



# Sex-based and beauty-based objectification: Metadehumanization and emotional consequences among victims

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We investigated how two forms of objectification (i.e., sex- and beauty-based objectification) relate to metadehumanization (i.e., the perception of being dehumanized) and emotional consequences for victims. Capitalizing on previous research, we hypothesized that sex-based objectification would induce animalistic metadehumanization and that beauty-based objectification would induce mechanistic metadehumanization. Our four studies showed that sex-based objectification elicits stronger mechanistic metadehumanization than beauty-based objectification, which also elicits higher mechanistic metadehumanization than non-objectifying control condition. Unexpectedly, animalistic metadehumanization did not vary across conditions. These findings suggest that, consistent with the social metaphor, objectified women feel mechanistically dehumanized, independently of the objectification type faced. Sex- and beauty-based objectifications also elicit more anger but less sadness than the control condition. However, only sex-based objectification increases guilt feelings. The general discussion contrasts perpetrators' vision of objectified women to women's own experience of objectification.

Despite ongoing changes in the way women are perceived and treated, Western societies still put a strong focus on women's physical appearance (Ward, 2016). Such an attention on physical appearance conveys, among other consequences, a dehumanized vision of women. A recent study (Morris, Goldenberg, & Boyd, 2018) indeed showed that (1) when the focus is placed on women's general appearance and beauty, people perceive them as passive, unemotional, and non-agentic objects (i.e., express mechanistic dehumanization), and (2) when the focus is more specific and restricted to women's sexual body parts and

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functions, people perceive them as immoral, coarse, and instinctive animals (i.e., express animalistic dehumanization). These two visions are clear and distinct in observers' perspective, but we do not know how the victims, that is women, react to the differential focus placed in interpersonal interactions on their general beauty versus their sexual body parts. Here, we take such an endeavour and examine women's experiences of being dehumanized, that is metadehumanization (Kteily, Hodson, & Bruneau, 2016).

### ***Dehumanized perceptions and appearance focus***

Dehumanization has received exponential attention in the last two decades (Haslam & Loughnan, 2014; Moradi, 2013). According to Haslam's framework (Haslam, 2006; Haslam & Loughnan, 2014), humanness encompasses two dimensions: Human Nature (HN) and Human Uniqueness (HU). Mechanistic dehumanization occurs when people are denied HN characteristics (e.g., interpersonal warmth, emotionality, agency, depth). The denial of HN leads to the perception of individuals as object- or robot-like. In contrast, animalistic dehumanization occurs when people are denied HU characteristics (e.g., civility, refinement, morality, maturity, high-order cognitive processes) distinguishing them from animals. The denial of HU leads to the perception of individuals as animal- or child-like.

In 1995, Nussbaum suggested that the focus on a woman's physical appearance would drive people to perceive her as a dehumanized object (i.e., mechanistic dehumanization). Empirical evidence backed up this theoretical proposition, showing that (1) sexualized women (i.e., wearing swimsuits rather than sweaters) are cognitively processed as objects rather than humans (Bernard, Gervais, Allen, Campomizzi, & Klein, 2012); (2) writing an essay on a woman's physical appearance (vs. on the person as a whole) leads to lesser HN attributions (Heflick & Goldenberg, 2009) and decreases warmth and competence attributions (Heflick, Goldenberg, Cooper, & Puvia, 2011), confirming that a focus on women's physical appearance elicits mechanistic dehumanization.

A physical focus can also lead to animalistic dehumanization of women, as sexualized women are attributed less HU traits (e.g., civility or refinement; Bongiorno, Bain, & Haslam, 2013). At an implicit level, Vaes, Paladino, and Puvia (2011), using a Single-Category Implicit Association Task, found that images of sexualized women (vs. non-sexualized ones) are more associated with animal-related words than human-related ones.

In sum, focusing on women's physical appearance can lead to mechanistic or animalistic dehumanization. Recently, Morris and Goldenberg (2015) proposed to distinguish beauty- and sex-based objectifications, to account for these differential effects on the two dehumanization forms. Beauty-based objectification refers to a focus on general physical appearance and beauty, while sex-based objectification refers to a restricted focus on sexual body parts and functions. These authors noted that studies linking objectification and *mechanistic* dehumanization mostly elicited objectification through a general focus on physical appearance and beauty. In contrast, studies linking objectification and *animalistic* dehumanization mostly manipulated objectification through sexualization of targets. According to Morris and Goldenberg (2015), such a focus on sexual body parts and functions leads to animalistic dehumanization because sexuality is associated with the animal nature (Goldenberg, Cox, Pyszczynski, Greenberg, & Solomon, 2002). In contrast, the authors also indicate the fact that other scholars envisage women's body as objects of beauty (Langton, 2009) and that such focus on women's beauty is expected to reduce perceived warmth, emotionality and agency.

Morris and Goldenberg thus hypothesized that while beauty-based objectification should lead to a perception of women as superficial, lacking interpersonal warmth,

emotionality and agency (i.e., mechanistic dehumanization), sex-based objectification should prone a perception of women as lacking civility, refinement, and morality (i.e., animalistic dehumanization). This theoretical assumption was tested and validated in three studies involving multiple objectification manipulations (Morris et al., 2018).

### ***Perceiving a focus on one's physical appearance: Metadehumanization***

Evidence thus points to different dehumanization types elicited when the focus on physical appearance is general versus specific to sexual body parts. Yet, much less is known regarding how women react to these differential treatments and, more particularly, how they believe they are viewed by the perceiver. In the present paper, we investigate targets' perceptions of being the victim of a dehumanizing treatment, that is metadehumanization (Kteily et al., 2016).<sup>1</sup>

Metadehumanization increases following interpersonal maltreatments. For instance, social ostracism, betrayal or humiliation (Bastian & Haslam, 2011), lack of support (Caesens, Stinglhamber, Demoulin, & De Wilde, 2017), reduced intragroup respect (Renger, Mommert, Renger, & Simon, 2016), and powerlessness (Yang, Jin, He, Fan, & Zhu, 2015) have been found as antecedents of metadehumanization. In terms of consequences, metadehumanization generates a vicious circle of dehumanization (i.e., being confronted to dehumanization facilitates reciprocal dehumanization feelings towards the perpetrator), as well as aggressive reactions (Kteily et al., 2016), and reduced well-being (Caesens et al., 2017). Bastian and Haslam (2011) also found that animalistic and mechanistic metadehumanizations trigger differential cognitive and emotional reactions among victims: animalistic metadehumanization leads to aversive self-awareness and feelings of guilt, while mechanistic metadehumanization triggers cognitive deconstruction states, anger, and sadness. A partial replication of these results (Zhang, Chan, Xia, Tian, & Zhu, 2017) showed that mechanistically dehumanized participants express higher cognitive deconstruction states and sadness (but not anger), while animalistic dehumanization generate higher guilt and sadness.

Metadehumanization has thus widespread consequences and mostly occurs when people face interpersonal maltreatments. Because objectification is one of the most prominent and pervasive form of gender discrimination (Holland, Koval, Stratemeyer, Thomson, & Haslam, 2017; Koval et al., 2019; Swim, Hyers, Cohen, & Ferguson, 2001), it constitutes interpersonal maltreatment and, consequently, should trigger metadehumanization among victims.

Yet, if the focus on physical appearance can generate metadehumanization, the question remains as to what form of metadehumanization it triggers. Here, we apply Morris and Goldenberg's reasoning to metadehumanization. Consistent with the perpetrator's side, we propose that victims' reactions to an observer's focus on their general beauty vs. sexual body parts would elicit different metadehumanization types: mechanistic metadehumanization should be reported when facing a focus on their general physical appearance and beauty, while animalistic metadehumanization should be observed when the focus is on sexual body parts and functions.

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<sup>1</sup> We insist that metadehumanization and self-dehumanization are different concepts: if meta-dehumanization is defined as the targets' perceptions of being dehumanized (i.e., attribution of human characteristics by others), self-dehumanization is defined as targets' perceptions about his/her own humanity (i.e., self-attribution of human characteristics). We focus here on metadehumanization processes.

Further, in line with previous findings (Bastian & Haslam, 2011; Zhang et al., 2017), we hypothesize that metadehumanization types should lead to differential emotional reactions: beauty-based objectification (by increasing mechanistic metadehumanization) should trigger anger and sadness, while sex-based objectification (by increasing animalistic metadehumanization) should trigger guilt. We thus propose that mechanistic and animalistic metadehumanization would mediate the effects of beauty and sex-based objectification practices, respectively, which in turn would respectively promote anger/sadness or guilt.

### **Overview of the studies**

In a series of four studies, we examine the influence of beauty- and sex-based objectification on women's mechanistic and animalistic metadehumanization, together with their emotional reactions. Our studies manipulated objectification through autobiographical recall. While Study 1 ( $N = 195$ ) was designed to test our general hypotheses, Study 2 ( $N = 160$ ) was conducted to account for a methodological limitation of Study 1 and to replicate unexpected findings. Studies 3a-b present pre-registered replications of Studies 1-2.

## **STUDY 1**

### **Method**

#### **Participants**

One hundred and ninety-five women were recruited through social networks. As part of her master thesis, a student posted the link of the study on her Facebook profile, asking their Facebook female friends to help her to collect data through the completion of the questionnaire. Participants of this study were French-native speakers. Two participants were withdrawn from analyses because they did not report objectification experiences. Analyses were conducted on 193 participants. Their age ranged from 18 to 64 years ( $M = 29.09$ ;  $SD = 10$ ). Participants were randomly assigned to one of the three conditions (sex-based,  $n = 70$ ; beauty-based,  $n = 60$ ; control,  $n = 63$ ).<sup>2</sup>

#### **Procedure and materials**

##### *Autobiographical recall*

Participants had to recall a memory during which someone objectified them, either in a sex-based or in a beauty-based way. In the control condition, they reported an event in which they were considered through a specific feminine personality trait. Instructions in the sex-based objectification condition were: 'Sometimes, women are faced with situations in which they are considered only through the sexual parts and functions of their bodies. They are considered as objects designed to satisfy the needs and sexual desires of others. The gaze of others is then focused on the sexual and/or sexualized parts of their bodies, without considering their person as a whole'. In the beauty-based objectification condition, instructions were: 'Sometimes, women are faced with situations in which they are considered only through their physical appearance. They

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<sup>2</sup>Unequal number of participants between conditions was due to partial completions of participants after effective randomization.

are considered as trophy women or objects of decoration pleasant to look at. The gaze of others then focused on their general physical appearance, without considering their person as a whole'. In the control condition, participants read the following instructions: 'Sometimes, women are faced with situations in which they are considered only through one specific feminine trait of their personality. The attention of others then focused on this specific trait, without considering their person as a whole'. Participants had to report a situation using minimum 10 lines and to describe the event and their related feelings in a way that a reader could easily imagine them.

### *Metadehumanization*

Participants estimated their animalistic and mechanistic metadehumanization levels during the event. We adapted and used the 16 items of Demoulin et al. (2020)'s studies. For instance, items such as 'The other treated me as if I was under-evolved' assessed animalistic form of metadehumanization, whereas items such as 'The other treated me if I was mechanical and cold, like a robot' assessed mechanistic form of metadehumanization. For each item, participants indicated their levels of agreement on a 7-point Likert-type scale ranging from 1 ('Strongly disagree') to 7 ('Strongly agree'). All items are presented as Supplementary Material.

### *Emotions*

Participants indicated how much they felt anger, sadness, and guilt during the recalled situation. We used scales from the Positive and Negative Affect Schedule ranging from 1 ('Not at all') to 7 ('Extremely') (Watson & Clark, 1999). Six items measured anger, four items measured sadness,<sup>3</sup> and six items assessed guilt.

## **Results**

### ***Preliminary analyses***

Principal components analyses were conducted on metadehumanization items. Exploratory factorial analysis revealed two factors explaining 53.69% of variance: one related to animalistic metadehumanization and the other to mechanistic metadehumanization. Although some items cross-loaded, the two-factor solution is satisfactory and corresponds to the two *a priori* dimensions of metadehumanization. We therefore averaged the eight animalistic metadehumanization items into one index ( $\alpha = .87$ ) and the eight mechanistic metadehumanization items into another ( $\alpha = .85$ ).<sup>4</sup>

### ***Main analyses***

#### *Descriptives*

Means, standard deviations, Cronbach alphas, and correlations are reported in the Table S1 (see Supplementary Materials). Animalistic and mechanistic metadehumanization

<sup>3</sup> The scale measuring feelings of sadness initially contained 5 items. However, the scale was translated in French for this first study and the translation was identical for the items 'alone' and 'lonely'. We decided to use only the item 'seule' in French to substitute both the English items.

<sup>4</sup> Results were identical when taking out cross-loading items. Results without these items are available via the link [https://osf.io/9zj7a/?view\\_only=ccb54549483f42108ac468e7c641a3d3](https://osf.io/9zj7a/?view_only=ccb54549483f42108ac468e7c641a3d3).

positively correlated. Both also positively correlated with anger, sadness, and guilt. Inconsistent with Bastian and Haslam (2011) and Zhang et al. (2017)'s results, these correlations did not indicate a preferential association of animalistic metadehumanization with guilt and sadness or of mechanistic metadehumanization with sadness and anger.

### Metadehumanization

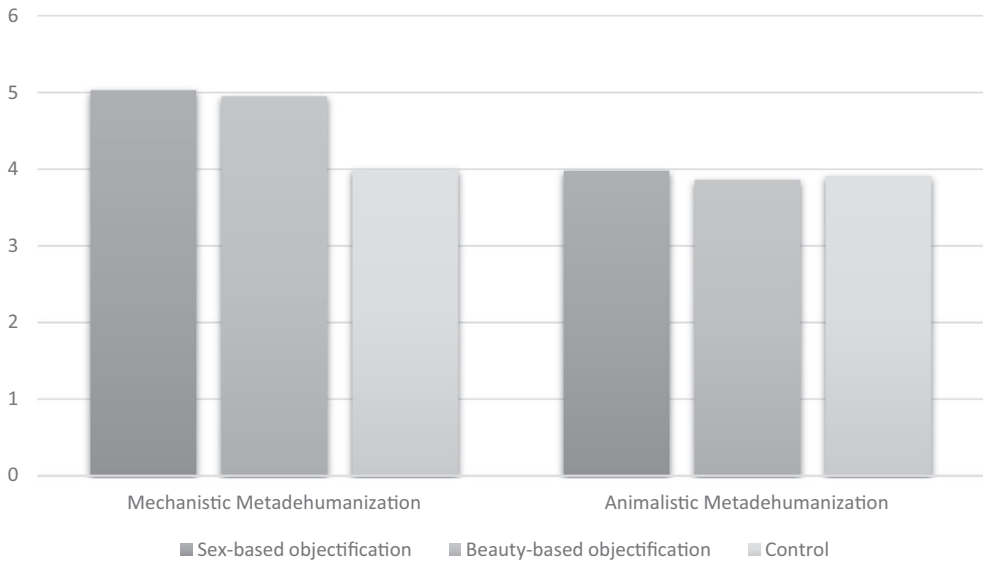
We conducted a 3 [conditions (sex-based vs. beauty-based vs. control) as between-subject factor]  $\times$  2 [metadehumanization (animalistic vs. mechanistic) as within-subject factor] mixed ANOVA. The main effects of condition [ $F(2, 190) = 3.59, p = .02, \eta_p^2 = .03$ ] and metadehumanization [ $F(1, 190) = 81.30, p < .001, \eta_p^2 = .30$ ] were significant, as (1) metadehumanization varies as function of condition and (2) mechanistic metadehumanization ( $M = 4.67$ ) was higher than animalistic metadehumanization ( $M = 3.92$ ). Importantly, the one-way interaction was also significant,  $F(2, 190) = 15.79, p < .001, \eta_p^2 = .14$ .

Regressions analyses were then conducted. Orthogonal contrasts were used: Contrast 1 (C1) opposed the sex-based objectification condition (coded 1) to the beauty-based objectification one (coded -1), with the control condition coded 0; Contrast 2 (C2) opposed the two experimental conditions (i.e., sex-based and beauty-based objectification, both coded -1) to the control condition (coded 2). We first regressed animalistic metadehumanization on C1 and C2. Results showed that our manipulation did not affect animalistic dehumanization: sex-based objectification did not elicit higher levels of animalistic metadehumanization compared to beauty-based objectification, C1:  $\beta = .059, t = .46, p = .64$ . In addition, participants in the experimental conditions did not express higher levels of animalistic metadehumanization compared to the control condition, C2:  $\beta = -.002, t = -.02, p = .98$ .

Secondly, we regressed perceptions of mechanistic dehumanization on C1 and C2. Results showed that C1 was not significant. Beauty-based objectification did not lead participants to report higher levels of mechanistic metadehumanization compared to sex-based objectification, C1:  $\beta = .04, t = .35, p = .72$ . Interestingly, however, C2 proved to be significant. Experimental conditions (i.e.,  $M = 5.03, SD = 1.35; M = 4.95, SD = 1.22$  for sex- and beauty-based objectification, respectively) elicited higher levels of mechanistic dehumanization than the control condition ( $M = 4.00, SD = 1.28$ ),  $\beta = -.331, t = -4.98, p < .001, \eta_p^2 = .11$  (Figure 1). Insofar as we did not conduct a priori power analysis to determine our sample size, we decided to conduct power analysis after data collection using G\*Power to check whether our sample size was large enough to detect an effect of objectification experiences on mechanistic metadehumanization. Based on the transformation of the eta squared we found (i.e.,  $\eta_p^2 = .11$ ), we set the effect size  $f$  at .35 and  $\alpha$  at .05. The analysis showed that the power to detect an effect size  $f$  of .35 was .99.

### Emotions

We regressed anger, sadness, and guilt on C1 and C2. The regression of guilt on C1 and C2 indicates that only C1 reached significance. Sex-based objectification ( $M = 3.15, SD = 2.09$ ) led participants to report higher guilt feelings compared to beauty-based objectification ( $M = 2.37, SD = 1.53$ ),  $\beta = .391, t = 2.58, p = .01, \eta_p^2 = .03$ . No other differences emerged on emotional states (i.e., anger or sadness did not differ as a function of C1 or C2). Given this general absence of results and the non-significant effect of C1 on metadehumanization, we did not analyse the hypothesized mediation models.



**Figure 1.** Means and standard errors of mechanistic and animalistic metadephumanization across conditions (Study 1).

## Discussion

Study 1's results showed little convergence with our initial hypotheses. First, no difference whatsoever was observed on animalistic metadephumanization across the three conditions. Second, sex-based and beauty-based objectification did not differ regarding mechanistic metadephumanization. Importantly, however, both forms of objectification led women to experience mechanistic metadephumanization. This result might reflect widespread metaphors in society according to which women are assimilated to objects of men's desires (Papadaki, 2010). If replicated, this result would suggest that although sexualized women are dehumanized in an animalistic way, their experience of being targeted by sexual gazes translates in mechanistic metadephumanization.

Third, regarding emotions, only sex-based objectification increased guilt feelings among women. This suggests that participants assume some responsibility for the sexual objectification behaviours they endure. To the extent that sex-based objectification experiences might include instances of unwanted sexual contacts, the latter finding is reminiscent of data showing that victims of rape often report some feelings of responsibility towards these traumatic events (Donde, 2017; Finkelson & Oswald, 1995).

This first study is not without limitations. First, we did not include a manipulation check, the absence of significant results thus potentially being the mere consequence of manipulation failure. Second, metadephumanization levels in the control condition were unexpectedly high. In this condition, participants had to report an event in which someone focused on a specific feminine trait of their personality without considering their individuality. Such instructions might have triggered metadephumanization feelings given the reductive aspect of the provided instructions to one's femininity.

## STUDY 2

Study 2 aimed to replicate the unexpected findings of Study 1 in an *a priori* hypothetical design and to alleviate methodological weaknesses by adding manipulation and attentional checks, as well as by modifying the control condition. Moreover, in order to strengthen our result, Study 2 was conducted with English-native speakers.

### Method

#### Participants

One hundred and sixty female participants were recruited on the crowdsourcing platform Prolific Academic. Data from 12 participants were excluded because they did not correctly answer the attentional checks (i.e., 'It is important that you pay attention to our survey. Please tick "Strongly agree" for this statement'). The final sample was composed of 148 female participants ( $M = 32.82$ ;  $SD = 11.81$ ). Participants were randomly assigned to one of the three conditions (sex-based,  $n = 55$ ; beauty-based,  $n = 43$ ; control,  $n = 50$ ).

#### Procedure and materials

##### Autobiographical recall

Similar to the first study, participants had to recall a situation in which they were objectified in a sex-based or in a beauty-based way. In the control condition, participants were asked to report a situation in which they were 'considered through one specific trait of their personality'. That is, we eliminated references to their femininity.

##### Manipulation check

Participants indicated on what specific part of their self the person focused on during the situation they recalled. They had to tick one of the following three options: their beauty, their sexual body parts, neither of them.<sup>5</sup>

##### Metadehumanization and emotions

We used the same scales as in Study 1 to assess mechanistic ( $\alpha = .90$ ) and animalistic ( $\alpha = .86$ ) metadehumanization as well as participants' emotions (anger,  $\alpha = .88$ ; sadness,  $\alpha = .88$ ; guilt,  $\alpha = .91$ ). All factorial analyses conducted on these scales replicated Study 1's findings and are available as Supplementary Material.

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<sup>5</sup> We decided to keep the entire sample in the reported analyses because of an important drop of participants who failed to 'correctly' answer to the manipulation check as a function of their experimental condition assignment. In particular, 21 participants failed to identify beauty-based objectification as a focus on their general physical appearance in the manipulation check, which would have left only 22 participants in the beauty-based objectification condition. Among these 21 participants, 19 indicated that the other person focused on their sexual body parts and 2 indicated that the other person focused neither on their beauty, nor on their sexual body parts. Importantly, however, results on mechanistic metadehumanization remained identical whether we drop or keep these participants: C1:  $\beta = .325$ ,  $t = -2.09$ ,  $p = .039$ , C2:  $\beta = -.503$ ,  $t = -6.04$ ,  $p < .001$ . The pattern of significance remained the same for both anger and sadness. Only results on animalistic metadehumanization and guilt differed slightly when we did not take into account participants who 'failed' to correctly complete the manipulation check according to their condition. In particular, for animalistic metadehumanization, C2 reached significance, C2:  $\beta = -.225$ ,  $t = -2.21$ ,  $p = .029$ , whereas C1 remained non-significant. For guilt, C1 did not reach significance,  $\beta = .122$ ,  $t = .82$ ,  $p = .410$  and C2 remained non-significant. This problem will be addressed in the general discussion.



## Results

### Descriptives

Means, standard deviations, Cronbach alphas, and correlations between metadehumanization and emotions are reported in the Table S2. Both forms of metadehumanization are strongly correlated with one another and, as in Study 1, both forms positively correlated with anger, sadness, and guilt.

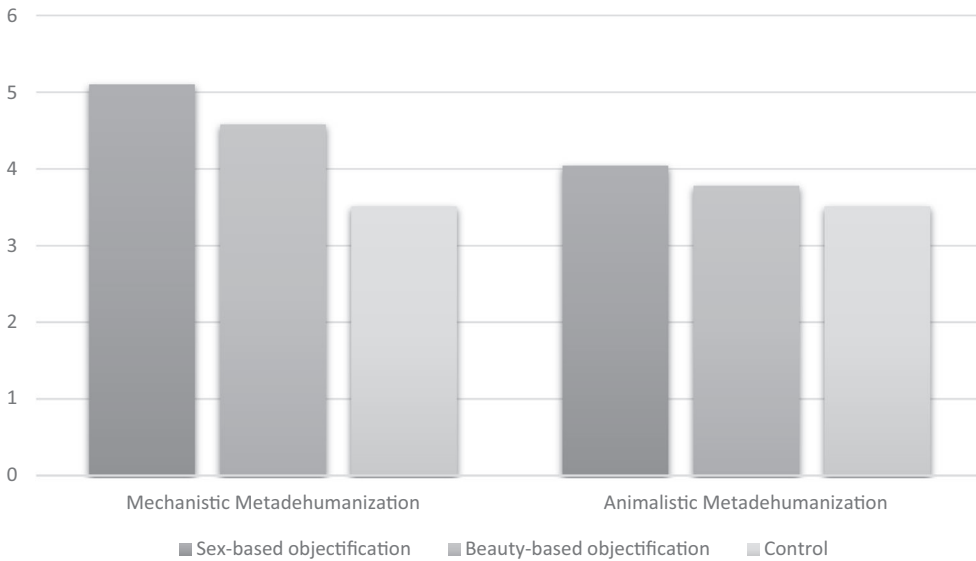
### Metadehumanization

A 3 (conditions: sex-based vs. beauty-based vs. control)  $\times$  2 (metadehumanizations: animalistic vs. mechanistic) mixed ANOVA was conducted with the later factor varying within subjects. Results revealed (1) a main effect of condition, [ $F(2, 145) = 9.78, p < .001, \eta_p^2 = .11$ ], showing that metadehumanization varies as function of condition and (2) a main effect of metadehumanization, [ $F(1, 145) = 52.53, p < .001, \eta_p^2 = .26$ ], showing that mechanistic metadehumanization ( $M = 4.41$ ) was higher than animalistic metadehumanization ( $M = 3.75$ ). The one-way interaction was also significant,  $F(2, 145) = 12.03, p < .001, \eta_p^2 = .14$ .

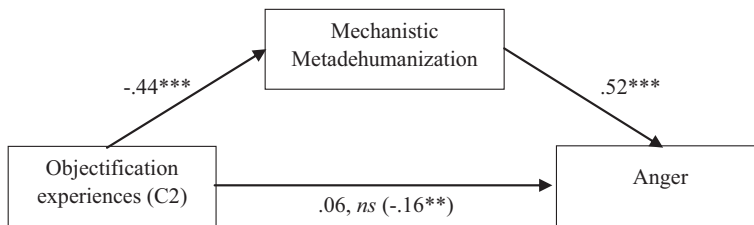
We used the same contrast coding as in Study 1 for regression analyses. We regressed animalistic metadehumanization on C1 and C2. As in Study 1, no contrast reached significance, C1:  $\beta = .174, t = 1.13, p = .26$  & C2:  $\beta = -.142, t = -1.61, p = .10$ . Regarding mechanistic metadehumanization, and in line with Study 1, C2 proved significant showing that the two experimental conditions (i.e., sex-based and beauty-based objectification,  $M = 5.10, SD = 1.08; M = 4.57, SD = 1.21$ , respectively) elicited higher levels of mechanistic metadehumanization compared to the control condition ( $M = 3.50, SD = 1.45$ ), C2:  $\beta = -.445, t = -6.09, p < .001, \eta_p^2 = .20$ . As for Study 1, we conducted power analysis after data collection to find out if our sample was large enough to detect the effect of objectification experiences on mechanistic metadehumanization. After completion of the required parameters, effect size  $f = .50$  and  $\alpha = .05$ , the analysis showed that the power to detect a medium-effect size  $f$  of .50 was .99. In addition, results revealed here that sex-based objectification ( $M = 5.10, SD = 1.08$ ) led to higher levels of mechanistic metadehumanization compared to beauty-based objectification ( $M = 4.57, SD = 1.21$ ), C1:  $\beta = .267, t = 2.08, p = .03, \eta_p^2 = .02$ . Mean differences on mechanistic metadehumanization across conditions are represented in Figure 2.

### Emotions

We regressed emotional states on C1 and C2. As in Study 1, participants reported higher levels of guilt following sex-based objectification ( $M = 2.47, SD = 1.23$ ) compared to beauty-based objectification ( $M = 1.89, SD = .99$ ), C1:  $\beta = .289, t = 2.45, p = .01, \eta_p^2 = .03$ . However, participants did not report higher levels of guilt in the experimental conditions compared to the control one, C2:  $\beta = .042, t = .624, p = .53$ . Second, participants reported similar levels of anger in sex- and beauty-based objectification conditions, C1:  $\beta = .023, t = .21, p = .83$ . Interestingly, analyses also revealed that experimental conditions (i.e., sex- and beauty-based objectification,  $M = 2.98, SD = 1.08; M = 2.93, SD = 1.04$ , respectively) led participants to report higher levels of anger compared to the control condition ( $M = 2.45, SD = 1.14$ ), C2:  $\beta = -.169, t = -2.66, p = .008, \eta_p^2 = .04$ . Third, as in Study 1, feelings of sadness did not vary across conditions, C1:  $\beta = .058, t = .47, p = .63$ ; C2:  $\beta = .016, t = .23, p = .81$ .



**Figure 2.** Means and standard errors of mechanistic and animalistic metadehumanization across conditions (Study 2).



**Figure 3.** Mechanistic metadehumanization mediates the relationship between sex- and beauty-based objectification experiences and anger while controlling for C1. \*\*\* $p < .001$ , \*\* $p < .01$ .

**Mediation**

In line with Bastian and Haslam (2011) and the results reported above, we first tested the mediating role of mechanistic metadehumanization in the relationship between objectification experiences and anger. We tested this mediation using bootstrap analyses (Hayes, 2013; macro PROCESS, model 4; resample = 5,000 iterations)<sup>6</sup>. Hence, we entered C2 as a predictor (while C1 was entered as a covariate), mechanistic metadehumanization as a mediator, and anger as the outcome variable. As presented in Figure 3, the effects of objectification treatments on anger are fully mediated by mechanistic metadehumanization, indirect effect =  $-.23$ , 95% CI =  $[-0.33; -0.14]$ .

In addition, for exploratory purposes, we also regressed guilt on mechanistic metadehumanization and C1 (while controlling for C2). Indeed, despite that previous

<sup>6</sup> For further information on mediation analyses with multicategorical independent variables, you may refer to Judd, McClelland, & Ryan, 2009 (see also, Hayes & Preacher, 2013).

studies did not find relation between mechanistic metadehumanization and guilt, our results indicate that sex-based objectification leads to higher levels of mechanistic metadehumanization and guilt feelings compared to beauty-based objectification. Hence, we entered C1 as a predictor (while C2 was entered as a covariate), mechanistic metadehumanization as a mediator, and guilt as the outcome variable. Results showed that the effects of sex-based (vs. beauty-based) objectification on guilt are fully mediated by mechanistic metadehumanization, indirect effect = .08, 95% CI = [0.01; 0.17] (Figure 4).

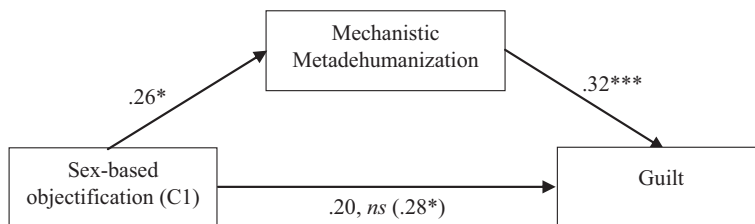
## Discussion

Overall, Study 2 replicates Study 1, particularly as participants did not report different levels of animalistic metadehumanization while they reported higher levels of mechanistic metadehumanization in objectifying situations, compared to the control condition. However, here, sex-based objectification led to higher levels of mechanistic metadehumanization than beauty-based objectification.

Considering emotions, this study also replicates results highlighted in Study 1, being objectified in a sex-based way leads to report more guilt than being objectified in a beauty-based manner. This effect is fully mediated by mechanistic metadehumanization. These results contrast with previous ones (Bastian & Haslam, 2011; Zhang et al., 2017) showing that guilt is induced by increased animalistic metadehumanization. In addition, in Study 2, both forms of objectification induced anger and these effects were fully mediated by mechanistic metadehumanization. Such findings are in line with Bastian and Haslam's results, evidencing that mechanistic metadehumanization relates to increased anger.

One aim of Study 2 was to use a more appropriate, less dehumanizing, control condition. We thus eliminated references to feminine traits, asking participants to recall a situation in which they were apprehended by others through one unspecified personality trait. Although, descriptively, metadehumanization scores were reduced in Study 2 as compared to Study 1, these scores remained higher than expected. As objectification has been defined as the reduction of one's whole to some part of the self (e.g., Nussbaum, 1995), this relatively high level of metadehumanization might result from participants' feelings that even a reduction to one specific personality trait is partly dehumanizing.

In order to strengthen our results and further test our proposals, two complementary pre-registered studies addressed the two main inconsistencies highlighted between Studies 1–2, namely whether (1) sex-based objectification elicits higher levels of



**Figure 4.** Mechanistic metadehumanization mediates the relationship between sex-based objectification and guilt while controlling for C2. \*\*\* $p < .001$  \* $p < .05$ .

mechanistic metadehumanization than beauty-based objectification; (2) objectification conditions elicit higher levels of anger than control condition.

## STUDIES 3A-B

The pre-registrations of Studies 3a-b are available on Open Science Framework (OSF) at: <https://osf.io/u29tr> (Study 3a) and <https://osf.io/pckuq> (Study 3b). We used the same procedure and measures as in Studies 1-2.<sup>7</sup>

## Method

### Power analyses and participants

We ran a priori power analyses based on the effect size related to the regression of mechanistic metadehumanization on C1 and C2. Considering the lowest partial eta squared found in the two previous studies (i.e.,  $\eta^2_p = .11$ , in Study 1), G\*Power recommended to recruit 108 participants to provide at least 95% of statistical power. We added 8% of participants to this initial sample size because failure in attentional check questions in Study 2 constrained us to drop 7,5% of our participants. We recruited 115 (Study 3a) and 124 (Study 3b) participants on Prolific Academic.<sup>8</sup> We dropped out data from participants who failed at attentional checks. Hence, the final samples were composed of 111 participants aged from 18 to 65 years old in Study 3a ( $M = 35.95$ ;  $SD = 11.61$ ) and 118 participants aged from 18 to 65 years old in Study 3b ( $M = 35.15$ ;  $SD = 12.35$ ). Participants were randomly assigned to each condition.

### Procedure and materials

Manipulation procedures and scales were the same as in Study 2. Here again, despite some failures in the manipulation check, we decided to keep the entire sample of participants in both studies.<sup>9,10</sup> Results of factorial analyses are available as Supplementary Material.

<sup>7</sup> In Studies 3a and 3b, we also investigate the cognitive consequences of metadehumanization (i.e., aversive self-awareness and cognitive deconstruction states, Bastian & Haslam, 2011; Zhang et al., 2017). Based on Bastian and Haslam (2011) and Zhang et al. (2017)'s results, we hypothesized that mechanistic metadehumanization would increase cognitive deconstructive states. Insofar as we did not obtain any results on these variables, we reported correlations between cognitive consequences and metadehumanization in the Supplementary Material section.

<sup>8</sup> Participants who took part in Study 2 were not allowed to complete Study 3a and participants who complete Studies 2–3a were not allowed to complete Study 3b.

<sup>9</sup> In Study 3a, in the sex-based objectification condition, 28 participants indicated a focus on their sexual body parts, 6 indicated a focus on their general physical appearance and 1 'neither of them', whereas in the beauty-based objectification, 16 reported that the other person focuses on their sexual body parts, 15 reported a focus on their general physical appearance, and 7 ticked 'neither of them'. Despite this, results on mechanistic metadehumanization remain identical when dropping the participants who 'failed' at the manipulation check question: C1:  $\beta = .168$ ,  $t = .81$ ,  $p = .41$ , C2:  $\beta = -.505$ ,  $t = -4.91$ ,  $p < .001$ . The pattern of significance remained the same for both guilt and anger. However, when animalistic metadehumanization was regressed on C1 and C2, C2 reached significance (C2:  $\beta = -.253$ ,  $t = -2.21$ ,  $p = .03$ ), whereas C1 remained non-significant. Regarding sadness, C2 did not reach significance when we took into account only participants who ticked the right option according to their condition in the manipulation check question, C2:  $\beta = .114$ ,  $t = 1.15$ ,  $p = .253$ .

<sup>10</sup> In Study 3b, in the sex-based objectification condition: 30 participants indicated a focus on their sexual body parts, 4 indicated a focus on their general physical appearance, and 6 'neither of them', whereas in the beauty-based objectification, 11 reported that the other person focuses on their sexual body parts, 21 reported a focus on their general physical appearance, and 7 ticked 'neither of them'. Despite this, we still observed more mechanistic metadehumanization in the objectification conditions compared to the control condition, C2:  $\beta = -.411$ ,  $t = -4.57$ ,  $p < .001$ . However, the difference between sex- and beauty-based objectification in mechanistic metadehumanization does not reach significance, C1:  $\beta = .276$ ,  $t = 1.61$ ,  $p = .11$ . The results for animalistic metadehumanization and emotions remained the same.

## Results

### Descriptive

Means, standard deviations, Cronbach alphas, and correlations between metadephumanization and emotions are reported in the Table S3 and S5. As in previous studies, metadephumanization forms were positively correlated. In terms of emotions, both forms correlated positively with anger, sadness, and guilt in Study 3b, but in Study 3a, mechanistic metadephumanization only related to anger while animalistic metadephumanization correlated with all three emotions.

### Metadephumanization

We conducted a mixed ANOVA using a 3 [conditions (sex-based vs. beauty-based vs. control) as between-subject factor]  $\times$  2 [metadephumanization (animalistic vs. mechanistic) as within-subject factor] mixed ANOVA. For both studies, results revealed a main effect of condition (Study 3a:  $F(2, 108) = 7.65, p = .001, \eta_p^2 = .12$ ; Study 3b :  $F(2, 115) = 4.5, p = .013, \eta_p^2 = .07$ ), showing that metadephumanization varies as function of condition. We also found a main effect of metadephumanization (Study 3a:  $F(1, 108) = 55.03, p < .001, \eta_p^2 = .33$ ; Study 3b :  $F(1, 115) = 26.82, p < .001, \eta_p^2 = .18$ ), as in previous studies, participants reported more mechanistic metadephumanization compared to animalistic metadephumanization. The one-way interaction also reached significance (Study 3a:  $F(2, 108) = 6.54, p = .002, \eta_p^2 = .10$ ; Study 3b :  $F(2, 115) = 19.11, p < .001, \eta_p^2 = .25$ ).

We then conducted regression analyses with the same contrast coding as previous studies. For reasons of clarity, means of dependent variables for each condition are reported in Table 1. Animalistic metadephumanization was regressed on C1 and C2. As in previous studies, animalistic metadephumanization did not vary across conditions (Study 3a: C1:  $\beta = .129, t = .773, p = .44$  & C2:  $\beta = -.161, t = -1.70, p = .09$ ; Study 3b: C1:  $\beta = .06, t = .43, p = .66$  & C2:  $\beta = .042, t = .505, p = .61$ ).

Then, we regressed mechanistic metadephumanization on C1 and C2. Analyses revealed that mechanistic metadephumanization levels were higher in the two experimental conditions compared to the control one, Study 3a: C2:  $\beta = -.457, t = -5.34, p < .001, \eta_p^2 = .20$ ; Study 3b: C2:  $\beta = -.413, t = -5.31, p < .001, \eta_p^2 = .19$ . Results between Studies 3a and 3b diverge on C1. In Study 3a, mechanistic metadephumanization

**Table 1.** Descriptive statistics: Descriptive statistics in each condition in Study 3a and Study 3b

	Study 3a						Study 3b					
	Sex-based		Beauty-based		Control		Sex-based		Beauty-based		Control	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Animalistic metadephumanization	3.97	1.33	3.71	1.22	3.35	1.65	3.85	1.22	3.73	1.26	3.92	1.30
Mechanistic metadephumanization	5.11	0.96	4.89	1.13	3.63	1.62	5.09	1.05	4.52	1.23	3.57	1.27
Anger	2.85	1.09	3.17	1	2.63	1.12	3.23	1.18	2.56	1.06	2.81	1.12
Sadness	2.82	1.33	2.80	1.15	3.28	1.07	2.52	1.15	2.84	1.13	3.12	1.06
Guilt	2.28	1.36	2.29	1.13	2.27	1.01	2.05	1.23	2.19	1.10	2.33	1.17

Note.  $N = 111$  (Study 3a),  $N = 118$  (Study 3b).

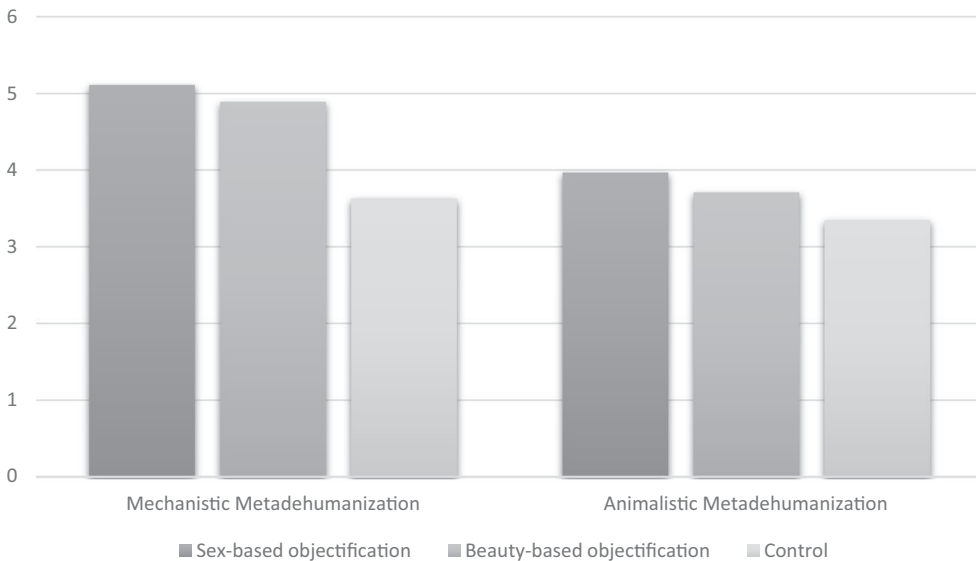
did not vary between sex-based and beauty-based objectification, C1:  $\beta = .110$ ,  $t = .73$ ,  $p = .46$  (Figure 5). However, in Study 3b and in line with Study 2, participants reported higher levels of mechanistic metadehumanization in the sex-based objectification condition compared to the beauty-based one, C1:  $\beta = .282$ ,  $t = 2.10$ ,  $p = .037$ ,  $\eta_p^2 = .03$  (Figure 6).

### Emotions

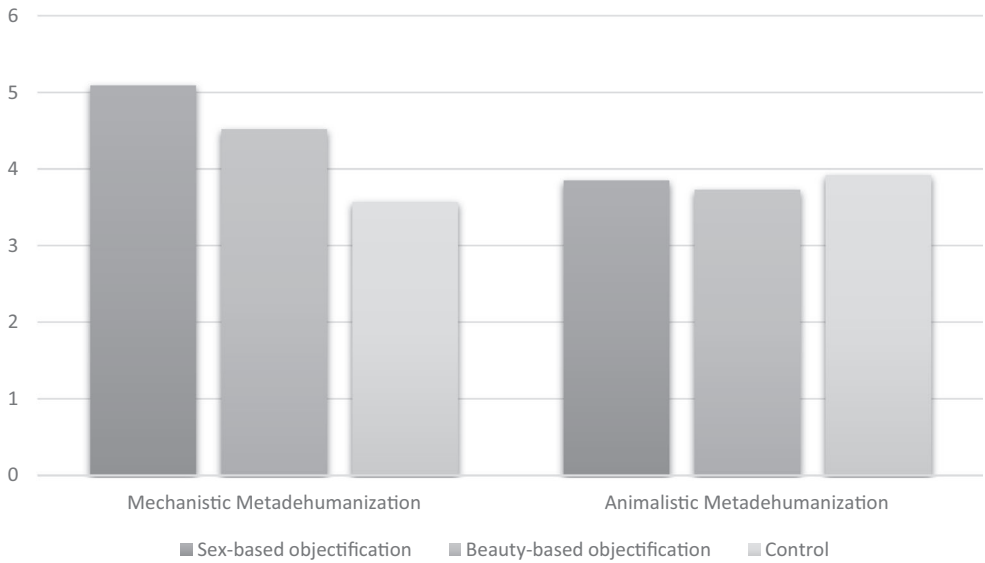
Feelings of anger, sadness, and guilt were regressed on C1 and C2. Contrarily to our pre-registered hypotheses, we did not observe any difference in guilt between the sex-based and beauty-based objectification conditions, neither in Study 3a, C1:  $\beta = -.004$ ,  $t = -.03$ ,  $p = .97$  nor in Study 3b, C1:  $\beta = -.071$ ,  $t = -.539$ ,  $p = .591$ . Further, guilt did not differ between experimental and control conditions, Study 3a: C2:  $\beta = -.004$ ,  $t = -.05$ ,  $p = .95$ ; Study 3b: C2:  $\beta = .071$ ,  $t = .924$ ,  $p = .358$ .

We regressed anger on C1 and C2. In contrast to the results of Study 2, regressions analyses also indicated that anger did not differ between experimental and control conditions, C2:  $\beta = -.128$ ,  $t = -1.77$ ,  $p = .07$ ,  $\eta_p^2 = .02$  (Study 3a) and  $\beta = -.029$ ,  $t = -.393$ ,  $p = .695$  (Study 3b). We also observed a diverging result on anger levels between experimental conditions in Studies 3a-3b. In Study 3a, anger did not vary between sex-based and beauty-based objectification, C1:  $\beta = -.161$ ,  $t = -1.28$ ,  $p = .20$ . However, in Study 3b, participants reported higher levels of anger in the sex-based objectification condition compared to beauty-based objectification one, C1:  $\beta = .335$ ,  $t = 2.64$ ,  $p = .009$ ,  $\eta_p^2 = .05$ .

Finally, as in Studies 1–2, sadness did not vary as a function of C1, Study 3a:  $\beta = .009$ ,  $t = .06$ ,  $p = .95$ ; Study 3b:  $\beta = -.158$ ,  $t = -1.25$ ,  $p = .21$ . Unexpectedly, in Studies 3a-3b, participants in the control condition reported higher levels of sadness compared to



**Figure 5.** Means and standard errors of mechanistic and animalistic metadehumanization across conditions (Study 3a).



**Figure 6.** Means and standard errors of mechanistic and animalistic metadehumanization across conditions (Study 3b).

participants in the experimental conditions, C2:  $\beta = .157$ ,  $t = 1.97$ ,  $p = .051$ ,  $\eta_p^2 = .03$  (Study 3a) and  $\beta = .147$ ,  $t = 2.01$ ,  $p = .047$ ,  $\eta_p^2 = .03$  (Study 3b).

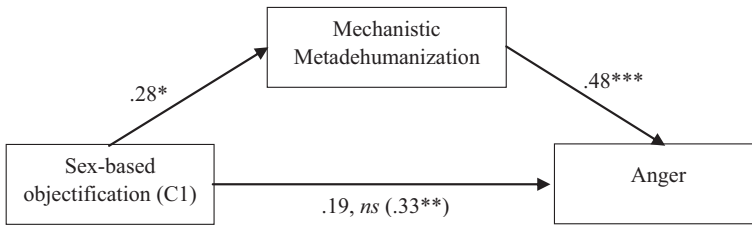
### Mediation

As in Study 2, we tested the mediating role of mechanistic metadehumanization in the relationship between conditions and emotional consequences. Mediation was conducted using bootstrap analyses (Hayes, 2013; macro PROCESS, model 4; resample = 5,000 iterations). For Study 3b, we ran a mediation analysis in order to test if the effect of C1 (while controlling for C2) on anger was mediated by mechanistic metadehumanization. As shown in Figure 7, the results showed that the effect of sex-based objectification on anger was fully mediated by mechanistic metadehumanization, indirect effect = .13, 95% CI = [0.01; 0.26].

### Discussion

Two main findings replicated across the four studies. First, participants did not report different levels of animalistic metadehumanization across conditions. Second, participants reported being perceived in a mechanistic way when assigned to objectification conditions.

Yet, despite rigorous similar protocols across studies, some results appeared less stable. First, mean differences in mechanistic metadehumanization between sex-based and beauty-based objectification emerged only in Studies 2-3b. Second, results involving emotions also varied. Participants in the sex-based objectification condition reported higher guilt compared to participants in the beauty-based objectification condition, but only in Studies 1-2. Similarly, in Studies 2-3a, participants reported higher levels of anger in



**Figure 7.** Mechanistic metadehumanization mediates the relationship between sex-based objectification and anger while controlling for C2. \*\*\* $p < .001$ ; \*\* $p < .01$ ; \* $p < .05$ .

the experimental conditions compared to the control one, while in Study 3b participants also reported higher anger in sex-based objectification as compared to beauty-based objectification. Finally, sadness feelings did not vary in Studies 1-2, while participants reported higher levels of sadness in the control condition compared to the objectifying conditions in Studies 3a-b.

## INTEGRATIVE DATA ANALYSES

To account for the discrepant results observed in our studies and to test for the stability of observed effects, we turned to integrative data analyses (IDA; Curran & Hussong, 2009). We combined the four datasets into one ( $N = 569$ , aged from 18 to 67 years old,  $M = 32.61$ ,  $SD = 11.61$ ) and ran regressions analyses on this new dataset.<sup>11</sup> We used the same contrast coding as previous studies for the independent variable (C1: sex-based (1), beauty-based (-1), control (0); C2: sex-based (-1), beauty-based (-1), control (2)). Then, in order to point out possible differences between studies, a second orthogonal contrast coding was created: contrast A (CA) opposed studies 1 and 3a (both coded -1) to studies 2 and 3b (both coded 1); contrast B (CB) opposed Study 2 (coded 1) to Study 3b (coded -1), with the Studies 1 and 3a (coded 0); contrast C (CC) opposed Study 1 (coded -1) to Study 3a (coded 1), with Studies 2 and 3b coded 0. All these contrasts were crossed to evaluate whether regressions' results vary as a function of studies and conditions.

We first regressed mechanistic metadehumanization on all contrasts. Contrasts related to studies (i.e., CA, CB, and CC) and interaction contrasts (i.e., C1\*CA, C1\*CB) did not reach significance, showing that (1) overall mechanistic metadehumanization did not vary as function of studies nor (2) that the effect of condition on metadehumanization varied across studies. However, results indicate a significant effect of C1 showing, as hypothesized, that participants reported higher levels of mechanistic metadehumanization in the sex-based objectification ( $M = 5.08$ ,  $SD = 1.15$ ) as compared to the beauty-based objectification ( $M = 4.75$ ,  $SD = 1.21$ ), C1:  $\beta = .175$ ,  $t = 2.62$ ,  $p = .009$ ,  $\eta_p^2 = .01$ .

Second, we analysed the effect of our conditions on emotions. Regarding guilt, results indicated that the interactions between studies and conditions were again not significant showing that the effect of condition on guilt did not vary across studies.<sup>12</sup> Importantly, C1

<sup>11</sup> We conducted a second IDA without taking into account participants who failed at manipulation check questions. The results of this second IDA are available on OSF through the following link: [https://osf.io/19zj7a/?view\\_only=ccb54549483f42108ac468e7c641a3d3](https://osf.io/19zj7a/?view_only=ccb54549483f42108ac468e7c641a3d3).

<sup>12</sup> For all negative emotions (i.e., anger, sadness, and guilt), the contrast CA reached significance, showing that participants reported overall higher levels negative emotions in Studies 1 and 3a as compared to Studies 2 and 3b. The contrast CC also reached significance, showing that participants reported higher levels of negatives emotions in Study 1 as compared to Study 3a.



turned out significant showing that, across studies, participants reported higher levels of guilt in the sex-based objectification condition ( $M = 2.59$ ,  $SD = 1.65$ ) compared to the beauty-based objectification one, ( $M = 2.20$ ,  $SD = 1.25$ ),  $C1: \beta = .151$ ,  $t = 2.07$ ,  $p = .03$ ,  $\eta_p^2 = .007$ .

Turning to anger and sadness, results showed that again the interactions between studies and conditions were not significant. Yet, C2 reached significance for both anger and sadness, showing that participants in the objectifying conditions ( $M = 3.46$ ,  $SD = 1.46$ ) reported significantly higher levels of anger compared to participants in the control one ( $M = 3.13$ ,  $SD = 1.46$ ),  $C2: \beta = -.103$ ,  $t = -2.63$ ,  $p = .009$ ,  $\eta_p^2 = .01$ . In contrast, participants reported lower levels of sadness in the objectifying conditions ( $M = 3.11$ ,  $SD = 1.52$ ) compared to the control one ( $M = 3.32$ ,  $SD = 1.43$ ),  $C2: \beta = .086$ ,  $t = 1.98$ ,  $p = .048$ ,  $\eta_p^2 = .006$ .

## GENERAL DISCUSSION

Based on Morris et al. (2018)'s findings, we hypothesized that, from a woman's perspective, sex-based objectification would be associated with animalistic metadephumanization, while beauty-based objectification would lead to mechanistic metadephumanization. Study 1's results did not confirm these hypotheses and suggested alternative effects of sex- and beauty-based objectification on metadephumanization. We conducted three more studies and showed that women reported higher levels of mechanistic metadephumanization when confronted with objectifying experiences. That is, victims of objectification uniformly experience mechanistic metadephumanization whatever the form of objectification they face. Consistently with general metaphors in the society (Bartky, 1990), objectification instances lead women to report being treated as non-human, superficial, unemotional. In addition to this general effect, women reported higher levels of mechanistic metadephumanization when apprehended as sexual object compared to situations in which the focus is on their physical appearance and beauty. These results suggest that, from a women's perspective, the two forms of objectification fall on a continuum rather than represent two independent types of treatments. On this continuum, sex-based experiences trigger higher metadephumanization feelings than beauty-based ones but both relate to object-like meta-perceptions. This interpretation is in line with the unexpected finding observed in our manipulation checks. Indeed, many of our participants in the beauty-based condition interpreted the situation they reported as sexually connoted or reported sexually connoted memories, but still reported higher mechanistic metadephumanization. Although unexpected, this result does not impair the main findings of our paper. Thus, if our first expectations had been observed in our data, then being apprehended as a sexual object would have enhanced animalistic metadephumanization rather than mechanistic metadephumanization. Yet, animalistic metadephumanization remains stable across the three conditions in all of our four studies.

We suggest that there are two main reasons why women may not report animalistic metadephumanization following sex-based objectification experiences. First, women may be reluctant to think they are denied HU characteristics because sex-based objectification might increase mortality salience due to the focus that is put on body parts that are involved in reproductive functions. Such a focus would increase awareness of one's animal nature and the threatening idea that one is fated to death (Goldenberg, Heflick, Vaes, Motyl, & Greenberg, 2009). Research findings indeed have shown that an increase in the salience of animal functions leads to heightened death-thoughts accessibility (i.e.,

mortality salience; Cox, Goldenberg, Pyszczynski, & Weise, 2006). In the same line, research has shown that when mortality salience and biological functions (i.e., pregnancy, breastfeeding, and menstruations) are made salient, women attribute less HN characteristics to the self (i.e., mechanistic self-dehumanization; Morris, Goldenberg, & Heflick, 2014) and accept more readily to be perceived in a mechanistic way (Goldenberg et al., 2009). Although these previous research efforts have focused on self-dehumanization, the same kind of effects could also apply to meta-perceptions.

Second, sex-based objectification might trigger higher levels of metadephumanization than beauty-based instances because of social norms. Indeed, in Western societies, women are often praised for being beautiful, but not for presenting themselves as sexualized object (Infanger, Rudman, & Sczesny, 2016). Consequently, situations in which observers focus on their beauty are experienced as less dehumanizing than situations in which they are treated as sexual objects, because it partly matches with social requirements. Moreover, if the tendency is to find beauty-based objectification more acceptable than sex-based objectification, one could expect that women associate sex-based objectification with a degrading experience.

Our findings also point out the specific effects of sex-based objectification on negative emotions. Indeed, women report higher guilt after being objectified in a sex-based manner, which is reminiscent of findings on sexual victimization (i.e., sexual harassments and sexual assaults). For instance, Vidal and Petrak (2007) found that up to 75% of victims report being ashamed following sexual assault. Similarly, acts of sexual victimization are largely unreported to authorities and around 98% of unwanted sexual contacts are not disclosed to the police (Rennison, 1999). Such lack of disclosure is related to victims' self-blame, shame, and guilt feelings (Weiss, 2010). Thus, to the extent that sex-based objectification leads to higher guilt, one could expect it to produce more deleterious consequences for women's psychological functioning than beauty-based objectification.

Unexpectedly, IDA's results showed that both sex- and beauty-based objectification elicit higher levels of anger and lower levels of sadness than the control condition. The three conditions thus elicit specific emotional responses, which is interesting in light of coping strategies. Anger (vs. sadness) leads participants to report active (vs. passive) coping strategies such as confronting the perpetrator (Shepherd, 2019). Both metadephumanization and negative emotions could thus mediate the relationship between objectifying experiences and coping strategies. The occurrence of guilt following sex-based objectification might inhibit active coping strategies and promote passive or avoidance responses such as self-blame (Gibson & Leitenberg, 2001; Shepherd, 2019; Street, Gibson, & Holohan, 2005). This is particularly interesting when considering the results from mediation models emphasizing the key role of mechanistic metadephumanization in the occurrence of anger and guilt feelings. Mechanistic metadephumanization had already been found as a mediator in the relationship between interpersonal maltreatments and anger (Bastian & Haslam, 2011; Zhang et al., 2017), but not as a mediator in the relationship between interpersonal maltreatments (i.e., sex-based objectification here) and guilt.

### **Limitations and futures directions**

The use of autobiographical recalls to manipulate objectification, despite its ecological value, does not constitute a direct manipulation of the concepts. Beauty-based objectification is often contaminated by sex-based objectification in the reported memories, suggesting that, from a victim perspective, sex-based and beauty-based

experiences might simply represent different intensity of the same experience. Future studies should thus more directly manipulate sex-based and beauty-based objectification to test whether, for victims (but not perpetrators), sex- and beauty-based objectification represent different intensities of a similar experience.

Moreover, even if some studies already highlight the predictive role of metadehumanization in the occurrence of negative emotions (i.e., anger, sadness, and guilt) through experimental design (Bastian & Haslam, 2011; Zhang et al., 2017), we did not experimentally manipulate metadehumanization in our studies. Consequently, our mediation analyses should be interpreted with cautious insofar as the relationship between metadehumanization (the mediator) and emotions (the dependent variables) is correlational rather than causal (Bullock, Green, & Ha, 2010; Pirlott & MacKinnon, 2016).

More generally, the consequences of metadehumanization among victims should be more intensely investigated, particularly in light of interpersonal interactions. Indeed, metadehumanization negatively influences intergroup relations (Kteily et al., 2016) and the mismatch between victims' and perpetrators' perceptions during gender objectification episodes regarding dehumanization might trigger gender misunderstandings and impact gender harmony (Shelton, Dovidio, Hebl, & Richeson, 2013). Future studies should thus investigate variables related to aggressive behaviours and intergroup misunderstandings (i.e., perceived positivity of gender interactions).

Future research could also envisage victims' understanding of and reactions to objectification in different contexts, notably in relation with variations in psychological intimacy, as participants report being less objectified when objectification comes from their partners rather than from strangers (Lameiras-Fernández, Fiske, Fernández, & Lopez, 2018). Objectification might be interpreted differently (in a sex- versus in a beauty-based way) depending on context and psychological intimacy might moderate metadehumanization.

### **Conclusion**

Our work offers the first insights on the relationship between objectifying treatments and metadehumanization perceptions among women. Our results show important differences in perceptions between perpetrators of sex-based objectification and their victims: while the formers perceive their victims as under-evolved animals or children, we show that the latter actually feel treated as emotionless objects. Such a discrepancy is likely to increase the often-observed intergender misunderstandings. In addition, the guilt and self-blaming emotions that victims of sex-based objectification experienced in our studies should be further considered as a factor of impeaching voice and collective actions against women's long mistreatment.

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### **Conflict of interest**

All authors declare no conflict of interest.

## Author contributions

Tina Chevallereau (Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Writing – original draft) Pierre Maurage (Conceptualization; Funding acquisition; Resources; Writing – review & editing) Florence Stinglhamber (Conceptualization; Funding acquisition; Resources; Writing – review & editing) Stéphanie Demoulin (Conceptualization; Funding acquisition; Investigation; Methodology; Resources; Supervision; Writing – original draft; Writing – review & editing)

## Data availability statement

Research data are available online in: [https://osf.io/txgua/?view\\_only=c9dbffe953084e268102f11047105993](https://osf.io/txgua/?view_only=c9dbffe953084e268102f11047105993). For ethical questions, we removed autobiographical memories from datasets and shared only anonymous quantitative data. Condition assignments are reported through the variable ‘Cond’ (coded as follow: 1 = sex-based objectification, 2 = beauty-based objectification, 3 = control).

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## Supporting Information

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