About Face: Seeing Class and Race

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Abstract

People's social class, and the social perception of their class, has important ramifications for one's life opportunities and outcomes. Research on first impressions has found that people are relatively accurate at judging a variety of traits such as perceived sexual orientation and income, but there is a paucity of research that investigates whether people also are accurate at judging wealth or class. In this paper, we first investigate whether people understand the distinction between income and wealth (Study 1) and then examine whether people are accurate at identifying the income and wealth levels of individuals across racial and ethnic groups by facial cues (Study 2). We find that participants understand the meaning of income, but not wealth. Additionally, we find that perceivers categorize class more accurately than by sheer chance, using minimal facial cues, but perceivers are particularly inaccurate when categorizing high-income and high-wealth black and Latino subjects.

Keywords: socioeconomic status, first impression, person perception, social class, inequality, stratification economics

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Introduction

First impressions matter–whether they are based on someone's profile photo from their LinkedIn account, their name on a job application, or their voice over the phone. These first impressions have been found to have meaningful impacts on individual opportunities and outcomes, including hiring decisions, home rental and homeownership prospects, and even sentencing in criminal cases (e.g., Bertrand and Mullainathan 2004; Eberhardt, Davies, Purdie-Vaughns, & Johnson 2006; Pager et al. 2009; Pager and Western 2012).

Impressions of one's class position, such as judging if someone has a high-income or is "wealthy," can also have important implications affecting access to employment, credit, and one's social network (Goldsmith et al. 2007; Hamilton et al. 2009; Keith et al 2017). Nevertheless, some studies indicate that people may have a poor understanding of the difference between income and wealth - two distinct measures of class, which we argue may also differentially influence perceptions of class position (Stanley and Stanley Fallaw 2019). By extending previous social perception research to test whether perceivers are also accurate at knowing a person's income versus their wealth status, we are among the first to investigate how people may infer others' social class from facial cues alone while also testing whether racial group identity affects accuracy.

Specifically, we explore perceptions and accuracy of class status through two studies. In Study 1 we investigate whether people understand the distinction between various measurements of class (income versus wealth). In Study 2 we investigate whether people are correct in identifying an individual's class position based upon the individual's facial cues.

We build upon a relatively new strand of research that demonstrates that people are surprisingly accurate when provided with minimal facial cues (e.g., Penton-Voak et al. 2006; Tskhay and Rule 2015). For example, past work shows that using facial cues alone, perceivers are accurate at detecting sexual orientation and even company profits (Rule and Ambady 2008a; 2008b). While researchers have tested if people are accurate at judging facial photos of subjects across many traits and salient group identities, there is a dearth of research regarding the social perception of class (income and wealth) through non-verbal cues.

One recent study by Bjornsdottir and Rule (2017) used a rough estimate of monetary income, which was self-reported from "web-based dating advertisements" and found that perceivers were more accurate than chance at categorizing faces as rich versus poor. However, the quality of the income data was questionable and wealth information was not known for the targets in this previous paper which provided an opportunity for both replication of income findings and an extension into wealth perceptions. Additionally, while the paper uses income data only, it conflates the terms "wealthy" and "rich" which are a distinct measure of social class. Moreover, the potential impact on these social perceptions when categories like race are salient have been studied even less. Prior work found that there are significant biases when one considers individuals in lower status groups (Penner and Saperstein 2013). This leaves open an important question: are people generally correct at categorizing people's social class based on minimal facial cues? And does accuracy differ across racial and ethnic groups?

In line with our priors, we find the majority of participants are able to define income adequately, and present a clear understanding of the distinction between high- and low-income status. On the other hand, few participants in the study demonstrated a clear understanding of wealth as a separate measure of class. Furthermore, we find that individuals do better than chance at identifying both the income and wealth levels of individuals based on first impressions afforded by minimal facial cues. However, we find that participants are particularly poor at identifying high-income and high-wealth black and Latino targets, pinpointing another dimension of inequality with respect to race and ethnicity.

Perceptions of Class: Income, Wealth, and Race

Social class, often operationalized as socioeconomic status, can be gauged in a variety of ways (Côté, 2011). Traditionally, researchers rely on proxies to identify an individual's socioeconomic status, which may include measures of occupation, employment status, and educational attainment, etc. For the present paper, we focus on income and wealth data, both of which can have profound effects on individual life outcomes (Nam et al. 2015; Chetty et al. 2014a; Chetty et al. 2014b). For example, a person's class position can affect one's health status at birth (Aizer and Currie 2014), access to greater financial resources, healthier environments, and better funded schools (Ash 2009; Bowles and Gintis 2002; Boyce 1994; Card and Krueger 1992; Drewnowski 2009; Oliver and Shapiro 2013; West 2018).

But the study of perceptions of class pose certain challenges since most people have a reasonable, shared understanding of the concept of income and yet equate it with wealth, which is a distinct and separate concept. In a brief review of previous research and popular media outlets, we found countless examples of the conflation of income and wealth. For example, recent work in the *New York Times* consistently referred to top income-earners as "rich" and "wealthy", failing to note the distinction between the economic categories (Leonhardt 2019).

Additionally, we still do not know whether snap judgements of social class are accurate nor whether they vary across racial and ethnic groups. Previous work shows people tend to equate being wealthy with traits such as "competent" and often report feeling admiration for wealthy individuals (Fiske et al. 2002). Other work examining verbal cues finds that signaling being upper-class through a stereotypical "high-class accent" or through conspicuous consumption, such as displaying luxury goods, elicits more favorable views from perceivers (Giles and Sassoon 1983; Nelissen and Meijers, 2011). In fact, people frequently signal their preferred, personal social class identity in a number of ways, including social media profiles (Becker et al. 2017) and clothing (Belfanti and Giusberti 2000; Piacentini and Mailer 2006).

Moreover, perceptions of class can be altered across racial and ethnic lines. For instance, researchers found that most Americans' mental image of a poor person is a black person (Brown-Iannuzzi et al. 2017; Lei and Bodenhausen 2017). Other work documents how identical resumés with either white- or ethnic soundings (black or immigrant) names experience markedly different success rates, yet do not find evidence that employers are inferring social class from the names. (Bertrand and Mullainathan, 2004; Oreopoulos 2011).

There also have been a number of papers to date which have investigated accuracy in perceptions of social class. The earliest paper in this vein demonstrated that through photos of people's living rooms, participants were fairly accurate at inferring people's occupational status and educational attainment (Davis 1956). Since then, work using non-verbal cues, including the use of university employee photographs (Scmid, Mast, and Hall 2004) and photos of people's shoes (Gillath, Bahns, Ge, and Crandall 2012) have been used to test accuracy in perception of social class. Other research has used verbal stimuli to test perception of social class, including Giles and Sassoon (1983), who had college students mimic accents, and Kraus et al. (2017) who had targets speak seven words, resulting in participants correctly identifying social class based on the accents of the speakers. There is variation across the literature in how researchers operationalize social class, with some relying on income (Bjornsdottir and Rule 2017; Lei and Bodenhausen 2017), occupational status (Davis 1956), by asking participants "to which they belong (e.g., upper, middle, working)" (Adler et al. 2000), or by multiple measures (Kraus and Keltner 2009; Kraus and Keltner 2013).

Thus, following the one paper showing perceivers' accuracy in judging income level from a facial photograph (Bjornsdottir and Rule 2017), combined with the fact that income and wealth are distinct constructs with different associated social outcomes, the present study seeks to examine whether people are precise in identifying class from appearance when defined by income and wealth.

The Present Studies
In the current set of studies, we use two different measures of social class: (1) income, the money that an individual receives in exchange for providing a good or service in the market, or through interest earned on an asset, or receipt of a transfer payment; and (2) wealth, a stock of resources that represents the net value of an individual's or a household's property, the difference between the value of what they own in assets and what they owe in liabilities. Unlike previous studies looking at perceptions of social class through facial cues (e.g., Bornsdottir and Rule 2017), we have a unique dataset that has detailed information on both economic indicators, along with a set of photos from a racially diverse sample of participants.

Study 1 tests if people generally have an accurate understanding of income and wealth as two distinct measures of social class and asks participants to identify income and wealth brackets that are associated with either low- or high-income and low- or high-wealth. We expect participants to accurately describe income, but to be inaccurate at describing wealth, in line with past work. Study 2 tests whether participants accurately infer targets as either high- or low-income and high- or low-wealth (tested separately) based on facial photographs, for which we have self-reported survey data on targets' income and wealth. Additionally, we test to see if these results varied depending on the race and ethnicity of the target in the photograph. All materials and methods for these studies were approved by the Institutional Review Board.

Study 1--Definitions of Income vs. Wealth
As noted above, income tends to be well understood, while wealth is often conflated with income by researchers, the media, and the public at large. We first seek to determine whether people actually do distinguish income and wealth by surveying an online sample of adults.

Data & Methodology
Participants were recruited via Amazon's Mechanical Turk (MTurk). An original sample of 254 participants was recruited but 27 participants were excluded due to incomplete surveys, resulting in a final sample size of 227 participants (122 female, 104 male, 1 unspecified; 109 white, 33 black, 22 Latino, 36 Asian, 20 biracial, 4 "other", 2 unspecified, and 3 refused to answer; M_{age} = 42.83, SD = 16.55; see Table 1 for sample details).

Table 1. Study 1, Summary Statistics for Participants

	N	Percent
Sex		
Male	104	45.8%
Female	122	53.7%
Refuse	1	0.4%
Race		
White	109	48.0%
Black	33	14.50%
Latino	22	9.7%
Asian	36	15.9%
Biracial	20	8.8%
Other	4	1.8
Refuse	3	1.3%
Income		
< $50,000	105	46.5%
$50,000-$99,999	92	40.7%
$100,000 +	29	12.8%
Employment Status		
Employed	93	41.0%
Unemployed	43	18.9%
Retired	42	18.5%
Seasonally Employed	10	4.4%
Not in Labor Force	25	11.0%
Student	14	6.2%
Educational Attainament		
High School	6	2.6%
Some College/Associate's	90	39.7%
Bachelor's Degree	54	23.8%
Some Graduate School	54	23.8%
Graduate Degree	23	10.1%

Notes. The data is based on self-reported demographic characteristics gathered from MTURK survey participants during study 1

All data was collected using a Qualtrics survey. Participants were first asked to define, in their own words, what it means for a person to be high-income, low-income, high-wealth, and low-

wealth. These qualitative responses were then coded by two research assistants to determine if participants were accurate or not in their responses. Definitions of income and wealth were provided to the research assistants by the research team and were based on commonly accepted definitions which have been used in prior research (Norton 2011).

For income, the following definition was provided: "Income is money that an individual or business receives in exchange for providing a good or service or through investing capital. Income is used to fund day-to-day expenses. People aged 65 and under typically receive the majority of their income from a salary or wages earned from a job." Further, they were told that "Median income is $56,000 in the United States." For wealth, the following definition was provided: "Wealth is determined by taking the total market value of all physical and intangible assets owned, then subtracting all debts. Essentially, wealth is the accumulation of resources. Specific people, organizations and nations are said to be wealthy when they are able to accumulate many valuable resources or goods." Further, they were told "Median wealth is $97,000 in the United States." Coders agreed on the accuracy of participants responses 74 percent of the time. Discrepancies were discussed and resolved by the authors.

Next, participants were asked to categorize income ranges for an individual who is low-income, followed by high-income, low-wealth, and high-wealth. The income and wealth brackets were predetermined by the research team, but participants could select as many brackets as they believe applied to the given category. For the income brackets, participants were provided with 10 different options ranging from "$0-14,999" to "$250,000 and above." For the wealth treatment, participants were provided with 13 different options, ranging from "Less than $0" to "$450,000 and above."

Finally, participants also completed the MacArthur Scale of Subjective Social Class, which accounts for a person's context (Adler et al. 2000). The MacArthur Scale allowed us to gather data on participants' subjective social class enabling us to learn more about the demographics of our sample. For this task participants were shown a ladder with 10 rungs and were presented with the following prompt:

> "Now, please think of this ladder as representing where people stand in our society. At the top of the ladder are the people who are best off, those who have the most money, most education, and best jobs. At the bottom are the people who are the worst off, those who have the least money, least education, and worst jobs or no job. Please tell us where on the ladder best represents where you think you stand on the ladder."

Since we are interested in perceptions of group-based inequality across racial groups we asked participants to not only identify where they believe they stand in society, but also where the following four racial and ethnic groups stand: white, black, Latinos, and Asian. Participants also proved basic demographic information before being debriefed.

Results and Discussion
As we suspected, we found that participants defined income accurately 58.5 percent of the time, while participants were only accurate 33.9 percent of the time when asked to define wealth.

Figure 1. Study 1, Qualitative Responses

		High	Low
Wealth	Accurate	To have a lot of money/assets; High passive income, investments or properties; Have a high value of assets.	Living paycheck to paycheck; "Low-wealth" has to do with the amount of assets or money a person possesses, regardless of how much income s/he has.
	Inaccurate	Making more than most people; Making over $250,000 per year; They have a very high income compared to everyone else	Below average income; To not have a good paying job; The same as low income.
Income	Accurate	Usually "high-income" refers to a set number, such as more than $100,000/year. What constitutes "high" can vary; Earning more than 6 figures; Someone that earns a substantial amount of money and are able to pay all bills, have a	Average pay is below middle class; Making under $30,000 a year and living paycheck to paycheck; not earning a lot of money at a low paying job; In poverty. Low paying or no job.
	Inaccurate	Wealthy; Someone who makes huge profit; Rich; Large savings, investments, and assets.	A person who displays little material wealth; Blue collar worker; Renting your home

Notes. Above are sample definitions provided by participants in study 1.

Next, we analyzed whether participants were accurate in deciding what income ranges represent low versus high income. Based on the 2017 Current Population Survey, we use the U.S. median income of $56,000 as a cutoff point between low- and high-income. We found that 89 percent of participants thought people with incomes below $45,000 were low-income. An additional 6.6 percent of participants thought the next income bracket ($45,000-$59,999) represented the cutoff for low-income individuals. The vast majority of participants (92.9 percent) reported that for someone to be high-income, they had to at least be in the income bracket that included the median income in the U.S. ($45,000-$59,999). A full 70.4% of respondents believed that people had to earn at least six-figures ($100,000) to be considered high-income.

Repeating this exercise for wealth, we use the median U.S. wealth ($97,000) as our baseline.[4] We find the majority of participants (61.2%) indicated that people with wealth below $30,000 should be described as low-wealth, while an additional 29.5% of participants thought people with wealth below $75,000 should be categorized as low wealth. In terms of high-wealth, only 15% of participants thought someone who had below $100,000 in wealth could be classified as high-wealth. A full 48.9% of the sample though individuals needed $250,000 or more in wealth to be classified as high-wealth, with the remaining 51.1% of participants reporting that people in a bracket below $250,000 was sufficient to classify people as high-wealth.

In terms of income, we find that participants both provided accurate definitions and were able to accurately select income ranges into high- or low-income. In terms of wealth, we found that participants were not accurate in their qualitative descriptions, but were fairly accurate in selecting wealth ranges for high- and low-wealth (91% categorized wealth levels that are below median wealth were "low-wealth", while 75% categorized wealth levels above the median as "high-wealth").

Regarding participants' own subjective social status ratings, results indicate that on average, participants felt they were about in the middle of society (see Table 2). In line with prior research,

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[4] This is based on both the Survey of Income and Program Participation and the Survey of Consumer Finances which report slightly different median wealth numbers for the U.S.

participants report that white individuals are seen as best off in society while black and Latino individuals are seen as less well-off than other racial groups (Zebrowitz and Montepare 2008). These trends support findings from general economic data as they pertain to income, wealth, education, and employment status (Paul et al. 2018; Noël 2018).

Interestingly, participants identify Asian individuals as better off than average, but not as well-off as white individuals. While white individuals remain the dominant group in the U.S., Asians tend to have superior economic indicators, including income, level of education, and employment (Noël 2018). These findings confirm our expectations that whites and Asian individuals are perceived as higher-status groups in comparison with black and Latino individuals, motivating Study 2. In sum, we show that people are not accurate in distinguishing between income and wealth, but they do seem to be reasonably accurate in identifying class tiers using either income or wealth, conditional on the information they were given about median levels of each.

Table 2. Study 1 Subjective Social Class Ladder

	Mean	SD
Self	4.86	2.06
White	7.61	3.47
Asian	6.45	2.71
Black	4.65	2.96
Latino	4.63	2.05

Notes. N=227 The data is based on self-reported responses to the Subjective Social Class Ladder gathered from MTURK survey participants during study 1

Study 2 -- First Impressions of Income versus Wealth by Race

To measure the accuracy of the first impressions, we asked participants to categorize a racially diverse set of photographs of real people for which we have accurate income and wealth data (a rarity within the field of studying social class). Knowing there are widespread misperceptions regarding race-based economic equality in the United States (Kraus et al. 2017), this study is among the first to test the accuracy of income and wealth perceptions coupled with variation in perceived race.

Data & Methodology

Due to IRB limitations including previous consenting processes on whom could see the photos used in this task, only undergraduates at the authors' institution were allowed to see the photographs used in this study. Undergraduate participants from a Southeastern university were recruited during fall 2017 and spring 2018 in exchange for $10 (N = 218; 101 female, 110 male, 7 did not respond; Median age = 19.7, SD = 2.1; 112 white, 37 black, 10 Latino, 48 Asian, 2 biracial, 6 "other", and 3 refused to answer).

Table 3. Study 2, Summary Statistics for Participants

	N	Percent
Sex		
Male	110	50.5%
Female	101	46.3%
Refuse	7	3.2%
Race		
White	112	51.4%
Black	37	16.97%
Latino	10	4.6%
Asian	48	22.0%
Biracial	2	0.9%
Other	6	2.75%
Refuse	3	1.38%
Income		
> $50,000	33	15.1%
$50,000-$99,999	29	13.3%
$100,000-$199,999	52	23.9%
$200,000+	61	28.0%
unsure/no answer	43	19.7%

Notes. The data is based on self-reported demographic characteristics gathered during study 2.

Finding facial stimuli in combination with data on income and wealth has posed a significant challenge for research of this type in the past. As indicated above, prior studies have looked at similar questions using income ranges, but none have used accurate income data nor have had any data on the wealth of the targets. For this study, we were able to use a proprietary dataset–the National Asset Scorecard and Communities of Color Survey (NASCC) administered by the Samuel DuBois Cook Center on Social Equity at Duke University.

This survey reports information on race and other key demographics, including income and wealth. This unique dataset is critical to our study, as no other dataset exists to our knowledge in the United States that has detailed income and wealth data in conjunction with photos of the individuals, which allow us to conduct our work on first impressions. The NASCC survey was originally developed to supplement existing national data sets that collect data on household wealth in the United States but rarely collect data disaggregated in detail by race and ethnicity.

While the survey covers five metropolitan areas in order to collect data about the assets and debt position of racial and ethnic groups at a detailed ancestral-origin level, the survey only collected photographs of a selection of the participants from the Los Angeles area. The full in-person survey in Los Angeles covered 703 people; 270 of those consented to be photographed for images that could be used in follow-up research. Among those, we had complete income and wealth data as well as a high-resolution photo for 196 targets.

Since we wanted a sample that was diverse across racial and ethnic groups, we split the remaining potential targets into the following groups based on participant self-reported race/ethnicity: white, black, Latino, and Asian (note: no racial/ethnic labels were provided to perceivers within this study since we were interested in measuring these perceptions without added cognitive information such as a label). We aimed to have roughly 30 photos per racial/ethnic group, resulting in 29 white, 30 black, 29 Latino, and 27 Asian targets for a total of 115 targets (56 male, 59

female, self-identified). All targets' gazes faced the camera. Each photo contained just a target's face and neck.

Using Qualtrics survey software, participants were randomly assigned to one of two categorization conditions: 1) high-income or low-income or 2) high-wealth or low-wealth. All faces were shown in a randomized order and participants were instructed to respond as quickly as possible during a forced-choice dichotomous categorization task by pressing either "1" for low-income/wealth or "2" for high-income using a standard computer keyboard.

Next, participants completed several exploratory measures of classism and social class essentialism. Here, we used Stevenson and Medler's 1995 Economic Belief Scale with five new questions from Bjornsdottir and Rule (2017), resulting in thirteen total questions. To measure social class preference, we adopted questions from Hadler et al. (2011). For social class essentialism, we used Kraus and Keltner's (2013) Essentialist Beliefs about Social Class Categories Scale. Finally, participants were asked to answer a number of questions to collect demographic information, including information on their race and ethnicity, family income, parental education, and subjective social class utilizing the same MacArthur Scale of Subjective Social Status as in Study 1.

Results

To test the accuracy of participants first impressions, we use the signal detection statistic A' to measure accurate (with A' = .50 indicating change). First, analyzing the income condition, we found that participants, indeed, do better random selection at categorizing targets as either high- or low-income. Overall, targets (i.e. photos) were categorized correctly in this treatment 63 percent of the time (SD = .06), which is better than the random outcome (t(108) = 15.69, p < .001). Low-income targets were significantly more likely to be rated accurately (73 percent of the time, SD = .15, t(77)=13.35, p<.001) compared to high-income targets (37 percent, SD = .21, t(36) = 7.5, p < .001).

Due to sample size, we were unable to stratify the sample across all racial and ethnic groups with signal detection measures; however, we are able to report the frequency of a target being classified correctly. Stratifying by race and ethnicity, white targets were categorized correctly 61 percent of the time, black targets were categorized correctly 57 percent of the time, Latino targets were categorized correctly 64 percent of the time, and Asian targets were categorized correctly 72 percent of the time. The groups which are least likely to be categorized correctly are high-income black and Latino targets, which were only categorized correctly 28 and 30 percent of the time respectively; this is compared to 50 percent of white and Asian high-income targets being correctly categorized. Using a Chi-square test, we ask if there is a relationship between a target being rated accurately at least 50 percent of the time (summing across all participants' ratings) and the target's self-reported racial or ethnic identity. For this test, we are able to stratify across our four main racial/ethnic groups (white, black, Latino, and Asian). We find that white and Asian targets are more likely to be categorized correctly compared to black and Latino targets.

Contrary to our predictions, we found participants overall also were above chance levels in categorizing a targets' wealth correctly. In total, participants were accurate at wealth categorization 60 percent of the time (SD = .07, t(114) = 4.19, p < .001). Following the pattern we observed for income, participants were more accurate at identifying low-wealth targets (72 percent accurate, SD = .15, t(78) = 2.04, p = .04) than high-wealth targets (32 percent accurate, SD = .17, t(35) = .25, p = .40). Thus, using a t-test, we confirmed that participants are indeed more accurate than chance at identifying low-wealth targets; however, they do not do better than random assignment in identifying high-wealth targets.

Stratifying the targets by self-reported race and ethnicity, we see that white targets are categorized correctly 49 percent of the time, black targets were categorized correctly 57 percent of the time, Latino targets were categorized correctly 63 percent of the time, and Asian targets were

categorized correctly 71 percent of the time. The groups which are least likely to be categorized correctly are high-wealth black and Latino targets, which were only categorized correctly 28 and 27 percent of the time respectively; however, high-wealth white targets do not fare much better, with only 36 percent categorized correctly. We also see that participants incorrectly categorized high-income and high-wealth black targets much more often (62 percent and 56 percent) than they incorrectly categorize low-income and low-wealth black targets (36 percent and 38 percent). Our results indicate that Asian targets are rated the most accurately in both treatments.

Finally, we test if the race or ethnicity of the participant in the experiment affects their accuracy at identifying social class across racial/ethnic groups. We do not find any statistical support to indicate that some groups are more accurate at identifying the class of those in the same group, nor those in other groups.

Discussion

In sum, two studies were conducted to investigate the accuracy of people's understanding of income and wealth (Study 1) and people's social perceptions of one's class simply from facial cues (Study 2). Through qualitative responses from Study 1, we find that participants accurately identified the meaning of income, but not wealth. When participants were provided with money ranges and asked to select ones which represent high-and low-income, we again confirm that people have an accurate understanding of income as a category to differentiate between classes. However, despite their inability to define the concept of wealth, participants were accurate at identifying ranges of wealth as high or low.

Study 2 demonstrates that participants accurately judge targets' class when it was operationalized as both income and wealth from standardized facial photos of real individuals. This is an important finding within the first impression literature. First, replicating past work, participants did better than chance at identifying white and East-Asian targets as either high-income or low-income (Bjonsdottir and Rule 2017). However, the present study also tested this same question by target race/ethnicity. When we stratify the targets by self-reported race and ethnicity we find that Asian targets are categorized correctly most frequently (72 percent), followed by Latino targets (64 percent), white targets (61 percent) and black targets (57 percent). On average, we find that the class of white and Asian targets was more likely to be accurately identified by perceivers. Participants were particularly inaccurate at identifying high-income black and Latino targets, which were correctly identified less than one-third of the time.

We also extended this past work to measure perceptions of wealth. In this treatment, we found that participants did better than chance at identifying an individual as either high- or low-wealth. However, participants were particularly inaccurate at categorizing high-wealth black and Latino targets. Overall, this work broadens the literature on social perceptions of class by studying first-person perceptions of both income and wealth across a racially diverse sample of targets.

However, future work should test the robustness of these results. While our novel and unique dataset allowed us to be the first to examine the social perceptions of wealth across targets, and the first to test the visibility of social class across numerous racial groups, there are a number of limitations that warrant further exploration. For one, additional data points regarding one's accuracy of income and wealth perceptions across different racial and ethnic groups is needed. Although not expected, participants were in fact accurate in perceiving wealth via facial cues. We believe that the natural unbalanced variation that existed within our set of photographs, with more low-wealth photos for black and Latino targets, may have led to higher rates of accuracy than we expected related to previous research on stereotype congruency. For example, if people's mental image of a poor person is a black person this may influence the results in two ways: first, this may account for the fact that people were more accurate than chance at identifying an individual's wealth since a

disproportionate number of photos for black and Latino participants were low-wealth; second, this may explain why participants in our study were particularly inaccurate at identifying high-income and high-wealth black and Latino targets (Brown-Iannuzzi et al. 2017; Lei and Bodenhausen 2017) since the hit rate was lower for that combination of social traits.

While our stimuli set was racially/ethnically diverse overall, statistically we did not have a large enough sample size to use signal detection methods across self-reported racial and ethnic groups, limiting the exploration of the heterogeneity that may exist across racial and ethnic groups. While this is a valid limitation of our current work, it should be noted that based on our knowledge alternative stimuli sets with photos and detailed wealth information do not exist. Moreover, the photographs of individuals are not evenly split between high- and low-income, nor evenly split between high- and low-wealth. While this is not an ideal research design, we feel these results still spark needed initial considerations surrounding the intersections of social class and race via one's first impressions.

Relatedly, future work should also use a more representative pool of perceiver participants. These two studies relied on Mechanical Turk workers and undergraduate students for participants—two convenience samples. Future work also could test social perceptions amongst decision makers, such as loan officers, judges, and employers for real-world ecological validity. Provided that first impressions matter greatly, especially in instances of employment opportunities and access to credit, the real-world implications of our findings are palpable (Stephens et al. 2014).

In sum, snap judgements can play an important role in limiting class mobility, perpetuate existing inequality, contribute to discriminatory practices, and can have long-run implications in continuing class stratification, especially across racial and ethnic groups (Kraus 2017; Markus 2017). Our findings suggest that the field needs to broaden its study of social perceptions of class to include other identities which can influence perceptions of class, namely race and ethnicity. Since there are important feedback loops at play, these identity intersections must be better understood, and taken into account when developing social policies related to income and wealth disparities.

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Appendix A

Questions on Classism. These were derived from Stevenson and Medler's (1995) Economic Beliefs Scale and additional questions adopted from Bjornsdottir and Rule (2017).

Participants indicated their agreement with each statement on a scale ranging from 1(strongly disagree) to 7 (strongly agree).

1. People who stay on welfare have no desire to work
2. Welfare keeps the nation in debt
3. People who don't make much money are generally unmotivated
4. Equal education opportunities exist for all people in our society
5. Homeless people should get their acts together and become productive members of society
6. Too many of my tax dollars are spent to take care of those who are unwilling to take care of themselves.
7. If every individual would carry his/her own weight, there would be no poverty
8. There are more poor people than wealthy people in prison because poor people commit more crimes.
9. The rich have exploited other to get their wealth
10. Wealth is a sign of greed and ruthlessness, not hard work.
11. The wealthy are directly responsible for the poverty of others
12. Wealthy people are untrustworthy
13. The rich exploit the system to their benefit and to detriment of others

Appendix B

Social Class Preference. These question were adopted from Haider et al. (2011) to measure class preference.

First, participants were asked which statement best described themselves.

1. I strongly prefer wealthy people to poor people
2. I moderately prefer wealthy people to poor people
3. I slightly prefer wealthy people to poor people
4. I like wealthy people and poor people equally
5. I slightly prefer poor people to wealthy people
6. I moderately prefer poor people to wealthy people
7. I strongly prefer poor people to wealthy people

Then, participants were asked how warm or cold they feel towards the following groups, with 0 = coldest feeling, 5 = neutral feeling, and 10 = warmest feeling.

1. Low income people
2. High income people
3. Low wealth people

4. High wealthy people
5. Poor people
6. Rich people

Appendix C

<u>Social Class Essentialism.</u> These questions were derived from Kraus and Keltner's (2013) Essential Beliefs about Social Class Categories.

Participants were asked to indicate their agreement with each of the following statements, ranging from 1 (strongly disagree) to 5 (strongly agree).

1. A child from a higher class can be easily picked out from a group of low-class children
2. It is easy to figure out another person's social class just by looking at them
3. A person's social class is easy to figure out even when they are from another country
4. I think even if everyone wore the same clothing, people would still be able to tell your social class
5. Other people's social class is easy to figure out
6. Children probably learn about social class automatically, without much help of adults
7. A person's social class does not change from their social class at birth
8. Social class is partly biological
9. Even after centuries, families will have the same social class as now
10. It is impossible to determine one's social class by examining their genes.

Appendix D

MacArthur Scale of Subjective Social Class. Questions adopted from Adler et al. (2000).

Now, please think of this ladder as representing where people stand in our society. At the top of the ladder are the people who are best off, those who have the most money, most education, and best jobs. At the bottom are the people who are the worst off, those who have the least money, least education, and worst jobs or no job. Please tell us where on the ladder best represents where you think you stand on the ladder.
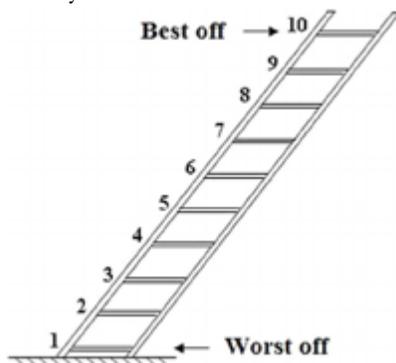
Next, using this same ladder, please tell us where you think the following racial groups stand on the ladder. Remember, people at the top of the ladder are the people who are the best off, and people at the bottom are the people who are the worst off.

Asians
Blacks
Latinos
Whites

Appendix E

Demographic Questions.

Sex:
Female
Male
Transgender
Other (please specify)
Prefer not to answer

Age: _____

Home State: _____

Native Language: _____

Were you born in the United States?
Yes   No (please specify where)_____

How many years have you lived in the United States? _____

Are you either a first- or second-generation immigrant?
Yes, I am a first-generation immigrant.
Yes, I am a second-generation immigrant.
No, I am not a first- or second-generation immigrant.
Unsure
Prefer not to answer

Please select any of the following that best describe your racial and ethnic background:

- *Asian (a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian Subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand and Vietnam)*
- *American Indian and Alaska Native (a person having origins in any of the original people of North and South America)*

- *Black or African American (a person having origins in any of the black racial groups of Africa)*
- *Native Hawaiian and other Pacific Islander (a person having origins in any of the original peoples of Hawaii, Samoa, or other Pacific Islands)*
- *Spanish/Hispanic/Latino (e.g. Mexican, Mexican-American, Chicano, Puerto Rican, Cuban)*
- *White/Caucasian (a person having origins in any of the original peoples of Europe, the Middle East, or North Africa)*
- *Biracial/Multicultural (Please specify: _____)*
- *I choose not to answer this question*

Which is your family income level?
Lower income
Middle income
High income
Unsure
Prefer not to answer

What is your estimated family income before taxes in 2016?
Below $50,000
$50,001-$100,000
$100,001-$200,000
$200,001-$300,000
$300,001-$400,000
Above $400,001
Unsure
Prefer not to answer

What is the education level of your parents?
Parent 1:
Some high school
Highschool degree
Some college
College degree
Some graduate school
Has earned a Masters/MBA
Has earned a Phd/MD/JD
Not Applicable
Unsure

Parent 2:
Some high school
Highschool degree
Some college
College degree
Some graduate school
Has earned a Masters/MBA
Has earned a Phd/MD/JD
Not Applicable
Unsure