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The Relationship Between Social Status Motivation and the Detection of Trustworthy and Affiliative Cues in Faces

Christopher J. Lustgraaf
University of Southern Mississippi

THE RELATIONSHIP BETWEEN SOCIAL STATUS MOTIVATION AND THE

DETECTION OF TRUSTWORTHY AND AFFILIATIVE CUES IN FACES

by

Christopher J. Lustgraaf

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Approved:

_____
Dr. Donald Sacco, Committee Chair
Assistant Professor, Psychology

_____
Dr. David Echevarria, Committee Member
Associate Professor, Psychology

_____
Dr. Alen Hajnal, Committee Member
Associate Professor, Psychology

_____
Dr. Richard Mohn, Committee Member
Associate Professor, Educational Research and Administration

_____
Dr. D. Joe Olmi
Department Chair, Psychology

_____
Dr. Karen S. Coats
Dean of the Graduate School

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ABSTRACT

THE RELATIONSHIP BETWEEN SOCIAL STATUS MOTIVATION AND THE

DETECTION OF TRUSTWORTHY AND AFFILIATIVE CUES IN FACES

by Christopher J. Lustgraaf

May 2017

A prominent feature of human (and non-human primate) social group structure

involves the establishment and maintenance of a social hierarchy; that is, social groups

are arranged hierarchically, based on individuals' level of status, and conspecifics who

more effectively ascend this status hierarchy accrue more reproductive and resource

benefits (Hawley, 1999). Thus, for any individual, other group members could be either a

threat to one's status, or an ally to assist status goals, and accurate identification of these

various social targets would have adaptive utility in status maintenance or status

hierarchy ascension. The current study tested the hypotheses that activation of status

motives would enhance accurate discrimination of trust and affiliative cues from faces,

thus aiding in status acquisition, especially for men. Participants were randomly assigned

to a status or control prime condition and completed two face perception tasks: a

trustworthy/untrustworthy discrimination task and a real/fake smile discrimination task.

Individual differences in status striving and socioeconomic status were measured. While

the primary hypotheses were not supported, partial support was found such that those

higher in dispositional status seeking demonstrated greater accuracy discriminating

between trustworthy and untrustworthy faces. Additionally, those higher in

socioeconomic status demonstrated reduced accuracy when identifying genuine or false

smiles. These patterns suggest that a number of individual differences may predict

differential accuracy in face perception. The theoretical implications of these findings are

discussed.

ACKNOWLEDGMENTS

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CHAPTER I - INTRODUCTION

Within social species, and humans in particular, an individual's standing within their respective social hierarchy plays a key role in securing resources and reproductive opportunities (Milinski, Semmann, & Krambeck, 2002). Consequently, status goals have been shown to influence aspects of social perception, motivational processes, and subsequent behavior. Specifically, status goals impact attitudes and behaviors toward other conspecifics (often in the form of aggressive behavior), interpersonal perception, and perhaps most importantly, how individuals navigate these social hierarchies and advance their social standing (see Griskevicius et al., 2011). Given that the pursuit of status is by nature competitive, (i.e., one person's ascension of the status hierarchy reduces another's access to power within a group), individuals motivated by status should be attentive to those who may be a threat or an ally when attempting to satisfy status goals. Indeed, identifying a cooperative conspecific could provide an alliance-formation opportunity, which could potentially allow an individual to challenge the status held by a conspecific with greater social standing, and as a result, allow both members of this alliance to increase their relative social standing within the group. Given that the majority of human interaction involves face-to-face communication, and the fact that faces communicate a wealth of social information about a target (e.g., emotion, motives, trustworthiness), it is hypothesized that individuals motivated by status should be especially capable of using facial cues to identify social targets who would be potential threats to status goals (untrustworthy or deceptive conspecifics) versus those who might facilitate status goals (trustworthy or affiliative conspecifics). Below, I outline the theoretical foundations and empirical research that supports these predictions.

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Evolutionary and Social Benefits of High Status

Although many species navigate resource acquisition and mating challenges without evolving high levels of sociality with conspecifics, humans and non-human primates rely heavily on social relationships and cooperation in groups to solve these adaptive problems (DeWaal, 1984). For example, primates susceptible to predation can better manage multiple adaptive problems through cooperation and reciprocal altruism; specifically, one conspecific can temporarily invest in foraging while another individual devotes resources to monitoring the environment for potential threats. As long as both parties are bound by reciprocity, this dynamic is beneficial to each member of the social unit because they are able to reverse their respective roles as needed, and thus manage a variety of adaptive challenges simultaneously (Janson & Goldsmith, 1995). Conversely, an individual who attempts to navigate both foraging and monitoring behaviors simultaneously may be less likely to notice an environmental threat, and thereby be more susceptible to predation.

Nonetheless, a pervasive feature of social organization in social animals (including humans) is that their social groups are arranged hierarchically, with greater reproductive benefits and access to resources accrued by those higher in the status hierarchy. Because access to these resources is preferentially accessed by those at the top of the social hierarchy, living in social groups is only adaptive insofar as an individual conspecific can attain and maintain relatively high status in a group (Ranta, Rita, & Lindstrom, 1993). Access to additional resources of higher caloric value by those with higher social status would have been extremely beneficial for early humans for whom food would have been scarce, unpredictably available, or both. Thus, status hierarchies

would have been consistently in flux, with high-status individuals attempting to maintain their status, and lower status individuals attempting to increase their own status. These motivations to protect or enhance status would have created significant selection pressures for early humans to evolve the capacity to identify conspecifics who would have been threats to existing status or provide opportunities to increase one's own status (Ranta et al., 1993).

While both men and women can accrue these vital resource benefits by securing higher status within a group, inherent differences in reproductive biology have led to differential benefits of attaining status for males and females. Specifically, attaining high status has been shown to be of even greater importance for human males, because women have evolved to favor male conspecifics with higher status for potential mating opportunities. Women's preference for high-status men is an adaptive solution, due to the fact that reproduction is inherently more costly for women than men (Parental Investment Theory; Trivers, 1972). For men, the mandatory minimum investment in offspring is the introduction of a sperm to fertilize a female egg, and human male testes create an average of 300 million sperm per day. On the other hand, human females are born with a set number of reproductive cells (approximately 400,000 eggs, many of which may be defective or become damaged over the lifespan due to exposure to pathogens and environmental toxins; Cornwallis & Birkhead, 2006). Additionally, men are capable of reproducing shortly after copulation, whereas women are reproductively unavailable for approximately one year following conception (e.g., women cannot produce additional offspring while they are pregnant, and women's estrus does not return until several months after the child is born; Wasser & Barash, 1983). Thus, women have fewer

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opportunities to reproduce over their lifetime relative to men, and each act of reproduction is more costly for women than it is for men.

To offset these reproductive costs, women have evolved to be much more judicious and selective when choosing potential mating partners, and tend to favor males with high social status. High-status males would have historically had access to more resources to invest in their offspring, thereby helping a female who selected and mated with high-status men to most effectively offset the high costs associated with reproduction. Thus, in order to be selected by women, men would have had to compete intrasexually with one another to increase status, because high status is preferred by women. As such men may have 1) a stronger motivation to pursue status, and as a consequence, 2) may have evolved a greater ability when status goals are salient to accurately identify conspecifics who might be a threat to their status versus those who might facilitate status attainment (allies).

<center>Status Goals and Neural Activation</center>

Given the importance of status goals in solving adaptive problems related to survival and reproduction, it is perhaps not surprising that the human brain responds in specific ways to status-connoting contexts. For example, Zink and colleagues (2008) utilized functional magnetic resonance imaging (fMRI) to assess brain activity in response to being in a stable social hierarchy (one's position is not changeable) or an unstable social hierarchy (wherein one does not have high status, but the hierarchy is changeable). In both situations, participants were led to interact with someone of higher status. The results revealed that for both stable and unstable social hierarchies, viewing a "superior" individual in the social hierarchy increased activity in the dorsolateral

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prefrontal cortex (dorsolateral PFC), a brain area associated with cognitive control and working memory (Zink et al., 2008). This is sensible given that, in both cases, participants were lower in status and asked to interact with a high-status individual. Investing higher order cognitive processes when interacting with this high-power target may be a means of gaining greater knowledge about the high-status person. Importantly participants in the unstable hierarchy condition additionally showed activation of the amygdala and the medial prefrontal cortex, areas associated with emotional processing and social cognition, respectively. In this case, participants were led to believe that status enhancement was possible, and activation of emotion and social cognition processes in the brain may help facilitate this goal. Specifically, emotional activation is often critical in motivating an adaptive response in an organism. For example, the activation of disgust emotions leads to the motivation to avoid pathogenic threats, which subsequently aids in minimizing pathogen exposure (Schaller & Park, 2011). Additionally, numerous social cognitive processes are related to understanding and interpreting others' intentions, which would help an individual determine who may serve to facilitate or hinder status goals (Pelphrey, Morris, & Mccarthy, 2004). Collectively, these results suggest that not only are there important neurological underpinnings behind social status motivation, but also that these neural activation patterns vary depending on the characteristics of the social hierarchy one is a part of.

The Relationship between Status Goals and Behavior

Because of the inherent importance of securing high status, it is likely that humans would have evolved behavioral strategies to successfully outcompete others for higher status. Indeed, several lines of research suggest that status goals result in a variety

of behaviors, including aggression and altruism. For example, Griskevicius and colleagues (2009) primed a group of participants with status motives and compared them to individuals primed with a physiologically arousing control experience. After completing this task, participants were asked to indicate how willing they would be to engage in aggressive behaviors directed toward a particular target. The results of this study demonstrated that men primed with social status motives exhibited increased direct aggression (e.g., face-to-face confrontation), while women primed with the same motives exhibited an increase in indirect aggression (e.g., social exclusion). Importantly, women may use indirect aggression more often because the utilization of direct aggression may prove more costly (to the female and her offspring) if their aggressive behavior leads to physical harm or death. Men, on the other hand, face lesser consequences when failing at direct aggression, due to their relatively lesser requirement for investment in offspring. Nonetheless, because both indirect and direct aggression are associated with actual status benefits, their utilization when status goals are activated serve as important adaptive behavioral responses (Cillessen & Mayeux, 2004; Vaillancourt & Hymel, 2006).

Other research has demonstrated that status motivation leads individuals to favor engaging in personally costly altruistic behavior to facilitate status-attainment. Specifically, Griskevicius and colleagues (2010) investigated the purchasing behavior of men and women based on product characteristics (i.e., "green" products versus "non-green" products) and purchasing context. In their study, green products were identified as personally more costly (i.e., less effective and more expensive) than non-green products, but were better for the social group as a whole (i.e., less costly to the environment shared by all). Importantly, activating status goals led individuals to display an increased

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preference for these more costly products, but only when the purchases were observable to other people. Thus, individuals motivated by status seem willing to incur costs to communicate their greater prosociality relative to others, but only insofar as others can be made aware of this sacrifice. This is quite sensible, as those who outcompete others in prosocial domains do, in fact, accrue higher social status (competitive altruism; Hardy & Van Vugt, 2006).

The Relationship between Status Goals and Social Perception

Given the evolutionary and social importance of status motives, and their impact on behavior, it is likely that humans have evolved underlying perceptual processes to facilitate adaptive behavior in the service of attaining status. Indeed, much research indicates that "perceiving is for doing," such that basic perception serves the purpose of facilitating adaptive behavioral responses (Dijksterhuis & Bargh, 2001). In order to protect one's own status, or attempt to increase one's own social standing, individuals must be able to identify conspecifics who could potentially threaten or facilitate status goals. The ability to identify a potential competitor or ally allows one to behave in ways that adaptively facilitate status goals, and subsequently reap the rewards from such identification of social targets. For example, if one identifies a threatening conspecific (through behavioral or facial characteristics), it might be best to avoid this person. Indeed, research shows that avoiding dominant and potentially threatening others can help individuals maintain status by avoiding conflict (see Marsh, Ambady, & Kleck, 2005). Alternatively, if one identifies a conspecific who communicates affiliative intent (also through behavioral or facial characteristics), it might be best to create an alliance with this individual to facilitate status ascension (Cummins, 2005).

Importantly, recent evidence does indicate that relative status exerts a significant influence on social perception. For example, people invest more attentional resources (and devote more cognitive resources) to those who control their personal outcomes (i.e., high-status persons; Neuberg & Fiske, 1987). These authors argue that because low-status individuals are motivated to increase their status, attending more judiciously to high-status targets may facilitate status acquisition by aiding in the identification of opportunities to effectively challenge a high-status person's power. Thus, status goals do seem to strongly influence an individual's attention to motivationally relevant social targets.

Additionally, Ratcliff, Bernstein, Cundiff, and Vescio (2012) investigated the link between social status and the perception of anger in facial stimuli, as well as the role of personal attitudes (specifically, the extent to which individuals endorse rigid social hierarchies). Their results showed that facial characteristics associated with anger were more accurately identified on faces of targets manipulated to be of high (compared to low) status, particularly for individuals who endorsed rigid social hierarchies (i.e., those higher in social dominance orientation; Pratto, Sidanius, Stallworth, & Malle, 1994). Given that angry facial expressions in humans evolved to communicate dominance, being especially attuned to anger on high-status targets would be adaptive, by helping an individual avoid conflict with dominant individuals (Hess, Blairy, & Kleck, 2000). These results suggest that when one is exposed to clearly high-status persons, individuals are more accurate at processing nonverbal information about these targets (relative to low status targets); by accurately processing high-power targets, particularly their threat displays, a low power person might be best able to avoid costly confrontation.

Additionally, research demonstrates that a target's social status influences gaze fixation. Dalmaso, Pavan, Castelli, and Galfano (2011) presented participants with a series of faces, each of which was associated with a respective curriculum vitae (CV). In one group, the faces were paired with CVs indicating that the targets were high-status individuals, while the other group viewed faces paired with CVs indicating that the targets were low-status persons. Utilizing eye tracking software, the results of this study showed that those in the high-status CV condition were more likely to fixate on the facial stimuli associated with the CV than those in the low-status CV condition. This study provides unique support for the link between social status and social perception, and identifies an underlying mechanism driving this association; specifically, status goals not only influence perception of socially relevant stimuli (e.g., a high status conspecific), but this influence seems to be driven by subconscious perceptual processes (e.g., visual attention as indexed by gaze fixation).

Finally, research has also revealed that humans routinely assess another's fighting ability based not only on visual characteristics, but also from characteristics of a target's voice. Specifically, Sell and colleagues (2010) demonstrated that participants were accurately able to assess the upper-body strength of targets based on voices from individuals across a variety of cultures and language groups (assessing height, weight, strength, fighting ability, etc.). These results are perhaps not surprising. Due to the importance of assessing a conspecific's dominance (both for the purposes of mate selection and self-protection), humans have likely evolved a variety of interpersonal perceptual systems which facilitate the perception of formidability in others, including information drawn from vocalizations by conspecifics. More importantly, both male and

female participants were more accurate in their assessment of male voices than their assessment of female voices, providing additional evidence for differences in interpersonal perception between men and women as it relates to identifying conspecifics' relative status. This accuracy was observed regardless of an individual's familiarity with the language being spoken. The researchers proposed a number of explanations for the observed gender differences (including depth of the voice), but the particular importance of dominance and physical formidability for males (see Snyder et al., 2011) supports the concept that individuals may allocate more resources to detecting physical formidability cues in male facial and vocal stimuli relative to female targets.

Collectively, existing research supports the hypothesis that aspects of status are broadly related to social perception. Low-status persons pay more attention to high-status targets, and individuals are more accurate at processing nonverbal displays of high status, relative to low-status targets. Additionally, individuals seem capable of inferring another's level of status or dominance (physical strength) from vocal cues alone. Nonetheless, individuals' motivated by status goals should benefit not only from differentiating high and low-status targets but also by being able to identify conspecifics based on relative trustworthiness and affiliative interest. Satisfying status goals should be aided by being able to identify others who communicate trustworthiness; indeed, an untrustworthy individual, regardless of their level of status, would ultimately be a threat to one's own status, as they may be willing to exploit another person for their own personal gain. Thus, there would be inherent value in accurately discriminating trustworthy from untrustworthy persons. Additionally, individuals can use deceptive affiliative signals to mask underlying disingenuous intentions. That is, one can appear

overtly affiliative (e.g., display a "smile"), in order to appear disarming, even though their intentions are to exploit the perceiver. Again, regardless of a target's social standing, a perceiver unable to recognize a target's underlying intentions based on facial emotion cues could potentially open themselves up to social exploitation. Thus, there would be inherent utility in accurately discriminating those individuals communicating true affiliation from those whose overt affiliative signals mask underlying disingenuous intentions.

Human Faces as Signals of Relative Trustworthiness and Affiliation Interest

As indexed by the research above, the human face is preferentially attended to in many contexts; additionally, research also reveals that the human face is capable of communicating a person's motives and intentions, through static facial structures (Todorov, Gobbini, Evans, & Haxby, 2007) and facial expressions (Parkinson, 2005). Importantly, there is increasing evidence that human faces communicate subtle information that, if detected, can help one determine a person's relative level of trustworthiness and affiliative interest.

Research reveals that individuals are able to determine a target person's relative level of trustworthiness from brief exposure to a target face, and that such judgments are highly consensual (Slepian, Young, Rule, Weisbuch, & Ambady, 2012). Indeed, numerous structural facial cues are associated with relative trustworthiness (e.g., jaw width, brow prominence; Todorov, Pakrashi, & Oosterhof, 2009). Importantly, past research demonstrates that these aspects of facial appearance predict actual trustworthiness in interpersonal contexts (Stirrat & Perrett, 2010). This basic sensitivity to cues of trustworthiness as indexed by facial structure is a critical human adaptation;

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evaluations of trustworthiness are important for establishing and maintaining social relationships (Rempel, Holmes, & Zanna, 1985). Critical to the current study, it is hypothesized that this basic accuracy for differentiating trustworthy from untrustworthy faces will be facilitated by the activation of status goals. Individuals who are motivated by status must be aware of conspecifics who are likely to offer safe interpersonal contact (trustworthy others) from those more willing to exploit them and jeopardize their status pursuit (untrustworthy others).

Additionally, facial affect can be used to infer another's intentions, and research indicates that in the context of smiling, human smiles can vary both morphologically and motivationally (Parkinson, 2005). A Duchenne smile involves largely involuntary activation of both the *zygomaticus major* and *orbicularis oculi* muscles, which raise the cheeks and cause wrinkling around the corners of the eyes. Its expression is spontaneous, and is indicative of a genuine experience of joy and affiliative interest (Lustgraaf, Sacco, & Young, 2015). Non-Duchenne smiles, on the other hand, involve activation of only the *zygomaticus major* muscle and are produced voluntarily. While Duchenne smiles have been consistently documented to be associated with cooperative intentions and behaviors (e.g., Brown & Moore, 2002; Mehu, Grammer, & Dunbar, 2007), non-Duchenne smiles are more variable in their social communicative meaning; they can be used to communicate non-cooperative intent and untrustworthiness (Krumhuber et al., 2007), and even if produced without direct malicious intentions, non-Duchenne smiles are designed to be misleading and to mask disingenuous intent (Biland, Py, Allione, Demarchi, & Abric, 2008).

Importantly, past research indicates that individuals are relatively accurate at differentiating Duchenne from non-Duchenne smiles; however, acutely activated social motives, such as self-protection threat and affiliation motivation can enhance smile discrimination accuracy (Bernstein, Brown, Young, Sacco, & Claypool, 2008; Young, Slepian, & Sacco, 2015). In the current study, it is hypothesized that those for whom status goals have been activated will demonstrate an enhanced ability to differentiate Duchenne and non-Duchenne smiles. Because effectively securing status requires avoiding exploitive conspecifics and allying with cooperative conspecifics, the ability to discriminate those displaying true affiliative affect from those whose outward positive affect may mask underlying negative intentions would be of critical adaptive value.

CHAPTER II – CURRENT STUDY

Because maintaining and gaining status are critical for humans' access to social

and reproductive resources, we predict that activating status goals should increase

individuals' ability to detect conspecifics who would represent threats and opportunities

to this goal. By doing so, individuals can avoid threatening conspecifics and ally

themselves with affiliative conspecifics. Additionally, because human faces are capable

of communicating information about another's level of dominance and affiliative interest,

status goals should make people especially sensitive to these cues. Finally, because

selection pressures have made status of greater adaptive importance to men, men should

demonstrate greater perceptual acuity for these facial cues when status goals are

activated, compared to women. The current study will test the following theoretically

and empirically derived hypotheses:

Hypotheses

Hypothesis 1

When status motives are activated, men and women should demonstrate an

enhanced ability to discriminate trustworthy from untrustworthy faces (see Slepian et al.,

2012). Such enhanced perceptual acuity should allow individuals to better align with

those who are more dispositionally inclined to be cooperative, while allowing for the

avoidance of those who are more dispositionally inclined to be exploitative.

Hypothesis 2

When status motives are activated, men and women should demonstrate an

enhanced ability to discriminate Duchenne from non-Duchenne smiles. Such enhanced

perceptual acuity should allow individuals to better identify those acutely and genuinely

interested in cooperation and social affiliation (i.e., potential allies to aid in status-attainment), while also allowing for the avoidance of those more likely to be exploitive and undermine one's own status goals.

Hypothesis 3

The impact of status goal activation on enhanced perceptual acuity for discriminating trustworthy from untrustworthy faces and discriminating real from fake smiles should be more pronounced in male participants. Given that women have evolved to prefer high-status men as mating partners, there are greater inherent benefits for men to outcompete other males to ascend the status hierarchy (Trivers, 1972). As such, men with activated status goals should be especially attuned to others capable of facilitating or undermining this goal.

To test these hypotheses, men and women were randomly assigned to a status goal condition or control condition on a between-participants basis, in which they were asked to imagine being the protagonist in one of two stories, one of which was designed to activate status motives and the other to be arousing, but unrelated to status goals Griskevicius et al., 2009). Following this priming procedure, all participants completed two face perception tasks. In one task, they viewed faces that communicated dispositional trustworthiness or untrustworthiness. Participants were then simply asked to indicate whether each face was "trustworthy" or "untrustworthy." In the other task, participants viewed images of a smiling target; in half of the trials the target displayed a Duchenne smile, and in the other half of the trials the target displayed a non-Duchenne smile. Upon presentation of each target stimuli, participants were then asked to indicate if

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the target's smile was real or fake. Participants also completed measures assessing their

dispositional motivation to strive for status as well as their socioeconomic status.

CHAPTER III - METHOD

Ethics Statement

This study was approved by The University of Southern Mississippi's

Institutional Review Board (#16080509; Appendix A).

Participants

Participants read a study description indicating that the research was interested in

reading comprehension and perception. Participants who volunteered to participate (see

Appendix B for the consent form) were redirected to the survey; participants who did not

consent to study procedures were asked to close their browser window. 251 participants

(M_{age}=25.38 years, SD_{age}=6.24 years) were recruited for this study using Amazon's

Mechanical Turk survey tool. Two participants did not disclose their sex. Due to the fact

that gender was a key part of the study's hypotheses, these two participants were

excluded from analyses, leaving a final sample of 249 participants (124 men, 125

women). Each participant was randomly assigned to either the status or control prime

conditions on a between subjects basis. While the instructions for the study explicitly

stated that participants were to be between 18-25 years of age to participate, 55

participants outside of this age range completed the study (only 15 of whom were over 35

years of age). To determine whether to include these persons, four 2 (condition: status

vs. control) x 2 (sex: male vs. female) x 2 (age category: 18-25 years old vs. over 25

years old) ANOVAs, for each of the dependent variables (smile d', smile criterion, trust

d', and trust criterion). These analyses revealed no main effects or interactions with

participant age category (all ps>.140). As such, all participants, regardless of age, are

included in analyses below to maximize statistical power to detect effects (see Zink et al., 2008 for estimates of effect size).

Materials

As a motivation-induction manipulation, participants were randomly assigned to one of two conditions in which they were asked to engage in a task which primed social status motivations or a physiologically arousing control task (see Griskevicius et al., 2009; see Appendix C for motive induction stories). Although past research demonstrates that the status prime leads to greater activation of status interest than the control prime, the same manipulation check was included from the original research. Specifically, following the priming task, participants in each condition were asked to indicate to what extent they currently felt 1) competitive, 2) motivated to compete, 3) the desire to have higher social status, and 4) motivated to have higher prestige (1=*not at all*; 9=*very much*). Our status manipulation was considered effective if aggregate scores on these questions were higher in the status prime condition relative to the control prime condition (the four status items demonstrated adequate reliability; α=.94). Additionally, participants were asked to indicate to what extent they currently felt 1) enthusiastic, 2) excited, 3) frustrated, and 4) angry (1=*not at all*; 9=*very much*). Because the two positive affect, $r(244)=.812$, $p<.01$, and negative affect, $r(246)=.841$, $p<.01$, items were highly correlated, they were each combined to create a composite positive and negative affect score, where higher values indicated greater positive and negative affect, respectively (degrees of freedom vary due to the missing data from 3 participants with respect to the manipulation check).

Trust Identification Task

In this task, participants viewed a series of 34 randomized male faces with neutral expressions to assess individual accuracy in regard to trust perception. Each of these faces have been reliably established as varying in the extent to which each of the facial stimuli exhibits trustworthiness or untrustworthiness (17 trustworthy faces, 17 untrustworthy faces; see Appendix D for sample stimuli; Slepian et al., 2012). Participants saw each face, one at a time, in a randomized order. On each trial participants were asked to indicate whether the face was trustworthy or untrustworthy. This task was self-paced, such that participants had an unlimited amount of time to generate their response; once a response was provided, participants automatically moved onto the next trial. Consistent with past research using these stimuli, we adopted a signal detection framework for analyzing participants' ability to discriminate trustworthy from untrustworthy faces (e.g., Sacco, Merold, Lui, Lustgraaf, & Barry, 2016; Young et al., 2015). Hits were coded for each trial in which participants identified a trustworthy face as "trustworthy," while False Alarms (FA) were coded for each trial in which participants identified an untrustworthy face as "trustworthy." Hits and FAs were used to calculate participants' d prime (d') score, which measures an individual's ability to accurately identify trustworthy targets, as well as a criterion value, (β), which measures the threshold of evidence required to deem a face trustworthy.

Smile Discrimination Task

In this task, participants viewed 20 smiles in a randomized order; 10 of these stimuli portray a single male individual producing a Duchenne (genuine) smile, while the other 10 stimuli portray a male producing a non-Duchenne (posed) smile. These stimuli

were developed by previous researchers that utilized a trained actor, familiar with the

Facial Action Coding System (FACS; Ekman, Friesen, & Hager, 2002), to contract single

facial action units. The actor generated a series of Duchenne and non-Duchenne smiles

at various intensities (half of the non-Duchenne smiles involved deliberate manipulation

of the eyes while half did not), and an independent sample of participants rated the

Duchenne smiles as significantly more authentic than the non-Duchenne smiles (Del

Giudice & Colle, 2007; see Appendix E for sample stimuli). Participants viewed each

smile stimulus, one at a time, in a randomized order. On each trial, participants were

asked to categorize each smile as "real" or "fake." This task was self-paced, such that

participants were provided an unlimited amount of time to respond and the next trial

begin after the participant provided a response (see Sacco et al., 2016, for additional

details regarding this procedure). As with the trust discrimination task, and consistent

with past research using these stimuli, a signal detection framework was utilized to

analyze participants' ability to discriminate real from fake smiles (Sacco et al., 2016;

Sacco, Brown, Lustgraaf, & Young, in press). Hits were coded for all trials in which

participants correctly categorized a real smile as "real," while False Alarms (FAs) were

coded for all trials in which participants incorrectly categorized a fake smile as "real."

Hits and FAs were then used to compute participants' d prime (*d'*) scores, which

represents their ability to accurately discriminate real and fake smiles, and their beta (β)

value, which represents the threshold of evidence needed to categorize a smile as genuine

rather than posed.[1]

Procedure

Following informed consent procedures, participants were randomly assigned to either the status motive condition or control condition on a between-participants basis. Following this priming task, participants then completed the trust and smile discrimination tasks (task order was counterbalanced between-participants). Participants then completed the Dispositional Status Striving scale (DSS; Appendix F; Neel, Kenrick, White, & Neuberg, 2016) and a measure of socioeconomic status (SES; Appendix G; Griskevicius, Tybur, Delton, & Robertson, 2011). Finally, participants completed a brief demographics form (Appendix H) and were then redirected to a debriefing form (Appendix I).

CHAPTER IV – RESULTS

Manipulation Checks

To determine whether the status prime produced greater status striving than the control prime, we compared participants' scores on the status striving manipulation check items across the two priming conditions. Consistent with past research, an independent samples t-test revealed that participants in the status condition reported greater status motivation (M=7.29, SD=1.57) than participants in the control prime condition (M=3.81, SD=2.26), $t(247)$=14.31, p<.01, d=1.79. Additionally, independent samples t-tests revealed that participants presented with the control and status primes did not differ in self-reported positive, $t(247)$=.97, p=.335, d=.13, or negative affect, $t(247)$=.33, p=.742, d=.06., indicating that the manipulation influenced status motives independent of positive and negative affect.

Additionally, the Dispositional Status Striving Scale demonstrated adequate reliability (α=.83); as such, a composite score was calculated for each participant where higher scores are indicative of greater dispositional status striving. Furthermore, both the Childhood SES (α=.85) and Adult SES (α=.84) demonstrated adequate reliability, and were significantly correlated with one another, $r(245)$=.29, p<.01. Given that separate analyses conducted with each subscale produced similar results, they were combined into a single index of SES for simplification of analyses, where higher scores are indicative of higher SES. Importantly, neither individual differences in status striving, $t(247)$=.596, p=.552, d=.07, nor SES, $t(247)$=.141, p=.888, d=.02, differed across the status and control conditions, making them viable predictor variables in statistical models reported below.

Trust Discrimination Results

It was hypothesized that the status prime would lead to greater accuracy when discriminating between trustworthy and untrustworthy faces than the control prime (Hypothesis 1), and that the effect status priming on trust discrimination accuracy would be larger for men than women (Hypothesis 3). To test these hypotheses, a 2 (condition: status vs. control) x 2 (gender: male vs. female) between subjects ANOVA was conducted, with participants' trust d' scores as the dependent measure. This analysis yielded no significant effect of condition, $F(1,245)=0.771$, $p=.381$, $\eta_p^2=.003$, which does not provide support for Hypothesis 1 (See Table 1 for descriptive statistics for all primary analyses). There was also not a significant condition by participant gender interaction, $F(1,245)=.423$, $p=.516$, $\eta_p^2=.002$, which does not support Hypothesis 3. There was also no main effect of participant sex, $F(1,245)=1.52$, $p=.218$, $\eta_p^2=.006$.

Smile Discrimination Results

It was hypothesized that the status prime would lead to greater accuracy when discriminating between real and fake smiles than the control prime (Hypothesis 2), and that the effect of status priming on smile discrimination accuracy would be larger for men than women (Hypothesis 3). To test these hypotheses, a 2 (condition: status vs. control) x 2 (participant gender: male vs. female) between subjects ANOVA was conducted, with participants' smile d' as the dependent measure. This analysis yielded no significant effect of condition, $F(1,245)=0.072$, $p=.789$, $\eta_p^2=.000$, which does not provide support for Hypothesis 2. There was also no significant condition by participant gender interaction, $F(1,245)=1.14$, $p=.286$, $\eta_p^2=.005$, which does not support Hypothesis 3.

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However, there was an unexpected marginal main effect of participant sex, $F(1,245)=3.30$, $p=.071$, $\eta_p^2=.013$, such that women demonstrated marginally more accurate smile discrimination accuracy ($M=.93$, $SD=.87$) than men ($M=.72$, $SD=.97$). This may be due to sex differences in reproduction outlined by Parental Investment Theory (Trivers, 1972). Specifically, females may be more sensitive to smiles as affiliative cues as such signals may communicate the willingness to invest resources, which would be useful for offsetting women's costs associated with reproduction (Trivers, 1972).

Exploratory Criterion Analyses

Although we had no specific hypotheses for the relationship between gender, status motivation and criterion (β), we conducted exploratory 2 (participant sex: male vs. female) x 2 (condition: status vs. control) ANOVAs, one with participants' trust β as the dependent measure and one with participants' smile β as a dependent variable. For trust β, there were no significant main effects nor an interaction (all ps>.300). The same held true for smile β, such that there was no main effect of condition nor an interaction between participant gender and condition (all ps>.141). However, there was a marginal main effect of participant sex, $F(1,245)=3.86$, $p=.051$, $\eta_p^2=.015$, such that women set a higher criterion for categorizing smiles as real ($M=1.34$, $SD=.87$) than did men ($M=1.14$, $SD=.67$). Thus, it may be the case that women's marginally greater accuracy when discriminating real from fake smiles is due to the fact that they set a higher criterion in categorizing any smile as real.

Moderation by Individual Differences in Status Striving for Trust

To determine the role of individual differences in status striving on trust discrimination accuracy, we conducted a 2 condition (status, control) x 2 participant sex (male, female) custom ANCOVA, with participants' status striving as a covariate, and trust d' as the dependent variable; this allowed us to test for any main effects and interactions with respect to both categorical and continuous predictor variables. The only significant effect to emerge was a main effect of dispositional status striving, $F(1,241)=5.85$, $p=.016$, $\eta_p^2=.024$. To understand this main effect, we correlated participants' status striving with their trust d', which indicated that as status striving increased, so too did the ability discriminate trustworthy from untrustworthy faces, $r(247)=.173$, $p=.006$.

To determine the role of individual differences in status striving on trust β, we conducted a 2 condition (status, control) x 2 participant sex (male, female) custom ANCOVA, with participants' status striving as a covariate, and trust β as the dependent variable. In this case, the only significant effect to emerge was a marginal main effect of dispositional status striving, $F(1,241)=3.69$, $p=.056$, $\eta_p^2=.015$. To understand the main effect of this continuous variable, we correlated participants' status striving with their trust β. A marginal effect emerged, which indicated that as status striving increased, so too did the setting of a higher criterion for categorizing any face as trustworthy, $r(247)=.120$, $p=.058$. Thus, not only do those higher in status striving demonstrate greater accuracy at discriminating trustworthy from untrustworthy faces, they also set a higher criterion for categorizing any given face as trustworthy.

Moderation by Individual Differences in Socioeconomic Status for Trust

To determine the role of individual differences of SES on trust discrimination accuracy, we conducted a 2 (condition: status vs. control) x 2 (participant sex: male vs. female) custom ANCOVA, with participants' SES as a covariate, and trust *d'* as the dependent variable. No significant effects emerged in this model (all *p*s>.27). To determine the role of individual differences in SES on trust *β*, we conducted a 2 (condition: status vs. control) x 2 (participant sex: male vs. female) ANCOVA, with participants' SES included as a covariate, and trust *β* as the dependent variable. No significant effects emerged in this model (all *p*s>.41).

Moderation by Individual Differences in Status Striving for Smiles

To determine the role of individual differences in status striving on smile discrimination accuracy, we conducted a 2 (condition status vs. control) x 2 (participant sex: male vs. female) custom ANCOVA, with participants' status striving as a covariate, and smile *d'* as the dependent variable. No significant effects emerged with this analysis (all ps>.161). To determine the role of individual differences in status striving on smile β, we conducted a 2 (condition: status vs. control) x 2 (participant sex: male vs. female) custom ANCOVA, with participants' status striving as a covariate, and smile β as the dependent variable. Once again, no significant effects emerged (all ps>.110).

Moderation by Individual Differences in Socioeconomic Status for Smiles

To determine the role of individual differences in SES on smile discrimination accuracy, we conducted a 2 (condition: status vs. control) x 2 (participant sex: male vs. female) custom ANCOVA, with participants' SES as a covariate, and smile *d'* as the dependent variable. The only significant effect was a main effect of participant SES,

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$F(1,241)=3.90$, $p=.032$, $\eta_p^2=.019$. To understand the main effect of this continuous

variable, we correlated participants' SES with their smile discrimination accuracy, which

revealed that as participants' SES increased, their smile discrimination accuracy

decreased, $r(247)=-.163$, $p=.010$.

To determine the role of individual differences in SES on smile β, we conducted a

2 (condition: status vs. control) x 2 (participant sex: male vs. female) ANCOVA, with

participants' SES as a covariate, and smile β as the dependent variable. No significant

effects emerged in this model (all ps>.280).

Table 1

Descriptives for Trust and Smile Discrimination Tasks

Participant Sex	Men		Women	
Condition	Status (N=70)	Control (N=54)	Status (N=67)	Control (N=58)
Trust d'	.90 (.71)	.92 (.66)	.95 (.64)	1.09 (.71)
Trust β	1.47 (.92)	1.42 (.87)	1.58 (.94)	1.55 (.90)
Smile d'	.76 (.96)	.67 (1.00)	.85 (.85)	1.01 (.88)
Smile β	1.19 (.69)	1.08 (.65)	1.43 (.90)	1.24 (.84)

CHAPTER V – DISCUSSION

Social groups are crucial to human survival. Given that social groups are arranged hierarchically, those higher in the status hierarchy have access to more resources and mating opportunities (Milinski et al., 2002). Therefore, individuals are motivated to ascend the status hierarchy to obtain such opportunities. Given the importance of social status, humans and other social species rely on a number of different cues to determine whether an individual may be a threat or an ally (Young et al., 2015) when ascending this status hierarchy. These cues include body movement (Sell et al., 2009), static facial cues such as trustworthiness (Todorov et al., 2009), and dynamic facial cues such as smiles (Lustgraaf et al., 2015). Therefore, it stands to reason that humans would be particularly sensitive to such cues if they are motivated to gain higher social status.

In the current study, participants were randomly presented with either a prime meant to activate as status goal (status condition), while others were presented with a comparable prime meant to induce the same affect (e.g., excitement or happiness) while not priming status motives (control condition). It was hypothesized that: 1) activation of status goals would lead to a greater ability to discriminate between trustworthy and untrustworthy faces, 2) activation of status goals would lead to a greater ability to discriminate between real and fake smiles, and 3) this enhanced accuracy of detection for both trustworthiness and genuine smiles when status goals are activated would be especially pronounced for men, given that men have evolved to compete for status because women differentially value this trait when evaluating potential mates (Trivers, 1972).

In the current study, none of the three primary hypotheses were supported by the data. The status prime did not lead to greater trust discrimination accuracy compared to the control prime (Hypothesis 1). Additionally, the status prime did not lead to greater smile discrimination accuracy than the control prime (Hypotheses 2). Finally, the expected effects in Hypotheses 1 and 2 were not moderated by participant gender (Hypothesis 3). It is somewhat surprising that the status manipulation did not influence trust and smile discrimination accuracy, as past research has demonstrated that status motives reliably influence face perception (Cunningham, Barbee, & Pike, 1990). However, this study can rule out failure of the manipulation as a factor; participants in the status prime condition reported significantly greater acute status striving motivation than participants in the control condition, suggesting that the social status prime effectively elicited status motivation. It is possible, therefore, that acute status motives may be unrelated to trust and affiliation detection. Indeed, research has indicated that face perception and preferences can be influenced by dispositional characteristics, independent of motive priming, which is a point we turn to below (Brown & Sacco, 2016). Future research would benefit by determining which, if any aspects of face perception, are influenced by acutely activated status goals. For example, much like Ratcliff and colleagues (2012), it is possible that status motives are related to efficient detection of anger in faces, given that anger is a dominance signal that would be useful to detect in others when one is attempting to navigate their group's status hierarchy.

Independent of the motive priming used in the current study, two notable relationships with individual difference variables emerged. As partial support for this study's hypotheses, participants who self-reported greater dispositional status striving

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demonstrated heightened discrimination accuracy for trustworthy and untrustworthy faces and set a higher criterion for categorizing any face as trustworthy. Those higher in status striving have a chronically activated status motive. For these individuals, being sensitive to facial traits that communicate trust (or lack thereof) would be critical in helping them identify threats and allies to their status acquisition goal. Conversely, individual differences in status striving were unrelated to smile discrimination accuracy. Thus, these aspects of status motivation seem to be more intimately related to trust discrimination accuracy than discriminating affective cues related to affiliative interest.

Additionally, this study indicates that those who reported higher socioeconomic status (SES) were significantly worse when discriminating between real and fake smiles. Past research finds that those higher in SES, because they have sufficient social and tangible resources, display more disengagement behaviors (e.g., doodling on a piece of paper) when interacting with others, because they do not need to invest in novel social targets (Kraus & Keltner, 2009). In the current study, those reporting higher SES may not have felt any inherent motivation to effortfully process the social cues of the targets displaying real and fake smiles, which could offer a potential explanation for their inferior performance in discriminating real from fake smiles. It is also the case that high power/status individuals may exert less cognitive effort when processing such facial cues, due to the fact that their status goals are satisfied, whereas low power/status individuals exert greater cognitive effort when processing others' facial cues to potentially improve their social standing (Neuberg & Fiske, 1987). Thus, higher-SES persons may simply be less invested in processing these cues, which subsequently leads to inaccurate person perception.

Limitations

One potential limitation of the current study is the fact that participants completed study procedures online, rather than in a controlled laboratory setting. Because this study relied on a motivational priming procedure, participants' undivided attention may be necessary to provoke significant activation of the desired motive (in this case, social status motivation). While past research indicates that online surveys are as reliable as those obtained in a more controlled laboratory setting (Buhrmester, Kwang, & Gosling, 2011), this previous research did not explore how online data collection influences motive priming procedures. There is, however, more recent evidence suggesting that traditional motive priming procedures may not transfer perfectly to online data collection methods (Brown & Sacco, 2016).

Another potential limitation of the current work stems from the stimuli used. In both tasks, we used still images of targets: targets consensually rated in past research as trustworthy or untrustworthy and a single male target displaying various real or fake smiles. While these stimuli have been used successfully in past research (e.g., Sacco et al., 2016; Young et al., 2015), these stimuli are limited in their ecological validity and somewhat inconsistent with the kinds of everyday exposure to other individuals that most people are familiar with. For example, smiles are a dynamic display that may not perfectly transfer to a still image, thus making it challenging for participants to process. More ecologically valid and dynamic stimuli may lead to findings that differ in meaningful ways from those documented in the current study.

Future Directions

Given these findings, there are a number of questions that future research may address. First, acquisition of high social status may influence face perception beyond trustworthiness and smiles. For example, past research finds that individuals demonstrate more sensitive anger detection when viewing high, relative to low-status targets (Ratcliff et al., 2012). It is suggested that detecting an anger display in a conspecific (which signals that another individual may be an interpersonal threat) is of value because it allows one to avoid these individuals to reduce any costs they can inflict on the perceiver. This ability to more efficiently detect anger on high-status target faces should be exacerbated by someone who is acutely interested in ascending the status hierarchy.

Additionally, individuals motivated by status should adaptively benefit from efficiently and accurately detecting facial dominance in male conspecifics. For example, wider-faced males have higher levels of testosterone, and display more reactive aggression, exploitive behavior and dominance, whereas men with narrower faces are more likely to die from contact violence (i.e., stabbed, strangled, or bludgeoned to death; Stirrat, Stulp, & Pollet, 2012). Thus, men with higher facial dominance would likely be more motivated to ascend the status hierarchy, and would be a greater threat for someone who is acutely motivated to ascend the status hierarchy themselves. As such, those primed with status motives should be highly sensitive to facial dominance in male conspecifics.

Additionally, those motivated to ascend the status hierarchy would likely benefit from greater accuracy when detecting the fighting ability of others, especially male conspecifics. Due to sexual dimorphism, men are a greater physical safety threat for both

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men and women, than are women (Archer, 2009). Past research finds that men and women demonstrate significant accuracy at detecting the fighting ability of others from visual exposure to their bodies and auditory exposure to their voices, especially as it pertains to male conspecifics (Sell et al., 2009; Sell et al., 2010). Given that greater fighting ability in male conspecifics would have consistently predicted ascension of status hierarchies, those motivated by status goals should demonstrate even more accurate perception of fighting ability from facial and vocal cues, particularly for male targets. This would allow them to either avoid these persons or create social alliances to challenge these individuals' social status within the group.

Finally, future research should explore how other fundamental social motives may influence accurate detection of affiliative and trust cues in faces. For example, past research has already demonstrated that individuals become more accurate at detecting these cues when self-protection threat is made salient (Young et al., 2015). By being sensitive to these cues, those concerned with self-protection threat can identify allies to facilitate safety and enemies to avoid, thereby facilitating self-protection goals. Additionally, those primed with affiliation motivation also demonstrate greater accuracy at discriminating real from fake smiles, in order to identify affiliative opportunities (Bernstein et al., 2008). Extending these past findings, it may be the case that priming participants with resource scarcity (i.e., a belief that there is limited access to important resources necessary for survival and reproduction) should lead participants to demonstrate a heightened ability to accurately discriminate trustworthy from untrustworthy faces and those displaying real versus fake smiles. This would be important in order to identify and avoid those who might exploit one's limited resources

as well as identify and befriend those who, through cooperation, could facilitate greater access to resources in an uncertain environment.

Conclusion

The current research tested the hypotheses that acute activation of social status motives should lead individuals to demonstrate a heightened ability to discriminate trustworthy and untrustworthy faces, as well at real and fake smiles, particularly amongst men. Such a heightened capacity for social perception would allow those motivated to ascend the status hierarchy to identify and befriend trustworthy and affiliative conspecifics who could facilitate status acquisition as well as identify and avoid untrustworthy and unaffiliative conspecifics who might interfere with status acquisition goals. Although these hypotheses were not supported at the level of acute social status motive activation, both men and women higher in dispositional status striving did demonstrate a heightened ability to discriminate trustworthy from untrustworthy faces, (which offers partial support for the hypothesis that status concerns facilitate adaptive social perception), while those higher in socioeconomic status demonstrated a heightened ability to discriminate between real and false smiles. Taken together, the results suggest that dispositional measures such as status striving and socioeconomic status may shed more light on the link between status striving and face perception than acute activation of acute status motives.

Endnote

[1]As is common in signal detection analyses, adjustments to the data were made to address the problem of empty cells: 0% was adjusted to 5%, and 100% was adjusted to 95% (see Hugenberg, Miller, & Claypool, 2007). Alternate adjustments yielded nearly identical results. In both face categorization tasks, only male targets are included. While sensible predictions could be derived for how other motives (e.g., mating motives) would lead to differences inaccurate perception based on target gender, it is hypothesized that status-goal activation makes male faces particularly more relevant for both men and women. Historically, human males, compared to females, would have been more likely to engage in aggressive and violent behaviors to secure access to resources and attain status, due to sexual dimorphism (i.e., greater physical stature and muscle mass; Daly & Wilson, 1988; Sell, Hone, & Pound, 2012). Additionally, attaining status is directly related to men's reproductive success (Trivers, 1972). As such, human males would likely have been a greater threat to both men's and women's status goals than would female conspecifics, and being able to identify threatening versus safe male conspecifics would have been especially critical for both men and women.

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NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 16080509
PROJECT TITLE: Social Status Motivation Facilitates Accurate Detection of Trustworthy and Affiliative Cues in Faces
PROJECT TYPE: New Project
RESEARCHER(S): Christopher Lustgraaf and Dr. Donald Sacco
COLLEGE/DIVISION: College of Education and Psychology
DEPARTMENT: Psychology
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 08/15/2016 to 08/14/2017

Lawrence A. Hosman, Ph.D.
Institutional Review Board

Research Consent Form

1. You are invited to take part in a research study conducted by Christopher Lustgraaf in the Department of Psychology, under the supervision of Dr. Donald Sacco (xxxx.xxxx@usm.edu). Any questions or concerns regarding this research may be directed to Christopher Lustgraaf (Owings-McQuagge Hall; Room 226; xxxx.xxxx@usm.edu). This project and this consent form have been reviewed by the Institutional Review Board, which ensures that research projects involving human participants follow federal regulations. Any questions or concerns about your rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, Box 5147, Hattiesburg, MS 39406, (601) 266-6820.

2. This study is interested in interpersonal perception. You will be asked to imagine hypothetical scenarios, engage in a face perception task, complete several personality questionnaires, and provide demographic information.

FOR SONA PARTICIPANTS: Collectively, the entirety of these tasks will not exceed 30 minutes, and you will receive 1.5 credits per every 30 minutes of participation.

FOR MTURK PARTICIPANTS: Collectively, the entirety of these tasks will not exceed 30 minutes, and you will receive ($0.10 - $0.050) for your participation.

3. You are free to discontinue your participation in this study at any time without penalty or loss of benefits. You may also freely decline to answer any of the questions asked of you.

4. The responses that you provide today will be kept completely confidential. At no time will your name or any other identifying information be associated with any of the data that you generate today. It will never be possible to identify you personally in any report of this research. Within these restrictions, results of the study will be made available to you upon request.

5. The risks associated with participation in this study are not greater than those ordinarily encountered in daily life, although you may feel mild emotional discomfort in various stages of the experiment. If you feel that you are distressed at any time while participating in this research, you should notify the researcher immediately. Your participation in this study does not guarantee any beneficial results. However, it will aid in your understanding of how psychological research is conducted as well as contribute to the general knowledge in the field.

6. If you become distressed as a result of your participation in this study, then you should contact an agency on-campus or in the surrounding community that may be able to provide services for you. A partial list of available resources are provided below:

University of Southern Mississippi Counseling Center (601) 266-4829
Pine Belt Mental Healthcare (601) 544-4641
Pine Grove Recovery Center (800) 821-7399
Forrest General Psychology Services (601) 288-4900
Lifeway Counseling Service Incorporated (601) 268-3159
Behavioral Health Center (601) 268-5026
Hope Center (601) 264-0890

By checking the box below, you are indicating that you understand your participation is voluntary, that your responses will be kept confidential, and that you are at least 18 years of age.

I voluntarily agree to participate in this study,

You must be 18 to participate in this study. **By checking the box below, you are certifying that you are at least 18 years of age, have read the above information, and agree to take part in the study.** If you no longer wish to participate, please exit the survey.
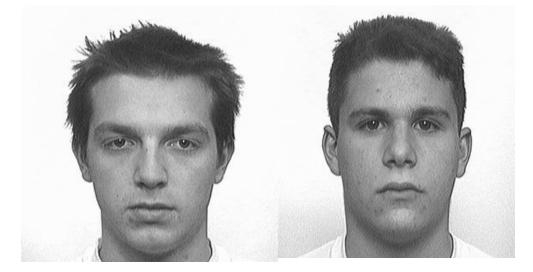
I give my voluntary consent to participate in this study: ☐

APPENDIX C – Social Status and Control Writing Primes

Social Status (Competition) Prime: "Imagine that you have recently graduated from college, and are approaching your first day of work at a high-status job. Impressed by the many prestigious features of the new work environment, you soon learn that you will be in competition with two other (male/female) individuals. The boss informs you that while one of the three of you will be fired, one individual will not only be promoted to a luxurious corner office but will also earn a large bonus and be put on a fast-track to the top. Please imagine your feelings of enthusiasm and motivation to obtain this high-status position."

Control Prime: "Imagine you are at home by yourself, and you realize that your wallet is missing. You search throughout the house and finally manage to find your missing wallet. Please imagine the excitement you experience upon discovering your missing wallet."

APPENDIX D – Sample Trustworthy and Untrustworthy Faces

Sample of Untrustworthy Facial

Stimuli.

Sample of Trustworthy Facial

Stimuli.

APPENDIX E – Sample Duchenne and Non-Duchenne Smiles

Fake Smile

Real Smile

Please respond to each question that follows using the scale below:

1=Strongly disagree
2
3
4
5
6
7=Strongly agree

1. It's important to me that other people look up to me.

2. I want to be in a position of leadership.

3. It's important to me that others respect my rank or position.

4. I do things to ensure that I don't lose the status I have.

5. I do not like being at the bottom of a hierarchy.

6. I do not worry very much about losing status (R).

APPENDIX G – Socioeconomic Status Measure

Please respond to each question that follows using the scale below:

1=Strongly disagree
2
3
4
5
6
7=Strongly agree

1. My family usually had enough money for things when I was growing up.

2. I grew up in a relatively wealthy neighborhood.

3. I felt relatively wealthy compared to the other kids in my school.

4. I have enough money to buy things I want.

5. I don't worry too much about paying my bills.

6. I don't think I'll have to worry about money too much in the future.

Please indicate your sexual orientation:
_____ Heterosexual
_____ Homosexual
_____ Bisexual
_____ Other
_____ Prefer not to answer

Please indicate your sex.
_____ Male
_____ Female
_____ Transgender

Please indicate your age.
_____ years

Please indicate your race.
_____ Caucasian
_____ African American
_____ Hispanic
_____ Asian
_____ Other

Please indicate your current relationship status.
_____ Single
_____ Dating
_____ Married
_____ Widowed

Please provide us with any comments you may have.

APPENDIX I – Debriefing Statement

Thank you for participating in this experiment. In this study, we were interested in determining how motivation to gain high social status impacts behavior. Research has shown that social group living involves a number of benefits (resource acquisition, mating opportunities, etc.; Richerson & Boyd, 1998). Additionally, these social groups tend to be arranged hierarchically. As such, to obtain the benefits associated with social living, members of a social group must obtain and maintain a higher position within the status hierarchy (Hawley, 1999).

In the current study, we were interested in determining if individuals' perceptions of others are influenced by motivations to obtain higher social standing. Humans have evolved to communicate in a face-to-face manner, and as a result, human faces convey a wealth of information. This includes affiliation or deceit via smile displays (Lustgraaf et al., 2015), and trustworthiness or untrustworthiness in an individual's facial structure (Slepian et al., 2012). As such, we hypothesized that individuals primed with social status motivations would more accurately identify these types of facial cues. We also hypothesized that this pattern of results would be especially pronounced for men, given that men have been shown to be especially sensitive to opportunities to ascend the status hierarchy (Trivers, 1972).

We did not tell you that this study was about social status and face perception because we wanted you to respond naturally to the experimental procedures. In order to see how people respond naturally, it was necessary not to reveal this aspect of the experiment prior to recording your responses. When people know about the purpose of some experiments ahead of time, they often cannot or will not behave as they normally would.

Due to the ongoing nature of this research, we would like to ask for your cooperation in not revealing any details of this study to others (e.g. friends, classmates) who might eventually participate in this study. These details could affect the way they perform in this experiment, which would adversely affect the nature of our study. If someone does ask, you can just tell them that you were asked to participate in a study about social perception, rather than providing specific details about the study.

If any part of this experiment has been traumatic for you in any way, please feel free to inform the experimenter. If you have further questions, please contact the experimenter listed on your consent form (Christopher Lustgraaf; xxxx.xxxx@usm.edu). Should you be interested in reading research related to this work, you can get more information from:

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