

“THE BODY AND SOUL EMOTION” — THE ROLE OF DISGUST IN INTERGROUP RELATIONS

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The present study aims to expand research on emotions in intergroup relations by exploring the impact of disgust on aggressive intentions and dehumanization. Starting from Rozin, Haidt, and McCauley's (1999) conceptualization of disgust as “the body and soul emotion,” we hypothesized that different forms of disgust may affect judgments about others. Specifically, by manipulating group membership (ingroup vs. outgroup) and disgust experiences (physical disgust vs. moral disgust vs. non-disgusting condition), we assumed that physical and moral disgust may differently affect aggressive tendencies and dehumanizing perceptions toward the outgroup. As expected, results showed that physical disgust led to an unwillingness to engage in contact with an outgroup member, whereas moral disgust resulted in a desire to insult that member. Furthermore, we found that physical disgust increased the view of the outgroup member as a contagious entity, whereas moral disgust led to an increased association of that member with animalistic metaphors. The implications are discussed.

Key words: Disgust; Intergroup disgust; Aggressive intentions; Biologization; Animalization.

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Disgust is one of the most basic emotions (Darwin, 1872/1965; Plutchik, 1962). Theorists (Ekman & Friesen, 1975; Tomkins, 1963) have traditionally focused on disgust as the oral rejection of harmful substances and the response to bad taste. According to Tybur, Lieberman, and Griskevicius (2009), some authors (e.g., Miller, 2004) found that disgust applies to objects and actions beyond the scope of food, and more generally serves to protect the self. In particular, Rozin, Haidt, and McCauley (1999) described disgust as “the body and soul emotion,” and developed a theory to trace a trajectory from food-related disgust, centered on protecting the body from harmful substances, to ideational disgust, serving to protect the soul from harmful influences. In line with this conceptualization, a related framing of disgust conceives it as the emotion that protects both the bodily self and the social self (e.g., Fessler & Haley, 2006; Miller, 2004). Rozin, Haidt, and McCauley (2008) suggested a cultural evolution of disgust: what originated as “physical or core disgust” — a rejection response to bad taste and dirt — has evolved into a much more abstract emotion defined as “moral disgust,” which functions to protect the soul and the social order. In this respect, some researchers (e.g., Inbar, Pizarro, & Bloom, 2012; Schnall, Haidt, Clore, & Jordan, 2008) have reasoned that moral disgust represents an extension of an adaptive reflex: just as feelings of disgust encourage withdrawal from substances and objects that are dangerous to the body, they similarly encourage withdrawal from humans whose behavior signals danger to the group.

Importantly for the present research, although moral disgust may be related to contamination-based disgust, it is different from the most primitive forms of this emotion that are connected to the inges-

tion of certain substances (Rozin, Lowery, & Ebert, 1994). In particular, the “bad taste” of moral disgust may serve as an abstract metaphor rather than reflecting a concrete origin in oral distaste (Chapman, Kim, Susskind, & Anderson, 2009). Accordingly, Russel and Giner-Sorolla (2013) stated that moral disgust arises from moral considerations and informs moral judgements. Furthermore, Vartanian (2010) examined the role of disgust in evaluations of some social groups and observed that drug addicts, smokers, obese people, and politicians are the social targets generating the most disgust. In line with these results, through a functional magnetic resonance imaging (fMRI) investigation, Harris and Fiske (2006) found that groups that are usually considered cold and incompetent, such as homeless people and drug addicts, especially activate insula and amygdala, a pattern consistent with disgust.

Drawing from this evidence, the present research aims to show that different experiences in terms of physical and moral disgust may affect different judgments about others. Specifically, we aim to demonstrate that disgust may represent a consistent component of intergroup dynamics, impacting on aggressive intentions and on perceptions of humanity in relation to ingroup and outgroup members.

DISGUST, AGGRESSIVE INTENTIONS, AND DEHUMANIZATION

Several studies have shown that disgust is a relevant emotion in the intergroup domain, which shapes how people react to others (e.g., Buckels & Trapnell, 2013; Hodson & Costello, 2007; Rozin, et al., 2008). Consistent with Taylor (2007), disgust may play an important role in generating and maintaining antipathy toward outgroups. In particular, disgust toward an outgroup predicts both an unwillingness to engage in contact with it (Esses & Dovidio, 2002) and a desire to attack it (Mackie, Devos, & Smith, 2000). On this point, Cuddy, Fiske, and Glick (2007) investigated how emotions shape behavioral tendencies, and noted that groups considered disgusting (cold and incompetent) elicited both passive and active harm. According to these authors, passive harm demeans or distances other groups by diminishing their social worth through exclusion, ignorance, or neglect, whereas active harm explicitly intends to hurt a group and its interests (e.g., verbal harassment). In line with these results, Sternberg (2003) argued that the negation of interpersonal and intergroup intimacy, the first potential component of hate, involves seeking distance, and often, distance from a target is sought because that target arouses disgust in a person who is experiencing hate. Furthermore, some studies (e.g., Faulkner, Schaller, Park, & Duncan, 2004; Navarrete & Fessler, 2006) showed that disgust is positively related to social exclusion toward immigrants, outgroups, and deviant individuals and that this relation may be mediated by fear of infection. Consistent with Mackie et al. (2000), disgust is also implicated in more severe reactions, especially in combination with anger. Anger and disgust share an appraisal base of the possibility of harm to the ingroup and the harm that elicits disgust is the infiltration of dangerous ideas, attitudes, or behaviors, usually regarded as moral violations. As stated in Mackie and Smith (2015), Tausch et al. (2011) showed that anger predicted support for normative forms of confrontation (e.g., petition signing) but disgust toward the outgroup justified more aggressive behaviours, such as violent attacks. In line with these considerations, we supposed that disgust may serve as both a response to a threat of infection and a justification for hostility and aggressive intentions.

A basic role for disgust in outgroup perceptions is also supported by research suggesting that this emotion may be uniquely equipped to enable dehumanized social cognition; in particular, as reported by Buckels and Trapnell (2013), disgust may block perceptions of target humanity. Harris and Fiske (2006, 2007) found that members of certain disgust-eliciting outgroups fail to be processed as fully human. Furthermore, Hodson and Costello (2007) reported positive correlations between interpersonal disgust sensi-

tivity and a tendency to *dehumanize* immigrants. Dehumanization is the idea that people are denied their proper humanness (see Haslam & Loughnan, 2014) and can assume different forms such as objectification (Loughnan & Pacilli, 2014) and mechanization (Haslam, 2006). Importantly, in relation to this paper, two other significant ways through which dehumanization occurs are biologization and animalization (Goff, Eberhardt, Williams, & Jackson, 2008) — considering people as more virus- or animal-like and as less human-like, respectively. In this regard, and of relevance to the present research, although some studies (e.g., Buckels & Trapnell, 2013; Capozza & Volpato, 2004; Hodson & Costello, 2007) discovered that biologization and animalization are strongly related to each other and that disgust leads people to associate others with both biological and animalistic metaphors, as we will discuss below, it is plausible to think that biologization and animalization may be caused by different disgust experiences.

THE PRESENT RESEARCH

The present study was designed to explore the impact of physical and moral disgust on aggressive intentions toward and perceptions of humanity of ingroup and outgroup members. In particular, for both aggressive tendencies and dehumanizing perceptions, we supposed that the effect of physical and moral disgust would be stronger toward an outgroup member than toward an ingroup member. Supporting this assumption, a set of studies (e.g., Buckels & Trapnell, 2013; Taylor, 2007) demonstrated that disgust may play a crucial role in generating aversion toward the outgroup. In addition, our hypothesis was backed up by Tajfel's social identity theory (Tajfel, 1981; Tajfel & Turner, 1979), according to which, since people generally need to evaluate themselves favorably and group membership is a fundamental part of self-concept, people will tend to evaluate their own group more positively than other groups.

Regarding aggressive intentions and dehumanizing perceptions, the aim of this research was twofold. Our first goal was to investigate whether different disgust experiences would shape the participants' aggressive behavioral tendencies. Considering that physical disgust may motivate the avoidance of potentially-contagious people and that disgust is one of the evolutionary mechanisms that help to keep our distance from contagion (Nesse & Williams, 1995), we assumed that physical disgust would especially increase the unwillingness to engage in contact with the outgroup member. On the other hand, Simpson, Carter, Anthony, and Overton (2006) found that moral disgust elicitors, unlike physical disgust elicitors, shared a great deal of variance with feelings of anger and aggression. Accordingly, we hypothesized that this form of disgust would especially increase active harm tendencies and, in particular, the intention to insult the outgroup target. Our second goal was to provide evidence of the connection between disgust and dehumanizing perceptions. Consistent with the idea that dirt, infection, and contagion are the core concepts of biological dehumanization (Savage, 2007; Volpato & Andrighetto, 2015) and that physical disgust is a rejection response to bad taste and dirt (Rozin et al., 2008), we supposed that physical disgust would especially increase the view of the outgroup member as a contagious being. Moreover, considering that perceiving others as lacking morality is an important antecedent of animalization (Haslam, 2006; Kteily & Bruneau, 2017) and that moral disgust can be elicited by immorality, injustice, and violations of social rules (Curtis & Biran, 2001), we hypothesized that moral disgust would especially lead to an increased association of the outgroup target with animalistic metaphors.

Method

Our hypotheses were tested with an experimental study in which we manipulated group membership (ingroup vs. outgroup) and disgust experiences (physical disgust vs. moral disgust vs. non-disgusting condition). Group membership was manipulated by using Tajfel's (Tajfel, Billig, Bundy, & Flament, 1971) minimal group paradigm. In the traditional minimal group study, by randomly dividing participants into two groups on the basis of trivial criteria (e.g., preference for paintings or the toss of a coin), the authors noticed that, even in the most minimal group conditions, responses favoring the ingroup occurred. In line with this procedure, as we will discuss below, we informed participants that their group membership was determined by their preference for certain paintings. According to our hypotheses, in order to verify whether aggressive tendencies and dehumanizing perceptions toward ingroup and outgroup members varied depending on disgust experiences, participants were randomly assigned to read one of three vignettes describing a situation eliciting physical disgust, moral disgust, or no emotion (for a similar procedure, see Schnall, Benton, & Harvey, 2008).

Participants and Experimental Design

Participants were 204 (131 females), aged from 16 to 64 years ($M = 28.68$, $SD = 7.58$). A 2 (group membership: ingroup vs. outgroup) \times 3 (disgust: physical disgust vs. moral disgust vs. non-disgusting condition) design was used, with both group membership and disgust as between-subjects variables. Participants were randomly allocated to the six experimental conditions.

Procedure and Measures

Participants took part in an online study that involved "sharing events" among people. Participants were informed that they would make decisions about paintings, be assigned to one of two groups on the basis of these decisions, and, lastly, read a memory written by another participant. This "other participant" was fictitious, and the written memory was a scenario eliciting physical disgust, moral disgust, or no emotion (non-disgusting condition). The participants were asked to rate their behavioral intentions and dehumanizing perceptions about the (fake) author of the memory who, depending on the experimental condition, was described as a member of the ingroup or as a member of the outgroup.

Group membership manipulation. According to Tajfel's (Tajfel et al., 1971) minimal group paradigm, participants were shown three pairs of paintings on the computer screen; their task was to state the one they preferred in each pair. Before starting, it was explained that their group membership was determined by their preference for de Chirico's or Sironi's paintings (after completing the task, all participants were informed that they were members of the de Chirico group).

Disgust manipulation. To manipulate disgust, participants were randomly assigned to read one of three vignettes written by a (fake) participant and describing a situation eliciting physical disgust, moral disgust, or no emotion (non-disgusting condition). Participants first read the following: "A few days ago, a couple of friends and I saw a homeless person begging for money. We decided to get close to the homeless person." The subsequent sentence varied depending on the experimental condition. For the physical disgust condition, participants read: "Because of the repugnant smell, I felt sick and vomited next to the homeless

person.” For the moral disgust condition, participants read the following: “I stole the money that pedestrians had donated to the homeless person, and I ran away.” Finally, for the non-disgusting condition, participants read the following: “I donated 50 cents to the homeless person, and I continued my walk.” After reading the vignette, all the participants completed a questionnaire using the scales described below. Finally, participants were asked for their demographic information, thanked, and fully debriefed.

Aggressive behavioral intentions. The participants’ aggressive behavioral intentions toward the target were measured using two items of passive harm intentions and active harm intentions (Cuddy et al., 2007). In particular, participants were asked to rate the extent to which they would be inclined to distance (passive harm) and to insult (active harm) the target (1 = *not at all*; 7 = *extremely*).

Dehumanizing perceptions. Dehumanizing perceptions of the target were measured by employing words that recalled the two forms of dehumanization considered (biologization and animalization). More specifically, respondents were asked to rate the extent to which the target was associated with these words (1 = *not at all*; 7 = *extremely*). The perceptions of the target as virus-like (biologization) and animal-like (animalization) were measured using, respectively, four virus-related words (virus, contamination, filth, and contagion, $\alpha = .88$) and four animal-related words (animal, savage, primitive, and beast, $\alpha = .95$) borrowed from previous works and the literature on dirtiness and dehumanization (e.g., Douglas, 1966; Savage, 2007; Speltini & Passini, 2014; Steuter & Wills, 2010; Tipler & Ruscher, 2014).

Manipulation check. After completing the scales, participants were asked to indicate to which group they and the (fake) author of the vignette belonged. Participants selected one of two responses: (a) “de Chirico group” or (b) “Sironi group”. Furthermore, participants were asked to rate, on a 7-point scale (1 = *not at all*; 7 = *extremely*), the extent to which they perceived physical (nausea, revulsion, $r = .98$) and moral (contempt, scorn, $r = .94$) disgust toward the event described in the vignette.

Results

Preliminary Analyses

Thirteen participants were excluded from the study because they failed the group manipulation check by failing to report to which group the target belonged.

Two one-way between-subjects (disgust: physical disgust vs. moral disgust vs. non-disgusting condition) ANOVAs were conducted to analyze the effect of disgust manipulation through the vignettes on participants’ feelings of physical and moral disgust.

Physical disgust. The analysis showed a main effect of disgust manipulation, $F(2,188) = 93.73$, $p < .001$, $\eta_p^2 = .50$, indicating that participants perceived more physical disgust in the physical disgust condition ($M = 5.31$, $SD = 2.27$) rather than in the moral disgust condition ($M = 2.26$, $SD = 1.94$), $p < .001$, and in the non-disgusting condition ($M = 1.15$, $SD = 0.53$), $p < .001$. Further, participants’ mean score in the moral disgust and non-disgusting conditions differed significantly ($p = .002$).

Moral disgust. The analysis showed a main effect of disgust manipulation, $F(2,188) = 202.02$, $p < .001$, $\eta_p^2 = .68$. Participants perceived more moral disgust in the moral disgust condition ($M = 6.43$, $SD = 0.95$) rather than in the physical disgust condition ($M = 2.68$, $SD = 2.19$), $p < .001$, and in the non-disgusting condition ($M = 1.31$; $SD = 0.91$), $p < .001$. Participants’ mean score in the physical disgust and non-disgusting conditions differed significantly ($p < .001$). These results confirm that the disgust manipulation through the vignettes was successful.

Main Analyses

To analyze the effects of group membership and disgust experiences on our dependent variables (i.e., aggressive behavioral intentions and dehumanizing perceptions), we utilized two multivariate analyses of variance (MANOVA). Before conducting the MANOVAs, we performed correlation analyses to test the MANOVA assumption that the dependent variables should be lowly-to-moderately correlated (Meyers, Gamst, & Guarino, 2016; Weinfurt, 1995). Indeed, according to Meyers and colleagues (2016), MANOVA should not be used with a set of dependent variables that are either uncorrelated or very highly correlated (i.e., $r > .60$). In our research, the aggressive behavioral intentions consisted of two variables, passive harm and active harm tendencies and both variables significantly correlated with each other ($r = .35$, $p < .001$). In the same vein, the dehumanizing perceptions consisted of two variables, biologization and animalization, and both variables significantly correlated with each other ($r = .19$, $p = .01$).

Aggressive behavioral intentions. A MANOVA was conducted to analyze the effect of group membership (ingroup vs. outgroup) and disgust experiences (physical disgust vs. moral disgust vs. non-disgusting condition) on participants' aggressive behavioral intentions. In particular, we used group membership and disgust experiences as independent variables and passive harm and active harm intentions as dependent variables.

The multivariate test revealed a main effect of group membership, $\lambda = .95$, $F(1,185) = 5.01$, $p = .008$, $\eta_p^2 = .05$, a main effect of disgust, $\lambda = .32$, $F(2,185) = 70.93$, $p < .001$, $\eta_p^2 = .43$, and an interaction Group membership \times Disgust, $\lambda = .91$, $F(2,185) = 4.63$, $p = .001$, $\eta_p^2 = .05$. The univariate tests showed a significant effect of group membership and disgust on aggressive behavioral intentions. Analyses showed a main effect of group membership: $F(1,185) = 6.74$, $p = .01$, $\eta_p^2 = .03$, for passive harm intentions; $F(1,185) = 5.02$, $p = .03$, $\eta_p^2 = .03$, for active harm intentions. Participants showed more passive harm intentions when the target was described as an outgroup member ($M = 3.98$, $SD = 0.15$) rather than an ingroup member ($M = 3.40$, $SD = 0.16$). Similarly, participants showed more active harm intentions when the target was an outgroup member ($M = 3.42$, $SD = 0.14$) rather than an ingroup member ($M = 2.97$, $SD = 0.15$). The main effect of disgust was significant: $F(2,185) = 48.72$, $p < .001$, $\eta_p^2 = .34$, for passive harm intentions; $F(2,185) = 117.12$, $p < .001$, $\eta_p^2 = .56$, for active harm intentions. Participants showed more passive harm intentions in the physical disgust condition ($M = 4.77$, $SD = 0.19$) rather than in the moral disgust condition ($M = 4.13$, $SD = 0.19$), $p = .02$, and in the non-disgusting condition ($M = 2.16$, $SD = 0.19$), $p < .001$. Participants' mean score in the moral disgust and non-disgusting conditions differed significantly ($p < .001$). Further, participants showed more active harm intentions in the moral disgust condition ($M = 5.24$, $SD = 0.17$) rather than in the physical disgust condition ($M = 2.79$, $SD = 0.18$), $p < .001$, and in the non-disgusting condition ($M = 1.55$, $SD = 0.18$), $p < .001$. Participants' mean score in the physical disgust and non-disgusting conditions differed significantly ($p < .001$).

Finally, we found that Group membership \times Disgust interaction was significant: $F(2,185) = 3.90$, $p = .02$, $\eta_p^2 = .04$, for passive harm intentions; $F(2,185) = 5.53$, $p = .005$, $\eta_p^2 = .06$, for active harm intentions (see Figure 1 for passive harm intentions and Figure 2 for active harm intentions). Simple effects showed that, when the target was an ingroup member, the effect of disgust on both passive and active harm intentions was significant: $F(2,185) = 15.96$, $p < .001$, $\eta_p^2 = .15$, for passive harm intentions; $F(2,185) = 39.13$, $p < .001$, $\eta_p^2 = .30$, for active harm intentions. As reported in Table 1, when the target was an ingroup member, participants showed more passive harm tendencies in the physical and moral disgust conditions than in the non-disgusting condition ($ps < .001$). Mean scores were not different in the physical and moral disgust conditions. Furthermore, when the target was an ingroup member, participants in the moral

disgust condition showed more active harm intentions than in the physical disgust and non-disgusting conditions (all $ps < .001$). Mean scores in the physical and non-disgusting conditions did not differ ($p = .06$).

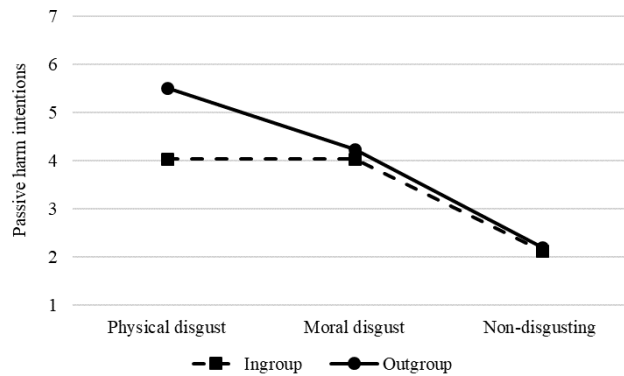


FIGURE 1

Passive harm intentions as a function of group membership (ingroup vs. outgroup) and disgust experiences (physical disgust vs. moral disgust vs. non-disgusting condition).

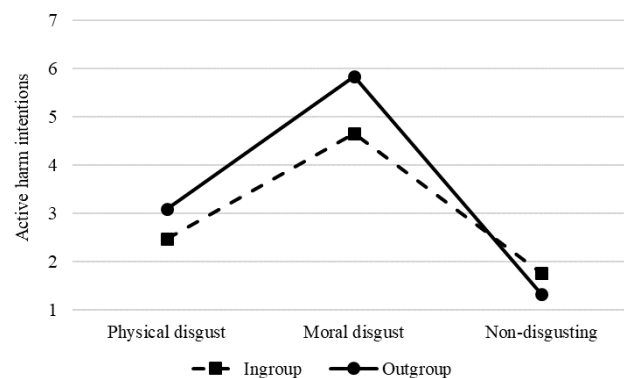


FIGURE 2

Active harm intentions as a function of group membership (ingroup vs. outgroup) and disgust experiences (physical disgust vs. moral disgust vs. non-disgusting condition).

Likewise, when the target was an outgroup member, the effect of disgust on both passive and active harm intentions was significant: $F(2,185) = 40.30$, $p < .001$, $\eta_p^2 = .30$, for passive harm intentions; $F(2,185) = 81.30$, $p < .001$, $\eta_p^2 = .47$, for active harm intentions. In line with our assumptions, in the physical disgust condition, participants showed more passive harm intentions than in the moral disgust ($p = .001$) and non-disgusting conditions ($p < .001$). Participants' mean scores in the moral disgust and non-disgusting conditions differed significantly ($p < .001$). Moreover, when the target was an outgroup member, participants in the moral disgust condition showed more active harm tendencies than in the physical disgust and non-disgusting conditions (all $ps < .001$). Participants' mean scores in the physical disgust and non-disgusting conditions differed significantly ($p < .001$).

The analysis of simple effects showed that, according to our hypotheses, in the physical disgust condition, the effect of group membership on passive harm intentions was significant, $F(1,185) = 14.12$, $p < .001$, $\eta_p^2 = .07$, whereas it was not significant on active harm intentions, $F(1,185) = 3.11$, $p = .08$. As reported in Table 1, in the physical disgust condition, participants showed more passive harm intentions to-

ward the outgroup member than toward the ingroup member ($p < .001$). Furthermore, in line with our assumptions, in the moral disgust condition, the effect of group membership on passive harm tendencies was not significant, $F < 1$, whereas the effect of group membership on active harm intentions was significant, $F(1,185) = 11.75, p = .001, \eta_p^2 = .06$: in the moral disgust condition, participants showed more active harm intentions toward the outgroup than toward the ingroup ($p = .001$). Finally, in the non-disgusting condition, the effect of group membership was not significant on either passive harm intentions, $F < 1$, or on active harm intentions, $F(1,185) = 1.56, p = .21$.

TABLE 1
 Means and standard deviations for passive and active harm intentions as a function of group membership (ingroup vs. outgroup) and disgust experiences (physical disgust vs. moral disgust vs. non-disgusting condition)

	Passive harm intentions				Active harm intentions			
	Ingroup		Outgroup		Ingroup		Outgroup	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Physical disgust	4.04 _a	0.30	5.50 _c	0.24	2.48 _{ad}	0.28	3.10 _d	0.22
Moral disgust	4.03 _a	0.26	4.23 _a	0.28	4.66 _b	0.23	5.83 _c	0.25
Non-disgusting condition	2.13 _b	0.27	2.20 _b	0.28	1.77 _a	0.25	1.33 _a	0.25

Note. The different letters, in the same row or column, indicate that the difference between the two means is significant, $p < .05$.

Dehumanizing perceptions. A MANOVA was conducted to analyze the effect of group membership (ingroup vs. outgroup) and disgust experiences (physical disgust vs. moral disgust vs. non-disgusting condition) on participants' dehumanizing perceptions of the target. We used group membership and disgust experiences as independent variables and biologization and animalization scores as dependent variables.

The multivariate test revealed a main effect of group membership, $\lambda = .86, F(1,185) = 15.33, p < .001, \eta_p^2 = .14$, a main effect of disgust, $\lambda = .43, F(2,185) = 48.89, p < .001, \eta_p^2 = .35$, and an interaction Group membership \times Disgust, $\lambda = .70, F(2,185) = 18.22, p < .001, \eta_p^2 = .16$. The univariate tests showed a significant effect of group membership and disgust on dehumanizing perceptions. Analyses showed a main effect of group membership: $F(1,185) = 6.77, p = .01, \eta_p^2 = .03$, for biologization; $F(1,185) = 29.80, p < .001, \eta_p^2 = .14$, for animalization. Participants perceived the target more as a contagious being when he/she was described as an outgroup member ($M = 2.06, SD = 0.11$) rather than an ingroup member ($M = 1.63, SD = 0.12$), $p = .01$. By the same token, participants perceived the target more as an animal when he/she was described as an outgroup member ($M = 2.68, SD = 0.13$) rather than an ingroup member ($M = 1.68, SD = 0.13$), $p < .001$. The main effect of disgust was also significant: $F(2,185) = 20.77, p < .001, \eta_p^2 = .18$, for biologization; $F(2,185) = 77.31, p < .001, \eta_p^2 = .45$, for animalization. Participants perceived the target more as a contagious being in the physical disgust condition ($M = 2.55, SD = 0.15$) than in the moral disgust condition ($M = 1.76, SD = 0.14$), $p < .001$, and in the non-disgusting condition ($M = 1.22, SD = 0.15$), $p < .001$. Participants' mean scores in the moral disgust and non-disgusting conditions differed significantly ($p = .009$). Further, participants perceived the target more as an animal in the moral disgust condition ($M = 3.76, SD = 0.16$) than in the physical disgust condition ($M = 1.67, SD = 0.16$), $p < .001$, and in the non-disgusting condition ($M = 1.11, SD = 0.16$), $p < .001$. Participants' mean score in the physical disgust and non-disgusting conditions differed significantly ($p = .01$).

Finally, we observed that the Group membership \times Disgust interaction was significant: $F(2,185) = 14.87, p < .001, \eta_p^2 = .14$, for biologization; $F(2,185) = 15.51, p < .001, \eta_p^2 = .14$, for animalization (see Figure 3 for biologization and Figure 4 for animalization).

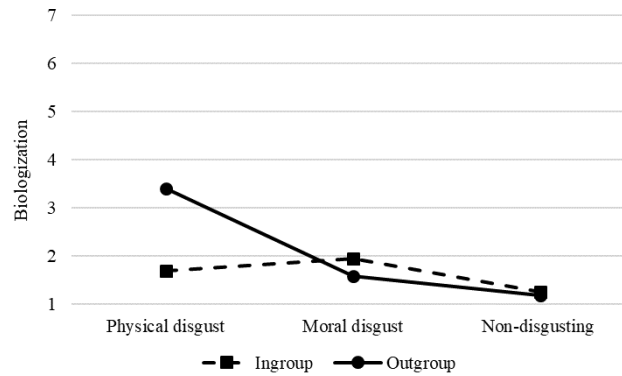


FIGURE 3
Biologization as a function of group membership (ingroup vs. outgroup) and disgust experiences (physical disgust vs. moral disgust vs. non-disgusting condition).

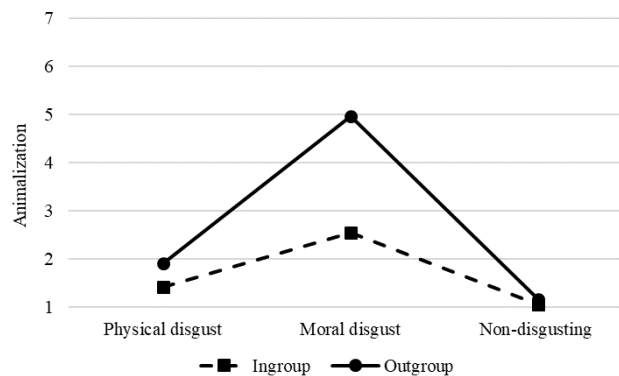


FIGURE 4
Animalization as a function of group membership (ingroup vs. outgroup) and disgust experiences (physical disgust vs. moral disgust vs. non-disgusting condition).

Analysis of simple effects showed that, when the target was an ingroup member, the effect of disgust on biologization was not significant, $F(2,185) = 2.92, p = .06$, whereas the effect of disgust on animalization was significant, $F(2,185) = 12.31, p < .001, \eta_p^2 = .12$. As reported in Table 2, when the target was an ingroup member, in the moral disgust condition, participants perceived the target more as an animal than in the physical disgust ($p = .001$) and in the non-disgusting conditions ($p < .001$). Participants' mean scores in the physical and non-disgusting conditions did not differ ($p = .30$). When the target was an outgroup member, the effect of disgust on both biologization and animalization was significant: $F(2,185) = 38.17, p < .001, \eta_p^2 = .29$, for biologization; $F(2,185) = 78.42, p < .001, \eta_p^2 = .46$, for animalization. In line with our assumptions, when the target was an outgroup member, in the physical disgust condition, participants perceived the other more as a contagious being than in the moral disgust and in the non-disgusting

conditions (all $ps < .001$). Participants' mean score in the moral disgust and non-disgusting conditions did not differ ($p = .18$). Moreover, participants in the moral disgust condition perceived the target more as an animal than in the physical disgust and in the non-disgusting conditions (all $ps < .001$). Participants' mean score in the physical disgust and non-disgusting conditions differed significantly ($p = .01$).

The analysis of simple effects showed that, according to our hypotheses, in the physical disgust condition, the effect of group membership on biologization was significant, $F(1,185) = 34.66, p < .001, \eta_p^2 = .16$, while it was not significant on animalization, $F(1,185) = 2.40, p = .12$. As reported in Table 2, in the physical disgust condition participants showed more biologization toward the outgroup member than toward the ingroup member. In line with our assumptions, in the moral disgust condition, the effect of group membership on biologization was not significant, $F(1,185) = 1.46, p = .23$, whereas the effect of group membership on animalization was significant, $F(1,185) = 59.91, p < .001, \eta_p^2 = .24$: participants showed more animalization toward the outgroup than toward the ingroup. Finally, in the non-disgusting condition, the effect of group membership was not significant either on biologization, $F < 1$, or on animalization, $F < 1$.

TABLE 2
 Means and standard deviations for biologization and animalization as a function of group membership (ingroup vs. outgroup) and disgust experiences (physical disgust vs. moral disgust vs. non-disgusting condition)

	Biologization				Animalization			
	Ingroup		Outgroup		Ingroup		Outgroup	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Physical disgust	1.69 _a	0.23	3.41 _b	0.18	1.42 _a	0.25	1.92 _a	0.20
Moral disgust	1.94 _a	0.19	1.59 _a	0.21	2.54 _b	0.21	4.97 _c	0.23
Non-disgusting condition	1.26 _a	0.20	1.19 _a	0.21	1.06 _{ad}	0.23	1.16 _d	0.23

Note. The different letters, in the same row or column, indicate that the difference between the two means is significant, $p < .05$.

DISCUSSION

The present study aimed to expand research on emotions in intergroup relations by exploring the effect of different disgust experiences on aggressive behavioral intentions and dehumanizing perceptions. In particular, for both aggressive tendencies and dehumanization, we supposed that the effect of disgust would be stronger toward the outgroup than toward the ingroup. The analysis of simple effects of group membership within disgust experiences supported our expectations for both aggressive intentions and dehumanizing perceptions. In particular, we learned that, in the physical disgust condition, participants showed more biologization and passive harm tendencies toward the outgroup member than toward the ingroup member. Additionally, in the moral disgust condition, participants showed more animalization and active harm tendencies toward the outgroup than toward the ingroup, while no significant differences emerged for the non-disgusting condition. These results are consistent with Speltini and Passini's (2014) statements about ingroup-outgroup dynamics, according to which ingroup favoritism is usually characterized by the use of dirtiness/impurity as a definition of outgroups and cleanliness/purity as a natural feature of the ingroup. Furthermore, consistent with social identity theory (Tajfel, 1981; Tajfel & Turner, 1979), there is a tendency for ingroup members to differentiate ingroups from outgroups, thus seeking ingroup superiority. Ingroup favoritism may enhance discrimination and hostile feelings and behaviors against outgroup members

(Brown, 1995): the more a group is seen as a threat to the ingroup's existence and values, the more intolerant attitudes and behaviors against the threatening group are formally and informally legitimated.

In contrast with our hypotheses, we found that disgust experiences affected aggressive intentions and dehumanization not only in reference to the outgroup but also in reference to the ingroup. In particular, simple effect analysis showed that, when the target was an ingroup member, in the disgust conditions (vs. non-disgusting condition), participants showed more passive harm tendencies, whereas, in the moral disgust condition (vs. physical disgust vs. non-disgusting condition), participants showed more animalization and more active harm intentions. These results may be explained by suggesting that group membership is a fundamental part of self-concept and, coherently, in order to protect and enhance their self-esteem, group members may be motivated to protect and enhance the positivity of their group also by distancing and denigrating the ingroup member who performs something disgusting. In other words, although the original "black sheep effect" (Marques, Yzerbyt, & Leyens, 1988), in which the negative ingroup member is evaluated worse than the negative outgroup member, was not observed in our research, it is plausible to think that we noticed a sort of "black sheep" perception in which unlikeable ingroup members who elicited disgust — a primary, innate, and strong emotion — were negatively evaluated in terms of aggressive intentions and dehumanization. According to Marques et al. (1988), a negative evaluation of dislikeable ingroup members may be an acceptable psychological strategy for preserving one's group's overall positivity. In this respect, despite the unexpected results, these findings may be considered a "sophisticated" form of ingroup favoritism.

Through the present research, we experimentally demonstrated the evolution of disgust argued by Rozin and colleagues (2008): a mechanism for avoiding harm to the body also became a mechanism for avoiding harm to the soul and the social order. Furthermore, to the best of our knowledge, we proposed the first evidence of the effect of different disgust experiences on aggressive tendencies and on biological and animalistic dehumanization in the intergroup domain. Crucially, our results expanded research on dehumanization by demonstrating that, despite some similarities, biologization and animalization are two distinct dehumanizing processes characterized by different antecedents (i.e., physical and moral disgust, respectively). In particular, our results support the idea that morality is one of the core dimensions defining human beings and perceiving others as lacking morality may have a crucial role in animalistic dehumanization (Pacilli, Rocco, Pagliaro, & Russo, 2016). Moreover, our findings confirm the importance of physical disgust and the concepts of disease and the protection of cleanliness in the biologization process (Douglas, 1966; Volpato & Andrighetto, 2015).

Regardless of the novelty of our investigation, some limitations should be considered in interpreting our findings and should guide future research. The main methodological limitation concerns the (explicit) measures employed in our study. In particular, the mean ratings of each dehumanizing perception (i.e., biologization and animalization), despite varying according to group membership and disgust manipulation, were low in all conditions, indicating a weak association of the target with virus- and animal-related words. However, it should be noted that our self-report measure may have been affected by participants' desirability concerns (e.g., Crowne & Marlowe, 1964; Nederhof, 1985). Greater associations with biological and animalistic metaphors may emerge in studies using implicit techniques, which are less susceptible to motivated responding (Gawronski & Bodenhausen, 2006).

Furthermore, considering that moral disgust is usually implicated in severe reactions, especially in combination with anger (Mackie et al., 2000; Simpson et al., 2006), it is plausible to imagine that the stronger intentions of active harm in the moral disgust condition could depend on the fact that participants also felt anger. Future research could corroborate our findings by employing different scenarios and controlling for anger feelings.

Finally, it is noteworthy that some participants ($n = 13$) were excluded from the analyses because they failed the group manipulation check. This outcome could be explained by the fact that we conducted the experiment online and thus we did not have great control over participants' attention. Laboratory studies may grant a more controlled setting.

CONCLUSIONS

The current research highlights an unexplored effect of different disgust experiences on two of the most dangerous intergroup dispositions: aggressive behavioral intentions and dehumanizing perceptions. We view the present research as a valuable starting point for future investigations that may enhance our understanding of other significant consequences of emotions and dehumanizing perceptions of others.

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