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Are they Animals or Machines? Measuring Dehumanization

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The present research deals with two forms of dehumanization: 1) denying uniquely human attributes to others (seeing them as animals); 2) denying human nature to others (seeing them as machines or automata). Studies 1 and 2 explored these two forms of dehumanization, analyzing whether people associated their ingroup more with human-related words (vs. animal- vs. machine-related words) than two different outgroups. A paper and pencil procedure was used to find out which words were associated with the surnames of the ingroup (Spaniards) or the outgroup (Germans, Gypsies). Results showed that participants were more ready to link ingroup than outgroup surnames to human words. They also linked more Gypsy surnames to animal-related words and German surnames with machine-related words. Studies 3 and 4 used the Implicit Association Test to analyze the same ideas and replicated the results of Studies 1 and 2.
Keywords: dehumanization, infrahumanization, animalistic dehumanization, mechanistic dehumanization.

La investigación que se presenta trata sobre dos formas de deshumanización: 1) Negar a los demás cualidades exclusivamente humanas (viéndolos como animales); 2) negarles la naturaleza humana (viéndolos como máquinas o autómatas). En los estudios 1 y 2 se examinaron ambas formas de deshumanización analizando si la gente asociaba más al endogrupo con palabras relativas a humanos (vs. animales o máquinas) en comparación con dos exogrupos diferentes. Se utilizó un procedimiento de papel y lápiz para saber qué palabras se asociaban más con los apellidos del endogrupo (españoles) o con los apellidos del exogrupo (alemanes, gitanos). Los resultados pusieron de manifiesto que los participantes relacionaron en mayor medida los apellidos del endogrupo con las palabras relativas a humanos. Además también vincularon los apellidos gitanos con palabras vinculadas a animales y los apellidos alemanes con palabras de máquinas. En los estudios 3 y 4 se utilizó el Test de Asociación Implícita (IAT) para probar las mismas ideas y los resultados corroboraron los encontrados en los estudios 1 y 2.
Palabras clave: deshumanización, infrahumanización, animalización, mecanización.

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Totally or partially denying human attributes to others, particularly members of other groups, is common in the history of humankind. This phenomenon is closely linked to prejudice and discrimination towards members of such groups. If certain people are not perceived as being human – or as being totally human – any behavior towards them might be justified, no matter how negative it is. Dehumanization has become particularly evident in major conflicts such as wars and genocides and in the context of the flagrant exploitation of various groups (slavery, for example).

In the field of Psychology, Haslam (2006) considers that the conceptions and theories dealing with dehumanization are very diverse and not very related to one another. According to Haslam, there are two basic forms of dehumanization: animalistic dehumanization and mechanistic dehumanization. One of the most current and prolific approaches to dehumanization understood as animalistic dehumanization is the work of Leyens and his collaborators on 'infrahumanization' (Boccato, Cortes, Demoulin, & Leyens, 2007; Demoulin, Saroglou, & Van Pachterbeke, 2008; Leyens et al., 2001; Paladino et al., 2002; Vaes, Paladino, Castelli, Leyens, & Giovanazzi, 2003). It has traditionally been argued that it is our ability to use language or reason that makes us 'human.' Yet, these authors consider that the essence of humanity is our ability to experience feelings (what they call 'secondary emotions'). Although we share primary emotions with animals, secondary emotions are uniquely human (Ekman, 1992; Innes-Ker & Niedenthal 2002). Sadness, joy, and anger are examples of primary emotions, whereas happiness, rancor, and bitterness are considered to be secondary emotions. Demoulin et al. (2004) conducted a series of cross-cultural studies whose results showed that people were able to establish differences between primary and secondary emotions and considered that primary emotions are shared with animals whereas secondary emotions are exclusive to humans. Compared to primary emotions, participants considered that secondary emotions are less intense, more lasting, less visible, require more cognitive resources, provide more information on the sensitivity and moral nature of those who experience them, and are due to internal causes. The first studies on infrahumanization explored the role of primary and secondary emotions in people's description of their ingroup and various outgroups. Results showed that people selected more secondary emotions to describe their ingroup than the outgroup but did not show any differences between the ingroup and the various outgroups when attributing primary emotions.

It is important to highlight three important features of the studies on infrahumanization carried out so far. First, differences in the attribution of primary and secondary emotions have been obtained both with positive and negative emotions. Therefore, infrahumanization cannot be understood just as a phenomenon of ingroup favoritism; in other words, people attribute more secondary emotions – even negative ones – to their ingroup than to outgroups. Second, infrahumanization is treated as a basically implicit phenomenon; that is, Leyens et al. (2001) used primary and secondary emotions in their research because they believe participants are not explicitly aware that attributing more secondary emotions to the ingroup implies considering it more human than the outgroup. Strictly speaking, they never proved that participants in their studies infrahumanized others; infrahumanization is related to their essentialist interpretation of the results (Leyens et al., 2001, p. 194). Leyens et al. did not always use implicit procedures, as in the case of paper and pencil tasks in which subjects have to associate written words to the ingroup and the outgroup. Yet, subjects are not aware in such tasks that such words are primary and secondary emotions and that some are more 'human' than others. Finally, Leyens et al. underlined that infrahumanization is not an extreme behavior that only takes place in situations of great conflict; in fact, many studies have concluded that people infrahumanize groups that they are not necessarily in conflict with (Demoulin et al., 2005; Viki & Calitri, 2008), although intergroup conflict contributes to infrahumanization. Research conducted by Rohmann, Niedenthal, Brauer, Castano, and Leyens (2009) shows that groups with a similar status (German and French people) and no conflict in their relationship did not attribute secondary emotions differently when identification with the ingroup was low and when between-group comparison was not activated. According to Haslam (2006), infrahumanization as proposed by Leyens et al. implies denying human attributes to members of other groups. These uniquely human attributes include civism, refinement, moral sensibility, and feelings. Haslam considers that this form of dehumanization implies seeing others like animals and therefore calls it 'animalistic dehumanization'. According to Haslam, Kashima, Loughnan, Shi, & Suitner (2008), when humans are compared to animalistically dehumanized groups, the latter are seen as lacking higher cognitive processes and more sophisticated emotions but also as having greater perceptive abilities.

However, as noted above, Haslam considers there is another way to deny humanity to the members of other groups that involves perceiving them as objects or automata. He calls it 'mechanistic dehumanization'. According to Haslam, the attributes of human nature that mechanistically dehumanized groups do not possess are emotional sensitivity, interpersonal warmth, cognitive openness, and agency. Instead, members of mechanistically dehumanized groups are seen as being cold and rigid. Robots, for example, mainly lack emotion and abilities related to desire (Haslam et al., 2008).

Based on the model presented by Haslam (2006), other authors have explored these various forms of dehumanization. Loughnan and Haslam (2007) proved that a group perceived as lacking distinctly human attributes –

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artists – was associated more with animals than another group seen as lacking attributes of human nature – business people. Other studies have provided evidence of the importance of attributing humanity in the social perception of other groups. Bain, Park, Kwok, and Haslam (2009) found that Anglo-Australians distinguish themselves from ethnic Chinese using attributes of human nature (that is, they see ethnic Chinese as machine-like); conversely, ethnic Chinese distinguish themselves from Anglo-Australian using uniquely human attributes (that is, they see Anglo-Australians as animal-like). Results were obtained by using questionnaires and other implicit measures.

In the present paper, the term 'infrahumanization' is used to refer to animalistic dehumanization (Demoulin et al., 2008), whereas 'dehumanization' is used as a broader concept that includes both animalistic and mechanistic dehumanization. These two forms of dehumanization are not only important because they imply ingroup favoritism and may be linked to prejudice towards certain groups but also because they may lead to different intergroup consequences. In other words, it is not the same to perceive a group as being animalistically dehumanized than to see it as being mechanistically dehumanized. The consequences for interpersonal, labor or professional relationships may be different in each case. In fact, these two forms of dehumanization do not necessarily imply rejection and discrimination and are sometimes used as a legitimizing ideology for taking advantage of or using members of such groups. Interaction with animals (and therefore with animalistically dehumanized groups) can often be pleasant (e.g., they evoke affection from us or amuse us) and beneficial (e.g., they help us perform certain tasks), just as interaction with machines can bring us many benefits.

How can we measure dehumanization?

Infrahumanization has mainly been studied by analyzing the different attribution of primary and secondary emotions to the ingroup and the outgroup (Leyens et al., 2000, 2001). As stated above, several procedures have been used for this purpose, including the Implicit Association Test (IAT), paper and pencil tasks, and the Wason selection task.

An adaptation of the IAT (Greenwald & Banaji, 1995; Greenwald, McGhee, & Schwartz, 1998) was used by Paladino et al. (2002) in four experiments to verify whether people's secondary emotions are more strongly associated to the ingroup than to the outgroup. The IAT can be used to measure prejudice implicitly. Paladino et al. (2002) used it in a task in which participants were asked to classify as fast as possible a series of words that were presented on a computer screen. After several practice rounds, participants had to perform a congruent and an incongruent task. In the congruent task, participants had to use the same key to answer when typical surnames of the ingroup and secondary emotions appeared on the screen, and a different key when the screen showed surnames of an outgroup and primary emotions. In the incongruent task, the response pattern was inverted: participants had to use the same key to respond to surnames of the ingroup and primary emotions and a different key to designate surnames of the outgrup and secondary emotions. Differences in reaction times between the congruent and the incongruent task were taken as an index of implicit prejudice. The experiments carried out by Paladino et al. (2002) showed the same pattern of results as previous studies: participant reaction times were significantly faster in the congruent task than in the incongruent task. These results confirm that there is a stronger automatic association between the ingroup and secondary emotions and between the outgroup and primary emotions than the other way round.

More recently, Viki et al. (2006) tested the idea that if infrahumanization (animalistic dehumanization) is a basic cognitive social process, it should also appear with other stimuli than emotions. To this end, they conducted several studies in which participants were asked to associate words directly related to animals (e.g., domestic animals, wildlife) or humans (e.g., people, civilian, single) to the ingroup (always the British) and to various outgroups (German, Italian, French people). In Study 1, they used the IAT. Their results showed that participants gave faster responses in the congruent task – in which the ingroup was associated to human-related words and the outgroup was associated with animal-related words – than in the incongruent task. In a second study, they used a paper and pencil task in which participants were asked to link ingroup and outgroup surnames to human- or animal-related words. The authors found that participants linked ingroup surnames (vs. outgroup surnames) more to human-related words. The procedure used in Study 2 was used again in Study 4, with the only difference that, this time, half of the animal- and human-related words were positive and half of them were negative. In this experiment, data analysis showed that the valence of words did not affect the results. In other words, participants linked ingroup surnames more to human-related words (compared to outgroup surnames) regardless of whether the words were positive or negative. In Study 3, participants were asked to select from a list of animal- and human-related words those which, according to them, best characterized the ingroup and the outgroup (Germans in Study 3a and Italians in Study 3b). Participants selected more human-related words for the ingroup than for the outgroup.

The methodology used by Haslam (Haslam, Bain, Douge, Lee, & Bastian, 2005) to study his formulation of the two different forms of dehumanization (animalistic and mechanistic dehumanization) generally involved directly asking participants to indicate to what extent a series of personality traits are uniquely human or characteristic of human nature. According to Haslam, people who deny other

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groups characteristics that are uniquely human (civility, refinement, moral sensibility, rationality, logic, maturity) see such groups as animals, whereas those who deny other groups characteristics referring to human nature (emotional responsiveness, interpersonal warmth, cognitive openness, agency, individuality, depth) see them as machines.

We consider that the measure proposed by Haslam can be complemented by other types of measures that use cognitive stimuli more directly related to mechanistic and animalistic dehumanization. In fact, this was the objective of the present research. Following Haslam et al., this study did not directly explore the association of certain groups or characteristics with animalistic or mechanistic dehumanization. Instead, these two processes were inferred by attributing much more abstract traits. Thus, attributing characteristics such as 'culturelessness,' 'innocence,' or 'amorality' is understood as a way of denying others uniquely human traits; in its extreme form, this implies seeing others as animals (Haslam et al., 2005). Similarly, seeing others as lacking traits related to cognitive openness (e.g., imagination, curiosity), sociability, and emotional sensitivity implies seeing others as automata (Haslam, 2006).

The present research

The present research proposes a new measure to explore how outgroups are dehumanized using stimuli referring to machines or animals. The intention was to distinguish between both types of dehumanization, avoiding any possible confusion when measuring them. The classic measure developed by Leyens et al. (2001) can only be used to approach one of the two types of dehumanization (infrahumanization or animalistic dehumanization). In addition, such authors explored it only based on the different attribution of secondary and primary emotions. Therefore, we consider that it is appropriate to create an instrument that can be used to explore the other form of dehumanizing people: mechanistic dehumanization. This involves not using emotions as a reflection of dehumanization.

The measure was developed by selecting two groups that some studies have highlighted as being associated to animalistic dehumanization (Gypsies) and mechanistic dehumanization (Germans). Studies on stereotypes about Gypsy people show that such stereotypes include animal-related traits, both positive (intuitive, creative, free, physically able, spontaneous) and negative (wild, impulsive, aggressive, instinctive, noisy) (Chulvi & Pérez, 2005). The Gypsy community is one of the largest ethnic minorities in Spain, with about 500,000 people. People in this social category are known as *gitanos* by the rest of Spaniards and refer to non-Gypsies as *payos* (Rodriguez-Bailón, Ruiz, & Moya, 2009). Studies performed following the Stereotype Content Model (Cuddy et al., 2009) have shown that Germans are perceived as being competent but not very warm, that is, very similar to machines or robots.

The present studies explored animalistic and mechanistic dehumanization using two different measures: an implicit measure (the IAT) and a more explicit (or less implicit) measure. The second measure was developed following the methodological proposal made by Viki et al. (2006); that is, participants were asked directly to associate the ingroup/outgroup with human-, animal- and/or machine-related words. In the first two studies, a paper and pencil measure was used to determine which form of dehumanization participants applied depending on the outgroup analyzed: a group stereotypically associated with to animals (the Gypsy community) and a group stereotypically associated with machines (Germans). Studies 3 and 4 also analyzed the form of dehumanization used by participants depending on the two outgroups mentioned, but this time using an implicit measure (the Implicit Association Test, IAT). Both measures were combined to test the following hypotheses: the ingroup would be more associated with human-related words than the outgroup, the Gypsy outgroup would be more associated with animal-related words (vs. human- or machine-related words), and the German outgroup would be more associated with machine-related words (vs. human- or animal-related words).

Studies 1 and 2

The main objective of the first two studies was to create a new measure of dehumanization that can distinguish between mechanistic and animalistic dehumanization. Following the procedure proposed by Viki et al. (2006), we created a measure in which participants had to select the words that best defined a series of surnames belonging to two different outgroups. Given that, according to Haslam (2006), there are different forms of dehumanization of groups in society, we selected two groups that we believed were likely to be subjected to animalistic or mechanistic dehumanization. In Study 1, our hypothesis was that the Spanish ingroup would subject the German outgroup to mechanistic dehumanization; in Study 2, the hypothesis was that the non-Gypsy ingroup would subject the Gypsy outgroup to animalistic dehumanization.

Preliminary study

A pilot study was carried out to construct the dependent measure of Studies 1 and 2. The study was useful to select a list of words referring to the three categories that we wanted to assess: humans, machines and animals. Seventeen graduate students in Psychology participated in this preliminary study. A list of 81 words referring to the three categories mentioned was presented. In a within-participant design, participants had to assess to what extent the words were human-, animal-, or animal-related in a Likert scale from 1 (e.g., Not Human-related, Not Animal-related, Not

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Machine-related) to 5 (e.g., Very Human-related, Very Animal-related, Very Machine-related). Finally, participants had to indicate the valence of each characteristic (1 = Totally Negative, 5 = Totally Positive).

The mean valence of each word and its score in each of the three possible categories was obtained. According to these results, we selected seven words strongly associated to humans – the mean score of each word in the scale "Not Human-related/Very Human-related" is shown between parentheses: *Gente* (People) (M = 4.67), *Habitante* (Inhabitant) (M = 4.67), *Ciudadano/a* (Citizen) (M = 4.42), *Individuo* (Individual) (M = 4.25), *Racional* (Rational) (M = 4.17), *Soltero/a* (Single) (M = 4.17), and *Pasivo/a* (Passive) (M = 3.18). In addition, seven words strongly associated to machines were selected (the mean score of each word in the mechanization scale is shown between parentheses): *Máquina* (Machine) (M = 4.94), *Tecnológico* (Technological) (M = 4.53), *Dispositivo* (Device) (M = 4.47), *Mecánico* (Mechanical (M = 4.47), *Calculador/a* (Calculating) (M = 4.47), *Instrumento* (Instrument) (M = 4.41), and *Herramienta* (Tool) (M = 4.18). Finally, seven words associated to animals in the animalistic dehumanization scale were chosen: *Animal* (Animal) (M = 4.76), *Pedigrí* (Pedigree) (4.76), *Mascota* (Pet) (M = 4.65), *Raza* (Breed) (M = 4.12), *Manso* (Tame) (M = 4.00), *Salvaje* (Wild) (M = 3.71), and *Irracional* (Irrational) (M = 2.82). The mean valence of the characteristics associated to each of the categories was similar, as shown by comparisons of means of the valence of the words included in the category humans (M = 3.19) and animals (M = 3.07), $t(16) = .96$, $p > .34$, in the category humans vs. machines (M = 3.05), $t(16) = 1.27$, $p > .22$ and in the category of animals vs. machines, $t(16) = .14$, $p > .88$.

Pretest analyses also made it possible to compare the scores of words in each of the three categories established: animals, machines, and humans. The aim of these analyses was to assess the meaning of these words in each of the scales used in the pretest (Human: Not Human-related/Very Human-related; Animalistic dehumanization: Not Animal-related/Very Animal-related; Mechanistic dehumanization: Not Machine-related/Very Machine-related). The seven words of the category "animals" obtained higher scores in the animalistic dehumanization scale (M = 4.11) than in the human (M = 2.11), $t(16) = 8.42$, $p < .001$ and mechanistic dehumanization scales (M = 1.4), t (16) = 15.94, $p < .001$, respectively. Likewise, the words selected in the category "machines" scored significantly higher in the mechanistic dehumanization scale (M = 4.49) than in the animalistic dehumanization (M = 1.31), $t(16) = 20.72$, $p < .001$ and the human scales (M = 1.54), $t(16) = 13.52$, $p < .001$. Finally, words referring to humans scored higher in the human scale (M = 4.28) than in the animalistic dehumanization (M = 1.98), $t(16) = 9.73$, $p < .001$ and mechanistic dehumanization scales (M = 1.47), $t(16) = 14.23$, $p < .001$.

In addition to human-, machine-, and animal-related words, it was also necessary to have a list of surnames of the groups that were going to be assessed to use it as a dependent variable. The surnames selected for the Spanish group were García, González, Fernández, Rodríguez, López, Martínez, Sánchez, Pérez, Gómez, and Jiménez, typical non-Gypsy Spanish names. The Gypsy surnames selected were Vargas, Heredia, Carmona, Flores, Morente, Amador, Cortés, Amaya, Montoya, and Salazar, typical Gypsy Spanish names. In the German group, the surnames selected were Müller, Schäfer, Schneider, Krüger, Günther, Zimmermann, Wagner, Becker, Schulz, and Schröder. All the surnames were selected from a website[1] showing the most frequent surnames of each category on the Internet.

Study 1

Study 1 focused on mechanization as a form of dehumanization. To this end, the Spanish group was selected as the ingroup and the German group was selected as the outgroup.

Method

Participants

The sample was composed of 42 Spanish students from the School of Architecture of the University of Granada, who participated voluntarily in the study. Of them, 28 (66.7%) were male and 14 (33.3 %) were female. Mean age was 20.12 years (SD = 2.98).

Instrument and procedure

Students participated in group sessions in which they responded anonymously to tasks included in a booklet containing the various measures. In the first section of the booklet, participants were told that the study focused on perception of words. After providing socio-demographic information, participants were shown a sheet of paper with two columns. The column on the left listed the ten German surnames described in the preliminary study. The column on the right listed the 21 words selected from the preliminary study: 7 human-related, 7 machine-related,

[1] http://german.about.com/od/germanicgenealogy/a/50surnames.html
http://www.ociototal.com/recopila2/r_aficiones/apellidos.html

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and 7 animal-related words. Participants were instructed to link each surname with one of the words of the column on the right side of the page choosing the word that best defined each surname. Each surname should only be linked to one word. Next, the following page of the booklet included the same task but with Spanish surnames instead. To control for a possible effect of group order, half of participants performed the task with the German outgroup first and the Spanish ingroup second and half did it in the inverse order.

Results

A preliminary analysis of the data showed that the order in which participants completed the booklet had no significant effect on the results obtained, $F < 1$. An ANOVA was performed, with two within-participant manipulated factors: Group (Ingroup vs. Outgroup) x Type of Word (Animal-related vs. Machine-related vs. Human-related). As predicted, the interaction between the two manipulated variables – Group x Type of Word – was significant, $F(2, 33) = 10.05$, $p < .001$, $\eta^2 = .37$. As shown in Figure 1, the attribution pattern of human- and machine-related words was different depending on the group (ingroup vs. outgroup). Participants attributed more human-related words to the Spanish ingroup ($M = 3.85$, $SD = 1.28$) than to the German outgroup, ($M = 2.54$, $SD = 1.24$), $t(37) = 4.27$, $p < .01$. By contrast, they attributed more machine-related words to the outgroup ($M = 3.85$, $SD = 1.35$) than to the ingroup ($M = 2.77$, $SD = 1.16$), $t(37) = 4.72$, $p < .001$. Participants did not attribute animal-related words differently to the ingroup and the outgroup, $t(35) = 1.46$, $p > .15$.

These results show that, as predicted, participants humanized the ingroup by attributing more human-related words to it than to the outgroup and subjected the outgroup to mechanistic dehumanization by attributing more machine-related words to it than to the ingroup. No differences were found between the ingroup and the outgroup in the attribution of animal-related words. Therefore, the need to distinguish between mechanistic and animalistic dehumanization seems clear, given that this first study showed that the German outgroup was subjected to mechanistic dehumanization but not to animalistic dehumanization.

Study 2

The fact that some groups – Germans, in this case – are subjected to mechanistic dehumanization but not to animalistic dehumanization raised the following question: does the opposite happen to other groups? In other words, are other groups associated to characteristics that are typical of animals but not of machines? In Study 2, the Gypsy category was used as the outgroup to check whether the dehumanization measure proposed in this article is also an effective instrument to measure animalistic dehumanization.

Method

Participants

A sample of 43 non-Gypsy students of the School of Architecture of the University of Granada participated voluntarily in the study. Of them, 25 (58.1%) were male and 14 (41.9%) were female. Mean age was 20.16 years ($SD = 2.72$).

Procedure

The procedure was the same as that described in Study 1. In this case, instead of using typically German surnames, ten typically Gypsy surnames were used (the outgroup) and ten non-Gypsy Spanish surnames (the ingroup).

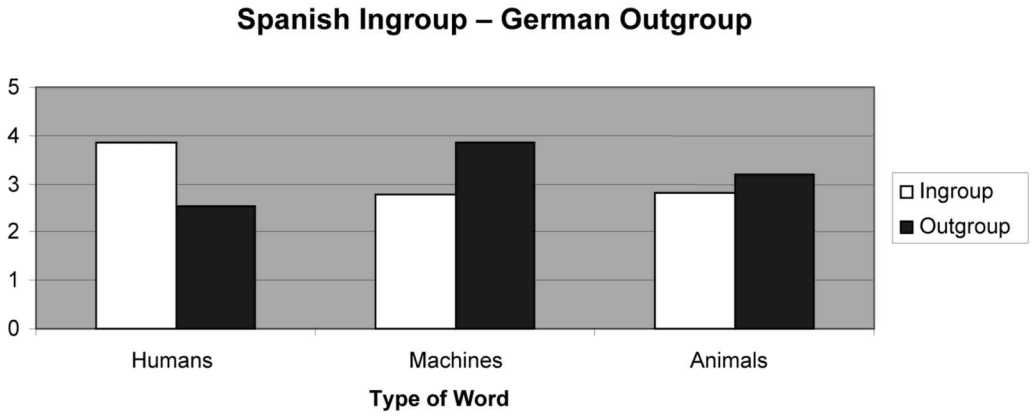


Figure 1. Number of human-, machine-, and animal-related words assigned to the Spanish ingroup and the German outgroup.

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Results

As in Study 1, an ANOVA was performed, with two within-participant manipulated factors: Group (Ingroup vs. Outgroup) x Type of Word (Animal-related vs. Machine-related vs. Human-related). Again, as in Study 1, the number of human-, machine-, and animal-related words attributed to the non-Gypsy ingroup vs. the Gypsy outgroup was different, as shown in the Group x Type of Word interaction, $F(2, 35) = 3.46$, $p < .05$, $\eta^2 = .16$. In this case, as shown in Figure 2, human-related and animal-related words were attributed differently to the non-Gypsy and Gypsy groups. Human-related words were used more to define the ingroup ($M = 4.16$, $SD = 1.28$) than the outgroup ($M = 3.59$, $SD = 1.48$), $t(40) = 2.40$, $p < .05$. By contrast, participants chose animal-related words more ($M = 3.77$, $SD = 1.51$) to define the Gypsy outgroup than the ingroup ($M = 2.92$, $SD = 1$), $t(39) = 2.28$, $p < .01$. No significant differences were found in the attribution of machine-related words to the ingroup and the Gypsy outgroup $t(38) = 1.49$, $p = .14$.

Again, the results of this study show the validity of the measure proposed to distinguish between both forms of dehumanization. As in Study 1, participants perceived the outgroup as being less human than the ingroup. Yet, in contrast with their treatment of the German outgroup, participants subjected the Gypsy outgroup to animalistic instead of mechanistic dehumanization.

Discussion

Results of these two studies show the validity of a paper and pencil task to measure two different forms of dehumanization. First, a pilot study was conducted to select groups of words with the same valence perceived as being human-, machine-, and animal-related, respectively. After this, Study 1 showed that participants clearly associated machine-related words more to German surnames and human-related words more to Spanish surnames (and associated animal-related words to Spaniards and Germans to the same extent). Similarly, in Study 2, participants associated animal-related words more clearly to Gypsy surnames and human-related words more to non-Gypsy surnames (and associated machine-related words to Spaniards and Gypsies (to the same extent). This corroborates the existence of two different forms of dehumanization: animalistic dehumanization and mechanistic dehumanization. The studies were conducted using a more or less explicit measure, given that participants may have been aware, at least in some cases, that the words were related to animals and machines; it is also likely that they are aware that the surnames were typically German or Gypsy. Given the lack of time pressure in the experiment, participants may also have controlled their responses.

Studies 3 and 4

In the studies presented below, an implicit measure was used to verify whether the same results of Studies 1 and 2 were replicated, that is, whether the Gypsy outgroup is automatically associated to animal-related words and the German outgroup is associated to machine-related words, whereas the ingroup is associated with human-related words. The IAT was used for this purpose. The IAT was selected because it is one of the measures with the highest validity indices in this area and also one of the procedures most widely used in studies with implicit measures in Social Psychology. Study 3 measured the associations between the Spanish/German implicit association and the human/machine pair; Study 4 measured the associations between the non-Gypsy/Gypsy association and the human/animal pair. Given that the methodology used in Studies 3 and 4 was the same, with the only difference of the groups selected, the procedure used in both studies is described in detail in the section on Study 3.

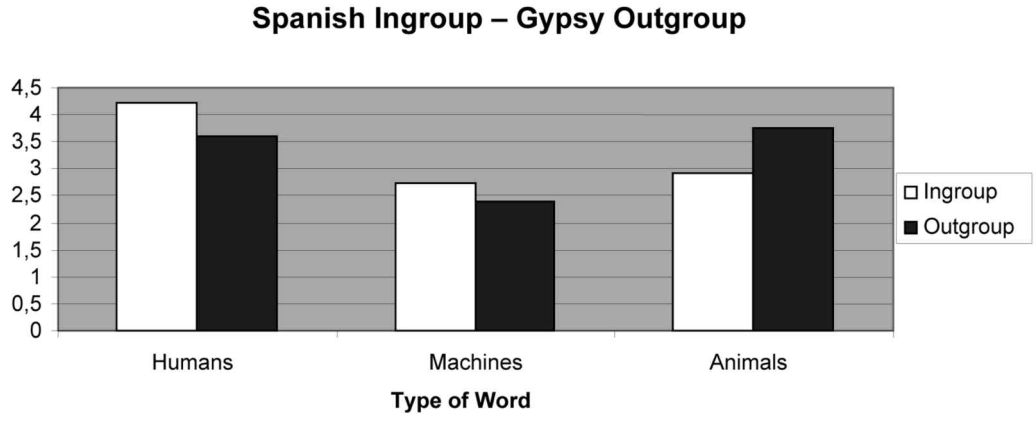


Figure 2. Number of human-, machine-, and animal-related words assigned to the Non-Gypsy ingroup and the Gypsy outgroup.

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Study 3

Method

Participants

The sample included 66 Spanish university students, who received course credit for participating in the experiment. Of them, 57 (86.4 %) were female and 9 (13.6 %) were male. Mean age was 19.8 years (*SD* = 6.38).

Procedure

The IAT proposed by Nosek, Greenwald, and Banaji (1997) is composed of seven blocks (see Table 1). In the present study, participants had to decide whether each of the items presented in the center of the screen corresponded to Spanish or German (when the word shown was a surname) or to humans or machines (when the word shown was one of the nouns or adjectives related to these groups that had been selected in the pilot study). Participants assigned each word to a category by pressing a key on the left or the right of the computer keyboard depending on the categories and attributes that appeared on the top left and right corners of the screen. For example, if "García" appeared in the centre and the category "Spanish" appeared on the top left corner and the category "German" appeared on the top right corner, participants had to press the key on the left. In a series of practice rounds, only one category or attribute appeared on the top corners of the screen and participants had to classify the stimuli presented in the centre according to the category they belonged to. However, in the most relevant trials for the purposes of this research, the top left and right corners of the screen showed two categories at the same time, one referring to citizenship (Spanish or German) and one referring to machine- human category. Two types of such blocks were used – congruent and incongruent ones. In the congruent blocks, the two categories presented in the same location of the screen corresponded to the categories humans and Spanish or German and machines (either on the right or on the left); such blocks were considered congruent because *a priori* and based on the results of Study 1, Spaniards (the ingroup) were expected to be more associated to humans than Germans, and Germans were expected to be more associated to machines than Spaniards. In incongruent trial blocks, the two categories shown on the same side of the screen were Spanish and machines or German and humans. As is usual with this technique, the order of these two blocks and the location of the two categories shown in the same place were counterbalanced across participants. Table 1 shows the different trial blocks used in Studies 3 and 4. Blocks B3 and B4 were congruent and blocks B6 and B7 were incongruent.

Six items were used in each of the four categories used. They were all selected from the pilot study explained above. The items included in the category "Spanish" were García, Fernández, Rodríguez, López, Jiménez, and González. The surnames included in the category "German" were Müller, Schneider, Wagner, Becker, Schulz, and Shäfer. Words included in the category "human" were *Gente* (People), *Ciudadano/a* (Citizen), *Habitante* (Inhabitant), *Individuo* (Individual), *Pasivo/a* (Passive), and *Soltero* (Single), and the items of the category "machines" were *Dispositivo* (Device), *Instrumento* (Instrument), *Herramienta* (Tool), *Máquina* (Machine), *Tecnológico* (Technological), and *Mecánico* (Mechanical).

Results

Data analysis

Following the indications of Greenwald, Nosek, and Banaji (2003), we eliminated trials in which participant reaction times (RTs) were lower than 10,000 ms and data of participants with more than 10% of RTs lower than 300 ms. In addition, RTs of trials in which participants responded incorrectly were replaced by the mean of the respective trial series, adding 600 ms. RTs were analyzed using Algorithm D6, considered by Greenwald et al. (2003) to be the most appropriate to analyze the results of the IAT.

Implicit association

According to Greenwald et al. (2003), the IAT effect shown with Algorithm D6 is significant when it differs from 0. The IAT effect is an index of the RT difference of incongruent minus congruent blocks. Therefore, when the IAT effect is significantly greater than 0, it shows that participants have responded to congruent blocks faster than to incongruent blocks. To test our hypothesis, a *t* test for independent measures was performed, comparing the IAT effect (D6) to 0. This analysis showed that, as predicted, the IAT significantly differed from 0 ($M = .38$, $SD = .29$), $t(65) = 10.63$, $p < .01$. Next, related sample comparisons were performed to verify whether participants took less time to classify the various items in the congruent condition (Spanish/humans and German/machines) than the incongruent condition (German/humans and Spanish/machines). Results showed significant differences, $t(65) = 8.07$, $p < .001$, in the time participants needed to classify the various items presented. They were faster in the congruent condition ($M = 707.01$, $SD = 94.03$) than in the incongruent condition ($M = 838.54$, $SD = 136.95$).

Study 4

Method

Participants

The sample was composed of 64 non-Gypsy Psychology university students, who obtained course credits for their

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Table 1

Block	Categories located on the left side of the screen and assigned to the left response key	Items assigned to the right response key
B1	Spanish (Non-Gypsy)	German (Gypsy)
B2	Humans (Humans)	Machines (Animals)
B3	Spanish + Humans (Non-Gypsy + Humans)	Germans + Machines (Gypsy + Animals)
B4	Spanish + Humans (Non-Gypsy + Humans)	German + Machines (Gypsy + Animals)
B5	German (Gypsy)	Spanish (Non-Gypsy)
B6	German + Humans (Gypsy + Humans)	Spanish + Machines (Non-Gypsy + Animals)
B7	German + Humans (Gypsy + Humans)	Spanish + Machines (Non-Gypsy + Animals)

Note: The order of blocks B1, B3, B4, and B5, B6, B7, was counterbalanced across participants. Categories used in Study 3 are not shown between parentheses. Categories used in Study 4 are shown between parentheses.

participation. Of them, 53 were female (82.8 %) and 11 were male (17.2 %). Mean age was 18.47 years (SD = 1.89).

Procedure

The procedure used was the same as in Study 3, with the only difference that the groups used were Gypsy (outgroup) and non-Gypsy (ingroup). As in Study 2, this time animal-related words were used instead of machine-related words. To verify whether the result obtained in Study 2 – animalistic dehumanization of the Gypsy group – was also obtained with an implicit measure, the IAT was used again. Table 1 shows the seven blocks of this test. The categories non-Gypsy and humans on one side and Gypsy and animals on the other were considered congruent because, according to our predictions and the results of Study 2, there is a cognitive association between them. Therefore, when participants had to respond to them with the same response key they were expected to be faster than when they had to respond to incongruent categories with the same key (i.e., non-Gypsy and animals or Gypsy and humans).

The items used in this study were selected from the pilot study. The non-Gypsy category included the typical non-Gypsy surnames García, López, Martínez, González, Pérez, and Sánchez, whereas the Gypsy category included the typical Gypsy surnames Heredia, Cortés, Carmona, Flores, Montoya, and Amaya. The items of the category humans were *Gente* (People), *Ciudadano/a* (Citizen), *Habitante* (Inhabitant), *Individuo* (Individual), *Pasivo/a* (Passive), and *Soltero/a* (Single), and those of the category machines were *Animal* (Animal), *Pedigrí* (Pedigree), *Raza* (Breed), *Salvaje* (Wild), *Irracional* (Irrational), and *Manso* (Tame).

Results

Implicit association

The strategy used for this analysis was the same as in Study 3. A t test for independent measures was used to determine whether the IAT effect (calculated with Algorithm D6) differed from 0. This analysis showed that, as predicted, the IAT effect was significantly greater than 0 (M = .31, SD = .23), $t(63) = 10.93$, $p < .001$. To verify whether participants were faster categorizing the various items in the congruent condition (non-Gypsy/humans and Gypsy/animals) than in the incongruent condition (Gypsy/humans and non-Gypsy/animals), a t test for related samples was performed. This analysis showed significant differences t (63) = 9.92, $p < .001$) in the time needed by participants to categorize the various items presented: they responded faster in the congruent condition (M = 840.91, SD =167.13) than in the incongruent condition (M =1002.54, SD = 204.36).

Discussion

Results of these two studies corroborate the validity of the items selected to measure two forms of dehumanization – animalistic and mechanistic dehumanization – implicitly, using the IAT. Participant responses show that they make a cognitive association – beyond their ability to control

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their responses – between machine-related words and Germans (Study 3), animal-related words and Gypsy (Study 4), and human-related words and the ingroup (Spanish or non-Gypsy).

General discussion

This study was conducted in the framework of a new way of understanding prejudice in the intergroup context. Allport (1954) defined prejudice as a negative attitude or predisposition to adopt a negative behavior towards a group or its members based on an erroneous and rigid generalization. However, according to Pettigrew and Meertens (1995), there are other more automatic and subtle forms of prejudice in our society. The study on dehumanization followed this approach and tried to come closer to an analysis of subtle prejudice arguing that some groups are not perceived as being human. The theory of infrahumanization is one of the best known proposals in the study of dehumanization. It is a phenomenon that has been proven consistently by various authors with different procedures and in different contexts. Yet, most studies on this subject have measured this phenomenon using the association between secondary emotions and the ingroup on one side and primary emotions and the outgroup. We consider this approach to be incomplete, because, as Haslam (2006) proposed, some groups are subjected to animalistic dehumanization while others are subjected to mechanistic dehumanization. According to Haslam, animalistic and mechanistic dehumanization are the two ways in which people dehumanize members of groups they do not belong to.

How can we measure mechanistic dehumanization? Is it possible to measure animalistic and mechanistic dehumanization using stimuli other than primary and secondary emotions? The measures most widely used to analyze infrahumanization (attribution of primary and secondary emotions) cannot be used to measure dehumanization based on mechanization of outgroups. Therefore, our aim was to create a new measure that can be used to distinguish between both types of dehumanization. Studies 1 and 2 used a simple and direct task in which participants had to link the surnames of the outgroup and the ingroup to a list of human-, animal-, and machine-related words. This study confirmed our hypotheses, showing that ingroup surnames were linked more to human-related words in both studies and outgroup German surnames were linked more to machine-related words (Study 1); by contrast, surnames of the Gypsy outgroup were linked more to animal-related words (Study 2). Results replicated the data provided in the literature on dehumanization, in which the ingroup is usually associated to humans whereas the outgroup is usually dehumanized. Interestingly, the German outgroup was dehumanized mechanistically in this research, while Germans were associated to more animal-related words than human-related words in research by Viki et al. (2006). Given that the study by Viki et al. (2006) did not include machine-related words or categories, it is not possible to know whether participants would have selected more machine-related words to describe the outgroup if they had been given the chance to do so.

We consider that the potential of the measure described to determine how outgroups are dehumanized is a new contribution of the present study. The paper and pencil measure is direct, easy, and simple to use. Classic studies on infrahumanization propose a subtle methodology in which participants attribute emotions and stimuli to various groups. By contrast, this research used more explicit stimuli that clearly referred to humans, machines, or animals. With the data available, it is not possible to know whether participants were aware or not of the aims of the research as well as of the categories and stimuli presented to them. On the one hand, participants were told the research focused on perception of words to prevent them from guessing the aim of the study. It is is also possible that, if participants had been aware of the real intentions of the study, this would have been reflected in the results, due to social desirability issues. On the other hand, as mentioned above, the absence of time pressure in the responses and the characteristics of the stimuli and categories may have allowed participants to become aware of the objectives of the study. Yet, even if this were so, the results obtained show the same pattern of results as the literature on infrahumanization: associating the ingroup to humans and the outgroup to animals. This leads us to consider that this measure is reliable and, most importantly, useful. In addition, given that this instrument has proven to be valid to study animalistic dehumanization, we consider it is also valid to measure the other form of dehumanization: mechanistic dehumanization.

So far, only the measure of emotions and feelings used by Leyens et al. (2000, 2001) is available in Spanish. This measure is useful to determine to what extent people infrahumanize (animalistically dehumanize) the outgroup. The measure we propose provides the Spanish-speaking community with a tool to analyze how various outgroups are dehumanized.

The results obtained show that people do not always dehumanize members of outgroups seeing them as animal-like but that certain outgroups are seen as machine-like. We believe that this measure can contribute to a more thorough approach to dehumanization. Therefore, this measure can allow future studies to prove whether the fact that there are different forms of dehumanization implies that such discrimination has different consequences.

Studies 3 and 4 applied an implicit methodology using the same items than in Studies 1 and 2. This increased the validity of the results obtained in the first two studies with the new measure proposed.

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Analyzed jointly, our results show that some outgroups are infrahumanized by being perceived as animals more than humans. This is the case of the Gypsy community, which has traditionally been one of the groups subjected to most prejudice and discrimination in Spain (Gómez-Berrocal & Ruiz, 2001). The fact that Spain is one of the European countries that has received the highest number of immigrants in recent years has not improved the current situation of the Gypsies (Rodríguez-Bailón, Ruiz, & Moya, 2009) In fact, according to some studies, prejudice and discrimination towards Gypsies is greater than prejudice towards other minorities such as North Africans or South Americans (Rodríguez-Bailón, Barranco, & Casado, 2000; Rodríguez-Bailón & Puertas, 2000; Rueda & Navas, 1996). The relationship betwen non-Gypsies and Gypsies has been one of the intergroup dynamics most studied by Spanish sociologists, anthropologists, and social psychologists over the last decades. We believe that the dehumanization perspective should also be taken into account when analyzing the discrimination that this group has suffered for so long. Depriving Gypsies of humanity and associating them with animals can have serious consequences. This is particularly so when the group that infrahumanizes has to share the same space and have a certain contact with the animalistically dehumanized group. This is the case of everyday relations between non-Gypsies and Gypsies. Yet, although certain groups are subjected to animalistic dehumanization, as happens to Gypsies, this does not necessarily reflect a totally negative and hostile view of groups subjected to it. After all, contact with animals can be positive and satisfactory, although it is also possible to have a relationship based on exploitation. Future studies should clarify these possible consequences – both positive and negative – of animalistic dehumanization.

Research has typically focused on intergroup relationships with groups traditionally discriminated against (non-Gypsies and Gypsies, whites and blacks). Little attention has been given to intergroup relationships that do not seem to be in conflict, such as those of Germans and Spaniards (Morera et al., 2004). Yet, dehumanization theorists (Haslam, 2006; Leyens et al. 2000; Leyens, Demoulin, Vaes, Gaunt, & Paladino, 2007) underline the importance of this phenomenon in a broad variety of social spheres. They argue that dehumanization also takes place outside the contexts of intergroup violence and conflict where it has generally been considered to occur. Our results show that intergroup conflict is not necessary for people to dehumanize the outgroup. Results of Studies 1 and 3 prove that Spanish participants mechanistically dehumanized Germans. We consider that is is of key importance for future studies to explore the consequences of this new form of dehumanization on the members of mechanistically dehumanized groups and the causes that lead people to dehumanize groups in one way or another.

In this study, we chose two specific groups which we thought *a priori* were likely to be subjected to animalistic and mechanistic dehumanization, respectively. Results confirmed our hypothesis, given that one group was more linked to animal-related words and the other was more linked to machine-related words. However, future studies should determine the degree of generalization of this type of perception of outgroups depending on the two dimensions presented: animalistic and mechanistic dehumanization. They will also have to answer questions such as the following: Are outgroups often perceived in terms of these two dimensions? Are there groups perceived as animal-like and machine-like in all contexts, or does it depend on the context?

Future studies will need to answer questions such as, to what extent are people ready to interact with members of dehumanized groups? Are there contexts in which the members of mechanistically dehumanized groups may be preferred (e.g., professionally) to members of animalistically-dehumanized ones? Does animalistic dehumanization have more negative consequences than mechanistic dehumanization? Is this always so? Does dehumanization have an influence on the interpersonal distance people set with members of outgroups? Which psychosocial factors lead to the occurrence of one type of dehumanization or the other?

Finally, in research on dehumanization, the creation of measures such as that presented in this study sheds some light on some of the different forms of dehumanization and makes it possible to study its consequences. Importantly, the results from these studies can be applied to real context. Discriminating behaviors and intergroup conflicts can only be prevented and eradicated if we have enough knowledge of this type of attitudes.

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