectively. Hunchback congruity was manipulated by pairing a lighter skinned Indian target or a darker skinned Indian target face with the target emotion probes of anger or calmness. In the hunchback congruent condition, category/emotion-word pairings were lighter skin/calmness and darker skin/anger, whereas in the hunchback incongruent condition, the pairings were reversed to lighter skin/anger and darker skin/calmness. The key dependent measure was the time taken to match a probe word stimulus to an emotion probe (Anger and Calm) while exposed to the hunchback congruent vs. the hunchback incongruent conditions.

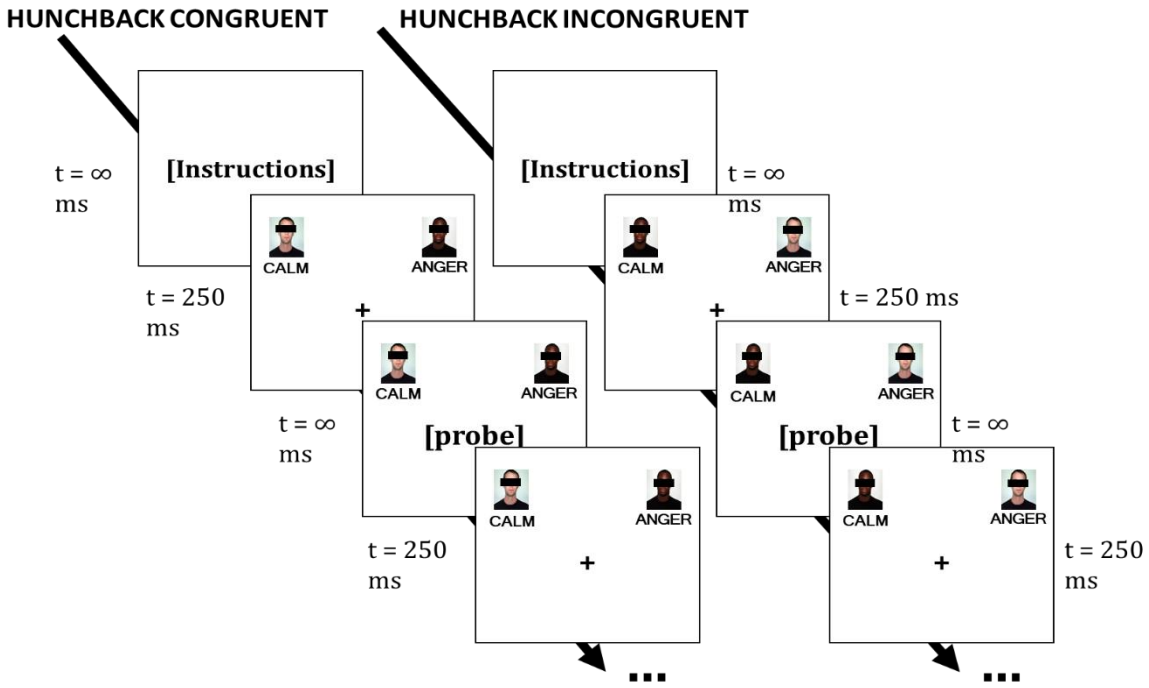
The adapted CPT consisted of eight blocks with three possible trial routines. My interest was in the response times from the COMBINED blocks while the FACE and EMOTION blocks were, as stated previously, designed to act as practice trials (i.e., for participants to adapt to the response keys and stimulus layout) and to disguise the true purpose of the experiment. In the FACE blocks, participants were presented with two target faces – one light-skinned, one dark-skinned – positioned at opposite upper

corners of the screen, while name stimuli were presented at the centre of the screen. Participants were asked to decide which of the presented target faces a given name stimulus 'matched' (i.e., paired with better), and instructed to press either the left or right arrow key for the left or right target face, respectively. Similarly, in the EMOTION blocks participants were presented with two emotion probes – 'ANGER' and 'CALM' - positioned at opposite upper corners of the screen, while probe word stimuli were presented in the centre of the screen. Participants were asked to decide which of the presented emotion words a given probe word stimulus 'matched' and instructed to press either the left or right arrow key for the left or right emotion probe, respectively. In both cases, participants were instructed to respond as fast as possible, with no time limits otherwise imposed on presentation or response time.

In the COMBINED blocks (see Figure 3.2), participants repeated the EMOTION block routine (with the FACE block stimuli added in as filler trials), except that this time, the target emotions were paired with the light-skinned and dark-skinned Indian target faces from the FACE block. In half of these trials, the pairings presented were hunchback congruent (Dark-skinned/Anger and Light-skinned/Calm pairings); in the other half, hunchback incongruent (Light-skinned/Anger and Dark-skinned/Calm pairings). As in the previous two block types, participants pressed the left or right arrow key to 'match' the presented probe stimulus to the face/emotion pairings presented on the left or right upper corners of the screen, respectively. Participants were again instructed to respond as fast as possible, with no time limits otherwise imposed on presentation or response time.

**Figure 3.2**

*Experimental Flow Diagram of the Key Trial Blocks (COMBINED Block) in the CPT*




**3.2.1.4.2 Self-Report Protocol.** I used a within-subjects design with one independent variable, namely, the social status of the target face (light-skinned/high status vs. dark-skinned/low status). The dependent variables were participants' responses to items measuring perceived calmness (1 = *not at all calm-looking*, 7 = *very calm-looking*) and perceived anger of the target faces (1 = *not at all angry-looking*, 7 = very *angry-looking*). As in the pilot study, I also had participants rate the target faces on the anger correlates of aggressiveness and dangerousness (1 = *not at all aggressive-looking*, 7 = *very aggressive-looking*; 1 = *not at all dangerous-looking*, 7 = *very dangerous-looking*), as well as the perceived attractiveness of each target face (1 = *not at all attractive-looking*, 7 = *very attractive-looking*). Each target face was presented five times, paired with one of the five rating items each time. These multiple presentations were carried out to prevent anchoring effects from affecting participants' ratings for the different variables. Participants were instructed to respond as fast as possible, but no

time limits were otherwise imposed on presentation or response time.

On completion, participants were given a full debriefing, inclusive of further information about the purpose of the experiment, the subject under investigation, and an opportunity to further discuss any questions they might have with the experimenters. Following the debriefing, they were reminded that they could request that their data be withdrawn from the study at any point and dismissed.

### 3.2.2 Results and Discussion

#### 3.2.2.1 *CPT Protocol: Response Time*

The data of four participants were either corrupted and/or incompletely encoded and, for this reason, these cases were discarded. Trials with incorrect responses were also discarded and participants' response times (milliseconds - ms) from the COMBINED blocks were collated to produce four measures of response time: mean response time for hunchback-congruent trials with an anger-associated probe word; mean response time for hunchback-incongruent trials with an anger-associated probe word; mean response time for hunchback-congruent trials with a calmness-associated probe word; and mean response time for hunchback-incongruent trials with a calmness-associated probe word. Here, I used mean response times following Greenwald et al. (2003), who in the process of developing an improved algorithm to calculate the IAT *D*-measure found that of five possible transformations, mean response time was (after the *D*-measure) the best-correlated with explicit measures, as well as most resistant to contamination by participant response variations.

A paired-samples *t*-test using a Bonferroni-corrected $\alpha$ of 0.025 showed, as predicted, that participants responded significantly faster during hunchback-congruent trials ($M$ = 1234 ms, $SD$ = 384.0 ms) compared to hunchback-incongruent trials ($M$ = 1450 ms, $SD$ = 872.5 ms), $t(75) = -2.39$, $p = .019$, Cohen's $d = 0.275$, when the probe

word stimulus was anger-associated. Similarly, when the probe word stimulus was calmness-associated, again using a Bonferroni-corrected $\alpha$ of 0.025, participants responded significantly faster during hunchback-congruent trials ($M$ = 1218 ms, $SD$ = 458.9 ms) compared to hunchback-incongruent trials ($M$ = 1415 ms, $SD$ = 806.7 ms), $t(75) = -2.58$, $p = .012$, Cohen's $d = 0.296$. These results support the view that the hunchback heuristic is automatically activated when people are reaching anger/calmness judgements of targets that vary in perceived social status.

#### 3.2.2.2 *Self-Report Protocol*

Two participants did not complete the relevant measures and were discarded as a result, reducing n from 80 to 78. Indices of perceived anger, perceived calmness, perceived aggressiveness, perceived dangerousness, and perceived attractiveness were calculated by averaging the self-reported ratings for each target face. Descriptive statistics and correlations for these indices are given in Table E2 in Appendix E.

**3.2.2.2.1 Perceived Anger and Perceived Calmness Judgments**. To test the predicted patterns based on the hunchback heuristic, I carried out a series of paired-samples $t$-tests, using a Bonferroni-corrected $\alpha$ of 0.0125, comparing perceived anger and calmness judgments for lighter-skinned target faces vs. darker-skinned target faces. The results corroborated the evidence that I obtained at the implicit level: darker-skinned targets were perceived to be angrier ($M$ = 4.12, $SD$ = 0.81) compared to lighter-skinned targets ($M$ = 3.32, $SD$ = 0.78), $t(77) = -9.58$, $p < .001$, Cohen's $d = -1.085$. And, lighter-skinned targets were perceived to be calmer ($M$ = 4.78, $SD$ = 0.73) compared to darker-skinned targets ($M$ = 3.97, $SD$ = 0.69), $t(77) = 10.56$, $p < .001$, Cohen's $d = 1.195$.

**3.2.2.2.2 Perceived Aggressiveness and Perceived Dangerousness Judgments.** I also performed paired-samples $t$-tests to compare perceived

aggressiveness and perceived dangerousness, for lighter-skinned target faces vs. darker-skinned target faces, using a Bonferroni-corrected $\alpha$ of 0.0125. The results converged with the patterns that I observed for perceived anger (as well as the evidence from the pilot study), showing that darker-skinned target faces were perceived to be more aggressive-looking and more dangerous-looking ($M_{aggressive\text{-}looking}$ = 4.34, $SD$ = 0.83; $M_{dangerous\text{-}looking}$ = 4.60, $SD$ = 1.00) compared to lighter-skinned target faces ($M_{aggressive\text{-}looking}$ = 3.59, $SD$ = 0.91, $t(77)$ = -.733, $p$ < .001, Cohen's $d$ = -0.830; $M_{dangerous\text{-}looking}$ = 3.88, $SD$ =.95, $t(77)$ = -7.63, $p$ < .001, Cohen's $d$ = -0.863).

Interestingly, the above findings of the self-report protocol show little evidence of being affected by social desirability motives. Comparing the average effect size in the self-report protocol ($M_{Cohen's\ d}$ = 0.993) versus the average effect size in the CPT protocol ($M_{Cohen's\ d}$ = 0.286) indicates that the hunchback heuristic effect is approximately 3 times larger in the self-report protocol. This may perhaps be attributed to a lack of inhibition among Malaysians in expressing potentially offensive opinions.

**3.2.2.2.3 The Effect of Attractiveness.** Because attractiveness is a proxy for social status, it is conceivable that attributions of anger (and its correlates) and calmness could correlate with this measure in manners that are consistent with the hunchback heuristic as was largely the case in pilot study. Hence, I examined the correlations between perceived attractiveness and (a) perceived anger (b) perceived calmness (b) perceived aggressiveness (d) perceived dangerousness for light-skinned and dark-skinned target faces separately. These results are summarised in Table 3.1.

**Table 3.1**

*Correlation Coefficients for the Relationships between Perceived Attractiveness and Key Hunchback Heuristic Measures (Study 1)*

| Target skin colour | Anger | | Calmness | | Aggressiveness | | Dangerousness | |
|---|---|---|---|---|---|---|---|---|
| | *R* | *p* | *R* | *p* | *r* | *p* | *r* | *p* |
| ***Light*** | -0.35 | .002 | 0.30 | .007 | -0.39 | <.001 | -0.40 | <.001 |
| ***Dark*** | -0.39 | <.001 | 0.33 | .004 | -0.58 | <.001 | -0.63 | <.001 |

Corroborating the hunchback heuristic, results revealed that perceived attractiveness was negatively correlated with perceived anger (as well as its correlates, aggressiveness and dangerousness) and positively correlated with perceived calmness for both dark- and light-skinned targets. Hence, markers of status within social groups that are traditionally accorded high or low social status can determine anger/calmness attributions in manners that are consistent with the hunchback heuristic.

It is possible to argue that in the real world, social status often presents itself in multiple ways, rather than being strictly tied to a few dimensions (e.g., race and attractiveness). Indeed, the correlation between perceived attractiveness and perceptions of anger and calmness support this argument. But it is difficult, nonetheless, to reach a firm conclusion based on these two contexts alone.

Therefore, I planned a follow-up investigation to determine how the intersection of multiple status dimensions might affect an expression of the hunchback heuristic in a different context involving other status dimensions (e.g., weight-based status). I speculated, based on the indirect evidence from Study 1, that the extent to which people ascribe anger vs. calmness to targets would be determined by the number of status-defining features visible to observers; e.g., an *overweight* Black individual should be more readily perceived to be more angry-looking, relative to a *thin* Black individual. I

reasoned that in this instance, both the attributes of being Black and overweight would present a more compelling reason for reaching a low status judgement compared to other combinations that mix status-defining attributes. In short, the greater the number of status-defining features visible to observers, the stronger perceivers should rely on the hunchback heuristic and, consequently, the greater its influence on perceivers' anger vs. calmness judgements.

### 3.3 Study 2

To investigate the possibility that multiple status-defining attributes lead to a stronger activation of the hunchback heuristic, I chose two status dimensions: physical size and race.

Although empirical data linking larger physical sizes to low status and thinner physical sizes to high status is limited, there is no shortage of documented evidence that larger people occupy a systematically disadvantaged position in society (see Diedrichs & Puhl, 2017). For example, larger people have been found to earn significantly less compared to average-sized adults, even when a range of related factors are controlled for (Judge & Cable, 2011), and are consistently discriminated against in the workplace, being less likely to be hired (Rudolph et al, 2009; O'Brien et al, 2013), less likely to be promoted (Rothblum et al., 1990), and more likely to be on the receiving end of disciplinary action (Bellizi & Hasty, 2001). Larger people also face systematic disadvantages when accessing healthcare services, being significantly more likely to have serious medical conditions undiagnosed or misdiagnosed (Gabriel et al., 2006), receive inadequate care and drug dosages even when accurately diagnosed (Roe, et al., 2012; Griggs et al., 2012), or simply be refused care until medical professionals are satisfied that they are seriously attempting to lose weight (Chastain, 2015, as cited by Chrisler & Barney, 2017). Thus, I based my decision to use physical size as an index of

status on both the above-detailed corpus of evidence of marginalisation, as well as the limited available empirical evidence (e.g. Durante et al., 2014; Owuamalam et al., 2016).

Race, meanwhile, was operationalised in the same manner as in the pilot study. Specifically, I selected both Black and White targets that were visibly large and visibly slim, to represent low status and high status targets respectively. Assuming the hunchback heuristic is a robust phenomenon, then one should expect intersecting categories of either high or low status to elicit a stronger association for calmness and anger respectively.

I also included a third status dimension by varying the type of attire worn by the targets. Following Freeman et al. (2011), I edited my target stimuli to produce three sets with different styles of attire, each of which provided a different status cue: formal attire (indicating high status), plain black t-shirt (control condition), and hooded sweatshirts (low status condition). The use of hooded sweatshirts to represent low social status was informed by a UK controversy criminalising the wearing of hooded sweatshirts ('hoodies') into shops (McLean, 2005); I also reasoned that due to the high consumption of Western media in Malaysia, it was possible that the stigma attached to 'hoodies' would carry over into the Malaysian population. In short, I reasoned that the activation of the hunchback heuristic should be stronger and therefore lead to more extreme attributions the more of the low- or high status features that a target possesses.

### 3.3.1 Method

#### 3.3.1.1 *Participants*

A statistical power analysis was performed for sample size estimation using G*Power 3.1. Given the large effect sizes found in Study 1, effect size was set to f = 0.4, considered to be large following Cohen (1988), with $\alpha$ = .05 and power = 0.80. The

projected sample size needed with this effect size was $N$ = 96, and I set an initial target of $N$+24=120 in order to account for attrition due to participant error and other factors. However, I only succeeded in recruiting a final sample of 114 participants (36 male; $M_{age}$ = 19.40, $SD$ = 1.39) from the student body of the University of Nottingham, Malaysia via convenience sampling. Participants were compensated with course credit or a payment of RM 5.

#### 3.3.1.2 *Stimuli and Apparatus*

Eight neutral-expression male faces (4 Black, 4 White; matched for age and ranging in age from 18-30) were chosen from the set of 32 images used in the pilot study. I chose to reuse target faces from this particular set of images primarily for reasons of convenience, as they had already been tested and validated in the Malaysian context.

Of these eight target faces, four (two Black, two White) were selected to represent Large (i.e., visibly physically large) targets, and another four (two Black, two White) were selected to represent Slim (i.e., visibly physically slim) targets; these eight target faces were used in the explicit ratings task. I also selected two additional target faces from the set of 32 images used in the pilot study for use in the cognition probe task (CPT), matched for age and attractiveness. To provide status cues via attire, these ten target faces were then photo-edited into formal attire (suits), 'street' attire (hooded sweatshirts) and neutral attire (plain black t-shirts) before being cropped to uniform size (see Figure 3.3 for examples).

**Figure 3.3**

*Examples of Extrinsic Status Cue Conditions.*



*Note: L-R: low status cue (hooded sweatshirt), neutral status cue (plain t-shirt), high status cue (suit and tie)*

Probe word stimuli and filler word stimuli were identical to those used in Study 1. Name stimuli of European and African origin were chosen from various online sources, including Kate Monk's Onomastikon (Monk, 1997; Appendix B), Statistical Bulletin: Baby Names in England and Wales, 2013 (Office for National Statistics, 2014; Appendix B); filler names of Cantonese origin were taken from the Cantonese Name Generator by SCC Overton (Overton, 2013; Appendix B). I chose to pair African names with the Black target faces for two reasons: first, I reasoned it was necessary to provide sufficient contrast between the European names paired with the White target faces, and second, I reasoned that as participants were recruited in Malaysia, where the Black population is mainly of African origin, and particularly at the University of Nottingham in Malaysia, which then had a sizeable population of students of African origin, participants could reasonably be expected to be familiar with African origin names.

As in Study 1, the purpose of the FACE and EMOTION blocks were both to provide practice trials (so participants could adapt to the response keys and screen layout) and to conceal the experimental hypothesis would be concealed from participants.

#### 3.3.1.3 *Design and Procedure*

As before, the experiment was conducted in a laboratory setting in two parts, using a standard computer desktop and keyboard: first, the cognition probe task (CPT), an adaptation of the implicit association task (Greenwald, McGee & Schwartz, 1998) followed by a self-report rating task as in Study 1. Participants were informed that they were to take part in an experiment on explicit and implicit associations, provided with an outline of the experimental protocol, and informed that they could choose to withdraw at any point before obtaining their informed consent.

**3.3.1.3.1 CPT Protocol.** To examine how status cues might impact the hunchback heuristic on the implicit level, I used a 2 (Hunchback congruity: congruent vs. incongruent) x 3 (Attire: formal/high status attire (suit and tie), vs. neutral/neutral status attire (plain t-shirt), vs. casual/low status attire (hooded sweatshirt)) mixed design, with Hunchback Congruity manipulated as a within-subject variable and Attire manipulated as a between-subject variable. I use the term "hunchback congruity" here to indicate whether the category/attribute pairings align with the twin propositions of the hunchback heuristic, i.e., if the low status category (in this study, Black targets) is paired with the attribute of anger while the high status category (in this study, White targets) is paired with the attribute of calmness. I chose not to include a manipulation of Physical Size in the CPT protocol due to two reasons: a) the lack of any precedent for such a manipulation (i.e. nested category variables) in the literature, in the absence of which I was not confident about making such a modification, and b) the need to limit the

experiment's duration to a reasonable time-span, as it was already nearly 45 minutes long, and added variables would have extended this time by approximately half an hour once the necessary counterbalancing of trials was accounted for.

As in Study 1, the attributes in the CPT were the emotion probes of Anger and Calm, and the social categories were low and high status, represented by a Black and White face respectively. Hunchback congruity was manipulated by pairing a Black or White target face with the emotion probes of Anger or Calm: in the hunchback-congruent condition, category/ emotion word pairings were White/Calm, Black/Anger, whereas in the hunchback-incongruent condition the pairings were reversed to White/Anger, Black/Calm. The key dependent measure was the time it took to match a probe word to a hunchback emotion (anger/calmness) when exposed to the hunchback congruent vs. hunchback incongruent conditions. Except for the stimuli used, the procedure of the CPT task in the present study was identical to the CPT conducted in Study 1.

**3.3.1.3.2 Self-Report Protocol.** To examine the co-occurring status thesis, I used a 2 (Race [Black, White]) x 2 (Physical size [Large, Slim]) x 3 (Attire [formal/high status attire, neutral/neutral status attire, casual/low status attire]) mixed design, with the latter factor included due to my interest in how attire-based status would interact with race- and physical size status dimensions. Race and Physical Size were manipulated as within-subjects factors, and Attire as a between-subjects factor, with participants completing self-report measures within the same attire condition as the CPT protocol.

Participants rated each of the 8 target faces on perceived anger (1 = *not at all angry-looking*, 7 = *very angry-looking*) and perceived calmness (1 = *not at all calm-looking*, 7 = *very calm-looking*), as well as on the anger correlates of perceived

aggressiveness (1 = *not at all aggressive-looking*, 7 = *very aggressive-looking*) and perceived dangerousness (1 = *not at all dangerous-looking,* 7 = *very dangerous-looking*). Participants also rated each target face on perceived attractiveness (1 = *not at all attractive-looking*, 7 = *very attractive-looking*) and completed a status manipulation check in which they rated their perception of the social standing of all the group types used in the study (1 = *lowest status*, 7 = *highest status*). All ratings were given on seven-point Likert scales, with each target face presented six times, each time paired with one out of the six scale items, for a total of 48 trials.

After completing ratings for all target faces on all items, participants were given a full debriefing, inclusive of further information about the purpose of the experiment, the subject under investigation, and an opportunity to further discuss any questions they might have with the experimenters. Following the debriefing, they were reminded that they could request that their data be withdrawn from the study at any point and dismissed.

### 3.3.2 Results

#### 3.3.2.1 *Status Manipulation Check*

To confirm that the social categories in the current study were distinguishable in terms of social status, I calculated the difference in perceived social status across the levels of each status manipulation, using a Bonferroni-corrected $\alpha$ of 0.025 to adjust for multiple comparisons. As expected, results from paired-samples *t*-tests showed that slim targets were perceived as higher in social status ($M$ = 4.52, $SD$ = 0.73) compared to targets who were large ($M$ = 3.68, $SD$ = 0.79), $t(113) = 9.75$, $p < .001$, Cohen's $d$ = 0.913. Also, Whites were attributed higher social status ($M$ = 4.40, $SD$ = 0.71) compared to Blacks ($M$ = 3.80, $SD$ = .87), $t(113) = 6.18$, $p < .001$, Cohen's $d$ = 0.579.

Finally, a one-way ANOVA revealed a main effect of attire-based status, $F(2, 111) = 6.16$, $p = .003$, $\eta^2_p = .100$. Post hoc tests of this effect using a Bonferroni-corrected $\alpha$ of 0.025 to adjust for multiple comparisons showed that formally attired targets were perceived to be higher in social status ($M = 4.37$, $SD = 0.66$) compared to neutrally (t-shirt) attired targets ($M = 3.40$, $SD = 0.51$, $p = .006$), as well as hooded targets ($M = 3.94$, $SD = 0.54$, $p = .002$). However, participants did not discriminate between targets who were attired in t-shirt vs. hoodie, $p = .690$. Thus, I combined the t-shirts condition and the hoodie condition to form a single low status attire condition and contrasted this against the high status attire condition. An independent-samples *t*-test demonstrated that perceived status was greater in the high status attire condition ($M = 4.37$, $SD = 0.66$) compared to the low status attire condition ($M = 3.97$, $SD = 0.52$), $t(60.477) = 3.23$, $p = .002$, Cohen's $d = 0.642$. As a result, the planned 2x3 and 2x2x3 designs outlined above were analysed as 2x2 and 2x2x2 designs, respectively. The two groups were weighted via effect coding to account for unequal sample sizes.

#### 3.3.2.2 *CPT Protocol: Response Time*

As in Study 1, trials with incorrect responses were discarded and participant response times (milliseconds - ms) from the COMBINED blocks were collated to produce four measures of response time: mean response time for hunchback-congruent trials with an anger-associated probe word; mean response time for hunchback-incongruent trials with an anger-associated probe word; mean response time for hunchback-congruent trials with a calmness-associated probe word; and mean response time for hunchback-incongruent trials with a calmness-associated probe word. The mean response times for each emotion probe were analysed in separate 2 (Hunchback congruity [congruent, incongruent]) x 2 (Attire [high status attire, low

status attire]) mixed ANOVAs; all planned comparisons were adjusted for multiple comparisons using a Bonferroni correction. As in Study 1, I used mean response times following Greenwald et al. (2003).

**3.3.2.2.1 Anger.** The results of the mixed ANOVA indicated a significant main effect of hunchback congruity, $F(1, 112) = 31.00$, $p < .001$, $\eta^2_p = 0.217$, showing that participants responded faster during hunchback-congruent trials ($M$ = 1221 ms, $SE$ = 38.03 ms) compared to hunchback-incongruent trials ($M$ = 1419 ms, $SE$ = 44.22 ms) when the probe word was anger-associated, $p < .001$. There was no significant main of attire condition, $F(1, 112) = 0.02$, $p = .890$, $\eta^2_p <. 001$, nor was there a significant interaction between hunchback congruity and attire condition, $F(1,112) = 0.23$, $p = .633$, $\eta^2_p = 0.002$.

**3.3.2.2.2 Calmness.** The results of the mixed ANOVA showed no significant main effect of hunchback congruity, $F(1, 112) = 2.76$, $p = .099$, $\eta^2_p = 0.024$: however, examination of the means indicated a trend in the expected direction, as responses were faster during hunchback-congruent trials ($M$ = 1365 ms, $SE$ = 49.73 ms) than during hunchback-incongruent trials ($M$ = 1455 ms, $SE$ = 52.16 ms). The main effect of attire was not statistically significant, $F(1,112) = 0.17$, $p = .683$, $\eta^2_p = .001$, nor was there a significant interaction between hunchback congruity and attire condition, $F(1,112) = 1.04$, $p = .309$, $\eta^2_p = 0.009$.

### 3.3.2.3 *Self-Report Protocol*

Indices of perceived anger, perceived calmness, perceived aggressiveness, perceived dangerousness, and perceived attractiveness were calculated by averaging participants' self-reports for each target face. Separate 2 (Race [Black, White]) x 2 (Physical size [Large, Slim]) x 2 (Attire [high status attire, low status attire]) repeated-measures ANOVAs were performed on participants' judgments of perceived anger,

calmness, aggressiveness, and dangerousness. Descriptive statistics and correlations for these indices are given in Table E3 in Appendix E. All planned comparisons were adjusted for multiple comparisons using the Bonferroni correction method.

**3.3.2.3.1 Anger Judgments**. The results of the ANOVA indicated a significant main effect of Race, $F(1, 112) = 169.30$, $p < .001$, $\eta^2_p = 0.602$, revealing that participants perceived Black faces to be significantly more angry-looking ($M = 4.67$, $SE = 0.08$) compared to White faces ($M = 3.22$, $SE = 0.08$, $p < .001$). The main effect of Physical Size was also found to be significant, $F(1, 112) = 122.32$, $p < .001$, $\eta^2_p = 0.522$, revealing that participants perceived Larger targets to be significantly more angry-looking ($M = 4.49$, $SE = 0.08$) compared to Slimmer targets ($M = 3.40$, $SE = 0.06$, $p < .001$). The Race x Physical Size interaction was also significant, $F(1, 112) = 9.72$, $p = .002$, $\eta^2_p = 0.080$. Consistent with the co-occurring status thesis, pairwise contrasts showed that targets who were both Large and Black were perceived to be more angry than Slim Black targets, *ps* < .001 (see Table 3.2), and Slim and White targets were perceived to be less angry-looking relative to Large White targets, *ps* < .001 (see Table 3.2). Attire did not qualify these effects further, *p*s > .050.

**Table 3.2**

*Estimated Marginal Means for the Interaction Between Race and Physical Size (Study 2)*

| | **Anger** | | **Calmness** | | **Aggressiveness** | | **Dangerousness** | |
|---|---|---|---|---|---|---|---|---|
| | *Black* | *White* | *Black* | *White* | *Black* | *White* | *Black* | *White* |
| **Slim** | 4.26 | 2.54 | 4.11 | 5.40 | 4.51 | 2.81 | 4.57 | 2.80 |
| | (.11) | (.09) | (.11) | (.08) | (.11) | (.10) | (.11) | (.11) |
| **Large** | 5.08 | 3.91 | 3.38 | 4.04 | 5.17 | 4.28 | 5.16 | 4.37 |
| | (.09) | (.12) | (.10) | (.11) | (.10) | (.12) | (.11) | (.12) |

*Note: numbers in parentheses indicate standard errors of mean*

**3.3.2.3.2 Calmness Judgments**. The results indicated a significant main effect of

Race, $F(1, 112) = 107.17$, $p < .001$, $\eta^2_p = 0.489$; showing that participants perceived White target faces to be significantly more calm-looking ($M = 4.72$, $SE = 0.08$) compared to Black target faces ($M = 3.75$, $SE = .09$), $p < .001$. The main effect of Physical Size was also found to be significant, $F(1, 112) = 151.79$, $p < .001$, $\eta^2_p = 0.575$; pairwise contrasts revealed that participants perceived Slim target faces to be significantly more calm-looking ($M = 4.75$, $SE = 0.07$) compared to Large target faces ($M = 3.71$, $SE = .08$), $p < .001$. The Race x Physical Size interaction was also significant, $F(1, 112) = 11.57$, $p = .001$, $\eta^2_p = 0.094$. Consistent with the co-occurring status thesis, pairwise contrasts showed that targets who were both Slim and White were perceived to be more calm than Large White targets, $ps < .001$ (see Table 3.2), and Slim and Black targets were perceived to be calmer-looking relative to Large Black targets, $ps < .001$ (see Table 3.2). Attire did not qualify these effects further, $ps > .050$.

**3.3.2.3.3 Aggressiveness Judgments**. The results indicated a significant main effect of Race, $F(1, 112) = 204.80$, $p <. 001$, $\eta^2_p = 0.646$; showing that participants perceived Black target faces to be significantly more aggressive-looking ($M = 4.84$, $SE = .08$) compared to White target faces ($M = 3.54$, $SE = .08$), $p < .001$. The main effect of Physical Size was also found to be significant, $F(1, 112) = 87.63$, $p < .001$, $\eta^2_p = 0.439$; pairwise contrasts revealed that participants perceived Large target faces to be significantly more aggressive-looking ($M = 4.72$, $SE = .09$) compared to Slim target faces ($M = 3.66$, $SE = .08$), $p < .001$. The Race x Physical Size interaction was also significant, $F(1, 112) = 25.69$, $p <.001$, $\eta^2_p = 0.187$. Consistent with the co-occurring status thesis, pairwise contrasts showed that targets who were both Large and Black were perceived to be more aggressive than Slim Black targets, $ps < .001$ (see Table 3.2), and Slim and White targets were perceived to be less aggressive-looking relative to Large White targets, $ps < .001$ (see Table 3.2). Attire did not qualify these effects further, $ps > .050$.

**3.3.2.3.4 Dangerousness Judgments**. The results indicated a significant main effect of Race, $F(1, 112) = 139.74$, $p <. 001$, $\eta^2_p = 0.555$; showing that participants perceived Black target faces to be significantly more dangerous-looking ($M = 4.87$, $SE = .09$) compared to White target faces ($M = 3.58$, $SE = .09$), $p < .001$. The main effect of Physical Size was also found to be significant, $F(1, 112) = 137.512$, $p <.001$, $\eta^2_p = 0.551$; pairwise contrasts revealed that participants perceived Large target faces to be significantly more dangerous-looking ($M = 4.76$, $SE = .09$) compared to Slim target faces ($M = 3.68$, $SE = .09$), $p < .001$. The Race x Physical Size interaction was also significant, $F(1, 112) = 35.31$, $p <.001$, $\eta^2_p = 0.240$. Consistent with the co-occurring status thesis, pairwise contrasts showed that targets who were both Large and Black were perceived to be more dangerous than Slim Black targets, *ps* < .001 (see Table 3.2), and Slim and White targets were perceived to be less dangerous-looking relative to Large White targets, *ps* < .001 (see Table 3.2). Attire did not qualify these effects further, *p*s > .050.

**3.3.2.3.5 The Effect of Attractiveness.** Again, I examined whether a co-occurring status effect could be observed in the context physical attractiveness by performing a series of correlations between perceived attractiveness and perceived (a) anger (b) calmness (b) aggressiveness (d) dangerousness and (e) perceived social status. I did this for White, Black, Slim, and Large targets separately. These results are summarised in Table 3.3.

These results indicate that for all status dimensions and status levels, perceived attractiveness was negatively correlated with perceived anger and its correlates (perceived aggressiveness and perceived dangerousness), and positively correlated with perceived calmness. However, the correlations were not always significant, with the correlation of perceived attractiveness and perceived anger being only marginally significant for White targets and non-significant for Slim targets: all other correlations

were significant at the .05 level.

**Table 3.3**

*Correlation Coefficients for the Relationships between Perceived Attractiveness and Measures Linked to the Hunchback Heuristic (Study 2)*

| Target type | Anger | | Calmness | | Aggressiveness | | Dangerousness | | Social Status | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *r* | *p* | *r* | *p* | *r* | *p* | *r* | *p* | *r* | *p* |
| ***White*** | -0.17 | 0.065 | 0.23 | 0.014 | -0.26 | 0.005 | -0.31 | 0.001 | 0.34 | <.001 |
| ***Black*** | -0.35 | <.001 | 0.35 | <.001 | -0.41 | <.001 | -0.42 | <.001 | 0.30 | 0.001 |
| ***Slim*** | -0.14 | 0.126 | 0.28 | 0.002 | -0.25 | 0.009 | -0.30 | 0.001 | 0.27 | 0.004 |
| ***Large*** | -0.36 | <.001 | 0.39 | <.001 | -0.47 | <.001 | -0.42 | <.001 | 0.44 | <.001 |

### 3.3.3 Discussion

This study revealed three important trends. Firstly, corroborating results from the preceding studies, I observed a hunchback heuristic effect for anger and calmness on both the explicit and implicit measures. Note, however, that the weight of evidence for the hunchback heuristic effect on calmness was most pronounced on explicit rather than on implicit measurements, as the latter showed only a trend in the expected direction and no significant difference, compared to anger effects. Nevertheless, the evidence for convergent validity with regards to implicit and explicit measurements of the hunchback effect across correlates of anger was also strong.

Secondly, consistent with the co-occurring status thesis, I observed that the hunchback heuristic effect was more pronounced when the perceived difference in social status between social groups is larger, at least on explicit measures. That is, perceivers' anger attributions were stronger when there were multiple indicators of low status, such as when the target face was both Black (i.e. low status in the dimension

of race) and Large (i.e. low status in the dimension of size), and calmness attributions were stronger when there were multiple indications of high status, such as when the target face was both White (i.e. high status in the dimension of race) and Slim (i.e. high status in the dimension of size).

It is important to note, however, that although the hunchback heuristic was consistently evident in the context of race, physical size and perceived attractiveness of the targets, I did not observe the corresponding effect in the context of attire, contrary to the co-occurring status thesis. That is, I only obtained evidence for the co-occurring status thesis 75% of the time. Although the proportion of the occurrence of this phenomenon is in itself strong, I note that my assumption that hoodies would be regarded as stigmatised attire in Malaysia, similar to the UK, may have been unrealistic, especially given that my Malaysian participants did not rate hoodies any differently from plain t-shirts. Nevertheless, future tests of the co-occurring status effect could use clearer-cut measurements of status beyond attire.

### 3.3.4 Meta-analysis: Implicit Measure Effect Size in Different Status Dimensions

As noted in Studies 1 and 2 above, the results for the implicit measures in both studies show that, although indicating significant differences in the expected direction, the effect sizes of these significant differences were smaller ($\eta^2_p \approx .2$) compared to the effect sizes for the explicit measures in both studies ($\eta^2_p \approx .5$), although it should be noted that these effect size values overall indicate a significant and large effect (Cohen, 1988; Miles & Shevlin, 2001).

I also compared the effect sizes of the implicit measures in Study 1 and Study 2, for anger- and calmness-associated probe trials (Table 3.4) by calculating effect sizes in terms of Cohen's *d* for the results of both studies. I found the hunchback heuristic effects for anger and calmness to be roughly equivalent ($\Delta_{\text{Cohen's } d} = .021$). However, on the

status dimension of race, the hunchback heuristic effect for anger was much larger than that for calmness, indicating that participants' implicit expectations were much stronger for anger compared to calmness ($\Delta_{\text{Cohen's } d}$ =.367). This suggests that different status dimensions elicit more/less pronounced hunchback heuristic effects.

**Table 3.4.**

*Effect Sizes in Implicit Measures by Probe Type and Study (Studies 1 and 2)*

| | **Cohen's *d*** | |
|---|---|---|
| | *Anger-associated trials* | *Calmness-associated trials* |
| **Study 1** | 0.275 | 0.296 |
| **Study 2** | 0.523 | 0.156 |

## 3.4 General Discussion

So far, the evidence supports the twin propositions derived from the hunchback heuristic, showing a positive relationship between low status and perceived anger on both implicit and explicit measures. Similarly, in the two studies that included a measure of perceived calmness, high status groups were consistently expected to be calmer compared to low status groups, across implicit and explicit measurements, with one exception that was nonetheless in the expected direction (see Study 2). However, effect sizes on the implicit measurements were quite small (Cohen, 1977; 1988), compared to equivalent effects on the explicit measures. This difference, however, may be due to increased salience in the explicit measures, where participants were directly questioned regarding their expectations, as opposed to the indirect probing of the hunchback heuristic effect in the implicit measures. Nevertheless, the fact that the hunchback heuristic is detected at all at the implicit, nonconscious level, is testament to its robustness.

Secondly, the evidence suggests that the hunchback heuristic is generalisable

across several status dimensions, as demonstrated by the results of Study 1, in addition to providing supportive evidence for the co-occurring status thesis. In the latter case, for instance, I showed that participants' explicit anger and calmness attributions were respectively stronger in the presence of multiple indicators of low or high status. This effect, however, was not further qualified by the attire-based status cue, which may not carry as much social stigma in Malaysian society as it ostensibly does in the UK. Thirdly, I demonstrated convergent support for the hunchback heuristic across multiple correlates of anger (i.e. perceived aggressiveness and perceived dangerousness). These results provide strong evidence for the existence a hunchback heuristic.

### 3.4.1 Limitations

However, the studies presented herein are not without limitations. Firstly, the use of Black and White target faces in a Malaysian sample, although repeatedly validated, also raises the question of whether other prejudices and biases may have influenced participants' judgments and evaluations. Malaysians in general are not free of anti-Black bias, with Black African immigrants in Malaysia known to face discrimination on both the State and interpersonal level (Luedi, 2018). Lacking a measure of anti-Black prejudice in my design, therefore, means it is difficult to conclusively eliminate the possibility that my findings may have been influenced by participants' latent anti-Black bias. Other potential limitations also stem from the Malaysian context in which the studies presented above were conducted, and the question of whether or not the assumptions on which my experimental design was based hold true within said context. The possibility that some assumptions may not, in fact, hold true is demonstrated by the partial failure of Study 2's attire-based status manipulation, where the use of hoodies as an exemplar of low status did not translate to a Malaysian sample.

Furthermore, although very informative, these initial studies have largely ignored the role of participants' own social status in these judgements: a potentially influential factor, considering the evidence that group memberships often play a role in how people evaluate others and themselves (Tajfel & Turner, 1979). That is, I do not yet know whether participants' attributions of anger/calmness in the studies that have been presented so far were influenced by the fact that the targets were members of status outgroups vs. ingroups, especially considering the well-documented tendency to undercut (even disparage) outgroup members (Tajfel et al., 1971).

Thus, I sought to further examine the hunchback heuristic effect under conditions where I could a) be reasonably certain that external prejudices such as anti-Black bias would not influence the results of the experiment b) investigate the potential influence of group membership and social identity motives on the expression of the hunchback heuristic. Chapter 4 attempts to address these issues, using an adaptation of the classic minimal group paradigm which is traditionally used to investigate social category effects (Tajfel et al., 1971).

**4**

# Social Category Membership and the Hunchback Heuristic: An Adapted Minimal Group Investigation

Chapter 3 presented empirical evidence for the existence of the hunchback heuristic, and further showed *some* evidence for co-occurring status effects when social status is signalled by multiple indicators. However, the evidence so far has largely ignored the potential effects of social category membership, despite the robust tendency for people to judge those who are perceived to be outsiders (i.e. outgroup members) in more negative terms relative to insiders (or fellow group members). As the investigations detailed in Chapter 3 focused almost exclusively on judgement of outgroups (e.g., Malaysian participants were asked to evaluate Indians, Africans, and European Americans), this raises the question of whether the hunchback heuristic also manifests *within* groups. That is, in the event that people shared group membership with a low status group, would they still associate the negative emotion of anger with their ingroup? If so, under what conditions would they do so?

Classic social identity theory (Tajfel & Turner, 1979) suggests that in the interests of maintaining a positive group social image, individuals who belong to a low status social group should be reluctant to ascribe negative attributes such as anger to their ingroup. If so, it is possible that members of low status social groups would resist the application of the hunchback heuristic to, and thus the association of anger with, their ingroup, whereas members of high status groups should reinforce the hunchback heuristic so that the positive attribute of calmness is associated with their ingroup. However, Spears et al.'s (2001) social reality caveat indicates that this resistance is only possible under limited circumstances, suggesting the possibility that low status groups may accept the application of the hunchback heuristic *if* social reality does not support

resistance to its application (see also Chapter 1 for a similar discussion).

Thus, in the following studies I sought to examine a) whether the hunchback heuristic effect is influenced by social identity motives, such as the drive for positive social image and ingroup bias, and if so b), whether this influence occurs in manners that are consistent with the social reality caveat. Hence, I predicted that:

H1. Affiliation with a target's low status group membership should elicit resistance to the application of the hunchback heuristic; such an effect should be especially visible when the status ranking is contestable (i.e. illegitimate status) but not when the status ranking is clear-cut (i.e. legitimate status).

H2. Affiliation with a target's high status group membership should cause participants to embrace the hunchback heuristic by accentuating (even flaunting) favourable judgment of their ingroup; such an effect should be especially visible when the status ranking is contestable (i.e. illegitimate status) but not when the status ranking is clear-cut (i.e. legitimate status).

### 4.1 Study 1

Following the classic minimal group paradigm (Tajfel et al., 1971), I developed an anagram protocol that created an elevated or deflated sense of one's anagram skill status. Specifically, the aim was to lead perceivers to believe that they were either skilled (high status), unskilled (low status) or average skill (median status) anagram solvers, and to then determine whether these category memberships affected their application of the hunchback heuristic in their anger/calmness judgments of other skilled and unskilled anagram solvers.

To test whether the hunchback heuristic would be subject to social reality constraints, I also manipulated the type of status ranking through which participants were assigned the labels of skilled, unskilled, or average skill, creating two distinct

ranking protocols:

- In the first ranking protocol, participants' status ranking was based on their real performance on their anagram task; I termed this the legitimate ranking, as the ranking was based on a legitimate and objective criterion, i.e. participants' scores.
- In the second ranking protocol, participants' status ranking was randomly assigned and unrelated to their performance on the anagram task; I termed this the illegitimate ranking, as the ranking was based on an illegitimate and subjective criterion, i.e., random assignment.

### 4.1.1 Method

#### 4.1.1.1 *Participants*

A statistical power analysis was performed for sample size estimation using G*Power 3.1. Given the large effect sizes found in the pilot and Studies 1 and 2, effect size was set to f = 0.4, considered to be large following Cohen (1988), with $\alpha = .05$ and power = 0.80. The projected sample size needed with this effect size was $N = 126$, and I set an initial target of $N+4 = 130$ in order to account for attrition. However, I was unsuccessful in achieving this target sample size, recruiting a total of 113 Malaysian participants from the University of Nottingham Malaysia, who took part in two phases of the experiment. In the first phase, using the legitimate ranking protocol, I recruited 63 Malaysian participants (17 males), $M_{age} = 20.33$) through random opportunistic sampling, who were rewarded with a candy bar for their participation. In the second phase, using the illegitimate ranking protocol, 50 Malaysian participants (11 male; $M_{age} = 19.1$) were recruited as part of a Psychology Practical Methods class and were offered course-credit and/or candies for their time.

#### 4.1.1.2 *Stimuli and Apparatus*

The experiment was conducted online using Qualtrics Research Suite. To manipulate participants' perceived status, I made use of a simple anagram solving task, where participants were presented with a word and required to enter one anagram of the word within 30 seconds. Thirty anagrams of moderate difficulty were selected from various online sources; I selected these anagrams from subsets labelled 'medium' or 'moderate' difficulty, varying in length from 4 to 7 letters (Appendix C).

#### 4.1.1.3 *Design and Procedure*

A 2 (Status Ranking [legitimate, illegitimate]) x 3 (Participant Status [skilled/high status, average skill/median, unskilled/low]) x 2 (Target Skill [skilled/high status, unskilled/low]) mixed design was used. Target Skill was manipulated as a within-subjects factor, while Participant Status and Status Ranking were between-subject factors.

**4.1.1.3.1 Experimental Manipulations.** To mask the purpose of the experiment, participants were told that they were taking part in an experiment investigating linguistic puzzle-solving ability in bilingual and multilingual Malaysians. They were then provided with further details on how the data obtained would be used, and informed that they could withdraw from the study at any point before obtaining their consent to proceed.

Participants were then told they would have to solve a series of anagrams, with each anagram to be solved within 30 seconds, and led to believe that anagram solving skill was linked to overall intelligence, lateral thinking skills, and problem-solving capacity, which are indicators of elevated social status. This information, however, was fabricated. They then viewed a minute-long YouTube video on anagrams to familiarise

them with the task.

**4.1.1.3.1.1** ***Participant Status and Objectivity of Status Ranking.*** In the legitimate status ranking condition, participants were presented with their actual scores on the anagram task which were used to place players in an anagram skill hierarchy from high to low skill. Once participants had completed all 30 anagrams, their score was displayed on-screen along with a short paragraph about their position in the anagram skill hierarchy that was based on their actual scores. Participants were sorted into three skill groups as follows:

- If participants scored from **0 to 10**, indicating they had solved **a third or less** of the 30 anagrams correctly, they were assigned to the **unskilled group**
- If participants scored between **11 and 20,** indicating they had solved **over a third but less than two-thirds** of the 30 anagrams correctly, they were assigned to the **average skill group**
- If participants scored between **21 and 30**, indicating they had solved **over two-thirds** of the 30 anagrams correctly, they were assigned to the **skilled group**

These benchmarks were chosen to create three evenly-spaced skill categories, with each category encompassing a numerically equivalent range of scores. Specifically, participants were told that they were either unskilled ($n$ = 29), of average skill ($n$ = 34) or skilled ($n$ = 0) and reminded once again that anagram skill was related to other dimensions of intelligence to reinforce the status manipulation.

In the illegitimate status ranking condition, participants were given false scores about their performance on the same anagram task and while being randomly assigned to either a low ($n$ = 17), average ($n$ = 16), or high ($n$ = 17) anagram skill group, based on their fictitious score. Participants were not aware of which status ranking condition

they were assigned.

**4.1.1.3.1.2** ***Target Skill and Inter-Status Judgments.*** Participants then performed intergroup judgments on expectations of anger ("how angry do you think people like N/R usually are?", 1 = *not at al*l, 6 = *extremely*), expectations of calmness ("how calm do you think people like N/R usually are?", 1 = *not at all*, 6 = *extremely*), and expectations of aggressiveness ("how aggressive do you think people like N/R usually are?", 1 = *not at all*, 6 = *extremely*) for a fictional skilled solver and a fictional unskilled solver. Participants were provided with no identifying information for these fictitious solvers other than an initial – N for the fictitious skilled solver, R for the fictitious unskilled solver – and their purported scores and rankings in the anagram solving task.

**4.1.1.3.1.3** ***Target Status Manipulation Check.*** To check the effectiveness of my status manipulation participants were also asked to rate the social status of the fictitious solvers that they had evaluated and, this was done on a 6-point Likert scale ("What social status do you think skilled/unskilled anagram solvers would normally occupy in society?" 1= *low status*, 6 = *high status*).

On completion, participants were given a full debriefing, inclusive of information about the true purpose of the experiment and an opportunity to further discuss any questions about the experiment with the experimenters. Following the debriefing, they were reminded that they could request that their data be withdrawn from the study at any point and dismissed.

### 4.1.2 Results and Discussion

#### 4.1.2.1 *Data Preparation: Legitimate Status Ranking*

A preliminary examination of the dataset revealed that none of the participants in the legitimate status ranking protocol had scored into the skilled (high status) group,

with nearly half the participants ($N$ = 29) scoring into the unskilled (low status group), whereas the remaining participants ($N$= 34) scored into the average skill (median status) group. Hence, the distribution of participants with regards to the three cells of the between-subject treatment was unbalanced in the legitimate status ranking protocol.

#### 4.1.2.2 *Status Manipulation Check*

A paired-samples $t$-test showed that participants across all conditions perceived skilled solvers ($M$ = 4.49, $SD$ = .81) to be significantly higher in status compared to unskilled solvers ($M$ = 3.50, $SD$ = .94), $t(113) = 8.10$, $p < .001$, Cohen's $d$ = 0.762. To ensure that my status manipulation was consistent across participant groups, I subsequently performed a repeated-measures ANCOVA on my manipulation check variables, statistically controlling for the effects of the between-subject factor Participant Status. Consistent with the results of the $t$-test, I found a main effect of Target Skill, $F(1,111) = 61.20$, $p < .001$, $\eta^2_p = 0.355$: unskilled solvers ($M$ = 3.50, $SE$ = .09) were perceived to be lower in status compared to skilled solvers ($M$ = 4.49, $SE$ = .08) irrespective of participants' own status group membership.

#### 4.1.2.3 *Main Analysis*

Given the less than ideal distribution of participants in the legitimate status ranking protocol, I decided to focus my analysis on the average skill/median status and unskilled/low status groups. Given that the average skill group is still higher in skill status compared to the unskilled/low status group, I renamed these to higher skill and lower skill groups. I excluded the skilled/high status group in the illegitimate status condition from my analyses, as there was no comparable sample in the legitimate condition and inclusion of the high status group may have provided more extreme

judgments, given the predicted pattern of uninhibited use of the hunchback heuristic. Therefore, treating the type of status hierarchy that each group of participants experienced as a between-subjects variable, I performed separate 2 (Status Ranking: legitimate vs. illegitimate) x 2 (Participant Status: higher skill/higher-status vs. lower skill/lower status) x 2 (Target Skill: skilled/high status vs. unskilled/low status) mixed factorial ANOVAs separately for the key measures of perceived anger, calmness, and aggressiveness. Intercorrelations for these key variables are given in Table E4 in Appendix E. All planned comparisons were adjusted for multiple comparisons using the Bonferroni correction method.

**4.1.2.3.1 Expectations of Calmness***.* Consistent with the hunchback heuristic, a significant main effect of Target Skill on calmness attributions was present, $F(1, 92) = 21.18$, $p < .001$, $\eta^2_p = 0.187$: overall, unskilled solvers (low status) were expected to be less calm ($M = 3.25$, $SE = .13$) compared to skilled solvers (high status; $M = 4.16$, $SE = .14$). However, this main effect was qualified by a significant interaction between Target Skill and Status Ranking, $F(1, 92) = 4.07$, $p = .047$, $\eta^2_p = 0.042$. Simple effects analysis showed that while participants in both Status Ranking conditions expected the skilled target to be calmer compared to the unskilled target, this difference was only significant when the status hierarchy was based on an legitimate ranking system ($M_{high} = 4.44$, $SE = .16$; $M_{low} = 3.14$, $SE = .15$; $p < .001$), but not when the status hierarchy was based on an illegitimate ranking ($M_{high} = 3.87$, $SE = .22$; $M_{low} = 3.36$, $SE = .21$; $p = .114$). Participant status did not further qualify the Target Skill x Status Ranking effect, $F(1, 92) = 2.11$, $p = .152$, $\eta^2_p = 0.022$. Thus, consistent with Spears et al.'s (2001) social reality caveat, participants in both the higher-status and lower status conditions did not contest the superiority of the high status target regarding the positive stereotypical attribute of calmness when the status ranking was legitimate/clear-cut. However, it should be noted

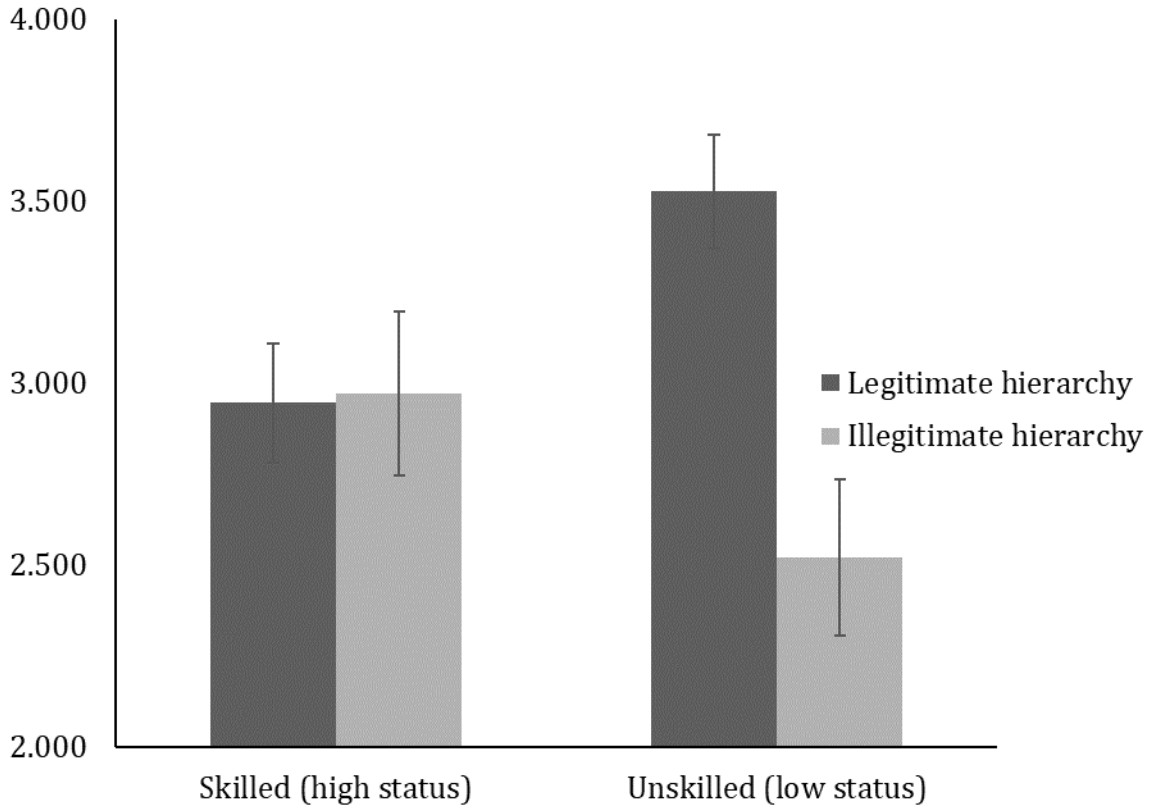
that the size of this effect was relatively modest.

**4.1.2.3.2 Expectations of Anger.** Again, consistent with the hunchback heuristic, I found a significant main effect of Target Skill on expected anger, $F(1,92) = 22.43$, $p < .001$, $\eta^2_p = 0.196$, such that unskilled solvers (low status) were expected to be angrier ($M = 3.60$, $SE = .14$) compared to skilled solvers (high status; $M = 2.77$, $SE = .13$) overall. This main effect, however, was neither qualified by Participant Status, $F(1, 92) = 1.48$, $p = .226$, $\eta^2_p = 0.016$, nor Status Ranking, $F(1, 92) = 2.41$, $p = .124$, $\eta^2_p = 0.025$. The three-way interaction between Target Skill, Participant Status, Status Ranking was also non-significant, $F(1,92) = 1.584$, $p = .211$, $\eta^2_p = 0.017$. Thus, although there is strong evidence for the hunchback heuristic, the patterns that one might expect based on the social reality caveat did not materialise for anger attributions.

**4.1.2.3.3 Expectations of Aggressiveness.** Surprisingly, the main effect of Target Skill on expectations of aggression was non-significant, $F(1, 92) = 0.25$, $p = .620$, $\eta^2_p = 0.003$. However, as expected, this null main effect of Target Skill was qualified by Status Ranking, $F(1, 92) = 6.81$, $p = .011$, $\eta^2_p = 0.069$: participants in the legitimate status condition expected the unskilled target to be significantly more aggressive compared to the skilled target, $p = .010$ (see Figure 4.1). Meanwhile, participants in the illegitimate status condition seemed to expect the unskilled target to be less aggressive compared to the skilled target, though this difference was not statistically significant, $p = .195$ (see Figure 4.1, and also Table 4.1 for the marginal means).

**Figure 4.1**

*Expectations of Aggressiveness by Target Skill and Status Ranking (Study 1)*




*Note: Error bars indicate standard errors of mean.*

**Table 4.1.**

*Estimated Marginal Means for Expectations of Aggressiveness by Participant Status and Target Skill (Study 1)*

| | ***Participant Status*** | | | |
|---|---|---|---|---|
| | ***Lower skill (Lower status)*** | | ***Higher skill (Higher-status)*** | |
| *Target Skill* | *Skilled (High)* | *Unskilled (Low)* | *Skilled (High)* | *Unskilled (Low)* |
| **Legitimate status hierarchy** | 2.86 (0.24) | 3.17 (0.23) | 3.03 (0.22) | 3.88 (0.21) |
| **Illegitimate status hierarchy** | 2.94 (0.31) | 2.59 (0.30) | 3.19 (0.32) | 2.75 (0.31) |

*Note: numbers in brackets represent standard errors of mean*

These divergent effects emerged regardless of the status group membership of the participants themselves, $F(1, 92) = 0.70$, $p = .404$, $\eta^2_p = 0.008$. That is, participants in the lower status condition as well as the higher-status condition resisted attributing the behavioural manifestation of anger (i.e. aggression) to low status targets when the status ranking system was less objective and, therefore could not confer legitimate prestige to high status individuals. Hence, the preponderance of the evidence presented above suggests that constraints imposed by social reality may determine whether the hunchback heuristic is applied or reversed.

In summary, the results of Study 1 indicate that reality appears to constrain the extent to which individuals are able to activate and apply the hunchback heuristic, especially in relation to attributions of calmness and aggressiveness (a behavioural manifestation of anger). But this reality check appears to be independent of and unaffected by participants' own status group membership. However, given the modest sample size of the above analysis, it remains unclear whether the unconditional manifestation of the hunchback heuristic with regard to anger attributions was a result of insufficient data to detect a similar reality constraint effect. Thus, in a subsequent study, I recruited a larger sample, focusing on the subjective, illegitimate ranking system, where the theorised resistance to the hunchback heuristic is expected to be most visible amongst members of low status groups (Spears et al., 2001). I did so to provide a more incisive test of group-membership induced resistance to the hunchback heuristic, especially regarding the key emotion of anger.

## 4.2 Study 2

### 4.2.1 Method

#### 4.2.1.1 *Participants*

A statistical power analysis was performed for sample size estimation using

G*Power 3.1. Effect size was set to a conservative f = 0.25, considered to be a medium sized effect following Cohen (1988), with $\alpha$ = .05 and power = 0.80. The projected sample size needed with this effect size was $N$ = 222, and I set an initial target of $N$+27=250 to account for attrition due to participant error and other factors.

However, I overshot this target significantly, with my final sample numbering 350 Malaysian participants (150 males; $M_{age}$ = 19.55, $SD$ = 1.14) from the University of Nottingham Malaysia. This was due to recruiting participants via snowball sampling: an initial sample of 60 Malaysian participants was recruited as part of a Psychology Practical Methods class and offered course-credit as recompense, with each member of this initial cohort then being supplied with a unique link to the online study protocol and requested to pass it on to four more unique, Malaysian participants.

#### 4.2.1.2 *Stimuli and Apparatus*

As in Study 1, the experiment was conducted online using Qualtrics Research Suite, and used the same stimuli and experimental protocol.

#### 4.2.1.3 *Design and Procedure*

I used a 3 x 2 (Participant Status [skilled/high status, average/median status, unskilled/low status] x Target Skill [skilled/high status, unskilled/low status]) mixed design to explore the impact of group identification and ingroup bias. Target Skill was again manipulated as a within-subjects factor, and Participant Status as a between-subjects factor.

Consistent with Study 1, to mask the purpose of the experiment, participants were told that they were taking part in an experiment investigating linguistic puzzle-solving ability in bilingual and multilingual Malaysians. They were then provided with further details on how the data obtained would be used, and informed that they could

withdraw from the study at any point before obtaining their consent to proceed.

Participants were then told that they would have to solve a series of anagrams within a given time-limit and told that anagram solving skill was linked to overall intelligence, lateral thinking skills and problem-solving capacity. They then viewed a minute-long YouTube video on anagrams to familiarise them with the concept and the task.

**4.2.1.3.1 Status Manipulation.** Once participants had completed all 30 anagrams, a false, randomly generated score was presented to them, unrelated to their actual performance. Participants were then assigned into the skilled, average skill, or unskilled solvers groups, ostensibly based on this score, and reminded of the purported link between anagram solving skill and other forms of intelligence. Unbeknownst to the participants, however, this sorting was completely randomised.

**4.2.1.3.2 Intergroup Judgments.** Participants then performed intergroup judgments on expectations of anger ("how angry do you think people like N/R usually are?", 1 = *not at all,* 6 = *extremely*), expectations of calmness ("how calm do you think people like N/R usually are?", 1 = *not at all*, 6 = *extremely*), and expectations of aggressiveness ("how aggressive do you think people like N/R usually are?", 1 = *not at all*, 6 = *extremely*) for a fictional skilled solver and a fictional unskilled solver. Participants also completed dummy ratings which were intended to mask the true purpose of the experiment ("how proud and pompous do you think people like N/R usually are?"/ "how embarrassed do you think people like N/R usually are?"/ "how dangerous do you think people like N/R usually are?" /"how excited do you think people like N/R usually are?"). Participants were provided with no identifying information for these fictitious solvers other than an initial – N for the fictitious skilled

solver, R for the fictitious unskilled solver – and their purported scores and rankings in the anagram solving task.

**4.2.1.3.3 Status Judgment.** As in Study 1, participants were asked to rate the social status of skilled and unskilled solvers on 6-point Likert scales ("What social status do you think skilled/unskilled anagram solvers would normally occupy in society?" 1 = *low status*, 6 = *high status*) to check the effectiveness of my status manipulation.

On completion, participants were given a full debriefing, inclusive of information about the true purpose of the experiment and an opportunity to further discuss any questions about the experiment with the experimenters. Following the debriefing, they were reminded that they could request that their data be withdrawn from the study at any point and dismissed.

### 4.2.2 Results and Discussion

#### 4.2.2.1 *Status Manipulation Check*

A paired-samples *t*-test showed that participants across all conditions perceived skilled solvers ($M$ = 4.28, $SD$ = 1.00) to be significantly higher in status compared to unskilled solvers ($M$ = 3.26, $SD$ = .96), $t(349) = 12.31$, $p < .001$, Cohen's $d = 0.811$. To ensure that my status manipulation was consistent across participant groups, I subsequently performed a repeated-measures ANCOVA on my manipulation check variables, controlling for the effects of the between-subject factor Participant Status. Consistent with the results of the *t*-test, I found a main effect of Target Skill, $F(1,346) = 150.0$, $p < .001$, $\eta^2_p = 0.302$: unskilled solvers ($M$ = 3.26, $SE$ = .05) were perceived to be lower in status compared to skilled solvers ($M$ = 4.28, $SE$ = .05) irrespective of participants' own status group membership.

#### 4.2.2.2 *The Effect of Social Identity Motives*

To test whether social identity motives influence the hunchback heuristic effect, I first performed separate 3 x 2 (Participant Status [skilled/high status, average/median status, unskilled/low status] x Target Skill [skilled/high status, unskilled/low status]) mixed ANOVAs for the key measures of perceived anger, calmness, and aggressiveness. All planned comparisons were adjusted for multiple comparisons using the Bonferroni correction method. Table 4.2 presents a summary of the estimated marginal means for this analysis. Intercorrelations for the key variables are given in Table E5 in Appendix E.

**Table 4.2**

*Estimated Marginal Means for Key Hunchback Heuristic Measures by Participant Status and Target Skill (Study 2)*

| Measure | Participant Status | | | | | |
|---|---|---|---|---|---|---|
| | Unskilled (Low) | | Average (Control) | | Skilled (High) | |
| | Skilled (High) | Unskilled (Low) | Skilled (High) | Unskilled (Low) | Skilled (High) | Unskilled (Low) |
| **Anger** | 3.05 (0.12) | 3.38 (0.12) | 2.73 (0.11) | 3.71 (0.12) | 2.93 (0.12) | 3.70 (0.12) |
| **Calmness** | 4.06 (0.12) | 3.48 (0.11) | 4.26 (0.12) | 3.10 (0.11) | 4.12 (0.12) | 3.18 (0.11) |
| **Aggressiveness** | 3.57 (0.18) | 3.16 (0.11) | 3.05 (0.18) | 3.62 (0.11) | 3.23 (0.12) | 3.41 (0.11) |

*Note: numbers in brackets represent standard errors of mean*

**4.2.2.2.1 Expectations of Anger.** In line with the predictions of the hunchback heuristic, I found a significant main effect of Target Skill on expected anger, $F(1, 347) = 42.71$, $p < .001$, $\eta^2_p = 0.110$, such that unskilled solvers (low status) were expected to be angrier ($M = 3.60$, $SE = .07$) compared to skilled solvers (high status; $M = 2.91$, $SE = .07$) overall. There was also a significant interaction between Target Skill and Participant

Status, $F(2, 347) = 3.30$, $p = .038$, $\eta^2_p = 0.019$. Simple effect analysis showed that the unskilled target was expected to be significantly angrier compared to the skilled target by participants who were led to believe that they belonged to an average skill group condition, $p < .001$, and the high status group (i.e. skilled group condition), $p < .001$. Corroborating Spears et al.'s reality caveat, participants in the unskilled group condition did not show this bias, $p = .076$: that is, they expected the skilled target to be equally prone to anger as the unskilled (ingroup) target.

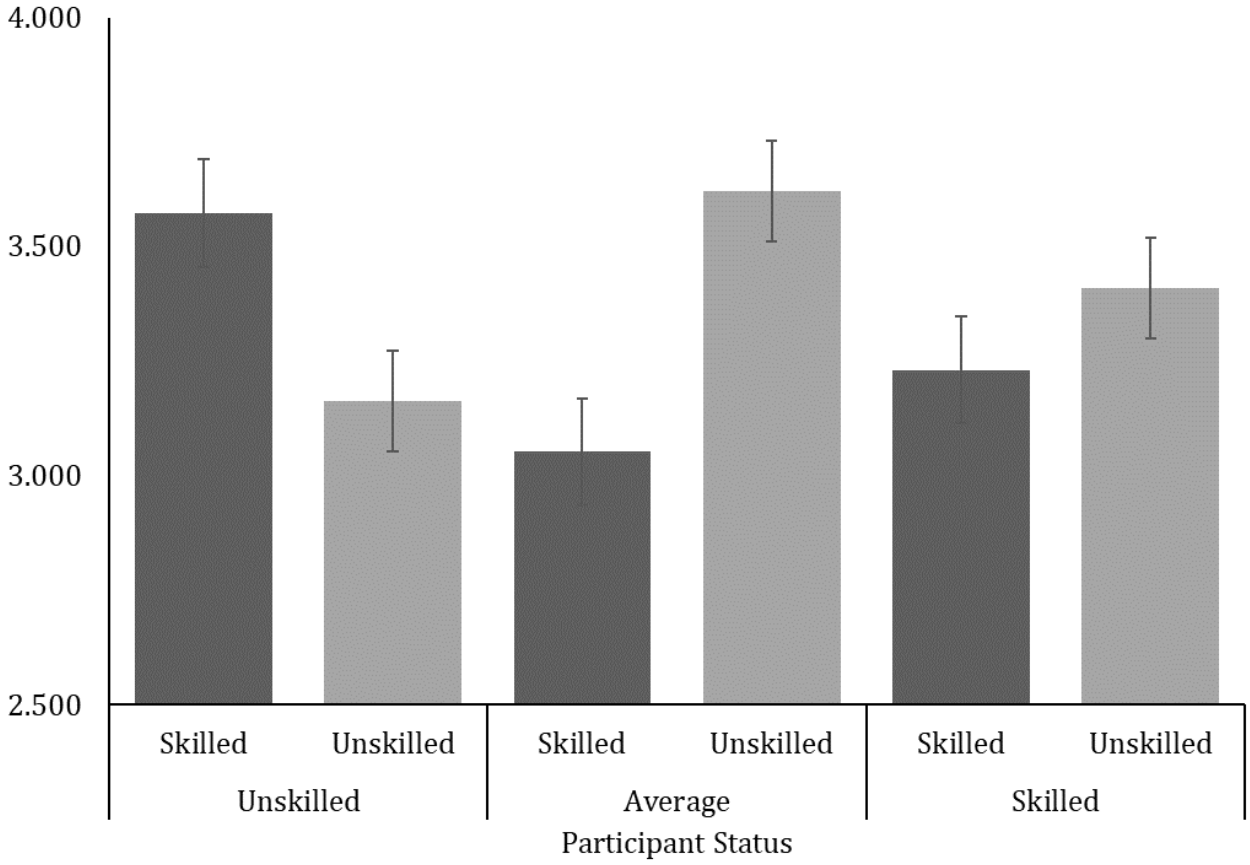
**4.2.2.2.2 Expectations of Calmness.** Again, in line with the hunchback heuristic, a significant main effect of Target Skill on expected calmness was present, $F(1, 347) = 76.67$, $p < .001$, $\eta^2_p = 0.181$: skilled solvers (high status) were expected to be calmer ($M = 4.15$, $SE = .07$) compared to unskilled solvers (low status; $M = 3.25$, $SE = .06$). The interaction term between Target Skill and Participant Status was not significant, $F(2, 347) = 2.75$, $p = .065$, $\eta^2_p = 0.016$, suggesting that even participants in the unskilled group condition did not necessarily contest this 'positive' status-defining attribute, even though they reported the lowest calmness scores for high status targets relative to their average and high status solver counterparts (see Table 4.2).

**4.2.2.2.3 Expectations of Aggressiveness.** Again, I found no significant main effect of Target Skill on expectations of aggressiveness, $F(1, 347) = 1.43$, $p = .232$, $\eta^2_p = 0.004$. The interaction between Target Skill and Participant Status, however, was significant, $F(2, 347) = 9.12$, $p < .001$, $\eta^2_p = 0.050$. Consistent with the hunchback heuristic, simple effect analysis for this interaction (see Figure 4.2) revealed that participants in the unskilled group condition, expected the unskilled target to be significantly less aggressive compared to the skilled target, $p = .012$. In contrast, participants in the average skill group condition expected the unskilled target to be significantly more aggressive compared to the skilled target, $p = .001$. That is, consistent

with Spears et al.'s (2001) social reality caveat, low status group members seemed strongly opposed to the assignment of this negative trait to their ingroup. Meanwhile, participants in the skilled group condition did not expect the unskilled target to be significantly more aggressive compared to the skilled target, $p = .271$, although the pattern of means generally conformed to the predicted hunchback effect.

**Figure 4.2**

*Expectations of Aggression by Target Skill and Participant Status (Study 2)*




*Note: error bars indicate standard errors of mean*.

## 4.3 General Discussion

The current findings qualify my previously established evidence regarding the hunchback heuristic, suggesting that an illegitimately imposed social status hierarchy enables members of low status groups to resist unflattering stereotypes about their

status ingroup. Members of higher-status groups, too, appear to be cautious in their application of the hunchback heuristic in a potentially illegitimate, subjective ranking system, especially with regard to attributions of aggression (i.e. the behavioural manifestation of the negative emotion of anger). Note that while participants were not aware of the illegitimate nature of the ranking system until they were debriefed, several participants indicated in post-debrief comments that they had in fact doubted the legitimacy of their purported ranking, due to their purported scores not matching up with their own perception of their performance.

Thus, the current study integrates the hunchback heuristic with perspectives derived from social identity theory (Tajfel & Turner, 1979), by showing that (a) although people generally associate members of low status groups (unskilled solvers) with anger and members of high status group with calmness, and (b) members of low status groups may *resist* the hunchback heuristic, while members of high status groups might be *cautious* in their application of this heuristic, if there is scope to doubt that the inter-status hierarchy is legitimate (Spears et al., 2001; see also Rubin & Hewstone, 2004; Owuamalam et al., 2018).

Results from Study 1 also indicate that members of low status groups may be more likely to accept and use the hunchback heuristic if the status hierarchy is based on some objective criterion, thus lending legitimacy to the status ranking system. It is important to note, however, that despite the evidence for a reality constraint with regards to the negative emotion of anger, members of low status groups actually did not contest the attribution of the positive emotion of calmness to higher-status outgroups. Such evidence is consistent with Brewer's (1999) caution that "ingroup love does not necessarily imply outgroup hate". It seems, therefore, for participants in the low status condition at least, that resisting an unflattering stereotype of their status ingroup does

not necessarily promote a 'hate agenda' against their higher status counterparts. In short, it is entirely possible that the social reality caveat is limited to the negative (but not the positive) dimension of the hunchback heuristic, and future research could formally investigate this possibility.

Aside from Brewer's caution, it is also entirely possible that these findings (especially the 'calmness bias') could have been culturally determined. The present findings were obtained in a South East Asian context (i.e. Malaysia) and there are indication that Eastern, collectivistic cultures generally prize calmness over anger expression, which could have given rise to greater expectation of calmness from people in elevated positions who may be expected to be the champions of this important social norm. Hence, in the next chapter, I consider the role of culture in the application of the hunchback heuristic, by examining a cultural moderation thesis proposed by Park et al. (2013), the predictions of which are in the opposite direction to the pattern of calmness bias reported among members of low status groups in this chapter.

# 5

# The Hunchback Heuristic and the Cultural Moderation Hypothesis

The findings presented in Chapter 4 both further corroborate previously presented evidence of the hunchback heuristic's existence with regards to expectations of anger and calmness, and highlight an interesting divergence from my previous findings in terms of expectations of aggressiveness, under conditions where participants were led to believe they shared status group membership with low status and high status targets. Also of interest is the 'calmness bias' reported by participants in Studies 3 and 4, where although members of low status groups pushed back against the attribution of the negative emotion of anger and its behavioural manifestation (aggression) to their ingroup, they did not conversely contest the attribution of the positive emotion of calmness to the higher-status outgroup. However, taking into account that the preceding studies have been conducted entirely within Malaysian sample populations, it would be imprudent to dismiss the likelihood that these findings may potentially be influenced by cultural factors, such as the premium placed on calmness over anger in Eastern, collectivistic cultures (see Chapter 1 for a similar discussion).

Some evidence that culture may influence the relationship between social status and anger is offered by Park et al.'s (2013) cultural moderation hypothesis. Briefly, Park et al. propose a negative relationship between social status and anger in individualistic cultures, and a positive relationship between social status and anger in collectivistic cultures, mediated by frustration and authority, respectively (see Chapter 1 for a more detailed discussion). However, these propositions contradict my findings in Chapters 3 and 4, which show largely opposite trends in expectations of anger and aggressiveness within a similarly Eastern, collectivistic sample, and indicate the possibility that the

cultural moderation hypothesis may not be universally applicable to *all* individualistic or collectivistic cultures.

To further investigate these questions, therefore, I planned a replication of my minimal group paradigm in the same sample populations used by Park et al. (USA – Western, collectivistic; Japan – Eastern, collectivistic), including an additional measure of expectations of frustration to facilitate a preliminary exploration of the possibility of frustration mediating the relationship between anger and status. I chose to focus on frustration as a potential mediator because the pattern of results from Studies 1-4, although they conducted in a collectivistic sample population, aligned best with Park et al.'s frustration-mediated model.

Considering my previous findings on the divergent trends in expectations of anger versus expectations of aggression, I hypothesised that:

H1. Frustration should mediate the relationship between social status and expectations of anger, but not the relationship between social status and expectations of aggression (i.e. anger expression) in collectivist cultures.

H2. For individualistic samples, frustration should mediate the relationship between social status and expectations of aggression (i.e. anger expression), as well as the relationship between social status and expectations of anger.

## 5.1 Study 1

### 5.1.1 Method

#### 5.1.1.1 *Participants and Stimuli*

A statistical power analysis was performed for sample size estimation using G*Power 3.1. Effect size was conservatively set to f = 0.25, considered to be a medium-sized effect following Cohen (1988), with $\alpha$ = .05 and power = 0.80. The projected sample size needed with this effect size was $N$ = 306, and I set an initial target of

*N*+14=320 to account for attrition due to participant error and other factors. I subsequently achieved a sample of 314 male participants between the ages of 18 and 35, from the same populations used by Park et al. – i.e., the USA and Japan (USA: $N$ = 153, $M_{age}$ = 25.6, $SD$ = 4.69; Japan: $N$ = 161, $M_{age}$ = 20.0, $SD$ = 1.40). Note that while the average age of the US sample was significantly higher than the average age of the Japan sample, $t(312) = 14.6$, $p < .001$, both samples may nevertheless be broadly categorised as 'young adults' and therefore are largely comparable. In both samples, I recruited solely citizens of the USA and Japan, respectively.

Participants in the USA were recruited via the online participant recruitment platform Prolific.ac – however, constraints related to recruitment funding limited my sample to male participants only. For this reason, I also recruited only male participants in my Japan sample, who were recruited by a native collaborator from among the student population of Senshu University, Tokyo.

For the USA sample, I used the same English-language experimental protocol and stimuli as in Studies 3 and 4. However, due to concerns about English proficiency in the Japanese university population, the experimental protocol was translated into Japanese. Due to the incompatibility of the Japanese language with the concept of anagrams (as the Japanese writing system is logographic), I replaced the English-language anagrams with mathematical puzzles (Appendix D).

#### 5.1.1.2 *Design and Procedure*

I used a 2 x 2 x 3 (Culture [individualistic, collectivistic] x Target Skill [skilled/high, unskilled/low] Participant Status [skilled/high, average/control, unskilled/low]) mixed design to explore the impact of culture on the hunchback heuristic, where Target Skill was manipulated as a within-subjects factor, and Culture as

a between-subjects factor. I also included Participant Status as a between-subjects factor in this design to examine whether the group identity effects identified in the Malaysian sample of Chapter 4, Study 1 would also be present in my non-Malaysian samples.

To mask the purpose of the experiment, participants were told that they were taking part in an experiment investigating differences in puzzle-solving ability in the USA, Japan, and Malaysia. They were then provided with further details on how the data obtained would be used, and informed that they could withdraw from the study at any point before obtaining their consent to proceed.

As in Chapter 4, Study 2, participants were told that they would have to solve a series of puzzles (anagrams for the USA sample; algebraic equations for the Japan sample) within a given time-limit and told that puzzle-solving skill was linked to overall intelligence, lateral thinking skills and problem-solving capacity to enhance the believability of the status manipulation. They then viewed a 1-minute long YouTube video on anagrams (in the case of the Japanese sample, this was replaced by a YouTube video on algebra) to familiarise them with the concept and the task.

**5.1.1.2.1 Status Manipulation.** Once participants had completed all 30 problems, a false, randomly generated score was presented to them, unrelated to their actual performance. Participants were then assigned into the skilled, average skill, or unskilled solvers groups, and reminded of the purported link between anagram (or in the case of the Japan sample, algebraic equation) solving skill and other forms of intelligence. Unbeknownst to the participants, however, this sorting was completely randomised and unrelated to their actual performance.

**5.1.1.2.2 Intergroup Judgments.** Participants then performed intergroup judgments on expectations of anger, expectations of calmness, and expectations of

aggressiveness for a fictional skilled solver and a fictional unskilled solver. Participants also rated their expectations of frustration from the fictional skilled and unskilled targets ("how frustrated do you think people like N/R are?" 1 = *not at all*, 2 = *extremely*), to tap into the potential relationship between frustration, anger, calmness, and status. Participants also provided dummy ratings, which were intended to mask the true purpose of the experiment ("how proud and pompous do you think people like N/R usually are?"/ "how embarrassed do you think people like N/R usually are?"/ "how dangerous do you think people like N/R usually are?" /"how excited do you think people like N/R usually are?"). As in Chapter 4, Study 2, participants were provided with no identifying information for these fictitious solvers other than an initial – N for the fictitious skilled solver, R for the fictitious unskilled solver – and their purported scores and rankings in the anagram solving task.

**5.1.1.2.3 Manipulation Checks.** As in Chapter 4, Study 2, participants were asked to rate the social status of skilled and unskilled solvers on 6-point Likert scales ("What social status do you think skilled/unskilled anagram solvers would normally occupy in society?" 1= *low status*, 6= *high status*) to check the effectiveness of my status manipulation. On completion, participants were provided with a debrief document, inclusive of information about the true purpose of the experiment and the experimenters' contact details to enable them to submit follow-up questions, if any, or to request that their data be withdrawn from the study at any point. They were then compensated for their time and dismissed.

### 5.1.2 Results and Discussion

#### 5.1.2.1 *Status Manipulation Check*

To ensure that my status manipulation was effective across both samples, I

performed separate paired-sample *t*-tests on each sample. Across both samples, skilled solvers (high status) were perceived as being higher in social status compared to unskilled solvers (low status) (*p*s < .001; see Table 5.1 for means and *t*-statistics).

**Table 5.1**

*Mean Ratings of Perceived Status and t-Statistics by Sample and Target Skill (Study 1)*

| **Sample** | *N* | *Skilled* | | *Unskilled* | | *t* | *df* | *p* | *Cohen's d* |
|---|---|---|---|---|---|---|---|---|---|
| | | *Mean* | *SD* | *Mean* | *SD* | | | | |
| ***USA*** | 153 | 4.20 | 0.93 | 2.92 | 0.90 | 10.81 | 152 | < .001 | 1.036 |
| ***Japan*** | 161 | 4.45 | 0.74 | 2.54 | 0.88 | 18.09 | 160 | < .001 | 1.627 |

#### 5.1.2.2 *Does Culture Moderate the Hunchback Heuristic?*

To answer this question, I performed separate 2 x 2 x 3 (Culture [individualistic vs. collectivistic] x Target Skill [skilled/high vs. unskilled/low] Participant Status [skilled/high vs. average/control vs. unskilled/low]) mixed factorial ANOVAs for expectations of anger, calmness, and aggressiveness. The first two factors are between-subject independent variables, while the third factor was a within-subject factor. All planned comparisons were adjusted for multiple comparisons using the Bonferroni correction method. Table 5.2 presents a summary of the estimated marginal means for this analysis.

**5.1.2.2.1 Expectations of Anger.** In line with the hunchback heuristic, I found a significant main effect of Target Skill, $F(1, 308) = 59.15$, $p < .001$, $\eta^2_p = 0.161$, such that unskilled solvers (low status) were expected to be more angry ($M = 3.67$, $SE = 0.07$) compared to skilled solvers (high status; $M = 2.87$, $SE = 0.07$). Neither the interaction of Target Skill and Culture, $F(1, 308) = 3.10$, $p = .079$, $\eta^2_p = 0.010$, nor the interaction of Target Skill and Participant Status, $F(2, 308) = 0.74$, $p = .462$, $\eta^2_p = 0.005$, were

significant, and neither was the 3-way interaction of Target Skill, Participant Status and Culture, $F(2, 308) = 0.02$, $p = .981$, $\eta^2_p < 0.001$.

**Table 5.2**

*Estimated Marginal Means for Key Hunchback Heuristic Measures by Culture, Participant Status, and Target Skill (Study 1)*

| **Individualist (USA)** | | | | | | |
|---|---|---|---|---|---|---|
| | Participant Status | | | | | |
| | Unskilled (Low) | | Average (Control) | | Skilled (High) | |
| **Measure** | Skilled (High) | Unskilled (Low) | Skilled (High) | Unskilled (Low) | Skilled (High) | Unskilled (Low) |
| **Anger** | 2.58 | 3.39 | 2.65 | 3.75 | 2.55 | 3.59 |
| | (0.17) | (0.18) | (0.17) | (0.18) | (0.17) | (0.19) |
| **Calmness** | 4.04 | 3.35 | 4.19 | 3.23 | 4.33 | 3.25 |
| | (0.16) | (0.16) | (0.16) | (0.16) | (0.17) | (0.17) |
| **Aggressiveness** | 3.08 | 3.29 | 2.79 | 3.83 | 2.65 | 3.49 |
| | (0.17) | (0.17) | (0.17) | (0.17) | (0.17) | (0.17) |
| **Collectivist (Japan)** | | | | | | |
| | Participant Status | | | | | |
| | Unskilled (Low) | | Average (Control) | | Skilled (High) | |
| **Measure** | Skilled (High) | Unskilled (Low) | Skilled (High) | Unskilled (Low) | Skilled (High) | Unskilled (Low) |
| **Anger** | 3.15 | 3.57 | 3.02 | 3.71 | 3.27 | 4.00 |
| | (0.16) | (0.18) | (0.16) | (0.17) | (0.17) | (0.18) |
| **Calmness** | 3.94 | 3.22 | 3.78 | 3.53 | 3.94 | 3.08 |
| | (0.16) | (0.16) | (0.16) | (0.16) | (0.16) | (0.16) |
| **Aggressiveness** | 3.17 | 3.41 | 3.29 | 3.87 | 3.02 | 3.94 |
| | (0.17) | (0.16) | (.16) | (0.16) | (0.17) | (0.17) |

*Note: numbers in parentheses represent standard errors of mean*

To test if expectations of frustration potentially played a mediating role in the activation of the hunchback heuristic, I repeated the above analysis on expectations of

anger, this time controlling for expectations of frustration to test for the possibility of mediation, following a method of limited mediation testing outlined in Fiske et al. (1982). See Table 5.3 for the estimated marginal means for this analysis.

**Table 5.3**

*Estimated Marginal Means for Key Hunchback Heuristic Measures by Culture, Participant Status, and Target Skill with the Effect of Expectations of Frustration Controlled (Study 1)*

| **Individualist (USA)** | | | | | | |
|---|---|---|---|---|---|---|
| | Participant Status | | | | | |
| | Unskilled (Low) | | Average (Control) | | Skilled (High) | |
| **Measure** | Skilled (High) | Unskilled (Low) | Skilled (High) | Unskilled (Low) | Skilled (High) | Unskilled (Low) |
| **Anger** | 2.80 | 3.41 | 2.87 | 3.69 | 2.70 | 3.47 |
| | (0.15) | (0.15) | (0.15) | (0.15) | (0.15) | (0.16) |
| **Calmness** | 3.94 | 3.39 | 4.07 | 3.33 | 4.22 | 3.37 |
| | (0.16) | (0.14) | (0.15) | (0.14) | (0.16) | (0.15) |
| **Aggressiveness** | 3.30 | 3.39 | 3.01 | 3.84 | 2.81 | 3.41 |
| | (0.15) | (0.14) | (0.15) | (0.13) | (0.15) | (0.14) |
| **Collectivist (Japan)** | | | | | | |
| | Participant Status | | | | | |
| | Unskilled (Low) | | Average (Control) | | Skilled (High) | |
| **Measure** | Skilled (High) | Unskilled (Low) | Skilled (High) | Unskilled (Low) | Skilled (High) | Unskilled (Low) |
| **Anger** | 3.07 | 3.65 | 2.76 | 3.74 | 3.04 | 4.03 |
| | (0.14) | (0.15) | (0.15) | (0.15) | (0.15) | (0.18) |
| **Calmness** | 4.00 | 3.15 | 3.91 | 3.43 | 4.06 | 2.99 |
| | (0.15) | (0.14) | (0.15) | (0.14) | (0.15) | (0.14) |
| **Aggressiveness** | 3.08 | 3.46 | 3.03 | 3.82 | 2.79 | 3.91 |
| | (0.15) | (0.13) | (0.15) | (0.13) | (0.15) | (0.13) |

*Note: numbers in parentheses represent standard errors of mean*

Assuming expectations of frustration did play a mediating role, then one should

find no significant main effects for expectations of anger when the proportion of variance in attributions that was due to frustration expectancies is statistically removed (i.e. fixed at its mean value). Consistent with this assumption, the main effect of Target Status was no longer statistically significant when frustration expectancies were controlled for, $F(1, 306) = 1.74$, $p = .189$, $\eta^2_p = 0.006$ (see Table 5.3). This null effect was not qualified by Culture, $F(1, 306) = 0.37$, $p = .546$, $\eta^2_p = 0.001$, Participant Status, $F(2, 308) = 1.27$, $p = .282$, $\eta^2_p = 0.008$, nor the 3-way interaction of Target Skill, Participant Status and Culture, $F(2, 308) = 0.22$, $p = .831$, $\eta^2_p = 0.001$. That is, the results suggested that frustration may fully mediate the anger attributions to low status targets relative to their higher-status counterparts.

**5.1.2.2.2 Expectations of Calmness.** Again, in line with the hunchback heuristic, I found a significant main effect of Target Skill, $F(1, 308) = 56.56$, $p < .001$, $\eta^2_p = 0.155$, such that skilled solvers (high status) were expected to be more calm ($M = 4.04$, $SE = 0.07$) compared to unskilled solvers (low status; $M = 3.28$, $SE = 0.07$). This effect was not further qualified by Culture, $F(1, 308) = 2.15$, $p = .143$, $\eta^2_p = 0.007$, or Participant Status, $F(2, 308) = 1.14$, $p = .321$, $\eta^2_p = 0.007$, nor was the 3-way interaction of Target Skill, Culture and Participant Status significant, $F(2, 308) = 1.16$, $p = .315$, $\eta^2_p = 0.007$.

As I did for my analysis of expectations of anger, I tested for potential mediation by statistically controlling for the effect of frustration expectancies on calmness attributions. Again, results showed that the effect of Target Skill on the attributions of calmness ceased to be statistically significant when the proportion of variance in calmness attributions that was due to frustration expectancies was accounted for, $F(1, 306) = 0.01$, $p = .912$, $\eta^2_p < 0.001$ (see Table 5.3 for the estimated marginal means for this analysis). Importantly, and contrary to the culture moderation hypothesis, this effect was not further qualified by Culture, $F(1, 306) = 0.24$, $p = .625$, $\eta^2_p = 0.001$, or

Participant Status, $F(2, 308) = 1.42$, $p = .243$, $\eta^2_p = 0.009$, nor was the 3-way interaction of Target Skill, Culture and Participant Status significant, $F(2, 308) = 1.04$, $p = .356$, $\eta^2_p = 0.007$.

**5.1.2.2.3 Expectations of Aggressiveness.** I found a significant main effect of Target Skill, $F(1, 308) = 38.47$, $p < .001$, $\eta^2_p = 0.111$, such that unskilled solvers (low status) were expected to be more aggressive ($M = 3.64$, $SE = 0.07$) compared to skilled solvers (high status; $M = 3.00$, $SE = 0.07$). This effect was qualified by Participant Status, $F(2, 308) = 4.07$, $p = .018$, $\eta^2_p = 0.026$; simple effects analysis showed that while all participant groups expected unskilled solvers to be more aggressive compared to skilled solvers, this difference was only significant in the average skill/median status and skilled/high status group conditions, $ps < .001$, while absent for participants in the unskilled/low status group condition, $p = .203$. Note that this pattern is consistent with my findings in Chapter 4, Study 2, and with Spears et al.'s social reality caveat.

The interaction of Target Skill and Culture was not significant, $F(1, 308) = 0.31$, $p = .581$, $\eta^2_p = 0.001$, as was the 3-way interaction of Target Skill, Participant Status, and Culture, $F(2, 308) = 0.71$, $p = .495$, $\eta^2_p = 0.005$.

I examined whether the main effect of Target Skill on attributions of aggression was potentially mediated by frustration and, again, found that the main effect of Target Skill disappeared when frustration was added into the model, $F(1, 306) = 1.18$, $p = .278$, $\eta^2_p = 0.004$ (see Table 5.3 for the estimated marginal means for this analysis).

Although this effect was not qualified by Culture, contrary to the cultural moderation hypothesis, $F(1, 306) = 1.96$, $p = .162$, $\eta^2_p = 0.006$, the interaction between Target Skill and Participant Status remained statistically significant, $F(2, 308) = 5.20$, $p = .006$, $\eta^2_p = 0.033$. Simple effects analysis showed that, as before, that while all participant groups expected unskilled solvers to be more aggressive compared to

skilled solvers, this difference was only significant in the average skill/median status and skilled/high status group conditions ($\Delta M_{Average}$ = 0.81, $SE$ = 0.15, $p$ < .001; $\Delta M_{Skilled}$ = 0.86, $SE$ = 0.15, $p$ < .001), but not in the unskilled/low status group condition, $\Delta M_{Unskilled}$ = 0.24, $SE$ = 0.15, $p$ = .117. The 3-way interaction of Target Skill, Participant Status, and Culture was not significant. $F(2, 308) = 0.85$, $p$ = .430, $\eta^2_p$ = 0.006.

## 5.2 General Discussion

The results of Study 1 highlight multiple points of interest. First, in my cross-cultural investigation, I found that in both my collectivistic and individualistic samples, low status targets were expected to be angrier and more aggressive than high status targets, whereas high status targets were expected to be calmer than low status targets. Furthermore, again in both the collectivistic and the individualistic samples, low status targets were expected to be more aggressive (i.e., more behaviourally expressive of anger) compared to high status targets.

Although my findings do indicate a larger effect size in my individualistic sample compared to my collectivistic sample for attributions of anger, the fact that the effect of culture on anger attributions was not significant, with both samples expecting low status targets to be more angry compared to high status targets, clearly contradicts the predictions of the cultural moderation hypothesis for collectivistic cultures. This raises questions about the generalisability of Park et al.'s claims concerning the relationship between social status and anger in collectivistic and individualistic societies, and indeed its replicability within the same sample population under different inter-status hierarchies. Although the possibility that this outcome could be the result of necessary differences between the tasks used in this Study and those used by Park et al. must be acknowledged, a more straightforward explanation is that the cultural moderation

hypothesis may be less robust than previously assumed.

Secondly, these results also further qualify my findings on the social reality caveat and the 'calmness bias' in Studies 3 and 4. Here, as previously demonstrated, under a subjective social hierarchy, members of the low status category consistently did not contest the expectation of the positive emotional attribute calmness to high status targets, but contested the expectation of the negative dimension of being aggressive (i.e., a behavioural expression of anger) to low status targets. Interestingly, and unlike the findings in Studies 3 and 4, members of the low status category in both the collectivistic and individualistic samples did not contest or 'push back' against the expectation of anger from low status targets, suggesting the effect of social reality constraints is most strongly visible in the behavioural rather than the emotional component of anger. Note however that participants were, as in Studies 3 and 4, unaware of the subjective nature of the ranking; lacking direct contact with participants, I was unable to surmise whether they doubted their rankings as previous participants had noted in post-debrief comments.

Thirdly, these results also provide a limited degree of support for a frustration-mediated model of the relationship between social status and anger, such as that proposed by Park et al.'s (2013) cultural moderation hypothesis for individualistic cultures. For expectations of both anger and calmness, controlling for the effects of expectations of frustration completely nullified the significant main effects found, suggesting that frustration mediates the hunchback heuristic. However, note that my findings only indicate the possibility of mediation, as I was not able to carry out a full mediation test on my dataset.

It should also be noted that while my results for the collectivistic sample are clearly divergent from Park et al.'s (2013) predictions, the subjective status hierarchy

system imposed by my experimental paradigm may be read as unfavourable to the predictions of the cultural moderation hypothesis, which specifies that it is objective status, not subjective status, that is most relevant and important in collectivistic cultures. Furthermore, recall that subjective status hierarchies may be perceived as potentially illegitimate: if, as Park et al. propose, perceived authority is involved in the social status-anger relationship in collectivistic cultures, then the potential illegitimacy of subjective status hierarchies may attenuate the strength of the status-anger relationship.

It is also important to note that I based my assumptions regarding the individualistic or collectivistic nature of my samples solely on Park et al.'s example and did not include a measure of individualism-collectivism in my design. While this does not invalidate my general findings, it does raise the possibility that my samples may not have been as strongly collectivistic or individualistic as Park et al.'s samples, which may have potentially influenced my findings.

The above limitations aside, this chapter highlights the independence of the hunchback heuristic effect from cultural artefacts, at least as far as the present results show. They also indicate a potentially fruitful avenue for future investigations into the activation mechanisms of the hunchback heuristic in the shape of expectations of frustration. Considered together with the findings in Chapters 3 and 4, they suggest that expectations of frustration could be the consistent driver not only behind the link between low social status and expectations of anger, but also the association of high social status with calmness.

# 6

# Summation, Implications, and Future Directions

The preceding chapters outline the methods and findings of this research programme's empirical investigations into the existence and boundaries of the hunchback heuristic. In this chapter, I present a summary of my findings, further theoretical questions regarding the hunchback heuristic, and its wider societal implications, as well as potential avenues for further investigation and my conclusions.

## 6.1 Summary of Preceding Studies and Major Hypotheses

In Chapter 3, I presented a preliminary pilot study and two follow-up studies intended to examine the following hypotheses:

H1. Members of low status social groups would be perceived to be angrier (and less calm) compared to their high status counterparts.

H2. Assuming H1 is true with respect to explicit measurements, then people should also be quicker in associating members of low status groups with anger and members of high status groups with calmness at the implicit level of measurement.

In my pilot study, I found that low status targets were in fact perceived to be angrier compared to high status targets, providing preliminary support for H1. Follow-up studies Chapter 3, Study 1 and 2, further consolidated this preliminary evidence by examining the relationship between social status and both anger and calmness using a two-part paradigm: an indirect cognitive probe task as well as direct self-report items. Chapter 3, Study 1's results confirmed that just as low status groups were expected to be angrier, high status groups were expected to be calmer, and that these expectations were expressed in both direct and indirect measures. In Chapter 3, Study 2, examining

whether multiple status-defining attributes (i.e., race, physical size, and attire) lead to a stronger manifestation of the hunchback heuristic, I found further evidence for H1 and H2: in both intragroup and intergroup status dimensions and across direct and indirect measures, low status groups were expected to be angrier whereas high status groups were expected to be more calm; intersecting status dimensions also had a cumulative effect. However, an exploratory clothing-based status cue manipulation had no effect.

From these results it may be surmised with some certainty that the hunchback heuristic manifests on both an explicit, conscious level and implicit, automatic level; indeed, I found a stronger hunchback heuristic effect in my direct measures compared to my indirect measures. This pattern implies that the association of low status with anger and high status with calm may be in fact be considered socially acceptable, as participants do not appear to be attempting to mask their responses out of social desirability concerns. Given that the evidence also suggests that the effect of the hunchback heuristic is cumulative, this means it may also feed into and/or amplify societal systems of discrimination, such as racism or gender discrimination.

In Chapter 4, I moved on to exploring the potential influence of group identity effects on the hunchback heuristic, and developed a novel experimental paradigm based on Tajfel and Turner's (1979) classic minimal group paradigm to do so. I also drew from Spears et al.'s (2001) social reality caveat model, to investigate whether a given status hierarchy's legitimacy would affect the hunchback heuristic's manifestation. It was hypothesised that:

H1. Affiliation with a target's low status group membership should elicit resistance to the application of the hunchback heuristic; such an effect should be especially visible when the status ranking is contestable (i.e. illegitimate status) but not when the status ranking is clear-cut (i.e.

legitimate status).

H2. Affiliation with a target's high status group membership should cause participants to embrace the hunchback heuristic by accentuating (even flaunting) favourable judgment of their ingroup; such an effect should be especially visible when the status ranking is contestable (i.e. illegitimate status) but not when the status ranking is clear-cut (i.e. legitimate status).

In Chapter 4, Study 1, manipulating both participants' status within a status hierarchy and the legitimacy of said hierarchy, my findings indicated some limited evidence for Chapter 4, H1 and H2: under a legitimate status hierarchy, participants across all status categories contested neither the attribution of the positive attribute calmness to high status targets, nor the attribution of the negative attribute anger and negative behaviour aggression to low status targets. Under an illegitimate status hierarchy, however, participants across all status categories resisted the attribution of the negative behaviour of aggression to their ingroup, but there was no resistance to anger attributions to low status targets nor calmness attributions to high status targets. Chapter 4, Study 2 used the same experimental paradigm but focused on the subjective, illegitimate ranking system, where resistance to the hunchback heuristic is theorised to emerge among low status group members (Spears et al., 2001). Here, low status participants contested attribution of both anger and aggression to low status targets, but not the attribution of calmness to the high status target; meanwhile, although all participant groups reported expecting the high status target to be more calm compared to the low status target, the high status and median status participant groups provided higher-value ratings, compared to the low status participant group.

Together, these results imply that social reality constraints do act on the hunchback heuristic to a limited degree, with the effects being most apparent on the

attribution of the negative behaviour aggression. They also imply that legitimacy – or the perception of such – may be important to the expression of the hunchback heuristic, as low status groups only resisted the hunchback-typical attribution of anger and aggression to their ingroup under subjective, potentially illegitimate status hierarchies. Furthermore, the limited nature of low status targets' resistance to the attribution of calmness to high status targets suggests that social reality supports the expectation of calmness from high status groups (i.e., high status groups may in fact be more likely to maintain calmness compared to low status groups).

I then focused on examining the pattern of non-pushback against positive stereotypes found in my samples. Here, I drew from Park et al. (2013), whose findings suggest cultural orientation may influence the direction of status-based attributions and expressions of anger, extrapolating further to consider a possible cultural component to status-based attributions of calmness as well. However, given that Park et al.'s predictions were in the opposite direction to the patterns found in my data, I also compared Park et al.'s cultural moderation hypothesis with the predictions of the hunchback heuristic. Thus, in Chapter 5 I hypothesised that:

H1. Frustration should mediate the relationship between social status and expectations of anger, but not the relationship between social status and expectations of aggression (i.e. anger expression) in collectivist cultures.

H2. For individualistic samples, frustration should mediate the relationship between social status and expectations of aggression (i.e. anger expression), as well as the relationship between social status and expectations of anger.

I used the same minimal groups paradigm used in Chapter 4, Study 2 with an added measure of expectations of frustration in sample populations from the US and

Japan and found that Chapter 3, H1 and H2 held true across both samples, with the hunchback heuristic effect emerging strongly. Chapter 4, H1 and H2 were also further corroborated, with all participants again not contesting the attribution of expectations of calmness to high status targets, but the low status participant group contesting the attribution of expectations of aggression to low status targets. Evidence for Chapter 5, H1 and H2 however was less conclusive: although frustration mediated the relationships between social status and anger and aggression for the individualistic sample, consistent with H1, the same was also true for the collectivistic sample, contrary to H2, and contradicting the predictions of the cultural moderation hypothesis. These findings further demonstrate that although social reality constraints do apply to the hunchback heuristic, they do so in a limited manner, and appear restricted to attributions of anger and aggression expectations (i.e., negative emotion and behaviours). Further, that I found the hunchback heuristic pattern for expectations of anger and calmness in both my collectivistic and individualistic sample populations may indicate that there is a disconnect between which status groups are expected to be angry or calm, and which express or embody anger or calmness according to Park et al.'s (2013) findings.

### *6.1.1 Caveats and Limitations*

Across Studies Pilot-4, and in one of the two sample populations in Chapter 5, Study 1, I recruited primarily university students, many of whom participated in these studies as part of their course requirements. Though I chose to recruit from these populations primarily for reasons of convenience and accessibility, choosing to do so nevertheless raises the question of whether university students accurately reflect the average of a given sample population. University students tend to be of a higher

education level compared to the general population, make for more compliant participants, and have more malleable attitudes (Sears, 1986). Furthermore, the differences between student samples and representative samples from the general public are not systematic (see Hanel & Vione, 2016, for a comprehensive, multinational analysis), which emphasises the issue of generalisability. Although there is a general consensus that the use of student samples for theoretical research is permissible (Peterson & Merunka, 2014), the abovementioned criticisms highlight the importance of further cross-validating the hunchback heuristic effect in a more generally representative sample.

Note also that because I chose to test the hunchback heuristic under stripped-down, minimal conditions in Chapter 4 to establish its independence as an effect, my findings can provide only limited insight into how the hunchback heuristic might function under less tightly-controlled conditions, where its effect will likely interact with other factors. As demonstrated by the body of literature I cited as indirect evidence for the hunchback heuristic, various forms of prejudice, such as sexism, racism and classism, also carry associations with anger, aggression and calmness for certain social groups (e.g.: Hutchings & Haddock, 2008; Kelly & Hutson-Comeaux, 1999; Tiedens, 2000) and these will likely interact with and affect the expression of the hunchback heuristic as well. Indeed, as discussed in Chapter 1, the findings of Tiedens et al. (2001) and Becker et al. (2007) suggest that factoring in gender prejudices and sexism may complicate the relatively straightforward association of high status and calmness and low status and anger set forth in the hunchback heuristic. These are however only inferences, and drawing definitive conclusions would require further investigation, perhaps with a modified version of the minimal groups paradigm. Below, I discuss other

available theoretical opportunities for future investigations into the hunchback heuristic effect.

## 6.2 Further Questions and Future Directions

The six studies summarised above, and their outcomes, constitute the first empirical data on the hunchback heuristic, and the first insights into this rather novel construct. Through them, I have successfully demonstrated that there is indeed an association between social status and expectations of anger and calmness, such that low status groups are *expected* to be angrier, and high status groups *expected* to be calmer. While the picture painted by these findings is far from complete, they nevertheless provide a base from which I may venture to speculate on further theoretical and practical questions regarding the hunchback heuristic. For example, are these expectations are based in reality, i.e., do low status groups truly more prone to expressing anger and high status groups truly more likely to maintain calmness? If yes, then what factors and conditions could facilitate or inhibit these effects, and what are their potential repercussions? Might other stereotypes and psychological phenomena influence their expression? Below, I explore a few of the potentially fruitful lines of inquiry which may be derived from these questions.

### 6.2.1 *Frustration in the Hunchback Heuristic*

The theoretical connection of frustration to anger and aggression dates to Dollard et al.'s (1939) frustration-aggression framework, which posited that aggressive behaviour impulses derive from the experience of frustration, i.e., encountering circumstances that prevent goal-oriented responses or actions. Although subsequent research went on to qualify, constrain and sometimes contradict Dollard et al.'s initial proposition (see Berkowitz, 1989 for a comprehensive review), the frustration-

aggression hypothesis remains a useful framework and continues to be referenced in anger and aggression research, such as Park et al. (2013). I may, therefore, similarly draw from Dollard et al. to reason that, if frustration incites aggression, then perhaps expectations of frustration will similarly elicit expectations of anger and aggression. That is, low status social groups may be expected to be angrier and more aggressive compared to high status social groups because they are expected to be significantly more frustrated than high status social groups. Conversely, high status social groups may be expected to be calmer because they are expected to experience significantly less frustration compared to low status social groups.

My findings in Chapter 5, Study 1 lend some credence to the above reasoning; recall that when expectations of frustration were statistically controlled for, the hunchback heuristic effect was reduced to non-significance, suggesting that expectations of frustration played an important mediating role in the hunchback heuristic. Indeed, this theorised link between status and frustration seems intuitive; there is ample real-life evidence that demonstrates members of low social status groups do in fact experience more obstructions to goal achievement compared to members of high social status groups, across a variety of social contexts (see: Borjas, 2005; Cech & Pham, 2017; Kubiak, 2005; Pololi et al., 2010; Trau & Hartel, 2007; Turney & Kao, 2009).

However, it is important to note that just as frustrating experiences may occur in different social contexts, so too may they be perceived differently by different people. One of the factors that affect how individuals react to a given situation is their locus of control (Rotter, 1966): that is, the perceived degree of control they have over the outcome of events which affect them. Loci of control may be internal, whereby the individual believes their behaviour and actions can influence event outcomes, or

external, whereby the individual believes their actions are unlikely to influence event outcomes (Rotter, 1966). Individuals who have internal loci of control and individuals who have external loci of control are known to react differently to the experience of frustration (Brisset & Nowicki, 1973): could this difference have consequences for any subsequent manifestation of the hunchback heuristic?

Referring to real-world norms and examples suggests that when frustrations are determined to arise from circumstances beyond control, any resultant anger expression or aggressive behaviour is deemed valid and justified, and the negative consequences of expressing anger or enacting aggression tend to be reduced. Indeed, these norms are codified in many legal systems: e.g., the legal defences of 'battered woman syndrome' (Kuhl & Sagatun, 1987; Ono, 2017; Rothenberg, 2002), which cites past experiences of abuse at the hands of victims as provocation, and 'gay panic' (Lee, 2008; Salerno et al., 2015), whereby unwanted same-sex sexual advances are similarly cited as provoking circumstances, have been successfully used to mitigate the sentences handed down to offenders.

Thus, following this reasoning, I may theorise that if the frustration expected from a low status social group is perceived to have an external origin (i.e. to be outside the individual's sphere of control), the consequent expectation of anger and/or aggression may be perceived as justified. In terms of the hunchback heuristic, while this may not necessarily result in a weaker hunchback heuristic effect, as anger would still be expected of the frustrated low status group, it does however suggest that any resultant negative consequences may be attenuated or nullified. Conversely, I may also reason that if the expected frustration is perceived to have an internal origin (i.e., to be within the individual's sphere of control) the consequent expected anger and/or aggression may be viewed as invalid or unjustified. Again, while this may not

necessarily change the size of the hunchback heuristic effect, it may lead to an exacerbation or amplification of any subsequent negative consequences of said anger expectation.

### 6.2.2 *Competence, Warmth, and the Stereotype Content Model*

The manifestation of the hunchback heuristic may also be impacted by other status-linked stereotypes and associations, such as those outlined by Fiske et al.'s (2002) stereotype content model (SCM). The SCM proposes that social perception operates along two fundamental dimensions, warmth and competence, and that a social group's relative position along these dimensions are predicted by perceived competition and perceived status, respectively.

Fiske et al. (2002) further outline a model of stereotype-driven behavioural responses termed the Behaviour from Intergroup Affect and Stereotypes (BIAS) map, which predicts systematic patterns of cognition and behaviour derived from intergroup judgments of warmth and competence (see Cuddy et al., 2007; Fiske et al., 2007). The BIAS map proposes that perceptions of warmth (i.e., agreeableness, friendliness, trustworthiness) are derived from perceived competition: groups that share common goals with the perceiver's ingroup are stereotyped as warm and elicit active facilitation (i.e., helping behaviour), and groups which do not are stereotyped as lacking warmth (i.e., disagreeable, ill-natured, untrustworthy, unfriendly) and elicit active harm (i.e., attacking behaviour). Similarly, perceptions of competence (i.e., efficiency, intelligence, capability) are derived from perceived status: groups which are low in status are stereotyped as incompetent and elicit passive harm (i.e., neglect, ignoring), whereas groups which are high in status are stereotyped as competent and elicit passive facilitation (i.e., association, cooperation). The BIAS map also predicts specific emotional

responses based on a group's position on the warmth and competence axes: warm-competent (i.e. high status with common goals) groups elicit admiration, whereas cold-competent (i.e., high status with competing goals) groups elicit envy; warm-incompetent groups elicit pity (i.e., low status with common goals), whereas cold-incompetent groups (i.e., low status with competing goals) elicit contempt (Cuddy et al., 2008).

Because both the SCM and the hunchback heuristic feature perceptions of status as a key component, it is reasonable to assume that their effects may interact: the status-competence dimension of the SCM, in particular, aligns well with the frustration-mediated relationship between status and expectations of anger and calmness outlined in the above section. For example, if low status groups are expected to be low in competence, then this expectation may be one factor which contributes to the expectations of frustration that lead to expectations of anger and/or aggression, as lacking the competence or ability required to achieve one's desired goals may be a major source of frustration. Conversely, if high status groups are expected to be high in competence, desired goals may be achieved without difficulty, and therefore this expectation leads to low expectations of frustration, and subsequently expectations of calmness.

The behavioural and attitudinal responses predicted by the SCM's competition-warmth dimension, meanwhile, may provide some insights into the social reality constraint effects which my findings suggest act on the hunchback heuristic, in terms of expectations of aggression (i.e. behavioural expression of anger), especially for low status groups which are expected to lack competence. If being perceived as warm leads to active facilitation and help, whereas being perceived as cold leads to active harm and attack, then it would be to the advantage of low status groups to be warm and

agreeable, as this perception would elicit supportive responses which would benefit their ingroup and compensate for their perceived lack of competence. Thus, although low status groups may be burdened with *expectations* of anger and/or aggression, they may also be constrained by the need to suppress any *expression* of anger and/or aggression, lest they be perceived as lacking warmth, and elicit responses which enact active harm on the ingroup instead.

For high status groups, although being perceived as warm and thereby receiving active support would be an advantage, it may be less vitally important, as they are considered competent and capable and therefore benefit from passive facilitation (i.e., association and cooperation), which would mitigate the negative effects of the active harm elicited by their perceived coldness. Thus, high status groups, although not expected to experience frustration and thus not *expected* to be angry and/or aggressive, may in fact be allowed to *express* anger and/or aggression without experiencing repercussions on the same scale as low status groups.

### 6.2.3 *David and Goliath, Anger Privilege, and System Legitimacy*

Although the above reasoning, and a great deal of existing research (e.g. Deffenbacher et al., 1996; Gibson et al., 2009; van Kleef & Côté, 2007; Wang et al., 2012) suggests that expressing anger and/or aggression generally leads to negative repercussions, it also highlights a subtle double standard regarding *expectations* and *expressions* of anger. That is, although low status groups are *expected* to be more frustrated and therefore angrier, they are also constrained from *expressing* said anger. Meanwhile, high status groups are not *expected* to be angrier, but if they do *express* anger, the repercussions are of diminished severity.

Taylor (2004; cf. Taylor & Risman, 2006) termed this double standard 'anger privilege', positing that high status groups are afforded the *privilege* of expressing anger because their anger is seen as justified and legitimate. Low status groups, meanwhile, are denied the privilege of expressing anger, with their anger seen as unjust and irrational if expressed directly. This same privilege may be reasoned to protect high status groups from association with the negative attributes of anger and/or aggression, whereas low status groups, lacking the same privilege, may be burdened with the expectation of anger and/or aggression, even if expressed with less frequency than by high status groups.

However, Taylor's (2004) account is contradicted by the findings of Jeffries et al. (2012), who posited that due to social norms dictating leniency to the disadvantaged, it is *low* status groups who are shielded from and disproportionately escape criticism, and *high* status groups that are seen as a more acceptable target for critical backlash. Jeffries et al. found that this tendency, which they termed the David and Goliath effect, held true across both Western and Chinese cultures, although it was weaker in the latter. It is important to note, however, that Jeffries et al. highlighted that avoiding backlash may not necessarily be helpful, as legitimate criticism is an important factor in the development, reform, and long-term growth for a social group. Thus, the David and Goliath effect, although favouring low status groups in the short term, does not truly benefit them in the long run.

Although Jeffries et al.'s (2012) findings were not specific to anger attributions, one may extrapolate from them that the David and Goliath rule would predict that expressions of anger and/or aggression from low status groups would be less likely to elicit negative backlash, due to their disadvantaged position in the status hierarchy. High status groups, however, would be more likely to face negative repercussions, such

as association with anger and/or aggression. Although these predictions run counter to those of Taylor's anger privilege framework, my findings regarding the hunchback heuristic and perceived system legitimacy offer an opportunity to reconcile these seemingly contradictory accounts. Recall that across Studies 3 to 5, low status individuals only challenged the attribution of high expectations of aggression (i.e., behavioural expression of anger) to their ingroup when the status hierarchy was subjective, and thus potentially illegitimate; when the status hierarchy was objective, and thus assumed legitimate, no such challenge manifested.

Thus, under a legitimate status hierarchy, although low status groups may be expected to be frustrated due to their disadvantaged position, and consequently expected to be angry, they may also be unable to challenge the hierarchy, as expressing anger caused by a lowly position within a legitimate hierarchy would be unjustified. Under an illegitimate status hierarchy, however, low status groups may not only be able to challenge the hierarchy and their position within it, but also avoid negative backlash for doing so, as high status groups in an illegitimate hierarchy may be perceived as an acceptable target. That is, it is possible that whereas Taylor's (2004) anger privilege framework applies within a legitimate status hierarchy, within an illegitimate status hierarchy, it is superseded by Jeffries et al.'s (2012) David and Goliath rule.

This unified framework aligns fairly well with previous findings on anger expectation and expression in workplace settings, such as those of Tiedens and colleagues (Tiedens, 2000; Tiedens et al, 2001). As workplace hierarchies are usually rigid and formalised, it then follows that those of a higher status within the workplace may, through anger privilege, be more prone to expressing anger and aggression towards lower-status workers. However when gender is factored in, the picture may become more complicated; women bosses are often seen as lacking true authority

(Rudman & Kilianski, 2000) and as less legitimate (Vial et al., 2016) and this may open up the possibility of the workplace hierarchy being seen as less legitimate in turn, and thus Jeffries' David & Goliath rule comes into effect with low status workers feeling more empowered to express anger under these conditions.

### 6.3 Practical Implications and Societal Impact

Although the theoretical questions explored above may potentially offer insight into the psychological underpinnings of the hunchback heuristic effect, it is also important to give due consideration to the real-world impact of the hunchback heuristic on interpersonal and intergroup social interactions. Multiculturalism, global economic systems, technological mass communication advances, and modernised urbanisation have created a modern society where intergroup contact is relatively prevalent - and with frequent intergroup contact arises frequent opportunity for the activation of stereotypes such as the hunchback heuristic.

One important point to consider is the fact that in modern society, low social status is most often occupied by minority social groups: immigrants, ethnic minorities, indigenous peoples, and in the case of ethnoreligious states, religious minorities. Thus, in a broader societal context, it is minority social groups which are expected to be more prone to anger, whereas majority social groups are expected to be calmer, which may then go on to have a significant impact on intergroup relations and societal harmony. It is important to note, however, that this impact may not necessarily be negative: as highlighted by the work of Jussim and colleagues (Jussim, 2012; Jussim, 2017b; Jussim et al., 2018), stereotypes can be accurate and reliable predictors of intergroup behaviour, and as such the hunchback heuristic may help majority and minority social groups navigate intergroup interactions with minimal difficulty. Below, I consider the impact the hunchback heuristic may have on various aspects of society.

### 6.3.1 *Early Childhood and Education*

Beginning from childhood, low social status students are at a social disadvantage with regards to childhood education and health outcomes, given the massive impact of socioeconomic disparity on young children and their development: low social status students are at greater risk of physical violence, abuse, mental illness, obesity, and maladaptive risk-seeking behaviour (Auwarter & Aruguete, 2010; Bradley & Corwyn, 2002; Currie & Stabile, 2003; McLoyd, 1998). However, although low status students may be at greater risk of the above difficulties, high status students are not necessarily exempt from similar problems. Although educators and school staff may be trained to identify and attempt counter-measures against the stresses caused by difficult home circumstances and ill health in the general student population, troubled students may receive differential attention based on their relative social status.

A low status student experiencing frustration may, for example, benefit by receiving disproportionate attention from educators and support staff, because they may be expected to resort to aggression, disrupting the classroom; a high status student experiencing similar frustration may find themselves overlooked due to an expectation of calmness. On the other hand, if a student is experiencing frustration due to external pressures, and the locus of origin of that frustration is not correctly identified by educators or support staff, this may amplify negative consequences (such as punishments and academic penalties) for the student, based on the *expectation* of anger and/or aggression, and regardless of whether they actually *express* anger and/or aggression. Recall also Jeffries et al.'s (2012) David and Goliath rule, which presents the possibility that, due to passive leniency on the part of educators, low status students may not receive the benefits of constructive criticism, and thus miss out on opportunities for personal development and growth. High social status students, on not

being afforded similar leniency, may perceive this difference as bullying behaviour on the part of educators, which may lead to high-risk behaviour and negative educational outcomes (Delfabbro et al., 2006).

### 6.3.2 *Workplace and Organisational Hierarchies*

Beyond the context of formal schooling, the hunchback heuristic is also likely to affect intergroup interactions in the workplace and within organisational structures. For example, in highly competitive corporate environments, expectations of anger and/or aggression and calmness may complicate the addressal and resolution of workplace interpersonal conflicts and disagreements. Given that standard workplace etiquette and professionalism standards call for reasoned, calm, and diplomatic discussion, in instances where management must adjudicate between high status and low status employees, high status employees may be at an advantage due to already being expected to be calm, as opposed to low status employees, who may be expected to be more aggressive.

Considering also that workplace status hierarchies are generally assumed to be legitimate, low status employees may be unable to challenge these expectations, as Chapter 4, Study 1 demonstrated that within a legitimate status hierarchy, social reality constraints appear to prevent resistance to the hunchback heuristic. This may exacerbate any frustrations arising from workplace conflict, amplifying expectations of anger and/or aggression. This amplified expectation, in turn, as may be predicted from the theorised relationship between the hunchback heuristic and the SCM, could lead other employees to ignore, neglect, or even attack low status employees professionally, as they would be perceived as lacking both competence and warmth (i.e., low status with competing goals). Combined with pre-existing societal factors, this may create a high-stress work environment that can have adverse effects on both the physical and

mental health of low status employees (Landsbergis et al., 2003; Lynch et al., 2011; Zimmerman & Katon, 2005).

### 6.3.3 *Judiciary and Medical Systems*

The impact of the hunchback heuristic may extend even further, beyond the structured environments of the education system and workplace and into social institutions and systems. For example, when interacting with law enforcement and the judiciary system, low status groups may be at a disadvantage: the expectation of anger and/or aggression may lead to law enforcement officers treating them as serious threats, which could lead to the use of disproportionate force. Similarly, the same expectation of aggression may lead judicial officials to more readily convict, and hand down harsher sentences to, members of low status groups, in an attempt to remove a perceived threat to societal harmony (Mitchell et al., 2005; Sampson & Lauritsen, 1997; Steffensmeier & Demuth, 2006; Wheelock, 2005). However, within the penitentiary system itself, low status groups may find that being expected to be more prone to anger and/or aggression is an advantage, as this expectation may help them avoid being targeted for violence by fellow inmates or prison guards. Conversely, high status group members who are incarcerated may find themselves subjected to disproportionate harassment, as the expectation of calmness may cause them to be viewed as suitably passive targets.

The hunchback heuristic may also affect low status groups' access to both emergency medical attention and routine healthcare (Marmot et al., 2008; Williams & Jackson, 2005): because they are expected to be especially prone to frustration and anger, low status patients may be neglected or ignored by medical professionals, who may assume that genuine distress is in fact an overreaction stemming from the expected tendency towards anger. High status groups, by contrast, may receive

disproportionately quicker attention, as the expectation of calmness would likely amplify the impact of any genuine distress they express.

### 6.3.4 *Mitigation and Countermeasures*

The above-highlighted potential repercussions and consequences of activating the hunchback heuristic inevitably raise the question: if the hunchback heuristic has such vast potential for negative impact, what can be done to negate or counter its effects? This is, however, a difficult question to answer.

One major issue with this question is the fact that it is more or less impossible to completely eliminate any form of stereotyping. Despite the general layman's view that reliance on social heuristics and stereotypes is a negative trait, and although the cognitive purpose of stereotyping is yet a matter of debate (see McGarty et al., 2002 for a comprehensive overview), the formation of heuristics and stereotypes in the human mind is an automatic process, a 'mental shortcut' that helps minimise the cognitive load borne by an individual (McGarty et al., 2002).

What, then, can be done to mitigate the negative effects of activating the hunchback heuristic? A positive first step, perhaps, would be an effort to educate the general public about the existence and pervasiveness of the hunchback heuristic. Although it is, as previously noted, near-impossible to fully eliminate any heuristic from a given individual's cognitive processes, ensuring that people are aware of the likelihood of their susceptibility to the hunchback heuristic may then enable them to reflect on whether it has negatively impacted their behaviour towards low status social groups, and thereby enable them to work towards actively countering such behaviour. Devising interventions beyond the individual level, however, would require further investigation and inquiry into the hunchback heuristic as a societal phenomenon, and

the various levels at which it interacts with other social, systemic factors such as wealth, political power, and intercommunity relations, etc.

### 6.4 Conclusion

In sum, the current programme of research has conclusively established that the hunchback heuristic is a real phenomenon: low status groups *are* expected to be angrier compared to high status groups, whereas high status groups *are* expected to be calmer compared to low status groups. Although I was unable to empirically test the extent to which these expectations are based in reality, I have, however, determined that expectations of frustration appear to be a key component in the activation of the hunchback heuristic. Given the preponderance of real-world evidence of low status groups experiencing a greater degree of frustration compared to high status groups, therefore, it is a real possibility that the hunchback heuristic is an accurate stereotype.

However, regardless of its accuracy, it is undeniable that the potential sphere of the hunchback heuristic's influence is vast indeed. As demonstrated by my studies using a minimal conditions paradigm, only an indication of a status differential appears necessary to activate the hunchback heuristic, and as status differentials permeate nearly every aspect of human society, the hunchback heuristic may, therefore, have the potential to influence most interpersonal and intergroup interactions. Although this influence may not necessarily be negative, its potential scope and scale underscores the importance of a deeper understanding of the hunchback heuristic than is afforded by this initial enquiry, and the need for further empirical investigations into its mechanism, impact, and limitations in the future. I hope, therefore, that the programme of research outlined in this thesis serves as a foundation from which such investigations may be launched.

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## Appendix A

## List of Word Stimuli Used in Chapter 3, Study 1

| **Stimuli Type** | | | | | |
|---|---|---|---|---|---|
| **Emotion-associated probes** | *Calm-associated* | still | peace | peaceful | patience |
| | | passive | relax | tame | |
| | | subtle | patient | soothe | |
| | *Anger-associated* | fierce | vent | violent | revenge |
| | | irritate | tantrum | jealousy | |
| | | aggravate | mean | frustrate | |
| | *Non-associated (filler)* | activity | junior | quarter | zipper |
| | | define | maximum | theory | |
| | | genuine | nitrogen | wonderful | |
| **Group-associated names** | *North Indian* | Rahul | Amar | Ranbir | Tarun |
| | | Anil | Sahil | Aamir | |
| | | Gurpreet | Sardar | Chand | |
| | *South Indian* | Gopi | Nanda | Balan | Madhavan |
| | | Balram | Natraj | Vignesh | |
| | | Ravi | Mohan | Venkat | |
| | *Cantonese (filler)* | Yat Chin | Chau Yin | Ho Seng | Chi Hang |
| | | Ho Yin | Tze Yau | Yiu Hong | |
| | | Hiu Wei | Chi Lai | Chun Kit | |

## Appendix B

## List of Word Stimuli used in Chapter 3, Study 2

| **Stimuli Type** | | | | | |
|---|---|---|---|---|---|
| **Emotion-associated probes** | *Calm-associated* | still | peace | peaceful | patience |
| | | passive | relax | tame | |
| | | subtle | patient | soothe | |
| | *Anger-associated* | fierce | vent | violent | revenge |
| | | irritate | tantrum | jealousy | |
| | | aggravate | mean | frustrate | |
| | *Non-associated (filler)* | activity | junior | quarter | zipper |
| | | define | maximum | theory | |
| | | genuine | nitrogen | wonderful | |
| **Race-associated names** | *White* | Thomas | Ethan | William | Jack |
| | | Oliver | Joseph | Charlie | |
| | | Jacob | Daniel | Alfie | |
| | *Black* | Kapepwe | Jafar | Ibou | Adewele |
| | | Themba | Idris | Kopano | |
| | | Hassan | Atsu | Tunde | |
| | *Cantonese (filler)* | Yat Chin | Chau Yin | Ho Seng | Chi Hang |
| | | Ho Yin | Tze Yau | Yiu Hong | |
| | | Hiu Wei | Chi Lai | Chun Kit | |

## Appendix C

### List of Anagrams Used in Studies 3, 4 and 5

| Word | Anagrams | | | |
|---|---|---|---|---|
| **Satin** | saint | stain | | |
| **beast** | beats | abets | baste | betas |
| **gallery** | allergy | largely | regally | |
| **protest** | potters | spotter | | |
| **beard** | bared | debar | bread | |
| **used** | dues | sued | | |
| **diapers** | despair | aspired | praised | |
| **stance** | ascent | secant | | |
| **edit** | diet | tide | tied | |
| **remains** | marines | seminar | | |
| **arrest** | rarest | starer | raters | |
| **mental** | lament | mantel | mantle | |
| **lair** | rail | liar | | |
| **nectars** | canters | recants | scanter | trances |
| **results** | lustres | rustles | | |
| **evil** | live | veil | vile | |
| **rise** | sire | ires | | |
| **learnt** | antler | rental | | |
| **dealing** | leading | aligned | | |
| **recall** | caller | cellar | | |
| **pools** | spool | loops | | |
| **threads** | dearths | hardest | hatreds | trashed |
| **parties** | pirates | pastier | traipse | |
| **presents** | pertness | serpents | | |
| **sated** | dates | stead | | |
| **horse** | hoers | shore | | |
| **bleats** | stable | tables | | |
| **deigns** | design | singed | signed | |
| **open** | nope | peon | pone | |
| **thickest** | thickets | thickset | | |

## Appendix D

### List of Algebraic Equations used in Japan Sample (Chapter 5, Study 1)

- $-20 = -4x - 6x$
- $-5(1 - 5x) + 5(-8x - 2) = -4x - 8x$
- $12 = -4(-6x - 3)$
- $14 = -(p - 8)$
- $4m - 4 = 4m$
- $2(4x - 3) - 8 = 4 + 2x$
- $4n - 2n = 4$
- $-11 + 10(p + 10) = 4 - 5(2p + 11)$
- $75 = 3(-6n - 5)$
- $-3(1 + 6r) = 14 - r$
- $-12 = 3 - 2k - 3k$
- $10p + 9 - 11 - p = -2(2p + 4) - 3(2p + 2)$
- $6 = \frac{a}{4} + 2$
- $-243 = -9(10 + x)$
- $144 = -12(x + 5)$
- $-15 = -4m + 5$
- $-1 = \frac{5+x}{6}$
- $-10 = -10 + 7m$
- $\sqrt{x} = 10$
- $\sqrt{x + 8} = \sqrt{3x + 8}$
- $10 + \sqrt{10m - 1} = 13$
- $-12 = -6\sqrt{b + 4}$
- $2 = \sqrt{4b}$
- $\sqrt{n} = \sqrt{2n - 6}$
- $-(7 - 4x) = 9$
- $3 = x + 3 - 5x$
- $-9x + 1 = -80$
- $5 = \sqrt{x + 3}$
- $-10\sqrt{v - 10}$
- $x^2 - \frac{2}{3}x + \frac{1}{9} = 0$

## Appendix E

## Descriptive Statistics and Correlations for Study Variables (Pilot Study–Chapter 5, Study 1)

**Table E1**

*Descriptive Statistics and Correlations for Indices of Perceived Anger, Aggression, and Dangerousness for Black and White Targets (Pilot Study)*

| Variable | *n* | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|
| **1. Perceived anger (Black targets)** | 20 | 4.17 | 0.85 | -- | | | | | |
| **2. Perceived aggressiveness (Black targets)** | 20 | 4.51 | 0.58 | 0.069 | -- | | | | |
| **3. Perceived dangerousness (Black targets)** | 20 | 4.38 | 0.60 | 0.339 | .738** | -- | | | |
| **4. Perceived anger (White targets)** | 20 | 3.50 | 0.71 | 0.397 | -0.057 | -0.099 | -- | | |
| **5. Perceived aggressiveness (White targets)** | 20 | 3.89 | 0.63 | -0.157 | .586** | 0.328 | 0.311 | -- | |
| **6. Perceived dangerousness (White targets)** | 20 | 3.88 | 0.67 | -0.07 | .534* | 0.435 | 0.294 | .918** | -- |

* $p < .05$

** $p < .001$

**Table E2**

*Descriptive Statistics and Correlations for Indices of Perceived Anger, Calmness, Aggressiveness, Dangerousness, and Attractiveness for Light-skinned and Dark-skinned Targets (Chapter 3, Study 1)*

| Variable | *n* | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. Perceived anger (light-skinned targets)** | 78 | 3.32 | 0.78 | -- | | | | | | | | | |
| **2. Perceived calmness (light-skinned targets)** | 78 | 4.78 | 0.73 | -.701** | -- | | | | | | | | |
| **3. Perceived aggressiveness (light-skinned targets)** | 78 | 3.59 | 0.91 | .756** | -.658** | -- | | | | | | | |
| **4. Perceived dangerousness (light-skinned targets)** | 78 | 3.88 | 0.95 | .629** | -.510** | .733** | -- | | | | | | |
| **5. Perceived attractiveness (light-skinned targets)** | 78 | 3.62 | 0.91 | -.351** | .302** | -.389** | -.402** | -- | | | | | |
| **6. Perceived anger (dark-skinned targets)** | 78 | 4.12 | 0.81 | .563** | -.471** | .562** | .587** | -.261* | -- | | | | |
| **7. Perceived calmness (dark-skinned targets)** | 78 | 3.96 | 0.69 | -.397** | .530** | -.363** | -.370** | 0.175 | -.723** | -- | | | |

| Variable | *n* | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **8. Perceived aggressiveness (dark-skinned targets)** | 78 | 4.34 | 0.83 | .360** | -.374** | .469** | .540** | -.301** | .796** | -.740** | -- | | |
| **9. Perceived dangerousness (dark-skinned targets)** | 78 | 4.60 | 1.00 | .295** | -0.209 | .437** | .634** | -.319** | .773** | -.571** | .844** | -- | |
| **10. Perceived attractiveness (dark-skinned targets)** | 78 | 2.94 | 0.88 | -0.204 | .226* | -.392** | -.421** | .713** | -.389** | .326** | -.582** | -.631** | -- |

* $p < .05$

** $p < .001$

**Table E3**

*Descriptive Statistics and Correlations for Indices of Perceived Anger, Calmness, Aggressiveness, Dangerousness, and Attractiveness for Black and White Targets by Physical Size (Chapter 3, Study 2)*

| Variable | *n* | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. Perc. anger (WL)** | 114 | 3.86 | 1.22 | -- | | | | | | | | | | | | | | | | | | | |
| **2. Perc. calm. (WL)** | 114 | 4.04 | 1.14 | -.457** | -- | | | | | | | | | | | | | | | | | | |
| **3. Perc. aggr. (WL)** | 114 | 4.25 | 1.15 | .529** | -.383** | -- | | | | | | | | | | | | | | | | | |
| **4. Perc. dang. (WL)** | 114 | 4.36 | 1.16 | .446** | -.457** | .533** | -- | | | | | | | | | | | | | | | | |
| **5. Perc. attr. (WL)** | 114 | 3.00 | 1.05 | -.307** | .301** | -.306** | -.402** | -- | | | | | | | | | | | | | | | |
| **6. Perc. anger (WS)** | 114 | 2.57 | 0.94 | .146 | -.051 | .047 | -.005 | .123 | -- | | | | | | | | | | | | | | |
| **7. Perc. calm. (WS)** | 114 | 5.32 | 0.87 | -.220* | .161 | -.097 | -.082 | -.032 | -.536** | -- | | | | | | | | | | | | | |
| **8. Perc. aggr. (WS)** | 114 | 2.85 | 1.04 | .213* | .140 | .119 | .143 | .032 | .532** | -.489** | -- | | | | | | | | | | | | |
| **9. Perc. dang. (WS)** | 114 | 2.84 | 1.10 | .141 | -.040 | -.013 | .277** | .046 | .495** | -.417** | .498** | -- | | | | | | | | | | | |
| **10. Perc. attr. (WS)** | 114 | 4.06 | 0.98 | -.109 | .077 | -.204* | -.268** | .416** | -.091 | .223* | -.162 | -.192* | -- | | | | | | | | | | |
| **11. Perc. anger (BL)** | 114 | 5.05 | 0.94 | .041 | -.069 | .092 | .074 | -.278** | -.045 | .118 | -.053 | -.013 | .033 | -- | | | | | | | | | |
| **12. Perc. calm. (BL)** | 114 | 3.36 | 1.05 | -.174 | .171 | -.175 | -.005 | .249** | -.082 | .148 | .112 | .003 | .102 | -.450** | -- | | | | | | | | |
| **13. Perc. aggr. (BL)** | 114 | 5.14 | 1.00 | .286** | -.218* | .470** | .343** | -.317** | .029 | -.028 | -.076 | -.011 | -.112 | .545** | -.384** | -- | | | | | | | |
| **14. Perc. dang. (BL)** | 114 | 5.15 | 1.05 | .193* | -.052 | .279** | .221* | -.106 | .070 | -.094 | .074 | .165 | .075 | .428** | -.395** | .596** | -- | | | | | | |
| **15. Perc. attr. (BL)** | 114 | 2.73 | 1.02 | .052 | .075 | -.250** | -.216* | .398** | .113 | -.126 | .191* | .023 | .183 | -.405** | .392** | -.496** | -.367** | -- | | | | | |
| **16. Perc. anger (BS)** | 114 | 4.25 | 1.14 | .049 | -.031 | .093 | .120 | .041 | .194* | -.042 | .182 | .252** | .126 | .302** | -.166 | .171 | .336** | -.060 | -- | | | | |
| **17. Perc. calm. (BS)** | 114 | 4.08 | 1.06 | -.046 | .308** | -.098 | -.181 | .045 | -.230* | .206* | -.093 | -.212* | .161 | -.106 | .336** | -.025 | -.057 | .059 | -.438** | -- | | | |
| **18. Perc. aggr. (BS)** | 114 | 4.54 | 1.07 | .194* | -.167 | .172 | .224* | .012 | .234* | -.263** | .232* | .331** | .053 | .181 | -.183 | .156 | .347** | -.133 | .624** | -.383** | -- | | |
| **19. Perc. dang. (BS)** | 114 | 4.57 | 1.07 | .019 | .019 | .105 | .130 | .128 | .148 | -.198* | .247** | .229* | .070 | .193* | -.219* | .202* | .462** | -.143 | .612** | -.413** | .610** | -- | |
| **2. Perc. attr. (BS)** | 114 | 3.71 | 1.14 | -.018 | -.198* | -.087 | -.038 | .141 | -.087 | -.001 | -.117 | -.164 | .178 | -.170 | .192* | -.035 | -.216* | .230* | -.265** | .274** | -.339** | -.394** | -- |

*Note: Perc. = perceived calm. = calmness; aggr. = aggressiveness; dang. = dangerousness; attr. = attractiveness; WL = White Large; WS = White Slim; BL = Black Large; BS = Black Slim*

* $p < .05$

** $p < .001$

**Table E4**

*Intercorrelations for Indices of Expected Anger, Calmness, and Aggressiveness for Skilled/High Status and Unskilled/Low Status Targets by Status Ranking Type (Chapter 4, Study 1)*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **1. Anger expectation (skilled)** | -- | -.398** | .378** | -0.043 | 0.006 | 0.019 |
| **2. Calmness expectation (skilled)** | -.443** | -- | -0.032 | .301* | -0.168 | .384** |
| **3. Aggressiveness expectation (skilled)** | .317* | -0.07 | -- | 0.171 | -0.204 | 0.224 |
| **4. Anger expectation (unskilled)** | .260* | 0.172 | 0.173 | -- | -.414** | .291* |
| **5. Calmness expectations (unskilled)** | 0.175 | -0.125 | 0.149 | -0.246 | -- | -0.044 |
| **6. Aggressiveness expectation (unskilled)** | 0.073 | 0.226 | 0.061 | .664** | -.401** | -- |

*Note: results for the legitimate ranking sample (n = 63) are shown below the diagonal; results for the illegitimate ranking sample (n = 50) are shown above the diagonal.*

** p < .05*
*** p < .001*

**Table E5**

*Descriptive Statistics and Correlations for Indices of Expected Anger, Calmness, and Aggressiveness for Skilled/High Status and Unskilled/Low Status Targets (Chapter 4, Study 2)*

| Variable | *n* | *M* | *SD* | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|
| **1. Anger expectation (skilled)** | 350 | 2.91 | 1.28 | -- | | | | | |
| **2. Calmness expectation (skilled)** | 350 | 4.15 | 1.24 | -.324** | -- | | | | |
| **3. Aggressiveness expectation (skilled)** | 350 | 3.29 | 1.28 | .493** | -0.054 | -- | | | |
| **4. Anger expectation (unskilled)** | 350 | 3.59 | 1.33 | -.155** | .215** | -0.09 | -- | | |
| **5. Calmness expectation (unskilled)** | 350 | 3.25 | 1.19 | .247** | -.250** | 0.096 | -.276** | -- | |
| **6. Aggressiveness expectation (unskilled)** | 350 | 3.40 | 1.20 | -0.045 | .189** | -0.063 | .544** | -.213** | -- |

* $p < .05$

** $p < .001$

**Table E6**

*Intercorrelations for Indices of Expected Anger, Calmness, Frustration, and Aggressiveness for Skilled/High Status and Unskilled/Low Status Targets by Culture (Chapter 5, Study 1)*

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| **1. Anger expectation (skilled)** | -- | -.370** | .379** | .510** | -.323** | .290** | -.194* | -.282** |
| **2. Calmness expectation (skilled)** | -.222** | -- | -.316** | -.363** | .230** | -.356** | .158* | .182* |
| **3. Frustration expectation (skilled)** | .561** | -.256** | -- | .505** | -.284** | .350** | -.285** | -.182* |
| **4. Aggression expectation (skilled** | .353** | -.203* | .424** | -- | -.312** | .276** | -.198* | -.313** |
| **5. Anger expectation (unskilled)** | .210** | .214** | -0.027 | -0.072 | -- | -.331** | .456** | .594** |
| **6. Calmness expectation (unskilled)** | 0.049 | -0.028 | .180* | 0.119 | -.503** | -- | -.435** | -.427** |
| **7. Frustration expectation (unskilled)** | 0.135 | .264** | -0.009 | -0.024 | .621** | -.446** | -- | .605** |
| **8. Aggression expectation (skilled)** | .222** | 0.068 | 0.141 | 0.039 | .535** | -.410** | .574** | -- |

*Note: results for the individualistic sample (n = 153) are shown below the diagonal; results for the collectivistic sample (n = 161) are shown above the diagonal.*

* $p < .05$

** $p < .001$