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Examining the Role of Fundamental Psychological Needs in the Development of Metadehumanization: A Multi-Population Approach

Stéphanie Demoulin[1], Nathan Nguyen[1], Tina Chevallereau[1], Sullivan Fontesse[1], Jennifer Bastart[2], Florence Stinglhamber[1], & Pierre Maurage[1]

[1] Université catholique de Louvain

[2] Université de Nice Sophia Antipolis

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Corresponding author:
Stéphanie Demoulin
10, place Cardinal Mercier, 1348, Louvain-la-Neuve, Belgium
Email: stephanie.demoulin@uclouvain.be; Tel: 00.32.10.47.30.10

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Abstract

In the present paper, we investigate dehumanization processes from a victim perspective. We propose that dehumanization experiences, i.e. metadehumanization, arise from people's feelings that their fundamental human needs are thwarted and that such experiences influence their emotions, self-esteem, and coping strategies. Our model is put at test in three contexts involving different types of dehumanization victims: Women (Study 1a, $N = 349$), patients with severe alcohol use disorder (Study 1b, $N = 120$), and employees in organizations (Study 1c, $N = 347$). Our integrated model of metadehumanization, which considers both its antecedents and consequences, proved stable across contexts and populations and therefore helps building bridges between different psychological disciplines in which dehumanization occurs.

Keywords: metadehumanization, dehumanization, fundamental human needs, emotions, self-esteem, coping

Examining the Role of Fundamental Psychological Needs in the Development of Metadehumanization: A Multi-Population Approach

Dehumanization globally refers to the denial of humanity to some persons or groups. Dehumanization takes multiple forms, from the simple evaluation of others as possessing less human attributes than oneself, to the overall exclusion of others from the human category. It varies in quality, from associating others with animal species to assimilating them with objects or robots. It is a pervasive phenomenon, which not only applies to extremely stigmatized groups (e.g., homeless people or criminals) but also affects larger and less stigmatized social categories (e.g., women, elderly people). Despite its pervasiveness, most works exploring dehumanization have focused on the perpetrator's perspective (see Haslam & Loughnan, 2014 for a review), and far less is known about the targets of dehumanization. As Moradi (2013, p. 155) put it, it is time to "encourage a broadening of theory and research that attends to targets not only as objects of dehumanization but also as subjects in dehumanization processes".

Previous studies exploring dehumanization targets have focused on how dehumanization expressed by the perpetrator is integrated in the targets' self-concept (i.e., self-dehumanization; Bastian & Haslam, 2010; Loughnan, Baldissarri, Spaccatini, & Elder, 2017), without examining the conditions in which dehumanization experience emerges and its effects on targets' functioning. We thus propose to tackle Moradi's concern by empirically investigating metadehumanization, defined as targets' experience and feeling of being dehumanized by others (Kteily, Hodson, & Bruneau, 2016). We developed a comprehensive model of antecedents and consequences of metadehumanization, offering an integrative view of this phenomenon. Concerning antecedents, we propose that metadehumanization is triggered when the targets' social environment put their fundamental psychological needs (i.e. needs for control and autonomy, for positive self-esteem, and for relatedness; Deci & Ryan, 2000) at stake. Regarding

consequences, we investigate three metadehumanization outcomes, related to the affective (negative affects), cognitive (self-esteem), and behavioral (coping strategies) levels.

We simultaneously explore metadehumanization in the social, medical-psychiatric, and organizational domains, offering a multi-population approach. In the social domain, the dehumanization literature is largely intergroup rather than interpersonal (e.g., infrahumanization; Leyens et al., 2001), and we focused here on the group of women, who frequently experience dehumanizing treatments (LeMoncheck, 1985). In the medical domain, as patients are often assimilated to defective human beings, particularly in psychiatry (Fontesse, Demoulin, Stinglhamber, & Maurage, 2019; Haque & Waytz, 2012), we focused on patients recently treated for severe alcohol use disorders (SAUD). Finally, dehumanizing treatments have been evidenced in organizations where workers are often assimilated to machines and tools (e.g., Bell & Khoury, 2016; Caesens, Stinglhamber, Demoulin, & De Wilde, 2017). Capitalizing on the assessment of metadehumanization's reports and on its antecedents/consequences in these three domains, we propose an integrative model, linking different psychological disciplines in which dehumanization occurs.

Metadehumanization: An Underexplored Phenomenon

While the ubiquity of dehumanizing perceptions and behaviors expressed by perpetrators (Haslam & Loughnan, 2014) has been largely documented, little is known regarding how targets experience dehumanization. Recent research on targets' perspective has focused on self-dehumanization processes (Bastian & Haslam, 2010; Bastian et al., 2013; Bastian, Jetten, & Radke, 2012), which occur when dehumanization targets do not only experience being dehumanized by others, but further incorporate this dehumanizing view in their self-concept (Bastian & Haslam, 2010; Loughnan, et al., 2017). While self-dehumanization is an important component of dehumanization, this exclusive focus on self-dehumanization currently prevents to

obtain a global understanding of dehumanization, as it leaves aside metadehumanization (i.e., the target's feeling of being treated as less than fully human, because of membership in a dehumanized group or because of one's personal characteristics, Kteily et al., 2016). The literature postulated two forms of dehumanization, namely animalistic (considering targets as childlike, unevolved and unrefined animals lacking civility and higher moral or intellectual abilities) and mechanistic (considering targets as objects without interpersonal warmth, depth, individuality, and emotionality) dehumanization (Haslam, Bain, Douge, Lee, & Bastian, 2005; Loughnan & Haslam, 2007). Accordingly, two forms of metadehumanization might be postulated. However, we focused, as a first empirical step, on general metadehumanization processes, which appears theoretically and practically relevant.

Indeed, metadehumanization first appears as one important antecedent of self-dehumanization. For instance, Griffiths and colleagues (2018) have shown that people suffering from eating disorder report feeling more inferior (i.e., self-dehumanization) when they perceive that they face patronizing behaviors (i.e., metadehumanization). Baldissarri, Andrighetto, and Volpato (2014) have evidenced that the more workers perceive instrumentalization from their supervisor (i.e., metadehumanization), the less they self-attribute human mental states (i.e., self-dehumanization). More broadly, experiencing being the object of sexual attention or being used as a working tool leads targets to see themselves as lacking human characteristics (e.g., warmth, competence, morality, humanity, Loughnan et al., 2017). Metadehumanization is thus a main intermediate between dehumanization from the perpetrator and self-dehumanization.

Second, metadehumanization is likely more widespread than self-dehumanization. Indeed, regarding self-perceptions, humanness rather than dehumanization is the default tendency as people generally see themselves as more human than others (Haslam et al., 2005), especially when the self (vs. others) is the evaluation standard and when the comparison target is de-

individualized (Haslam & Bain, 2007). In contrast, literature has shown the pervasiveness of dehumanization instances (e.g., Goff, Eberhardt, Williams, & Jackson, 2008; Haslam, 2006), which should render metadehumanization a common phenomenon. The key position of metadehumanization in dehumanization processes and its pervasiveness should initiate further investigations of this phenomenon, and of its antecedents/consequences, which will be described in the following sections.

Antecedents of Metadehumanization

Only a few studies explored metadehumanization antecedents[1]. Bastian and Haslam (2011, Study 1) showed that metadehumanization emerges following interpersonal maltreatments from others (e.g., ostracism[2], disrespect, humiliation, cruelty, constraint). Yang and collaborators (2015) also reported that people experiencing powerlessness believed they were viewed as less human by powerful people and by outside observers. In organizations, metadehumanization decreases with higher perceived organizational support (Caesens et al., 2017) and procedural justice (Bell & Khoury, 2016) and increases following abusive supervision (Caesens, Nguyen, & Stinglhamber, 2018). In intragroup relationships, people experience lesser human treatments in the absence of intra-group equality-based respect (Renger, Mommert, Renger, & Simon, 2016, Study 1). Finally, qualitative data among dental patients evidenced that many report feeling dehumanized by oral health providers, relating this dehumanization to a perception that their needs are unimportant for the providers (Raja et al., 2015).

[1] Importantly, some of the results that we report in the next two sections describe research on metadehumanization although the term metadehumanization was not directly used by the authors in their original paper.

[2] In a study on social ostracism in which they measured victims' dehumanized perceptions of themselves and their perpetrators as well as metadehumanization, Bastian and Haslam (2010, Study 1) report significant dehumanization differences across conditions on the two former measures but the effect did not emerge on meta-perceptions.

While offering interesting insights, the above-reported studies focused on very specific or very broad antecedents, which did not allow determining the common factors involved across these various studies. Rather than adding to this list of metadehumanization antecedents, we propose to identify the basic principles guiding the emergence of metadehumanization, through a general framework based on Self-Determination Theory (SDT; Ryan & Deci, 2000). SDT identifies the social conditions that foster or undermine the naturally positive tendencies of human nature. More specifically, SDT suggests that the satisfaction of fundamental psychological needs (i.e., need for autonomy/control, competence/self-efficacy, and relatedness), which are energizing states, nurtures the innate human potentials and fosters healthy development and effective functioning.

Relying on SDT, we suggest that the variables studied in metadehumanization are relevant antecedents of this phenomenon because they thwart fundamental psychological needs, i.e. they all place individuals in situations that put their needs at stake. In line with this idea, we propose that social targets will perceive a maltreatment as dehumanizing when their fundamental needs are undermined. The crucial role of needs thwarting in metadehumanization was similarly theorized in organizational (Christoff, 2014) and medical (Fontesse et al., 2019) domains.

Consequences of Metadehumanization

The sparse available research that has examined the consequences of metadehumanization showed that it leads to a vicious circle where the perceived perpetrators of dehumanization are in turn dehumanized by their targets (Kteily et al., 2016). Such reactive dehumanization triggers aggressive attitudes and behaviors towards the former perpetrators (Kteily et al., 2016). Metadehumanization thus not only affects one's perceptions of the perpetrators, but also influences one's attitudes and behaviors. Research conducted in organizational psychology leads to the same conclusion. That is, metadehumanization impacts employees' well-being (job

satisfaction, emotional exhaustion, psychosomatic strains; e.g., Caesens et al., 2017, 2018), their attitudes towards the organization (affective commitment, turnover intentions; e.g., Bell & Khoury, 2016; Caesens et al., 2017), their coping strategies (i.e., surface acting) and their self-perceptions (i.e., core self-evaluations; Nguyen & Stinglhamber, 2018). Finally, metadehumanization is related to cognitive (cognitive deconstruction, aversive self-awareness) and emotional (anger, sadness, shame, guilt) consequences when people are presented with or reminded of maltreatments from others (Bastian & Haslam, 2011; Zhang, Chan, Xia, Tian, & Zhu, 2017).

In line with these results, we examine how people respond psychologically to having their humanity undermined, by offering a global picture of the outcomes of metadehumanization encompassing different levels of human functioning. Here again, we rely on SDT (Ryan & Deci, 2000) to understand the relationships between metadehumanization and its outcomes. Research on SDT has contributed to the development of formal knowledge of the causes of human functioning by determining how to optimize it. In particular, environments supporting or thwarting people's psychological needs were found to facilitate versus forestall people's social development (Deci & Ryan, 2000), personal well-being (e.g., self-esteem; Deci et al., 2001), performance (Chiniara & Bentein, 2016), behavioral effectiveness and volitional persistence (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). These findings have been replicated within a variety of situations and groups (e.g., students in classrooms, patients in clinics, employees in the workplace).

Building on this evidence and consistent with the proposal that environments thwarting people's needs will increase their metadehumanization, we suggest that these effects will carry over to targets' functioning. Accordingly, we developed a broad exploration of metadehumanization consequences from the target's perspective, encompassing affective,

cognitive, and behavioral functioning. Regarding the affective dimension, and in line with previous studies (Bastian & Haslam, 2011), we proposed that metadehumanization, constituting an aversive treatment, should be related to increased negative emotions. Regarding the cognitive dimension, we proposed that metadehumanization should negatively impact self-esteem, as studies suggested that being treated negatively by others reduces self-esteem (e.g., Crocker, 1999). Regarding the behavioral dimension, we propose that targets will develop behavioral reactions when facing dehumanization, to cope with this negative experience. Although many coping strategies have been described (up to 12 dimensions in the COPE scale, Carver, Scheier, & Weintraub, 1989), the main distinction differentiates active (i.e. confronting the problem and seeking for a solution) and avoidance (avoiding the problem or denying its importance) coping, and we will thus explore this distinction.

The Present Research

Capitalizing on the identification of the main putative antecedents and consequences of metadehumanization, we propose an exploration of dehumanization experience across women, patients with SAUD, and employees. This interdisciplinary framework will assess the generalizability of our assumptions. Although the three populations probably encounter different difficulties, the basic psychological experiences triggering metadehumanization are likely to be identical across groups. The population selection is based on previous research showing that these groups can all suffer from exclusion and/or isolation, that is, from situations that put their fundamental need for relatedness at stake. Indeed, women, because of their gender, are frequently excluded from important positions, discussions, or places (Rosen & Jerdee, 1974); patients with SAUD experience societal reject and exclusion (Schomerus et al., 2011); and employees can suffer from professional isolation (e.g., Golden, Veiga, & Dino, 2008). Similarly, all three populations are likely to face instances of disrespect endangering their need for esteem. Indeed,

women are often paternalized (Glick & Fiske, 1996); patients with SAUD suffer from a negative image and are stigmatized (Pescosolido et al., 2010); and disrespectful treatments have been evidenced in organizations (e.g., Bell & Khoury, 2011). Finally, because of their subordinate societal positions as a whole (women), in the medical system (patients with SAUD), or in organization (employees), all populations might suffer from infringement to their need for control and autonomy.

The main originality of the present study is thus twofold. On the one hand, at the conceptual level, it proposes the first integrated exploration of metadehumanization from the victim's perspective based on a sound model. Indeed, capitalizing on an established theoretical proposal (i.e. the SDT), our study develops a comprehensive exploration of the antecedents (i.e., fundamental needs) and consequences (at emotional, behavioral and cognitive levels) of metadehumanization. On the other hand, at the experimental level, it offers a multi-population exploration allowing to determine the commonalities and differences related to metadehumanization processes across various groups of victims. As this study is the first to offer such an integrative investigation of metadehumanization, and as the current literature on the antecedents and consequences of metadehumanization is very sparse, our study is to be considered as exploratory. We however hypothesized that the three groups will be characterized by significant metadehumanization levels, and that these strong experience of dehumanization will (1) be predicted by a reduced satisfaction of the three categories of fundamental needs measured, namely by a lower fulfillment of the control, belonging, and self-esteem needs; (2) be associated with severe consequences at the emotional (i.e., increased presence of negative affects), behavioral (i.e., modified frequency of dysfunctional coping strategies) and cognitive (i.e., reduced self-esteem) levels. The general model tested across the three studies is presented in Figure 1.

[Insert Figure 1 about here]

Study 1a

Participants (N = 349) were all females and reported the frequency with which, because of their gender, they experienced exclusion, lack of control, and disrespect, before assessing both animalistic and mechanistic dehumanization. Then, participants evaluated their negative emotions, private/public self-esteem, and the type of identity management strategy they most often follow when facing problems related to their female identity. Specifically, they were asked to evaluate the extent to which they would rely on individual mobility and social competition (active coping) or on social creativity (avoidance coping) in relation with their female identity.

Method

Participants and design. According to Kline (1998), sample sizes in studies using path analyses need to be 10 to 20 times superior to the number of parameters to be estimated (in this case, between 270 and 540 participants), we therefore decided to test 350 participants. A sample of 349 participants took part in the study via Prolific Academic. To be eligible to participate, they had to be native English speakers, at least 18 years of age, female, and with at least 90% approval rate in previous studies completed on the platform. Participation was voluntary and anonymous. Participants were paid 1£ as a monetary compensation. Twenty-nine participants were withdrawn from analyses as they failed attentional checks. The 325 women included in the final sample (87.5% from the UK, 7% from the USA) were 36.35 years old (SD = 11.68) on average, and 93% had a high school degree or higher education degree. Participants were asked to complete questions about how they felt in regards to their female identity. Unless otherwise specified, ratings were performed on a scale from 1 (strongly disagree) to 7 (strongly agree).

Measures.

Fundamental needs thwarting. Participants assessed how often they were exposed to three fundamental needs thwarting because of their female identity. Based on previous research (e.g., Zadro, Williams, & Richardson, 2004), 12 items were created to assess belonging (e.g., "*Rejected from some important social networks*"; four items; α = .79), control (e.g., "*Compelled to follow what others tell you*"; four items; α = .79), and self-esteem (e.g., "*Disrepected*"; four items; α = .87) needs. Participants responded using a 5-point scale from 1 (never) to 5 (almost always).

Metadehumanization. Participants' perceptions of being dehumanized by the society because of their female identity were measured by using 7 items adapted from Bastian and Haslam (2011). Nine items were also created to capture all the facets of Haslam's (2006) dehumanization dual model. Eight items assessed animalistic dehumanization (e.g., "*Society does not treat me as someone cultured*") and 8 - mechanistic dehumanization, distinguishing "robotic" (e.g., "*Society treats me as if I was mechanical and cold, like a robot*"; 4 items) and "object" (e.g., "*I feel like I am used by others*"; 4 items) dehumanization. An exploratory factor analysis using a principal axis factor determined the factor structure. The metadehumanization scale was conceived as multidimensional, with the two sub-dimensions being nonorthogonal. Accordingly, we used an oblimin rotation that extracted two factors. The eight items of animalistic dehumanization and the four items of "object dehumanization" loaded onto one factor, the four items assessing "robotic dehumanization" loading onto a second factor. This might be explained by the fact that "robotic dehumanization" (i.e., to be treated as an emotionless person or cold) might not constitute a key aspect of dehumanization among women. Indeed, a prevalent gender stereotypes is that women are more emotional than men (Fischer, 1993; Plant, Hyde, Keltner, & Devine, 2000; Shields, 2002), thus suggesting that they would not be strongly targeted by robotic dehumanization. We therefore culled the four items assessing the "robotic dehumanization". A

new principal axis extraction was conducted and showed a very good Kaiser-Meyer Olkin (.943), suggesting that the sample was factorable. All items loaded onto one factor explaining 60.74% of the variance (See Supplementary Materials section; Table S1). Finally, the internal consistency of this 12-item scale was very good (α = .94).

Negative emotions. Negative emotions were measured using 14 items from Watson and Clark's (1999) Positive and Negative Affect Scale. Participants assessed how often they have experienced negative emotions (e.g. "*Sad*", "*Blameworthy*", and "*Angry*") regarding their position as a woman in society on a 5-point scale from 1 (not at all) to 5 (extremely). A good internal consistency was obtained (α = .95).

Coping strategies. Participants' use of coping strategies was assessed by using 10 items from Raman's (2008). Three subscales were adapted, including individual active (i.e., individual mobility; e.g., "*I try to act like a man when it helps me get ahead*"; 3 items; α = .85), collective active (i.e., social comparison; e.g., "*I am ready to involve myself in actions in order to help us achieve equality with men in all aspects of life*"; 4 items; α = .88), and avoidance (i.e., social creativity; e.g., "*I am glad to be sensitive and attentive to others unlike most men*"; 3 items; α = .79) coping strategies.

Self-esteem. Eight items from Luhtanen and Crocker (1992) measured public (e.g., "*Overall, women are considered good by others*"; 4 items; α = 79) and private (e.g., "*I feel good about the social groups of women that I belong to*"; 4 items; α = 75) self-esteem.

Results

Data of the present study as well as of Studies 1b and 1c are available on OSF[3]. Preliminary analyses were carried out with SPSS 25. Table 1 displays means, standard deviations, internal consistency, and correlations among variables. To test the hypothesized model (Figure S1), we performed a path analysis using Mplus 7.4. Results showed that fundamental needs thwarting (i.e., control, belonging, and self-esteem) were positively related to metadehumanization (β = .25, p<.001, β = .27, p<.001, and β = .18, p<.001, respectively). The analyses revealed that metadehumanization was positively related to negative emotions (β = .39, p<.001), individual active coping (β = .22, p<.01), collective active coping (β = .23, p<.001), and avoidance coping (β = .17, p<.05), and negatively linked to public (β = -.58, p<.001) and private (β = -.36, p<.001) self-esteem. Concerning the direct effects, belonging need thwarting was positively associated with negative emotions (β = .13, p<.05) and individual active coping (β = .24, p<.05), and negatively related to avoidance coping (β = -.16, p<.05). Furthermore, self-esteem need thwarting was positively associated with negative emotions (β = .15, p<.05) and negatively with public self-esteem (β = -.13, p<.05). We further tested the significance of the indirect effects by performing bootstrapping analyses (Model 4; 10, 000 bootstraps; Hayes, 2013). Table S3 - indicates that all indirect effects of the theoretical model were significant.

[Insert Table 1 about here]

Discussion

The results of Study 1a totally confirmed our hypotheses, as (1) they provided first evidence that fundamental needs thwarting is related to metadehumanization among women, a reduced fulfillment of the three needs (i.e., control, belonging, and self-esteem) being positively related to dehumanization feelings; (2) they suggested that women feeling dehumanized by the

[3] https://osf.io/9f35u/?view_only=145ef83af3354387bae59f5c2bd65d40

society are more prone to face negative consequences. Indeed, metadehumanization was associated with emotional (i.e., increased negative emotions), behavioral (i.e., increased active or avoidance coping) and cognitive (i.e., reduced public and private self-esteem) effects. To test the integrative model of metadehumanization perceptions within a different population, Study 1b seeks at replicating these results in a psychiatric population (i.e., patients with SAUD) because of its relevance (e.g., Fontesse et al., 2019; Robbins, 2018).

Study 1b

Participants (N = 102) were individuals who had reported having been involved in a therapeutic program focused on their alcohol use disorder during the past year. Except for metadehumanization, self-esteem, and coping, measures were identical than those in Study 1a, while slightly adapted to the context of severe alcohol use disorders.

Method

Participants and design. To be eligible to participate, participants had to have been involved in an individual therapy for alcohol-related disorders during the previous year, be at least 18 years of age, and have not taken part in Study 1a. On the Prolific Academic platform at the time of the study (from 4th of June 2018 until 14th of August 2018), only 140 persons corresponded to these criteria. Out of the 140 eligible, 120 participants with SAUD took part in the study. Participation was voluntary and anonymous. Participants were paid 2£ as a monetary compensation. Eighteen participants were withdrawn from analyses as they failed attentional checks. The final sample included 102 participants (29.7% female; 22% from the UK, 50% from the USA), with an average age of 33.81 years (SD = 9.39). Participants were asked to complete questions about how they felt in regards to their alcohol use disorder. Unless otherwise specified, participants rated the items on a scale from 1 (strongly disagree) to 7 (strongly agree).

Measures.

Control variables. Anxiety and depression were assessed as they are frequently associated with SAUD (Davidson, 1995; Schuckit & Hesselbrock, 1994) and can worsen its severity (Saatcioglu, Yapici, & Cakmak, 2008). Trait anxiety was measured using 20 items from the State-Trait Anxiety Inventory (Spielberger, 1983; e.g., "*I feel nervous*"; α = .89). Participants responded on a 4-point scale from 1 (not at all) to 4 (very much so). Depression was assessed using the 13-item version of Beck Depression Inventory (Beck and Beck, 1972; e.g., "*I don't feel particularly guilty/I feel bad or unworthy a good part of the time/I feel quite guilty/I feel as though I am very bad or worthless*"; α = .91). Participants indicated which statement described the way they had been feeling during the past two weeks and responses were coded from "0" to "3".

Fundamental needs thwarting. Subscales were identical to Study 1a except for one item on control need, i.e. "*Pressured to conform to feminine roles*", which was modified by "*Pressured to conform to a role*". A good internal consistency was obtained for control (α = .90), belonging (α = .94), and self-esteem (α = .96) subscales.

Metadehumanization. Participants' perception of being dehumanized by their family, friends, and others because of their alcohol use was assessed using 9 items (7 animalistic, 2 mechanistic) from Study 1a, adapted to fit individuals with SAUD. In addition, 13 items (4 animalistic, 9 mechanistic) were created to capture all the facets of Haslam's (2006) dehumanization dual model. At the end, eleven items assessed animalistic metadehumanization (e.g., "*My close ones or other people see me as lacking self-restraint, like an animal*") and 11 assessed the mechanistic form of metadehumanization (e.g., "*My close ones or other people treat me as if I was lacking empathy and sensitivity*"). A principal axis factor was conducted to determine the factor structure using an oblimin rotation because the metadehumanization scale was created as multidimensional, with the two forms being related. Results showed that most

items loaded onto one factor, 3 items (2 animalistic, 1 mechanistic) loading onto a second factor. Given that the second factor was composed of only three items and accounted for less than 5% of the variance, we therefore culled those items (e.g., Costello & Osborne, 2005). A new principal axis extraction showed a very good Kaiser-Meyer Olkin (.948), suggesting that the sample was factorable. Analyses indicated that all items loaded onto one factor, explaining 69.70% of the variance (See Table S2). Finally, the internal consistency of this 19-item scale was very good (α = .98). Similarly to Study 1a, the metadehumanization scale had a unidimensional structure.

Negative emotions. Identical to Study 1a (α = .97).

Coping strategies. Participants' use of coping strategies to deal with negative events were assessed using 30 items adapted from the Responses to Stress Questionnaire (RSQ; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000) which includes two sub-dimensions (i.e., engagement and disengagement coping strategies). Active coping was assessed via engagement coping measuring six facets (i.e., problem resolution, emotion regulation, cognitive restructuration, positive thoughts, acceptation, distraction) via 21 items (e.g., "*I did something to try to fix or change the situation*"; α = .93). Avoidance coping was evaluated via disengagement coping measuring three facets (i.e., deny, avoidance, magical thinking) via 9 items (e.g., "*I tried to believe that it never happened*"). We added three items capturing the use of alcohol as an avoidance coping strategy (e.g., "*I tried to think about something else by drinking alcohol*"; α = .86). Participants responded to these items through a 4-point scale from 1 (not at all) to 4 (a lot).

Self-esteem. Twenty items from Heatherton and Polivy (1991) were used to measure performance (e.g., "*I feel confident in my abilities*"; 7 items; α = .68), sociability (e.g., "*I feel concerned about the impression I am making*"; 7 items; α = .89), and appearance (e.g., "*I feel satisfied with the way my body looks right now*"; 6 items; α = .73) self-esteem.

Results

Analyses were identical to Study 1a. Table 2 displays means, standard deviations, internal consistency, and correlations among variables among participants with SAUD. Figure S2 displays the hypothesized model. Results showed that belonging and self-esteem needs thwarting were positively related to metadehumanization (β = .25, p<.05 and β = .44, p<.01, respectively). Control need thwarting was unrelated with metadehumanization (β = .19, p = .13). Furthermore, metadehumanization was positively related to both active (β = .31, p<.05) and avoidance (β = .36, p<.05) coping strategies, and negatively associated with performance (β = -.37, p<.05) and sociability (β = -.44, p<.01) self-esteem. However, metadehumanization was not linked to negative emotions (β = .00, p = .99) nor appearance self-esteem (β = .05, p = .78). Lastly, the negative direct effect of control need thwarting on sociability self-esteem was significant (β = -.39, p<.05). We tested the significance of the indirect effects by performing, once again, bootstrapping analyses (Model 4; 10, 000 bootstraps; Hayes, 2013). Table S4 shows that the indirect effect of belonging need thwarting on sociability self-esteem through metadehumanization was significant. Furthermore, results indicated that the indirect effects of self-esteem need thwarting on active coping, avoidance coping, performance self-esteem, and sociability self-esteem via metadehumanization were also significant.

Control variables. Following Becker's (2005) recommendations, the relationships between control (anxiety, depression) and dependent (metadehumanization, negative emotions, active and avoidance coping strategies, performance, sociability, appearance self-esteem) variables were investigated. Anxiety and depression were related to several dependent variables. Analyses were performed with and without these control variables, but the main results were identical and the inclusion of these control variables did not change the interpretation of the findings. Table S5 displays the direct and indirect effects when controlling for anxiety and

depression. Therefore, the final model was free from these control variables to reduce model complexity (Becker, 2005).

[Insert Table 2 about here]

Discussion

The results of Study 1b globally supported our hypotheses by showing that (1) belonging and self-esteem (but not control) needs thwarting are related to higher metadehumanization in SAUD; (2) metadehumanization is associated with behavioral (i.e., increased active or avoidance coping) and cognitive (i.e., reduced performance and sociability self-esteem, without association with appearance self-esteem) effects. Conversely, metadehumanization was not associated with increased negative emotions. One explanation is that experiencing metadehumanization may initiate a state of cognitive deconstruction, characterized by a distancing from emotions (Bastian & Haslam, 2011; Twenge, Catanese, & Baumeister, 2003). This is congruent with our SAUD sample as this population presents multiple emotional impairments (e.g., reduced emotional empathy and alexithymia, Maurage et al., 2011; Taieb et al., 2002). Despite some discrepancies (i.e., the fact that metadehumanization is not associated with control need thwarting nor with negative emotions), the results observed in Study 1b are very coherent with those reported in Study 1a, and thus offer further confirmation of the validity of our model. Study 1c seeks to replicate the findings found in Studies 1a and 1b among a population of employees, who are also frequently dehumanized by their organizations (e.g., Bell & Khoury, 2011; Caesens et al., 2017).

Study 1c

Participants (N = 347) were recruited in the organizational domain. Because research in organizational psychology relies on context-specific scales, we selected scales that would best fit our theoretical concepts. Experiences of lack of control, exclusion, and disrespect were measured by job autonomy, professional isolation, and abusive supervision, respectively.

Metadehumanization was assessed through the organizational dehumanization scale (Caesens et al., 2017). Negative emotions were assessed with the PANAS (as in Studies 1a-1b), while coping strategies and self-esteem were assessed via the active and avoidance coping scales, and organizational based self-esteem, respectively.

Method

Participants and design. Similar to what was done in Study 1a, we intended to test 350 participants in order to account for Kline's (1998) recommendations (in this case, between 190 and 380 participants). Three hundred and forty-seven employees took part in the study via Prolific Academic. To be eligible to participate, they had to be native English speakers, be 18 years of age at least, be part-time or full time employees, not be self-employed, with at least 90% approval rate in previous studies completed on the platform, and have not taken part in Studies 1a and 1b. Participation was voluntary and anonymous. Participants received 1.5£ as a monetary compensation. Twenty-nine participants were withdrawn from the analyses as they failed attentional checks, worked as freelancers or were unemployed. Three hundred sixteen employees composed the final sample. On average, they were 36.25 years (SD = 9.54; 70.8% from the UK, 19.8% from the USA), had been working with their direct supervisor for 3.31 years (SD = 3.41), and in their current organization for 6.85 years (SD = 6.54). Most participants worked in medium-sized organizations (39.8%) and held a bachelor degree (39%). Participants were asked to complete questions about how they felt in regards to their employed status. Unless otherwise specified, participants rated the following items on a scale from 1 (strongly disagree) to 7 (strongly agree).

Measures.

Fundamental needs thwarting. Participants' frequency of experiencing control need thwarting was measured through the 3 items from Fuller, Marler, and Hester's (2006) job

autonomy scale (e.g., "*I can decide on my own how to go about doing my job*"; α = .93). To capture the control need thwarting, job autonomy items were reversed. Belonging need thwarting was assessed through 6 items adapted from Golden et al.'s (2008) professional isolation scale (e.g., "*I feel isolated*"; α = .90). Finally, self-esteem need thwarting was through the 15 items from Tepper's (2000) abusive supervision scale (e.g., "*My direct supervisor tells me my thoughts or feelings are stupid*"; α = .96).

Metadehumanization. Participants' perception of being dehumanized by their organization was assessed using the 11-item organizational dehumanization scale (e.g., "*My organization considers me as a tool devoted to its own success*"; α = .94; Caesens et al., 2017). This scale focuses on mechanistic dehumanization because this form is more frequent in organizational contexts (Bell & Khoury, 2011; Christoff, 2014).

Negative emotions. Identical to Study 1a (α = .97).

Coping strategies. Participants' use of coping strategies to deal with the perception of being dehumanized by their organization was assessed through two strategies. Active coping was measured using the eight items of Latack's (1986) scale (e.g., "*I try to think myself as a winner, as someone who always comes through*"; α = .83), while avoidance coping was assessed using 8 items from Feifel and Strack's (1989) scale (e.g., "*I try not to think about the situation*"; α = .76).

Self-esteem. The 10-item organizational based self-esteem scale from Pierce, Gardner, Cummings, and Dunham (1989) was used to measure participants' self-esteem (e.g., "*I am valuable around here*"; α = 93).

Results

Analyses were identical to Studies 1a and 1b. Table 3 displays means, standard deviations, internal consistency, and correlations across variables among employees. Figure S3 displays the hypothesized model. Results showed that fundamental needs thwarting (i.e. control,

belonging, and self-esteem) were positively related to metadehumanization (β = .26, p<.001, β = .27, p<.001, and β = .24, p<.001, respectively). Metadehumanization was positively related to negative emotions (β = .34, p<.001), avoidance coping (β = .28, p<.001), negatively related to organizational based self-esteem (β = -.11, p<.05), and unrelated to active coping (β = -.01, p=.84). Concerning the direct effects, control need thwarting was positively linked to negative emotions (β = .10, p<.05) and negatively to active coping (β = -.23, p<.001), avoidance coping (β = -.13, p<.05), and organizational based self-esteem (β = -.28, p<.001). Furthermore, belonging need thwarting was positively associated with negative emotions (β = .24, p<.001) and negatively related to active coping (β = -.19, p<.01) and organizational based self-esteem (β = -.39, p < .001). Finally, self-esteem need thwarting was positively associated with negative emotions (β = .26, p<.001). Here again, we tested the significance of the indirect effects by performing bootstrapping analyses (Model 4; 10, 000 bootstraps; Hayes, 2013). Table S6 indicates that all indirect effects of the theoretical model were significant, except those for which the dependent variable was active coping.

[Insert Table 3 about here]

Discussion

The results of Study 1c confirmed our hypotheses, as they showed (1) a positive association between the thwarting of the three fundamental needs and metadehumanization among employees; (2) that metadehumanization is associated with emotional (i.e., increased negative emotions), behavioral (i.e., increased avoidance coping) and cognitive (i.e., organizational based self-esteem) consequences. The only discrepancy with the two previous studies is that, by contrast with women and individuals with SAUD who use both active and avoidance coping strategies to deal with a dehumanizing situation, employees rather rely on avoidance strategy. The explanation of the non-significant link between metadehumanization and active coping

reported in Study 1c lies in the nature of the relationship between an employer and its employee. In this specific context, dehumanizing treatments from the organization are "often viewed as an acceptable, and even necessary, strategy for pursuing organizational goals" (Christoff, 2014, p. 1). In line with this view, Nguyen and Stinglhamber (2018) stated that, to a certain extent, being treated as a tool devoted to the organization's ends or being valued through one's job performance are inherently induced by employment because "being productive at work is part of the job" (p. 8). From this perspective, one can argue that employees will not seek solutions or help from others to cope with dehumanizing treatment (active coping), as this is seen as the essence of the job, but instead will resign themselves to this certain situation (avoidance coping). The above would thus explain why metadehumanization is not related to active coping in this specific context.

General discussion

We tested an integrated model of metadehumanization, assessing its antecedents and consequences across three populations. Our three studies showed that metadehumanization, while underexplored, is intensively experienced when people are facing interpersonal situations endangering their fundamental psychological needs (i.e. control, belonging, and self-esteem). Moreover, we suggest that this metadehumanization may have widespread consequences, being associated with intensified negative emotions, increased active/avoidance coping strategies, and reduced self-esteem. Our results are in line with previous arguments made which have already suggested that metadehumanization varies as a function of fundamental human needs thwarting (e.g., Christoff, 2014; Fontesse et al., 2019). They, however, vary with regards to previous published work on the emotional and cognitive consequences of metadehumanization (e.g., Bastian & Haslam, 2011). Indeed, as previously stated, we failed to obtain in our studies the two subdimenions of metadehumanization observed elsewhere and, consequently, we were unable to

assess whether different forms of metadehumanization might lead to different kinds of consequences.

A key strength of our paper is the coherent findings observed across populations, suggesting that our model is a robust metadehumanization account, holding beyond large differences in samples characteristics and methodology. First, our targets vary in terms of ubiquity (i.e. generalization to all life situations) and stability (i.e. presence during the whole lifespan) of their belonging to the targeted social group, and thus of the dehumanizing contexts faced. Indeed, being a woman is a stable characteristic while the categorization as a patient with SAUD is generalized to every situation (i.e. dehumanization occurring in familial, professional and medical situations in this population) but acquired only after a certain age and varying in time according to drinking status and therapeutic processes. In the same vein, employees facing dehumanization at the workplace can avoid this phenomenon in other life situations (e.g., familial context) or even leave their current status and engage in another (less dehumanizing) organization. Finally, while women are stigmatized but constitute a large proportion of the population, patients with SAUD are part of a much-stigmatized minority and employees face neither a minority nor a stigmatized status. There is thus a huge variation in the frequency and intensity of the dehumanization experiences faced by the groups.

Second, our model largely holds despite variations in concept operationalization, further reinforcing its validity as a trans-situational metadehumanization model. The association between metadehumanization and lower self-esteem, for instance, replicates whether self-esteem was measured at the private or public levels (in women), very broadly (in SAUD), and in relation to the very specific organizational context (in employees),

It should be underlined that some slight variations have been observed across populations, as (1) no significant impact of metadehumanization on negative emotions was reported in SAUD;

(2) no association was found between control need thwarting and metadehumanization in SAUD; (3) no relation was observed between metadehumanization and active coping among employees. Such differences might be partly explained by the variations across the measures used in each study, as adaptations have been conducted to consider the specificity of each population. Despite these limited discrepancies, the three studies support our integrated model in which psychological needs thwarting is related to perceptions that the self is dehumanized by others (i.e., metadehumanization) which, in turn, is associated with affective (increased negative emotional reactions), behavioral (increased use of coping strategies), and cognitive (reduced self-esteem) impairments.

Based on the limited literature, we selected the most adapted antecedents and consequences, but future studies should determine which other factors could be involved in the emergence of this phenomenon, or could result from it (e.g., metadehumanization's impact on aggression and dehumanization; Kteily et al., 2016). Regarding the antecedents, we focused on psychological needs thwarting, and specifically on social situations in which targets feel they have been put under other people's control, excluded, or shown disrespect. Yet, other psychological needs could contribute to metadehumanization, notably the need for meaningfulness as fragmented, repetitive, and other directed tasks lead people to self-objectify (Baldissarri, Andrighetto, Gabbiadini, & Volpato, 2017). People feeling that others interact with them in meaningless fashions or assign them (e.g., through work practices) meaningless tasks could thus experience metadehumanization. Baldissarri et al. (2017) also suggested that, beyond the psychological needs that relate to social interactions, metadehumanization can result from non-social factors related to the task (e.g., work chain) or physical environment (e.g., prison, hospital).

Future studies will also have to explore the links between metadehumanization and other outcomes than those examined here. We have suggested that metadehumanization is an antecedent of self-dehumanization but, as the literature on stigmatization has shown that aversive treatments are not necessarily internalized in people's self-concept (Firmin, Luther, Lysaker, Minor, & Salyers, 2016), several moderators might influence this relationship. Such moderators should be investigated with regards to other observed relationships in our model. For instance, Caesens and colleagues (2018) have shown that the relationship between abusive supervision and metadehumanization is stronger for employees reporting high coworker support. This paradoxical moderating effect of social support is consistent with the organizational literature (Wu & Hu, 2009) but needs replication in other contexts and populations (e.g., women and patients with SAUD).

Finally, as previously underlined, two forms of dehumanization (animalistic and mechanistic) have been identified in the literature. In Studies 1a and 1b, this distinction was not found in our factorial analyses, and metadehumanization was considered as a unidimensional variable. This failure to distinguish metadehumanization subcomponents has been observed elsewhere (e.g., Bastian et al., 2013), but might also be related to the fact that the distinction does not make sense in populations where metadehumanization is a global experience encountered in all life situations (e.g., women or patients with SAUD). It could also be that, in contrast to what happens for dehumanization, metadehumanization subcomponents overlap more strongly in targets' experience than in perpetrators' view. In the organizational study, we focused on mechanistic dehumanization as it is more frequent in organizational contexts (e.g., Bell & Khoury, 2011; Christoff, 2014). Future research should further investigate this bidimensionality of metadehumanization experiences given that findings on the subject are mixed.

Several limitations should also be acknowledged. First, participants were recruited using Prolific Academic. In response to concerns of Landers and Behrend (2015) regarding similar platforms, we ensured that participants did not take part in more than one of the three studies. Replicating the present studies using other samples would, however, be worthwhile. The representativeness of these convenient samples can indeed be questioned (Landers & Behrend, 2015). Second, our ecological approach, capitalizing on a cross-sectional design, did not determine the causal links across variables. It can thus not be excluded that some overlap and reverse causal relationships might exist between the variables included at the successive stages of the model. For example, reduced self-esteem might not only constitute a consequence of metadehumanization, but might also reversely increase such metadehumanization processes, thus initiating a vicious circle. More globally, although our theoretical model fits with a well-established conceptual framework (SDT; Ryan & Deci, 2000) and thus supports the hypothesized direction of the relationships, future works are needed to further test the validity of this model. Longitudinal designs with repeated measures could clarify the causal relations across the processes at stake. Moreover, experimental studies proposing a direct manipulation of the model's components, and particularly of fundamental needs (e.g., thwarting the need to belong through a social exclusion paradigm, Eisenberger, Lieberman, & Williams, 2003) would also constitute promising way to test the model. Third, our data were based on self-reported measurements, leading to a potential common method variance bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Self-reported measures seemed the most accurate way to collect data here, since we examined individual perceptions, cognitions, attitudes, and behavioral intentions. Despite this and as recommended (Conway & Lance, 2010; Podsakoff et al., 2003), we caught several methodological precautions to limit this threat: We assured participants of their anonymity and stressed that there were no right or wrong answers. When possible, we also used

validated scales. Nevertheless, future research should corroborate our results through alternative measures (e.g. peer ratings, observational measures).

At the fundamental level, our paper clearly underlines the key role played by metadehumanization, which should be further explored, notably in view of its potential intermediate position between dehumanizing behaviors and self-dehumanization. At the applied level, our study underlines the ubiquity of metadehumanization in everyday social interactions, and the need to consider it in the various domains explored. Past studies have already shown that women are sometimes dehumanized (Heflick & Goldenberg, 2009; Vaes, Paladino, & Puvia, 2011). However, the present study offers the first evidence that women feel that their humanity is denied by others (i.e., metadehumanization). This has important implications. Just as African-American men had to protest with the "I am a man" slogan to be considered of equal status, women may have to protest against dehumanization with a "I am a full human being" slogan to affirm their legitimate equal belonging to humanity.

Regarding SAUD, this paper offers the first empirical evidence that metadehumanization constitutes a pervasive phenomenon in psychiatry (Fontesse et al., 2019), which might be involved in disease maintenance (relapse risk) and reduced quality of life. This claims for the implementation of multi-level interventions reducing (meta)dehumanization towards patients with SAUD, and more globally towards psychiatric patients: At the public health level, structural changes should be initiated to favor psychiatric patients' humanization by rethinking the treatment process and structures to ensure patients' fundamental needs fulfillment. For instance, treatment centers organized as communities or proposing various activities should be favored compared to locked centers without activity, to promote patients' need of control fulfillment. Additionally, to fight the thwarting of patients' need of belonging, voluntary initiatives to visit the most isolated psychiatric patients at home could be implemented, in line with the recent

blooming of outreach programs in psychiatry. At the hospital level, treatment conditions could evolve accordingly, for example by increasing medical workers' empathy or adapting hospital settings to increase intimacy and comfort.

The present research has also a number of practical implications for managers in organizations. In line with the scarce research on organizational metadehumanization (Caesens et al., 2017), this paper confirms that this phenomenon is a frequent experience for workers in modern organizational settings (Christoff, 2014), where humans are seen as "means" rather than "ends in themselves'" (Rochford, Jack, Boyatzis, & French, 2017, p. 9). Interestingly, our findings also indicate that in order to reduce this metadehumanization, companies must implement policies and practices that promote job autonomy and workgroup functioning, and that prevent abusive mistreatment from managers. Labor ministries already control for work issues such as discrimination and harassment; similarly, they should pay attention to dehumanizing organizational practices. Such practices are sanctioned but still too present in organizations: More than 60% of retail industry workers have experienced bullying in the workplace (Lutgen-Sandvik, 2003). Some other practices are currently accepted while presenting dehumanizing characteristics: Some companies identify their interim using barcode instead of names, Amazon workers are forced to urinate in bottles over fear of being punished for taking a break, while other companies literally overwork their employees to death (International Labour Organization, 2013).

Conclusion

The present paper constitutes an initial framework towards an integrative model of metadehumanization across dehumanized populations, serving as a sound basis for future refinements. While it should be extended, our model already generalizes across very different domains, which build bridges between different psychological disciplines in which dehumanization occurs.

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Table 1

Descriptive statistics and intercorrelation among variables of Study 1a

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Control need thwarting	2.55	0.75	(.79)											
2. Belonging need thwarting	2.44	0.71	.67**	(.79)										
3. Self-esteem need thwarting	2.70	0.77	.71**	.64**	(.87)									
4. Metadehumanization	3.22	1.29	.55**	.55**	.57**	(.94)								
5. Negative emotions	1.76	0.78	.42**	.45**	.47**	.56**	(.95)							
6. Individual active coping	3.17	1.60	.24**	.31**	.19**	.31**	.21**	(.85)						
7. Collective active coping	4.20	1.52	.30**	.29**	.29**	.35**	.18**	.16**	(.88)					
8. Avoidance coping	4.78	1.33	.15**	.06	.15**	.18**	.04	.04	.20**	(.79)				
9. Public self-esteem	4.64	1.12	-.46**	-.46**	-.50**	-.69**	-.46**	-.24**	-.30**	-.05	(.79)			
10. Private self-esteem	5.78	1.04	-.21**	-.27**	-.22**	-.38**	-.39**	-.27**	.01	.14*	.48**	(.75)		
11. Age	36.35	11.68	-.05	-.08	-.04	-.29**	-.18**	-.07	-.12*	.09	.15**	.20**	-	
12. Education	2.81	1.09	-.01	.06	.02	.06	.10	.06	.14*	-.03	-.01	.06	-.05	-

Note. $N = 325$. Cronbach's alpha are on the diagonal. Education was coded 1 for "did not complete high school", 2 for "high school", 3 for "some college", 4 for "bachelor's degree", 5 for "master's degree", and 6 for "Ph.D".

*$p < .05$. **$p < .01$.

Table 2

Descriptive statistics and intercorrelation among variables of Study 1b

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Control need thwarting	4.04	1.66	(.90)													
2. Belonging need thwarting	3.87	1.85	.84**	(.94)												
3. Self-esteem need thwarting	4.06	1.89	.88**	.87**	(.96)											
4. Metadehumanization	4.13	1.78	.78**	.78**	.82**	(.98)										
5. Negative emotions	3.46	1.09	.51**	.52**	.50**	.44**	(.97)									
6. Active coping	2.80	0.66	.61**	.53**	.62**	.62**	.27**	(.93)								
7. Avoidance coping	2.96	0.63	.57**	.55**	.57**	.59**	.62**	.57**	(.86)							
8. Performance self-esteem	3.80	1.10	-.22*	-.20*	-.23*	-.30**	-.47**	.04	-.47**	(.68)						
9. Sociability self-esteem	2.91	1.38	-.62**	-.56**	-.57**	-.64**	-.63**	-.37**	-.61**	.60**	(.89)					
10. Appearance self-esteem	3.65	1.46	.18	.19	.20*	.18	-.34**	.45**	-.18	.60**	.28**	(.73)				
11. Anxiety	46.30	12.13	.18	.20*	.11	.18	.31**	-.05	.26*	-.27**	-.37**	-.34**	(.89)			
12. Depression	12.09	8.06	.12	.20*	.17	.10	.25*	-.12	.16	-.17	-.20*	-.29**	.61**	(.91)		
13. Gender	-	-	.05	.11	.14	.06	-.07	.18	-.03	.07	.11	.30**	-.28**	-.14	-	
14. Age	33.81	9.38	.25*	.21*	.18	.28**	.05	.40**	.34**	.01	-.23*	.13	.13	.15	.05	-

Note. $N = 102$. Cronbach's alpha are on the diagonal. Gender was coded "1" for female and "2" for male.

*$p < .05$. **$p < .01$.

Table 3

Descriptive statistics and intercorrelation among variables of Study 1c

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Control need thwarting	3.10	1.64	(.93)													
2. Belonging need thwarting	3.19	1.56	.27**	(.90)												
3. Self-esteem need thwarting	1.81	1.17	.27**	.44**	(.96)											
4. Metadehumanization	4.08	1.54	.40**	.45**	.43**	(.94)										
5. Negative emotions	2.01	1.27	.38**	.54**	.54**	.60**	(.97)									
6. Active coping	4.75	1.07	-.28**	-.24**	-.10	-.17**	-.24**	(.83)								
7. Avoidance coping	4.43	0.96	.02	.16**	.16**	.28**	.16**	-.03	(.74)							
8. Organizational based self-esteem	5.60	1.03	-.44**	-.53**	-.33**	-.41**	-.45**	.34**	-.10	(.93)						
9. Gender	-	0.49	.04	.02	-.02	-.03	.04	-.07	.03	.02	-					
10. Age	36.22	9.54	.03	.08	.00	.13*	.04	.07	.03	.07	.02	-				
11. Education	3.75	1.09	-.17**	.16**	.02	-.06	-.03	.00	-.10	-.02	-.06	-.06	-			
12. Organizational size	5.08	2.58	.17**	.07	.00	.22**	.07	.05	.00	-.15**	-.04	-.01	.02	-		
13. Tenure with the organization	6.79	6.52	.05	.09	.02	.22**	.11*	.05	.14*	.03	.02	.48**	-.10	.16**	-	
14. Tenure with the superior	3.26	3.33	-.09	.02	.05	.10	.00	.03	.12*	.06	.01	.24**	-.03	-.07	.51**	-

Note. $N = 316$. Cronbach's alpha are on the diagonal. Gender was coded 1 for male and 2 for female. Education was coded 1 for "did not complete high school", 2 for "high school", 3 for "some college", 4 for "bachelor's degree", 5 for "master's degree", and 6 for "Ph.D". Organizational size was coded 1 for 1-9 employees, 2 for 10-49 employees, 3 for 50-249 employees, 4 for 250-499 employees, 5 for 500-999 employees, 6 for 1000-1999 employees, 7 for 2000-4999 employees, 8 for 5000-9999 employees, 9 for more than 10000 employees. $^{*}p < .05$. $^{**}p < .01$.

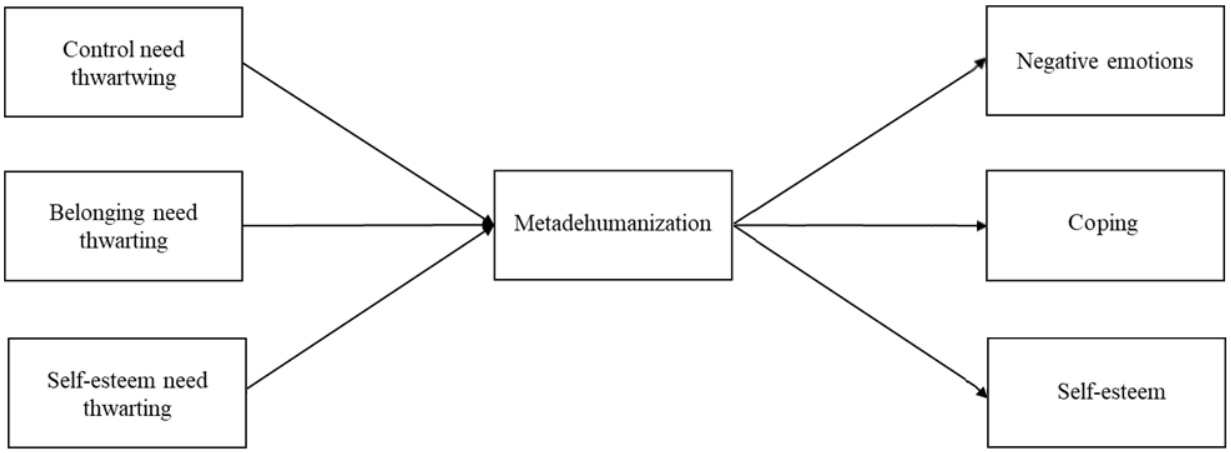


Figure 1. Graphical representation of the general model tested in the three studies.

Online Supplemental Materials for:

Examining the Role of Fundamental Psychological Needs in the Development of Metadehumanization: A Multi-Population Approach

Stéphanie Demoulin, Nathan Nguyen, Tina Chevallereau, Sullivan Fontesse, Jennifer Bastart, Florence Stinglhamber, and Pierre Maurage

Sections

1. Table S1. *Factor Loadings of the Metadehumanization Scale Based on a Principal Axis Factor within a Population of Women*.
2. Table S2. . *Factor Loadings of the Metadehumanization Scale Based on a Principal Axis Factor within a Population of Alcohol-Dependent Individuals*.
3. Table S3. *Bootstrapping Direct and Indirect Effects, Standard Error, and 95% Confidence Interval for Study 1a*.
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7. Figure S1. Standardized Coefficients for the Path Analysis Model of Study 1a.
8. Figure S2. Standardized Coefficients for the Path Analysis Model of Study 1b.
9. Figure S3. Standardized Coefficients for the Path Analysis Model of Study 1c.

Table S1

Factor Loadings of the Metadehumanization Scale Based on a Principal Axis Factor within a Population of Women

Type of dehumanization	Items	EV (60.74%)
Animalistic	Society treats me as if I was under-evolved	.823
Mechanistic	Society treats me as if I were an object	.817
Mechanistic	Society thinks that I am superficial, is not concerned about who I am inside	.807
Animalistic	Society does not treat me as someone cultured	.806
Animalistic	Society considers that I behave in a childlike way	.801
Animalistic	Society believes that I am an unsophisticated person	.788
Animalistic	Society believes that I am someone irrational	.783
Animalistic	Society considers me as rather primitive	.774
Mechanistic	Society thinks that women are all the same	.746
Mechanistic	I feel like I am used by others	.737
Animalistic	I am considered as an immature person	.736
Animalistic	Society sees me as someone who lacks of self-restraint, like an animal	.724
	Cronbach's alpha	.940

Note. N = 325. EV = explained variance.

Table S2

Factor Loadings of the Metadehumanization Scale Based on a Principal Axis Factor within a Population of Alcohol-Dependent Individuals

Type of dehumanization	Items	EV (69.70%)
	My close ones (friends, family, etc.) or other people…	
Mechanistic	treat me as an automaton	.892
Mechanistic	treat as if I was lacking depth	.891
Animalistic	perceive me as rather primitive	.881
Animalistic	treat me as if I was under-evolved	.871
Mechanistic	perceive me as a closed person, incapable of integrating new ideas	.870
Animalistic	treat me as if I lacked culture	.860
Mechanistic	treat me as if I was lacking empathy and sensitivity	.849
Mechanistic	treat me as if I was mechanical and cold, like a robot	.847
Mechanistic	treat me as a an object	.846
Mechanistic	perceive me as being cold	.845
Mechanistic	think that I am superficial	.835
Animalistic	treat me as an animal	.831
Mechanistic	treat as if I did not have a personality	.828
Animalistic	treat me as if I lacked intelligence and competence	.806
Animalistic	perceive me as lacking moral	.803
Animalistic	see me as coarse	.791
Mechanistic	consider me as immature	.784
Animalistic	consider that I behave in a childlike way	.780
Animalistic	see me as lacking self-restraint, like an animal	.735
	Cronbach's alpha	.977

Note. N = 102. EV = explained variance.

Table S3

Bootstrapping Direct and Indirect Effects, Standard Error, and 95% Confidence Interval for Study 1a

Model pathways	Direct effect	SE	95% CI		Indirect effect	SE	95% CI	
			Lower	Upper			Lower	Upper
CNT → MD → Negative emotions	.0146	.0725	-.1280	.1572	.0743	.0302	.0208	.1423
CNT → MD → Individual active coping	.0894	.1724	-.2497	.4285	.0855	.0424	.0220	.1939
CNT → MD → Collective active coping	.1847	.1627	-.1354	.5048	.0857	.0431	.0218	.1938
CNT → MD → Avoidance coping	.2052	.1505	-.0908	.5012	.0542	.0322	.0083	.1392
CNT → MD → Public self-esteem	-.0431	.0927	-.2255	.1393	-.1582	.0618	-.2836	-.0400
CNT → MD → Private self-esteem	.0802	.1109	-.1380	.2984	-.0898	.0399	-.1844	-.0255
BNT → MD → Negative emotions	.1407	.0725	-.0019	.2833	.1094	.0344	.0512	.1877
BNT → MD → Individual active coping	.5486	.1723	.2096	.8877	.1260	.0529	.0425	.2564
BNT → MD → Collective active coping	.1450	.1627	-.1751	.4651	.1263	.0509	.0464	.2512
BNT → MD → Avoidance coping	-.3057	.1504	-.6017	-.0097	.0799	.0395	.0188	.1784
BNT → MD → Public self-esteem	-.0575	.0927	-.2399	.1249	-.2330	.0643	-.3660	-.1136
BNT → MD → Private self-esteem	-.1921	.1109	-.4103	.0261	-.1322	.0424	-.2316	-.0605

SNT → MD → Negative emotions	.1543	.0703	.0159	.2926	.1091	.0318	.0560	.1814
SNT → MD → Individual active coping	-.2612	.1672	-.5901	.0677	.1257	.0531	.0402	.2490
SNT → MD → Collective active coping	.1049	.1578	-.2056	.4154	.1260	.0520	.0449	.2516
SNT → MD → Avoidance coping	.1311	.1459	-.1560	.4182	.0797	.0398	.0185	.1791
SNT → MD → Public self-esteem	-.1862	.0899	-.3631	-.0093	-.2324	.0617	-.3575	-.1161
SNT → MD → Private self-esteem	.0329	.1076	-.1788	.2445	-.1319	.0427	-.2309	-.0621

Note. CNT = control need thwarting; BNT = belonging need thwarting; SNT = self-esteem need thwarting; MD = metadehumanization; SE = standard error; CI = confidence interval.

Table S4

Bootstrapping Direct and Indirect Effects, Standard Error, and 95% Confidence Interval for Study 1b

Model pathways	Direct effect	SE	95% CI		Indirect effect	SE	95% CI	
			Lower	Upper			Lower	Upper
CNT → MD → Negative emotions	.1568	.1256	-.0925	.4061	-.0004	.0269	-.0616	.0537
CNT → MD → Active coping	.1133	.0694	-.0246	.2512	.0235	.0257	-.0069	.1084
CNT → MD → Avoidance coping	.0854	.0701	-.0538	.2247	.0225	.0239	-.0085	.0907
CNT → MD → Performance self-esteem	-.0253	.1433	-.3098	.2591	-.0454	.0501	-.1922	.0141
CNT → MD → Sociability self-esteem	-.3237	.1408	-.6032	-.0442	-.0679	.0589	-.2101	.0261
CNT → MD → Appearance self-esteem	-.0228	.1954	-.4107	.3651	.0078	.0402	-.0487	.1271
BNT → MD → Negative emotions	.1455	.1106	-.0740	.3650	-.0004	.0337	-.0606	.0761
BNT → MD → Active coping	-.0861	.0604	-.2062	.0339	.0320	.0274	-.0012	.1164
BNT → MD → Avoidance coping	.0259	.0610	-.0953	.1472	.0307	.0292	-.0011	.1213
BNT → MD → Performance self-esteem	.0686	.1262	-.1819	.3190	-.0553	.0567	-.2326	.0044
BNT → MD → Sociability self-esteem	.0101	.1240	-.2360	.2562	-.0828	.0653	-.2680	-.0014
BNT → MD → Appearance self-esteem	.0653	.1721	-.2763	.4068	.0095	.0500	-.0780	.1288

SNT → MD → Negative emotions	.0446	.1247	-.2029	.2921	-.0007	.0465	-.1126	.0824
SNT → MD → Active coping	.1093	.0682	-.0261	.2448	.0513	.0371	.0004	.1560
SNT → MD → Avoidance coping	.0112	.0688	-.1256	.1480	.0491	.0331	.0048	.1460
SNT → MD → Performance self-esteem	.0046	.1423	-.2778	.2870	-.0940	.0631	-.2787	-.0089
SNT → MD → Sociability self-esteem	.0851	.1398	-.1924	.3626	-.1405	.0751	-.3351	-.0289
SNT → MD → Appearance self-esteem	.0831	.1941	-.3021	.4682	.0161	.0696	-.0969	.1916

Note. CNT = control need thwarting; BNT = belonging need thwarting; SNT = self-esteem need thwarting; MD = metadehumanization; SE = standard error; CI = confidence interval.

Table S5

Bootstrapping Direct and Indirect Effects, Standard Error, and 95% Confidence Interval for Study 1b With Covariates

Model pathways	Direct effect	SE	95% CI		Indirect effect	SE	95% CI	
			Lower	Upper			Lower	Upper
CNT → MD → Negative emotions	.1389	.1251	-.1095	.3873	-.0022	.0232	-.0696	.0320
CNT → MD → Active coping	.1012	.0698	-.0376	.2401	.0156	.0228	-.0126	.0891
CNT → MD → Avoidance coping	.0705	.0710	-.0707	.2117	.0147	.0218	-.0153	.0776
CNT → MD → Performance self-esteem	-.0010	.1437	-.2862	.2842	-.0293	.0423	-.1669	.0200
CNT → MD → Sociability self-esteem	-.2712	.1367	-.5427	.0003	-.0422	.0518	-.1755	.0399
CNT → MD → Appearance self-esteem	-.0026	.1836	-.3671	.3619	.0080	.0313	-.0258	.1276
BNT → MD → Negative emotions	.0969	.1096	-.1206	.3144	-.0037	.0337	-.0723	.0618
BNT → MD → Active coping	-.0622	.0603	-.1820	.0576	.0293	.0258	-.0016	.1090
BNT → MD → Avoidance coping	.0064	.0613	-.1155	.1283	.0275	.0277	-.0030	.1088
BNT → MD → Performance self-esteem	.1174	.1258	-.1324	.3671	-.0493	.0536	-.2197	.0054
BNT → MD → Sociability self-esteem	.0700	.1198	-.1678	.3077	-.0712	.0598	-.2484	-.0004
BNT → MD → Appearance self-esteem	.1894	.1608	-.1298	.5086	.0135	.0431	-.0558	.1223

SNT → MD → Negative emotions	.0936	.1270	-.1585	.3458	-.0075	.0546	-.1376	.0865
SNT → MD → Active coping	.1126	.0703	-.0272	.2524	.0548	.0376	.0016	.1575
SNT → MD → Avoidance coping	.0420	.0715	-.1002	.1842	.0514	.0358	.0013	.1502
SNT → MD → Performance self-esteem	-.0536	.1458	-.3431	.2359	-.0984	.0684	-.2875	-.0024
SNT → MD → Sociability self-esteem	-.0184	.1388	-.2940	.2572	-.1422	.0764	-.3453	-.0287
SNT → MD → Appearance self-esteem	-.0062	.1864	-.3763	.3638	.0270	.0705	-.0886	.2037

Note. CNT = control need thwarting; BNT = belonging need thwarting; SNT = self-esteem need thwarting; MD = metadehumanization; SE = standard error; CI = confidence interval.

Table S6

Bootstrapping Direct and Indirect Effects, Standard Error, and 95% Confidence Interval for Study 1c

Model pathways	Direct effect	SE	95% CI		Indirect effect	SE	95% CI	
			Lower	Upper			Lower	Upper
CNT → MD → Negative emotions	.0796	.0336	.0134	.1458	.0683	.0171	.0397	.1086
CNT → MD → Active coping	-.1525	.0385	-.2282	-.0768	-.0022	.0125	-.0285	.0221
CNT → MD → Avoidance coping	-.0729	.0348	-.1413	-.0045	.0432	.0140	.0201	.0752
CNT → MD → OBSE	-.1768	.0308	-.2375	-.1161	-.0179	.0098	-.0399	-.0008
BNT → MD → Negative emotions	.2005	.0378	.1262	.2749	.0753	.0194	.0431	.1203
BNT → MD → Active coping	-.1316	.0432	-.2166	-.0466	-.0024	.0139	-.0315	.0238
BNT → MD → Avoidance coping	.0297	.0391	-.0471	.1066	.0476	.0151	.0225	.0817
BNT → MD → OBSE	-.2569	.0346	-.3251	-.1887	-.0198	.0103	-.0435	-.0022
SNT → MD → Negative emotions	.2851	.0496	.1875	.3827	.0858	.0224	.0483	.1368
SNT → MD → Active coping	.0449	.0567	-.0667	.1565	-.0028	.0156	-.0340	.0283
SNT → MD → Avoidance coping	.0421	.0513	-.0588	.1430	.0542	.0183	.0236	.0950

SNT → MD → OBSE	-.0336	.0455	-.1231	.0559	-.0225	.0128	-.0522	-.0013

Note. CNT = control need thwarting; BNT = belonging need thwarting; SNT = self-esteem need thwarting; MD = metadehumanization; OBSE = organizational based self-esteem; SE = standard error; CI = confidence interval.

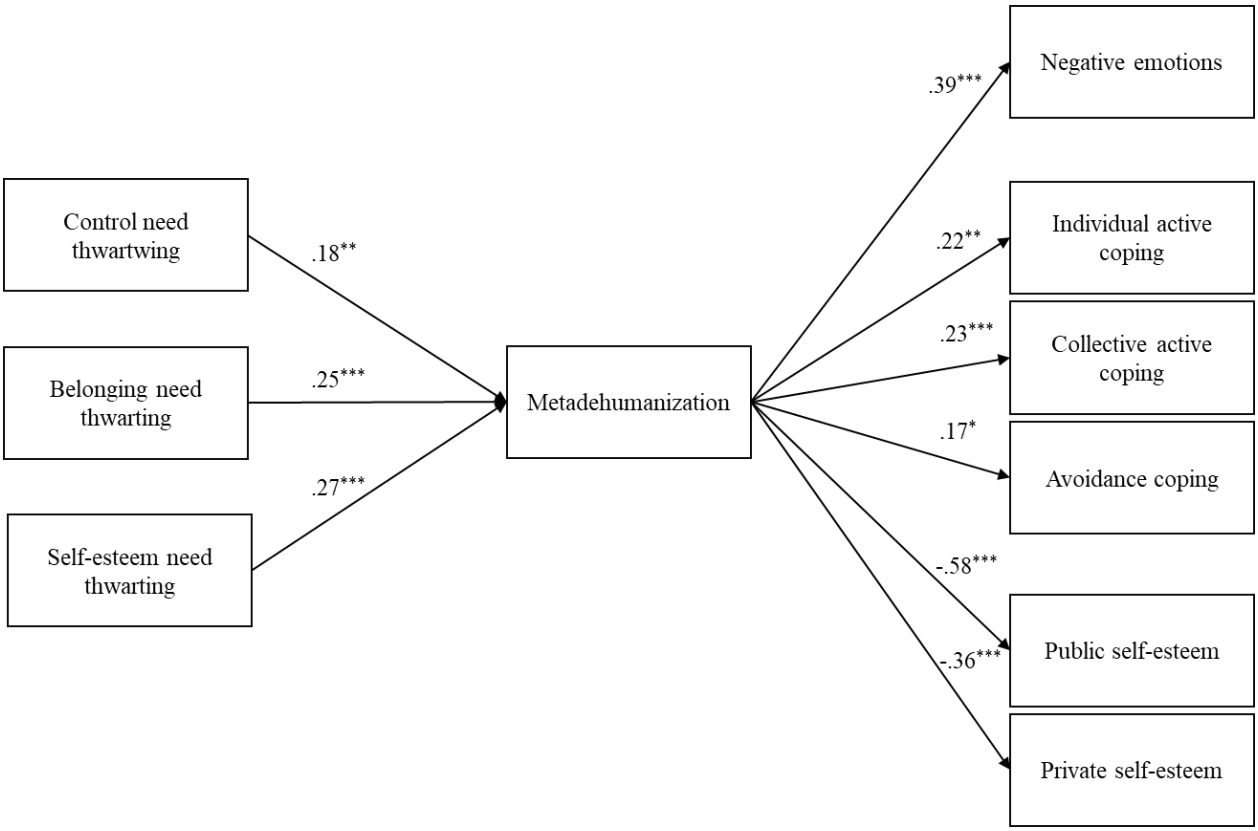


Figure S1. Standardized coefficients for the path analysis model of Study 1a (N = 325). For the sake of clarity, (non-)significant direct effects are not displayed.

$^{*}p < .05$. $^{***}p < .001$.

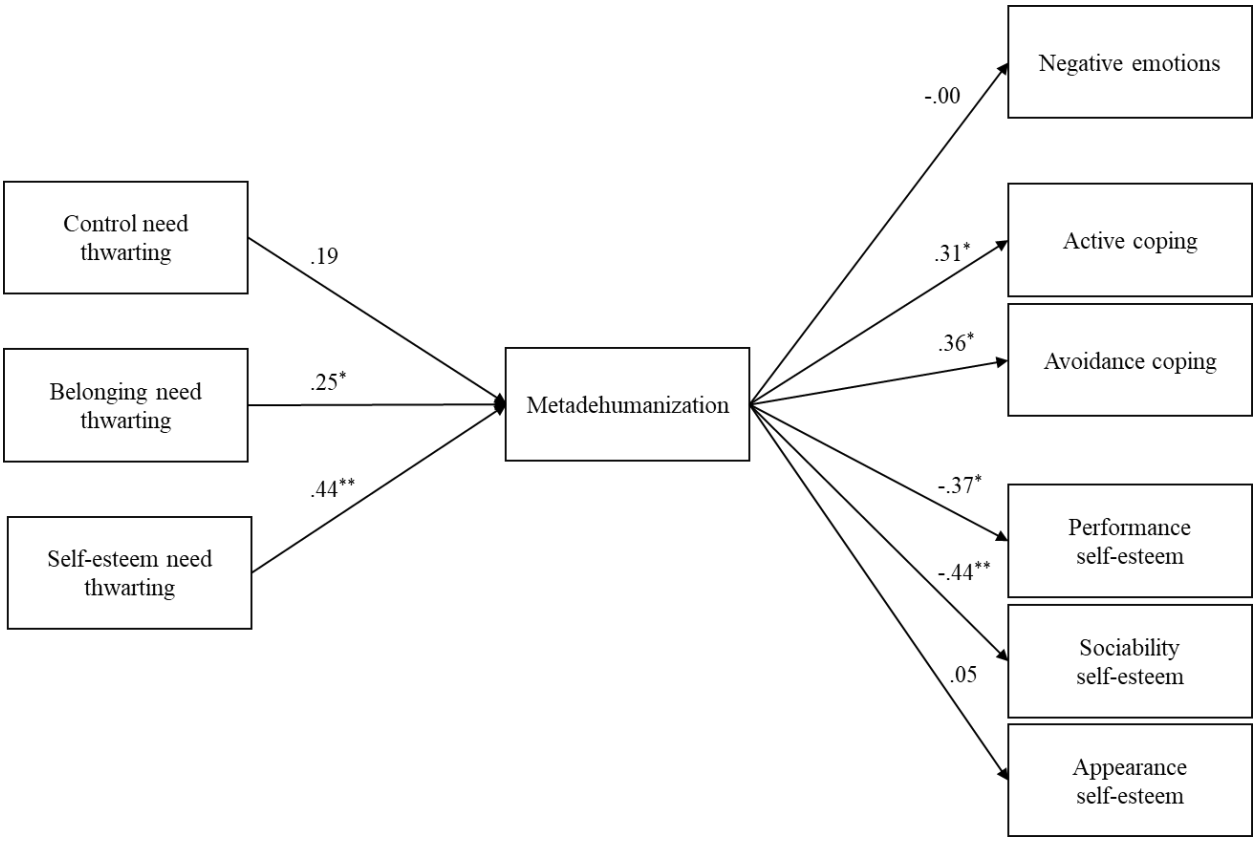


Figure S2. Standardized coefficients for the path analysis model of Study 1b (N = 102). For the sake of clarity, (non-)significant direct effects are not displayed.

$^{*}p < .05$. $^{***}p < .001$.

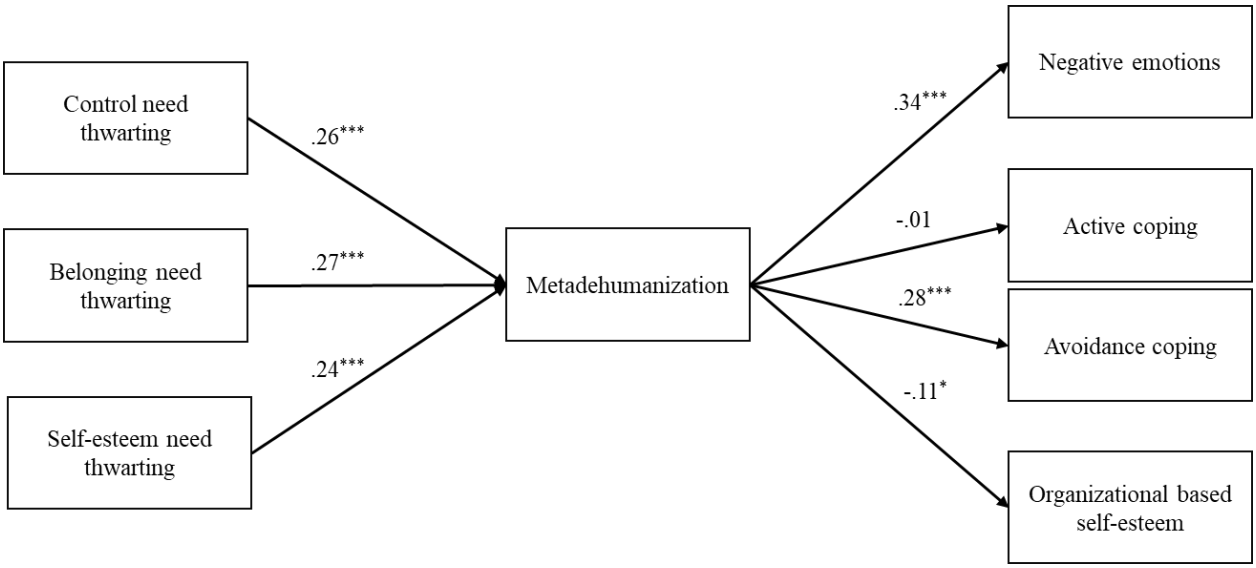


Figure S3. Standardized coefficients for the path analysis model of Study 1c (N = 316). For the sake of clarity, (non-)significant direct effects are not displayed.

$^{*}p < .05$. $^{***}p < .001$.