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Investigating the link between biological dehumanization and indirect aggression

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Abstract

The present research aims at expanding the literature on biologization (i.e., a form of dehumanization in which others are perceived as contagious entities) by providing the first empirical evidence of the link between this sociopsychological process and indirect aggression (i.e., behaviours intended to harm someone in a roundabout manner, such as excluding them from a group or society). We first identified the most dehumanized social groups in Italy. Then, by using cluster analysis, we demonstrated that biologized social groups (i.e., drug addicts, homeless people, prostitutes, and sick people) tend especially to be victims of indirect rather than direct aggression tendencies (i.e., intentions against individuals or groups to cause damage through face-to-face confrontation). Furthermore, we found that social groups associated with disease-related metaphors are more likely to be victims of indirect aggression than social groups perceived as animal-like (i.e., immigrants, prisoners, and Roma). These findings enrich our understanding of biological dehumanization and enhance the so far scarce literature on the topic.

KEYWORDS
aggression, biologization, cluster analysis, dehumanization

1 | INTRODUCTION

Biological dehumanization (or biologization) is the perception of others as disease organisms (Volpato & Andrighetto, 2015). Several scholars (e.g., Hirsch & Smith, 1988; Savage, 2007) revealed that biological rhetoric had been primarily used in relation to aggressive episodes. For example, along with all the other dehumanizing representations, Hitler's *Mein Kampf* also

included the representation of Jews as bacteria (Musolff, 2007). More recently, Steuter and Wills (2010) found that many biological metaphors (e.g., cancer, viruses) were used by Western mass media for describing terrorist enemies. Valtorta et al. (2019a, 2021) expanded this picture by focusing on biologization in the work and interpersonal contexts. Through their studies, the authors experimentally demonstrated the key role of disgust as an antecedent of biologization by therefore explaining the emotional roots of this phenomenon.

Despite the relevance of these considerations, very little is known about other correlates of biological dehumanization. Some studies (e.g., Dalsklev & Kunst, 2015; Utych, 2018) showed that using metaphors concerning disease to describe foreign people can have relevant effects in terms of policy attitudes. However, there are plenty of unanswered questions about the impact of biologization in different contexts from immigration. This research was designed to fill this gap in the literature and provide the first empirical evidence of the link between biological dehumanization and indirect aggression, namely behaviours planned to harm someone in a roundabout manner, such as excluding them from a group or society (e.g., Forrest et al., 2005).

2 | BIOLOGIZATION AND INDIRECT AGGRESSION

Many researchers (e.g., Greitemeyer & McLatchie, 2011; Haslam, 2006) stated that dehumanizing others is a precursor to harm against them. For instance, Vasquez et al. (2014) showed that animalistic descriptions of crimes and criminals (i.e., animalization) lead to more retaliation against the perpetrators. Rudman and Mescher (2012) demonstrated that men who implicitly dehumanize women (as animals and objects) are also likely to rape and sexually harass them. Additionally, several studies (Bevens & Loughnan, 2019; Morera et al., 2022; Pecini et al., 2023) confirmed that dehumanization is associated with abuse in romantic relationships, greater dating violence, and more sexual aggression towards women.

Although the above-mentioned findings are extremely relevant in demonstrating that dehumanization can lead to direct aggression (i.e., behaviours directed towards others to cause damage through face-to-face confrontation), to date, no research has focused on biologization and its potential link to hostile conduct. Some scholars theoretically suggested a possible link between biologization and indirect aggression, that is a type of harm involving any behaviour where individuals were hurt (or hurt another person) in manipulative ways (Forrest et al., 2005). Some examples of indirect aggression behaviour are making other people not talk to someone and excluding them from a conversation or an activity, namely all conduct aimed at isolating. Neuberg and colleagues (Neuberg et al., 2011; Neuberg & Cottrell, 2002) argued that disease metaphors motivate contaminant-minimising behaviours, including avoiding the contaminant. Similarly, Tipler and Ruscher (2014) speculated that the behavioural script that can be adopted when disease metaphors are used to describe others is that of exclusion. Cuddy et al. (2007) developed the 'behaviours from intergroup affect and stereotypes' (BIAS) map, according to which some emotions mediate the effects of stereotype content (warmth and competence) on behavioural outcomes. Importantly, this model predicts that groups considered disgusting (i.e., an emotion strongly associated with biological dehumanization; Valtorta et al., 2019a) because of low warmth and low competence (e.g., homeless people) elicit 'passive harm', a form of aggression that demeans others by diminishing their social worth through exclusion. More recently, Brown et al. (2019, p. 344) stated that 'if immigrants are metaphorically compared to a disease weakening the health of the nation, individuals should apply their natural avoidance of illness to support policies that quarantine the country to minimize future "infection"'.

Of relevance to the present study, different lines of research have argued that prejudice and negative attitudes towards outgroup members might be an output of the behavioural immune system, namely a motivational system that helps minimise infection risk by changing cognition, affect, and behaviour in ways that promote pathogen avoidance (Murray & Schaller, 2016). A consistent result in the literature on this topic is that if the risk of contamination is salient (even abstractly), people are more motivated to avoid pathogens through negative attitudes towards and intentions aimed at the exclusion of various outgroups, such as homeless, illegal immigrants, and Muslims (e.g., Faulkner et al., 2004; Huang et al., 2011; Miller & Maner, 2012). According to the behavioural immune literature (Ackerman et al., 2018; see also Brown et al., 2019), disease metaphors may be a particularly powerful framing

because behavioural immune system activation could further bolster support for avoidance motives in the service of mitigating contact with real and/or figurative pathogens.

If the link between biological metaphors and indirect aggression is backed up by substantial research literature (e.g., the behavioural immune system literature; Neuberg & Cottrell, 2002; Neuberg et al., 2011; Tipler & Ruscher, 2014), the same does not seem true for the association between biologization and direct aggression. Most of the studies investigating these constructs (e.g., Musolff, 2007; O'Brien, 2003) have applied the content analysis approach to texts and images used by the Nazi Party or in the immigration debate; however, the analysed material that scholars described as potentially associated with violence and direct aggression includes biological imagery together with object, demon, and animal metaphors (e.g., in Hitler's *Mein Kampf*, Jewish people were described and pictured as viruses, snakes, rats, and evil spirits; Musolff, 2007). It is thus unclear whether biologization alone or the combination of different forms of dehumanization can elicit direct aggression.

Combining all these aspects, we hypothesised that indirect (vs. direct) aggression might represent a relevant behaviour specifically associated with biologization. In this perspective, perceiving others as more similar to disease organisms rather than to human beings might be linked to indirect aggression conduct, such as their exclusion from a group, society or activity. Furthermore, since biologization and animalization are the only two forms of dehumanization that imply subhuman metaphors, we also considered individuals' evaluations of animalistic dehumanization in our research by assuming that only biologized others might be the targets of indirect aggression behaviour. The choice to consider animalization stemmed from the awareness that biologization and animalization are two close dehumanizing processes united by the fact that both imply representations of others as less-evolved living beings (i.e., viruses and animals). On the contrary, the remaining forms of dehumanization, such as objectification and mechanization, involve the perception and treatment of individuals or groups as non-living entities, such as objects and cold automata.

3 | THE PRESENT RESEARCH

A preliminary and a main study addressed our hypothesis. The preliminary study was designed to select the most salient dehumanized groups in our research context (i.e., Italy). The main study used a sample of 11 social groups—the most frequent answers resulted from the preliminary study—and investigated participants' dehumanizing perceptions and aggressive intentions towards them. Each social group, with its score on biologization and animalization dimensions, became a unit in cluster analysis. We compared clusters for distributions of groups to examine whether biological and animalistic perceptions would differentiate the considered social targets. Then, to test our assumption on the link between biologization (vs. animalization) of others and indirect (vs. direct) aggression, we compared biologized and animalized social groups on the scores of indirect and direct aggression intentions.

Both the studies were conducted after receiving ethical approval from the local commission of the Psychology Department for minimal risk studies (Approval no. RM-2022-497). Participation was voluntary, and informed consent was obtained before each data collection.

4 | PRELIMINARY STUDY

The social groups used in our research were selected through a preliminary study. Thirty two (53% women; $M = 39.12$, $SD = 14.33$; age range: 20–70) participants were asked to report at least one Italian dehumanized social group (for a similar procedure, see Fiske et al., 2002). Before answering, participants received the following definition of 'dehumanization' (Volpato & Andrighetto, 2015, p. 31): 'Dehumanization is the act of denying humanness to other human beings, introducing an asymmetry between people who have human qualities and people who are perceived as lacking these qualities'. Overall, participants reported 16 dehumanized social groups. We considered in the main

study those that were listed by 6% ($n = 2$) or more of the respondents (for a similar criterion of inclusion, see Fiske et al., 2002; Valtorta et al., 2019b). They were (in descending order): immigrants, homeless people, prisoners, drug addicts, politicians, Roma, prostitutes, disabled people, obese people, older people, and sick people.

5 | MAIN STUDY

5.1 | Methods

5.1.1 | Participants

A snowball sampling strategy was employed, and participants were recruited starting from the experimenters' networks. Given the correlational nature of the study, we aimed to collect at least 250 participants. According to Schönbrodt and Perugini (2013), this sample size would guarantee the stability of the tested correlations and a power of .80 for correlation as low as .17, as found in a-priori power analysis that we conducted with G*Power (Faul et al., 2007). A sample of 280 Italians consented to participate in the study. We excluded respondents ($n = 30$) who failed the three attentional check items (e.g., 'Please answer 2 to this item'). The final sample comprises 250 participants (54% women; $M_{age} = 31.94$, $SD = 13.00$; age range: 18–72).

5.1.2 | Procedure and measures

Data were collected online using the Qualtrics survey web system (https://www.qualtrics.com). Each participant rated three social groups on scales reflecting dehumanizing perceptions and aggressive intentions. To dispel any social desirability concerns, respondents were instructed to express their judgements about how the considered groups are viewed by Italian society (for a similar procedure, see Fiske et al., 2002; Valtorta et al., 2019b).

Dehumanizing perceptions
Participants were asked to rate the extent to which, according to the perspective of Italian society, each group was associated with different words (1 = *not at all*; 5 = *very much*). Perceptions of the group as virus-like were measured with the following words: *virus*, *contamination*, *disease*, and *contagion* ($\alpha = .92$). Instead, perceptions as animal-like were measured with the following animal-related terms: *animal*, *savage*, *primitive*, and *beast* ($\alpha = .93$). Perceptions of the target as a human being were measured using four human-related words (i.e., *human being*, *person*, *individual*, and *subject*; $\alpha = .92$). We conducted a confirmatory factor analysis (CFA) to determine whether the scale fitted the hypothesised structure, with each item loading on the corresponding subscale. Results indicated that the fit of the model was acceptable ($\chi^2[51] = 394$, $p = .032$; RMSEA = 0.084 [95% CI: 0.064, 0.103]; CFI = 0.955; TLI = 0.941; SRMR = 0.045). To compute the scores of biologization and animalization, we followed the same procedure adopted in previous research on the topic (e.g., Andrighetto et al., 2017; Valtorta et al., 2019a). To obtain the biologization score, we computed the difference between the perception as virus-like and the perception as human-like. The same operation, with the animal-related words, was computed to obtain the animalization score. Thus, higher scores indicated stronger perceptions of the target as virus-like or animal-like than a human being.

Aggressive intentions
Aggressive behavioural intentions were measured using 20 items assessing the extent to which, in participants' opinion, Italians would be tempted to engage in various behaviours. Ten items measured direct aggression intentions (e.g., throwing something at the group; $\alpha = .97$; adapted from Richardson & Green, 2003), and 10 items assessed

indirect aggression tendencies (e.g., excluding the group from society; α = .96; adapted from Forrest et al., 2005).[1] All responses were made from 1 (*not at all*) to 5 (*very much*). Results from a CFA confirmed that the items saturated on two dimensions, as expected ($\chi^2[169] = 1622$, $p < .001$; RMSEA = 0.083 [95% CI: 0.072, 0.094]; CFI = 0.919; TLI = 0.909; SRMR = 0.061). Higher scores indicate more indirect and direct aggression, respectively.

Finally, participants were asked to report their demographics (i.e., gender, age, nationality) and political orientation. This variable was measured on a single-item scale ranging from 1 (*extreme left*) to 9 (*extreme right*) borrowed from previous research (Kroh, 2007) ($M = 4.54$, $SD = 1.50$). All participants were thanked and fully debriefed.

5.2 | Results

5.2.1 | Preliminary analysis

Table 1 shows the means and standard deviations for each social group considered in the study. Drug addicts and sick people emerged as the most biologized categories; instead, prisoners and Roma were the most animalized. Overall, the less dehumanized groups are older and disabled people. As for aggressive intentions, we found that participants reported higher indirect aggression towards drug addicts and homeless people. Direct aggression was expressed mainly against politicians, prisoners, and Roma. According to these preliminary results, some of the most dehumanized social groups (e.g., drug addicts, prisoners, and Roma) are also those towards whom higher aggressive intentions were reported, thus providing first evidence of the link between dehumanizing perceptions and aggressive conduct.

5.2.2 | Cluster analysis

We conducted hierarchical cluster analysis (Ward's, 1963, method) to determine the best-fitting number of clusters. Based on the graphical scree plot, we adopted a three-cluster solution. We then performed *k*-means cluster analysis (with the parallel threshold method) to determine which social groups fit into which cluster.

As shown in Figure 1, one cluster comprised four social groups: drug addicts, homeless people, prostitutes, and sick people. Another cluster included three social groups: immigrants, prisoners, and Roma. The final cluster comprised four social groups: disabled people, older people, obese people, and politicians.

TABLE 1 Means and standard deviations (in parentheses) for each social group considered in the study.

Social group	Biologization	Animalization	IA	DA
Immigrants	−0.72 (1.90)	−0.02 (1.80)	3.17 (1.15)	3.41 (1.13)
Prisoners	−1.37 (1.63)	0.15 (1.60)	3.44 (1.22)	3.57 (1.10)
Politicians	−1.84 (1.89)	−1.30 (1.63)	2.87 (1.26)	3.75 (0.99)
Roma	−0.79 (1.94)	0.30 (1.68)	3.53 (1.20)	3.57 (1.16)
Prostitutes	−0.09 (1.75)	−0.91 (1.81)	3.69 (1.00)	3.14 (1.21)
Homeless people	−0.08 (1.48)	−1.10 (1.83)	4.44 (0.67)	2.31 (1.11)
Drug addicts	0.56 (1.54)	−0.68 (2.14)	4.55 (0.53)	2.72 (1.19)
Disabled people	−1.57 (1.58)	−2.30 (1.58)	3.09 (0.98)	1.80 (0.84)
Obese people	−2.02 (1.44)	−1.58 (1.55)	3.10 (1.15)	2.29 (0.98)
Older people	−2.49 (1.07)	−3.07 (0.92)	2.60 (0.92)	1.63 (0.65)
Sick people	0.20 (1.40)	−2.21 (1.76)	3.90 (0.99)	1.83 (0.95)

Abbreviations: DA, direct aggression; IA, indirect aggression.
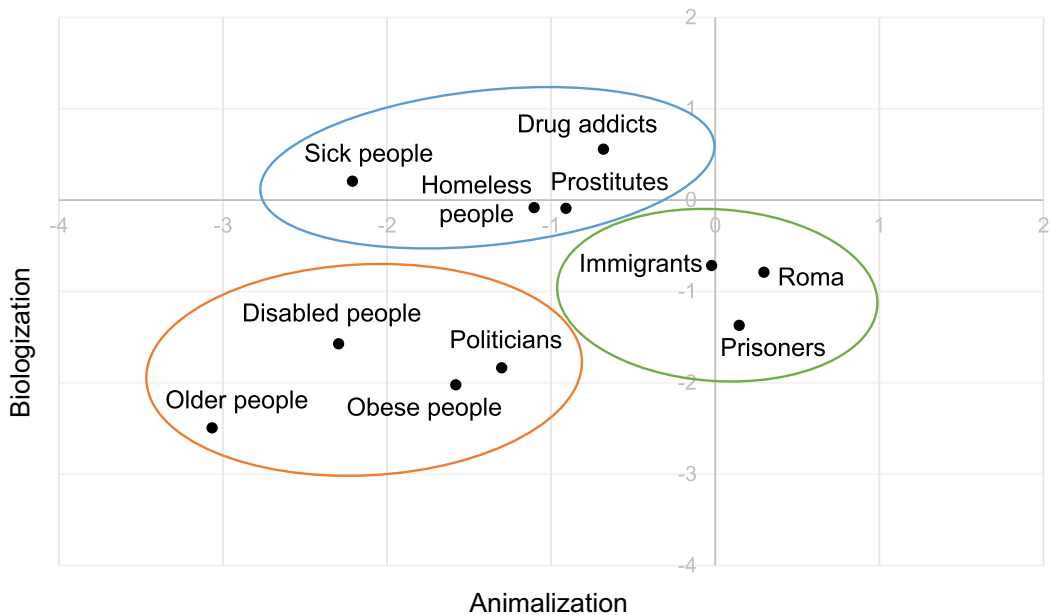
FIGURE 1 Three-cluster solution. The cluster with the highest biologization score is plotted in blue; the cluster with the highest animalization score is plotted in green; the low dehumanization cluster is plotted in orange.

TABLE 2 Means and standard deviations (in parentheses) for the dehumanizing perceptions by cluster.

Cluster	Biologization	Animalization
	M (SD)	
Drug addicts, homeless people, prostitutes, and sick people	0.15_{aA} (0.31)	-1.23_{aB} (0.68)
Immigrants, prisoners, and Roma	-0.96_{bA} (0.36)	0.14_{bB} (0.16)
Disabled people, older people, obese people, and politicians	-1.98_{cA} (0.39)	-2.06_{aA} (0.79)

Note: Capital subscripts compare the two dehumanization scores within clusters; small subscripts compare clusters within the two dehumanization scores.

As reported in Table 2, the cluster with the highest biologization score was the one that comprised drug addicts, homeless people, prostitutes, and sick people. This cluster significantly differed in the biologization score from the second cluster, $t(5) = 4.41$, $p = .007$, $d = 3.30$, 95% CI [0.46, 1.75], and from the third cluster, $t(6) = 8.61$, $p < .001$, $d = 6.05$, 95% CI [1.52, 2.73]. Comparing the scores on biologization and animalization of this cluster, matched pair t-test revealed a significant difference, $t(3) = 3.83$, $p = .031$, $d = 2.61$, 95% CI [0.23, 2.51].

The cluster with the highest animalization score was the one that included immigrants, prisoners, and Roma. This cluster significantly differed in the animalization score from the first cluster, $t(5) = 3.34$, $p = .021$, $d = 2.77$, 95% CI [0.32, 2.42], and from the third cluster, $t(5) = 4.65$, $p = .006$, $d = 3.86$, 95% CI [0.98, 3.42]. Comparing the scores on animalization and biologization of this cluster, matched pair t-test revealed that the two ratings significantly differed, $t(2) = 4.63$, $p = .044$, $d = 3.95$, 95% CI [0.08, 2.12].

Finally, the cluster with the lowest dehumanization scores was the one that included disabled people, older people, obese people, and politicians. This cluster's biologization rating was significantly lower than the first (see the statistics above) and the second cluster, $t(5) = 3.55$, $p = .016$, $d = 2.72$, 95% CI [0.28, 1.76]. Furthermore, this cluster's animalization score was lower than the second cluster's (see the statistics above). Instead, this cluster's

animalization score did not significantly differ from that of the first cluster, $t(6) = 1.60$, $p = .160$. Comparing the scores on biologization and animalization of this cluster, matched pair t-test revealed a non-significant difference, $t(3) = 0.24$, $p = .824$.

5.2.3 | Aggressive intentions

We performed a 3 (cluster: biologization vs. animalization vs. low dehumanization) × 2 (aggression: indirect, direct) repeated measures ANOVA with cluster as a between-subjects factor.[2]

The analysis yielded a main effect of cluster, $F(2747) = 69.13$, $p < .001$, $\eta_p^2 = 0.16$. The social groups in the animalization cluster ($M = 3.45$, $SD = 0.78$) elicited more aggressive intentions than those in the low dehumanization cluster ($M = 2.65$, $SD = 0.93$), $p < .001$, 95% CI [0.62, 0.99]. Similarly, the social groups in the biologization cluster ($M = 3.33$, $SD = 0.77$) elicited more aggressive intentions than those in the low dehumanization cluster, $p < .001$, 95% CI [0.50, 0.85]. The scores of the animalization and biologization clusters did not significantly differ, $p = .294$.

In the same vein, the main effect of aggression was significant, $F(1747) = 145.61$, $p < .001$, $\eta_p^2 = 0.16$, 95% CI [0.57, 0.79], indicating that participants reported more indirect ($M = 3.47$, $SD = 1.18$) than direct ($M = 2.75$, $SD = 1.29$) aggression intentions.

Crucially, we observed that the interaction cluster × aggression was significant, $F(2747) = 81.78$, $p < .001$, $\eta_p^2 = 0.18$. Simple effects indicated that when participants evaluated the social groups in the biologization cluster, the effect of aggression was significant, $F(1747) = 294.11$, $p < .001$, $\eta_p^2 = 0.28$, 95% CI [1.45, 1.82]. As reported in Figure 2, respondents reported more indirect than direct aggression intentions. A similar trend emerged for the low dehumanization cluster, $F(1747) = 33.65$, $p < .001$, $\eta_p^2 = 0.04$, 95% CI [0.35, 0.71]. Finally, when participants assessed the social groups in the animalization cluster, the effect of aggression was not significant, $F(1747) = 1.67$, $p = .197$.

Moreover, simple effects showed that when participants were asked to report their indirect aggression intentions, the effect of cluster was significant, $F(2747) = 89.77$, $p < .001$, $\eta_p^2 = 0.19$. As shown in Figure 2, the social groups in the biologization cluster elicited more indirect aggression than those in the animalization cluster, $p < .001$, 95% CI [0.56, 0.95], and in the low dehumanization cluster, $p < .001$, 95% CI [1.05, 1.41]. Furthermore, the animalization and low dehumanization clusters were significantly different, $p < .001$, 95% CI [0.28, 0.66]. The effect of cluster was also significant when participants were asked to report their direct aggression tendencies, $F(2747) = 63.07$, $p < .001$, $\eta_p^2 = 0.14$. As reported in Figure 2, the social groups in the animalization cluster elicited more direct aggression
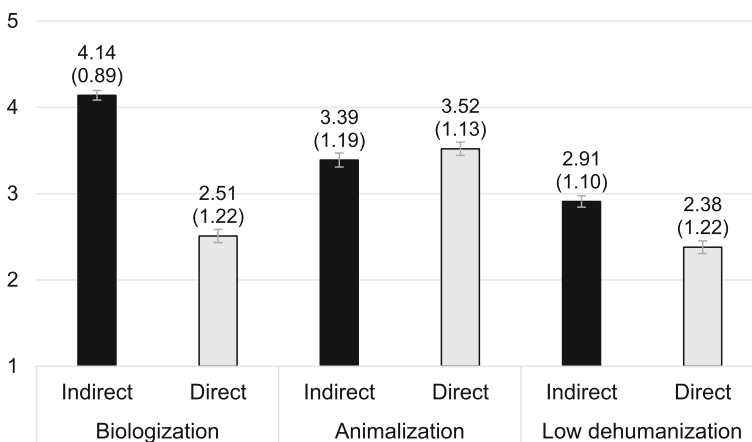

FIGURE 2 Means and standard deviations (in parentheses) for indirect and direct aggression as a function of the clusters.

intentions than those in the biologization cluster, $p < .001$, 95% CI [0.79, 1.23], and in the low dehumanization cluster, $p < .001$, 95% CI [0.92, 1.35]. Instead, the difference between the biologization and low dehumanization clusters was not significantly different, $p = .223$.

6 | DISCUSSION

Although the literature on biological dehumanization is growing, most of the studies conducted so far have focused on the antecedents of this phenomenon (e.g., Valtorta et al., 2019a, 2021). As far as we know, no research has considered other variables that can be linked to biologization. To fill this gap, we conducted a preliminary and a main study to examine whether biologized (vs. animalized) social groups in Italian society can also be targets of manipulative behaviours aimed at exclusion and isolation (i.e., indirect aggression) rather than direct damage (i.e., direct aggression). We found that social groups that are biologized (i.e., drug addicts, homeless people, prostitutes, and sick people) elicit more indirect than direct aggression. Crucially, our results revealed that biologized social groups are more likely to be victims of indirect aggression than animalized social groups (i.e., immigrants, prisoners, and Roma). Our findings are partially in line with other research on dehumanization and stereotypes. Valtorta et al. (2019b) found that politicians in Italian society tend to be dehumanized especially in terms of animalization. Furthermore, several other studies demonstrated that immigrants and Roma are usually associated with animalistic metaphors (e.g., Goff et al., 2008; Martínez Lirola, 2022). These groups, along with drug addicts and homeless people, are not only denied humanity but are also perceived as lacking warmth and competence (e.g., Fiske, 2009). In this regard, the present study importantly integrates the literature on dehumanization with that on the stereotype content model (SCM; Cuddy et al., 2007), namely one of the most relevant approaches investigating how people perceive individuals and social groups. According to the SCM, judgements of warmth and competence are fundamental to social cognition. Several investigations conducted on the topic (e.g., Cuddy et al., 2007; Harris & Fiske, 2009) demonstrated that low warmth and low competence are associated with negative emotions and behavioural intentions, and dehumanization should occur when a social group lacks both these dimensions. We partially confirmed these arguments. Indeed, even if we did not measure people's perceptions of warmth and competence, we found that some of the groups that in other research emerged among the lowest in warmth and competence (e.g., drug addicts and homeless people; see Cuddy et al., 2007) are here the most biologized and are victims of indirect aggression.

Our research expands the literature on dehumanizing processes by providing the first empirical evidence of the link between biological dehumanization of others and indirect aggression. Many scholars demonstrated that different forms of dehumanization, such as animal-like representations, can be considered precursors of direct aggression and violence. For example, Kteily et al. (2015) showed that blatant animalistic dehumanization, namely the explicit denial of full humanness in terms of animalistic representations, is specifically associated with aggressive attitudes and behaviours that are relevant to violent conflicts. In line with the theoretical literature on metaphorical thought and pathogen representations (e.g., Brown et al., 2019; Neuberg et al., 2011), our results add a tile to this picture by revealing that also biologization seems to be associated with aggressive conduct, especially in terms of avoidance and exclusion motives towards the biologized others.

Our main finding is particularly important also because of its contribution to the behavioural immune system literature, according to which if the risk of contamination is salient, people are more motivated to avoid pathogens through intentions aimed at isolating the potential sources of contagion (Murray & Schaller, 2016). Through this study, we demonstrated the possible connection between this theoretical framework and biological dehumanization. According to previous research on the topic (e.g., Schaller & Park, 2011), the behavioural immune system is sensitive to perceptual cues and representations indicating that pathogens may be present, also in figurative ways. When perceived, these stimuli trigger adaptive psychological responses (e.g., aversive emotions and the activation of specific kinds of cognitive knowledge structures in working memory) that facilitate behavioural avoidance.

This line of research seems remarkably relevant in explaining why perceiving others as more similar to disease organisms rather than human beings emerged as associated with behavioural intentions attempting to harm them in more indirect ways, such as through physical and social exclusion.

Our study also provides further evidence of the link between animalization and aggressive actions. As reported above, literature on this topic consistently demonstrated that animalized targets tend to be victims of hostile attitudes. Even if investigating this association was not one of the objectives of the present study, we contributed to this line of research and demonstrated that when people perceive individuals or groups as more similar to animals, they are more likely to report violent intentions towards them. This result becomes clearer if we think about morality, namely one of the core dimensions defining human beings (Haslam, 2006). Previous studies demonstrated that perceiving others as lacking morality is an important antecedent of animalistic dehumanization (Kteily & Bruneau, 2017). For example, Pacilli et al. (2016) revealed that within the political domain, the perception of moral distance from political outgroups positively predicts their animalistic dehumanization. Accordingly, Valtorta et al. (2019b) found that occupations perceived as immoral (e.g., lawyers and insurance agents) are associated with an increase in animalized perceptions of people who perform these activities. Of relevance to our findings, several scholars (e.g., Vasquez et al., 2014; Weidman et al., 2020) indicated that people have fundamental tendencies to punish immoral actors. On this basis, it is plausible that our participants' high scores on direct aggression against animalized social groups, such as prisoners and Roma, emerged because these individuals have often been associated with immoral conduct.

Furthermore, our research highlights the difference between biologization and animalization, namely the only two forms of dehumanization implying representations of others as less-evolved living beings. Valtorta and Volpato (2018) deepened the analysis of this differentiation through an experimental study and showed that physical and moral disgust affect these two kinds of dehumanizing processes differently. They found that while physical disgust (i.e., a rejection response to dirt) increased the view of outgroup members as disease carriers, moral disgust (i.e., a form of disgust elicited by immorality and violations of social rules) led to an increased association of others with animalistic metaphors. Our research expands these results by revealing that biologization and animalization differ also considering aggressive behaviours.

7 | LIMITATIONS AND FUTURE DIRECTIONS

Although our study enriches the literature on dehumanization and aggression in different ways, there are some limitations that we have to consider. First, the correlational nature of our data does not allow us to draw causal conclusions. The tested associations can be bidirectional and dynamic. Experimental research would help to determine the direction of these paths.

Furthermore, it is important to note that we considered animalization as a control process to test the specific association between biologization and indirect aggression. Because of its similarity to biologization, we believe that animalization is one of the most appropriate forms of dehumanization to use as a contrasting category. However, future studies could test the relationship we found in the present research by considering other dehumanizing representations, such as those involving the perception of others as nonliving entities (e.g., objectification and mechanization).

Also, we did not collect data on the possible identification of our participants with the considered targets (e.g., disabled people and obese people). Since this information might affect how people perceive social groups, future research could test our results by also controlling for this variable.

Finally, we collected data in Italy and by referring to Italian society. Future studies could cross-culturally test our associations. It is possible that the link between dehumanized social groups and aggressive intentions would be confirmed when tested in different countries, even if the social groups in each cluster could change according to the cultural context.

8 | CONCLUSIONS

The present work paves the way for new understandings of biologization and its negative correlates. Given that dehumanization has historically led to catastrophic consequences for dehumanized social groups, it is essential for both scholars and practitioners to understand how these metaphorical representations operate and the severe repercussions they may have for marginalised others, especially in terms of aggressive conduct. We hope that our findings and future investigations encourage researchers to join efforts in order to increase the comprehension of the impact of dehumanizing language on people who are not privileged and already live on the margins of society.

CONFLICT OF INTEREST STATEMENT
The authors declare that there is no conflict of interest.

DATA AVAILABILITY STATEMENT
Data, SPSS syntax for the analyses, and Supplementary Material are available on the project's OSF page: https://osf.io/3ad8m/.

ETHICS STATEMENT
This research was conducted after receiving ethical approval from the local Commission of the Department of Psychology for minimal risk study (Approval no. RM-2022-497). All procedures performed in the studies were in accordance with the APA ethical guidelines, the ethical principle of the Helsinki Declaration, and the Oviedo Convention on Human Rights and Biomedicine. At the beginning of the studies, participants were informed about how the data were collected, processed, and stored. Participation was voluntary, and informed consent was obtained before each data collection.

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ENDNOTES

[1] To measure indirect aggression, we used the following 10 items: *withholding information from the group that others are let in on*; *purposefully leaving the group out of activities*; *making other people not talk to the group*; *excluding the group from society*; *using private in-jokes to exclude the group*; *spreading rumours about the group*; *making the group feel as if it does not part of society*; *stopping talking to the group*; *omitting the group from conversations on purpose*; *turning other people against the group*.
Instead, to measure direct aggression, we used the following 10 items: *yelling or screaming at the group*; *threatening to hit or throw something at the group*; *cursing at the group*; *throwing something at the group*; *hitting (or trying to hit) the group with something hard*; *insulting the group*; *kicking (or trying to kick) the group*; *hitting (or trying to hit) the group but not with anything*; *pushing, grabbing, or shoving the group*; *beating the group*.

[2] We conducted this analysis also considering gender, age, and political orientation as covariates. The results are roughly the same as those reported here (for more details, see Tables S1–S4 in the Supplementary Material on the project's OSF page: https://osf.io/3ad8m/).

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