Asian=Machine, Black=Animal? The Racial Symmetry of Two Forms of Dehumanization

Hui Bai and Xian Zhao

Author Note

Hui Bai is a post-doctoral researcher at the Polarization and Social Change Lab at Stanford University in affiliation with Stanford Impact Labs. Xian Zhao is a post-doctoral fellow at Rotman School of Management, University of Toronto. *Address correspondence to Hui Bai at huibai@stanford.edu

RACE AND DEHUMANIZATION

Abstract

Prevailing approach in dehumanization research investigates animalistic dehumanization (i.e., derogating someone by comparing them with animals) as the only type of *blatant* dehumanization and assumes that Asian people do not experience very much dehumanization. We contend otherwise. Using American samples, we show that animalistic dehumanization and mechanical dehumanization, the two primary forms of dehumanizations, are experienced by Asian and Black people differently in a symmetry: though Black people experience more animalistic dehumanization, Asian people experience more mechanical dehumanization. We demonstrate the symmetry from the victims' perspective as well as perpetrators' perspective using measures that range from somewhat blatant to very blatant. We also demonstrate that the symmetry has implications for people's evaluation of Asian and Black people and biases in leadership selection. Together, this new account on racial dehumanization contributes to the literature of dehumanization, and its implications for studying intergroup relations are discussed.

Keywords: Asian, Black, animalistic dehumanization, mechanical dehumanization, race, job selection

RACE AND DEHUMANIZATION

Dehumanization occurs when we perceive someone to be less than human or lacking human traits, likening them to non-human entities derogatorily (Haslam & Loughnan, 2014).

Dehumanization is associated with discrimination in daily life (Bruneau et al., 2020), slavery (e.g., Ota Benga exhibited at the Bronx Zoo in 1906), violence during wars (Bruneau & Kteily, 2017), and even biased perception of COVID-19 when the pandemic is strongly tied to a racial outgroup (Markowitz et al., 2021). Haslam (2006) identified two primary forms of dehumanization: animalistic dehumanization occurs when one perceives others to be similar to animals (e.g., having no self-restraint) and lack of traits that are unique to humans (e.g., civility). In contrast, mechanical dehumanization occurs when one perceives others to be similar to machines (e.g., being rigid) and lacking what is considered to be human nature (e.g., emotional responsiveness).

Ethnic minorities are often dehumanized by advantaged majorities (Bain et al., 2009; Boccatto et al., 2008; Goff, et al., 2008; Saminaden et al. 2010; Vaes & Paladino, 2010), and the degree of dehumanization can range from inconspicuously subtle (e.g., perceive a group to experience less emotions—*infracommunication*; Cortes et al., 2005) to overtly blatant (e.g., explicitly likened to apes; Goff et al., 2008; Kteily & Bruneau, 2017). For example, Kteily and colleagues (2015) showed that some social groups are perceived to be more evolved and are characteristic of modern humans (e.g., Americans and Japanese) whereas others are perceived to be less evolved and resemble chimpanzees (e.g., Muslims).

However, past studies often do not distinguish the two forms of dehumanization in the intergroup context, particularly in the popular, yet lopsided, area of blatant dehumanization, which involves overtly likening humans to non-humans: research on blatant dehumanization is essentially equivalent to blatant *animalistic* dehumanization (Goff et al., 2008; Kteily et al., 2015; also see Haslam and Loughnan, 2014), leaving it unclear if blatant *mechanical* dehumanization exists or whether

RACE AND DEHUMANIZATION

mechanical dehumanization can be blatant. Due to this, the lack of the conceptual applicability of animalistic dehumanization to the stigmatization of Asian people also lead the results that Asian people do not face very much blatant dehumanization, at least compared to Black people (see Kteily et al., 2015). We contend otherwise. Here, we argue that 1. Asian and Black people experience dehumanizations in different ways such that Black people are more often animalistically dehumanized and Asian people are often more mechanically dehumanized, and 2. Both of these types of dehumanizations can be blatant.

Racial Symmetry of the Two Forms of Dehumanization

There is some evidence for our contention. Although Asian people are believed to be industrial (Maykovich, 1972), competent, and efficient (Fiske, et al., 2002), they are also perceived as lacking sociability and emotional expressions (Mauss et al., 2010; Nam et al., 2018). The stereotype that Asians are efficient but lack interpersonal warmth, and are capable of thinking but not feeling (Fiske et al., 2002) resonates with the conceptualization of mechanical dehumanization (Haslam, 2006). These stereotypes about Asians are also incongruent with the idea of animalistic dehumanization, as the often discussed analogy of apes (Goff et al. 2008) embodies the traits of being emotional and aggressive (Gosling, 2001). Consistent with these ideas, Bain and colleagues (2009) found that White Australians rate Chinese higher on traits associated with mechanical dehumanization (e.g., unemotional) than traits associated with animalistic dehumanization (e.g., rude), and implicitly associate robot-related words with Asian facial images more than White facial images. Similarly, though not the focus of their study, Andrighetto and colleagues' pilot study (2014) reveal that Italians rate Japanese higher on traits associated with mechanical dehumanization than Haitians, and vice versa for traits associated with animalistic dehumanization.

RACE AND DEHUMANIZATION

In contrast, Black people are perceived as socially savvy (Czopp & Monteith, 2006), athletic (Devine & Elliot, 1995) and even “apelike” virulent (Goff et al., 2008), but unintelligent, incompetent (Fiske et al., 2002), incapable of emotional regulation (Wittenbrink et al., 1997) and self-control (Gray et al., 2007), and unable to obtain socioeconomic achievement (Koch et al., 2016). These suggest that Black people are perceived to be similar to animals (apes in particular), but not machines. Consistent with this observation, Italians perceive Haitians to have more animalistic traits than mechanical traits (Andrighetto, et al., 2014).

Therefore, rooted in their distinct stereotypes in contemporary society, Asian and Black people are likely perceived to be less than human in different ways. Here, we propose and test a symmetry about how Asian and Black people may experience the two forms of dehumanization differently (the “the symmetry”): whereas Asian people are more mechanically dehumanized, Black people are more animalistically dehumanized. Together, the current studies contribute to our understanding of racial prejudice and dehumanization by introducing a novel framework that differentiates the unique challenges different racial groups may face, uncovering the “hidden” prejudices Asian people often face but that are rarely recognized.

Current studies

Seven pre-registered studies test the symmetry hypothesis and its related implications. Studies 1a and 1b focus on the victim perspective by testing two hypotheses: Asian people experience more mechanical than animalistic dehumanization (Hypothesis 1a), and vice versa for Black people (Hypothesis 1b). Studies 2a through 2d test the symmetry from the *perceivers’* perspective in four hypotheses (see Table 1): People mechanically dehumanize Asian people more than animalistically dehumanize them. (Hypothesis 2a), and vice versa for Black people (Hypothesis

RACE AND DEHUMANIZATION

2b). Furthermore, people animalistically dehumanize Asian people less than Black people (Hypothesis 2c), and vice versa for mechanical dehumanization (Hypothesis 2d).

Table 1. The theorized symmetry about the two forms of dehumanization of Black and

Asian people		
Animalistic Dehumanization of Asian people H2c $\wedge$	H2a <	Mechanical Dehumanization of Asian people H2d $\vee$
Animalistic Dehumanization of Black people	H2b >	Mechanical Dehumanization of Black people

The differences in how Asian and Black people are dehumanized may also guide people to evaluate them differently. As such, we test the implications of the symmetry with the following hypotheses (not pre-registered): the effect of mechanical dehumanization on overall evaluation of the minority groups is stronger for perceptions of Asian people than perceptions of Black people (Hypothesis 3a), and vice versa for the effect of animalistic dehumanization (Hypothesis 3b).

Finally, we test the implication of this symmetry in the “real world” by investigating its consequences in biases in leadership selection, and we test Hypothesis 4 that it is less likely for Black people to be selected for a leadership position that requires the candidate to be unlike animals, whereas it is less likely for Asian people to be selected for a position that requires the candidate to be unlike machines.

Overall method

All measures, manipulations, exclusions, as well as the method of determining the final sample size in all studies are reported. No additional data collection was continued after analysis in any study. Table 2 describes the samples. The sample size and sources were determined by convenience and funding availability, and the overall aggregated sample size is large compared to most studies commonly found in psychological research. All descriptive statistics, correlation tables, materials, including manipulation and question wordings, can be found in Appendix A. All analytic code, supplemental materials (i.e., the Qualtrics survey files), appendices, and data for all studies (other than that of Study 2a due to IRB rules) can be found at https://osf.io/r6kde/?view_only=25edc964999e4022ae8be3f9601edf54. Several studies were collected as part of larger collaborative surveys that includes contents from various researchers unrelated to the current studies, as detailed in the pre-registration forms. These pre-registrations are accessible via: https://osf.io/vtm2z?view_only=98074686edcb4774b033aa6c9c05e7f1 for Study 1a, https://osf.io/w4yx7?view_only=68cdf6117d0346b6930c1e0ffacdf13b¹ for Studies 1b and 2b, https://osf.io/94h3b?view_only=b00d5bbd140c48688c3e545ff9489298 and https://osf.io/jsb3t?view_only=432e086589a04d15ba3344dd86ebc10f for Study 2a, https://osf.io/958wa/?view_only=39ff8e24a6ef4d7c8b091b795ec69b1c for Study 2c, https://osf.io/sczvb?view_only=6c8487fbc8aa4380813fcec4c9ce7fbc for Study 2d, and https://osf.io/2mznk/?view_only=5a94e73166d24340add720a50e78af53 for Study 3.

¹ This survey's final sample size was less than what we anticipated due to COVID-19's disruptions in classes.

Table 2. Sample characteristics

	Study 1a	Study 1b	Study 2a	Study 2b	Study 2c	Study 2d	Study 3
Sample source	Undergrads	Undergrads	Mturk	Undergrads	Prolific	Prolific	Prolific
Data collection year	2019	2021	2018	2021	2019	2019	2019
%Female	0.74	0.74	0.40	0.79	0.47	0.54	0.51
Age	19.87	19.88	40.37	20.33	35.04	37.61	42.14
N White	410	-	781	206	397	397	484
N Asian	114	73	83	-	46	34	-
N Black	34	21	119	-	54	43	-
N total	624	94	1100	206	593	603	484

Studies 1a and 1b

Studies 1a and 2b first demonstrate that Asian and Black people experience the two types of dehumanization differently from the perspective of Black and Asian people using different measures.

Method

In Study 1a, Asian and Black participants first learned about the concept of dehumanization and the differences between animalistic dehumanization and mechanical dehumanization by reading a short paragraph that is accompanied by Figure 1 of the Haslam paper (2006). They then responded to two questions that ensured their understanding of the concepts (only participants responded correctly were included per pre-registration). They were then asked how much (from 1=Not at all to 7=Very often) they believe that discrimination and biases in terms of animalistic dehumanization and mechanical dehumanizations are experienced in society by various targets that included “Blacks,” “Asians,” and “Yourself.” The averages of Black participants’ responses to “Blacks” and “Yourself” for the two types of dehumanization experience were used as the measures for Black people’s experience of the two types of dehumanization ($\alpha=.73$ for animalistic dehumanization, $.76$ for mechanical dehumanization). The averages of Asian participants’ responses to “Asian” and

RACE AND DEHUMANIZATION

“Yourself” for the two types of dehumanization experience were used as measures for Asian people’s experience of the two types of dehumanization ($\alpha=.86$ for animalistic dehumanization, .83 for mechanical dehumanization).

In Study 1b, Black and Asian participants were asked: “Based on your personal experience in the United States, how often do you feel you are treated by people like a machine as opposed to a human? (1 = Not at all, 10 = very often)” and “Based on your personal experience in the United States, how often do you feel you are treated by people like an animal as opposed to a human? (1 = Not at all, 10 = very often)” as measures of their own experiences of dehumanization in the two domains.

In Study 1a, participants who were not Asian or Black were allowed to enter the survey, though their responses were not our focus. In Study 1b, participants who self-identified as White at the beginning of the survey were branched off to Study 2b (see below) instead of responding to the above questions.

Results

All variables were linearly transformed to run from 0 to 1, where 1 represents the highest level of the construct they represent before analyses.

Individual studies. T tests in both studies reveal that Asian participants experienced more mechanical dehumanization (Study 1a: $M=.49$, $SD=.27$; Study 1b: $M=.33$, $SD=.28$) than animalistic dehumanization (Study 1a: $M=.42$, $SD=.25$; Study 1b: $M=.21$, $SD=.22$), mean difference = 0.07, 95% CI [0.03, 0.12], $t(112) = 3.11$, $p = 0.002$, $d = 0.29$ for Study 1a, and mean difference = 0.12, 95% CI [0.07, 0.17], $t(71) = 4.68$, $p < .001$, $d = 0.55$ for Study 1b. In contrast, only in Study 1a Black participants experienced more animalistic dehumanization ($M=.73$, $SD=.27$) than mechanical dehumanization ($M=.47$, $SD=.30$), mean difference = -0.26, 95% CI [-0.35, -0.16], $t(32) = -5.61$, $p < .001$, Cohen's $d = -0.98$. In Study 1b, Black participants reported to experience exactly the same

RACE AND DEHUMANIZATION

level of the two types of dehumanization ($M=.49$, $SD=.33$ for both), mean difference <0.01 , 95% CI $[-0.13, 0.13]$, $t(20) = 0.00$, $p > .999$, $d = 0.00$. This might be due to the small Black sample size of Study 1b due to the COVID disruption in class. Overall, these results are supportive of Hypothesis 1a and somewhat supportive of Hypothesis 1b.

Analyses using the combined data. To provide a meta-analytical view of the overall pattern, data from the two studies were combined for additional analyses. After aggregating the data from the two studies into one, we reshaped the data into the long format and created a variable that indicate participants' responses to the dehumanization questions, a variable indicating whether the response variable from a particular row of the data is for animalistic ($=1$) or mechanical ($=0$) dehumanization, and an indicator-coded variable describing whether a particular row of the data is from Study 1a ($=0$) or 1b ($=1$). To compare Asian people's experience of the two types of dehumanization, we used the dehumanization type variable to predict Asian participants' responses, along with the indicator-coded variable for Study in a linear regression.

The results are summarized in Model 1 of Table 2 and visualized in the left half of Figure 1. As expected, Asian participants experience a higher level of mechanical dehumanization than animalistic dehumanization, $b=-.09$, $p<.001$. A parallel analysis was conducted for Black participants. It is summarized in Model 2 of Table 2 and visualized in the right half of Figure 2. As expected, the pattern reversed for them—they report that they experience a higher level of animalistic dehumanization than mechanical dehumanization, $b=.16$, $p<.001$. An additional regression adding the interaction between experience type and race ($1=Black$, $0=Asian$) reveals that the interaction is significant $b=.25$, $p<.001$, suggesting that the aforementioned reversal is significant. Graphically, it means that the difference between the two mean differences described in the right two bars and the two left bars of Figure 1 is significant.

RACE AND DEHUMANIZATION

Perceptions from other racial groups. Are the differences in the two types of dehumanizations experienced by Asian and Black people recognized by people not from that racial group? Though this question is not core to the current research question, based on Study 1a data, responses to the same items for “Black” and “Asian” targets from non-Asian participants reveal that they believe Asian people experience more mechanical dehumanization ($M=.56$, $SD=.29$) than animalistic dehumanization ($M=.39$, $SD=.26$), $t(503)=12.20$, $p<.001$, M_{diff} 95% $CI=[-1.20, -0.87]$, $d=-.54$, and non-Black participants report that they believe Black people experience more animalistic dehumanization ($M=.69$, $SD=.27$) than mechanical dehumanization ($M=.48$, $SD=.31$), $t(584)=14.68$, $p<.001$, M_{diff} 95% $CI=[0.18, 0.23]$, $d=.61$. These suggest that the pattern that the two types of dehumanization experienced by Asian and Black people differentially are recognized by others, which also provide indirect evidence that perceivers outside of the victim groups may dehumanize Asian and Black people differently in the hypothesized pattern.

Finally, we note that we did not pre-register or test whether Asian participants report more experience of mechanical dehumanization than Black participants or vice versa for Black participants. This is because whereas all other comparisons, including Hypothesis 2c and 2d, occur *within* participants (i.e., comparing the same participants’ rating of different racial groups on different measures), these types of comparisons occur not only between different participants but also between groups (i.e., comparing Asian participants’ responses against Black participants’ responses). Therefore, these differences could introduce potential confounds. For example, we considered that Black participants may report to experience a higher level of both types of dehumanization, which we observed in the data.

Discussion

Overall, these two studies and analyses based on the combined data support Hypotheses 1a and 1b, demonstrating that Black people and Asian people experience the two types of dehumanization differently from the perspective of the victims.

Table 3. Studies 1a and 2b results

		b	S.E.	p	95% CI	Partial η^2 (in %)	β
Model 1. Comparing Asian people's experience of two types of dehumanization	(Intercept)	0.31 ***	0.03	0.000 [	0.26 0.36]		0
	Experience type (1=Animalistic; 0=mechanical)	-0.09 ***	0.03	0.001 [	-0.14 -0.04]	2.95	-0.16
	Study 1b	0.19 ***	0.03	0.000 [	0.14 0.24]	11.56	0.34
	F(2,367)=29.57, R-squared=0.14, adjusted R-squared=0.13						
Model 2. Comparing Black people's experience of two types of dehumanization	(Intercept)	0.41 ***	0.06	0.000 [	0.30 0.52]		0.00
	Experience type (1=Animalistic; 0=mechanical)	0.16 **	0.06	0.009 [	0.04 0.27]	6.33	0.25
	Study 1b	0.11 †	0.06	0.062 [	-0.01 0.23]	3.27	0.18
	F(2,105)=5.33, R-squared=0.09, adjusted R-squared=0.07						

Note. † $p < .10$, ** $p < .01$, *** $p < .001$

Figure 1. Asian and Black people's experiences of the two types of dehumanization using the aggregated data from Studies 1a and 2b with raw data points, standard errors, and distribution

Studies 2a-2d

Studies 2a through 2d test the symmetry hypotheses from perceivers' perspective via a variety of dehumanization measures, ranging from somewhat blatant to very blatant.

Method

Participants and procedure. In these studies, participants were asked to rate Asian and Black people on the two types of dehumanization using different measures. Participants were also asked to rate other social groups, such as White people, in some studies for exploratory purposes.

RACE AND DEHUMANIZATION

In Study 2a, participants were asked how similar each racial group is to “artificial intelligence,” “calculator” (averaged as a mechanical dehumanization measure; $\alpha=.88$ for Asian target, .89 for Black target) “chimpanzee,” and “ape” (averaged as an animalistic dehumanization measure; $\alpha=.96$ for Asian target, .97 for Black target)².

In Study 2b, White participants were asked to rate Black and Asian people on mechanical dehumanization traits (1=cold to 10=interpersonally warm; 1=rigid to 10=cognitively open; 1=passive/fungible to 10=agentic/has a sense of individuality; 1=superficial to 10=has depth; $\alpha=.91$ for Asian target, .90 for Black target) and on animalistic dehumanization traits (1=Lack of culture to 10=civilized; 1=coarse to 10=refined; 1=amoral/lack of self-restraint to 10=morally sensible; 1=irrational/instinctual to 10=rational/logical; 1=childish to 10=mature; 1=inert to 10=emotionally responsive; $\alpha=.92$ for Asian target, .94 for Black target). These traits were derived from Haslam (2006).

In Studies 2c³ and 2d, participants were asked to rate the level of similarity that Blacks and Asians (along with other targets, i.e., White, Muslim, and immigrants) have with machines and animals as opposed to modern humans on pictographic scales from 0 to 100 where 100 is coded as most similar to primitive machines or animals (see Appendix A). The animalistic dehumanization pictograph was from Kteily and colleagues (2015). The mechanical dehumanization pictograph was developed by us. In all studies, participants were also asked to rate their feelings toward the racial

² Participants received two versions of wording, in one, the racial groups were referred to as “Asians,” “Blacks” and “Whites,” and in the other version, they were “Asian Americans,” “Black Americans” and “White Americans.” The results are similar with both wordings, and the wording do not have any interaction with the effect of race (these analyses can be found in the Markdown file), so the participants are combined in all the analyses reported in the main text; We also included glass and plastic as filler items.

³ This study also tests additional pre-registered hypotheses focusing on how the two types of dehumanization are related to people’s romantic preferences for them. These results are less conclusive and can be found in Appendix B for conciseness.

RACE AND DEHUMANIZATION

groups from 0=coldest/least favorable and 100=warmest/most favorable. This variable was reverse-coded and used as a measure for participants' prejudice toward the racial groups.

Results

All variables were linearly transformed to run from 0 to 1 before analyses like Studies 1a and 1b. All correlation and descriptive statistics can be found in Appendix A.

Individual studies. To test Hypotheses 2a through 2d, corresponding t tests were used to compare participants' two types of dehumanization of Asian and Black people only using White participants' responses, per pre-registrations. The results are summarized in Table 4. In short, all four hypotheses were supported in all studies barring one comparison—the comparison of the two types of dehumanization of Black people in Study 3c. So, the results overall provide predominant support for all four hypotheses.

Table 4. Testing the four comparisons of the symmetry using Studies 2a-2d data by study.

Study 2a	Animalistic Dehumanization of Asian people (M=.26, SD=.30) ^ ***	<***	Mechanical Dehumanization of Asian people (M=.31, SD=.32) v ***
	Animalistic Dehumanization of Black people (M=.32, SD=.33)	>***	Mechanical Dehumanization of Black people (M=.23, SD=.27)
Study 2b	Animalistic Dehumanization of Asian people (M=.17, SD=.15) ^ ***	<***	Mechanical Dehumanization of Asian people (M=.31, SD=.23) v ***
	Animalistic Dehumanization of Black people (M=.26, SD=.20)	>***	Mechanical Dehumanization of Black people (M=.21, SD=.17)
Study 2c	Animalistic Dehumanization of Asian people (M=.07, SD=.14) ^ ***	<***	Mechanical Dehumanization of Asian people (M=.16, SD=.24) v ***
	Animalistic Dehumanization of Black people (M=.11, SD=.19)	> <i>ns</i>	Mechanical Dehumanization of Black people (M=.12, SD=.21)
Study 2d	Animalistic Dehumanization of Asian people (M=.06, SD=.14) ^ ***	<***	Mechanical Dehumanization of Asian people (M=.11, SD=.21) v ***
	Animalistic Dehumanization of Black people (M=.09, SD=.18)	>*	Mechanical Dehumanization of Black people (M=.07, SD=.16)

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

RACE AND DEHUMANIZATION

Analyses using the combined data. Like in Studies 1a and 1b, to provide an overall picture from the overall meta-analytical view of the pattern, data from the four studies were combined. We conducted four linear regression models using data from all four studies, including participants of all racial background (given that the patterns generalize to non-White participants as well, as will be shown below). The results are summarized in Table 5 and visualized in Figure 2.

Model 3 compares the animalistic and the mechanical dehumanization of Asian people by using the dehumanization type (1=Mechanical; 0=animalistic) and study indicators to predict the dehumanization ratings, and it supports Hypothesis 2a, i.e., participants dehumanized Asian people more mechanically than animalistically, $b=.08, p<.001$. Model 4 with parallel specification for dehumanization of Black people supports Hypothesis 2b, i.e., participants dehumanize Black people more animalistically than mechanically, $b=-.03, p<.001$.

Model 5 compares the animalistic dehumanization of Black and Asian people by using the type of target of dehumanization (1=Black; 0=Asian) to predict participants' dehumanization rating, along with indicators for the data of studies. This model supports Hypothesis 2c that Black people are dehumanized more animalistically than Asian people, $b=.05, p<.001$. Finally, Model 6 is parallel to it except that it is about the mechanical dehumanization, and it supports Hypothesis 2d, i.e., Asian people are dehumanized more mechanically than Black people, $b=-.07, p<.001$.

An additional regression adding the interaction between type and race reveals that the interaction is significant $b=-.11, p<.001$, suggesting that the aforementioned reversal is significant. Graphically, it means that the difference between the two mean differences described in the right two bars and the left two bars of Figure 2 is significant (mathematically, it is tantamount to say that the difference between the two mean differences described in the first and third bars and the second and fourth bars of Figure 2 is significant).

Table 5. Studies 2a-2d results using the aggregated data

		b	S.E.	p	95% CI	Partial η^2 (in %)	β
Model 3. Comparing animalistic and mechanical dehumanization of Asian people (H2a)	(Intercept)	0.29 ***	0.01	0.000 [	0.28 0.30]		0.00
	Type (1=Mechanical; 0=animalistic)	0.08 ***	0.01	0.000 [	0.07 0.10]	2.55	0.15
	Study 2b	-0.09 ***	0.01	0.000 [	-0.12 -0.06]	0.88	-0.09
	Study 2c	-0.20 ***	0.01	0.000 [	-0.22 -0.18]	8.82	-0.31
	Study 2d	-0.24 ***	0.01	0.000 [	-0.26 -0.23]	12.42	-0.38
	F(4,4789)=242.89, R-squared=0.17, adjusted R-squared=0.17						
Model 4. Comparing animalistic and mechanical dehumanization of Black people (H2b)	(Intercept)	0.33 ***	0.01	0.000 [	0.32 0.34]		0.00
	Type (1=Mechanical; 0=animalistic)	-0.03 ***	0.01	0.000 [	-0.04 -0.02]	0.37	-0.06
	Study 2b	-0.08 ***	0.01	0.000 [	-0.10 -0.05]	0.65	-0.08
	Study 2c	-0.20 ***	0.01	0.000 [	-0.21 -0.18]	8.61	-0.31
	Study 2d	-0.24 ***	0.01	0.000 [	-0.25 -0.22]	12.06	-0.37
	F(4,4782)=210.35, R-squared=0.15, adjusted R-squared=0.15						
Model 5. Comparing animalistic dehumanization of Black vs Asian people (H2c)	(Intercept)	0.30 ***	0.01	0.000 [	0.28 0.31]		0.00
	Target (1=Black; 0=Asian)	0.05 ***	0.01	0.000 [	0.03 0.06]	0.85	0.08
	Study 2b	-0.11 ***	0.01	0.000 [	-0.13 -0.08]	1.26	-0.11
	Study 2c	-0.22 ***	0.01	0.000 [	-0.24 -0.21]	11.36	-0.35
	Study 2d	-0.25 ***	0.01	0.000 [	-0.27 -0.23]	13.79	-0.40
	F(4,4788)=263.4, R-squared=0.18, adjusted R-squared=0.18						
Model 6. Comparing mechanical dehumanization of Black vs Asian people (H2d)	(Intercept)	0.36 ***	0.01	0.000 [	0.35 0.37]		0.00
	Target (1=Black; 0=Asian)	-0.07 ***	0.01	0.000 [	-0.08 -0.05]	1.66	-0.12
	Study 2b	-0.06 ***	0.01	0.000 [	-0.09 -0.04]	0.40	-0.06
	Study 2c	-0.18 ***	0.01	0.000 [	-0.19 -0.16]	6.49	-0.27
	Study 2d	-0.23 ***	0.01	0.000 [	-0.25 -0.21]	10.87	-0.35
	F(4,4783)=193.84, R-squared=0.14, adjusted R-squared=0.14						

Note. *** $p < .001$.

RACE AND DEHUMANIZATION

Figure 2. Comparing the two types of dehumanization of Asian and Black people using the aggregated data from Studies 2a-2d with raw data points, standard errors, and distribution

RACE AND DEHUMANIZATION

To test Hypotheses 3a and 3b about the differential effect of the two types of dehumanization on overall evaluation of the two racial groups, four linear regression models were conducted in steps. These results are summarized in Table 6. In the first step, Model 7 uses mechanical dehumanization, animalistic dehumanization, the racial group of targets (1=Black, 0=Asian), and indicator-coded study numbers to predict people's negative attitude toward the racial groups (measured with reverse-coded feeling thermometers). Both dehumanization terms are significant, suggesting that they each have a unique contribution to people's overall evaluation.

In the second step, Model 8, an additional term, Mechanical dehumanization $\times$ Target, was added, and it is significant, $b=-.06$, $p=.012$. This suggests that the effect of mechanical dehumanization of Asian people on overall feelings toward Asian people is stronger than the effect of mechanical dehumanization of Black people on overall feelings toward people, supporting Hypothesis 3a. In the third regression, Model 9, the interaction Animalistic dehumanization $\times$ Target was added instead, and this term is significant ($b=.08$, $p<.001$), revealing the opposite is true for animalistic dehumanization, supporting Hypothesis 3b. Finally, in the last model, Model 10, both interactions were included, and they both remain significant in the same direction ($b=-.14$ and $b=.16$ respectively, $ps<.001$ for both), revealing the robustness of the effects.

Table 6. Comparing the effects of two types of dehumanization using aggregated data from Studies

2a-2d

		b	S.E.	p	95% CI	Partial η^2 (in %)	β
Model 7. Predicting prejudice against Asian and Black people from animalistic and mechanical dehumanization of them	(Intercept)	0.19 ***	0.01	0.000 [	0.18 0.21]		0.00
	Mechanical dehumanization	0.05 ***	0.01	0.000 [	0.03 0.08]	0.31	0.06
	Animalistic dehumanization	0.21 ***	0.01	0.000 [	0.18 0.23]	4.26	0.25
	Target (1=Black; 0=Asian)	0.01 *	0.01	0.021 [	0.00 0.03]	0.11	0.03
	Study 2b	-0.09 ***	0.01	0.000 [	-0.11 -0.07]	1.21	-0.11
	Study 2c	0.04 ***	0.01	0.000 [	0.03 0.06]	0.56	0.08
	Study 2d	-0.01 ns	0.01	0.487 [	-0.02 0.01]	0.01	-0.01
F(6,4774)=85.48, R-squared=0.1, adjusted R-squared=0.1							
Model 8. Comparing the effect of mechanical dehumanization Black and Asian people on prejudice against them (H3a)	(Intercept)	0.19 ***	0.01	0.000 [	0.17 0.20]		0.00
	Mechanical dehumanization	0.07 ***	0.02	0.000 [	0.04 0.11]	0.31	0.09
	Target (1=Black; 0=Asian)	0.03 ***	0.01	0.001 [	0.01 0.04]	0.11	0.06
	Animalistic dehumanization	0.21 ***	0.01	0.000 [	0.18 0.24]	4.38	0.25
	Study 2b	-0.09 ***	0.01	0.000 [	-0.11 -0.07]	1.21	-0.11
	Study 2c	0.04 ***	0.01	0.000 [	0.03 0.06]	0.57	0.08
	Study 2d	-0.01 ns	0.01	0.521 [	-0.02 0.01]	0.01	-0.01
	Mechanical dehumanization×Target	-0.06 *	0.02	0.012 [	-0.10 -0.01]	0.13	-0.05
F(7,4773)=74.26, R-squared=0.1, adjusted R-squared=0.1							
Model 9. Comparing the effect of animalistic dehumanization Black and Asian people on prejudice against them (H3b)	(Intercept)	0.20 ***	0.01	0.000 [	0.19 0.22]		0.00
	Mechanical dehumanization	0.05 ***	0.01	0.000 [	0.03 0.08]	0.32	0.07
	Animalistic dehumanization	0.16 ***	0.02	0.000 [	0.12 0.20]	4.27	0.19
	Target (1=Black; 0=Asian)	0.00 ns	0.01	0.927 [	-0.02 0.01]	0.11	0.00
	Study 2b	-0.09 ***	0.01	0.000 [	-0.12 -0.07]	1.24	-0.11
	Study 2c	0.04 ***	0.01	0.000 [	0.03 0.06]	0.55	0.08
	Study 2d	-0.01 ns	0.01	0.455 [	-0.02 0.01]	0.01	-0.01
	Animalistic dehumanization×Target	0.08 ***	0.02	0.000 [	0.04 0.13]	0.26	0.08
F(7,4773)=75.22, R-squared=0.1, adjusted R-squared=0.1							
Model 10. Comparing the effect of both types of dehumanization on prejudice against them (H3a and H3b)	(Intercept)	0.19 ***	0.01	0.000 [	0.18 0.21]		0.00
	Mechanical dehumanization	0.11 ***	0.02	0.000 [	0.08 0.14]	0.33	0.14
	Target (1=Black; 0=Asian)	0.01 †	0.01	0.088 [	0.00 0.03]	0.11	0.03
	Animalistic dehumanization	0.13 ***	0.02	0.000 [	0.09 0.17]	4.41	0.15
	Study 2b	-0.09 ***	0.01	0.000 [	-0.12 -0.07]	1.29	-0.11
	Study 2c	0.04 ***	0.01	0.000 [	0.03 0.06]	0.56	0.08
	Study 2d	-0.01 ns	0.01	0.507 [	-0.02 0.01]	0.01	-0.01
	Mechanical dehumanization×Target	-0.14 ***	0.03	0.000 [	-0.19 -0.09]	0.58	-0.13
F(8,4772)=69.65, R-squared=0.1, adjusted R-squared=0.1							

Note. † $p < .10$, * $p < .05$. *** $p < .001$.

Minorities' dehumanization of Asian and Black people. Though minorities' dehumanized perceptions of Asian and Black people were not our primary goal, we also found that the pattern described in Hypotheses 2a-3b mostly generalize to non-White participants.

When Model 3 was re-estimated using non-White participants from the aggregated data (Asian and Black participants included), participants still dehumanize Asian people more

RACE AND DEHUMANIZATION

mechanically than animalistically, $b=.12, p<.001$. In fact, this difference is more pronounced among non-White participants: an additional interaction term for Target $\times$ White participant (1=White; 0=non-White) were added along with the main effect term for White participant, and the interaction terms is significant ($b=-.05, p=.006$). However, in re-estimated Model 4, non-White participants dehumanize Black people similarly between the two types of the dehumanization ($b=.01, p=.610$).

In models parallel to Models 5 and 6, minority participants still animalistically dehumanize Black more than Asian people ($b=.03, p=.020$), but mechanically dehumanize Asian more than Black people ($b=-.08, p<.001$). In fact, these two comparisons for White participants and non-White participants do not differ significantly. When an additional interaction term for Target $\times$ White participant (1=White; 0=non-White) was added along with the main effect term for White participant, the interaction terms were not significant in either case ($b=.01, p=.268$ and $b=.01, p=.546$ in each model respectively). Therefore, Hypotheses 2a, 2c, and 2d, though not 2b, were also supported based on minority participants' dehumanized perceptions of Asian and Black people.

Minorities' dehumanization of Asian and Black people and evaluation of them. When Model 10 was re-estimated using non-White participants, the two interaction terms are very similar to that of Model 10, $b=-.15, p=.002$ for Mechanical dehumanization $\times$ Target, and $b=.15, p=.004$ for Animalistic dehumanization $\times$ Target. In fact, these two interaction terms for White participants and non-White participants do not differ significantly—in another model parallel to Model 10, three-way interaction for Mechanical dehumanization $\times$ Target $\times$ White participant (1=White; 0=non-White) Animalistic dehumanization $\times$ Target $\times$ White participant were added (along with other corresponding lower order two-way interaction terms), and neither term is significant, $b=.03, p=.589$ and $b<.01, p=.949$, respectively. Therefore, the extent to which White participants and minority participants use the two types of dehumanization to guide their evaluation of Asian and Black people do not significantly differ.

RACE AND DEHUMANIZATION

Are the measures measuring prejudice? One may ask whether the dehumanization measures we developed in Studies 2a, 2c and 2d are truly dehumanization or prejudiced perceptions (as opposed to neutral or positive perceptions). We believe they are for two reasons. First, these studies demonstrate robust associations between the dehumanization measures and overall evaluation of Asian and Black people (i.e., the feeling thermometers), so these measures are likely capturing negative perceptions. Second, the dehumanization measures we developed are correlated with other variables that are either racial prejudice or variables often related to racial prejudice. In Study 2a, the dehumanization measures are correlated with preferences for social hierarchy (i.e., social dominance orientation; Pratto et al., 1994; r s range between .22 and .33 for both types of dehumanization of both Asian and Black people, $ps < .001$ for all), preferences for socially distancing from racial out-groups (Wolsko et al., 2006; r s range between .22 and .34, $ps < .001$ for all), and ideological conservatism (r s range between .15 and .23, $ps < .001$ for all). In Study 2c and 2d, they are correlated with ideological conservatism (Sidanius et al., 1996; r s range between .09 and .21, $ps < .050$ for all). In all cases, these variables correlate with animalistic dehumanization of Black people more than mechanical dehumanization of Black people. In contrast, these variables correlate with mechanical dehumanization of Asian people more than animalistic dehumanization of Asian people (again, all correlations can be found in Appendix A). These patterns further support the idea of the racial symmetry.

Discussion

The aggregated data from Studies 2a-2d support all four aspects of the symmetry hypothesis from the perceiver perspective. Additionally, it demonstrates that the two types of dehumanization differentially contribute to people's overall impression of Asian and Black people, further demonstrating the idea that the two types of dehumanizations are differentially applicable to evaluations of Asian and Black people.

Study 3

Finally, Study 3 attempts to demonstrate “real world” implications of the symmetry by testing Hypothesis 4 that Asian and Black people would face different types of biases in a leadership selection context.

Method

Participants and procedure. As pre-registered, we recruited participants who have responded “Yes” to the question “Do you have any experience in making hiring decisions (i.e. have you been responsible for hiring job candidates)?” to Prolific screener. We used a revised leadership selection paradigm from Galinsky et al. (2013). This paradigm was originally used by them to test the idea that Asian people are more likely to be selected for feminine positions while Black people are more likely to be selected for masculine positions.

In our study, participants were invited to review a hypothetical candidate’s profile and decide which one of two leadership positions, Position A and Position B, that the candidate will be given (see Appendix A). Position A is said to require traits that differentiate humans from animals (e.g., civility and moral sensibility) and it needs to avoid traits that resemble animals (irrationality and childlikeness) based on Haslam (2006). In contrast, Position B is said to require traits that differentiate humans from machines (e.g., emotional responsiveness and interpersonal warmth) and it needs to avoid traits that resemble machines (e.g., passivity and superficiality), also based on Haslam (2006)⁴.

Participants were then asked to decide which position the candidate should be given. The job candidate’s race (Black, White, or Asian) and gender (male or female) were manipulated in the

⁴ In fact, the description of the positions was modified from Figure 1 of the Haslam paper (2006). In the figure, “Human uniqueness” was replaced with “Top traits required for Position A,” and “Animalistic dehumanization” was replaced with “Top traits to be avoided for Position A,” and likewise for “Human Nature” and “Mechanical dehumanization” in Position B.

RACE AND DEHUMANIZATION

profile with the applicant's name, and the applicant's race was checked in a box visible to participants. The "White" condition was included only for comparison like in Galinsky et al. (2013), as our focus is primarily on Asian and Black targets (see the pre-registration). The applicant's gender is a theoretical random factor in this study, as we do not have *a priori* theory regarding its role. The manipulations about the candidate's demographic background are identical to that of Galinsky et al. (2013). To ensure that participants noticed the applicant's race, they were asked to identify the applicant's race after answering two other filler questions about the applicant but before they decided which position to give to the applicant.

Participants were also asked two additional questions about how suitable they think the candidate is for the two positions regardless of their choice earlier (from Not suitable at all=1 to Extremely suitable=7). Analyses using these questions are more exploratory, as we discussed in the pre-registration.

Results

Selection decision. To test the hypothesis using the decision variable, we conducted a 2 (Race of Candidate: Asian vs White vs Black) $\times$ 2 (Sex of Candidate: male vs female) $\times$ 2 (Position type: Position A vs Position B) log-linear analysis following Galinsky et al. (2013). The analysis only uses responses from White participants per pre-registration. There were 75.3% of participants nominated the Asian targets, 69.0% of participants nominated the White targets, and 61.5% nominated the Black targets for Position A that require traits that differentiate humans from animals, and the differences between the selection rates for Asian and Black targets are significantly different ($p=.025$), consistent with the hypothesis⁵ (see Figure 3 for visualization).

⁵ The differences between the selection rate for Black and White targets are also significantly different, $p=.048$, though the differences between the selection rate for Asian and White targets are not significantly different, $p=.856$.

Figure 3. The proportion of participants' choice for Position A (as opposed to Position B) by racial background of the hypothetical applicant with raw data points, standard errors, and distribution

Perceived suitability. To compare whether Asian and Black candidates were perceived to be differentially suitable to the two positions (hence White targets were excluded from the analysis), participants' perceived suitability of the candidates for the positions was predicted by the candidates' race (Black vs Asian), the position type (Position A vs Position B), and their interaction in a linear regression, controlling for the candidate's sex. The model is summarized in Table 7.

These patterns are visualized in Figure 4. Based on the figure, Asian candidates were perceived to be more suitable than Black candidates for Position A, which requires the candidate to behave unlike animals. The pattern reverses for Position B. Based on results from Table 7, the race $\times$ position interaction is significant, $b=.42$, $p=.034$, revealing that this reversal is statistically

RACE AND DEHUMANIZATION

significant. Therefore, participants' perceived suitability of different leadership positions is indeed determined by the candidates' race and how the positions are described along the two forms of dehumanization in a manner consistent with Hypothesis 4.

Table 7. Perceived suitability in Study 3

	b	S.E.	<i>p</i>	95% CI	Partial η^2 (in %)	β
(Intercept)	5.16 ***	0.11	0.000	[4.94 5.39]		0.00
Job type (1=Position B)	-0.22 ns	0.15	0.139	[-0.50 0.07]	3.04	-0.08
Candidate's race (1=Asian)	0.29 *	0.14	0.044	[0.01 0.56]	0.08	0.11
Candidate's sex (1=female)	0.12 ns	0.10	0.216	[-0.07 0.32]	0.24	0.05
Job type $\times$ Candidate's race	-0.42 *	0.20	0.034	[-0.82 -0.03]	0.71	-0.15
F(4,631)=6.59, R-squared=0.04, adjusted R-squared=0.03						

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

Figure 4. Perceived suitability by position and race in Study 3 with raw data points, standard errors, and distribution

Discussion

These results substantiate Hypothesis 4 that Black and Asian people face biases in the selection of leadership positions along the two forms of dehumanization.

General Discussion

The tendency to dehumanize racial minority groups has captured researchers' attention in past studies, but the popular operational focus on animalistic dehumanization has belied the subtlety

RACE AND DEHUMANIZATION

of how different racial groups are dehumanized differently. This lacuna in the literature prompted assumptions that animalistic dehumanization is the only type of explicit and blatant dehumanization, and Asians, as “model minorities” (Chou & Feagin, 2015), are relatively immune to it. In light of the two forms of dehumanization proposed by Haslam (2006), we proposed and found evidence for a racial symmetry of dehumanization such that Asian people are primarily mechanically dehumanized and Black people are primarily animalistically dehumanized. Our studies take the perspective of victims as well as perceivers, and we demonstrate that the ways Asian and Black people experience the two forms of dehumanization differently have profound implications for how people evaluate them as well as biases in leadership selection decisions. Therefore, due to the unique combination of cultural stereotypes they face, different racial groups, while humanized in one form, are dehumanized in another (see Over, 2020 for related discussion).

Though our studies focus on the responses from White participants, we have also found that most of the hypothesized patterns are generalized to non-White participants. These results reveal that Asian and Black people’s different experiences of dehumanization are not something uniquely perpetuated from the dominant group to the minority group. Instead, it flows “in the air” as shared sociocultural knowledge and notorious practices (Adams, 2008; Steele, 1997). In work contexts, our findings suggest that different racial minority groups are differentially selected for positions based on how they are racially dehumanized. This racial division of labor may further confirm and reinforce racial dehumanization (Eagly & Wood, 2011), creating a vicious circle.

The current research makes several contributions to the literature. Though previous research has investigated how some sub-groups of Blacks (e.g., Haitians) and Asians (e.g., Japanese and Chinese) face different types of dehumanization (Bain et al., 2009; Andrighetto et al., 2014). As opposed to focusing on targets of different national backgrounds, the current studies focus on broad

RACE AND DEHUMANIZATION

racial categories (i.e., Blacks and Asians), and introduce a theory of the symmetry hypothesis and test the full symmetry. Furthermore, as part of our effort in operationalization, we also developed a mechanical dehumanization scale (Studies 2c and 2d) that we validated by demonstrating its ability to capture meaningful variances and to correlate with other outcome variables in the expected fashion. This measure complements Keitly et al. (2015)'s animalistic dehumanization scale--which asks participants where participants believe a social group is at the evolutionary stage--in the operationalization of the two forms of dehumanization.

To combat these widely-held prejudices, researchers who are interested in designing prejudice-reduction intervention programs should consider that different racial groups, in particular, Black and Asian people, are primarily facing different types of dehumanization. For instance, interventions that increase intergroup contact (Pettigrew, 1998) and construct common ingroup identity (Gaertner & Dovidio, 2014) are useful in reducing prejudice against the out-group. Current studies suggest that interventions that increase the commonality in emotion and empathy during contact (Sesko & Biernat, 2010) may be especially useful for reducing prejudice against Asians or other social groups that primarily face mechanical dehumanization. In contrast, interventions that focus on the mechanism of increasing the commonality in cultural achievement and moral sensibility may be especially useful for reducing prejudice against Blacks or other social groups that face animalistic dehumanization.

Future direction. A limitation of the current studies is that we focus on American participants, and it remains unclear whether they generalize to other national contexts. Future studies should address this. Past studies revealed that minorities who perceive that they are dehumanized tend to be more supportive of violent collective action and less willing to assist counterterrorism efforts (Keitly, & Bruneau, 2017). In light of the current findings, it is possible that the two forms of

RACE AND DEHUMANIZATION

dehumanization are differentially associated with these political tendencies for Blacks and Asians, and future studies should consider empirically answer this question.

Conclusion

In conclusion, we show that animalistic dehumanization and mechanical dehumanization are experienced by Asian and Black people differently in a symmetry: whereas Black people are more often dehumanized animalistically, Asian people are more often dehumanized mechanically.

RACE AND DEHUMANIZATION

Reference

- Adams, G., Biernat, M., Branscombe, N. R., Crandell, C. S., & Wrightsman, L. S. (2008a). Beyond prejudice: Toward a sociocultural psychology of racism and oppression. In G. Adams, M. Biernat, N. R. Branscombe, C. S. Crandall, & L. S. Wrightsman (Eds.), *Commemorating Brown: The social psychology of racism and discrimination* (pp. 215–246). Washington, DC: American Psychological Association.
- Andrighetto, L., Baldissarri, C., Lattanzio, S., Loughnan, S., & Volpato, C. (2014). Humanitarian aid? Two forms of dehumanization and willingness to help after natural disasters. *British Journal of Social Psychology, 53*(3), 573-584.
- Bain, P., Park, J., Kwok, C., & Haslam, N. (2009). Attributing human uniqueness and human nature to cultural groups: Distinct forms of subtle dehumanization. *Group Processes & Intergroup Relations, 12*(6), 789-805.
- Boccatto, G., Capozza, D., Falvo, R., & Durante, F. (2008). The missing link: Ingroup, outgroup and the human species. *Social Cognition, 26*(2), 224-234.
- Bruneau, E., & Kteily, N. (2017). The enemy as animal: Symmetric dehumanization during asymmetric warfare. *PloS one, 12*(7), e0181422.
- Bruneau, E., Szekeres, H., Kteily, N., Tropp, L. R., & Kende, A. (2020). Beyond dislike: Blatant dehumanization predicts teacher discrimination. *Group Processes & Intergroup Relations, 23*(4), 560-577.
- Chou, R. S., & Feagin, J. R. (2015). *Myth of the model minority: Asian Americans facing racism* (2nd ed.). Routledge.
- Cortes, B. P., Demoulin, S., Rodriguez, R. T., Rodriguez, A. P., & Leyens, J. P. (2005). Infrahumanization or familiarity? Attribution of uniquely human emotions to the self, the ingroup, and the outgroup. *Personality and Social Psychology Bulletin, 31*(2), 243-253.

RACE AND DEHUMANIZATION

- Cuddy, A. J., Fiske, S. T., & Glick, P. (2007). The BIAS map: behaviors from intergroup affect and stereotypes. *Journal of Personality and Social Psychology*, 92(4), 631-647.
- Czopp, A. M., & Monteith, M. J. (2006). Thinking well of African Americans: Measuring complimentary stereotypes and negative prejudice. *Basic and Applied Social Psychology*, 28(3), 233-250.
- Devine, P. G., & Elliot, A. J. (1995). Are racial stereotypes really fading? The Princeton trilogy revisited. *Personality and Social Psychology Bulletin*, 21(11), 1139-1150.
- Eagly, A. H., & Wood, W. (2012). Social role theory. In P. van Lange, A. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories in social psychology* (pp. 458 – 476). Thousand Oaks, CA: Sage.
- Fiske, S. T., Cuddy, A. J., Peter, G., & Xu, J. (2019). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, 82, 878–902.
- Gaertner, S. L., & Dovidio, J. F. (2014). *Reducing intergroup bias: The common ingroup identity model*. Philadelphia: Psychology Press.
- Galinsky, A. D., Hall, E. V., & Cuddy, A. J. (2013). Gendered races: Implications for interracial marriage, leadership selection, and athletic participation. *Psychological Science*, 24(4), 498-506.
- Goff, P. A., Eberhardt, J. L., Williams, M. J., & Jackson, M. C. (2008). Not yet human: implicit knowledge, historical dehumanization, and contemporary consequences. *Journal of Personality and Social Psychology*, 94(2), 292-306.
- Gosling, S. D. (2001). From mice to men: what can we learn about personality from animal research?. *Psychological Bulletin*, 127(1), 45-86.
- Gray, H. M., Gray, K., & Wegner, D. M. (2007). Dimensions of mind perception. *Science*, 315(5812), 619-619.

RACE AND DEHUMANIZATION

- Haslam, N. (2006). Dehumanization: An integrative review. *Personality and Social Psychology Review*, 10(3), 252-264.
- Haslam, N., & Loughnan, S. (2014). Dehumanization and infrahumanization. *Annual Review of Psychology*, 65, 399-423.
- Kteily, N., Bruneau, E., Waytz, A., & Cotterill, S. (2015). The ascent of man: Theoretical and empirical evidence for blatant dehumanization. *Journal of personality and social psychology*, 109(5), 901.
- Kteily, N., & Bruneau, E. (2017). Backlash: The politics and real-world consequences of minority group dehumanization. *Personality and Social Psychology Bulletin*, 43(1), 87-104.
- Koch, A., Imhoff, R., Dotsch, R., Unkelbach, C., & Alves, H. (2016). The ABC of stereotypes about groups: Agency/socioeconomic success, conservative–progressive beliefs, and communion. *Journal of Personality and Social Psychology*, 110(5), 675-709.
- Mauss, I. B., Butler, E. A., Roberts, N. A., & Chu, A. (2010). Emotion control values and responding to an anger provocation in Asian-American and European-American individuals. *Cognition and Emotion*, 24(6), 1026-1043.
- Markowitz, D. M., Shoots-Reinhard, B., Peters, E., Silverstein, M. C., Goodwin, R., & Bjälkebring, P. (2021). Dehumanization During the COVID-19 Pandemic. *Frontiers in Psychology*, 12, 634543 .
- Maykovich, M. K. (1972). Reciprocity in racial stereotypes: White, black, and yellow. *American Journal of Sociology*, 77(5), 876-897.
- Nam, Y., Kim, Y. H., & Tam, K. K. P. (2018). Effects of emotion suppression on life satisfaction in Americans and Chinese. *Journal of Cross-cultural Psychology*, 49(1), 149-160.
- Over, H. (2021). Seven challenges for the dehumanization hypothesis. *Perspectives on Psychological Science*, 16(1), 3-13.

RACE AND DEHUMANIZATION

Pettigrew, T. F. (1998). Intergroup contact theory. *Annual Review of Psychology*, 49(1), 65-85.

Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. F. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of personality and social psychology*, 67(4), 741.

Saminaden, A., Loughnan, S., & Haslam, N. (2010). Afterimages of savages: Implicit associations between primitives, animals and children. *British Journal of Social Psychology*, 49(1), 91-105.

Sesko, A. K., & Biernat, M. (2010). Prototypes of race and gender: The invisibility of Black women. *Journal of Experimental Social Psychology*, 46(2), 356-360.

Sidanius, J., Pratto, F., & Bobo, L. (1996). Racism, conservatism, affirmative action, and intellectual sophistication: A matter of principled conservatism or group dominance?. *Journal of personality and social psychology*, 70(3), 476.

Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, 52(6), 613-629.

Vaes, J., & Paladino, M. P. (2010). The uniquely human content of stereotypes. *Group Processes & Intergroup Relations*, 13(1), 23-39.

Wittenbrink, B., Judd, C. M., & Park, B. (1997). Evidence for racial prejudice at the implicit level and its relationship with questionnaire measures. *Journal of Personality and Social Psychology*, 72(2), 262-274.

Wolsko, C., Park, B., & Judd, C. M. (2006). Considering the Tower of Babel: Correlates of assimilation and multiculturalism among ethnic minority and majority groups in the United States. *Social Justice Research*, 19, 277-306. doi:10.1007/s11211-006-0014-8

RACE AND DEHUMANIZATION

Appendix A Materials for all studies.

Study 1a

In this study, participants learned about the concepts of dehumanization and its two forms by reading the following paragraph. The paragraph is accompanied by Figure 1 from Haslam 2006(2).

“According to Haslam (2006)(2), people may have dehumanized perceptions of others, or see someone as less than fully human. There are mainly two types of dehumanization (see the Figure below from Haslam 2006)(2). Animalistic dehumanization occurs when one perceives others to be similar to animal (e.g., in terms of having no culture, or self restraint) and to be lack of traits of human uniqueness (e.g., civility, refinement, and rationality). In contrast, mechanical dehumanization occurs when one perceives others to be similar to machines (e.g., in terms of being rigid, passive and superficial) and to be lack of human nature (e.g., emotional responsiveness, interpersonal warmth and individuality).

Reference:

Haslam, N. (2006). Dehumanization: An integrative review. *Personality and social psychology review*, 10(3), 252-264.

” [sic]

The two comprehension check questions are

1. According to the above, if one is perceived to be lack of civility, this person is dehumanized in what way?

Animalistic dehumanization (answer)

Mechanical dehumanization

2. According to the above, if a social group is mechanically dehumanized, they might be perceived to be lack of which one of the following traits?

Agency/individuality (answer)

Culture

Refinement

The experience of dehumanizations are measured using the following two questions from 1=Not at all to 7=Very often. The key targets are “Blacks,” “Asians,” “Yourself.” “Whites,”

“Hispanics/Latinos,” “Muslims,” “Immigrants” were also included as fillers⁶. The word “animalistic” and “mechanical” in the items are bolden in the original items.

How much do you think discrimination and biases in terms of **animalistic** dehumanization are experienced in the society by...?

How much do you think discrimination and biases in terms of **mechanical** dehumanization are experienced in the society by...?

⁶ Participants also responded to an open-ended question that asks them to elaborate more about their experiences of dehumanizations for exploratory purposes and these responses are not reported here.

RACE AND DEHUMANIZATION

Study 1b

Based on your personal experience and every day interactions with other people in the United States, how often do you feel you are treated by people like a **machine** as opposed to a human? (1=Not at all, 10= Very often)

Based on your personal experience and every day interactions with other people in the United States, how often do you feel you are treated by people like an **animal** as opposed to a human? (1=Not at all, 10= Very often)

RACE AND DEHUMANIZATION

Study 2a

What percentage of characteristics/attributes do you think ____ share with the following items? [half of participants respond to the question three times where “____” was replaced with Whites, Blacks, or Asians, and the other half of participants respond to the question three times where “____” was replaced with White Americans, Black Americans, or Asian Americans]

You can use whatever characteristics/attributes that come to mind when answering the questions. Please indicate the percentage using the slider. The "0" to the left indicates 0% of shared characteristics (not at all shared), and the "100" to the right indicates 100% of shared characteristics (entirely shared). There are no right or wrong answers--you can just be totally honest about your own personal belief.

Artificial intelligence

Calculator

Ape

Chimpanzee

Glass

Plastic

RACE AND DEHUMANIZATION

Study 2b

How would you rate **Black people** using the following phrases? (on a ten point scales matrix)

1=	10=
Lack of culture	Civilized
Course	Refined
Amoral/lack of self-restraint	Morally sensible
Irrational/instinctual	Rational/logical
Childish	Mature
Inert	Emotionally responsive
Cold	Interpersonally warm
Rigid	Cognitively open
Passive/fungible	Agentic/has a sense of individuality
Superficial	Has depth

How would you rate **Asian people** using the following phrases? (on a ten point scales matrix)

1=	10=
Lack of culture	Civilized
Course	Refined
Amoral/lack of self-restraint	Morally sensible
Irrational/instinctual	Rational/logical
Childish	Mature
Inert	Emotionally responsive
Cold	Interpersonally warm
Rigid	Cognitively open
Passive/fungible	Agentic/has a sense of individuality
Superficial	Has depth

RACE AND DEHUMANIZATION

Studies 2c and 2d

Dehumanization measures

The mechanical dehumanization was measured using the following pictograph:

People and entities can vary in how machine-like they seem. Some seem highly mechanical whereas others seem no different than average humans. Using the image below, indicate on the sliders how mechanical versus humanized you consider average member of each group or entities to be. Ratings closer to the left side of the scale indicate more machine-like features, and ratings closer to the right side of the scale indicate more human-like features. There is no right or wrong answer.

The animalistic dehumanization was measured using the pictograph as presented in Kteily, Bruneau, Waytz and Cotterill (2015) with the following instruction.

People and entities can vary in how animal-like they seem. Some seem highly animalistic whereas others seem no different than average humans. Using the image below, indicate on the sliders how animal you consider average member of each group or entities to be. Ratings closer to the left side of the scale indicate more animal-like features, and ratings closer to the right side of the scale indicate more human-like features. There is no right or wrong answer.

RACE AND DEHUMANIZATION

Study 3

Please read about the following profile from a hypothetical job applicant who is being promoted to take on a leadership role, and answer the following questions.

[Participants were randomly assigned to review one of the following profiles that are originally from Galinsky, A. D., Hall, E. V., & Cuddy, A. J. (2013). Gendered races: Implications for interracial marriage, leadership selection, and athletic participation. *Psychological science*, 24(4), 498-506.]

Asian Female

ABX INDUSTRIES, INC.

Leadership Representative Application

APPLICANT INFORMATION						
Last Name	Omitted for confidentiality	First	Ming Lee	M.I.	M	Date
Street Address	Omitted for confidentiality			Apartment/Unit# 5E		
City	Chicago	State	IL	ZIP		
Position Applied for	ABX Leadership Representative					
Opportunity to Self-identify –				<i>Please note that any information you provide below is completely voluntary</i>		
Are you a native English speaker?				☒ Yes ☐ No		
Race/ethnicity:				☐ White ☐ Black ☒ Asian ☐ Hispanic ☐ Other		
Gender:				☐ Male ☒ Female		

PREVIOUS EMPLOYMENT					
Company	ABX Industries Inc.		Phone	()	
Address	5 N. Industrial Pkwy		Supervisor	Omitted for confidentiality	
Job Title	Account Executive	Starting Salary	Ending Salary		
Responsibilities Managing Local Accounts for XLS					

RACE AND DEHUMANIZATION

Asian Male

ABX INDUSTRIES, INC.

Leadership Representative Application

APPLICANT INFORMATION						
Last Name	Omitted for confidentiality	First	Ming Hoa	M.I.	M	Date
Street Address	Omitted for confidentiality				Apartment/Unit #	5E
City	Chicago	State	IL	ZIP		
Position Applied for	ABX Leadership Representative					
Opportunity to Self-identify –	Please note that any information you provide below is completely voluntary					
Are you a native English speaker?	☒ Yes ☐ No					
Race/ethnicity:	☐ White ☐ Black ☒ Asian ☐ Hispanic ☐ Other					
Gender:	☒ Male ☐ Female					

PREVIOUS EMPLOYMENT			
Company	ABX Industries Inc.	Phone	()
Address	5 N. Industrial Pkwy	Supervisor	Omitted for confidentiality
Job Title	Account Executive	Starting Salary	Ending Salary
Responsibilities	Managing Local Accounts for XLS		

Black female

ABX INDUSTRIES, INC.

Leadership Representative Application

APPLICANT INFORMATION						
Last Name	Omitted for confidentiality	First	Lakisha	M.I.	M	Date
Street Address	Omitted for confidentiality				Apartment/Unit #	5E
City	Chicago	State	IL	ZIP		
Position Applied for	ABX Leadership Representative					
Opportunity to Self-identify –	Please note that any information you provide below is completely voluntary					
Are you a native English speaker?	☒ Yes ☐ No					
Race/ethnicity:	☐ White ☒ Black ☐ Asian ☐ Hispanic ☐ Other					
Gender:	☐ Male ☒ Female					

PREVIOUS EMPLOYMENT			
Company	ABX Industries Inc.	Phone	()
Address	5 N. Industrial Pkwy	Supervisor	Omitted for confidentiality
Job Title	Account Executive	Starting Salary	Ending Salary
Responsibilities	Managing Local Accounts for XLS		

RACE AND DEHUMANIZATION

Black male

APPLICANT INFORMATION				
Last Name	Omitted for confidentiality	First	Jamal	M.I. M Date
Street Address	Omitted for confidentiality			Apartment/Unit # SE
City	Chicago	State	IL	ZIP
Position Applied for	ABX Leadership Representative			
Opportunity to Self-identify – <i>Please note that any information you provide below is completely voluntary</i>				
Are you a native English speaker? ☒ Yes ☐ No				
Race/ethnicity: ☐ White ☒ Black ☐ Asian ☐ Hispanic ☐ Other				
Gender: ☒ Male ☐ Female				

PREVIOUS EMPLOYMENT			
Company	ABX Industries Inc.		Phone ()
Address	5 N. Industrial Pkwy		Supervisor Omitted for confidentiality
Job Title	Account Executive	Starting Salary	Ending Salary
Responsibilities Managing Local Accounts for XLS			

White female

ABX INDUSTRIES, INC.

Leadership Representative Application

APPLICANT INFORMATION				
Last Name	Omitted for confidentiality	First	Emily	M.I. M Date
Street Address	Omitted for confidentiality			Apartment/Unit # SE
City	Chicago	State	IL	ZIP
Position Applied for	ABX Leadership Representative			
Opportunity to Self-identify – <i>Please note that any information you provide below is completely voluntary</i>				
Are you a native English speaker? ☒ Yes ☐ No				
Race/ethnicity: ☒ White ☐ Black ☐ Asian ☐ Hispanic ☐ Other				
Gender: ☐ Male ☒ Female				

PREVIOUS EMPLOYMENT			
Company	ABX Industries Inc.		Phone ()
Address	5 N. Industrial Pkwy		Supervisor Omitted for confidentiality
Job Title	Account Executive	Starting Salary	Ending Salary
Responsibilities Managing Local Accounts for XLS			

RACE AND DEHUMANIZATION

White male

ABX INDUSTRIES, INC.

Leadership Representative Application

APPLICANT INFORMATION			
Last Name	<input type="text" value="Omitted for confidentiality"/>	First	Greg
M.I.	M	Date	
Street Address	<input type="text" value="Omitted for confidentiality"/>		Apartment/Unit #
City	Chicago	State	IL
ZIP			
Position Applied for	ABX Leadership Representative		
Opportunity to Self-identify – <i>Please note that any information you provide below is completely voluntary</i>			
Are you a native English speaker?	☒ Yes ☐ No		
Race/ethnicity:	☒ White ☐ Black ☐ Asian ☐ Hispanic ☐ Other		
Gender:	☒ Male ☐ Female		

PREVIOUS EMPLOYMENT			
Company	ABX Industries Inc.		Phone ()
Address	5 N. Industrial Pkwy		Supervisor
Job Title	Account Executive	Starting Salary	Ending Salary
Responsibilities Managing Local Accounts for XLS			

[the first two questions were asked as fillers]

What is the job title of the applicant in during previous employment?

Account executive

IT manager

Human resource manager

Information not provided

What is the ending salary of the applicant?

More than \$100,000

Less than \$100,000

Information not provided

What is the race of the applicant?

Asian

Black

White

Hispanic/Latino

Information not provided

RACE AND DEHUMANIZATION

Currently, there are two leadership positions the company needs to fill in, and this applicant is being considered for them. Please see below for some top traits required and to be avoided for each position.

[the following questions were asked as fillers]

Which one of the following traits is to be **avoided** for position A?

- Rationality
- Coarseness
- Depth

Which one of the following traits is **required** for position B?

- Interpersonal warmth
- Inertness
- Refinement

Can you please briefly describe in your own words the overall difference between Position A and Position B?

- Position A
- Position B

Here is the information about the leadership positions and the job application again. Given these, which position do you think the applicant should be given?

- Position A
- Position B

[the following questions were asked for exploratory analyses]

Regardless of your choice above, how suitable do you think the candidate is for Position A?

RACE AND DEHUMANIZATION

Not suitable at all=1; Extremely suitable=7

Regardless of your choice above, how suitable do you think the candidate is for Position B?

Not suitable at all=1; Extremely suitable=7

Social Dominance Orientation [1=Strongly disagree, 7=strongly agree]

Please show how much you favor or oppose each idea below. You can work quickly; your first feeling is generally best.

1. An ideal society requires some groups to be on top and others to be on the bottom.
2. Some groups of people are simply inferior to other groups.
3. No one group should dominate in society. R
4. Groups at the bottom are just as deserving as groups at the top. R
5. Group equality should not be our primary goal.
6. It is unjust to try to make groups equal.
7. We should do what we can to equalize conditions for different groups. R
8. We should work to give all groups an equal chance to succeed. R

Preferences for social distancing from racial out-groups [1=Strongly disagree, 7=strongly agree]

1. I would be completely comfortable in a social setting (such as a dance club or bar) where there were very few people from my racial/ethnic group. R
2. I would be completely comfortable dating someone from a different racial/ethnic group (if I was single). R
3. It would bother me if my child married someone from a different racial/ethnic background.
4. I would prefer to live in a neighborhood with people of my same racial/ethnic origin.
5. If I were living with others in a house or an apartment, I would be more comfortable if my roommates were from my same racial/ethnic background.
6. I would rather work alongside people of my same racial/ethnic origin.

Ideological conservatism [1= Very liberal; 7= Very conservative]

How would you describe your ideological preference in general?

Correlation tables of Studies 2a-2d

Study 2a

Variable	<i>M</i>	<i>SD</i>	1. Ani. d. of Black	2. Mec. d. of Black	3. Ani. d. of Asian	4. Mec. d. of Asian	5. ft. Black	6. ft. Asian	7. SDO	8. Social distance
1. Animalistic dehumanization of Black people	0.35	0.33								
2. Mechanical dehumanization of Black people	0.28	0.29	.48***							
3. Animalistic dehumanization of Asian people	0.29	0.31	.81***	.54***						
4. Mechanical dehumanization of Asian people	0.37	0.33	.50***	.79***	.39***					
5. Feeling toward Black people	0.70	0.25	-.021***	0.04	-.006 †	-.09**				
6. Feeling toward Asian people	0.73	0.22	-.17***	-.003	-.11***	-.09**	.64***			
7. SDO	0.30	0.21	.33***	.22***	.25***	.26***	-.43***	-.30***		
8. Social distance	0.39	0.21	.34***	.23**	.22***	.29***	-.41***	-.34***	.60***	
9. Conservatism	0.47	0.30	.22***	.20***	.15***	.23***	-.27***	-.18***	.59***	.48***

Note. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Study 2b

Variable	<i>M</i>	<i>SD</i>	1. Ani. d. of Black	2. Mec. d. of Black	3. Ani. d. of Asian	4. Mec. d. of Asian	5. ft. Black	6. ft. Asian	7. SDO
1. Animalistic dehumanization of Black people	0.26	0.20							
2. Mechanical dehumanization of Black people	0.21	0.17	.85***						
3. Animalistic dehumanization of Asian people	0.17	0.15	.68**	.81***					
4. Mechanical dehumanization of Asian people	0.31	0.23	.83***	.69***	.62***				
5. Feeling toward Black people	0.81	0.20	-.42***	-.36***	-.36***	-.37***			
6. Feeling toward Asian people	0.83	0.19	-.38***	-.33***	-.34***	-.37***	.79***		
7. SDO	0.19	0.13	.33***	.30***	.26***	.23**	-.31***	-.21***	
8. Conservatism	0.30	0.24	.29***	.29***	.27***	.21**	-.25***	-.17**	.56***

Note. These correlations are based on the full sample of all racial groups. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Study 2c

Variable	<i>M</i>	<i>SD</i>	1. Ani. d. of Black	2. Mec. d. of Black	3. Ani. d. of Asian	4. Mec. d. of Asian	5. ft. Black	6. ft. Asian
1. Animalistic dehumanization of Black people	0.11	0.20						
2. Mechanical dehumanization of Black people	0.12	0.22	.57***					
3. Animalistic dehumanization of Asian people	0.08	0.15	.72***	.47***				
4. Mechanical dehumanization of Asian people	0.18	0.25	.45***	.53***	.39***			
5. Feeling toward Black people	0.71	0.23	-.49***	-.36***	-.32***	-.23***		
6. Feeling toward Asian people	0.74	0.21	-.34***	-.26***	-.43***	-.25***	.73***	
7. Conservatism	0.36	0.28	.21***	.17***	.11**	.13**	-.25***	-.15***

Note. These correlations are based on the full sample of all racial groups. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

RACE AND DEHUMANIZATION

Study 2d

Variable	<i>M</i>	<i>SD</i>	1. Ani. d. of Black	2. Mec. d. of Black	3. Ani. d. of Asian	4. Mec. d. of Asian	5. ft. Black	6. ft. Asian
1. Animalistic dehumanization of Black people	0.08	0.18						
2. Mechanical dehumanization of Black people	0.08	0.18	.55***					
3. Animalistic dehumanization of Asian people	0.06	0.15	.66***	.46***				
4. Mechanical dehumanization of Asian people	0.11	0.22	.46***	.60***	.46***			
5. Feeling toward Black people	0.78	0.23	-.46***	-.33***	-.19***	-.31***		
6. Feeling toward Asian people	0.79	0.21	-.26***	-.22***	-.29***	-.36***	.63***	
7. Conservatism	0.33	0.27	.15***	.15***	.09*	.13**	-.18***	-.09*

Note. These correlations are based on the full sample of all racial groups. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Appendix B

In Study 2c, two sets of questions about participants' preferences for romantic partners (in terms of their sexual preferences and marriage preferences) for different racial groups. They are "How much do you prefer to engage in a sexual relationship or encounter, with no commitment, with a person who is...?" and "How much would you like to marry a person who is...?" Participants responded to these questions on a scale of 1=Not at all to 10=Very much so, and there was a list of social groups provided, but Blacks and Asians were the key groups of interest, as pre-registered.

According to our pre-registration, "regression tests will be conducted where the two types of dehumanization perceptions of each racial group are used to predict people's preferences for a romantic partner in that racial group. It is hypothesized that mechanical dehumanization measure provides predictive power on preferences for Asians above and beyond the measure of animalistic dehumanization. In other words, when mechanical dehumanization and animalistic dehumanization variables are both used to predict measures for preferences for Asians in romantic relationship, the term for mechanical dehumanization is significant. In contrast, it is hypothesized that animalistic dehumanization measure provides predictive power on preferences for Blacks above and beyond the measure of mechanical dehumanization. In other words, when mechanical dehumanization and animalistic dehumanization variables are both used to predict measures for preferences for Blacks in romantic relationship, the term for animalistic dehumanization is significant. Separate analyses will be conducted for each dependent variable (i.e., short-term/sexual relationship and marriage)"

Pre-registered analyses. Therefore, several regressions were conducted per our pre-registration. In each regression, the two types of dehumanization perceptions of a racial group were used to predict participants' preferences for a romantic partner. Separate analyses were conducted for each dependent variable (i.e., short-term/sexual relationship and marriage preferences). The hypotheses related to Blacks are fully supported: for the analysis with sexual preferences for Blacks, the term for animalistic dehumanization of Black is significant ($b=-3.30$, $s.e.=1.19$, $p=.006$, 95% CI=[-5.64, -.96]) while the term for mechanical dehumanization of Black is not ($b=.61$, $s.e.=1.35$, $p=.65$, 95% CI=[-2.05, 3.26]). Similarly, for the analysis with marriage preferences for Black, the term for animalistic dehumanization is significant ($b=-4.86$, $s.e.=1.06$, $p<.001$, 95% CI=[-6.94, -2.79]) while the term for mechanical dehumanization is not ($b=.82$, $s.e.=1.20$, $p=.49$, 95% CI=[-1.53, 3.18]).

Regarding the hypotheses related to Asians, the sexual aspect of the hypothesis for Asians in its current format was not supported. In fact, neither the term for Asian animal ($b=-1.88$, $s.e.=1.31$, $p=.153$, 95% CI=[-4.45, .70]) nor Asian machine ($b=-.27$, $s.e.=.91$, $p=.753$, 95% CI=[-2.08, 1.50]) is significant in predicting sexual preferences for Asians. However, the marriage aspect of the hypothesis has some support, as the term for Asian machine is marginally significant ($b=-1.37$, $s.e.=.77$, $p=.074$, 95% CI=[-2.87, .13]) even when the term for Asian animal is also included ($b=-2.72$, $s.e.=1.10$, $p=.014$, 95% CI=[-4.88, -.55]) in predicting marriage preferences for Asians.

Interaction with participants' sex. In light of these results (in particular, the lack of significance in analyses related to Asians), an additional set of analyses (not pre-registered) was conducted to test the potential interactions between the key predictors and the participants' sex identity. For these analyses, participants' sex and its interaction with animalistic dehumanization as well as its interaction with mechanical dehumanization were added to each of the analyses. For the analyses related to Black people, none of the interactions are significant ($ps>.10$), suggesting that the effects on Blacks are not contingent on participants' sex. However, the analyses for Asians revealed the predicted patterns are present for female participants though they are attenuated (i.e., not significant) for male participants: the mechanical dehumanization of Asian term is significant for sexual preferences ($b=-4.31$, $s.e.=1.42$, $p=.003$, 95% CI=[-7.10, -1.51]) as well as for marriage preferences for Asians ($b=-4.07$, $s.e.=1.23$, $p=.004$, 95% CI=[-6.49, -1.65]). Sex $\times$ mechanical dehumanization of Asian interaction is significant for sexual preferences ($b=5.45$, $s.e.=1.79$, $p=.002$, 95% CI=[1.93,

RACE AND DEHUMANIZATION

8.96]) as well as for marriage preferences for Asians ($b=3.89$, $s.e.=1.55$, $p=.012$, 95% CI=[.85, 6.94]). (See Appendix F for the full results).

Therefore, we found some evidence that the two types of dehumanization of Blacks and Asians uniquely contribute to preferences for Blacks and Asians in a manner consistent with the symmetry hypothesis. Our hypotheses related to the dehumanization of Blacks are fully confirmed, though our hypotheses related to Asians are only supported among female-identified participants. This is likely because preferences for Asian females among male participants is driven by other factors, such as tendencies to sexualize and fetishize Asian women (Kim, 2011), assuming that most of the participants are heterosexual.

To some extent, these results also partially reflect the symmetry that we theorized. In particular, the term for “Black machine” is *not* significant in either analysis about preferences for Blacks. In contrast, these terms are significant for analyses related to Asians, at least among the female participants. These results suggest that the animalistic form of dehumanization, not the mechanical form of dehumanization, is the primary driver of Whites’ romantic preferences for Blacks, and the mechanical form of dehumanization uniquely contributes to Whites’ (in particular, females’) romantic preferences for Asian, but not Black people.

Another result worthy of mention is that the term for animalistic dehumanization, although not significant in the model related to sexual preferences for Asians, is significant for marital preferences for Asians. These results, therefore, suggest that at least in the domain of marital attractions, the animalistic type of dehumanization of an individual's racial group can play an important role in determining one’s attraction to that person even if that person’s racial group is not usually dehumanized in the animalistic sense very much.