

Animalizing the disadvantaged, mechanizing the wealthy: The convergence of socio-economic status and attribution of humanity

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Differences between groups in socio-economic status (SES) are becoming more salient nowadays. In this context, we examined the animalistic and mechanistic dehumanization that both low and high-SES groups may experience respectively by conducting three studies. In study 1, we manipulated the SES of two fictitious groups (low vs. high-SES) and measured the humanity ascribed to them. Results showed that the low-SES group was animalized in comparison with the high-SES group, which was mechanized. In study 2, we manipulated the humanity of two fictitious groups by describing them as animals or machines and measured the perceived SES of the groups. Participants tended to attribute lower SES to the group described as animals and higher SES to the group described as machines. Finally, in study 3, we used an Implicit Association Test to replicate the results of studies 1 and 2. Taken together, these studies show that low-SES groups are considered as animal-like whereas high-SES groups are seen as robot-like. We discuss the implications of these findings in relation to the justification of income inequality within our society.

Keywords: Dehumanization; Animalization; Mechanization; Socio-economic status; Income inequality.

Income inequality is rising in many countries according to Wilkinson and Pickett (2010). This means that the differences between groups that have low socio-economic status (SES) and those that have higher-SES are becoming salient. In this context, we wondered how groups at both ends of the socio-economic hierarchy are perceived. Specifically, we considered that low-SES groups are depicted as inferior and less evolved animals due to their less sophisticated lifestyle (Jones, 2011), while members of high-SES groups are considered as unemotional and heartless machines, as suggested by Hodson, Kteily, and Hoffarth (2014). Importantly, the dehumanization of both low- and high-SES groups may not only have serious consequences for dehumanized groups, but may also damage inter-class relations reinforcing the idea that the class structure represents some kind of natural order where each group is placed where it deserves, as Loughnan, Haslam, Sutton, and Spencer (2014) pointed out.

DEHUMANIZATION AND SOCIO-ECONOMIC STATUS

The study of humanness and dehumanization has been growing in recent years (for some reviews, see Haslam & Loughnan, 2014; Vaes, Leyens, Paladino, & Pires-Miranda, 2012). One of the main contributions to the field of dehumanization is Haslam's (2006) dual model of humanity. According to this author, there are two dimensions of humanity that can be denied to different groups: The Human Uniqueness (HU) factor, which includes traits such as civility and rationality, and the Human Nature (HN) factor, which includes traits such as emotionality, cognitive openness, and depth. When HU is denied to groups, they are seen as animal-like (i.e. animalistic-dehumanization); by contrast, when HN is denied, groups are perceived as robot-like (i.e. mechanistic-dehumanization). Both forms

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of dehumanization have been applied to different groups. Animalistic dehumanization has usually been associated with disadvantaged groups (e.g. Esses, Veenvliet, Hodson, & Mihic, 2008; Goff, Eberhardt, Williams, & Jackson, 2008), while mechanistic dehumanization has been associated with some occupations such as law enforcement (Vasiljevic & Viki, 2014) and has also been used to portray members of high-SES groups (Hodson et al., 2014).

Previous studies addressing the dehumanization of groups with different status have mainly focused on how lower and higher status groups perceive each other (i.e., mutual dehumanization). These studies have typically found that members of high-status groups tend to dehumanize low-status groups, while members of low-status groups do not dehumanize high-status group members and sometimes even show a tendency to humanize them in comparison to their ingroup (e.g. Capozza, Andrighetto, Di Bernardo, & Falvo, 2012; Iatridis, 2013). Less attention has been given to dehumanization of high- and low-SES groups from an external perspective (i.e. independently of the observer's own SES). External perceptions of poverty and wealth have a considerable influence on people's general understanding and legitimization of income inequality (e.g. support for welfare policies, income redistribution). For this reason, we considered that the analysis of the dehumanization of both ends of the social ladder would provide us with valuable information about how the class structure is understood and justified. In this regard, we are only aware of a series of correlational studies carried out by Loughnan et al. (2014), who analysed the perception of low-SES groups in several countries such as the United Kingdom, the United States and Australia. The results of these studies showed that low-SES groups and some animals such as apes were considered to have similar personality traits. Importantly, the authors showed that the tendency to associate low-SES groups with animals was independent of the SES of the participants, that is, of how rich or poor participants were.

These previous findings highlight the importance of considering the animalization of low-SES groups as a process that may facilitate the analysis of poverty. Such animalization may contribute to justifying income inequality by considering poverty as a natural outcome of poor people being less evolved. Thus, the perception of low-SES groups as animals adds the distress associated with being dehumanized to the negative consequences of poverty (Bastian & Haslam, 2011). However, although the perception of low-SES groups is a key issue in the study of income inequality, poverty is only one aspect of the problem. As Bullock, Williams, and Limbert (2003) suggested, more attention should be paid to how wealthy groups are perceived. Previous studies have shown that people explicitly hold a negative attitude (Horwitz & Dovidio, 2017) and usually exhibit less prosocial behaviours toward high-SES groups (Van Doesum, Tybur,

& Van Lange, 2017). The representation of high-SES individuals as cold, unemotional and inflexible (i.e. as a mechanized group, Hodson et al., 2014) may currently be influencing how wealth is perceived and legitimated. The mechanization of wealthy groups could be a mechanism that allows people to cope with upwards comparisons by distancing themselves from the wealthy (e.g. they may be rich but they are not human beings). This mechanization may in turn justify their wealth by considering that machine-like groups deserve their position (e.g. they work hard) or may even trigger some attitudes about income redistribution (e.g. higher taxation to the rich) as a way of punishing cold and heartless wealthy groups. Considering the importance of these possible outcomes, in the present research we experimentally addressed the dehumanization of low- and high-SES groups in order to broaden the insight obtained by the previous literature and clarify how dehumanization and SES influence each other.

OVERVIEW OF THE STUDIES

The present research was aimed at exploring the animalistic dehumanization (by denying HU) and mechanistic dehumanization (by denying HN) of groups at both ends of the socio-economic hierarchy, that is, low- and high-SES groups. We conducted three studies using explicit and implicit methodologies to analyse the dehumanization of these groups. In the first study, we analysed the dehumanization of low- and high-SES groups using different measures. In the second study, we reversed the experimental design by presenting descriptions of fictitious groups as animals or machines and measured the SES attributed to them in order to analyse the possible bidirectional relationship between SES and dehumanization. Finally, in our third study we performed an Implicit Association Test (IAT) in order to analyse the automatic attribution of animal and machine-related words to both low- and high-SES groups. All the materials used in the present studies can be found online (osf.io/r2pn6).

STUDY 1

The goal of this study was to analyse the dehumanization of groups with low and high SES. We predicted that participants would attribute less HU to low-SES groups compared to high-SES groups (H1) given that groups with a low status or subordinate positions are considered to lack this dimension of humanity (Haslam & Loughnan, 2014). In addition, we expected to find a lower attribution of HN to high-SES groups compared to low-SES groups (H2) because wealthy people are perceived as cold and rigid, with no concern for others (Hodson et al., 2014). Furthermore, we measured participants' own SES to explore its relationship with the dehumanization of high- and low-SES groups.

Method

Participants and procedure

The sample was composed of 91 volunteers (65 females, $M_{\text{age}} = 20.75$, $SD = 2.61$) who answered a questionnaire in public libraries of a city in southern Spain; they were asked to participate in a study about the social perception of groups. The study had a between-subject design with two conditions (i.e. evaluation of a low- and a high-SES group). Participants rated the described group on two dehumanization scales and also reported the SES of their own family.

Social class manipulation. Participants were asked to think about a low-SES group (described as being worst off, having the least money, the lowest education level, and the least respected jobs or no jobs), or about a high-SES group (described as being the best off, having a lot of money, the highest education level, and the most respected jobs). These descriptions were complemented with a picture of a ladder and an arrow pointing to the bottom (low-SES) or the top (high-SES) of the ladder to refer to both groups. After reading the description of the group, participants completed the following measures:

Dehumanization scales. We used two dehumanization measures. First, we included a measure of dehumanization that assesses the attribution of HU and HN traits, adapted by Martínez, Rodríguez-Bailón, and Moya (2012) to the Spanish context. This measure was composed of eight traits associated with HU (e.g. rational, civilised, $\alpha = .71$) and eight traits associated with HN (e.g. active, emotional, $\alpha = .68$). Both trait sets included the same amount of positive and negative traits and the valence was controlled for HU and HN traits (equal valence in both trait sets). Next, we included a new measure with positive and negative behaviours related to both HU (e.g. taking decisions in an impulsive way, reversed, $\alpha = .79$) and HN (e.g. remaining indifferent to a surprise, reversed, $\alpha = .61$). The final selection of HU and HN behaviours was equal in valence (Appendices S1–S4, Supporting Information). Answers to these measures were provided on a 7-point scale from 1 “Not at all representative” to 7 “Very much representative of the group.”

Manipulation check and open questions. Participants answered a manipulation check question (“In which step of the ladder is the group that you have been asked about?”) to ensure that they answered thinking about the respective condition (answers ranged from 1 “At the bottom” to 10 “At the top”). In addition, participants were asked to provide examples of real groups when reading low- and high-SES group descriptions (Appendices S1–S4).

Participants’ SES. First, given that most participants were students who were economically dependent on their parents, we asked them to rate the subjective SES of

their family using the 10-step MacArthur ladder adapted from Adler, Epel, Castellazzo, and Ickovics (2000). Second, participants reported objective SES indicators such as monthly family income (6-point scale from “Less than 500 €” to “More than 4000 €”) and education level of both parents separately (6-point scale from “Primary studies” to “University degree”). An overall measure of participants’ objective SES was created by standardising responses in income and parental education level and averaging them ($\alpha = .72$, Kraus & Keltner, 2009). Finally, participants reported demographic data and were thanked and debriefed for participating.

Results

The manipulation checks about perception of the target groups on the ladder confirmed differences in the SES of the described groups between conditions. In the low-SES condition participants were thinking of low-SES groups ($M = 2.45$, $SD = 1.18$); in the high-SES condition, they were thinking of high-SES groups ($M = 8.79$, $SD = 1.99$), $t_{(88)} = 18.56$, $p \leq .001$, effect size Hedges’ $g_s = 3.88$.

Differences in the attribution of humanity between the low- and high-SES groups were calculated by using several repeated-measure analysis of variances (ANOVAs) with Humanity (HU vs. HN) as a within-participants factor, Group (Low- vs. High-SES) as a between-participants factor, and participants’ SES (subjective and objective SES) as a covariate. Results regarding the traits measure showed a main effect of Humanity, $F_{(1, 84)} = 4.11$, $p = .046$, $\eta^2_p = .05$, with a lower attribution of HU ($M = 4.49$, $SD = .91$) than HN ($M = 4.77$, $SD = .73$), $t_{(90)} = 2.62$, $p = .010$, Hedges’ $g_{\text{av}} = .34$. Results also revealed an unexpected interaction between Humanity and Participants’ SES only for Objective SES, $F_{(1, 84)} = 5.75$, $p = .019$, $\eta^2_p = .06$, not for Subjective SES, $F_{(1, 84)} = 2.41$, $p = .147$. Importantly for the main goal of our study, we also found a significant interaction between Humanity and Group, $F_{(1, 84)} = 75.49$, $p \leq .001$, $\eta^2_p = .47$. As predicted by hypothesis 1, results showed a lower attribution of HU traits to low-SES groups compared to high-SES groups. Moreover, participants attributed fewer HN traits to high-SES groups than to low-SES groups, supporting hypothesis 2 (Table 1).

Regarding the attribution of behaviours measure, results did not show an effect of Humanity, $F_{(1, 84)} = .16$, $p = .698$, or an interaction between Humanity and Participants’ SES (participants’ Objective SES, $F_{(1, 84)} = .91$, $p = .343$; participants’ subjective SES, $F_{(1, 84)} = .08$, $p = .83$). However, we found a significant interaction between Humanity and Group, $F_{(1, 84)} = 62.72$, $p \leq .001$, $\eta^2_p = .43$. In line with hypothesis 1 and similarly to the measure of traits, the analysis showed that participants attributed fewer behaviours related to HU to low-SES groups than to high-SES groups. In addition, results

TABLE 1
Statistical analysis of the comparison between low- and high-SES groups in the attribution of humanity scales (study 1)

	<i>Low-SES</i> Mean (SD)	<i>High-SES</i> Mean (SD)	$t_{(89)}$	p	Hedges' g_s
Traits					
HU	4.03 (.83)	4.98 (.72)	5.77	≤.001	1.21
HN	4.96 (.65)	4.56 (.76)	2.71	.008	.56
Behaviours					
HU	4.18 (1.04)	4.65 (.77)	2.43	.017	.51
HN	4.71 (.66)	4.01 (.66)	5.05	≤.001	1.05

also showed a lower attribution of HN behaviours to high-SES groups than to low-SES groups, in line with hypothesis 2.

Discussion

In this study, we analysed the animalistic dehumanization (i.e. perceived lack of HU) of low-SES groups compared to the mechanistic dehumanization (i.e. perceived lack of HN) of high-SES groups. This pattern of results was obtained using a measure of dehumanization (i.e. traits) that is well established in the literature but also using a new measure proposed in this study (i.e. behaviours). In addition, in line with previous studies (Loughnan et al., 2014), the dehumanization of high- and low-SES groups seems to be independent of participants' SES. As pointed out by these previous studies, the lack of interactions between participants' SES and the perceived dehumanization of high- and low-SES groups may indicate that people assume that there is a widespread and normalised association between the traits associated with low-SES and animals on one side and the traits associated with high-SES and machines on the other. In the following study, we tried to replicate the association between low-SES/animals and high-SES/machines by analyzing which SES is ascribed to dehumanized groups and its position on the scale compared to participants' own SES.

STUDY 2

Study 1 provided evidence about how groups with SES on both ends of the spectrum are dehumanized in a different way. In study 2, we intended to explore the reverse process by verifying whether presenting clues about the humanity of a group (i.e. describing a group as animals or machines) leads to a different attribution of SES. We applied this procedure to analyse the bidirectional relationship between SES and humanity following a similar procedure to that used by Loughnan, Haslam, and Kashima (2009). Bearing in mind the results of study 1, we predicted that presenting the group with few HU traits (i.e. animalistic-dehumanization) would lead to an attribution of lower SES to its members in

comparison to the members of groups presented as lacking HN (i.e. mechanistic-dehumanization), who would be considered as having higher SES (H1). Moreover, we explore where dehumanized groups are placed in the socio-economic hierarchy compared with participants' own SES (middle-SES). We hypothesized that participants will be motivated to distance themselves from dehumanized groups. On the one hand, they will try to be further apart from animalized groups ascribing them a lower-SES (H2) given that animals are regarded as phylogenetically inferior to human beings. On the other hand, we hypothesized that mechanized groups would be considered as having higher-SES compared to participants (H3). Participants will be also motivated to distance from cold and rigid (i.e. mechanized) groups, but given that machines are associated with economic progress and even considered as better than humans on certain tasks they will be posited higher in the socio-economic ladder. In short, we anticipated that participants will distance themselves from animal and machine-like groups by placing them on opposite extremes of the socio-economic ladder.

Method

Participants and procedure

The sample included 100 university students (70 females, $M_{age} = 22.68$, $SD = 1.99$) of a university in southern Spain, who received course credit for participating in the study. Participants received a written questionnaire with the following sections:

Humanity manipulation. Participants were asked to read two brief descriptions of fictitious groups (Appendices S1–S4). One group was described as animal-like (low HU) and the other was depicted as machine-like (low HN) following the same procedure used in Martínez, Rodríguez-bailón, Moya, and Vaes (2015). We used a within-participants design: each participant was presented with two descriptions of fictitious groups in a counterbalanced order. After reading the description of each group, participants were asked to provide information about the following questions:

SES of dehumanized groups and participants' SES. We asked participants to rate the SES of the fictitious groups

using (a) a modified version of the subjective social ladder by Adler et al. (2000), along with (b) the monthly income, and (c) the education level ascribed to the group, using the same scales as in study 1. Participants were also asked to report their own family SES at the end of the questionnaire, using the same scales than the ones used to evaluate dehumanized groups.

Manipulation check and open questions. Participants were asked if the descriptions of the groups had characteristics associated with “Animals” or “Machines” (from 1 “Not at all” to 5 “Completely”). In addition, participants provided examples of real groups that matched the description they had read (Appendices S1–S4). Demographic data were provided and participants were debriefed and thanked for participating in the study.

Results

First, as expected, the manipulation check confirmed that the group lacking HU was perceived as being more animal-like ($M = 3.41$, $SD = 1.22$) than the group lacking HN ($M = 2.46$, $SD = 1.16$), $t_{(98)} = 6.24$, $p \leq .001$, Hedges’ $g_{av} = .79$. By contrast, the group lacking HN was perceived as being more machine-like ($M = 3.68$, $SD = 1.14$) than the group lacking HU ($M = 1.98$, $SD = 1.19$), $t_{(99)} = 12.11$, $p \leq .001$, Hedges’ $g_{av} = 1.45$.

Second, we performed three repeated-measures ANOVAs of the attributed SES (socio-economic ladder, income and education level) assigned to the Group (animal, machine and participants’ own SES) as a within-participants factor, and questionnaire Order as a between-participants factor. As expected, we found a main effect of Group on the position on the social ladder, $F_{(2, 97)} = 57.27$, $p \leq .001$, $\eta^2_p = .54$, on income level, $F_{(2, 94)} = 55.84$, $p \leq .001$, $\eta^2_p = .54$ and on education level, $F_{(2, 92)} = 71.34$, $p \leq .001$, $\eta^2_p = .61$. No order effects were found in the dependent measures (social ladder, $F_{(2, 97)} = .27$, $p = .764$; income level, $F_{(2, 94)} = .18$, $p = .834$, and education level, $F_{(2, 92)} = .43$, $p = .652$). Supporting hypotheses 1 and 2, simple results (Table 2) indicated that the animal group was attributed a lower position in the three SES measures compared to the machine group (social ladder, $t_{(99)} = 9.18$, $p \leq .001$, Hedges’ $g_{av} = 1.26$; income level, $t_{(96)} = 9.54$, $p \leq .001$, Hedges’ $g_{av} = 1.35$; and education level, $t_{(95)} = 9.81$, $p \leq .001$, Hedges’ $g_{av} = 1.41$).

Finally, we compared dehumanized groups and participants’ own SES ratings. Results indicated that the animal group was considered as having a lower score compared to participants’ own SES in the three indicators of SES (social ladder, $t_{(99)} = 10.22$, $p \leq .001$, Hedges’ $g_{av} = 1.48$; income level, $t_{(96)} = 8.34$, $p \leq .001$, Hedges’ $g_{av} = 1.24$; and education level, $t_{(95)} = 10.93$, $p \leq .001$, Hedges’ $g_{av} = 1.51$). Results of the comparison between the machine group and participants’ own SES ratings did

TABLE 2

Means (SD) of the measures of socio-economic status attributed to the animal group, the machine group, and participants’ own SES (study 2)

	Socio-economic ladder	Income level	Education level
Animal group	3.49 (2.23) ^a	1.85 (.97) ^a	2.03 (1.39) ^a
Machine group	6.57 (2.62) ^b	3.73 (1.69) ^b	4.32 (1.82) ^b
Participants’ own SES	6.14 (1.17) ^b	3.04 (.95) ^c	4.20 (1.45) ^b

Note: Values with different superscripts across columns are significantly different from each other.

not show any differences on the social ladder, $t_{(99)} = 1.57$, $p = .120$, or on education level, $t_{(95)} = .52$, $p = .604$. However, we found significant differences between the machine group and participants’ own SES in income level, $t_{(96)} = 3.66$, $p \leq .001$, Hedges’ $g_{av} = .50$, partially supporting hypothesis 3.

Discussion

In this study, we analysed the differences in inferred SES attributed to fictitious groups described as animal and machine-like. Results showed that the group perceived as lacking HU (i.e. animal-like) was considered as having lower SES (in all the measures) when it was compared with both the group lacking HN (i.e. machine-like) and participants’ own SES. In addition, the mechanized group (i.e. lacking HN) was considered as having an equal position on the social ladder and the same education level as our participants, but a higher income level compared with participants’ income level. Overall, these results replicated the previous explicit association between low-SES/animals and high-SES/machines, providing valuable insight about the differences between both forms of dehumanization in terms of ascribed SES. Furthermore, these results also indicate that there is a bidirectional relationship between SES and humanity, as has been found in previous studies (Loughnan et al., 2009).

In addition, the tendency of our participants to differentiate themselves (i.e. their families) from mechanized groups only in income level but not in education level or on the social ladder may indicate the following: participants did not perceive wealthy groups as being superior to them or having better qualifications but only as having more money. Mechanistic dehumanization serves to distance and differentiate oneself from others (Haslam & Loughnan, 2014). Thus, in this context, mechanizing wealthy groups may serve as a mechanism to cope with the economic upwards comparison avoiding negative consequences for oneself. In short, people may rationalise that other groups can be richer than themselves, but it is because they have become cold and heartless machines in order to reach their advantageous position. However, given that several explicit process might

influence the associations we were studying, we decided to implement an implicit procedure that would allow us to confirm the existence of these previous associations at an unconscious level.

STUDY 3

In order to provide more evidence supporting the link between SES and different forms of dehumanization, we decided to conduct a conceptual replication by using an implicit measure (the IAT, Nosek, Greenwald, & Banaji, 2007) to test the automatic nature of the associations between low-SES/animals and high-SES/machines. Our predictions (H1) were that participants would be faster at responding simultaneously to congruent categories (low-SES/animals and high-SES/machines) than to incongruent ones (low-SES/machines and high-SES/animals), revealing that these associations are automatic.

Participants and procedure

Participants were asked to participate in an experiment about word perceptions in order not to reveal the aim of the research. The final sample included 80 students from a university in southern Spain (69 females, $M_{\text{age}} = 20.07$, $SD = 1.37$), who participated in the experiment in exchange for course credits (we excluded six participants from the analyses because they were not fluent Spanish speakers and they were unable to understand the instructions of the task).

We used an IAT procedure that consisted of categorising each word presented in the centre of the screen by pressing a key on the left or the right on the keyboard, depending on the categories that appeared in the top corners of the screen. Participants were presented with words related to the four categories of interest of our study: animal versus machine and low versus high-SES. For example, if “owner” appeared in the centre of the screen and the categories “low-SES” and “high-SES” appeared in the top left and top right corners of the screen, respectively, participants had to press the right key on the keyboard. As usual in the standard IAT, the task was composed of seven blocks. Participants started with practice trial blocks in which only one category appeared in the top corners of the screen and they had to categorise the words in the centre into that single category. In the experimental trial blocks, participants were asked to categorise the words simultaneously into two categories (animals vs. machines and low-SES vs. high-SES) at the same time. Two types of blocks were presented in the experimental trials: congruent blocks (i.e. animals and low-SES or machines and high-SES) and incongruent blocks (i.e. animals and high-SES, or machines and low-SES).

Selection of words. We conducted a pilot study ($N = 22$, 14 females, $M_{\text{age}} = 20.86$, $SD = 2.55$) to select words related to the four categories of interest (i.e. animal,

machine, low-SES and high-SES). In this study, participants were presented a total of 100 words (25 of each category) taken from the Spanish dictionary. They were asked to rate the extent to which each word was representative of each category (“To what extent is the following word related to animals/machines/low-SES/high-SES?” from 1 “Not at all related” to 5 “Very related”) as well as the valence of the word (“To what extent do you think that the following word is positive or negative when it is applied to a group of people?” from 1 “Negative” to 5 “Positive”). We finally selected six words that were strongly associated with each category, that is, animals (e.g. ape), machines (e.g. engine), low-SES (e.g. servant), and high-SES (e.g. affluent), and had a similar valence (Appendices S1–S4).

RESULTS AND DISCUSSION

Data analysis

Following Nosek et al. (2007), we eliminated trials whose reaction times (RTs) were higher than 10,000 milliseconds (ms) and data from participants with more than 10% of RTs lower than 300 ms. In addition, trials incorrectly answered (5.72% of all trials) were replaced by the mean of the respective trial series plus 600 ms. RT differences between congruent and incongruent blocks were analysed using Algorithm D_6 .

Implicit association

According to Nosek et al. (2007), an algorithm D different from 0 indicated that participants responded faster to congruent than to incongruent categories. A t test confirmed that algorithm D ($M = 0.12$, $SD = 0.26$, $t_{(79)} = 4.19$, $p \leq .001$, Cohen’s $d_z = .47$) was significantly different from zero. Therefore, results confirmed that participants required less time to classify the words when they were presented with a congruent association (e.g. animal and low-SES or machines and high-SES, $M = 922.93$, $SD = 159.25$) than when they were presented with an incongruent association (e.g. animals and high-SES or machines and low-SES, $M = 994.68$, $SD = 179.65$). The results of this study indicated that participants implicitly associated low-SES with animals and high-SES with machines, supporting results from previous explicit studies.

GENERAL DISCUSSION

In the present research, we analysed the interplay between SES and dehumanization in a series of studies using different methodologies. The reciprocal and pervasive association between animalization/low-SES and mechanization/high-SES was repeatedly found in

the three studies conducted. Indeed, results regarding the animalization of low-SES groups support the idea that HU is a hierarchical dimension of comparison that reinforces the class-based structure by equating the lack of SES with the lack of humanity (Loughnan et al., 2014). In addition, the mechanistic dehumanization of high-SES groups identified in our studies may help to understand, for instance, why people hold a negative explicit attitude toward wealthy groups (Horwitz & Dovidio, 2017). As has been pointed out before in the literature, mechanization has been associated with the desire to distance oneself from others in order to avoid negative consequences for oneself (Haslam & Loughnan, 2014). Therefore, people might consider that the wealthy position of the groups also made them less human and more machine-like, as a way to distance themselves from cold and unemotional advantaged groups. In short, these results reveal that poor and rich groups are perceived differently. People seem to distance themselves from the poor and the rich by considering low-SES groups as being phylogenetically inferior and high-SES groups as heartless machines.

The present work also extends the results of previous studies about a complementary attribution of humanity (i.e. groups highlighting a dimension of humanity that it is denied to the outgroup, and vice versa) to groups, as Bain, Park, Kwok, and Haslam (2009) found with ethnic groups (Australians denying HN to Asians, and Asians denying HU to Australians). Unlike these studies, we found this symmetrical pattern of results by using an external evaluation of groups instead of having members of groups evaluate each other. Therefore, it seems that complementary dehumanization can happen without the need of mutual dehumanization. This complementary perception has also been shown when stereotyping the low-SES groups (warm but incompetent) and high-SES groups (cold but competent), as Durante, Tablante, and Fiske (2017) reported. Along these lines, previous studies (Loughnan et al., 2014) have shown that animalizing low-SES groups is an independent process from stereotyping the poor and that mechanization is not necessary associated with high competence (e.g. mechanized groups lack flexibility or agency, Martínez et al., 2015). However, further research is needed to identify the specific role of dehumanization above and beyond the stereotype of low- and high-SES groups.

In addition, even though our findings suggest that dehumanization of low- and high-SES groups is not influenced by the perceiver's SES, in line with Loughnan et al. (2014), we did not consider participants' identification with a given social class. Future studies could address this limitation by analyzing how participants' identification with a given social class may influence their attribution of HU/HN traits to low- and high-SES groups. Additionally, including an identification scale will also help us to understand if identification plays a role when

the mechanized group is considered equal to our participants in some aspects. Considering that mechanization serves to disconnect oneself from outgroups, it is hard to believe that our participants identified themselves with a mechanized group. Instead, this could be a reflection of participants' consideration that only money distinguishes mechanized groups from them instead of other signs of social class. As we pointed out above, mechanizing high-SES groups may be a process that contributes to solving potential conflicts of the self by considering that wealthy groups may have more money but also have less humanity.

Furthermore, our results highlight the importance of studying the consequences of both kinds of dehumanization not only on the perception of income inequalities, but also on the potential personal consequences for those who are dehumanized. First, it can be expected that animalizing low-SES groups will have only negative consequences for such groups. For instance, people may oppose welfare policies because they infer that these groups cannot control their primitive impulses. This animal-like perception is likely to contribute to directly blaming low-SES groups for their deprived position. In addition, mechanizing high-SES groups is also likely to have negative consequences for these groups. Mechanization can trigger the punishment of these groups without any moral concern for them (e.g. Bastian & Haslam, 2011). In the economic sphere, mechanizing high-SES groups may encourage people to demand a high taxation for these groups as a way to punish them for being cold and heartless; yet, mechanization may also contribute to justifying the wealthy position of the group by considering that their advantageous position is the result of their hard work (i.e. working like machines). Future studies should explore the consequences of mechanizing high-SES groups on the justification of their wealthy position to highlight what are the consequences of mechanizing versus humanizing high-SES groups. In addition, the consequences of dehumanization may not be the same for low- and high-SES groups. Specifically, dehumanization is likely to generate greater distress in low-SES than in high-SES groups. Future studies should address the potentially different outcomes depending on the group's SES, particularly focusing on whether an advantageous position helps groups to cope with dehumanization.

In conclusion, the results of the current research provide new insight about how people who are at the very top of the social ladder are considered as unemotional and heartless machines, whereas those who are at the bottom are perceived as less evolved animals. These findings add valuable information about how people perceive the class divide, highlighting that dehumanizing poor and rich groups may have serious consequences, not only for those who are dehumanized. They also provided us with information about how the rising income gap might

be justified and legitimised in many societies around the world.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Appendix S1. Pilot study for developing the measure of behaviours associated with HU and HN.

Appendix S2. Correlations between measures of dehumanization.

Appendix S3. Open question analysis (studies 1 and 2).

Appendix S4. Text of the manipulation used in study 2.

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