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The Visibility of Social Class from Facial Cues

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Abstract

Social class meaningfully impacts individuals' life outcomes and daily interactions, and the mere perception of one's socioeconomic standing can have significant ramifications. To better understand how people infer others' social class, we therefore tested the legibility of class (operationalized as monetary income) from facial images, finding across four participant samples and two stimulus sets that perceivers categorized the faces of rich and poor targets significantly better than chance. Further investigation showed that perceivers categorize social class using minimal facial cues and employ a variety of stereotype-related impressions to make their judgments. Of these, attractiveness accurately cued higher social class in self-selected dating profile photos. However, only the stereotype that well-being positively relates to wealth served as a valid cue in neutral faces. Indeed, neutrally-posed rich targets displayed more positive affect relative to poor targets and perceivers used this affective information to categorize their social class. Impressions of social class from these facial cues also influenced participants' evaluations of the targets' employability, demonstrating that face-based perceptions of social class may have important downstream consequences.

Keywords: social class, socioeconomic status, person perception, first impressions

The Visibility of Social Class from Facial Cues

A person's social class importantly impacts not only life outcomes but also daily social interactions. How people perceive others' social class is therefore important to understand, as such perceptions have the potential for significant downstream effects in interactions. Indeed, a wealth of research has demonstrated that nonverbal cues powerfully influence people's impressions (e.g., Ambady, Bernieri, & Richeson, 2000; Zebrowitz, 1997), yet little work has investigated the visibility of social class from nonverbal cues. Here, we tested the legibility of social class from the face and explored the cues involved in impressions of social class. We then examined how face-based impressions of social class might impact important real-world judgments, such as employment suitability (that could, in turn, perpetuate social class differences).

Social Class

Social class, often referred to as socioeconomic status in the literature, has a variety of both conceptual and operational definitions (Côté, 2011). Conceptual definitions range from ownership or means of production relationships to cultural identity, stemming from both objective resources and perceived rank in the social hierarchy. Operational definitions consist of varying combinations of income, education, occupation, and subjective perceptions of relative rank. Following Côté (2011), we therefore broadly defined social class here as "a dimension of the self that is rooted in objective material resources (income, education, and occupational prestige) and corresponding subjective perceptions of rank vis-à-vis others" (p. 47).

Social class is relatively stable across both the lifespan and between generations (see Bowles & Gintis, 2002; Mood, in press), contrary to laypeople's beliefs (Davidai & Gilovich, 2015). Class furthermore significantly shapes people's lives, both directly through differences in

resources and indirectly through (a) the environments that it engenders (e.g., neighborhoods and schools; Ridgeway & Fisk, 2012; Stephens, Markus, & Phillips, 2014), (b) distinct cultural practices and attitudes (Lareau & McCrory Calarco, 2012; Stephens & Townsend, 2013; Williams, 2012), and (c) differences in everyday interactions (Kraus, Rheinschmidt, & Piff, 2012; Ridgeway & Fisk, 2012). Social class also affects social perception for both targets and perceivers. For example, perceivers' social class affects the attributions they make: Higher-class individuals favor dispositional explanations whereas lower-class individuals tend toward contextual explanations (Kraus, Piff, & Keltner, 2009). Furthermore, lower-class individuals empathize more with others (Varnum, Blais, Hampton, & Brewer, 2015) and demonstrate greater interpersonal accuracy across various domains (Bjornsdottir, Alaei, & Rule, 2017; Kraus, Côté, & Keltner, 2010). On the part of targets, different social class groups carry distinct stereotypes that evoke disparate responses. For example, people stereotype the rich as competent and feel admiration for them but stereotype the poor as incompetent and feel pity for them (Fiske, Cuddy, Glick, & Xu, 2002). Furthermore, signaling higher social class through a stereotypically higher-class accent or by displaying luxury goods prompts more favorable judgments and behaviors from others (Giles & Sassoon, 1983; Nelissen & Meijers, 2011).

Despite recognizing these pronounced differences in the perception and treatment of people based on their social class, researchers have paid little attention to the visibility of social class from nonverbal cues. Yet people's impressions of social class form the starting point for these consequences. For instance, first impressions in job interviews can affect employment outcomes (Harris & Garris, 2008), and class-related impressions may heavily influence perceptions of someone's potential as an employee (Ridgeway & Fisk, 2012; Rivera & Tilcsik,

2016; Stephens et al., 2014). Understanding how people infer social class could therefore inform both basic and applied questions about the manifestation, legibility, and use of social class cues.

Social Perception of Class

The ecological theory of social perception suggests that people extract useful information about others from the environment, allowing them to perceive potentially valuable social information and adapt to it accordingly (McArthur & Baron, 1983). Perceiving cues to social class would allow people to identify who possesses power and resources. Accordingly, previous research indicates that people signal their social class through self-presentation in a variety of contexts, including their Facebook profiles (Becker, Kraus, & Rheinschmidt-Same, 2017), their homes (Davis, 1956), and their attire (e.g., shoes; Gillath, Bahns, Ge, & Crandall, 2012). Cues to social class therefore seem omnipresent, and judgments of social class inevitable. Little research has examined how people may unintentionally communicate their social class through nonverbal cues, however, leaving unanswered the question of how early in the perceptual process perceivers can detect it.

To date, only two studies have explored the legibility of social class from nonverbal cues. One found that perceivers accurately estimated American speakers' social class based on their accents (Kraus, Park, & Tan, in press). A separate investigation demonstrated that third-party observers could perceive social class from thin-slice recordings of dyadic interactions (Kraus & Keltner, 2009): Lower-class targets displayed more engagement cues (e.g., nodding) whereas higher-class targets exhibited more disengagement cues (e.g., checking their mobile phones). Similarly, perceivers can identify people's relative status within their work hierarchy from photographs of social interactions, using cues such as leaning forward towards the interaction partner (signaling higher status; Schmid Mast & Hall, 2004). These cues notwithstanding, facial

appearance alone may convey other nonverbal information and may serve as the seed from which such behaviors in interactions initiate and then cascade (e.g., Perrett, 2010; Zebrowitz, 1997). We therefore began our investigation by examining the visibility of social class from minimal cues captured in static images of the face.

Facial appearance heavily influences the nature of one's interpersonal interactions (Perrett, 2010). Moreover, people can reliably infer a variety of characteristics from individuals' faces (see Re & Rule, 2015a, for review). For example, perceivers accurately judge the faces of men who self-report high levels of openness as significantly more open to new experiences than they do the faces of men who self-report low levels of openness (Penton-Voak, Pound, Little, & Perrett, 2006). Perceivers can also detect various salient group memberships from people's faces, ranging from perceptually obvious distinctions (like race and sex) to perceptually ambiguous distinctions (like sexual orientation and political affiliation; Tskhay & Rule, 2013).

Even when the cues are subtle and ambiguous, such facial information can actively influence how people think and behave to meaningfully influence individuals' life outcomes. For instance, people who look more Afrocentric receive harsher criminal sentences (regardless of their race; Blair, Judd, & Chapleau, 2004), men's employment opportunities may depend on whether they look gay or straight (Rule, Bjornsdottir, Tskhay, & Ambady, 2016), and more competent-looking people tend to receive more votes in US elections (Todorov, Mandisodza, Goren, & Hall, 2005). People seem to automatically judge these and other social attributes from faces as soon as they see someone (e.g., Rule, Macrae, & Ambady, 2009). Moreover, the influence of facial appearance defies more relevant information. For example, people continue to evaluate Afrocentric-looking individuals as aggressive even after learning information to the contrary (Blair, Chapleau, & Judd, 2005) and reiterate their first impressions that someone is gay

or straight every time they see a face, even when they have learned otherwise (Rule, Tskhay, Freeman, & Ambady, 2014). Social perceptions from faces can therefore exert a strong and persistent influence on the impressions that people form, subsequently guiding how they act towards an individual and influencing that person's opportunities and well-being.

Given the amount of information communicated by the face, it therefore seems likely that people's faces might also exhibit cues to something as consequential and influential as social class. Indeed, not only would social class information hold value for perceivers, but the persistent influence of class differences in people's lives could fashion lasting effects on their facial appearance. For instance, Malatesta, Fiore, and Messina (1987) found a Dorian Gray effect whereby women's dispositions became etched into their facial appearance over the course of their lives. Adams, Garrido, Albohn, Hess, and Kleck (2016) similarly found that elderly women's dispositional positive affect was visible in their neutral facial expressions. Given (a) the potential visibility of social class and (b) the robust cognitive framework that links face perception to social behavior, social-class prejudices might reasonably manifest immediately upon meeting a person. More important, considering how much social class affects people's lives, its perception could feasibly shape interactions in ways that impact a person's life outcomes. We therefore tested the legibility of social class from facial appearance and the consequences of this legibility in the current work.

Possible Cues to Social Class

If the face does convey social class, it might do so through indirectly associated cues. For example, people with more wealth and power typically feel and express more positive affect (e.g., Diener & Biswas-Diener, 2002; Keltner, Gruenfeld, & Anderson, 2003), whereas poverty causes negative affect, including increased depression and anxiety (see Haushofer & Fehr, 2014).

People know that wealth and happiness relate (even overestimating how much; Aknin, Norton, & Dunn, 2009), and may therefore use positive facial expressions to infer someone's social class. Social class also predicts a variety of health outcomes: Lower social class individuals experience poorer health and increased mortality (e.g., Adler et al., 1994; Adler, Epel, Castellazzo, & Ickovics, 2000; Marmot et al., 1991; Singh-Manoux, Adler, & Marmot, 2003)—a difference echoed in nonhuman primate social hierarchies (Sapolsky, 2005). Because people can reliably detect both physical and mental health from the face (e.g., Daros, Ruocco, & Rule, 2016; Re & Rule, 2016), perceivers might also rely on facial cues to health when evaluating social class. Moreover, both happiness and health contribute to a person's overall well-being (see Seligman, 2008), which may be signaled by facial affect. Furthermore, affect can cue other perceptually ambiguous group memberships (e.g., sexual orientation, political ideology; Tskhay & Rule, 2015), and, as noted above, chronic affective differences may be reflected in even the neutral face (Adams et al., 2016; Malatesta et al., 1987). We thus tested whether perceived health and affect might accurately cue social class.

Beyond these valid correlates of social class, perceivers might also attempt to use stereotypes about the rich and poor to make their judgments (even if they do not provide accurate signals). Some of the most pervasive stereotypes about social class portray the rich as intelligent, cold, and possessing a strong work ethic; and characterize the poor as unintelligent, warm, and lazy (Durante, Tablante, & Fiske, 2017; Fiske et al., 2002; Spencer & Castano, 2007; Varnum, 2013). People also tend to imagine higher-class individuals as better-looking (Dermer & Thiel, 1975; Kalick, 1988), even perceiving *themselves* as higher in social class when made to feel more physically attractive (Belmi & Neale, 2014). Furthermore, facial dominance predicts status attainment and success in certain contexts (e.g., business, the military; Mueller & Mazur, 1996;

Re & Rule, 2015b), and people may extrapolate this to social class. Though many of these stereotypes might simply reflect expectations about the rich and poor (rather than actual differences between them; see Varnum, 2013), even stereotypes that bear kernels of truth may not manifest in a person's face. We therefore tested whether perceivers infer attractiveness, dominance, intelligence, laziness, and warmth to judge social class from faces and whether these stereotypes might actually provide valid cues.

The Current Research

In our studies, we operationally defined social class according to income, as income information is commonly reported and may predict social-class outcomes better than some other contributing factors (such as education; e.g., Côté et al., 2017). We began by testing whether perceivers could accurately categorize faces as belonging to rich or poor individuals (Study 1). Next, we investigated which physical features of the face support social-class judgments (Study 2). We then tested how actual and stereotypical cues to wealth related to social-class inferences (Study 3). To provide a more conservative test of the visibility of social class in the face, we replicated Study 1 using highly standardized targets (Study 4) and then thoroughly tested potential cues to class (Studies 4-6). Finally, we examined how facial cues to social class impact judgments of one's employment suitability, a life outcome highly relevant to existing and future class differences between individuals (Study 7). All studies received Research Ethics Board approval.

Study 1

We first tested whether participants could accurately categorize targets as rich or poor from facial photographs. Based on the social value of facial information and the importance of social class and resource distribution for navigating social relationships (e.g., Ridgeway & Fisk,

2012; Stephens et al., 2014; Zebrowitz & Collins, 1997), we hypothesized that perceivers would attune to social class and thus demonstrate rates of accuracy exceeding chance. We also explored whether perceivers' class biases, essentialist beliefs regarding social class, or own social class might moderate their accuracy.

Method

We conducted a power analysis using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007), anticipating the average effect size in social psychology (r = .21; Richard, Bond, & Stokes-Zoota, 2003), which revealed that we would need at least 73 participants to achieve 95% power for a single-sample t-test with a 5% false-positive rate. In total, 81 Canadian undergraduates (97% power; 68 female, 13 male; M_{age} = 19.30 years, SD = 1.91; 34 East Asian, 24 Caucasian, 11 South Asian, 3 Middle Eastern, 2 African, 2 mixed-race, 1 Hispanic, 4 unspecified ethnicity) participated in exchange for partial course credit or monetary compensation.

Hypothesis-blind research assistants collected 160 (80 male, 80 female; all Caucasian) face stimuli from web-based dating advertisements of people between the ages of 18 and 35 in major US cities, all without facial hair or adornments (e.g., glasses, piercings; see also Tskhay, Clout, & Rule, 2017).[1] The targets were collected in 2013, all reporting incomes well above or

[1] Although we did not know each target's specific age, perceptions of individuals' age often strongly correlate with their actual ages (e.g., George & Hole, 2000). We therefore asked 30 independent participants to estimate the targets' ages, finding that they did not significantly correlate with either their actual, $r(158) = .02$, $p = .78$, or perceived social class, $r(158) = .12$, $p = .14$. Thus, we feel confident that age differences did not confound our results.

below the median income in US metropolitan areas for that year ($56,798; US Census Bureau, 2014). Thus, half of the targets reported annual incomes over $150,000 and half reported annual incomes below $35,000; we hereafter refer to these groups as rich and poor, respectively. We removed the faces from their original backgrounds; cropped them around their hair, ears, and chins; converted them to grayscale; and standardized them in height (see Figure 1A). All targets' gazes faced the camera, but both photo angle and emotional expression varied between targets.

Participants began by categorizing the faces as *rich* or *poor* in random order at their own pace; we instructed them to base their categorizations on their first impressions. Following the categorization task, participants completed several exploratory measures of classism (i.e., class-based bias) and social class essentialism in counterbalanced order. We measured classism using Stevenson and Medler's (1995) Economic Belief Scale (interitem $\alpha = .78$) with five additional questions assessing attitudes towards wealthy people, as the original scale items only measured attitudes towards the poor (interitem $\alpha = .74$; see Appendix A). We also adapted questions used by Haider et al. (2011) to measure class preference, ranging from 1 (*I strongly prefer wealthy people to poor people*) to 7 (*I strongly prefer poor people to wealthy people*), and warmth toward rich and poor people, ranging from 0 (*coldest feelings*) to 9 (*warmest feelings*). To assess social class essentialism, we used Kraus and Keltner's (2013) Essentialist Beliefs about Social Class Categories Scale (interitem $\alpha = .73$). Finally, participants provided basic demographic information, including their family income and subjective social class (measured using the MacArthur Scale of Subjective Social Status; see Adler et al., 2000).

Results

We calculated participants' categorization performance using the signal detection statistic *A'* to measure accuracy (with *A'* = .50 indicating chance) and *B''* to measure response bias (see

Macmillan & Creelman, 2005), arbitrarily counting categorizations of poor targets as *poor* as hits and categorizations of rich targets as *poor* as false alarms (for hit and false alarm rates across all studies, see Table S1 in the Online Supplemental Material; OSM). Overall, participants categorized the targets' social class significantly better than chance ($M_{A'}$ = .61, *SD* = .07), $t(80)$ = 13.35, $p < .001$, $r_{\text{effect size}}$ = .83. Response bias did not differ significantly from zero ($M_{B''}$ = .02, *SD* = .15), $t(80)$ = 1.30, p = .20, $r_{\text{effect size}}$ = .14, indicating that participants categorized targets as rich and poor at similar rates.[2]

For our exploratory analyses, we regressed the participants' accuracy and response bias scores onto the six potential moderator variables (classism, class preference, class warmth, social class essentialism, the perceivers' incomes, and their subjective social class) in separate simultaneous multiple linear regressions (see Table 1 for descriptive statistics and correlation matrix). We first calculated classism scores by averaging participants' responses to the questions assessing bias towards lower-class people and subtracting this mean from the average of

[2] We had no specific hypotheses about differences in the legibility of men's and women's social class, though exploratory tests showed small differences favoring the legibility of women over men (M_r = .07, 95% CI [.01, .13]) and a bias to categorize women as rich more often than men (M_r = .09, 95% CI [.03, .15]) when aggregating the mean effect sizes across all of our studies. We do not discuss this further but believe the question worthy of further examination in future research. We additionally found male perceivers to be less accurate than female perceivers (M_r = -.09, 95% CI [-.03, -.15]), consistent with females' increased interpersonal accuracy in various domains (e.g., Hall, 1984), but did not find any significant differences in response bias based on perceiver gender (M_r = -.04, 95% CI [-.10, .02]).

responses to questions measuring upper-class bias. Negative scores thus indicated more bias against poor versus rich people, whereas positive scores indicated more bias against rich versus poor people. Similarly, we computed class warmth by subtracting warmth towards the rich from warmth towards the poor—negative scores therefore signaled more warmth towards rich versus poor people, and positive scores signaled more warmth towards poor versus rich people. None of these individual difference variables significantly related to the participants' accuracy or response bias scores (see Table S2 in the OSM).

Replication

Method. To assure the validity of our results, we wanted to replicate the findings with a second sample. Rather than test undergraduates, we paid 80 American Mechanical Turk (MTurk) Workers (97% power; 40 female, 31 male, 9 unknown; M_{age} = 42.07 years, *SD* = 12.01; 52 Caucasian, 6 Hispanic, 5 East Asian, 4 African, 3 mixed-race, 1 Native American, 9 unspecified ethnicity) to follow the same procedure as above. Given the null results for our explicit measures of classism, we added an implicit classism measure immediately following the categorization task. Specifically, participants completed an Implicit Association Test modified from those described by Nosek et al. (2007) in which they classified positive and negative words as either *good* or *bad,* and social class terms (e.g., *white collar, blue collar*) as pertaining to either *rich people* or *poor people* (see Appendix B for full list of terms used). We then combined the categories (e.g., *good or rich people* vs. *bad or poor people*), and analyzed the participants' response latencies for these categorizations to assess their implicit classism. Finally, participants completed the same explicit measures of class bias and social class essentialism as above (again in counterbalanced order), ending with demographic questions that included questions about their annual household income and subjective social class.

Results. Participants again categorized the targets as rich and poor significantly better than chance ($M_{A'}$ = .64, *SD* = .06), $t(79) = 20.30$, $p < .001$, $r_{\text{effect size}} = .92$ (see Table S3 in the OSM for correlation matrix). The participants' response bias scores ($M_{B''}$ = -.03, *SD* = .10) significantly departed from zero in this sample, however, indicating a tendency to categorize targets as poor more often than rich, $t(79) = -2.16$, $p = .03$, $r_{\text{effect size}} = -.24$. Regressing the participants' accuracy and response bias scores onto our seven potential moderator variables (class preference, class warmth, explicit classism, implicit classism, self-reported annual income, social class essentialism, and subjective social class) in separate simultaneous multiple linear regressions returned only one significant result: Income significantly negatively predicted response bias, such that participants with higher incomes were more likely to categorize targets as poor than as rich (see Table S4 in the OSM).

Discussion

Here, we found that perceivers could distinguish rich (annual incomes above $150,000) and poor (annual incomes below $35,000) men and women from photos of their faces better than chance. These data expand upon previous research showing above-chance accuracy for discerning membership in perceptually ambiguous groups (Tskhay & Rule, 2013) and sensitivity to social-class status via nonverbal cues in dyadic interactions (Kraus & Keltner, 2009) and voice recordings (Kraus et al., in press). None of our exploratory moderators consistently significantly predicted participants' categorization performance, however, suggesting that the ability to judge

others' social class may not vary according to the perceivers' own social class or related attitudes.[3]

Study 2

The results of Study 1 provided evidence for the visibility of social class from faces. To better understand the basis of these judgments, we investigated which facial features might allow individuals to accurately categorize social class in Study 2. We began by testing whether information about social class in the face emerges from its configuration or from individual features by asking participants to categorize inverted faces as rich or poor in Study 2A. We then examined judgments from the upper and lower halves of the faces in Study 2B to determine where the cues to social class lie in the face. Finally, we investigated participants' accuracy when judging individual features (the eyes or mouth) in Study 2C.

Study 2A

Method. Inversion disrupts the spatial relations between facial features (see Maurer, Le Grand, & Mondloch, 2002). Thus, failure to accurately categorize social class from inverted faces would suggest that the layout of the features in the face proves critical to participants' ability to make their judgments. If participants' accuracy for categorizing inverted faces rivals that of upright faces, however, it would suggest that individual features might carry sufficient information to infer social class. We therefore recruited 150 American MTurk Workers (74 female, 76 male; M_{age} = 37.01 years, SD = 11.80; 117 Caucasian, 12 African, 9 Hispanic, 7 East

[3] Although we had only 46% power to detect effects the size of the average in social psychology in these exploratory analyses (r = .21; Richard et al., 2003), we subsequently replicated these null findings using a much larger sample (N = 293) with 95% power (see Study S1 in the OSM).

Asian, 2 mixed-race, 1 Native American, 1 South Asian, 1 unspecified ethnicity), again anticipating the average effect size in social psychology (r = .21, Richard et al., 2003) for two one-sample t-tests (96% power), and randomly assigned them to complete the same rich/poor categorizations as in Study 1 either with the stimuli as originally presented (N = 72) or with all of the stimuli inverted 180° along the vertical plane (N = 78; see Figure 1B). They then provided basic demographic information. Six participants reported problems with the stimuli loading; we therefore excluded their data from the analyses (final n = 144; 73 female, 71 male; M_{age} = 37.01 years, SD = 11.71; 114 Caucasian, 12 African, 9 Hispanic, 5 East Asian, 1 mixed-race, 1 Native American, 1 South Asian, 1 unspecified ethnicity), resulting in 73 participants in the inverted condition and 71 in the upright condition (95% power).[4]

Results and discussion. Signal detection analyses showed that participants' categorizations significantly exceeded chance accuracy for both the upright ($M_{A'}$ = .63, SD = .07), $t(70) = 15.41$, $p < .001$, $r_{effect\ size} = .88$, and inverted faces ($M_{A'}$ = .56, SD = .07), $t(72) = 6.62$, $p < .001$, $r_{effect\ size} = .62$; though significantly more so for the upright faces, $t(142) = 6.32$, $p < .001$, $r_{effect\ size} = .47$. Participants furthermore showed no bias towards one or the other response category in either the upright ($M_{B''}$ = -.02, SD = .14), $t(70) = -0.94$, $p = .35$, $r_{effect\ size} = -.11$, or inverted stimulus condition ($M_{B''}$ = .01, SD = .06), $t(72) = 1.68$, $p = .10$, $r_{effect\ size} = .19$.

[4] Participant attrition did not significantly differ between conditions in any of the studies in which we made between-subject comparisons (all χ^2s ≤ 2.00, ps $\geq .16$, Φs $\leq .11$), suggesting that different attrition rates did not account for the differences between conditions (see Zhou & Fishbach, 2016).

These data suggest that the face's configuration may not provide the only cues to social class, though it allows for more accurate perceptions. We therefore further explored the specific facial features that perceivers might use to judge social class in Studies 2B and 2C.

Study 2B

Method. To narrow the scope of which facial features perceivers use to judge targets' social class, we split each of the faces from Study 1 into their upper and lower halves at the nose bridge (see Figures 1C and 1D) and randomly assigned 150 American MTurk Workers (83 female, 67 male; M_{age} = 39.31 years, SD = 12.75; 114 Caucasian, 19 African, 6 East Asian, 3 mixed-race, 2 Hispanic, 1 Native American, 1 South Asian, 1 Southeast Asian, 3 unspecified ethnicity) to categorize either the top (N = 73) or bottom halves (N = 77) as rich or poor following the same procedure as in Study 2A, achieving at least 95% power for a one-sample t-test in each condition.

Results and discussion. Signal detection analyses showed that participants categorized both the upper ($M_{A'}$ = .59, SD = .06), $t(72) = 12.01$, $p < .001$, $r_{\text{effect size}} = .82$, and lower ($M_{A'}$ = .60, SD = .01), $t(76) = 11.99$, $p < .001$, $r_{\text{effect size}} = .81$, halves of the faces significantly better than chance. Furthermore, accuracy did not differ between the two conditions, $t(148) = 1.01$, $p = .31$, $r_{\text{effect size}} = .08$. Response bias did not significantly differ from zero for categorizations of either the upper ($M_{B''}$ = .00, SD = .05), $t(72) = 0.03$, $p = .98$, $r_{\text{effect size}} = .004$, or lower halves of the faces ($M_{B''}$ = .01, SD = .07), $t(76) = 1.10$, $p = .28$, $r_{\text{effect size}} = .13$. Thus, perceivers may draw information from both halves to infer social class. We therefore proceeded to examine individual features within each half of the face in Study 2C.

Study 2C

Method. To elucidate the specific facial features that perceivers use to judge social class, we cropped each target's eyes and mouth from the photos in Study 1 (see Figures 1E and 1F) and randomly assigned 150 American MTurk workers (74 female, 76 male; M_{age} = 33.49 years, *SD* = 11.41; 112 Caucasian, 17 East Asian, 10 African, 5 mixed-race, 3 Hispanic, 1 South Asian, 2 unspecified ethnicity) to categorize just the eyes (N = 73) or mouths (N = 77) following the same procedure as in Studies 2A and 2B (again accruing at least 95% power for a one-sample *t*-test in each condition).

Results and discussion. Participants categorized both the targets' mouths ($M_{A'}$ = .58, *SD* = .08), $t(76) = 8.55$, $p < .001$, $r_{effect\ size} = .70$, and eyes ($M_{A'}$ = .52, *SD* = .07), $t(72) = 1.95$, $p = .03$, $r_{effect\ size} = .22$, significantly better than chance. However, participants who judged the mouths achieved significantly greater accuracy than those who judged the eyes, $t(148) = 4.71$, $p < .001$, $r_{effect\ size} = .36$. Response bias did not significantly differ from zero for either the mouths ($M_{B''}$ = .01, *SD* = .09), $t(76) = 0.75$, $p = .46$, $r_{effect\ size} = .09$, or eyes ($M_{B''}$ = .01, *SD* = .05), $t(72) = 1.16$, $p = .25$, $r_{effect\ size} = .14$.

Perceivers may use social-class cues visible in both the eyes and mouth, but those in the mouth may signal class more clearly. One candidate for the basis of these judgments may be affect, which is conveyed by expressions in both the eyes and mouth (e.g., Yuki, Maddux, & Masuda, 2007) and underlies the accuracy of discerning other ambiguous group memberships (Tskhay & Rule, 2015). Additionally, cues to affect are often more obvious in the mouth than in the eyes (at least for Western perceivers; Yuki et al., 2007). We therefore explored whether affect and other relevant cues might support accurate judgments of social class in Study 3.

Study 3

Although we explored the physical features that perceivers use to judge social class in Study 2, we sought to specify the cues that those features might carry in Study 3. We asked participants to rate a variety of traits related to stereotypes of high and low social class documented in previous work (i.e., attractiveness, dominance, empathy, intelligence, and warmth; Durante et al., 2017; Fiske et al., 2002; Spencer & Castano, 2007; Varnum, 2013). Because stereotypes of groups can affect perceivers' impressions of who belongs in those groups, impressions of stereotype-relevant traits may drive categorizations (e.g., Hutchings & Haddock, 2008; Tskhay & Rule, 2013, 2015).

We were most interested in obtaining participants' judgments of health and affect, however. As noted above, not only does health relate to social class (e.g., Adler et al., 1994), it is also quite legible from the face (see Re & Rule, 2016, for review). Similarly, affect relates to wealth and power (Diener & Biswas-Diener, 2002; Haushofer & Fehr, 2014; Keltner et al., 2003), serves an important role in cuing other perceptually ambiguous group memberships (Tskhay & Rule, 2015), and (perhaps most important) is principally visible in the eyes and mouth—two critical facial features that we identified in Study 2. We therefore examined how impressions of these qualities related to targets' actual and perceived social class using a lens model (e.g., Gosling, Ko, Mannarelli, & Morris, 2002) to compare the utility and validity of each as a cue to social class.

Method

We recruited 218 participants (109 female, 108 male, 1 other; M_{age} = 36.03 years, *SD* = 13.32; 144 Caucasian, 21 East Asian, 16 African, 15 Hispanic, 9 South Asian, 5 mixed-race, 3 Southeast Asian, 2 Middle Eastern, 1 Native American, 1 Pacific Islander, 1 unspecified ethnicity), 48 Canadian undergraduates and 170 American MTurk Workers, for roughly 30

participants per trait rating—the number of perceivers necessary to reach good inter-rater reliability (i.e., Cronbach's $\alpha \geq .80$) in previous person perception research (e.g., Rule et al., 2016; Tskhay & Rule, 2015). We excluded the data of seven participants who reported trouble viewing the stimuli (final $n = 211$; 108 female, 102 male, 1 other; $M_{age} = 36.13$ years, $SD = 13.27$; 141 Caucasian, 20 East Asian, 16 African, 14 Hispanic, 8 South Asian, 5 mixed-race, 3 Southeast Asian, 2 Middle Eastern, 1 Pacific Islander, 1 unspecified ethnicity).

We randomly assigned participants to rate the faces from Study 1 in random order on one of seven traits (affect, attractiveness, dominance, empathy, health, intelligence, or warmth) from 1 (*not at all*) to 7 (*very*) in response to the question "How *X* is this person?". For affect, we asked participants, "How does this person feel right now?" alongside a response scale ranging from -3 (*negatively*) to 3 (*positively*). We converted these responses to a 1 to 7 scale to parallel the other ratings. Participants then provided basic demographic information.

Results

Inter-rater reliability for the trait ratings ranged from acceptable to excellent (Cronbach's αs = .74 – .95). Because many of the traits were conceptually similar, we began by conducting an exploratory factor analysis using promax rotation. This revealed two factors that we used to form composites by averaging the items with factor loadings at or above .45. The first of these (Attractiveness, 27% variance explained) consisted of attractiveness, health, and intelligence ratings, whereas the second (Positivity, 47% of variance explained) consisted of affect, empathy, warmth, and reverse-coded dominance ratings (see Table 2).

We then computed a lens model to examine the degree to which Positivity and Attractiveness veridically signaled targets' social class, and the extent to which perceivers used these cues in their categorizations. We thus calculated the correlation between targets' social

class (coded 0 = poor, 1 = rich) and both the Positivity and Attractiveness composite scores to evaluate the validity of these two cues—that is, how much each cue accurately signaled targets' social class. Moreover, we calculated the correlation between targets' likelihood to be categorized as rich (averaged across perceivers in Study 1 and its replication) with the Positivity and Attractiveness scores to examine perceivers' utilization of the cues. Our 160 targets afforded 77% power to detect correlations the size of the average in social psychology ($r_{\text{effect size}} = .21$; Richard et al., 2003).

Targets' likelihood to be categorized as rich ($M = 50\%$, $SD = 19\%$) correlated significantly with both Positivity ($M = 4.65$, $SD = 0.67$), $r(158) = .44$, $p < .001$, and Attractiveness ($M = 4.24$, $SD = 0.42$), $r(158) = .80$, $p < .001$—thus, both served as utilized cues. However, only Attractiveness significantly correlated with targets' actual social class, $r(158) = .36$, $p < .001$, whereas Positivity did not, $r(158) = .11$, $p = .17$. Perceivers therefore appeared to correctly use Attractiveness to perceive targets' social class (see Figure 2).

Discussion

Perceptions of targets' Positivity (a composite of positive affect, empathy, warmth, and reversed dominance ratings) and Attractiveness (a composite of attractiveness, health, and intelligence ratings) served as utilized cues in perceivers' social class categorizations. That is, the participants in Study 1 were more likely to categorize as rich those targets that participants in Study 3 rated higher on Positivity and Attractiveness. This suggests that perceivers use class-related stereotypes (e.g., of the rich being happier and more attractive) when categorizing people as rich or poor. Only Attractiveness validly cued targets' actual social class, however. Unsurprisingly, then, not all wealth-related stereotypes are correct. However, we should note that because the correlation between targets' actual social class and Positivity ratings was small, we

may not have had sufficient power to detect a significant effect of this magnitude. Moreover, Attractiveness might particularly signal social class among the current targets because we obtained the stimuli from online dating advertisements. We therefore tested the perceptibility of social class using a more controlled stimulus set in Study 4.

Study 4

Across Studies 1-3, we found that people could accurately perceive social class from facial features with some indication that inferences of the targets' Attractiveness might underlie the accuracy of these judgments. Despite the benefits that the diversity of our stimuli provided in terms of ecological validity, however, we worried that using photos from online dating advertisements might have confounded our results because of targets' potential self-presentation motives and image variability (e.g., in camera angle and emotional expression). We therefore repeated our investigation of the legibility of social class from the face using neutrally posed photos taken under standardized conditions in the lab in Study 4A and investigated the trait inferences that might underlie these judgments in Study 4B.

Study 4A

Method. Hypothesis-blind research assistants collected 160 standardized facial photographs of Canadian undergraduate targets (M_{age} = 19.36 years, SD = 2.37) posing neutral expressions, evenly split by ethnicity (Caucasian, East Asian) and gender, from an in-house database that included information about their self-reported annual family incomes.[5] We included both Caucasian and East Asian targets to increase the generalizability of our findings,

[5] Similar to the targets used in Studies 1-3, target age did not correlate with actual, $r(158) = -.09$, or perceived social class, $r(158) = -.06$, across our studies.

and we furthermore used family income rather than individual income in this target sample, as this should more accurately reflect social class among undergraduates. The median household income in Canada is $76,550 (Statistics Canada, 2013); thus, we defined targets with family incomes below $60,000 as poor ($n$ = 80) and above $100,000 as rich ($n$ = 80).[6] Most of the targets (67%) had lived in Canada for at least 10 years, ensuring that we could interpret their family incomes within the Canadian economic context. Those who had resided in Canada for less than 10 years all had family incomes either below $20,000 or above $100,000, values respectively below and above the median household incomes in the countries from which most undergraduates at our university originate (Gallup, 2013).

All targets' faces were free of facial hair and adornments such as glasses or piercings. We cropped, grayscaled, and resized the facial images, as we had for the previous stimulus set (see Figure 1A). We then recruited 76 American MTurk Workers (48 female, 28 male; M_{age} = 42.37 years, SD = 13.85; 62 Caucasian, 7 African, 3 East Asian, 1 Hispanic, 1 mixed-race, 1 Native American, 1 Pacific Islander) to categorize the targets as rich or poor based on their first impressions (96% power based on the same parameters described in Study 1). We excluded the trials for two rich targets and two poor targets whose photos did not display properly due to a programming error, resulting in a total of 156 targets. Participants reported basic demographic information after completing the categorization task.

[6] Our poor targets fell into three family income brackets: under $20,000, $20-39,999, and $40-59,999. Throughout our studies, the legibility of the targets' social class did not differ between these groups, allowing us to collapse them into one "poor" category.

Results and discussion. Replicating Study 1, categorization accuracy ($M_{A'}$ = .52, *SD* = .06) significantly exceeded chance, $t(75) = 2.39$, $p = .01$, $r_{\text{effect size}} = .27$, and response bias ($M_{B''}$ = -.01, *SD* = .05) fell significantly below zero, $t(75) = -2.07$, $p = .04$, $r_{\text{effect size}} = -.23$, indicating that participants categorized the targets more often as poor than as rich.[7] Unsurprisingly, participants' mean accuracy was lower here than in Study 1 because our stricter standardization procedures would have removed potential cues, providing a much more conservative test. We therefore proceeded to explore the cues that participants might have used to discern these targets' social class in Study 4B.

Study 4B

Method. To explore the cues signaling social class in our more controlled stimulus set, we asked 244 American MTurk Workers (131 female, 112 male, 1 other; M_{age} = 34.57 years, *SD* = 11.73; 168 Caucasian, 26 East Asian, 15 African, 10 Hispanic, 8 mixed-race, 8 South Asian, 3 Southeast Asian, 2 Middle Eastern, 1 Pacific Islander, 3 unspecified ethnicity) to rate the targets from Study 4A on one of how attractive, educated, empathetic, dominant, intelligent, hard-working, healthy, or warm they looked from 1 (*not at all*) to 7 (*very*), similar to Study 3 (again assigning roughly 30 participants per trait rating to ensure good inter-rater reliability). We added

[7] As with gender, we had no specific hypotheses regarding possible differences due to ethnicity. Exploratory analyses showed no substantial differences in accuracy for categorizations of East Asian versus Caucasian targets, M_r = -.08, 95% CI [-.16, .01], but did find a bias to categorize East Asian targets as poor across the present studies, M_r = -.15, 95% CI [-.24, -.07]. Moreover, neither accuracy, M_r = .02, 95% CI [-.05, .08], nor response bias, M_r = -.05, 95% CI [-.11, .01], differed according to participants' ethnicity.

ratings of education and work ethic to test whether these stereotypes might relate to social class independent of intelligence, and excluded ratings of affect because the targets all posed neutral expressions. Participants provided basic demographic information at the end of the study. We excluded the data of nine participants who reported trouble viewing the face images (final n = 235; 126 female, 108 male, 1 other; M_{age} = 34.76 years, SD = 11.82; 164 Caucasian, 25 East Asian, 14 African, 10 Hispanic, 8 mixed-race, 7 South Asian, 3 Southeast Asian, 2 Middle Eastern, 2 unspecified ethnicity).

Results and discussion. Inter-rater reliability ranged from acceptable to excellent (Cronbach's αs = .73 – .93) for all but the education ratings (Cronbach's α = .55), which we therefore excluded from the analyses. As in Study 3, we conducted an exploratory factor analysis using promax rotation. This revealed three factors, which we termed Attractiveness (25% variance explained), Diligence (23% variance explained), and Positivity (28% variance explained; see Table 3), again forming composites by averaging the ratings for traits with factor loadings of .45 or greater.

We next computed a lens model by calculating the correlations between targets' scores on each of the three composites and their average categorization as rich (M = 46%, SD = 16%) to assess the utilized cues, and between the composites and the targets' actual social class (coded 0 = poor, 1 = rich) to assess cue validity. This revealed that Attractiveness (M = 4.08, SD = 0.57), Diligence (M = 4.34, SD = 0.36), and Positivity (M = 3.74, SD = 0.41) all served as utilized cues. Of these, only Positivity also functioned as a valid cue (albeit marginally; see Figure 3). These findings depart from those in Study 3, where Attractiveness served as a valid cue but Positivity did not.

Differences between the two stimulus sets might explain this inconsistency. In Study 3, we used stimuli from dating advertisements. Not only might this have inflated the relevance of traits related to Attractiveness due to the targets' motivations, but most of these targets expressed positive affect in the pictures they used to advertise themselves to potential romantic partners. Here, however, we used stimuli collected under strictly controlled conditions in the lab that required the targets to pose neutral expressions. Variations in impressions of Positivity might therefore better indicate well-being (and, by extension, social class) in neutral faces because chronic contraction of particular facial muscles during emotional expression can lead to structural changes in the face that can become masked by active emotional expressions (see Adams et al., 2016; Malatesta et al., 1987). Indeed, previous research has reported that neutral faces convey subtle cues to affect that impact impression formation (Adams, Nelson, Soto, Hess, & Kleck, 2012). Such subtle affective expressions could therefore cue targets' social class, reflecting the correlation between wealth and well-being (e.g., Diener & Biswas-Diener, 2002). We tested this possibility by measuring perceptions of affect from these neutral faces in Study 5.

Study 5

In Study 4, we confirmed the legibility of social class using a highly controlled stimulus set developed in our laboratory. Here, inferences of the targets' Positivity seemed to underlie judgments of the targets' social class, according with previous research reporting positive correlations between subjective well-being (including positive affect) and wealth (e.g., Diener & Biswas-Diener, 2002). Yet the traits comprising our Positivity composite in Study 4B only indirectly measured affect (cf. Study 3). We therefore investigated the role of affect in judgments of social class more directly in Study 5.

Notably, the highly standardized targets that we tested in Study 4 all consisted of neutrally posed individuals. Thus, to first explore the possibility that the rich and poor targets differed in affect, we morphed them together to isolate their common cues in Study 5A. To extend our investigation to the individual faces, we then asked participants to rapidly evaluate the faces' affect and social class in Study 5B so that the targets' obviously neutral expressions would not obscure the perception of very subtle affective cues (Adams et al., 2012; Rule, Tskhay, Freeman, & Ambady, 2014). The subtext of both previous research and Study 4 has suggested that rich individuals might display more positive affect. We therefore expected to find that morphed averages of the neutral rich faces would display more positive affect than the morphed averages of the neutral poor faces in Study 5A and that rapid judgments of the individual neutral faces' affect would positively correlate with higher perceived and actual social class in Study 5B.

Study 5A

Method. To explore the possibility that affect might cue social class in neutral faces, we first asked participants to rate the affect of composite images that we created by using Psychomorph (Tiddeman, Stirrat, & Perrett, 2005) to average the rich and poor targets tested in Study 4 according to each Gender (male, female) × Ethnicity (Caucasian, East Asian) combination.

We created two sets of composites. One consisted of all 20 targets from each of the four gender and ethnicity groups (Full Composites), which helped us to isolate the valid cues to social class by aggregating their common features. The other consisted of only the five most accurately categorized rich and poor targets within each group (Best Composites; $M_{\text{accurate categorizations}} = 68\%$, $SD = 7\%$), which helped us to isolate the valid cues that the participants actually used to make

their judgments. This resulted in 16 composite images (eight Best Composites and eight Full Composites), evenly split by social class, gender, and ethnicity (see Figure 4).

We then recruited 40 American MTurk Workers (25 female, 14 male, 1 other; M_{age} = 39.98 years, *SD* = 12.09; 30 Caucasian, 5 East Asian, 2 African, 1 Hispanic, 1 mixed-race, 1 unspecified ethnicity) to rate *How does this person feel right now?* from -3 (*negatively*) to 3 (*positively*) for each of the 16 composite images in random order. Because we had so few targets, we compared the participants' ratings of the rich versus poor composite targets within subjects; this design yielded more than 99% power in a paired-samples *t*-test, based on the average effect size across four previous studies examining emotion and perceptions of other ambiguous groups ($\bar{r}$ = .62; Tskhay & Rule, 2015).

Results and discussion. Participants rated the rich Best Composites (*M* = 0.74, *SD* = 0.52) as expressing significantly more positive affect than the poor Best Composites (*M* = -0.66, *SD* = 0.65), $t(39) = 14.92$, $p < .001$, $r_{effect\ size} = .92$. They also rated the rich Full Composites (*M* = 0.31, *SD* = 0.52) as displaying significantly more positive affect than the poor Full Composites (*M* = -0.06, *SD* = 0.43), $t(39) = 4.96$, $p < .001$, $r_{effect\ size} = .62$. Comparing the perceivers' ratings to zero (i.e., "neutral" on the rating scale) suggested that they perceived the rich composites as expressing positive affect for both the Full, $t(39) = 3.77$, $p < .001$, $r_{effect\ size} = .52$, and Best Composites, $t(39) = 9.09$, $p < .001$, $r_{effect\ size} = .82$. Complementarily, they rated the poor Best Composites as expressing negative affect, $t(39) = -6.50$, $p < .001$, $r_{effect\ size} = -.72$; however, they did not rate the poor Full Composites as significantly different from neutral, $t(39) = -0.83$, $p = .41$, $r_{effect\ size} = -.13$.

Given that the Full Composites represent the common cues visible in all of the rich and poor faces, the significantly greater positive affect displayed by the rich Full Composites

compared to the poor Full Composites suggests that affect may represent a valid cue to social class. Moreover, the significantly greater positive affect displayed by the rich versus poor Best Composites (which illuminate the valid cues that perceivers actually use to make their accurate categorizations) suggests that perceivers tune into this affect difference and employ it to judge social class.

These relative differences notwithstanding, participants rated both types of rich composites as positive (i.e., significantly above the scale midpoint marking neutral), rated the poor Best Composite as negative (i.e., significantly below the scale midpoint marking neutral), and rated the poor Full Composite as effectively neutral (i.e., not significantly different from the scale midpoint marking neutral). Thus, it seems that relative (rather than absolute) differences in affect communicate social class: Rich targets display more positive affect relative to poor targets, and greater differences in affect between the rich and poor groups result in more accurate categorizations.

These results rely on judgments of morphed composites of the faces, however. We therefore wanted to relate them back to the individual constituent faces. Previous research has shown that perceivers overwrite their initial impressions of targets' attributes when provided sufficient time to perceive them (Rule et al., 2014). Thus, by limiting their exposure to the faces, we can glean participants' immediate judgment of the faces' affect before they recognize their neutral expressions. To reliably assess perceptions of affect from neutrally posed faces, we therefore asked participants in Study 5B to rate affect after viewing the faces for very brief amounts of time and related these judgments to the targets' actual and perceived social class while employing the same time constraints.

Study 5B

Method. We recruited 42 Canadian undergraduate students (27 female, 13 male, 2 unknown; M_{age} = 19.10 years, *SD* = 1.54; 12 Caucasian, 9 East Asian, 9 South Asian, 3 African, 2 mixed-race, 1 Hispanic, 1 Middle Eastern, 1 Southeast Asian, 4 unspecified ethnicity) to rate the targets' affect and 93 Canadian undergraduates (74 female, 16 male, 1 other, 2 unknown; M_{age} = 19.28 years, *SD* = 2.29; 28 East Asian, 22 Caucasian, 10 South Asian, 6 Middle Eastern, 5 mixed-race, 4 African, 3 Southeast Asian, 2 Caribbean, 2 Pacific Islander, 1 Hispanic, 10 unspecified ethnicity) to categorize them as rich or poor. These sample sizes allowed us to achieve good or better inter-rater reliability for the affect ratings (e.g., Cronbach's $\alpha \geq .80$; as detailed in Study 3) and to reach 98% power for the categorizations (based on the same parameters described in Study 1). We presented the stimuli used in Study 4 for 500 ms, followed by a 500-ms mask.[8] Participants then either rated the targets' affect (answering "How does this

[8] We also ran a study using the same procedure but with stimulus and mask presentations of 100 ms, rather than 500 ms. Although affect ratings for the two presentation times strongly correlated, $r(158) = .89$, $p < .001$, categorization accuracy at 100 ms ($M_{A'} = .49$, *SD* = .13) did not exceed chance guessing, $t(92) = -0.73$, $p = .77$, $r_{effect\ size} = -.08$. If perceivers do infer targets' social class from their affect, they would likely process affect more quickly than class. This aligns with previous research finding that top-down evaluations of targets (here, associating wealth and happiness) occurs later in processing than the immediate bottom-up perception of visual cues (Rule et al., 2014).

person feel right now?") from 1 (*negatively*) to 7 (*positively*) or categorized them as rich versus poor, depending on their assigned task.[9] Finally, they provided basic demographic information.

Results and discussion. Replicating the results of Study 4A, participants categorized the targets' social class significantly better than chance ($M_{A'}$ = .53, SD = .08), $t(92) = 3.50$, $p < .001$, $r_{\text{effect size}} = .34$, though their response bias scores did not significantly differ from zero ($M_{B''}$ = .03, SD = .19), $t(92) = 1.69$, $p = .09$, $r_{\text{effect size}} = .17$.

More pertinent, we averaged the participants' affect ratings for each target (M = 3.31, SD = 0.63; inter-rater reliability Cronbach's $\alpha = .96$) and correlated these with the proportion of participants that categorized each target as rich (M = 51%, SD = 16%). Supporting our hypothesis, targets' affect ratings positively correlated with their perceived social class, $r(158) = .45$, $p < .001$, indicating that affect served as a utilized cue for the social class judgments. Ratings of the rich targets' affect furthermore significantly exceeded ratings of the poor targets' affect, $t(158) = 2.58$, $p = .01$, $r_{\text{effect size}} = .20$, indicating that affect also served as a valid cue to social class.

Subsequent tests showed that both the rich (M = 3.44, SD = 0.61), $t(79) = -8.27$, $p < .001$, $r_{\text{effect size}} = -.68$, and poor targets ($M$ = 3.19, SD = 0.62), $t(79) = -11.65$, $p < .001$, $r_{\text{effect size}} = -.80$, expressed negative affect (i.e., mean scores fell significantly below the neutral value of 4 on the 1 to 7 response scale). Similar to what we observed in Study 5A, then, relative differences in affect seemed more important than absolute differences in affect, as both the rich and poor targets appeared to express negative affect here. Parallel to the way that subjective differences in

[9] Here, the response scale ranged from 1 to 7, rather than -3 to 3 due to software constraints (cf. Studies 3, 5A, and 6).

social class seem to influence well-being more than individuals' objective income levels (e.g., Adler et al., 2000), people in a group who display more positive affect may appear higher-class than those who express less positive affect.

The neutral faces of rich targets therefore displayed greater relative positive affect than the neutral faces of poor targets. These findings support those of prior research showing that ostensibly neutral faces convey affective signals (e.g., Adams et al., 2012, 2016; Malatesta et al., 1987) and bolster the findings of Studies 4B and 5A that suggested that perceivers use facial affect cues to accurately discern others' social class. Moreover, the comparable rates of perceiver accuracy for categorizing social class at self-paced (Study 4A) and rapid speeds (here) suggests that people form their impressions of class quickly. We explored the role of affect further in Study 6 by examining how posed smiles might obstruct the legibility of social class by blocking vestigial signals of affect present in the neutral faces.

Study 6

The results of Study 5 showed that perceivers associate more positive facial expressions with higher social class. Moreover, they suggest that the same arduous experiences of lower-class individuals that impact their well-being might also influence their resting (neutral) expressions. If so, we might expect that actively engaging an emotional expression might obscure the subtle affective cues that distinguish rich and poor targets, and interrupt perceivers' accurate detection of social class. To test this, we retrieved smiling photos of the same 160 targets used in Studies 4 and 5 from our lab database. Because we found that positive affect relates to higher perceived and actual social class in Study 5, we tested the hypothesis that all targets would appear higher-class when smiling than when neutral in Study 6A. More important, because active ephemeral expressions could overwhelm the subtle permanent expressions that

reflect individuals' baseline emotional states, we also tested the hypothesis that smiling would obscure the targets' social class in Study 6B, leading participants to categorize the targets' social class no better than chance.

Study 6A

Method. Given that we wanted to examine the relative differences between smiling versus neutral expressions, we randomly assigned 150 American MTurk Workers (78 female, 72 male; M_{age} = 37.45 years, *SD* = 13.85; 110 Caucasian, 13 African, 9 East Asian, 9 Hispanic, 1 mixed-race, 1 Native American, 7 unspecified ethnicity) to categorize the social class of only either the 80 rich targets (*N* = 76) or 80 poor targets (*N* = 74) because the results of Study 5B showed that the neutral photos of the two groups significantly differed in affect (over 90% power for a target-level analysis with 160 targets). Asking participants to judge photos from just one of the social-class groups therefore allowed us to manipulate affect while holding social class constant and thus avoid any contrast effects within the stimulus corpus (see Rule, Krendl, Ivcevic, & Ambady, 2013). We counterbalanced each target's expression within two conditions across participants so that every participant viewed 40 smiling and 40 neutral faces but never both versions of the same target. The targets were instructed to pose *happy* expressions when photographed (consequently, all smiled). We verified that their expressions looked happy rather than polite (which could appear deferential and thus low-status; e.g., Hecht & LaFrance, 1998), as the ratings of two hypothesis-blind coders (inter-rater agreement α = .83) indicated that 91% of the targets showed the orbicularis oculi muscle activation characteristic of Duchenne smiles. Finally, we standardized the photos in the same manner described in Study 4. Participants categorized the images in random order at their own pace, after which they provided basic demographic information.

Results and discussion. We calculated the proportion of participants categorizing each smiling and neutral photo as rich and submitted these scores to a 2 (expression: smiling, neutral) × 2 (social class: rich, poor) target-level ANOVA with repeated measures on the first factor. This revealed the expected main effect of expression, $F(1, 158) = 260.78$, $p < .001$, $r_{\text{effect size}} = .79$, whereby targets were more likely to be categorized as rich when smiling ($M = 55\%$, $SD = 16\%$) than when neutral ($M = 37\%$, $SD = 15\%$). Neither the between-subjects social-class main effect, $F(1, 158) = 0.33$, $p = .57$, $r_{\text{effect size}} = .05$, nor the Expression × Social Class interaction reached significance, $F(1, 158) = 1.63$, $p = .20$, $r_{\text{effect size}} = .10$, indicating that smiling targets looked richer regardless of their actual social class and suggesting that enacting an emotional expression might obscure the visibility of subtle cues to social class present in neutral faces. We tested this possibility more directly in Study 6B by relating perceptions of affect to categorizations of social class for the smiling faces, expecting that targets' smiles would interfere with participants' ability to distinguish their social class.

Study 6B

Method. We recruited 30 American MTurk Workers (to achieve good or better inter-rater reliability, as explained above; 19 female, 11 male; $M_{\text{age}} = 33.13$ years, $SD = 11.45$; 22 Caucasian, 3 African, 3 East Asian, 1 Hispanic, 1 Southeast Asian) to rate all 160 smiling targets' affect and another 75 participants to categorize them as rich and poor (33 female, 41 male, 1 other; $M_{\text{age}} = 34.89$ years, $SD = 11.01$; 60 Caucasian, 7 African, 5 Hispanic, 3 East Asian); we excluded eight participants in the latter group from analysis because they reported problems loading the stimuli (final $n = 67$ for 93% power based on the same criteria as in Study 5B; 29 female, 38 male; $M_{\text{age}} = 35.40$ years, $SD = 11.31$; 53 Caucasian, 6 African, 5 Hispanic, 3 East Asian). Procedures followed those described in Study 4 (although self-paced): Participants

either categorized the targets as rich versus poor or rated their expressed affect (answering "How does this person feel right now?") from -3 (*negatively*) to 3 (*positively*) and then reported basic demographic information.

Results and discussion. As expected, participants categorized the targets' social class no better than chance when they were all smiling ($M_{A'}$ = .50, *SD* = .07), $t(66) = -0.16$, $p = .57$, $r_{\text{effect size}} = -.02$, and their response bias scores did not differ from zero ($M_{B''}$ = -.01, *SD* = .05), $t(66) = -0.91$, $p = .37$, $r_{\text{effect size}} = -.11$. Likewise, the mean affect ratings (averaged across participants; inter-rater reliability Cronbach's $\alpha = .96$) did not significantly differ between the rich ($M = 0.99$, $SD = 0.70$) and poor targets ($M = 1.05$, $SD = 0.75$), $t(158) = -0.60$, $p = .55$, $r_{\text{effect size}} = -.05$, with both groups' scores significantly exceeding zero (indicating positive affect), $ts(79) \geq 12.53$, $ps < .001$, $rs_{\text{effect size}} \geq .82$. The targets' mean affect scores furthermore correlated with the proportion of participants that perceived them as rich ($M = 44\%$, $SD = 14\%$), $r(158) = .29$, $p < .001$, demonstrating that participants still used relative affect to try to infer the targets' social class. Thus, across Studies 5 and 6, participants associated more positive affect with higher social class, though positive affect only distinguished rich and poor targets when their facial expressions were neutral. This suggests that targets' resting facial expressions reveal their social class, consistent with previous research demonstrating that ostensibly neutral faces can display individuals' chronic dispositions or personalities (Adams et al., 2016; Malatesta et al., 1987).

On the surface, these results seem to contrast with the results for the dating-profile targets, some of whom smiled but were nonetheless accurately categorized (see Study 1). As noted in Study 3, however, the rich targets obtained from dating profiles displayed somewhat more positive affect than the poor targets from dating profiles did, albeit a nonsignificant difference. Though not independently diagnostic in that sample, this slight discrepancy may

reflect natural variations in affect between the two groups that could have cumulatively contributed to the participants' accurate categorizations alongside the more potent cues. In contrast, instructing all of the lab-based targets to display happy expressions here might have masked their natural resting affect, obviating its utility. Thus, posed affective expressions could obfuscate cues to social class whereas natural variation in expression (as in the expressions of the dating-profile targets or affective relics in the lab targets' neutral faces) may provide valid cues.

Study 7

Although the results of Studies 1-6 show that people can perceive social class from facial cues, they do not address what perceivers might do with this information. Here, we explored how perceptions of social class influence individuals' life outcomes. For example, prejudice against poor individuals can restrict and foreclose opportunities that might otherwise allow them to ameliorate their economic circumstances (Ridgeway & Fisk, 2012; Stephens et al., 2014). Employment is an important example of one such opportunity. We therefore investigated how perceptions of social class from facial cues might impact targets' hirability by asking participants to evaluate the rich and poor targets' chances of getting a job. Despite the subtlety of social class cues in the targets' faces, we anticipated that participants would show less inclination to rate poor (vs. rich) individuals as hirable, a bias that could ironically hinder poor individuals' ability to improve their financial circumstances and allow them to escape this prejudice. Of course, even in contexts where job applicants routinely include photos with their resumes, employers typically have more than just a facial photo to inform their real-life hiring decisions. Yet previous research has nonetheless demonstrated that subtle facial information can influence hiring decisions despite the availability of more diagnostic information (Rule et al., 2016). Testing whether this

extends to social class is therefore an important first step in understanding the downstream consequences of social-class perception.

Method

We recruited 75 American MTurk Workers (39 female, 35 male, 1 other; M_{age} = 36.39 years, *SD* = 11.62; 56 Caucasian, 6 African, 4 East Asian, 3 Hispanic, 2 mixed-race, 1 Native American, 1 South Asian, 1 Southeast Asian, 1 unspecified ethnicity) to complete the study (96% power based on the same criteria as in Studies 1, 2, 4A, 5B, and 6B). We instructed the participants that they would see photos of recent graduates of accounting programs and asked them to rate the likelihood that each person would successfully obtain a job as an accountant on a scale from 1 (*not at all likely*) to 8 (*very likely*) in a self-paced task. Pilot testing demonstrated that perceivers viewed accounting as neither a low- nor high-class job, ensuring that any differences in ratings between the two groups would not simply stem from stereotype fit (e.g., Eagly & Karau, 2002; Heilman, 2001; Rule et al., 2016). After rating all of the targets in random order, we asked the participants to provide basic demographic information (as above) but added a question about their experience making hiring decisions. Of the 75 participants, 27 responded that they had professional experience hiring employees.

Aside from incidentally mentioning that the targets had come from diverse educational backgrounds in the initial task instructions (i.e., community colleges vs. top universities), we did not directly mention social class; thus, the participants' ratings relied primarily on the targets' facial appearance. Given the pronounced subtlety of social class cues within our highly controlled faces, we only presented participants with the 40 targets that we used to create the rich and poor Best Composites in Study 5B. Thus, social class remained highly ambiguous ($M_{accurate}$

$_{\text{categorizations}}$ = 68%, *SD* = 7%) but still allowed us to test whether its subtle perception impacts downstream social judgments.

Results and Discussion

Participants rated the rich targets (*M* = 5.37, *SD* = 1.01) as significantly more likely to be hired as accountants than the poor targets (*M* = 4.47, *SD* = 0.90), $t(74) = 13.01$, $p < .001$, $r_{\text{effect size}} = .83$, suggesting that people may use facial cues to social class to make consequential social judgments. In this instance, rich targets may possess advantages over poor targets in securing employment, thereby perpetuating the existing class differences between the two groups. Furthermore, an exploratory analysis showed that both individuals with (*N* = 27) and without professional hiring experience (*N* = 48) seemed to share this bias—a 2 (target social class: poor, rich) × 2 (subject hiring experience: yes, no) mixed-model ANOVA with repeated measures on the first factor revealed only a main effect of target social class on ratings of target hirability, $F(1, 73) = 167.27$, $p < .001$, $r_{\text{effect size}} = .83$. Neither the main effect of subject hiring experience, $F(1, 73) = 0.07$, $p = .79$, $r_{\text{effect size}} = .03$, nor the interaction between hiring experience and target social class reached significance, $F(1, 73) = .15$, $p = .70$, $r_{\text{effect size}} = 05$.[10] Even in the absence of obvious or explicit cues to social class, people may therefore use social class information to evaluate others in ways that could potentially reinforce existing boundaries by constraining class mobility (which is already limited; Bowles & Gintis, 2002; Davidai & Gilovich, 2015; Mood, in press).

[10] Target social class likewise significantly predicted employability ratings in an exploratory multilevel model that included targets' affect and participants' hiring experience as covariates (though we had only 75% power for this test).

General Discussion

Here, we found consistent support for the legibility of social class from subtle facial cues (see Table S5 in the OSM for summary of results and effect sizes). Participants accurately judged others' social class (operationalized as annual individual or family income) from their faces based on both naturally varying photos downloaded from online personal advertisements and highly controlled emotionally neutral photos taken under standardized conditions in the lab. Individual facial features and their configuration contributed to these judgments and participants achieved similar levels of accuracy whether they categorized social class at their own pace or when seeing the faces for only half of a second. People therefore appear to discern social class rapidly, from minimal facial cues, and from both self-selected photos and standardized neutral laboratory photos (mean weighted $r_{\text{effect size}} = .62$, 95% CI [.58, .65]).

Multiple cues supported perceivers' social class judgments in this work, many of which related to stereotypes of rich and poor people. Attractiveness cued social class best for photos from dating advertisements (in which individuals select their own photos and typically strive to present themselves as attractive mates). Rich targets also looked slightly (although nonsignificantly) more positive, however, perhaps reflecting natural variations in affect. Previous research reported that social class relates to well-being (e.g., Diener & Biswas-Diener, 2002; Haushofer & Fehr, 2014), and that well-being relates to positive affect (e.g., Abel & Kruger, 2010). Indeed, only affect veridically cued social class among the faces photographed in the lab: Participants accurately perceived happier-looking neutral faces as higher-class. But when the same targets all displayed happy expressions, their posed smiles seemed to mask these subtle cues, and their social class became illegible. Furthermore, in contrast to the dating-profile photos, attractiveness did not serve as a valid cue to social class for the lab-based set of targets.

Because we used grayscale images throughout our studies, however, further tests using full-color stimuli (which better convey attractiveness and health cues; Stephen, Coetzee, & Perrett, 2011; Stephen et al., 2012) might help to elucidate how attractiveness contributes to social-class judgments.

The accurate perception of social class may therefore largely rest on subtle emotional expressions etched into the structure of individuals' faces over time. Earlier research found that people's emotional expression habits manifest in their neutral expressions as they age (Adams et al., 2016; Malatesta et al., 1987). Individuals who enjoy greater subjective well-being may therefore experience more positive affect and accordingly exhibit more positive expressions. One's facial musculature may hypertrophy and one's skin may fold in ways that reflect these repeated expressions, resulting in a neutral or resting appearance that resembles the person's baseline, or most frequent, feeling state (Adams et al., 2016; Malatesta et al., 1987). We speculate that the more arduous life experiences of lower-class individuals and more facile life experiences of higher-class individuals could thus emerge in their facial appearance via this mechanism. Our data support this hypothesis, showing a significant difference in the apparent affect conveyed by the neutral expressions of rich and poor targets. Moreover, the consistent relation of positive affect to attributions of wealth by our participants suggests that perceivers anticipate this association and use it to discern others' social class. Future research should explore whether the legibility of social class increases as targets age and their experiences become more deeply engrained in their faces, as well as whether this may differ by gender (see Adams et al., 2016).

Interestingly, we found not just that positive affect signaled higher social class, but that *relative* positive affect signaled higher social class. Although rich neutral targets displayed

significantly more positive affect than poor targets did, both groups expressed somewhat negative affect overall. Aggregated morphs of rich faces appeared positive whereas aggregated morphs of poor faces appeared neutral or negative (when concentrated via the Best Composites). Thus, neutrally posed rich targets do not necessarily appear happy, but simply *happier* than neutrally posed poor targets. We also found evidence that one may mask one's social class by displaying a positive emotional expression. Appearing happier (or less negative) may lead others to perceive a person as higher-class (at least within the context of some less happy-looking people). Future research should investigate this possibility more thoroughly.

Perhaps more important than the observation that individuals can extract information about social class from facial appearance, we also found evidence that these perceptions influence their dispositions towards rich versus poor people. In Study 7, participants rated rich targets as more suitable for employment than poor targets. Notably, both participants with and without hiring experience showed susceptibility to this bias in favor of the rich. This finding has implications for real-world hiring situations. Though interviewers surely incorporate information beyond facial appearance when evaluating candidates, previous work suggests that initial impressions can strongly persist despite more diagnostic nonvisual information (e.g., Blair et al., 2005; Rule, Slepian, & Ambady, 2012; Rule et al., 2014). Given that past research has found that "gateway" interactions play important roles in enforcing social class boundaries (Ridgeway & Fisk, 2012; Stephens et al., 2014), it thus seems tenable that one's first glimpse of another person might scaffold the tenor of a job interview and cascade into a negative outcome for a lower-class individual (e.g., in a manner consistent with aversive bigotry; see Dovidio & Gaertner, 2000).

Thus, first impressions of social class could contribute to perpetuating social class stratification and limit class mobility—facilitating a cycle of inequality and disadvantage

(Markus, 2017; Stephens et al., 2014). Employment is by no means the only enforcer or consequence of social class, however. Future research might therefore benefit from exploring the relation between facial appearance and social class for other judgments, such as those related to education, housing, and social relationships. Overall, due to the pervasive effects of social class (see Kraus et al., in press, for review), impressions of someone's social-class standing have the potential to be one of the more impactful judgments one makes of another person. This research therefore provides a glimpse of the possible consequences that first impressions of others' social class might render.

Moreover, the finding that relative differences in affect can cue social class points to the importance of further exploring perceptions of others' subjective social class. Although we used income to measure social class here, subjective social class (which accounts for a person's context) often predicts class-related outcomes better (e.g., health, visual attention, social cognition; Adler et al., 2000; Dietze & Knowles, 2016; Kraus et al., 2009). Given that people can judge subjective social class at rates similar to income from thin slices of dyadic interactions (Kraus & Keltner, 2009), future research could consider whether perceivers can also discern subjective social class from the cues we examined here. Researchers might likewise consider how a nation's degree of class inequality relates to the legibility of its citizens' social class, particularly given the negative relation between income inequality and life satisfaction among lower-class individuals (Oishi, Kesebir, & Diener, 2011; Roth, Hahn, & Spinath, 2017)—this may explain some of the differences in social-class legibility between our American dating-advertisement targets and Canadian undergraduate targets.

Finally, given that emotional expressions may mask resting facial cues to social class, future work could also investigate how the subtle affective cues to social class that we observed

in neutral faces manifest in dynamic interpersonal interactions when one's facial movements and expressions rapidly and frequently change. Researchers should also explore how social-class cues from varying channels might converge or contradict one another. For example, both engagement cues (Kraus & Keltner, 2009) and resting facial affect veridically signal social class, but self-presentation cues such as clothing or speech style may be faked; thus, how do perceivers integrate this information? Because social class can be extracted from facial information following 500-ms perceptions, it may be among the first in a cascade of cues that potentially biases how perceivers interpret other information about a target's social class. It remains to be explored whether intentional self-presentation can effectively modulate one's perceived social class, however. It will also be important to explore how accuracy may vary for targets belonging to groups whose stereotypes intersect with social class, such as African American or Hispanic individuals (e.g., Brown-Iannuzzi, Dotsch, Cooley, & Payne, 2017; Marín, 1984).

Altogether, the present studies provide evidence for the visibility of social class through very subtle and static facial cues. These perceptions occur under limited conditions of time (i.e., in half of a second) and space (i.e., from individual facial features) based on mere hints of one's baseline affective disposition. Yet we also observed that they may effect consequences that contribute to maintaining class distinctions. Overall, these data align with previous research on how wealth relates to well-being, and on emotional habits visible in neutral faces. The integration of these literatures opens a wealth of avenues for future research on the outcomes of perceptions, cognitions, and behaviors related to social class.

References

Abel, E. L., & Kruger, M. L. (2010). Smile intensity in photographs predicts longevity. *Psychological Science*, *21*, 542-544.

Adams Jr, R. B., Garrido, C. O., Albohn, D. N., Hess, U., & Kleck, R. E. (2016). What facial appearance reveals over time: When perceived expressions in neutral faces reveal stable emotion dispositions. *Frontiers in Psychology*, *7*, 986.

Adams Jr, R. B., Nelson, A. J., Soto, J. A., Hess, U., & Kleck, R. E. (2012). Emotion in the neutral face: A mechanism for impression formation? *Cognition and Emotion*, *26*, 431-441.

Adler, N. E., Boyce, T., Chesney, M. A., Cohen, S., Folkman, S., Kahn, R. L., & Syme, S. L. (1994). Socioeconomic status and health: the challenge of the gradient. *American Psychologist*, *49*, 15-24.

Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, White women. *Health Psychology*, *19*, 586.

Aknin, L. B., Norton, M. I., & Dunn, E. W. (2009). From wealth to well-being? Money matters, but less than people think. *The Journal of Positive Psychology*, *4*, 523-527.

Ambady, N., Bernieri, F. J., & Richeson, J. A. (2000). Toward a histology of social behavior: Judgmental accuracy from thin slices of the behavioral stream. *Advances in Experimental Social Psychology*, *32*, 201–271.

Becker, J. C., Kraus, M. W., & Rheinschmidt-Same, M. (2017). Cultural expressions of social class and their implications for group-related beliefs and behaviors. *Journal of Social Issues, 73,* 158-174.

Belmi, P., & Neale, M. (2014). Mirror, mirror on the wall, who's the fairest of them all? Thinking that

one is attractive increases the tendency to support inequality. *Organizational Behavior and Human Decision Processes*, *124*, 133-149.

Blair, I. V., Chapleau, K. M., & Judd, C. M. (2005). The use of Afrocentric features as cues for judgment in the presence of diagnostic information. *European Journal of Social Psychology*, *35*, 59-68.

Blair, I. V., Judd, C. M., & Chapleau, K. M. (2004). The influence of Afrocentric facial features in criminal sentencing. *Psychological Science*, *15*, 674-679.

Bjornsdottir, R. T., Alaei, R., & Rule, N. O. (2017). The perceptive proletarian: Subjective social class predicts interpersonal accuracy. *Journal of Nonverbal Behavior.* doi: 10.1007/s10919-016-0248-6

Bowles, S., & Gintis, H. (2002). The inheritance of inequality. *The Journal of Economic Perspectives*, *16*, 3-30.

Brown-Iannuzzi, J. L., Dotsch, R., Cooley, E., & Payne, B. K. (2017). The relationship between mental representations of welfare recipients and attitudes toward welfare. *Psychological Science*, *28*, 92-103.

Côté, S. (2011). How social class shapes thoughts and actions in organizations. *Research in Organizational Behavior*, *31*, 43-71.

Côté, S., Kraus, M. W., Carpenter, N. C., Piff, P. K., Beermann, U., & Keltner, D. (2017). Social affiliation in same-class and cross-class interactions. *Journal of Experimental Psychology: General: 146,* 269-285.

Daros, A. R., Ruocco, A. C., & Rule, N. O. (2016). Identifying mental disorder from the faces of women with borderline personality disorder. *Journal of Nonverbal Behavior, 40*, 255-281.

Davidai, S., & Gilovich, T. (2015). Building a more mobile America—One income quintile at a time.

Perspectives on Psychological Science, 10, 60-71.

Davis, J. A. (1956). Status symbols and the measurement of status perception. *Sociometry*, *19*, 154-165.

Dermer, M., & Thiel, D. L. (1975). When beauty may fail. *Journal of Personality and Social Psychology*, *31*, 1168.

Diener, E., & Biswas-Diener, R. (2002). Will money increase subjective well-being? *Social Indicators Research*, *57*, 119-169.

Dietze, P., & Knowles, E. D. (2016). Social class and the motivational relevance of other human beings: Evidence from visual attention. *Psychological Science*, *27*, 1517-1527.

Dovidio, J. F., & Gaertner, S. L. (2000). Aversive racism and selection decisions: 1989 and 1999. *Psychological Science*, *11*, 315-319.

Durante, F., Tablante, C. B., & Fiske, S. T. (2017). Poor but warm, rich but cold (and competent): Social classes in the stereotype content model. *Journal of Social Issues*, *73*, 138-157.

Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Bulletin, 109,* 573-598.

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*, 175-191.

Fiske, S. T., Cuddy, A. J., Glick, P., & Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, *82*, 878.

Gallup. (2013). *Worldwide, median household income about $10,000*. Retrieved from http://www.gallup.com/poll/166211/worldwide-median-household-income-000.aspx

George, P. A. & Hole, G. J. (2000). The role of spatial and surface cues in the age-processing of unfamiliar faces. *Visual Cognition, 7,* 485-509.

Giles, H., & Sassoon, C. (1983). The effect of speaker's accent, social class background and message style on British listeners' social judgements. *Language & Communication*, *3*, 305-313.

Gillath, O., Bahns, A. J., Ge, F., & Crandall, C. S. (2012). Shoes as a source of first impressions. *Journal of Research in Personality*, *46*, 423-430.

Gosling, S. D., Ko, S. J., Mannarelli, T., & Morris, M. E. (2002). A room with a cue: Personality judgments based on offices and bedrooms. *Journal of Personality and Social Psychology*, *82*, 379.

Haider, A. H., Sexton, J., Sriram, N., Cooper, L. A., Efron, D. T., Swoboda, S., ... & Lipsett, P. A. (2011). Association of unconscious race and social class bias with vignette-based clinical assessments by medical students. *Journal of the American Medical Association*, *306*, 942-951.

Hall, J. A. (1984). *Nonverbal sex differences: Communication accuracy and expressive style.* Baltimore: The Johns Hopkins University Press.

Haushofer, J., & Fehr, E. (2014). On the psychology of poverty. *Science*, *344*, 862-867.

Harris, M. J., & Garris, C. P. (2008). You never get a second chance to make a first impression. In N. Ambady & J. J. Skowronski (Eds.), *First impressions* (pp.147-168). New York, NY: The Guilford Press.

Hecht, M. A., & LaFrance, M. (1998). License or obligation to smile: The effect of power and sex on amount and type of smiling. *Personality and Social Psychology Bulletin*, *24*, 1332-1342.

Heilman, M. E. (2001). Description and prescription: How gender stereotypes prevent women's ascent up the organizational ladder. *Journal of Social Issues, 57,* 657-674.

Hutchings, P. B., & Haddock, G. (2008). Look Black in anger: The role of implicit prejudice in the categorization and perceived emotional intensity of racially ambiguous faces. *Journal of Experimental Social Psychology*, *44*, 1418-1420.

Kalick, S. M. (1988). Physical attractiveness as a status cue. *Journal of Experimental Social Psychology*, *24*, 469-489.

Keltner, D., Gruenfeld, D. H., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Review*, *110*, 265.

Kraus, M. W., Côté, S., & Keltner, D. (2010). Social class, contextualism, and empathic accuracy. *Psychological Science, 21,* 1716-1723.

Kraus, M. W., & Keltner, D. (2009). Signs of socioeconomic status a thin-slicing approach. *Psychological Science*, *20*, 99-106.

Kraus, M. W., & Keltner, D. (2013). Social class rank, essentialism, and punitive judgment. *Journal of Personality and Social Psychology*, *105*, 247.

Kraus, M. W., Park, J. W., & Tan, J. J. X. (in press). Signs of social class: The experience of economic inequality in everyday life. *Perspectives on Psychological Science.*

Kraus, M. W., Piff, P. K., & Keltner, D. (2009). Social class, sense of control, and social explanation. *Journal of Personality and Social Psychology*, *97*, 992.

Kraus, M. W., Rheinschmidt, M. L., & Piff, P. K. (2012). The intersection of resources and rank: Signaling social class in face-to-face encounters. In S. T. Fiske & H. R. Markus (Eds.), *Facing social class: How societal rank influences interaction* (pp. 152-172). New York, NY: Russell Sage Foundation.

Lareau, A., & Calarco, J. M. (2012). Class, cultural capital, and institutions: The case of families and schools. In S. T. Fiske & H. R. Markus (Eds.), *Facing social class: How societal*

rank influences interaction (pp. 61-86). New York, NY: Russell Sage Foundation.

Macmillan, N. A., & Creelman, C. D. (2005). *Detection theory. A user's guide*. New York, NY: Taylor and Francis Group.

Malatesta, C. Z., Fiore, M. J., & Messina, J. J. (1987). Affect, personality, and facial expressive characteristics of older people. *Psychology and Aging*, *2*, 64-69.

Marín, G. (1984). Stereotyping Hispanics: The differential effect of research method, label, and degree of contact. *International Journal of Intercultural Relations*, *8*, 17-27.

Markus, H. R. (2017). In this together: Doing and undoing inequality and social class divides. *Journal of Social Issues, 73,* 211-221.

Marmot, M. G., Stansfeld, S., Patel, C., North, F., Head, J., White, I., ... & Smith, G. D. (1991). Health inequalities among British civil servants: the Whitehall II study. *The Lancet*, *337*, 1387-1393.

Maurer, D., Le Grand, R., & Mondloch, C. J. (2002). The many faces of configural processing. *Trends in Cognitive Sciences*, *6*, 255-260.

McArthur, L. Z., & Baron, R. M. (1983). Toward an ecological theory of social perception. *Psychological Review*, *90*, 215.

Mood, C. (in press). More than money: Social class, income and the intergenerational persistence of advantage. *Sociological Science.*

Mueller, U., & Mazur, A. (1996). Facial dominance of West Point cadets as a predictor of later military rank. *Social Forces*, *74*, 823-850.

Nelissen, R. M., & Meijers, M. H. (2011). Social benefits of luxury brands as costly signals of wealth and status. *Evolution and Human Behavior*, *32*, 343-355.

Nosek, B. A., Smyth, F. L., Hansen, J. J., Devos, T., Lindner, N. M., (Ranganath), K. A., …

Banaji, M. R. (2007). Pervasiveness and correlates of implicit attitudes and stereotypes. *European Review of Social Psychology*, *18*, 36-88.

Oishi, S., Kesebir, S., & Diener, E. (2011). Income inequality and happiness. *Psychological Science*, *22*, 1095-1100.

Penton-Voak, I. S., Pound, N., Little, A. C., & Perrett, D. I. (2006). Personality judgments from natural and composite facial images: More evidence for a "kernel of truth" in social perception. *Social Cognition*, *24*, 607-640.

Perrett, D. I. (2010). *In your face: The new science of human attraction.* New York, NY: Palgrave Macmillan.

Re, D. E., & Rule, N. O. (2015). Appearance and physiognomy. In D. Matsumoto, H. Hwang, & M. Frank (Eds.), *APA Handbook of Nonverbal Communication* (pp. 221-256). Washington, DC: American Psychological Association.

Re, D. E., & Rule, N. O. (2015). CEO facial appearance, firm performance, and financial success. In M. Fetscherin (Ed.) *CEO Branding: Meaning, Measuring, Managing* (pp. 219-238). New York, NY: Routledge.

Re, D. E., & Rule, N. O. (2016). About face: New directions for the physician's general survey. *Current Directions in Psychological Science, 25*, 65-69.

Richard, F. D., Bond Jr, C. F., & Stokes-Zoota, J. J. (2003). One hundred years of social psychology quantitatively described. *Review of General Psychology*, *7*, 331-363.

Ridgeway, C. L., & Fisk, S. R. (2012). Class rules, status dynamics, and "gateway" interactions. In S. T. Fiske & H. R. Markus (Eds.), *Facing social class: How societal rank influences interaction* (pp. 131-151). New York, NY: Russell Sage Foundation.

Rivera, L., & Tilcsik, A. (2016). Class advantage, commitment penalty: The gendered effect of social class signals in an elite labor market. *American Sociological Review*, *81*, 1097-1131.

Roth, B., Hahn, E., & Spinath, F. M. (2017). Income inequality, life satisfaction, and economic worries. *Social Psychological and Personality Science*, *8,* 133-141.

Rule, N. O., Bjornsdottir, R. T., Tskhay, K. O., & Ambady, N. (2016). Subtle perceptions of male sexual orientation influence occupational opportunities. *Journal of Applied Psychology.* Advanced online publication. doi: 10.1037/apl0000148

Rule, N. O., Garrett, J. V., & Ambady, N. (2010). On the perception of religious group membership from faces. *PLoS ONE, 5,* e14241.

Rule, N. O., Krendl, A. C., Ivcevic, Z., & Ambady, N. (2013). Accuracy and consensus in judgments of trustworthiness from faces: Behavioral and neural correlates. *Journal of Personality and Social Psychology, 104,* 409-426.

Rule, N. O., Macrae, C. N., & Ambady, N. (2009). Ambiguous group membership is extracted automatically from faces. *Psychological Science, 20,* 441-443.

Rule, N. O., Slepian, M. L., & Ambady, N. (2012). A memory advantage for untrustworthy faces. *Cognition, 125,* 207-218.

Rule, N. O., Tskhay, K. O., Freeman, J. B., & Ambady, N. (2014). On the interactive influence of facial appearance and explicit knowledge in social categorization. *European Journal of Social Psychology, 44*, 529-535.

Sapolsky, R. M. (2005). The influence of social hierarchy on primate health. *Science*, *308*, 648-652.

Schmid Mast, M., & Hall, J. A. (2004). Who is the boss and who is not? Accuracy of judging status. *Journal of Nonverbal Behavior*, *28*, 145-165.

Seligman, M. E. (2008). Positive health. *Applied Psychology, 57,* 3-18.

Singh-Manoux, A., Adler, N. E., & Marmot, M. G. (2003). Subjective social status: its determinants and its association with measures of ill-health in the Whitehall II study. *Social Science and Medicine*, *56*, 1321-1333.

Spencer, B., & Castano, E. (2007). Social class is dead. Long live social class! Stereotype threat among low socioeconomic status individuals. *Social Justice Research, 20,* 418-432.

Statistics Canada (2013). *Median total income, by family type, by province and territory.* Retrieved from http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/famil108a-eng.htm

Stephen, I. D., Coetzee, V., & Perrett, D. I. (2011). Carotenoid and melanin pigment coloration affect perceived human health. *Evolution and Human Behavior*, *32*, 216-227.

Stephen, I. D., Scott, I. M., Coetzee, V., Pound, N., Perrett, D. I., & Penton-Voak, I. S. (2012). Cross-cultural effects of color, but not morphological masculinity, on perceived attractiveness of men's faces. *Evolution and Human Behavior*, *33*, 260-267.

Stephens, N. M., Markus, H. R., & Phillips, L. T. (2014). Social class culture cycles: How three gateway contexts shape selves and fuel inequality. *Annual Review of Psychology*, *65*, 611-634.

Stephens, N. M., & Townsend, S. S. (2013). Rank is not enough: Why we need a sociocultural perspective to understand social class. *Psychological Inquiry*, *24*, 126-130.

Stevenson, M. R., & Medler, B. R. (1995). Is homophobia a weapon of sexism? *Journal of Men's Studies*, *4*, 1.

Tiddeman, B. P., Stirrat, M. R., & Perrett, D. I. (2005, September). Towards realism in facial image transformation: Results of a wavelet mrf method. In *Computer graphics forum* (Vol. 24, No. 3, pp. 449-456). Oxford, UK: Blackwell Publishing, Inc.

Todorov, A., Mandisodza, A. N., Goren, A., & Hall, C. C. (2005). Inferences of competence from faces predict election outcomes. *Science*, *308*, 1623-1626.

Tskhay, K. O., Clout, J. M., & Rule, N. O. (2017). The impact of health, wealth, and attractiveness on romantic evaluation from photographs of faces. *Archives of Sexual Behavior*, doi:10.1007/s10508-017-0963-z

Tskhay, K. O., & Rule, N. O. (2013). Accuracy in categorizing perceptually ambiguous groups: A review and meta-analysis. *Personality and Social Psychology Review, 17*, 72-86.

Tskhay, K. O., & Rule, N. O. (2015). Emotions facilitate the communication of ambiguous group memberships. *Emotion, 15,* 812-826.

US Census Bureau. (2014). *Income and poverty in the United States: 2014.* Retrieved from https://www2.census.gov/programs-surveys/demo/tables/p60/252/table1.pdf

Varnum, M. E. (2013). What are lay theories of social class?. *PloS one*, *8*, e70589.

Varnum, M. E., Blais, C., Hampton, R. S., & Brewer, G. A. (2015). Social class affects neural empathic responses. *Culture and Brain*, *3*, 122-130.

Williams, J. C. (2012). The class culture gap. In S. T. Fiske & H. R. Markus (Eds.), *Facing social class: How societal rank influences interaction* (pp. 39-58). New York, NY: Russell Sage Foundation.

Yuki, M., Maddux, W. W., & Masuda, T. (2007). Are the windows to the soul the same in the East and West? Cultural differences in using the eyes and mouth as cues to recognize emotions in Japan and the United States. *Journal of Experimental Social Psychology*, *43*, 303-311.

Zebrowitz, L.A. (1997). *Reading faces: Window to the soul?* Boulder, CO: Westview Press.

Zebrowitz, L. A., & Collins, M. A. (1997). Accurate social perception at zero acquaintance: The affordances of a Gibsonian approach. *Personality and Social Psychology Review*, *1*, 204-223.

Zhou, H., & Fishbach, A. (2016). The pitfall of experimenting on the web: How unattended selective attrition leads to surprising (yet false) research conclusions. *Journal of Personality and Social Psychology, 111,* 493-504.

Table 1

Descriptive Statistics and Bivariate Correlations for Categorization Performance and Perceiver Characteristics in Study 1

	M	*SD*	1	2	3	4	5	6	7
1. Accuracy (*A'*)	.61	.07	—						
2. Response Bias (*B''*)	.02	.15	.15	—					
3. Class Preference	3.47	0.95	.10	.09	—				
4. Class Warmth	0.27	1.94	-.10	.10	.47***	—			
5. Classism	0.00	0.89	.09	.04	.39***	.20	—		
6. Family Income	4.28	1.64	-.10	-.02	.01	-.21	-.28*	—	
7. Social Class Essentialism	3.83	1.80	-.03	-.20	-.15	-.23*	-.06	-.10	—
8. Subjective Social Class	5.79	1.23	-.05	-.08	-.02	-.30***	-.36***	.50***	-.04

Note. $df = 79$.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table 2

Factor Loadings for Trait Ratings in Study 3

Trait	Attractiveness factor	Positivity factor
Attractiveness	**.99**	-.07
Health	**.77**	.25
Intelligence	**.50**	-.07
Affect	-.05	**.98**
Dominance	.12	**-.76**
Empathy	.08	**.88**
Warmth	.07	**.97**

Note. Items indicated in bold used to form composites.

Table 3

Factor Loadings for the Trait Ratings in Study 4B

Trait	Attractiveness factor	Diligence factor	Positivity factor
Attractiveness	**.97**	-.11	.15
Health	**.74**	.30	.00
Hard-work	-.08	**.74**	.09
Intelligence	.04	**.97**	-.09
Dominance	.37	-.15	**-.70**
Empathy	.21	-.06	**.93**
Warmth	.24	-.07	**.76**

Note. Items indicated in bold used to form composites.

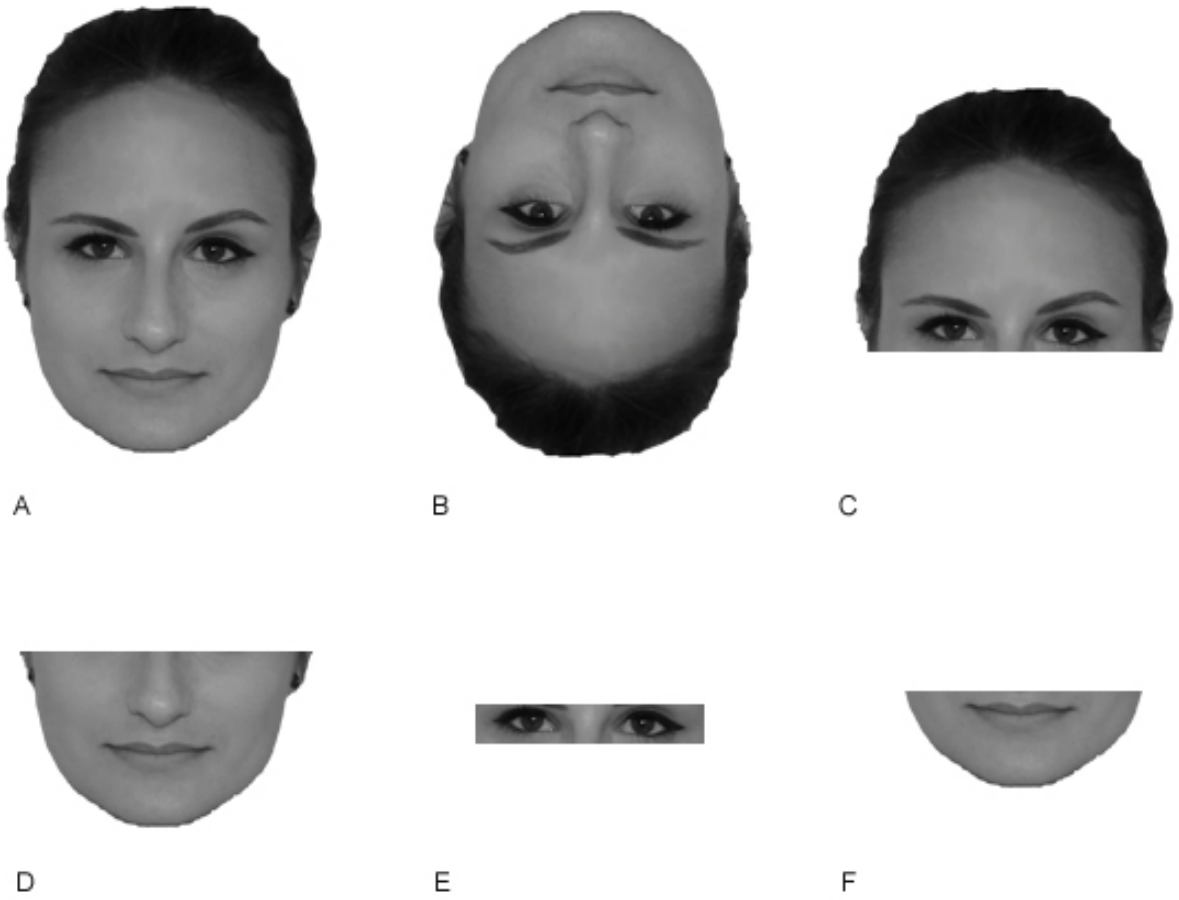

Figure 1. Sample stimuli: (A) full face, from online dating advertisement in Studies 1 and 3, and from an in-house database in Studies 4, 5B, 6, and 7; (B) inverted, Study 2A; (C) top half, Study 2B; (D) bottom half, Study 2B; (E) eyes, Study 2C; and (F) mouth, Study 2C.

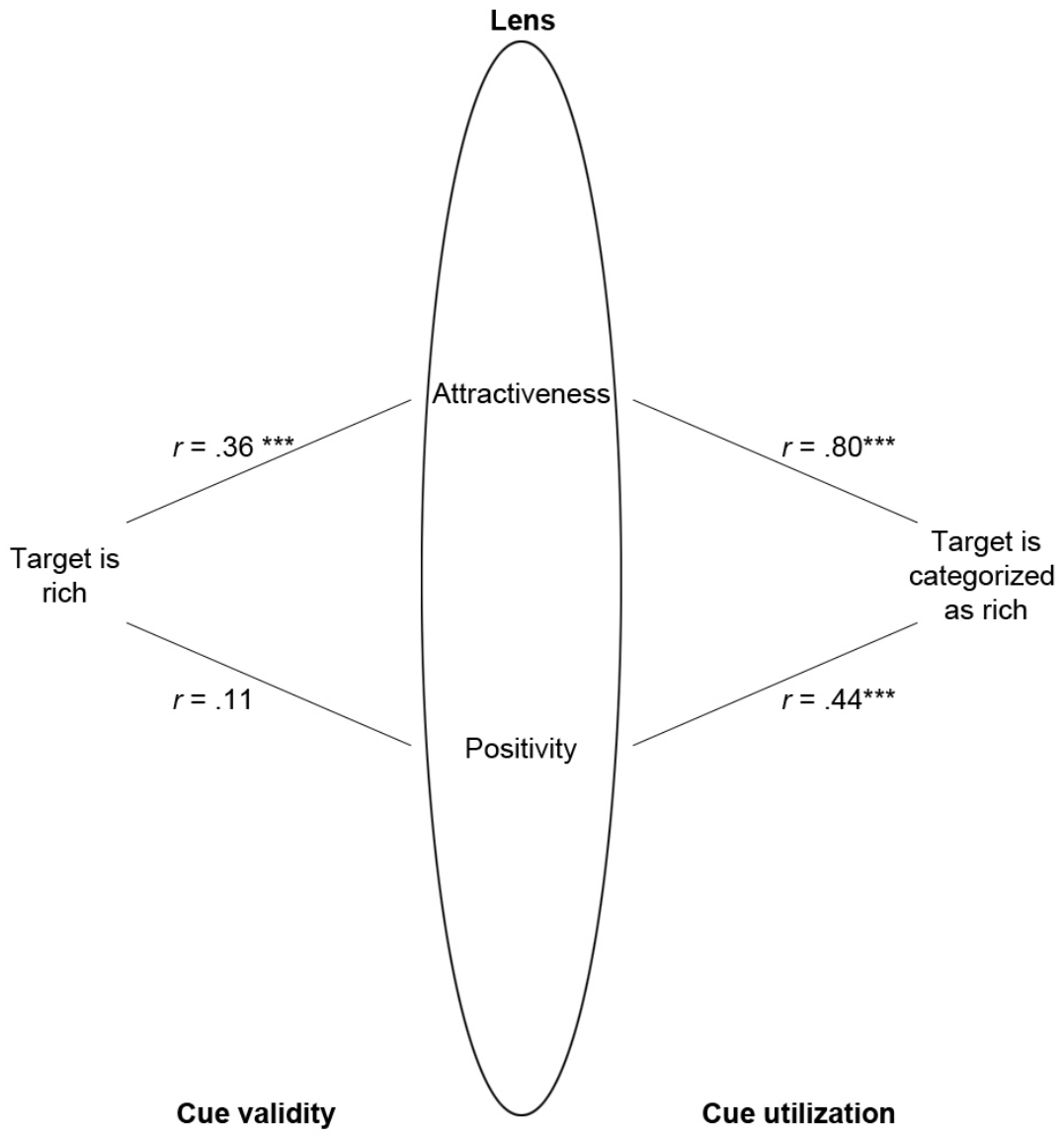

Figure 2. Lens model linking targets' actual social class (cue validity, left side) to trait-composite cues (center) and perceptions of social class (cue utilization, right side) in Study 3.

Note. df = 158.

*** $p < .001$.

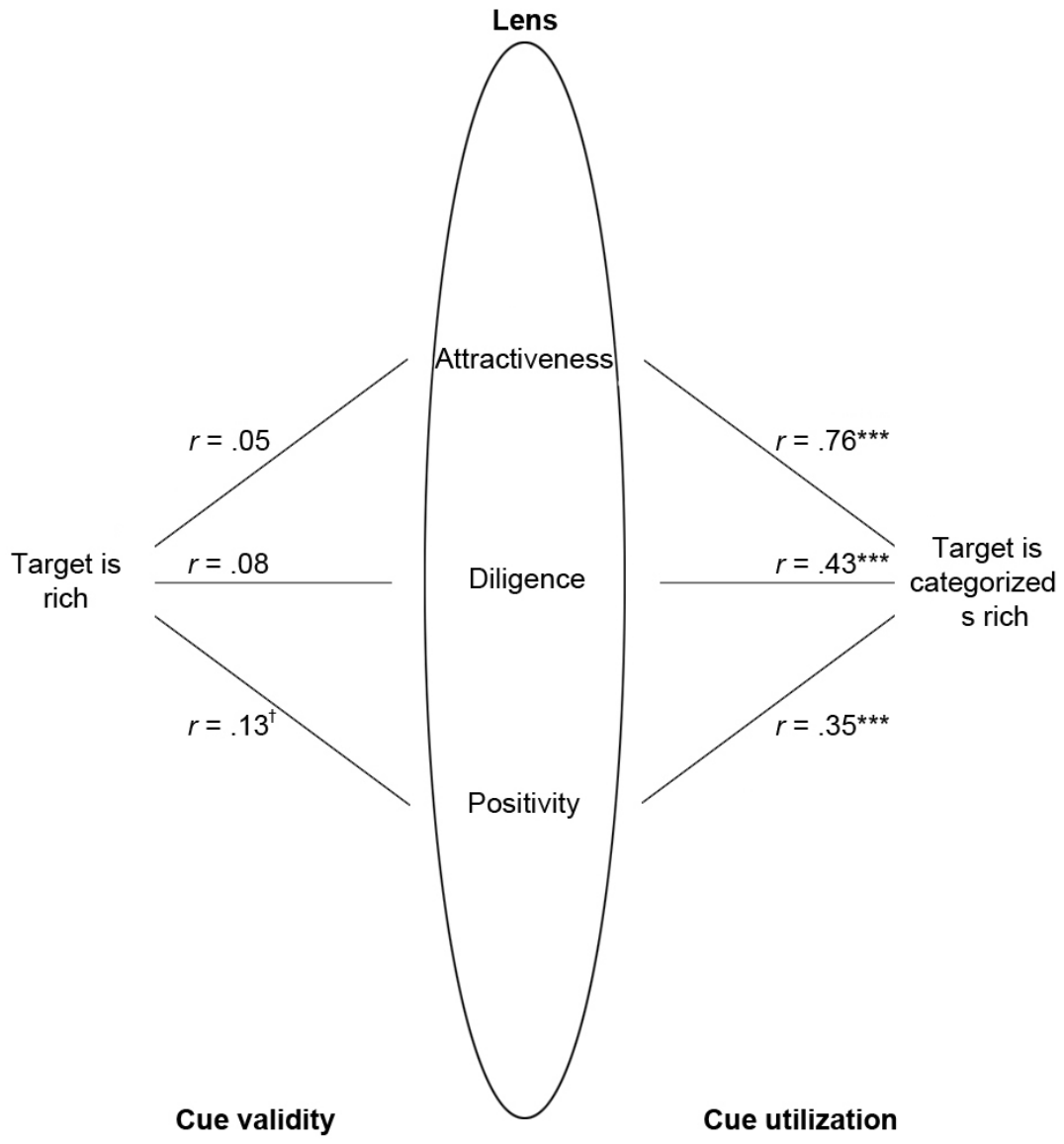

Figure 3. Lens model linking targets' actual social class (cue validity, left side) to trait-composite cues (center) and perceptions of social class (cue utilization, right side) in Study 4B.

Note. df = 154.

† $p = .10$, *** $p < .001$.

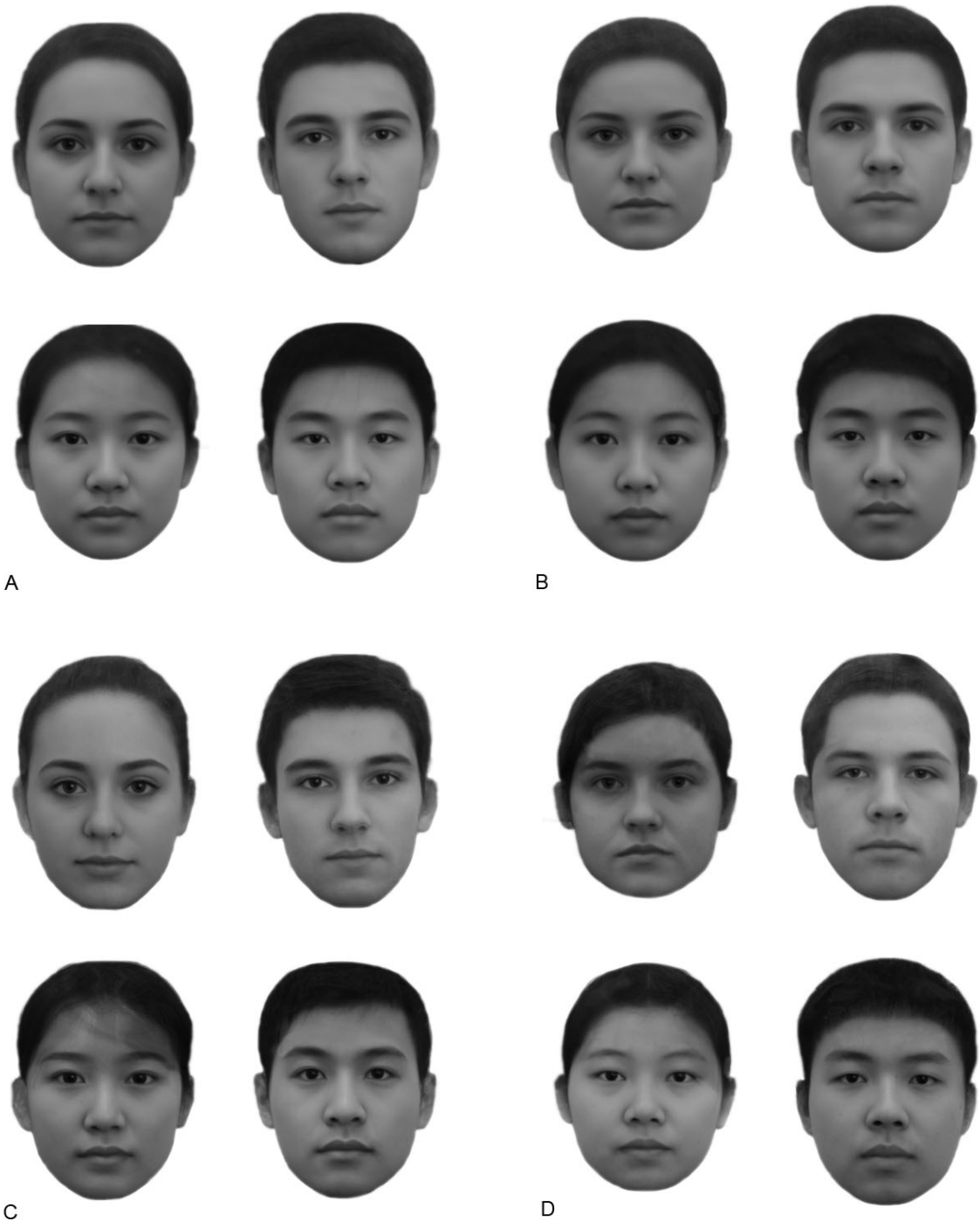

Figure 4. Composite images used in Study 5A: (A) rich Full Composites, (B) poor Full Composites, (C) rich Best Composites, (D) poor Best Composites; Caucasian female, Caucasian male, East Asian male, and East Asian female faces presented clockwise from the top-left corner within each array.

Appendix A

Questions added to Stevenson and Medler's (1995) Economic Beliefs Scale in Study 1. Participants indicated their agreement with each statement on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

1. The rich have exploited others to get their wealth.
2. Wealth is a sign of greed and ruthlessness, not hard work.
3. The wealthy are directly responsible for the poverty of others.
4. Wealthy people are untrustworthy.
5. The rich exploit the system to their benefit and to the detriment of others.

Appendix B

Terms used in the classism Implicit Association Test in Study 1.

Poor people:

- Blue collar
- Laborer
- Poor
- Worker
- Working class

Rich people:

- Bourgeois
- Professional
- Rich
- Upper class
- White collar

Online Supplemental Material

Study S1

In Study 1, we found null results for the relation between measures of participants' categorization accuracy and response bias with measures of their classism and own social class. To assure that these results did not simply reflect Type-II (false-negative) errors, we conducted an additional study with 293 American MTurk Workers (172 female, 121 male; M_{age} = 38.17 years, *SD* = 12.86; 214 Caucasian, 30 African, 19 Hispanic, 13 East Asian, 9 mixed-race, 2 Native American, 1 South Asian, 1 Southeast Asian, 4 unspecified ethnicity)—a sample large enough to achieve at least 95% power in a multiple linear regression with five predictors when assuming the average effect size in social psychology (*r* = .21; Richard et al., 2003) and α = .05. We excluded seven additional participants from analysis who reported trouble loading the stimuli.

Method. Participants categorized the neutral undergraduate stimuli used in Studies 4 and 5B as rich or poor in a self-paced task. They then completed the explicit classism, class preference, and social class essentialism measures from Study 1 in random order, and ended by reporting their demographic information (including annual household income and subjective social class). We did not include either our implicit classism measure (as it has not yet been validated) or class warmth (as it correlated strongly with class preference in both Study 1 and its replication).

Results and discussion. As in the studies reported in the main text, participants categorized the faces better than chance ($M_{A'}$ = .52, *SD* = .07), $t(292) = 5.43$, $p < .001$, $r_{effect\ size}$ = .30, and showed a bias to categorize them as poor ($M_{A'}$ = -.02, *SD* = .09), $t(292) = -4.22$, $p <$ .001, $r_{effect\ size}$ = -.24. Regressing accuracy and response bias onto the five class bias,

essentialism, and social class variables revealed no significant predictors (see Table S6). These results replicate those of Study 1, demonstrating (with much greater power) that the ability to detect social class from faces appears stable across perceivers' own social class or class-related beliefs and biases.

Table S1

Descriptive Statistics for Hit and False Alarm Rates for the Categorization of Targets as Rich *or* Poor *Across All Studies*

	Hits	False Alarms
	M (*SD*)	*M* (*SD*)
Study 1	.53 (.17)	41 (.16)
Replication	.61 (.14)	.45 (.14)
Study 2A	.53 (.15)	.44 (.16)
Study 2B		
Lower Halves	.56 (.11)	.44 (.13)
Upper Halves	.54 (.11)	.44 (.11)
Study 2C		
Eyes	.50 (.13)	.48 (.14)
Mouths	.52 (.16)	.44 (.16)
Study 4A	.55 (.14)	.53 (.14)
Study 5B	.50 (.20)	.47 (.19)
Study 6B	.56 (.16)	.56 (.17)
Study S1	.57 (.14)	.55 (.15)

Note. Hit rates calculated as the percentage of poor targets categorized as *poor*, false-alarm rates calculated as the percentage of rich targets categorized as *poor*.

Table S2

Unstandardized Parameter Estimates Predicting Perceivers' Accuracy and Response Bias in Categorizing Targets as Rich or Poor Based on their Class Biases, Social Class, and Social Class Essentialism in Study 1

	Accuracy (*A'*)			Response Bias (*B''*)		
	B	*SE*	*t*	*B*	*SE*	*t*
Class Biases						
Classism	0.00	0.01	-0.06	-0.01	0.02	-0.23
Class Preference	0.02	0.01	1.54	0.01	0.02	0.49
Class Warmth	-0.01	0.01	-1.88	0.00	0.01	-0.02
Social Class						
Objective (Family Income)	-0.01	0.01	-1.06	0.00	0.01	-0.05
Subjective	0.00	0.01	-0.42	0.00	0.02	-0.64
Social Class Essentialism	0.00	0.01	-0.69	-0.02	0.01	-1.66

Note. $df = 74$.

Table S3

Descriptive Statistics and Bivariate Correlations for Categorization Performance and Perceiver Characteristics in Study 1 Replication

	M	*SD*	1	2	3	4	5	6	7	8
1. Accuracy (*A'*)	.64	.06	—							
2. Response Bias (*B''*)	-.03	.10	-.17	—						
3. Class Preference	4.25	1.38	-.12	.00	—					
4. Class Warmth	1.14	3.14	-.13	-.09	.76***	—				
5. Classism, Explicit	0.26	1.80	-.16	-.02	.62***	.74***	—			
6. Classism, Implicit (IAT)	0.59	0.39	.08	.19	-.05	.02	-.02	—		
7. Family Income	3.30	1.47	.21	-.21	-.36**	-.37**	-.40***	.04	—	
8. Social Class Essentialism	3.64	0.96	-.02	.22	-.15	-.12	-.16	.24*	.06	—
9. Subjective Social Class	4.44	1.84	.11	.05	-.33**	-.35**	-.38***	.22	.53***	.34**

Note. $df = 78$; IAT = Implicit Association Test.

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

Table S4

Unstandardized Parameter Estimates Predicting Perceivers' Accuracy and Response Bias in Categorizing Targets as Rich or Poor Based on their Class Biases, Social Class, and Social Class Essentialism in Study 1 Replication

	Accuracy (*A'*)			Response Bias (*B''*)		
	B	*SE*	*t*	*B*	*SE*	*t*
Class Biases						
Class Preference	0.00	0.01	0.09	0.01	0.01	0.88
Class Warmth	0.00	0.00	-0.12	-0.01	0.01	-1.56
Classism, Explicit	0.00	0.01	-0.52	0.00	0.01	0.37
Classism, Implicit (IAT)	0.03	0.02	1.43	0.04	0.03	1.26
Social Class						
Objective (Family Income)	0.01	0.01	1.29	-0.02	0.01	-2.07*
Subjective	0.00	0.01	-0.41	0.01	0.01	0.75
Social Class Essentialism	0.00	0.01	-0.55	0.02	0.01	1.35

Note. $df = 63$ (seven participants did not complete the IAT and nine did not complete the remaining individual difference measures); IAT = Implicit Association Test.

* $p \leq .05$.

Table S5

Summary of Main Study Findings With Effect Sizes

Study	Target Type	Level of Analysis	Condition	Main Findings	Effect Size (*r*)	95% CI
1	Dating-profile photos	Perceiver	Main study	Categorization above chance	.83	[.75, .89
			Replication	Categorization above chance	.92	[.88, .95
2A	Dating-profile photos	Perceiver	Upright	Categorization above chance	.88	[.81, .92
			Inverted	Categorization above chance	.62	[.45, .74
2B	Dating-profile photos	Perceiver	Upper half	Categorization above chance	.82	[.73, .88
			Lower half	Categorization above chance	.81	[.72, .88
2C	Dating-profile photos	Perceiver	Eyes	Categorization above chance	.22	[-.01, .43
			Mouth	Categorization above chance	.70	[.56, .80
3	Dating-profile photos	Target	Utilization of Attractiveness	Attractiveness is a utilized cue to social class	.80	[.74, .85
			Utilization of Positivity	Positivity is a utilized cue to social class	.44	[.31, .56

			Validity of Attractiveness	Attractiveness is a valid cue to social class	.36	[.22, .49
			Validity of Positivity	Positivity is not a valid cue to social class	.11	[-.05, .26
4A	Neutral lab photos	Perceiver	N/A	Categorization above chance	.27	[.05, .47
4B	Neutral lab photos	Target	Utilization of Attractiveness	Attractiveness is a utilized cue to social class	.76	[.68, .82
			Utilization of Diligence	Diligence is a utilized cue to social class	.43	[.29, .55
			Utilization of Positivity	Positivity is a utilized cue to social class	.35	[.20, .48
			Validity of Attractiveness	Attractiveness is not a valid cue to social class.	.05	[-.11, .21
			Validity of Diligence	Diligence is not a valid cue to social class	.08	[-.08, .23

			Validity of Positivity	Positivity is a marginally valid cue to social class	.13	[-.03, .28
5A	Neutral lab photos	Perceiver	Best composites	Rich composites display more positive affect than poor composites	.92	[.85, .96
			Full composites	Rich composites display more positive affect than poor composites	.62	[.38, .78
5B	Neutral lab photos	Perceiver	Categorization	Categorization above chance.	.34	[.15, .51
		Target	Actual class	Rich targets display more positive affect than poor targets	.20	[.05, .34
			Perceived class	Affect ratings correlate positively with perceived social class	.45	[.32, .57
6A	Neutral and smiling lab photos	Target	N/A	Smiling targets categorized as rich more than neutral targets	.79	[.72, .84
6B	Smiling lab photos	Perceiver	Categorization	Categorization not above chance	-.02	[-.26, .22

		Target	Actual class	Rich targets do not display more positive affect than poor targets	-.05	[-.20, .11
			Perceived class	Affect ratings correlate positively with perceived social class	.29	[.14, .43
7	Neutral lab photos (best-categorized subsample)	Perceiver	N/A	Rich targets rated as more likely to be hired than poor targets	.83	[.74, .89
S1	Neutral lab photos	Perceiver	N/A	Categorization above chance	.30	[.19, .40

Table S6

Unstandardized Parameter Estimates Predicting Perceivers' Accuracy and Response Bias in Categorizing Targets as Rich or Poor Based on Their Class Biases, Social Class, and Social Class Essentialism in Study S1

	Accuracy (*A'*)			Response Bias (*B''*)		
	B	*SE*	*t*	*B*	*SE*	*t*
Class Biases						
Class Preference	0.00	0.00	0.75	0.00	0.00	-0.58
Classism, Explicit	0.00	0.00	-1.26	0.00	0.01	1.13
Social Class						
Objective (Family Income)	0.00	0.00	1.43	-0.01	0.00	-1.46
Subjective	0.00	0.00	-0.66	0.00	0.00	-0.57
Social Class Essentialism	-0.01	0.00	-1.35	0.00	0.00	0.51

Note. $df = 286$.