Pro-Wealth or Anti-Elite Bias? Examining Attitudes toward the Wealthy

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Abstract

Wealth inequality is arguably one of the most consequential societal issues plaguing the 21st century. An important, but understudied, aspect of wealth inequality is people's spontaneous and self-reported attitudes toward the wealthy as well as those in the working class and people who are poor. Across four studies, participants completed various Implicit Association Tests (Greenwald et al., 1998) designed to measure their bias toward wealth groups using different stimuli (words, hourly wages, photos of people, yearly salaries, and property photos) and ways of framing the wealthy and non-wealthy social groups (wealthy and poor as well as upper class, middle class, and working class). Participants also completed self-report measures and standardized scales to assess explicit attitudes toward these groups. Across these studies, participants consistently showed a bias on the implicit measure that favoured the wealthy to varying degrees of magnitude, but their self-reported attitudes showed more favourability toward the middle class, working class, and poor compared to the upper class and wealthy. These results can be situated within the broader Bias of Crowds framework and suggest that participants have acquired societal biases in favour of the elite.

Keywords: Wealth bias, intergroup relations, implicit associations, social class

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Examining Attitudes toward the Wealthy

Wealth inequality continues to have a powerful and profound impact on the opportunities and outcomes of the people in our society (Adler, 1994; Devlin-Foltz et al., 2016; Kraus et al., 2013; Nowatzki, 2012; Stephens et al., 2012). Extensive research examining wealth inequality has focused primarily on the negative effect of financial disparities, and specifically poverty, on people's mental and physical well-being and achievement (e.g., Ansell, 2021; Evans & Kim, 2013; Kraus et al., 2017; McGrail et al., 2009; Pfeffer, 2018). However, additional barriers can arise from the associations and biases that people hold toward those who have differing levels of wealth (e.g., poor, middle-class, wealthy). The limited research to date that has examined bias toward others who differ in perceived wealth has shown a tendency for people, and especially men, to have more positive associations with wealthy people over people who are poor on implicit measures, even if they explicitly express ambivalent or negative views regarding the wealthy (e.g., Connor et al., 2022; Horwitz & Dovidio, 2017; Fung et al., 2023; Mattan & Cloutier, 2020; Williams et al., 2010, Wu et al., 2018). The goal of the proposed research was to increase our understanding of attitudinal biases based on cues to wealth, by examining attitudes and associations associated with different cues to wealth (Studies 1-4) and across different magnitudes of wealth disparities (i.e., upper class vs. working class, upper class vs. middle class, and middle class vs. working class; Study 4). Across each study, I focus primarily on understanding the affective associations that people show on implicit measures and whether these associations differ from people's self-reported attitudes. A secondary goal across each of these studies was to examine potential predictors and moderators of a pro-wealth bias.

Wealth Bias

Wealth and income inequality can evoke different attitudes and responses from people. At a systemic level, critical political economy perspectives argue that state policies tend to favour the success of corporations and the system of capitalism above and beyond that of poor and working class people (Maher & Aquanno, 2018). In other words, there are macrolevel systemic influences that push a state's policies and overall political and economic climate in a direction that privileges the views and needs of capital above those of the people. This view partly originates from Marx's seminal critique of capitalism (Marx, 1867[1887]). Consistent with this critique, and bolstered by an increasing wealth gap (Hansen, 2023), there have been demonstrations of anti-wealth sentiment in recent years, in the form of protests. These include the Occupy Wall Street movement in 2011 (Anderson, 2021), the 2010 Toronto G20 Protests (CBC News, 2010) and, more recently, the 2018 Yellow Vest movement in France (Daige, 2018). Such movements suggest that people can hold resentments and anger toward the wealthy that could be reflected in their attitudes. By contrast, psychological research situated in system justification theory (Jost et al., 2004) has found that some people adopt and endorse beliefs that support structural systems as fair and meritocratic, despite negative outcomes for working class and poor people, racialized and sexual minorities, and women (Hussak & Cimpian, 2015). As Hussak and Cimpian (2015) note, some people justify that the wealthy have money because they are smart, and as such people who are not rich are, by default, perceived as simply not as smart.

These competing views of the wealthy are consistent with a recent paper by Fiske (2019; see also Durante et al., 2017) in which they used the Stereotype Content Model (Fiske et al., 1999) to examine stereotypes of people who differ in wealth. They reanalyzed responses from 52 samples (originating in 38 different countries) and found that, on average, participants tend to

rate rich people as high in competence but low in warmth. By contrast, participants showed the reverse pattern when looking at poor targets, associating them with greater warmth but also with incompetence (cf. Durante et al., 2017). Interestingly, when considering the middle class, Fiske (2019) found that participants viewed these targets as high in both warmth and competence. Since some research has argued that most people identify with the middle class (Evans & Kelly, 2004), this could reflect an in-group bias, as predicted by Social Identity Theory (Tajfel & Turner, 2004). Connor and colleagues (2020) found in their series of studies using undergraduate and community samples that higher income targets were consistently viewed as high in competence and lower income targets were viewed as less competent, but no reliable associations between income and warmth were found. Similarly, Wu et al. (2018) examined the self-reported warmth and competence stereotypes for online community participants from both America and China and observed no association with between upper class nor middle class with warmth, for either culture. Taken together, this suggests greater evidence for a wealthy-competent stereotype, but not as much evidence for a poor-warmth stereotype. Viewing the wealthy as more competent could lead to a pro-wealth attitudinal bias when the distinction is made between the wealthy and poor, but this bias may be reduced or eliminated when the comparison group is the middle class instead of the poor.

These self-reported attitudes and stereotypes may not, however, tell the complete story because not all of an individual's cognition is fully accessible to their introspective recollection (Charlesworth & Banaji, 2023; Conrey et al., 2005; Gawronski & De Houwer, 2014; Greenwald & Banaji, 2017; Nosek et al., 2007). Both theory and research suggest that there can be a divide between one's implicit, relatively more automatic, thoughts and beliefs, and their more controlled, explicit, and declarative statements (Charlesworth & Banaji, 2023). One argument for

this cognitive perspective is that the mind is divided into two tracks. Daniel Kahneman uses the terminology of System 1 to refer to the mind's intuitive, reflexive, and effortless thinking, and System 2 to refer to its methodical, deliberate, and effortful thinking (Kahneman, 2013). Alternatively, Johnathan Haidt (2006) uses the metaphor of the rider and the elephant to refer to the same distinction, with the emphasis that the elephant (Kahneman's System 1) is more pronounced and influential. The implications of this are that although one may say they support egalitarian beliefs, their conceptual (or associative) models may not show this to be the case. One of the most common tools to assess people's spontaneously activated associations is the Implicit Association Test (IAT; Greenwald et al., 1998).

According to the Bias of Crowds model, biases on measures like the IAT reflect environmental biases rather than individual dispositions (Payne et al., 2017; cf. Connor & Evers, 2020). Payne and colleagues (2017) base their theoretical model on the previous concept of the wisdom of crowds, which finds that individual guesses of something (e.g., how many marbles in a jar) tend to be less correct than the average guess of a group. The same individuals may change their guess when asked multiple times, but the group's answer tends to remain remarkably consistent. Similarly, when individuals take the IAT multiple times, they show fluctuations in their scores and sometimes show reversed associations, even as group biases persist. Because people who live in Western industrialized countries also live in liberal democratic nations that operate under capitalism, their environment sends clear messages about the role of wealth as a key to success. This could lead to increased accessibility of cognitive concepts regarding wealthy and good that make associations on implicit measures more likely to be detected. Before Payne and colleagues proposed their model, Arkes and Tetlock (2004) argued that biases on implicit measures could be a product of cultural stereotypes that people are sensitive to but may not

necessarily personally endorse. In fact, they argue that if one is aware of a cultural stereotype, it is thus likely to be detected on an IAT even if they view the bias as repugnant. This could also explain why Black participants can sometimes show a preference on implicit measures that favours White people relative to Black people (Nosek et al., 2002), even though they would not typically endorse such a bias. This could be the product of a systemically racist environment that favours White people at a macro level.

Although limited research has examined wealth biases using implicit measures, there is some preliminary research to suggest that people show such biases based on cues to wealth. For example, Mattan and Cloutier (2020) analyzed community data from Project Implicit using a "rich" and "poor" IAT collected between 2004 and 2007. Participants in this study sorted words representing the rich (i.e., Wealthy, Prosperous, Affluent, Well Off) and poor (i.e., Poor, Impoverished, Broke, Bankrupt). The authors found that overall, men displayed a stronger pro-wealth bias on the IAT and a weaker explicit pro-wealth bias relative to women. Additionally, in their pilot dataset, men showed a higher pro-wealth score as their income increased, but this did not emerge for women. However, in the confirmatory dataset, this pattern emerged for women who showed higher pro-wealth scores as their income increased, but the same was not observed for men. These findings might be driven, at least in part, from the words used to depict rich and poor. For example, the researchers used the word "Broke," which may have affectively negative associations. Similarly, the word "Prosperous" may have positive associations. These affective associations can be independent of their associations with poor and rich people.

In another study to examine implicit wealth biases, Horwitz and Dovidio (2017, Study 3) used two single-category IATs. In their study, online mTurk participants paired either wealthy with good and bad or the middle class with good and bad, rather than comparing the two social

groups directly. One strength of this study is that participants' *absolute* associations with the wealthy and good or bad were being measured, rather than *relative* associations with good or bad as compared to the middle class (or vice versa). The researchers found that participants showed positive (versus negative) associations with the wealthy and the middle class, but the magnitude of the pro-wealth bias was larger for wealthy than for the middle class. Wu and colleagues (2017) also examined wealth biases between America and China using implicit measures. They found that in both cultures, participants more easily associated the wealthy with competence relative to the middle class on an implicit measure. Although they examined stereotyping as opposed to attitudes, their research suggests that even across different cultures, people show more positive associations with the wealthy relative to less affluent populations. Taken together, this research provides some initial evidence that, on an implicit measure, people show more positive attitudes toward the wealthy (see also John-Henderson et al., 2013).

These previous studies are limited however in that the stimuli used to assess pro-wealth bias was typically affect laden. In other words, the stimuli used to represent the wealthy and poor were synonymous with either the positive or negative words. In my research, I build on this research by first replicating these studies using affectively laden words, and then transition to different types of stimuli across the studies. As well, given the variability in self-reported attitudes toward the wealthy, it was not clear how robust this pro-wealth bias on an implicit measure might be, how it might compare to self-reported attitudes, and whether individual differences could predict or moderate wealth-based associations.

Potential Predictors and Moderators of Wealth-Based Associations

Theoretically, there are reasons to believe that individual differences can predict or moderate pro-wealth bias. One potential predictor of wealth-bias could be the endorsement of

social dominance (Pratto et al., 1994; Sidanius et al., 2004). Social dominance has been defined as the degree to which individuals wish their ingroup to be the dominant (i.e., powerful) group in society compared to their outgroups (Pratto et al., 1994). More simply, this is a "measure of support for inequality between social groups" (Ho et al., 2015, p. 1004). Original work by Pratto and colleagues (1994) found that social dominance orientation was positively correlated with both economic conservatism and the belief that resources were distributed fairly in a meritocratic system, meaning individuals at the bottom levels were deserving of their fate. Additionally, the researchers found positive correlations with the Belief in a Just World Scale and an original equal opportunity scale. Participants who believed that the outcomes individuals face are fair, and believed the United States to be a society in which everyone can succeed if they work hard, also endorsed ingroup superiority over outgroups. More recently, research conducted by Rodriguez-Bailon et al. (2017) has found that social dominance is associated with less support for government interventions that reduce inequality, such as income support programs, once again reflecting a meritocratic view of the economic system. Taken together, it seems likely that those who explicitly endorse societal hierarchies would have more positive associations with, and self-reported attitudes toward, the wealthy as compared to the poor or working class.

A second potential predictor is how much agency people believe they have in determining their life outcomes. People with an external locus of control hold the belief that events and outcomes originate and are determined by factors beyond themselves (Lachman & Weaver, 1998). By contrast, those with an internal locus of control feel they have complete control over their outcomes (Lachman & Weaver, 1998). Sense of control can be further subdivided into personal mastery and perceived constraints, which are seen as relatively mutually exclusive. People with a high sense of personal mastery see themselves as being

capable of doing what needs to be done to achieve their goals and thus have a low perception of constraints, whereas those with a low sense of personal mastery view external obstacles as impediments to their goals and are more likely to perceive constraints (Lachman & Weaver, 1998). Early research by Lachman and Weaver (1998) found that those who were lower income also had lower levels of personal mastery and higher levels of perceived constraints. More recently, Kraus and colleagues (2009) found that people with a greater sense of control, who had more internal explanations for both successes and failures, tended to generalize these internal abilities to other people, attributing wealth to earned success and poverty to earned punishment. This research suggests that people who have a greater sense of control could have more positive views and attitudinal associations with wealth and wealthy people.

One additional factor that could influence pro-wealth biases is one's subjective assessment of their wealth status. As argued by Social Identity Theory (Tajfel & Turner, 2004), people tend to view their groups more positively than other groups. This could result in people who see themselves as more wealthy, or of a higher social class, showing a higher pro-wealth association and those who see themselves as less wealthy or of a lower social class showing a reduced, eliminated, or even reversed pro-wealth bias on an implicit measure. In support of this possibility, recent research in Denmark by Mijs and colleagues (2022) found that higher levels of subjective social class were associated with higher levels of meritocratic reasons (e.g., working hard, highly skilled). In addition, lower levels of subjective social class were associated with stronger beliefs that social structures determined success. In line with Social Identity Theory and Mijs et al. (2022), those higher in subjective social class might engage in motivated reasoning to explain their position in society as that pertaining to their deserved (or earned) successes.

The Present Research

The main goal of the current research was to examine people's spontaneously activated (implicit) attitudes based on cues to wealth. A few studies have examined wealth bias using implicit measures, and these studies have provided some initial evidence of a pro-wealth bias (Connor et al., 2023; Horwitz & Dovidio, 2017; Fung et al., 2023; Mattan & Cloutier, 2020; Williams et al., 2010, Wu et al., 2018). Given the mixture of community (Connor et al., 2020; Horwitz & Dovidio; Mattan & Cloutier, 2020; Wu et al., 2018) and undergraduate samples (Connor et al., 2020) that have convergent findings, I did not expect there would be systematic differences based on this factor in my research. However, should wealth biases emerge in my research, it could be argued that this is a conservative test given that students tend to be lower in personal income and thus may align more with those of modest wealth status. One point of caution of this research topic is that research using implicit measures in the context of social class and wealth inequality is largely absent in the broader literature with a meta-analysis by Lai and Wilson (2021) finding that 85% of the articles they found on intergroup biases using implicit measures were focused on race and ethnicity, gender, sexual orientation, or political party. Previous research has also focused largely on the biases of racially homogenous samples of primarily White participants, often using stimuli and headers that are affect-laden. To address this limitation, I examined the robustness of this pro-wealth bias with a racially/ethnically and economically diverse sample, using a variety of different stimuli. Specifically, I examined the robustness of a pro-wealth bias on an implicit measure when participants were presented with different target groups (e.g., wealthy/poor; wealthy people/poor people; upper class/working class) and stimuli (e.g., words, wages, photos of people, salaries, and property photos). Based on

these previous findings, across each of the four pre-registered studies, I hypothesize that participants would show a pro-wealth association on implicit measures.

A secondary goal of these studies was to identify potential predictors and moderators of implicit wealth associations. Specifically, across each of the four studies, I examined if people's wealth association on implicit measures could be associated with their self-reported wealth attitudes, Social Dominance Orientation, Sense of Control, and Subjective Social Class. One possibility was that those with more positive self-reported attitudes toward the wealthy, higher Social Dominance Orientation, greater Sense of Control, and greater Subjective Social Status ratings could show a stronger pro-wealth bias on the IAT (and vice versa). However, given that implicit and explicit measures are not always related (e.g., Payne et al., 2017), another possibility was that these self-report measures would not correlate with bias on the implicit measure. Across each study I tested these competing possibilities. In addition, given previous findings, in an exploratory manner in Study 1, I examined whether wealth bias on implicit measures is moderated by people's gender. In accordance with open science practices, the study hypotheses, measures, and analysis plan for each study were preregistered on the Open Science Framework.

Study 1

The primary goal of Study 1 was to examine whether people would show a pro-wealth bias on implicit measures. I predicted that participants would show a positive wealth bias, such that participants would, on average, be faster to pair wealth-related words with good, and poor-related words with bad, relative to the reverse pairing. I also examined whether the magnitude of the association depended on how people are asked to conceptualize the concept of wealth and poverty. Specifically, people were randomly assigned to complete an IAT in which the category headers depicted conceptual wealth (i.e., wealthy and poor) or wealth as a social class (i.e.,

wealthy people / poor people). This allowed me to examine whether the magnitude of bias favoring the concept of wealthy (versus poor) is comparable to the magnitude of bias toward people who belong to those groups. As outlined in the pre-registration, I did not anticipate finding evidence of a difference between these conditions. However, if there was a difference, I anticipated it would be that participants in the people condition (i.e., wealthy people/poor people) would show a reduced pro-wealth bias. The rationale behind this prediction was that whereas individuals could hold positive attitudes toward the concept of having wealth (or not being poor), they may have more ambivalent or even negative associations toward wealthy (versus poor) people who might be perceived as "elites" who benefit financially while others struggle (Tiku & Greene, 2021).

A secondary goal of this study was to examine whether bias on the IAT was moderated by the gender of the participant, and for this reason an equal number of men and women were recruited. No effect of gender was anticipated. However, based on some previous (but inconsistent) evidence that men show a stronger pro-wealth association, combined with research showing men may value economic wealth more than women (Mattan & Cloutier, 2020; Williams et al., 2010), I anticipated that if gender moderated effects, men would show a stronger association between wealth and good than women. This study had a 2 (Wealth Condition: Wealthy People/Poor People, Wealthy/Poor) x 2 (Participant Gender: Men or Women) between-subjects design.

Finally, exploratory analyses were undertaken to examine whether participants' Social Dominance Orientation, Sense of Control, and Subjective Social Class were correlated with participants bias on the implicit measure. It was predicted that if a relationship emerged, greater pro-wealth associations would be related to more positive self-reported attitudes toward wealthy

(versus poor) people, higher Social Dominance Orientation, greater Sense of Control, and/or Subjective Social Class. In addition, I expected self-reported wealth bias to be correlated with Social Dominance Orientation, Sense of Control, and Subjective Social Class. The study hypotheses, measures, and analysis plan can be found on OSF (https://osf.io/fc9yg/?view_only=2534b97c701c4bdc9bb123bd5209ae75).

Method

Participants

An *a priori* power analysis indicated a minimum of 128 participants (32 per condition) was needed in order to detect a medium (0.25) effect size with .80 power at the standard alpha error probability (.05). Because of the online nature of the study and the expected attrition and failure to pass attention checks, we oversampled with a stopping rule of 200 participants that included 100 women and 100 men. A total of 200 timeslots were posted for recruitment; after removing duplicate data (n = 12) and participant withdrawal (n = 3), this resulted in 185 unique participants. Based on exclusion guidelines used by Lipman et al. (2021), eighteen participants were excluded from further analyses for the implicit data due to missing IAT data (n = 3), greater than 10% of their responses being less than 300 ms (n = 8) or an error rate of 35% or greater (n = 7). Given that gender was a factor in our design, three additional participants were excluded from the implicit data because they identified as non-binary (n = 1) or preferred not to indicate their gender identity (n = 2). This resulted in 164 participants (M_{age} = 20; SD = 3.83; 82 men and 82 women) with data on the implicit measure. Participant racial/ethnic backgrounds included South Asian (n = 37), Middle Eastern (n = 32), Black (n = 22), Southeast Asian (n = 17), East Asian (n = 15), White (n = 15), Latin American (n = 11), Mixed Race (n = 7), South American (n = 2) and those who indicated other (n = 6). Participants who were excluded from the IAT but nonetheless

had explicit and self-report data were retained for these analyses. Six participants were excluded from the explicit data for failing attention checks (n = 6). This resulted in 179 participants (M_{age} = 20.06; *SD* = 4.28; 86 men, 90 women, 1 non-binary, and 2 who preferred to not answer).

Materials

Implicit Wealth Bias. The Implicit Association Test (Greenwald et al., 1998) was created to test the speed of affective associations with the target concept of wealth. After providing instructions for the task, two sets of 20 practice trials were presented sequentially, in random order using Millisecond's (2022) Inquisit 6.6.1 software. In the first set of practice trials, participants were asked to use one key on a computer keyboard when they saw words associated with the concept of wealth (i.e., Wealthy, Rich, Luxury, Privileged, Mansion, and Upper Class) and another key when they saw words associated with the concept of poverty (i.e., Poor, Disadvantaged, Broke, Underprivileged, Destitute, and Lower Class). Responses were guided by green word headers that appeared in the top left and right of the screen; depending on their randomly assigned conditions, these headers were either "Wealthy" and "Poor" or "Wealthy People" and "Poor People". In the second set of practice trials, participants used one key to categorize Good words (i.e., Appealing, Fantastic, Friendship, Fabulous, Delightful, Laughing, Cheerful, and Happy) and another key to categorize Bad words (i.e., Angry, Ugly, Horrible, Rotten, Yucky, Hatred, Despise, and Disgust) using the headers "Good" and "Bad" in black ink.[1]

These two sets of practice trials were followed by one of two critical blocks that each included 60 (20 practice and 40 real) critical trials. In each critical block, all of the previously sorted words were presented in random order. In one critical block, the target and attributes were

[1] Words depicting wealth were generated from previous research (e.g., Mattan & Cloutier, 2020, Rudman et al., 2002, Williams et al., 2010) and online searches for synonyms and antonyms. Words depicting good and bad were derived from Nosek et al. (2002) and Mattan and Cloutier (2020).

combined such that one key was paired with words associated with Wealthy (or Wealthy People) and Good and another key was paired with words associated with Poor (or Poor People) and Bad. After an additional practice block (20 trials) where the position of the attribute labels was reversed, the second critical block was presented. In the other critical block, the target and attributes were reversed such that the one key was used to categorize Poor (or Poor People) and Good words and the other key was used to categorize Wealthy (or Wealthy People) and Bad words. The order of the two critical blocks was counterbalanced across participants. The reaction times for each critical block were collected and transformed into a *D* score as outlined by Greenwald et al. (2003). Specifically, I calculated the difference between the mean response latency for each block's critical trials and divided this number by the pooled standard deviation. In this study, a positive *D* score on the IAT, analogous to a Cohen's *d* effect size, reflects a pro-wealth bias, with faster responding occurring when wealth was paired with good and poverty was paired with bad, relative to the reverse pairing.

Self-Reported Wealth Bias. Explicit wealth bias was assessed using two feeling thermometers. Statements range from 1 (extremely cold) to 10 (extremely warm) toward wealthy people, and in a separate question toward poor people. In addition, using a seven-point scale, people were asked to indicate which statement best describes them using items that ranged from strongly prefer people who are wealthy to people who are poor (1) to strongly prefer people who are poor to people who are wealthy (7).

Perceived Societal Wealth Bias. To assess perception of societal views about wealth, the statements asked participants how society views the rich and the poor on a Likert scale from 1 (strongly negative) to 7 (strongly positive) for both wealthy people and poor people as well as

society's attitude toward wealth attainment and poverty from 1 (strongly discouraged) to 7 (strongly encouraged).

Social Dominance Orientation. The social dominance orientation (SDO) questionnaire (Pratto et al., 1994) consisted of 16 statements that measure endorsement of social hierarchy in society. Participants were asked to rate statements using a scale from 1 (very negative) to 7 (very positive), with sample statements including "It's OK if some groups have more of a chance in life than others" and "Group equality should be our ideal" (Pratto et al., 1994, p. 763). Items 9-16 on the measure were reverse coded, and all 16 items were averaged, with higher scores indicating greater SDO.

Sense of Control. The sense of control questionnaire (Lachman & Weaver, 1998) consisted of 12 statements that participants were asked to rate using a scale that ranged from 1 (strongly disagree) to 7 (strongly agree). Four statements measured personal mastery and a sample item includes, "I can do just about anything I really set my mind to" (Lachman & Weaver, 1998, p. 765). The remaining eight items measured perceived constraints, such as "There is little I can do to change the important things in my life" (Lachman & Weaver, 1998, p. 765). Items in the perceived constraints subscale were reverse coded, and overall sense of control was computed from the average on all 12 items, with higher scores indicating great sense of control.

Subjective Social Status. The MacArthur Scale of Subjective Social Status (Adler et al., 2000) consisted of a ladder with numbers on each rung. Participants read that the bottom rungs represented those people the least well off in Canada and the top rungs represented those who are the most well off in Canada. Participants were asked to consider their own and their family's

backgrounds and indicate from 1-10 where they saw themselves in relation to other people in Canada.

Self-Reported Social Class. Participants were asked to indicate their self-reported social class as poor, lower middle class, upper middle class, or wealthy.

Demographics Questionnaire. Participants were asked to indicate their age, race, gender, as well as additional demographics questions. For exploratory purposes, participants were also asked to rate their political ideology from very liberal (1) to very conservative (7) (based on Kraus et al., 2009) and were asked to indicate whether their peer group or social circle is economically heterogenous, economically homogeneous and similar to them, or economically homogeneous but dissimilar to them.

Procedure

Participants were recruited from the York University Undergraduate Research Participant Pool (URPP) and were directed to a Qualtrics consent form. Participants were then randomly assigned to one of the two main IAT conditions (Wealthy/Poor or Wealthy People/ Poor People) which they completed using Millisecond's (2022) Inquisit version 6 software. After they completed the IAT, participants were directed back to Qualtrics to complete the self-report measures, which included three attention check questions (e.g., "Select the response Strongly Disagree"). Finally, participants were debriefed, thanked for their time, and asked to provide post-debriefing consent before being granted credit toward their introductory psychology course.

Results and Discussion

Main Analyses

Implicit Wealth Bias. To examine whether participants showed evidence of an implicit pro-wealth bias, I conducted a one-sample *t*-test with the average *D* score of all participants

compared against zero. Consistent with my preregistered hypothesis, participants showed evidence of a pro-wealth bias on this implicit measure, $D = 0.87$ ($SD = 0.34$, [95%CI: 0.82, 0.92]), $t(163) = 33.04$, $p < .001$, Cohen's $d = 2.58$ [95%CI: 2.26, 2.90], see Table 1 for the descriptive statistics for all measures. This pattern persisted even when each condition was analyzed separately. Specifically, participants in the Wealthy/Poor condition were faster to pair wealthy with good and poor with bad, $D = 0.89$, $SD = .35$, [95%CI: 0.82, 0.97], $t(80) = 23.09$, $p < .001$, Cohen's $d = 2.57$ [95%CI, 2.11, 3.02], relative to the reverse pairing. Similarly, participants in the Wealthy People/Poor People condition were faster to pair wealthy people with good and poor people with bad, $D = 0.84$, $SD = .32$, [95%CI: 0.77, 0.91], $t(82) = 23.66$, $p < .001$, Cohen's $d = 2.60$ [95%CI: 2.11, 3.02], relative to the reverse pairing.

Table 1

Descriptive statistics for Study 1

Variable	N	Mean	SD	SE
D Score	164	0.87	.34	.03
Feeling Thermometer – Wealthy People	179	5.77	1.96	.15
Feeling Thermometer – Poor People	179	6.36	1.98	.15
Relative Preference - Wealthy over Poor People	179	4.06	1.19	.09
Subjective Social Status	179	6.07	1.57	.12
Sense of Control	179	5.09	.90	.07
Social Dominance Orientation	179	2.40	1.05	.08
Political Orientation (Increased Conservativism)	179	3.60	1.29	.10

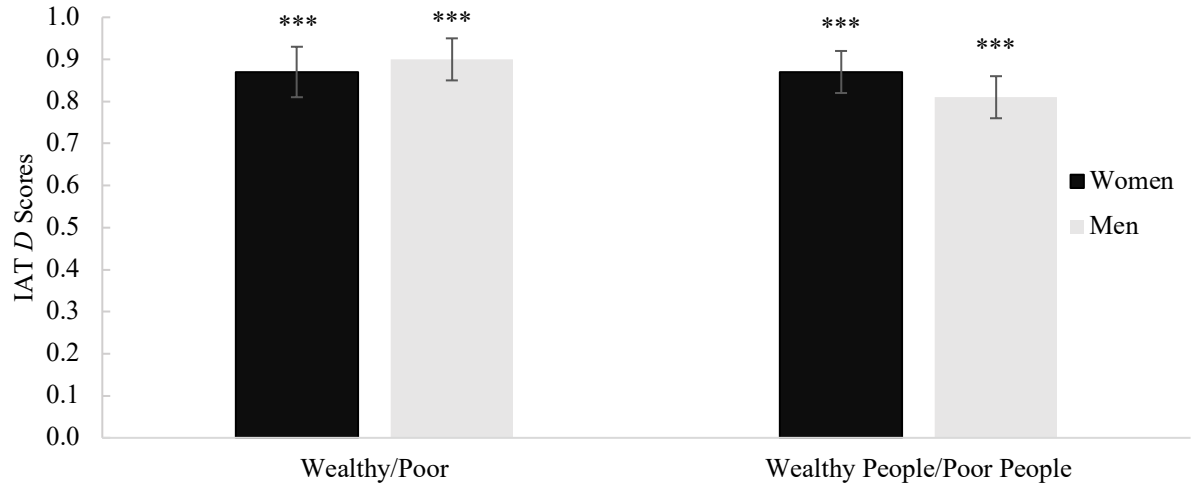
Note. Sample size reflects current numbers after exclusions

To examine whether the magnitude of this wealth bias on the implicit measure differed by Condition or Participant Gender, I conducted a 2 (Condition: Wealthy/Poor or Wealthy People/Poor People) x 2 (Participant Gender: Women or Men) between-subjects ANOVA with participant *D* score serving as the dependent variable. Consistent with my preregistered hypotheses, there was no evidence of a difference by Condition, $F(164, 1) = 0.94$, $p = .333$, $\eta_p^2 = 0.006$ or Participant Gender, $F(164, 1) = 0.07$, $p = .796$, $\eta_p^2 < 0.001$, and the interaction between Condition and Participant Gender was not statistically significant, $F(164, 1) = 0.61$, $p = .437$, η_p^2

= 0.004; see Figure 1. Taken together, these findings support my first hypothesis that participants would show a pro-wealth bias on this implicit measure that was not moderated by the headers used (Wealthy/Poor versus Wealthy People/Poor People) or the gender of the participants.

Figure 1

Implicit association D scores by condition and participant gender in Study 1



Note. Across both conditions, a strong positive *D* score was observed. No significant differences emerged between conditions nor participant genders. Error bars represent standard errors (***$p < .001$).

Self-Reported Wealth Bias (Feeling Thermometers) To examine participants' warmth toward wealthy and poor people, one-sample *t*-tests were first run against the scale midpoint (5.5) for participants' ratings on the feeling thermometers for each target group. Participants' feelings toward wealthy people did not significantly differ from the midpoint ($M = 5.77$ $SD = 1.96$), $t(178) = 1.85$, $p = .066$, Cohen's $d = .14$ [95%CI: -.01, .29], suggesting an attitude that was not particularly positive or negative toward wealthy people. By contrast, participants' self-reported feelings toward poor people reflected greater warmth ($M = 6.36$, $SD = 1.98$), with the ratings differing significantly from the midpoint, $t(178) = 5.78$, $p < .001$, Cohen's $d = .43$ [95%CI: .28, .59]. In addition, the results of a paired-samples *t*-test suggest that, in contrast to their implicit pro-wealth bias, participants' self-reported attitudes were significantly more

positive toward poor people as compared to wealthy people, $t(178) = -2.60$, $p = .01$, Cohen's $d = -.20$ [95%CI: -.34, -.05].

Self-Reported Wealth Bias (Relative Preference). In addition, participants' relative preference score was examined to see if participants similarly expressed a preference for poor people over wealthy people when the two groups were compared on the same measure. The results of a one-sample *t*-test comparing to the scale midpoint (4) revealed no difference on this measure ($M = 4.06$, $SD = 1.19$), $t(178) = .69$, $p = .489$, Cohen's $d = .05$ [95%CI: -.10, .20], suggesting that when participants considered their attitudes in a relative manner, they did not express a preference for poor or wealthy people.

Additional Analyses

Perceptions of Societal Wealth Biases. For exploratory purposes, I examined participants' perceptions of societal attitudes toward wealthy and poor people, and society's encouragement of wealth attainment and poverty. To examine this, I first conducted one-sample *t*-tests with participant mean responses compared against the scale midpoint of 4. Participants' responses suggest that they believe that wealthy people are liked in society ($M = 5.25$, $SD = 1.75$), $t(178) = 9.52$, $p < .001$, Cohen's $d = .71$ [95%CI: .55, .88]. Participants also indicated a belief that poor people are disliked by society ($M = 2.82$, $SD = 1.35$), $t(178) = -11.65$, $p < .001$, Cohen's $d = -.87$ [95%CI: -1.04, -.70]). In addition, a paired-samples *t*-test confirmed that participants on average believe that people's attitudes toward the wealthy are more positive than their attitudes toward poor people, $t(178) = 13.57$, $p < .001$, Cohen's $d = 1.01$ [95%CI: .83, 1.19]. Participants also indicated that society encouraged wealth attainment ($M = 6.32$, $SD = 1.13$), $t(178) = 27.64$, $p < .001$, Cohen's $d = 2.07$ [95%CI: 1.81, 2.33] and discouraged poverty ($M = 2.05$, $SD = 1.55$), $t(178) = -16.85$, $p < .001$, Cohen's $d = -1.25$ [95%CI: -1.45, -1.06].

Correlations Between Implicit and Explicit Measures

As can be seen in Table 2, my preregistered hypothesis that a positive correlation would emerge between participant *D* scores and Social Dominance Orientation was not supported (r = -.03, p = .730). However, my preregistered hypothesis concerning a positive correlation between Social Dominance Orientation and their relative preference was supported (r = .17, p = .020), with people who expressed greater Social Dominance Orientation also expressing a greater relative preference for wealthy people over poor people. Similarly, Social Dominance Orientation was related to greater warmth toward wealthy people (r = .22, p = .003) and less warmth toward poor people (r = -.20, p < .008).

No statistically significant correlations emerged between participant *D* scores and the explicit measures. However, exploratory analyses revealed several additional correlations. First, participants' warmth toward wealthy people was negatively correlated with their warmth toward poor people (r = -.17, p = .026), positively correlated with their explicit preference for wealthy over poor people (r = .44, p < .001). Participants' sense of control was positively correlated with participants' subjective social class (r = .20, p = .007) and negatively correlated with their Social Dominance Orientation (r = -.20, p =.007). Lastly, participants' conservativism was positively correlated with their subjective social class (r = .15, p = .051), and this correlation approach statistical significance. Conservatism was also positively correlated with Social Dominance Orientation (r = .33, p < .001). All other correlations were not statistically significant (p's > .050).

Table 2

Correlation matrix for Study 1

Variable	1	2	3	4	5	6	7
1. *D* Score	-						
2. Feeling Thermometer – Wealthy People	.11 [-.04, .26]	-					
3. Feeling Thermometer – Poor People	-.09 [-.25, .06]	**-.17*** [-.31, -.02]	-				
4. Relative Preference – Wealthy People over Poor People	.13 [-.03, .28]	**.44***** [.31, .55]	-.31 [-.44, -.17]	-			
5. Subjective Social Status	-.09 [-.24, .06]	.15 [.00, .29]	-.01 [-.15, .14]	.14 [-.01, .28]	-		
6. Sense of Control	.04 [-.12, .19]	.02 [-.13, .17]	-.05 [-.19, .10]	.01 [-.13, .16]	**.20**** [.06, .34]	-	
7. Social Dominance Orientation	-.03 [-.18, .13]	**.22**** [.07, .35]	**-.20**** [-.34, -.05]	**.17*** [.03, .31]	.08 [-.07, .23]	**-.20**** [-.34, -.06]	-
8. Political Orientation (Increased Conservatism)	-.01 [-.16, .15]	**.16*** [.01, .30]	-.03 [-.18, .12]	.07 [-.08, .21]	.15 [-.001, .29]	.15 [-.15, .14]	**.33***** [.19, .45]

Note. *** $p < .001$ ** $p < .01$ * $p < .05$

Overall, participants exhibited a strong pro-wealth bias on this implicit measure, supporting my principal pre-registered hypothesis. Consistent with my predictions, this bias did not differ between participant gender nor between conditions. This suggests that the pro-wealth bias measured by the IAT is not sensitive to framing effects in terms of how the wealthy and poor are depicted (i.e., generally as a social class or as individual people). As well, participants expressed greater warmth toward poor people while not showing any warmth or coldness toward wealthy people, and the warmth shown toward poor people significantly differed from their ratings toward wealthy people. Participants' pro-wealth biases did not correlate with any of the explicit measures, which was not consistent with my pre-registered hypotheses. Given the highly valanced nature of the words used in the IAT, in Study 2 I aimed to replicate and extend these findings using new stimuli and a new framing condition.

Study 2

The primary goal of Study 2 was to replicate and extend the findings of Study 1, by depicting wealth and poverty using hourly wages rather than words. One limitation to Study 1 is that words used to depict wealth (e.g., privileged) and poverty (e.g., disadvantaged) might be inherently positively and negatively valanced, leading to a pro-wealth bias based on word valence alone. In Study 2, I instead made use of hourly wages to depict wealth and poverty. This allowed me to determine whether the findings from Study 1 were exclusively due to the inherent valence of the words presented or reflect a more general bias. In addition, to test whether any bias from Study 1 was due to the valence of the header itself (i.e., wealthy people and poor people), a new condition, specifically an Upper Class/Working Class condition, was introduced to test the robustness of a pro-wealth bias and whether the magnitude of bias depends on the

description of the target groups. As such, this study had a two condition between-subjects design: Wealthy People/Poor People or Upper Class/Working Class.

As outlined in my pre-registration, it was predicted that a pro-wealth association would be found such that participants would be faster to associate Wealthy People or Upper Class people with good and Poor People or Working Class people with bad, relative to the reverse pairing. I did not anticipate an effect of condition; however, if there was a significant difference in wealth biases between conditions, I predicted a stronger pro-wealth implicit bias for participants in the wealthy and poor people condition relative to participants in the upper class and working class condition because it seems likely that participants would hold stronger negative attitudes toward the poor than those held toward the working class. All other hypotheses relating to Social Dominance Orientation, Sense of Control, and Subjective Social Status were the same as Study 1. The study hypotheses, measures, and analysis plan can be found on OSF (https://osf.io/nf257/?view_only=1bccd19295264b4791ffbb89999bbd33).

Method

Participants

An *a priori* power analysis indicated I would need a minimum of 200 participants (50 per condition) to detect a medium (0.25) effect size with .80 power with the standard alpha error probability (.05). To account for attrition and failing attention checks, I oversampled with a stopping rule of 250 participants attempting to complete the study. A total of 233 participants completed the study. However, after removing duplicate data (n = 10) and participant withdrawals (n = 12) this resulted in 211 unique participants. A total of 17 participants were excluded from the implicit measure because of missing IAT data (n = 2), greater than 10% of their responses being less than 300 ms (n =14), or an error rate of 35% of greater (n = 1). This

resulted in 194 participants for the IAT (M_{age} = 20.14; SD = 3.80; 127 women, 64 men, 3 non-binary or not reported). A *post hoc* sensitivity power analysis indicated that with 194 participants (48-49 per condition), we could still detect a medium (0.25) effect size with .80 power at the standard alpha error probability (.05). The racial and ethnic representation for the IAT included White (*n* = 50), South Asian (*n* = 43), Black (n = 26), Middle Eastern (*n* = 23), East Asian (*n* = 14), Southeast Asian (*n* = 12), Latin American (*n* = 4), South American (*n* = 2), Polynesian (n = 1), Mixed race (n = 15) and Other (*n* = 4). Participants who were excluded from the IAT but nonetheless had explicit and self-report data were retained for these analyses. Twenty-six participants were excluded from the explicit and self-report measures for failing two or more attention checks (n = 26). The explicit measures included 185 participants (M_{age} = 20.08; SD = 3.87; 118 women, 63 men, 2 non-binary, and 2 who preferred to not answer).

Materials

The materials for Study 2 were identical to Study 1 with the following exceptions:

Implicit Wealth Bias. The IAT used hourly wages to depict Wealthy People/Upper Class people (i.e., $550/hr, $600/hr, $650/hr, $700/hr, $750/hr) as well as Poor people/Working Class people (e.g., $15.50/hr, $16/hr, $16.50/hr, $17/hr, $17.50/hr) and participants were randomly assigned to see categories headers that included Wealthy People/Poor People (as per Study 1) or Upper Class/Working Class.

Self-Reported Wealth Bias. Participants were also asked to complete a feeling thermometer for Upper Class and Working Class as well as a relative preference scale between the Upper Class and Working Class.

Perceived Societal Wealth Bias. In addition to the questions about Wealthy People and Poor People, participants in Study 2 were also asked to rate their perceptions of societal wealth biases toward the Upper Class and Working Class.

Demographic Questionnaire. In addition to the standard demographic questionnaire, I also asked participant to indicate their income, first in response to discrete categories that ranged from (1) less than $15.50 an hour to (8) greater than $800 an hour, and then as an open-ended question that asked for participants' current or most recent hourly wage.

Procedure

The procedure was identical to Study 1.

Results and Discussion

Main Analyses

Implicit Wealth Bias. To examine whether participants again showed evidence of a pro-wealth bias, I conducted a one-sample *t*-test comparing the average *D* score of all participants against zero. Consistent with my preregistered hypothesis, with an average *D* score of 0.41 (*SD* = .47, [95%CI: 0.34, 0.48]), there was evidence of a pro-wealth bias on this implicit measure, $t(193) = 12.18$, $p < .001$, Cohen's $d = .87$ [95%CI: .71, 1.04], see Table 3 for the descriptive statistics for all measures. This pro-wealth bias was also found when each condition was analyzed separately. Participants in the Wealthy People/Poor People condition were faster to pair wealthy people with good and poor people with bad (*D* = .50, *SD* = .47, [95%CI: 0.40, 0.59]), $t(94) = 10.27$, $p < .001$, Cohen's $d = 1.05$ [95%CI: .80, 1.30] relative to the reverse pairing. Participants in the Upper Class/Working Class condition similarly were faster to pair upper class with good and working class with bad (*D* = .32, *SD* = .45, [95%CI: 0.23, 0.41]), $t(98) = 7.18$, $p < .001$, Cohen's $d = .72$ [95%CI: .50, .94]. An independent samples *t*-test comparing the average *D*

score across conditions revealed a difference in the magnitude of bias across conditions; participants in the Wealthy People/Poor People condition had greater pro-wealth bias than participants in the Upper Class/Working Class condition $t(192) = 2.56$, $p = .011$, Cohen's $d = .37$ [95%CI: .08, .65]. This is somewhat consistent with the pre-registered hypothesis; I anticipated that there would be no difference across conditions; however further noted that if a difference were to emerge, bias would be greater in the Wealthy People/Poor People condition.

Table 3

Descriptive statistics for Study 2

Variable	N	Mean	SD	SE
D Score	194	0.41	.46	.03
Feeling Thermometer – Wealthy People	185	5.51	2.00	.15
Feeling Thermometer – Poor People	185	6.29	2.15	,16
Feeling Thermometer – Upper Class People	185	5.79	2.02	.15
Feeling Thermometer – Working Class People	185	7.45	1.81	.13
Explicit Preference – Wealthy or Poor People	184	4.21	1.26	.09
Explicit Preference – Upper Class or Working Class	185	3.66	1.51	.11
Subjective Social Status	185	5.82	1.53	.11
Sense of Control	185	4.81	.91	.07
Social Dominance Orientation	185	2.41	1.10	.08
Political Orientation (Increased Conservativism)	185	3.61	1.42	.10

Note. Sample size reflects current numbers after exclusions

Figure 2

Implicit association D scores by condition for Study 2

Note. Across both conditions, a moderate positive *D* score was observed. As well, a significant difference emerged between conditions with participants in the Wealthy People/Poor People condition having higher *D* scores on average. Error bars represent standard errors (***$p < .001$; *$p < .05$).

Self-Reported Wealth Bias (Feeling Thermometers). To examine participants' warmth toward wealthy and poor people, one-sample *t*-tests were first run against the scale midpoint (5.5) for participants' ratings on the feeling thermometers for each target group. Participants' feeling thermometer for wealthy people ($M = 5.51$ $SD = 2.00$), $t(184) = .09$, $p = .927$, Cohen's $d = .01$ [95%CI: -.14, .15] and upper class people ($M = 5.79$, $SD = 2.02$), $t(184) = 1.92$, $p = .057$, Cohen's $d = .14$ [95%CI: -.004, .29] did not differ from the midpoint. By contrast, as in Study 1, participants' feelings toward poor people ($M = 6.29$, $SD = 2.15$), $t(184) = 4.98$, $p < .001$, Cohen's $d = .37$ [95%CI: .22, .51], and working class people ($M = 7.45$, $SD = 1.81$), $t(184) = 14.70$, $p < .001$, Cohen's $d = 1.08$ [95%CI: .90, 1.26] showed warmth which significantly differed from the midpoint. Paired samples *t*-tests further revealed that participants again showed greater warmth toward poor people over wealthy people, $t(184) = -3.34$, $p = .001$, Cohen's $d = -.25$ [95%CI: -39, -.10]. They similarly expressed greater warmth for working class people over upper class people

t(184) = -9.15, *p* < .001, Cohen's *d* = -.67 [95%CI: -.83, -.51]. In addition, exploratory paired-samples *t*-tests suggest that participants were warmer toward the upper class compared to the wealthy *t*(184) = 2.97, *p* = .003, Cohen's *d* = .22 [95%CI: .07, .36]. As well, they expressed greater warmth toward the working class over the poor *t*(184) = -8.09, *p* < .001, Cohen's *d* = -.59 [95%CI: -.75, -.44]. These findings suggest that participants are more positive toward social classes when they are framed as upper and working class as opposed to wealthy and poor.

Self-Reported Wealth Bias (Relative Preference). One-sample *t*-tests with the mean relative preferences scores tested against the scale midpoint (4) revealed that, unlike the results of Study 1, participants expressed a preference for wealthy people over poor people (*M* = 4.21, *SD* = 1.26), *t*(183) = 2.22, *p* = .028, Cohen's *d* = .16 [95%CI: .02, .31]. By contrast, participants expressed a preference for working class people over the upper class people (*M* = 3.66, *SD* = 1.51), *t*(184) = -3.08, *p* = .002, Cohen's *d* = -.23 [95%CI: -.37, -.08].

Additional Analyses

Awareness of Societal Wealth Biases. For exploratory purposes, I examined if participants showed awareness of societal perceptions of wealthy and poor people, and society's encouragement of wealth attainment and of poverty. I conducted one-sample *t*-tests with participant mean responses compared against the scale midpoint (4). Participants believed that wealthy people (*M* = 5.25, SD = 1.77), *t*(184) = 9.59, *p* < .001, Cohen's *d* = .71 [95%CI: .54, .87], and upper class people (*M* = 5.25, SD = 1.74), *t*(184) = 9.80), *p* < .001, Cohen's *d* = .72 [95%CI: .56, .88], are liked by society. Additionally, participants believed that society likes working class people (*M* = 4.54, SD = 1.32), *t*(184) = 5.54, *p* < .001, Cohen's *d* = .41 [95%CI: .26, .55]. Participants also said that poor people (*M* = 2.98, SD = 1.24) are disliked by society, *t*(184) = -11.23, *p* < .001, Cohen's *d* = -.83 [95%CI: -.99, -.66]. Regarding wealth attainment,

participants believed that society encourages wealth attainment (M = 6.07, SD = 1.26), $t(184)$ = 22.43, $p < .001$, Cohen's d = 1.65 [95%CI: 1.43, 1.87]. Participants also identified society as discouraging of poverty (M = 2.02, SD = 1.71), $t(184)$ = -15.80, $p < .001$, Cohen's d = -1.16 [95%CI: -1.35, -.97]).

Correlational Analyses Between Implicit and Explicit Measures

As seen in Table 4, my preregistered hypothesis that a positive correlation would emerge between participant *D* scores and social dominance orientation was not supported (r = -.03, p = .75). However, unlike Study 1, there was a positive correlation between participant *D* scores and their explicit preference for wealthy people over poor people (r = .18, p = .015). No other statistically significant correlations emerged between participant *D* scores and the explicit measures. In addition, my preregistered hypotheses concerning a positive correlation between Social Dominance Orientation and explicit relative preference for wealthy (over poor) people (r = .29, $p < .001$) and upper class (over working class) people were supported (r = .33, $p < .001$).

A number of additional exploratory correlations emerged. In addition to the correlations noted above, participants' Social Dominance Orientation positively correlated with their warmth toward wealthy people (r = .18, p = .010) and upper class people (r = .18, p = .020) as well as their political orientation (r = .19, p = .010). Social Dominance Orientation also negatively correlated with their warmth toward poor people (r = -.22, p = .003), working class people (r = -.23, p = .002), and Sense of Control (r = -.27, $p < .001$). Additionally, participants' Sense of Control positively correlated with their subjective social status (r = .23, p = .002).

Overall, Study 2 replicated my results from Study 1 in that participants showed a pro-wealth bias on this implicit measure, as predicted in my pre-registered hypothesis. Interestingly, there was a difference between conditions such that participants in the wealthy people / poor

people condition showed a stronger pro-wealth bias on the IAT than those in the upper class / working class condition. These results again diverged from participants' self-reported biases in that participants showed greater warmth toward the poor and especially the working class when asked to assess the social classes independently, but on the relative measures participants showed less consistency with a relative preference for wealthy people over poor people but a relative preference for the working class compared to the upper class.

Table 4

Correlation matrix for Study 2

Variable	1	2	3	4	5	6	7	8	9	10
1. *D* Score	-									
2. Feeling Thermometer – Wealthy People	.09 [-.06, .24]	-								
3. Feeling Thermometer – Poor People	-.05 [-.19, .10]	**-.15*** [-.29, -.006]	-							
4. Feeling Thermometer – Upper Class People	.05 [-.10, .19]	**.81***** [75, .85]	-.04 [-.18, .11]	-						
5. Feeling Thermometer – Working Class People	.02 [-.13, .17]	.11 [-.03, .25]	**.52***** [.41, .62]	.16 [.02, .30]	-					
6. Explicit Preference – Wealthy People over Poor People	**.18*** [.04, .32]	**.60***** [.49, .68]	**-.32***** [-.44, -.18]	**.48***** [.36, .58]	-.11 [-.25, .04]	-				
7. Explicit Preference – Upper Class over Working class People	-.03 [-.18, .12]	**.49***** [.37, .59]	**-.24**** [-.37, -.10]	**.41***** [.29, .53]	**-.28***** [-.41, -.14]	**.52***** [.40, .62]	-			
8. Subjective Social Status	-.04 [-.18, .11]	**.32***** [.19, .45]	.04 [-.10, .13]	**.31***** [.17, .43]	.01 [-.14, .15]	**.29***** [.15, .41]	**.23**** [.09, .36]	-		
9. Sense of Control	-.03 [-.17, .12]	.11 [-.03, .25]	-.02 [-.16, .13]	.09 [-.06, .23]	.06 [-.08, .20]	.10 [-.05, .24]	.04 [-.10, .18]	**.23**** [.09, .36]	-	
10. Social Dominance Orientation	-.03 [-.17, .12]	**.18*** [.04, .32]	**-.22**** [-.35. -.07]	**.18*** [.03, .31]	**-.23*** [-.36, -.09]	**.29***** [.15, .41]	**.33***** [.20, .46]	.03 [-.11, .17]	**-.27***** [-.40, -.13]	-
11. Political Orientation (Increased Conservatism)	.13 [-.01, .28]	**.20**** [.06, .34]	-.08 [-.22, .06]	**.17*** [.03, .31]	-.09 [-.23, .06]	**.24***** [.10, .38]	**.20**** [.60, .34]	**.20**** [.06, .33]	.22 [.08, .35]	**.19*** [.04, .32]

*Note. *** $p < .001$ ** $p < .01$ * $p < .05$*

Unlike in Study 1, there was little correlation between implicit scores and explicit measures, with the only statistically significant correlation being between pro-wealth bias on the IAT and relative preference for wealthy people over poor people. Studies 1 and 2 used written stimuli (words and wages) in the IAT to depict wealth. The goal for Study 3 was to replicate and extend these findings using pictorial stimuli to see if visual depictions of people who differ in cues to wealth can produce similar effects.

Study 3

The goal of Study 3 was to further test the robustness of a pro-wealth bias using different stimuli. In this study, images of people whose appearance suggested that they are wealthy/upper class (e.g., suits) or poor/lower class status (e.g., white tank top) were used. These images were selected from a Project Implicit collaboration in which identical people provide images of themselves dressed in more and less formal attire (https://www.projectimplicit.net/brs/). Using these images provided the opportunity to create two conditions, one in which specific people were depicted with more formal business attire (wealthy/upper class) and other people were in informal attire (poor/lower class). In the other condition, the people representing each wealth category were reversed. This allowed me to rule out the possibility that participants may have preferential responses based on the models depicting each social category, as opposed to the cues to wealth. Based on the images available, the models in each condition (wealthy/upper class versus poor/lower class) always included a racially prototypical Black man, Black woman, White man, and White woman.

The category headers remained the same as Study 2, allowing for a conceptual replication of the previous results. The main design of this study was therefore a 2 (Wealth Condition: Wealthy People/Poor People, Upper Class/Working Class) between-subjects design. As in the

previous studies, it was predicted that a pro-wealth association would emerge such that participants would be faster to pair Wealthy People/Upper Class with good words and Poor People/Working Class with bad words, relative to the reverse pairing. Similarly, it was predicted that condition would also not moderate these effects, with bias being of comparable magnitude when the groups are described as Wealthy People and Poor People as opposed to Upper Class and Working Class. As in Study 2, I again anticipated that if a difference did emerge, a stronger implicit pro-wealth bias for participants in the Wealthy People/Poor People condition would be observed.

As Study 1 provided no evidence that Social Dominance Orientation predicted implicit wealth bias, I did not anticipate a relationship in this current study. Because of this, Study 3 also included the Global Belief in a Just World Scale (Lipkus, 1991). Belief in a just world correlates with Social Dominance Orientation (Pratto et al., 1994), but the questions are more subtle. I therefore anticipated that social desirability concerns could be lowered, and participants might show greater variability on this measure leading to a positive correlation with participants' bias scores on the wealth IAT. The study hypotheses, measures, and analysis plan can be found on OSF (https://osf.io/kv6an/?view_only=cca64896abfe4574830e89b532df692f).

Method

Participants

An *a priori* power analysis indicated that I would need 200 participants (100 per condition) to detect a medium effect size (0.40) with .80 power using the standard .05 alpha error probability. To account for attrition and failing attention checks, I oversampled with a stopping rule of 250 participants (62-63 per condition). A scheduling error resulted in an additional 44 participants being recruited for a total of 294 participants. After excluding duplicate data (n = 4)

and withdrawals (n = 7), there were a total of 283 unique participants. A further ten participants were excluded from the implicit measure for 10% or greater of their responses being less than 300ms (n = 7) and missing IAT data (n = 3). This resulted in 273 participants for the IAT (M_{age} = 19.32; SD = 3.85; 231 women, 38 men, and 4 non-binary). The racial and ethnic representation for the IAT included South Asian (n = 69), White (n = 55), Southeast Asian (n = 35), Black (n = 33), East Asian (n = 16), mixed race (n = 14), Latin American (n = 7), South American (n = 5), Indigenous (n = 1), and other (n = 7). Participants who were excluded from the IAT but nonetheless had explicit and self-report data were retained for these analyses. Twenty-nine participants were excluded from the explicit and self-report analyses for failing 2 or more attention checks (n = 29). The explicit measures included 254 participants (M_{age} = 19.34; SD = 3.96; 215 women, 35 men, and 4 non-binary).

Measures

All measures were identical to Study 2, with the following exceptions:

Implicit Wealth Bias. Pictorial stimuli were used to depict class status using models in different sets of clothing associated with wealthy people/upper class and poor people/working class (see Appendix A)[2]. The same models were used in both photo conditions, but their depictions were reversed to rule out the possibility that the effects observed are partly driven by participant preferences to certain models. A model depicted as upper class / wealthy in one condition is depicted as working class / poor in the other condition.

Exploratory Measures.

Global Belief in a Just World. This scale measures impressions on how just or fair the world is (Lipkus, 1991). Participants were asked to rate seven statements using a scale ranging

[2] Images were informally piloted internally with research assistants to ensure images were easily associable with their intended social classes

from 1 (Strongly Disagree) to 7 (Strongly Agree). An example item includes "I feel that most people get what they are entitled to have" (Lipkus 1991, p. 1173), and Belief in a Just World is computed from the average on all seven statements.

Procedure

The procedure was the same as Study 1 and 2.

Results and Discussion

Main Analyses

Implicit Wealth Bias. To examine whether participants showed evidence of an implicit pro-wealth bias, I conducted a one-sample *t*-test with the average *D* score of all participants compared against zero. Consistent with my preregistered hypothesis, participants again showed evidence of a pro-wealth bias on this implicit measure, $D = 0.58$, $SD = .40$, [95%CI: 0.53, 0.63], $t(272) = 23.83$, $p < .001$, Cohen's $d = 1.44$ [95%CI: 1.27, 1.61]), see Table 5 for the descriptive statistics for all measures. This pattern persisted even when each condition was analyzed separately. Participants in the Wealthy People/Poor People condition were faster to pair wealthy people with good and poor people with bad, $D = 0.61$, $SD = 0.38$, [95%CI: 0.55, 0.68], $t(136) = 19.07$, $p < .001$, Cohen's $d = 1.63$ [95%CI, 1.37, 1.88], relative to the reverse pairing. Similarly, participants in the Upper Class/Working Class condition were faster to pair upper class with good and working class with bad, $D = 0.55$, $SD = 0.43$, [95%CI: 0.48, 0.63], $t(135) = 14.99$, $p < .001$, Cohen's $d = 1.29$ [95%CI: 1.06, 1.51], relative to the reverse pairing[3].

[3] As expected, there was no difference in participant *D* scores between the photo conditions, meaning there was no difference in the magnitude of bias depending on whether specific models were depicted in wealthier or poorer clothes $t(271) = -.369$, $p = .712$.

Table 5

Descriptive statistics for Study 3

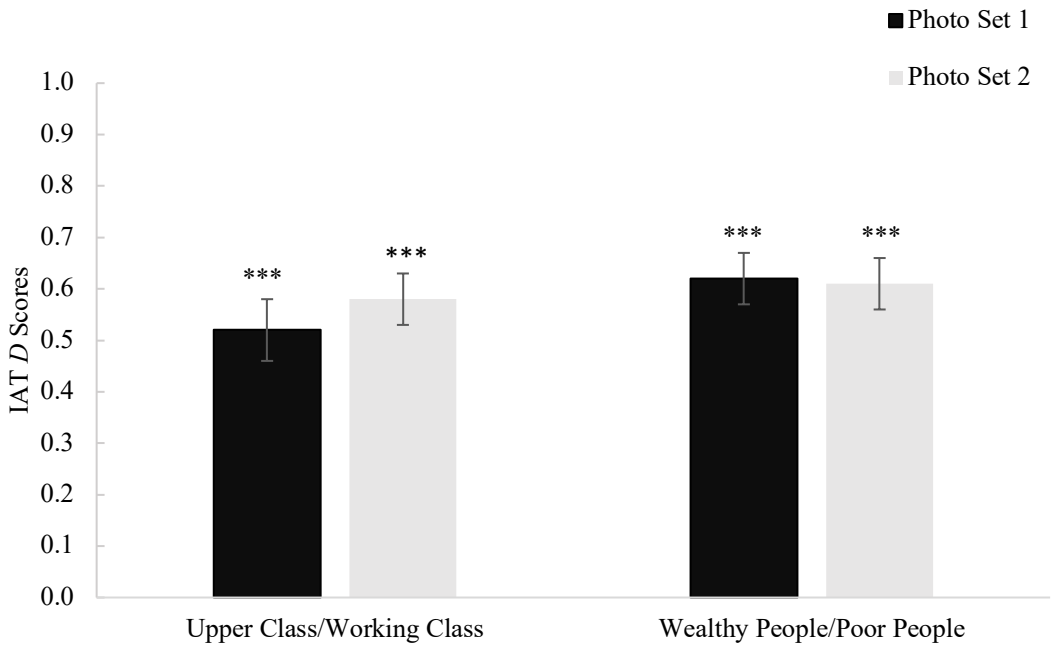
Variable	N	Mean	SD	SE
D Score	273	0.58	.40	.02
Feeling Thermometer – Wealthy People	254	5.31	1.90	.12
Feeling Thermometer – Poor People	254	5.83	2.02	.13
Feeling Thermometer – Upper Class People	254	5.53	1.84	.12
Feeling Thermometer – Working Class People	254	7.33	1.82	.11
Explicit Preference – Wealthy or Poor People	254	4.18	1.12	.07
Explicit Preference – Upper Class or Working Class	254	3.63	1.34	.08
Social Dominance Orientation	254	2.19	.88	.05
Sense of Control	253	4.89	.98	.06
Global Belief in a Just World	254	3.54	.97	.06
Subjective Social Status	254	5.82	1.44	.09
Political Orientation (Increased Conservatism)	254	3.52	1.39	.09

Note. Sample size reflects current numbers after exclusions

To examine whether the magnitude of the wealth bias on the implicit measure differed by condition, I conducted an independent samples *t*-test comparing each condition's average *D* score against each other. Consistent with my preregistered hypothesis, but unlike the findings of Study 2, there was no evidence of a difference by condition, $t(271) = -1.24$, $p = .216$, Cohen's $d = -.15$ [95%CI: -.39, .09]. Taken together, these findings support my first hypothesis that participants would show a pro-wealth bias on this implicit measure that was not moderated by condition.

Figure 3

Implicit association D scores by condition and photo sets for Study 3



Note. Across both conditions, a moderate positive *D* score was observed This was true within each condition for each photo set as well (all *t*'s > 8.94, all's *p*'s < .001). No significant difference was observed between the photo variants. Error bars represent standard errors (***$p < .001$).

Self-Reported Wealth Bias (Feeling Thermometers). To examine participants' warmth toward wealthy and poor people, and upper class and working class people, one-sample *t*-tests were run against the scale midpoint (5.5) for the feeling thermometers. Replicating my previous findings, participants' feelings toward wealthy people ($M = 5.31$ $SD = 1.90$), $t(253) = -1.62$, $p = .107$, Cohen's $d = -.10$ [95%CI: -.23, .02], and upper class people ($M = 5.54$, $SD = 1.84$), $t(253) = .31$, p = .759, Cohen's $d = .02$ [95%CI: -.10, .14], did not significantly differ from the midpoint, suggesting an attitude that was not particularly positive or negative toward wealthy nor upper class people. By contrast, participants' self-reported feelings toward poor people ($M = 5.83$, $SD = 2.02$), $t(253) = 2.61$, $p = .010$, Cohen's $d = .16$ [95%CI: .04, .29], and working class people ($M = 7.33$, $SD = 1.82$), $t(253) = 16.08$, $p < .001$, Cohen's $d = 1.01$ [95%CI: .86, 1.16], again reflected

greater warmth, with the ratings differing significantly from the midpoint. In addition, the results of a paired-samples *t*-test suggest that, in contrast to their implicit pro-wealth bias, participants' self-reported attitudes were significantly more positive toward poor people as compared to wealthy people, $t(253) = 3.12$, $p = .002$, Cohen's $d = .20$ [95%CI: .07, .32], and working class people as compared to upper class people, $t(253) = 11.25$, $p < .001$, Cohen's $d = .71$ [95%CI: .57, .84].

From an exploratory perspective, I also compared participants' warmth ratings toward upper class/working class people and wealthy/poor people to see if the label had an impact on participant ratings. Participants were warmer toward upper class people compared to wealthy people, $t(253) = 2.29$, $p = .020$, Cohen's $d = .14$ [95%CI: .02, .27] and warmer toward working class compared to poor people, $t(253) = 12.81$, $p < .001$, Cohen's $d = .80$ [95%CI: .66, .95], replicating the results from Study 2.

Self-Reported Wealth Bias (Relative Preference). In addition, participants' relative preference scores were examined to see if participants expressed a preference for poor people over wealthy people, and working class over upper class people, when the two groups were compared on the same measure. Replicating the findings of Study 2, one-sample *t*-tests comparing scores to the scale midpoint (4) showed that participants preferred wealthy people over poor people ($M = 4.18$, $SD = 1.16$), $t(253) = 2.53$, $p = .012$, Cohen's $d = .16$ [95%CI: .04, .28], but preferred working class people over upper class people ($M = 3.63$, $SD = 1.34$), $t(253) = -4.36$, $p < .001$, Cohen's $d = -.27$ [95%CI: -.40, -.15].

Additional Analyses

Awareness of Societal Wealth Biases. For exploratory purposes, I examined if participants expressed awareness of societal perceptions of wealthy and poor people, upper class

and working class people, and society's encouragement of wealth attainment and of poverty. I conducted one-sample *t*-tests with participant mean responses compared against the scale midpoint (4). Participants indicated that wealthy people (M = 5.22, SD = 1.74), $t(253) = 11.18$, $p < .001$, Cohen's $d = .70$ [95%CI: .56, .84], and upper class people (M = 5.29, SD = 1.70), $t(253) = 12.05$, $p < .001$, Cohen's $d = .76$ [95%CI: .62, .90], are liked by society. Additionally, participants indicated that society likes working class people (M = 4.33, SD = 1.31), $t(253) = 4.01$, $p < .001$, Cohen's $d = .25$ [95%CI: .13, .38]. However, consistent with Study 2, participants also indicated that poor people (M = 2.66, SD = 1.17) are disliked by society, $t(253) = -18.17$, $p < .001$, Cohen's $d = -1.14$ [95%CI: -1.30, -.98]. Regarding wealth attainment, participants indicated that society encouraged wealth attainment (M = 6.24, SD = 1.10), $t(253) = 32.52$, $p < .001$, Cohen's $d = 2.04$ [95%CI: 1.82, 2.26] and discourages poverty (M = 1.63, SD = 1.27), $t(253) = -29.66$, $p < .001$, Cohen's $d = -1.86$ [95%CI: -2.06, -1.66].

Correlational Analyses Between Implicit and Explicit Measures

As can be seen in Table 6, consistent with my preregistered hypothesis there was again limited evidence of a significant correlation between participant *D* scores and social dominance orientation, ($r = .12$, $p = .055$). Contrary to my hypothesis, participant *D* scores did not correlate with their Global Belief in a Just World scores ($r = .11$, $p = .076$). However, an exploratory analysis revealed a positive correlation between participant *D* scores and their warmth toward upper class people ($r = .16$, $p = .014$), with greater pro-wealth bias on the implicit measure predicting greater expressed warmth toward upper class people. No other correlations between the implicit measure and the explicit items were significant.

Regarding correlations amongst the explicit measures, Social Dominance Orientation was positively correlated with participants' relative preference for wealthy people over poor people (*r*

= .28, $p < .001$) and upper class people over working class people ($r = .26$, $p < .001$). In addition, consistent with my pre-registered hypothesis, Global Belief in a Just World was positively correlated with participants' relative preference for wealthy people over poor people ($r = .21$, $p < .001$) and upper class people over working class people ($r = .16$, $p = .013$).

A number of additional exploratory correlations emerged. Social Dominance Orientation was positively correlated with warmth toward wealthy people ($r = .21$, $p < .001$), upper class people ($r = .17$, $p = .008$) and political orientation ($r = .35$, $p < .001$). As well, Social Dominance Orientation was negatively correlated with warmth toward poor people ($r = -.30$, $p < .001$).

Participants' Sense of Control positively correlated with their warmth toward wealthy people ($r = .22$, $p < .001$), Subjective Social Status ($r = .19$, $p = .002$), and Global Belief in a Just World ($r = .31$, $p < .001$). Participants' Subjective Social Status was positively correlated with their warmth toward upper class people ($r = .19$, $p = .002$), relative preference for wealthy people over poor people ($r = .13$, $p = .041$), relative preference for upper class people over working class people ($r = .13$, $p = .046$), and Global Belief in a Just World ($r = .19$, $p = .003$). Participants' Global Belief in a Just World positively correlated with their warmth toward wealthy people ($r = .30$, $p < .001$), upper class people ($r = .23$, $p < .001$), relative preference for wealthy people over poor people ($r = .21$, $p < .001$), relative preference for upper class people over working class people ($r = .16$, $p = .013$), and negatively correlated with their warmth toward poor people ($r = -.18$, $p = .004$).

Table 6

Correlation matrix for Study 3

Variable	1	2	3	4	5	6	7	8	9	10	11
1. *D* score	-										
2. Feeling thermometer – Wealthy People	.11 [-.01, .23]	-									
3. Feeling thermometer – Poor People	.01 [-.12, .13]	.07 [-.05, .19]	-								
4. Feeling thermometer – Upper Class People	**.16*** [.03, .28]	**.64***** [.56, .71]	-.07 [-.19, .06]	-							
5. Feeling thermometer – Working Class People	-.004 [-.13, .12]	-.01 [-.13, .12]	**.53***** [.44, .61]	.03 [-.09, .15]	-						
6. Relative Preference – Wealthy over Poor People	.10 [-.03, .22]	**.29***** [.17, .40]	**-.41***** [-.51, -.30]	**.26***** [.15, .37]	**-.17**** [-.29, -.05]	-					
7. Relative Preference – Upper Class over Working Class People	.09 [-.04, .21]	**.30***** [.19, .41]	**-.27***** [-.38, -.15]	**.25***** [.13, .36]	**-.36***** [-.46, -.25]	**.47***** [.37, .56]	-				
8. Social Dominance Orientation	.12 [-.003, .24]	**.21***** [.09, .32]	**-.30***** [-.38, -.15]	**.17**** [.04, .28]	-.10 [-.22, .02]	**.28***** [.16, .39]	**.26***** [.14, .37]	-			
9. Sense of Control	.09 [-.04, .21]	**.22***** [.10, .33]	.04 [-.09, .16]	.09 [-.04, .21]	.07 [-.06, .19]	**.13*** [.01, .25]	-.01 [-.14, .11]	-.07 [-.19, .06]	-		
10. Global Belief in a Just World	.11 [-.01, .24]	**.30***** [.19, .41]	**-.18**** [-.30, -.06]	**.23***** [.11. .35]	-.11 [-.23, .02]	**.21***** [.09, .33]	**.16*** [.03, .27]	**.35***** [.23, .45]	**.31***** [.19, .42]	-	
11. Subjective Social Status	-.04 [-.17, .08]	.11 [-.01, .23]	-.07 [-.19, .06]	**.19**** [.07, .31]	-.06 [-.18, .06]	**.13*** [.01, .25]	**.13*** [.003, .25]	.04 [-.08, .17]	**.19**** [.07, .31]	**.19**** [.07, .30]	-
12. Political Orientation (Increased Conservativism)	.01 [-.11, .14]	**.22***** [.10, .34]	**-.20**** [-.32, -.08]	.11 [-.01, .23]	-.10 [-.22, .02]	**.24***** [.12, .35]	**.25***** [.13, .36]	**.35***** [.24, .45]	**.18**** [.06, .30]	**.32***** [.20, .42]	.04 [-.09, .16]

*Note. *** $p < .001$, ** $p < .01$, * $p < .05$*

Overall, and consistent with Studies 1 and 2, participants showed a pro-wealth bias on the IAT and as in Study 1, but not in Study 2, there were no differences between conditions. One might ask if the effects observed could be driven by the categorizing features of the targets other than their social class memberships. Previous research by Steele and colleagues (2018; see also Lipman et al., 2021) has found that children who did an IAT that manipulated target race and facial expression showed a preference for neutral White targets over smiling Black targets when race was the categorizing condition of the IAT. However, when children categorized according to the facial expression of the targets, participants instead preferred smiling Black targets over neutral White targets. These results lead me to conclude that the most salient category of the target images in my study (social class) was primarily responsible for driving my effects. However, future research can directly test these intersectional categorizing conditions.

As well, participants expressed greater warmth toward poor and working class people compared to wealthy and upper class people, and also expressed the warmest ratings toward working class people, replicating Study 2. Also, as in Study 2, participants expressed a relative preference toward wealthy people compared to poor people, but working class people compared to upper class people. These data suggest that working class people are the most admired by participants but that, unlike Study 2, this was not enough to produce a difference in participants' bias scores on the IAT. There was only one significant correlation between participant *D* scores and their warmth toward upper class people. Despite there being no correlation detected between Belief in a Just World and participant's scores on the IAT, this is overall consistent with my previous studies where no correlations between the implicit and explicit measures have emerged. These data suggest that the implicit and explicit measures are largely independent from each other, with participant performance on the wealth IATs not being a reliable predictor of their self-

reported attitudes. Across three studies thus far, I have observed a pro-wealth bias on the IAT, but this has been when the comparison conditions are highly contrasted between a high-earning group and a relatively low-earning group. It is thus an open question as to whether the same pattern of results would persist when the wealth status differences between categorization conditions are smaller in magnitude.

Study 4

The primary goal of Study 4 was to investigate whether the magnitude of pro-wealth bias reflects absolute or relative differences in wealth. Specifically, I examined whether a comparable magnitude of pro-wealth bias would be found when including the middle class, resulting in a smaller wealth disparity for the comparison. Approximately seventy percent of Canadians identify as part of the middle class, despite some people suggesting that there is no official definition available (Hogan, 2019). This means that, at least from a subjective standpoint, most Canadians identify as a social class that is neither rich (upper class) nor poor (lower class). It is thus an empirical question as to whether people will show a comparable magnitude of pro-wealth bias favouring the middle class when the comparison group is the working class, or favouring the upper class when the comparison is the middle class. To test these questions, I pre-screened participants and only invited those who identify as middle class to participate.

Participants in this study were randomly assigned to one of three wealth comparison conditions: upper class/working class, upper class/middle class, or middle class/working class and I tested three competing hypotheses. The first hypothesis, and the one I predicted, is if a pro-wealth bias is guided by relative wealth, participants would show a smaller implicit wealth bias when the wealth gap between targets is smaller (i.e., the upper class/middle class and middle class/working class conditions) compared to a larger gap (upper class/working class condition). I

also tested the competing hypothesis that, alternatively, there might be no difference in the magnitude of pro-wealth bias across conditions. That is, participants could show a similar magnitude in bias favoring the more economically advantaged group across conditions, suggesting that pro-wealth biases on implicit measures reflect absolute (not relative) differences in wealth. Lastly, if people showed an ingroup preference, it would be expected that middle-class participants would have the smallest pro-wealth bias in the upper class/middle class condition targets, relative to the other two conditions.

Building from the results of Studies 2 and 3, participants were randomly assigned to one of two wealth stimuli condition: either pictures of houses and cars designed to depict each class or yearly salaries (similar to the hourly wages from Study 2). Using these additional stimuli allowed me to further test the robustness of pro-wealth bias. As a result, the IAT had a 3 (Wealth Condition: Upper Class/Working Class, Upper/Middle, Middle/Working) x 2 (Wealth Stimuli: Property, Salaries) design. I expected a robust bias and did not expect the type of stimuli to moderate any effects.

Given that my previous studies had not consistently found relationships between the self-report measures and the implicit data, I did not anticipate that such relationships would emerge. Nonetheless, for consistency with my previous studies, I included the measures in Study 4. The study hypotheses, measures, and analysis plan can be found on OSF (https://osf.io/m4q8f/?view_only=b097e2fba8194ab19631553f2516b58f).

Method

Participants

An *a priori* power analysis indicated that we would need a minimum of 330 participants (55 per condition) to detect a medium (0.2) effect size with .80 power with the standard alpha

error probability (.05). To account for attrition and failing attention checks, we planned to oversample, using a stopping rule of 420 participants (70 per condition) who had attempted the study. Due to an unexpected labour disruption at the testing location, the final sample was substantially lower; for this reason, for the purposes of this thesis, only the main analyses for the data collected to date were analyzed at this stage, with the goal being to finish data collection in the upcoming months.

After excluding duplicate data (n = 5), and participant withdrawals (n = 16), there were a total of 194 unique participants. An additional 15 participants were excluded from the implicit measure for having a proportion of 10% or greater of their responses be less than 300ms (n = 7), an error rate greater than 30% (n = 2) or missing IAT data (n = 6). This resulted in 179 participants for the IAT (M_{age} = 19.89, SD = 3.41, 131 women, 42 men, 4 non-binary, and 4 who preferred not to answer). The racial and ethnic composition for the IAT was South Asian (n = 47), White (n = 37), Middle Eastern (n = 28), Black (n = 18), East Asian (n = 13), Southeast Asian (n = 11), Mixed Race (n = 10), Latin American (n = 6), South American (n = 2), and other (n = 7). Participants who were excluded from the IAT but nonetheless had explicit and self-report data were retained for these analyses. Four participants were excluded from the explicit and self-report measures for failing two or more attention checks (n = 4). The explicit measures included 190 participants (M_{age} = 19.85; SD = 3.33; 138 women, 46 men, 4 non-binary, and 2 who preferred to not answer).

Measures

All measures are the same as Study 3 with these exceptions.

Implicit Wealth Bias. In this study, the property IAT condition depicted wealth with photos of two houses and two cars. An example would be a large two-story detached house with

a two-car garage for the upper class; a smaller two-story detached house for the middle class; and a smaller semi-detached/quadplex home for the working class (see Appendix B). In the yearly salary IAT condition, wealth was depicted using stimuli similar to the hourly wages from Study 2, but with numbers now reflecting annual salaries ($25,000/year, $30,000/year, $35,000/year, and $40,000/year for working class; $80,000/year, $85,000/year, $90,000/year, and $95,000/year for the middle class; and, $255,000/year, $260,000/year, $265,000/year, and $270,000/year for upper class).

Self-Reported Wealth Bias. As in the previous studies, feeling thermometers were used to assess warmth toward all class categories, and in this study, this included the middle class.

Perceived Societal Wealth Bias. The same statements from previous studies were used, and in this study included the middle-class.

Exploratory Measures[4]

Demographic Questionnaire. In addition to the questions in previous studies, participant yearly salary (or most recent salary) was obtained as opposed to the hourly wages in study 2. This question was asked as both an open-ended question as well as in discreet categories from 1 (less than $25,000 a year) to 8 (greater than $80,001 a year).

Procedure

The procedure was the same as Studies 1 through 3.

[4] *Societal Stereotypes About Social Classes*. For the purpose of stimulus generation for a related set of studies, participants were asked to indicate stereotypes they believe society has about the upper class, middle class, and working class. These measures were not intended to be analyzed for this study and will not be reported in the results.

Results and Discussion

Main Analyses

Implicit Wealth Biases. To examine whether participants showed evidence of an implicit pro-wealth bias, I conducted a one-sample *t*-test with the average *D* score of all participants compared against zero. Consistent with my preregistered hypothesis, participants again showed evidence of a pro-wealth bias on this implicit measure, $D = 0.49$, SD = .42, [95%CI: 0.43, 0.56], $t(178) = 15.62$, $p < .001$, Cohen's $d = 1.17$ [95%CI: .98, 1.36]), see Table 7 for the descriptive statistics for all measures. To test whether there was a difference in the magnitude of this bias across the three social class conditions, I ran an ANOVA with the social class and stimuli type condition serving as the between-subjects factors and participant *D* scores serving as the dependent variable. Consistent with my first competing hypothesis (but not my main hypothesis), there was no difference between the social class conditions, $F(2) = 1.81$, $p = .170$, $\eta_p^2 = .02$ suggesting that this bias reflects a relative, as opposed to absolute, wealth gap. However, unexpectedly, there was a difference observed between the stimuli type on this implicit measure, $F(1) = 18.11$, $p < .001$, $\eta_p^2 = .10$. Participants in the property photo condition ($D = .62$, SD = 39) had a higher *D* score than participants in the yearly salary condition ($D = .37$, SD = .42). There was no interaction between the categorization conditions and the stimuli type, $F(2) = 2.15$, $p = .120$, $\eta_p^2 = .02$, see Figure 4.

Table 7

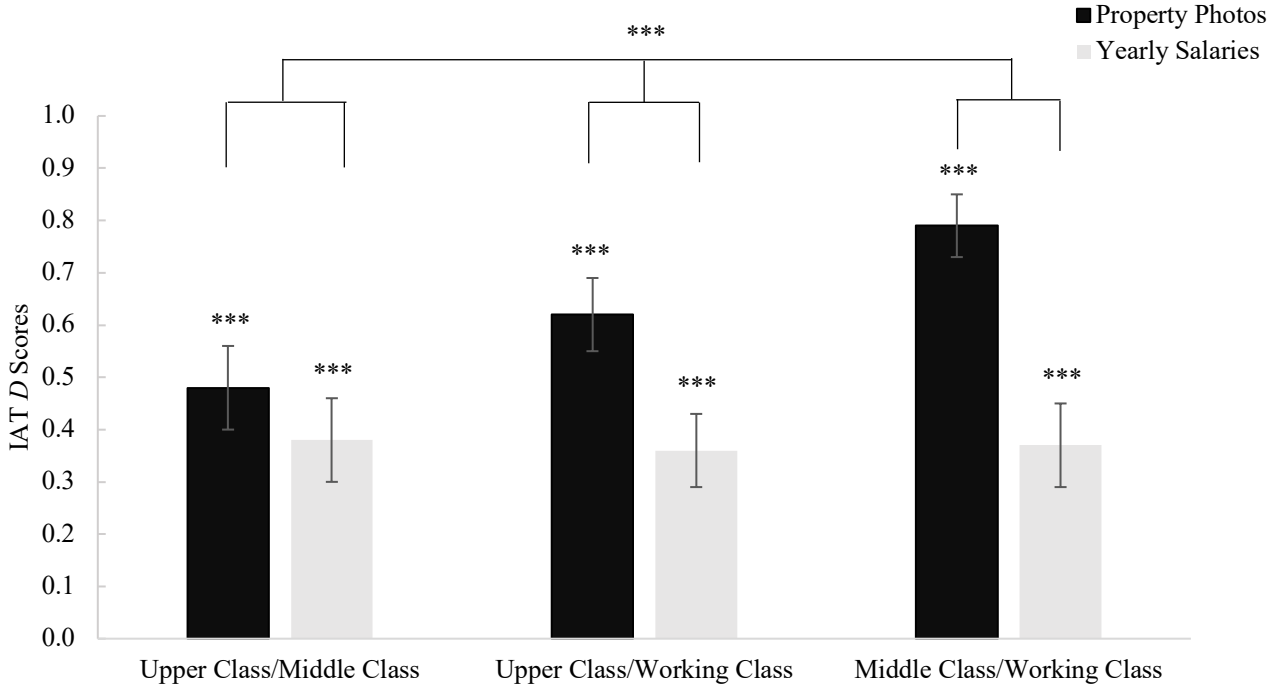
Descriptive statistics for Study 4

Variable	N	Mean	SD	SE
D Score	178	0.49	.42	.03
Feeling Thermometer – Upper Class People	190	5.87	2.13	.16
Feeling Thermometer – Middle Class People	190	7.51	1.55	.11
Feeling Thermometer – Working Class People	190	7.16	1.85	.13
Explicit Preference – Upper Class or Working Class	190	4.11	1.18	.09
Explicit Preference – Upper Class or Middle Class	190	3.66	1.44	.10
Explicit Preference – Middle Class or Working Class	190	4.61	1.27	.09
Social Dominance Orientation	190	2.40	1.06	.08
Sense of Control	190	4.98	.91	.07
Global Belief in a Just World	190	3.64	.92	.07
Subjective Social Status	190	6.62	1.28	.09
Political Orientation (Increased Conservatism)	189	3.71	1.29	.09

Note. Sample size reflects current numbers after exclusions.

Figure 4

Implicit association scores by categorization condition and stimuli type in Study 4



Note. Participants across all conditions showed a pro-wealth bias on the IAT, on average. Within each condition, participants who categorized by property photos and yearly salaries showed a pro-wealth bias on this IAT (all *t*'s > 4.34, all *p*'s < .001) However, across all conditions on average, participants who categorized with property photos showed stronger *D* scores than participants who categorized using yearly salaries. Error bars represent standard errors (***$p < .001$).

Self-Reported Wealth Biases (Feeling Thermometers). To examine participants' warmth toward upper class people, middle class people, and working class people, one-sample *t*-tests

were first run against the scale midpoint (5.5) for participants' ratings on the feeling thermometers for each target group. Participants' feelings toward upper class people significantly differed from the midpoint, reflecting greater warmth (M = 5.87 SD = 2.13), $t(189) = 1.85$, p = .017, Cohen's d = .18 [95%CI: .03, .32]. Participants' self-reported feelings toward middle class people reflected greater warmth (M = 7.52, SD = 1.55), with the ratings differing significantly from the midpoint, $t(189) = 17.90$, $p < .001$, Cohen's d = 1.30 [95%CI: 1.10, 1.49]. Participants' self-reported feelings toward working class people reflected greater warmth (M = 7.16, SD = 1.85), with the ratings differing significantly from the midpoint, $t(189) = 12.42$, $p < .001$, Cohen's d = .90 [95%CI: .73, 1.07].

From an exploratory perspective, I also compared participants' warmth ratings toward upper class people as compared to middle class people and working class people, and middle class people compared to working class people to see if the label had an impact on participant ratings. Participants expressed greater warmth toward middle class people compared to upper class people, $t(189) = =11.60$, $p < .001$, Cohen's d = -.84 [95%CI: -.1.01, -.68]. As well, participants expressed significantly greater warmth toward working class people compared to upper class people, $t(189) = -8.00$, $p < .001$, Cohen's d = -.58 [95%CI: -.73, -.43]. Lastly, participants were significantly warmer toward middle class people compared to working class people, $t(189) = 3.60$, $p < .001$, Cohen's d = .26 [95%CI: .12, .41] These results suggest that participants express greater warmth toward the middle and working class compared to the upper class and express the greatest warmth overall toward the middle class.

Self-Reported Wealth Bias (Relative Preference). In addition, participants' relative preference scores were examined to see if participants expressed a preference for either social group when two groups were compared on the same measure. For the comparison between the

upper class and the working class, the results of a one-sample *t*-test comparing to the scale midpoint (4) revealed no difference on this measure (M = 4.10, SD = 1.18), $t(189) = 1.23$, p = .221, Cohen's d = .09 [95%CI: -.05, .23]. For the comparison between the upper class and the middle class, the results of a one-sample *t*-test comparing scores to the scale midpoint (4) revealed a significant difference on this measure, with participants slightly favouring the middle class relative to the upper class (M = 3.66, SD = 1.44), $t(189) = -3.22$, $p < .001$, Cohen's d = -.23 [95%CI: -.38, -.09]. Finally, for the comparison between the middle class and the working class, the results of a one-sample *t*-test comparing to the scale midpoint (4) revealed a significant difference on this measure with participants slightly favouring the middle class relative to the working class (M = 4.61, SD = 1.27), $t(189) = 6.65$, $p < .001$, Cohen's d = .48 [95%CI: .33, .63].

Additional Analyses

Awareness of Societal Wealth Biases. For exploratory purposes, I examined if participants showed awareness of societal perceptions of upper class people, middle-class people, and working class people, and society's encouragement of wealth attainment. I conducted one-sample *t*-tests with participant mean responses compared against the scale midpoint (4). Participants reported that upper class people (M = 5.25, SD = 1.67), $t(189) = 10.37$, $p < .001$, Cohen's d = .75 [95%CI: .59, .91], middle class people (M = 4.99, SD = 1.16), $t(189)$ = 5.54, $p < .001$, Cohen's d = .86 [95%CI: .69, 1.02], and working class people (M = 4.26, SD = 1.42) are liked by society, $t(189) = 2.56$, p = .011, Cohen's d = .19 [95%CI: .04, .33] are all liked (more than disliked) by society. Regarding wealth attainment, participants endorsed the belief that society encourages wealth attainment (M = 6.34, SD = .93), $t(184) = 34.75$, $p < .001$, Cohen's d = 2.52 [95%CI: 2.23, 2.81].

Overall, I observed a consistent pro-wealth bias on the IAT in this study that did not differ based on the categorization conditions; but, they did differ based on the stimulus type with greater bias being detected for participants who categorized property photos compared to those in the yearly salary condition. However, this general bias toward the upper class was not observed in the self-report data, with participant showing greater warmth toward the middle class followed by the working class and then the upper class. This pattern is consistent with my previous three studies, finding that participants tend to show a consistent pro-wealth bias on the implicit measure, but report greater positivity toward the working class and now the middle class.

General Discussion

Across four studies, I found evidence of a consistent pro-wealth bias on the Implicit Association Test. Participants were consistently faster to pair wealth-related stimuli with good words, and poor or working class-related stimuli with bad words, relative to the reverse pairing. This was true regardless of whether the stimuli were words (Study 1), hourly wages or yearly salaries (Studies 2 and 4), or images of people or house and cars (Studies 3 and 4). This pro-wealth bias also emerged at a comparable magnitude for men and women (Study 1) and for different social class framings (Studies 1-4), suggesting that the pro-wealth bias on this implicit measure is a robust, reliable, and replicable effect. These studies also replicate the pro-wealth bias found in previous research using implicit measures (Horwitz & Dovidio, 2016; Mattan & Cloutier, 2020; Williams et al., 2010; Wu et al., 2018). My research extends these previous findings by using different category headers to frame social class (i.e., wealthy and poor, wealthy people and poor people, and upper class, middle class, and working class) and across different depictions of social class (descriptive words, wages, pictures of people and property items, and

yearly salaries). It is worth also noting that, unlike previous research, these results were observed among a racially diverse university sample that includes a high number of first-generation and financially underprivileged students (Williams et al., 2020); people we might expect to be the least likely to show a pro-wealth bias. Together, these findings suggest that on the IAT participants spontaneously and robustly show relatively more positive association with wealthier groups.

These findings are conceptually similar to other implicit research showing that participants tend to be faster to pair socially advantaged groups with positive affective terms, such as White people compared to Black people (Nosek et al., 2002), younger people compared to older people (Nosek et al., 2002), and ingroup political candidates compared to outgroup candidates (Choma & Hafer, 2009). One mechanism to explain this finding is Payne and colleagues' (2017) Bias of Crowds theoretical model. Their model posits that biases on implicit measures are likely a result of participants accessing environmentally salient associations. Specifically, attitudes observed on implicit measures like the IAT may not be reflective of people's individual attitudes regarding the elite and wealth inequality, but rather the attitudes about wealth and elite status that society has made available. As a result, even though participants may exhibit different IAT results at different time points, the results should be quite similar within an environment across time and participants. In my studies, participants on average tended to subjectively rate themselves as belonging to the middle class, and all of my participants are members of a capitalist society in which wealth is valued and purportedly based on merit. One advantage that my data has over the original Payne and colleagues (2017) study is that the participants in my studies are not from elite, high status American universities. Instead, York University is a racially and ethnically diverse campus located in a multicultural

metropolitan city. And so, although these participants share a common social environment, they also have distinct backgrounds and experiences, including some being international students from across the world. Nonetheless, samples from this population consistently exhibited a pro-wealth bias on the various IATs.

By contrast, on the self-report measures, participants expressed more positive attitudes toward poor people, working class people, and middle class people compared to wealthy people and upper class people. This seems consistent with the possibility that these samples might be the least likely to show a pro-wealth bias on an implicit measure, but yet they do. Although this pro-wealth bias does not align with their explicit attitudes, it does suggest that their more spontaneous attitudes could reflect societal views or values that they have acquired. Similarly, participants consistently expressed a preference for working class and middle class over upper class people when asked to compare these groups directly. Surprisingly, when asked to indicate their preference for wealthy people versus poor people on a relative measure, the findings were mixed, with participants expressing no preference (Study 1) or a preference for wealthy people (Studies 2-3), consistent with the implicit measures.

This self-reported attitude difference could explain why I observed a statistically significant difference between the conditions on the IAT in Study 2, with participants showing a lower pro-wealth bias on the IAT in Study 2 when asked to categorize the same stimuli using ‘Upper Class’ and ‘Working Class’ headers as compared to ‘Wealthy People’ and ‘Poor People’. It is possible that participants’ explicitly positive attitudes (warmth and relative preference) toward the working class interfered with their pro-wealth bias on the IAT, pulling scores closer to zero. Despite the expressed positivity toward the working class, this did not eliminate the pro-wealth bias on the implicit measure. There is some precedent for this finding, as research by

Charlesworth and Banaji (2022) showed that—despite reductions in explicit bias for age, disability, and body weight over time—there were no changes for these biases on implicit measures. This was in contrast with the reductions seen for biases on implicit measures for race, skin-tone, sexual orientation, and age. Thus, it is possible that the participants in my studies are showing explicit attitudes that are sensitive to wealth and income inequality, but that implicit measures continue to reflect a dominant societal pro-wealth attitude.

The difference between pro-wealth attitudes on implicit measures and pro-working class attitudes on explicit measures have the potential to have an impact on societal outcomes. People who are lower class continue to face barriers in ascending the economic ladder (Davidai, 2018). Because wealth inequality intersects with race (Davidai & Walker, 2021) and other identities, members from social groups that face economic hurdles are less likely to be wealthy and are therefore less likely to benefit from positive associations. This is especially important because wealth dovetails with interpersonal networks. In a study by Nishi and colleagues (2015), participants were randomly assigned to a social network with lower or higher initial economic inequality. The researchers also manipulated how visible wealth was to other people within the networks. They found that when participants began the study in networks with higher wealth inequality, high wealth visibility led to greater economic inequality at the end of the study compared to when wealth cues were less visible. This study also found that more wealth visibility across all levels of initial wealth inequality predicted lower levels of cooperation at the end of the study. Thus, in a society in which people from lower class backgrounds may not have access to the best clothes or may have different diction and cultural tastes, these people can be less likely to have the same number of job interviews or offers. Moreover, research suggests that simply getting their foot in the door is more difficult for lower socioeconomic status individuals,

at least in part because of the hidden curriculum for processes like graduate and professional school applications (Semper & Blasco, 2018) that might be less accessible due to a system of bias that implicitly favours the wealthy.

In additional research, attitudes that favour the wealthy also predict a more troubling tendency to dehumanize people from lower socioeconomic status backgrounds. Across three studies, Sainz and colleagues (2019) found that participants who tended to rate higher SES group as more human than low SES groups, also viewed low SES groups as more animalistic, and associated animals with low SES status on an implicit measure. These findings suggest that investigating implicit attitudes favouring the wealthy is not just an intellectual pursuit but one that is rooted in real, social outcomes.

Predictors and Moderators

Regarding potential correlations between pro-wealth implicit bias and participants' explicit attitudes, there were no significant correlations detected in Study 1. But in Study 2 participants' explicit preference for wealthy people over poor people correlated with a greater pro-wealth bias on the IAT. In Study 3, participants warmth toward upper class people also correlated with a greater pro-wealth bias on the IAT. This suggests that, on average, participants' scores on the IAT tend to be largely independent of their explicit attitudes. This is somewhat in contrast to previous research that found some evidence that, preference for, or warmth toward, more affluent social classes can predict implicit wealth biases. Reid and Inbar (2024) found a correlation between bias on an Capitalism/Socialism attitudinal IAT and both Social Dominance Orientation and Right-Wing Authoritarianism. One potential reason why similar correlations did not emerge across my studies is that participants categorized between social classes that exist in

the contemporary liberal democratic system. This is in contrast to comparing between economic systems with one more socially dominant and conservative relative to the other.

It is interesting to note that despite the lack of correlation between IAT scores and self-report measures, correlations were observed between self-reported wealth measures and the standardized scales. Across my studies, Social Dominance Orientation positively correlated with the feeling thermometers for wealthy people and upper class people and correlated negatively with those for poor people and working class people. The same pattern was observed in Study 3 for the Global Belief in a Just World measure. Of relevance, a meta-analysis undertaken by Kurdi et al. (2019) recommended that research using implicit measures, particularly the IAT, ensure that there are parallel explicit measures to better examine potential correlations between implicit and explicit attitudes. My research uses the parallel independent and relative wealth attitudes, in addition to questions about societal wealth attitudes, to better round out wealth attitudes in my samples.

Limitations and Future Directions

There are a few important limitations in my research that future research could investigate further. First, despite my strong interest in the Bias of Crowd model, I did not directly manipulate participant environment. This means that I was not able to directly examine the impact of participants being immersed in a pro-wealth environment versus an anti-elite environment. Future research could experimentally manipulate wealth messaging in a priming study to see if there is any impact on wealth biases on implicit and explicit measures. Other studies could increase ecological validity by examining wealth biases at both affluent universities compared and community colleges in small towns, to determine whether local culture is related these biases. A by-product of my design also meant that I could not measure within-participant

fluctuations in data on my implicit measures. Kurdi and Banaji (2019; Studies 3&4) demonstrated that repeated pairings of stimulus associations lead to more lasting attitudinal change on implicit measures compared to simple awareness of upcoming associative pairings. Using a within-participant, or mixed-method paradigm, could facilitate important lines of inquiry as to how implicit attitudes can change across time as a function of environmental change or new environmental messaging.

Second, my research did not test for the particular valence of wealth stimuli outside of just being positive or negative. Previous research suggests that people who are working class are stereotyped as higher in warmth and lower in competence; whereas the upper class are stereotyped as higher in competence and lower in warmth (Fiske et al., 2019). Through additional ongoing research, we have found some preliminary evidence that when the words used to depict attitudes on the IAT are related to positive stereotypes of the working class (i.e., warmth), participants showed a decreased pro-wealth bias than when the words were related to positive stereotypes about the wealth (i.e., competence; Lemud et al., 2024). Future research could extend these findings by manipulating whether participants are asked to think of a time when they encountered a friendly, welcoming stranger versus one who appeared intelligent before completing an implicit measure. This could make warmth and competence personally relevant to the participant in the context of their own life. It is possible that participants in the warmer condition could show a reduced pro-wealth bias on an implicit measure because these warm, friendly strangers likely made a stronger impact on their impression of them.

Moreover, my research only used the Implicit Association Test to assess spontaneously activated associations with wealthier and poorer groups. It is therefore an empirical question as to whether I would observe a similar pattern of results using other implicit measures like the

Affect Misattribution Procedure (AMP; Payne & Lundberg, 2014; Payne et al., 2005). On the AMP, across multiple trials participants see a prime that they are told to ignore (such as a racially prototypical Black or White face) and then a neutral stimulus that has no meaning to the participant (such as a Chinese ideograph to mono-English participants). The participant is then asked if the target stimuli is positive or negative. A systematic pro-White (versus Black) racial bias on the AMP, it is argued, is observed if participants respond more negatively to the target stimulus after seeing a Black face prime as compared to a White face prime. Future research could replicate my research using the AMP to determine if my pattern of results is limited to the measure I used or is more reflecting of a general implicit attitude. Given the pervasiveness of pro-wealth messaging in our culture, I anticipate that a comparable bias would be found on a variety of implicit measures, but this is an empirical question to be tested.

Lastly, Null hypothesis statistical testing (NHST) was used rather than equivalence testing as my preregistered hypotheses were not concerned with testing for exact equivalence of distributions (between men and women in Study 1, or social class across all studies). Standard limitations of NHST apply and thus, my results that do not find evidence of significant group differences (e.g., lack of gender differences in study 1) does not necessarily mean group differences do not exist or that the groups are statistically equal. However, given that these group differences did not emerge significantly in my data, finding no evidence of an equivalence between groups could imply that while small group differences could exist, they likely will not be a consistently reliable finding, nor would they be large enough to be meaningful. This is of course an empirical question that awaits proper testing with *a priori* preregistered hypotheses.

Conclusion

Across four studies, I consistently observed a pro-wealth bias on an implicit measure. This was in contrast to explicit attitudes that indicated either ambivalence toward the wealthy or more positive attitudes toward the working class and poor. It is clear that people may want to show more solidarity with those who are lower down on the economic ladder, especially if this includes themselves personally as well as their friends and family. Nonetheless, this intention may not be enough to impact implicit attitudes that could, nonetheless, impact downstream behaviours, such as supporting initiatives to clear homeless people off of the streets without helping them, or idealizing wealthy people regardless of how this wealth was attained. As we continue the fight for a more equitable wealth distribution, people will need to reflect critically on their own associations with wealth, as well as consider the environments they are a part of, if we are truly to achieve a more just society.

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Appendix A

Pictorial Stimuli from Study 3

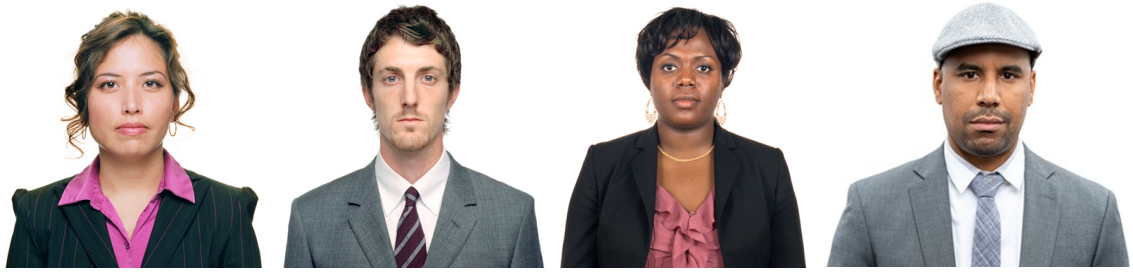
Condition 1

Wealthy People/Upper Class

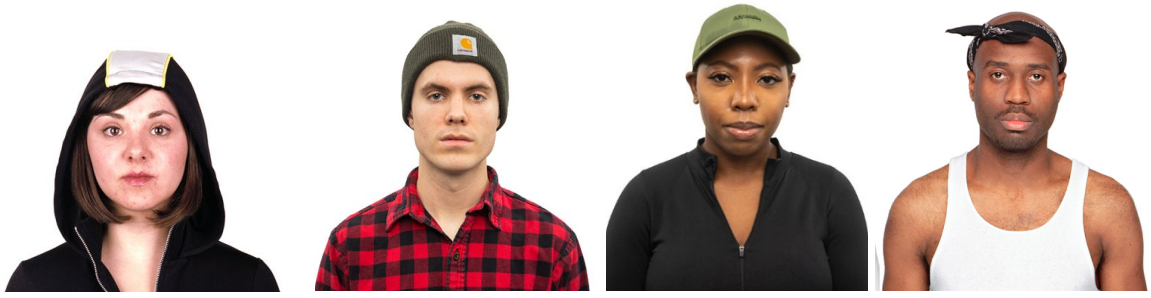
Poor People/Working Class

Condition 2

Wealthy People/Upper Class



Poor People/Working Class



Appendix B

Property Stimuli from Study 4

Upper Class

Middle Class

Working Class