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Backfire Effects of Performance Quantification on Stress and Disidentification: The role of Metadehumanization in Organizations, Sport, and Social Networks

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Abstract

Quantification, i.e., the shaping of human environments in numerical terms, is so widespread in contemporary societies that it has contaminated almost all spheres of human life. We explore the links between performance quantification and individuals' feelings of being treated in a dehumanized way, i.e., metadehumanization. We present an integrative research that assessed the relationships between performance quantification, metadehumanization, and on two of metadehumanization's consequences, i.e., stress and disidentification, in three contexts, i.e., organizations, sport, and social networks. In addition, we test the moderating roles of two individual variables, i.e. competitiveness and tender-mindedness, in this model. In three samples ($N_s = 204, 300, 297$, for Samples A, B, and C, respectively), we show a mediation effect of metadehumanization on the links between performance quantification and stress and disidentification that holds despite of contextual variations. Unexpectedly, our two moderated-mediation hypotheses did not hold or showed inconsistent effects across samples.

Keywords: Quantification; Metadehumanization; stress; disidentification; organizations; sport; social networks

Backfire Effects of Performance Quantification on Stress and Disidentification: The role of Metadehumanization in Organizations, Sport, and Social Networks

One important characteristic of contemporary life is that it is increasingly approached in numerical terms and by means of mathematical and statistical models (Plester et al., 2022). Whether we think of domains as diverse as work, health, science, or internet, numbers are everywhere and all aspects of human activity and performance have become quantifiable. Indeed, quantification is such a widespread phenomenon that some have argued that it “intrudes into every kind of natural system scientists care to investigate” (Michell, 2003, p. 531). Because numbers shape our perception of the world (Everett, 2017), it is thus essential to examine their influence in diverse spheres of our human societies.

When utilized to measure human being’s activities, the alleged goal that quantification pursues is the increase of (individual or collective) performance. For instance, via the used of KPIs (Key Performance indicators, Marr et al., 2004) or the implementation of electronic performance monitoring (Ravid, 2020), quantification in organizational environments aims at increasing employees and teams’ productivity; in the sport domain, wearable technologies quantifying health, activities and overall performance are used by athletes and their coaches to boost their competitive advantage (Luczak et al., 2020); and on social networks, social worth is often synonymous of the number of “views”, “likes”, and “shares” and the latter indices are used as measures of influencers’ performance which determines their marketability (Gräve, 2019).

In the present paper, we propose that performance quantification might have unexpected effects that run counter to its original intent, i.e., that of increasing performance. As a matter of fact, recent literature has already underlined that the excessive monitoring of individuals has a host of negative consequences for its recipients as, for instance, increased anxiety, stress, and performance fatigue (e.g., at work, see Ball, 2021; in sport, see Manley &

Williams, 2022). The present research builds on this literature by providing further evidence for the backfire effects of performance quantification on stress and domain disidentification in three contexts, i.e., organizations, sport, and social networks. These domains were selected because quantification in other domains (e.g., health) is not specifically related to people's performance and might therefore be less relevant regarding our dependent variables (in particular, with respect to domain disidentification). In addition, although social networks have only recently attracted researchers' attention and are not often listed among performance-focused domains (unlike work or sport for instance, Molan et al., 2019), we deemed it important to extend our investigation to a domain in which social rather than cognitive performance is at play. Importantly, the parallel study of performance quantification in these three domains responds to a call in the literature to examine concepts in various contexts (Jones, 2002; Molan et al., 2019). Indeed, research suggests that performance-related effects traditionally found in cognitive-based tasks might not always operate in exactly the same way in the management of non-cognitive tasks (e.g., the stereotype threat phenomenon in sport; Beilock & McConnell, 2004).

More importantly, our work aims at testing one of the likely mechanisms explaining the links between performance quantification and its consequences, namely, metadehumanization, the experience of being perceived or treated in a dehumanized way (Kteily et al., 2016). Indeed, because performance quantification reduces human activities to numbers and because individuals whose performance is quantified are not seen by others as full human being (McCabe, 2016) and are treated as socially-empty entities (Barker-Ruchti et al., 2021), we reasoned that it would be related to metadehumanization among its targets. In addition, we explore the possibility that the performance quantification-metadehumanization link is not of the same intensity for all individuals. We argue and test the possibility that highly competitive individuals (Fletcher et al., 2008) and those that are low in tendermindedness (Costa et al.,

1991) would experience dehumanization to a lesser extent and, as a result, would suffer less from stress and disidentify less with the domain in which their performance is being quantified.

Performance Quantification

Quantification can be defined as the practice of counting and ordering the world through numbers (Pérezts et al., 2021). When quantification is at play, phenomena are approached and understood through numerical representations and inferences are made on the mathematical analysis of these numerical representations (Tafreshi et al., 2016). Quantification is a pervasive practice in contemporary societies where the performance of many human activities is approached through numerical values and analyzed by statistical methods. Such pervasiveness led some scholars to consider it as “by far one of the major revolutions of our times” (Pérezts et al., 2021, p. 1353).

Quantification practices, through the control and surveillance they allow, aim at the correction, exclusion, standardization and optimization of the individuals under scrutiny (Lemke, 2011). Indeed, quantification is primarily used as an apparently rational way of measuring absolute and relative performance in various domains (Sewell et al., 2012; see also the concept of “performativity”, Ball, 2003). For instance, quantification at work helps determining the extent to which a given employee’s performance is ‘deviant’, ‘normal’, or ‘useful’ (Sewell et al., 2012); in sport, it is utilized by coaches and athletes in the training and learning process as augmented information to support athletes’ development, preparation, and recovery related to competitive performance (McCosker et al., 2022); and in social networks, it is used by social media users as an indicator of their social media performance (Ferreira et al., 2022).

As a broad phenomenon, performance quantification is still largely understudied and we know little on its psychological impact on those that are its targets although available

evidence suggests that this impact is potentially tremendous. As a matter of fact, literature has shown numerous influences of electronic performance monitoring at work on employees' psychological functioning. A recent review by Kalischko and Riedl (2021), for instance, evidenced the effects of such monitoring on six major outcomes (i.e., overall, higher stress and lower job satisfaction, motivation, trust, performance, and commitment). However, electronic quantification at work is only one part of the vast phenomenon of quantification performance, and quantification practices have been evidenced in other domains than work.

In addition, the mechanisms underlying the links between quantification and individuals' psychological functioning are still largely unknown. The available literature on this question has nevertheless suggested that the effect of performance quantification on stress, motivation, and performance might depend on the perceived purpose (e.g., control, development, research, etc.; Bartels & Nordstrom, 2012) that people associate with the very practice of quantification, the sense of informational justice (McNall & Roch, 2009) or the loss of control feeling (Carayon, 1993) that quantification might trigger. Hereafter, we propose that performance quantification is also likely to be linked metadehumanization among targets and that this metadehumanization mediates the relationships between performance quantification and two important variables, namely stress and disidentification.

Performance Quantification and Metadehumanization

As defined before, metadehumanization refers to the feeling or experience of dehumanization (Kteily et al., 2016), and in its mechanistic form¹, to the experience of being

¹ There also exist an animalistic form of metadehumanization which refers to the experience of being associated with animals or of being treated as lacking uniquely human traits like self-restrain, civility or culture (Bastian & Haslam, 2010, 2011). Although in Samples B and C of the present research we also measured the animalistic form of metadehumanization, we chose to exclusively focus on the mechanistic form since performance quantification renders it more relevant than the animalistic form. As we will see later in the manuscript, performance quantification indeed leads to the perception of the individual as socially empty (Barker-Ruchti et al., 2021), which is one of the characteristics of mechanistic dehumanization. Moreover, given that mechanistic dehumanization is more prevalent than animalistic dehumanization in the work context (Bell & Khoury, 2011), literature on organizational

associated with an object, a robot or feeling treated as having lower human nature qualities, such as empathy and sensitivity (Haslam, 2006; Haslam & Loughnan, 2014).

Metadehumanization often arises as a consequence of the perceived (mal)treatment one receives from another person or another group. For instance, metadehumanization has been shown to follow instances of ostracism (Bastian & Haslam, 2010), harassment (Moor et al., 2013), abusive practices (Caesens et al., 2019), interpersonal objectification (Chevallereau et al., 2021), or racial discrimination (Mekawi & Watson-Singleton, 2021). Metadehumanization has also been evidenced as a consequence of the physical environment in which people operate. For instance, at work, metadehumanization is stronger when employees operate in flex offices than in cell ones (Taskin et al., 2019) or when they work in unhealthy environments (Stinglhamber et al., 2022).

Aside from these, metadehumanization levels importantly depend on the various ways in which human beings shape their social, organizational, or cultural environments. For instance, , metadehumanization diminishes when individuals operate in (organizational) environments that are perceived as supportive (Caesens et al., 2017) and just (Bell & Khoury, 2016) while environments that are overly sexualized (Demoulin et al., 2023) or too bureaucratic (Lagios, Nguyen, et al., 2022) tend to enhance dehumanization feelings.

As quantification is also a practice that shapes the way human beings apprehend the world (Everett, 2017), we reasoned that it should similarly be related to people's metadehumanization when their performance is the target of potentially dehumanizing numerical evaluations. While so far performance quantification has never been linked to metadehumanization, it has nevertheless been associated with dehumanization, i.e., the phenomenon of perceiving or treating others in dehumanized ways. For instance, in one study

metadehumanization has so far focused primarily on its mechanistic form. By "metadehumanization", we thus mean "mechanistic metadehumanization" in the rest of the manuscript.

conducted in a UK bank, McCabe (2016) found that strategists who use numerical ways of thinking in their analyses of frontline employees do not see the latter as human beings and fail to display towards them the level of compassion that full human beings usually deserve. The same conclusion is also drawn from studies in the sport domain which highlight the counterproductive effects of quantification practices that remove agency and create socially-empty athletes (Barker-Ruchti et al., 2021). Thus, if performance quantification relates to perceivers' dehumanization of its targets, one could expect these targets' level of metadehumanization to correlate with the extent to which their performance is being quantified. This argument is in line with research that has shown that people are often clear-sighted about the way others view them (Sigelmand & Tuch, 1996; Yzerbyt et al., 2005). It is also corroborated by research in the organizational domain that has linked monitoring practices to the creation of a depersonalized atmosphere in organizations (Sherif & Al-Hitmi, 2017).

Hypothesis 1: Increased performance quantification will be associated with higher metadehumanization.

Consequences of the Performance Quantification-Metadehumanization Link

The potential relationship between performance quantification and metadehumanization is not without consequences. Indeed, metadehumanization is related to a host of consequences at the cognitive, emotional, behavioral, and interpersonal levels (Demoulin, Maurage, & Stinglhamber, 2021). For instance, at work, perceptions of being dehumanized by one's organization are associated with lower levels of well-being, more negative attitudes towards the organization and work, lower individual and team performance and higher conflicts (for a review, see Brison et al., 2022). Metadehumanization has also commonly been associated with higher aggression tendencies (Landry et al., 2022) and higher avoidant coping strategies (Demoulin, Nguyen, et al., 2021).

In the present work, we investigate the effects of the performance quantification-metadehumanization link on two consequences, namely, stress and disidentification. First, assessing stress responses is important in the context of quantification as performance quantification or, more generally, all forms of electronic performance monitoring, has been related to higher levels of stress in various studies (for a review, see Kalischko & Riedl, 2021). If performance quantification is a significant environmental stressor, it is important to explore through which mechanism is exerted its effect. We propose that metadehumanization would mediate the relationship between performance quantification and stress. Indeed, metadehumanization has been shown to profoundly affect individuals' well-being in terms of psychological and physical strains, negative emotions, and stress (e.g., Caesens & Stinglhamber, 2019; Lagios, Caesens, et al., 2022). If performance quantification relates to metadehumanization, as suggested by our first hypothesis, and because metadehumanization increases stress, it is reasonable to propose that the relationship between quantification and stress might, at least in part, be mediated by an increase in metadehumanization.

Hypothesis 2a: Metadehumanization mediates the relationship between quantification and stress.

Second, we reasoned that performance quantification, because of its relationship with metadehumanization, should also lead to disidentification with the domain in which quantification is applied. Indeed, metadehumanization increases avoidant coping strategies (Demoulin, Nguyen, et al., 2021), i.e., attempts to get away from the problematic situation (Feifel & Strack, 1989), and one way to increase avoidance is psychological disidentification. Psychological disidentification creates psychological distance between the threatened individual and the problematic situation (Becker & Tausch, 2014). For instance, in the intergroup relation literature, research has shown that negatively stereotyped group members (e.g., women as bad in mathematics) disidentify with the domain of competence to which the

negative stereotype applies (e.g., mathematics) and that such disidentification helps them protecting their self-esteem from failures in the threatening domains (Major et al., 1998). Similarly, in the organizational literature, Schaubroeck and colleagues (2018) have shown that when workers experience high levels of work dirtiness, their occupational disidentification increases. In line with these literatures, we hypothesized that the performance quantification-metadehumanization relationship would lead to disidentification with the domain to which quantification applies (i.e., organizations, sport, or social networks in our research).

Hypothesis 2b: Metadehumanization mediates the relationship between performance quantification and disidentification with the quantifying domain.

In sum, Hypotheses 2a and 2b both imply that performance quantification can have a backfire effect on performance because the metadehumanization that is linked with it increases stress and decreases domain identification, two consequences that would ultimately be detrimental, instead of beneficial to performance.

Individual Moderators of the Performance Quantification-Metadehumanization Link

So far, we have considered that performance quantification would systematically be positively related with metadehumanization and its negative outcomes without considering potential variations in intensity. Yet, scholars have previously noted that performance quantification practices are not always perceived negatively and might be considered by some as serving some important functions. For instance, Sewell and collaborators (2012; see also Sewell & Barker, 2006) examined reactions of call-center employees to quantifying surveillance practices. These authors argue that practices of performance measurement can be seen as either designed to increase employees' subordination to the organization's interests (i.e., increasing performance and hence the organization's productivity), what the authors call the Coercion discourse, or as a legitimate management tool aiming at minimizing opportunistic behaviors of some (deviant) free-riders, what they call the Care discourse.

According to the person-environment fit theory (Edwards et al., 2006), interpretations of a given situation will vary as a function of fit vs. mismatch between the characteristics of a person and the characteristics of an environment. Research using fit theory in our three domains of interest has shown, for instance, that, in organizations, fit between a person and a job positively relates to job satisfaction and commitment (Kristof-Brown et al., 2005); in sport, athletic satisfaction relates to athletes' perceived fit with their coaches (Beattie & Turner, 2022); and on social media, fatigue is dependent on the interaction between social media characteristics and individuals' personality (Xiao & Mou, 2019).

In line with the fit literature, we reasoned that quantifying environments might suit better some individuals than others depending on the fit between individuals' characteristics and the characteristics of the quantifying environment. In our research, we thought to explore two potential individual moderators of the link between performance quantification and metadehumanization: competitiveness and tender-mindedness. First, performance quantification leads to enhanced levels of competition (Carayon, 1993) and research has shown that individuals with high competitiveness function particularly well in competitive climates (e.g., Spurk et al., 2019). In line with this, we hypothesized that competitiveness would moderate the performance quantification-metadehumanization link such that individuals with high levels of competitiveness would experience lower feelings of dehumanization, with the consequence of less stress and disidentification.

Hypothesis 3a: The positive effects of performance quantification on stress and disidentification via metadehumanization are stronger for low competitors than for high ones.

Second, performance quantification is a practice in which judgements and decisions are being made based on the mathematical analysis of numerical representations (Tafreshi et al., 2016). Although some individuals might appreciate this (apparently) rigorous way of making decisions, others, that are more governed by feelings than cold logic, might find quantifying

environments particularly problematic. Again, in line with fit theory, we propose that tender-minded individuals, i.e., individuals that are guided by feelings more than logic in making their judgments and forming their attitudes (Costa et al., 1991), would experience stronger mismatch than tough-minded individuals in quantifying environments. Indeed, lay wisdom in Western societies often tends to oppose heart and sentiments to head, logic, and reasoning (see for instance, Goodhart, 2020). Tender-minded individuals, because of their sentimental and romantic inclinations (Perugini & Gallucci, 1997; Crowe et al., 2018), might feel particularly at odd in environments that put such a strong emphasis on numbers and rationality. The stronger mismatch should then lead them to experience higher levels of metadehumanization and, as a consequence, more stress and higher disidentification.

Hypothesis 3b: The positive effects of performance quantification on stress and disidentification via metadehumanization are stronger for high tender-minded individuals than for low ones.

Overview of the Study

Our full moderated-mediation theoretical model is presented in Figure 1. To test our hypotheses, we conducted a field study using samples coming from three different domains, i.e. the organizational domain (Sample A), the sport domain (Sample B) and the social networks domain (Sample C).

This research project was approved by the ethics committee of the authors' home institution. The pre-registrations for Samples B and C and the data that support the findings for all three samples are available on Open Science Framework (OSF) at the following addresses: https://osf.io/xg2hr/?view_only=4fb6e7719b654091b0cb85f1c522c304 and https://osf.io/s936w/?view_only=f13e267568d24e478be987b7e80045ff, for preregistration of Samples B and C, respectively, and https://osf.io/57fsa/?view_only=b7d4510181814644a05e3785a02ce493 for data.

Method

Participants and Procedure

Sample A (Organizations)

We relied on a convenience sample composed of employees coming from a variety of organizations and sectors. Participants were recruited via the social networks of an undergraduate student and were invited to complete an online questionnaire. Collection was stopped when no additional participants logged in to the questionnaire despite several reminders sent by the undergraduate student to her network². Although no power analyses were *a priori* run to determine this sample, we compute sensitive power analyses, estimating minimal effect sizes detectable at two power levels given our expected moderation. Results of these analyses showed that, given our sample size (i.e., 204), the minimally detectable effects for a moderation with three predictors are .05 and .09, i.e., at .80 and .95 power levels, respectively.

A total of 204 participants fully completed the survey ($M_{\text{age}} = 41.29$, $SD = 10.06$) who, for the most part, were women (149 were women and 55 were men). Most participants had been working in the public administration (15.7%) or in the business, consulting and management domain (15.2%). Most of them held a master's degree (59.3%) and worked in organizations employing 50-249 people (22.1%). On average, they had been working in their current organization for 10.83 years ($SD=8.54$). Participants were assured of the anonymity and confidentiality of their responses.

Sample B (Sport)

To determine the sample size for our moderated mediation, we resorted to a combination of calculation: sample size for moderation, mediation, and path analysis. Using

² For Sample A, no power analyses were performed as this sample was collected by a master student as part of her master thesis and the sample was directly dependent on the student's social network. In line with our supervision practices regarding master theses, a minimum sample of 150 participants was required from the student.

G*Power, we first assessed a moderation effect with 3 predictors, a small effect size (.05), a power of .80. This required 222 participants. We then estimated the sample for a mediation using the Fritz and MacKinnon estimations (2007, Table 3) with medium effect size on path a and small-to-medium effect sizes on path b; this led to a sample size of 116. Finally, as we also planned to compute path analyses on an exploratory basis and given that, in path analyses, 5 participants should be included for each indicator to be estimated and that we have 19 indicators, 95 participants were needed. With these 3 sample size indicators (222, 116, and 95) in mind, we opted for a more conservative sample size of 300 participants.

We recruited participants via Prolific Academic. They had to be at least 18 years old, be native English speakers³, have at least 90% approval rate in prior studies completed on Prolific Academic, and be a member of a sport team. Each participant received a £1.47 compensation for the time spent on completing the survey. Three hundred and ten participants took part in our survey. However, 10 participants were excluded from the analyses as they failed attentional check questions or because they admitted that they did not answer the questionnaire honestly. The final sample thus comprised 300 participants. Most of them were men (216 were men, 83 were women, and 1 individual did not indicate their gender). Their mean age was 35.80 years ($SD=11.56$) and most held a bachelor's degree (46.0%).

Sample C (Social Networks)

Since the hypotheses and theoretical model are identical to that of Sample B, we applied the same rules to determine the needed sample size and opted for a conservative size of 300 participants. Similar to Sample B, participants were recruited via Prolific Academic. They had to be at least 18 years old, be native English speakers, and have at least 90% approval rate in prior studies completed on Prolific Academic. In addition, participation in

³ Despite the use of this inclusion criterion on Prolific, we asked participants if English was their first language in the survey. Twenty-four participants responded that it was not in Sample B and 26 in Sample C.

one sample precluded participation in the other. Each participant received a £1.47 compensation for the time spent on completing the survey. Three hundred and six participants fully completed our survey. However, 9 participants who failed attentional check questions or who indicated that they did not answer the survey honestly were withdrawn from the analyses. The final sample thus comprised 297 participants. One hundred and ninety-six were women and 94 were men, with 7 individuals not indicating their gender. Their mean age was 37.61 years ($SD=12.94$) and most held a bachelor's degree (31.6%).

Measures

As far as possible, the measures were identical from sample to sample. For some variables, however, slight adaptations had to be applied to better fit with the domain under study. Unless otherwise indicated, all items were assessed using a 7-point Likert scale ranging from “1” (strongly disagree) to “7” (strongly agree). Although items within scales were randomly presented, the scales themselves were presented in a fixed order (i.e., independent variable, mediator, dependent variables, moderators), and scale scores were computed by averaging all scale items.

Performance Quantification

In order to assess performance quantification in participants' organization, in their team sport or on the social networks they used, we developed a 6-item scale for the purpose of the current research. In line with the definition of Pérezts et al. (2021), items refer to the fact that every action or decision in these human environments is governed by numbers or shaped in numerical terms. A sample item is: “In my organization/In my sport/On social networks, every action is monitored and measured” (see all items in Tables S1A-B-C in Supplementary Material). Exploratory and confirmatory factor analyses were performed on the performance quantification and metadepersonalization items to investigate their distinctiveness. As can be shown in Tables S1A-B-C (see Supplementary Material), the performance quantification and

metadehumanization items appropriately loaded on their respective factors and did not present high cross-loadings, implying that performance quantification and metadehumanization are distinct constructs. Results of confirmatory factor analyses indicated that the two-factor models fitted the data well (although less so in Sample C) and were superior to the more constrained 1-factor models (see Table S2). The Cronbach's alphas of this measure as well as of all subsequent measures are reported in Tables 1A, 1B, and 1C.

Metadehumanization

For the organizational domain, we used the 11-item scale developed by Caesens et al. (2017) to assess employees' perceptions of being dehumanized by their organization. A sample item is "My organization treats me as if I were an object" (see all items in Tables S1A-B-C in Supplementary Material).

For the other two domains (i.e., sport and social networks), we assessed participants' perceptions of being dehumanized adapting the 8 items of Demoulin, Nguyen et al.'s scale (2021; cf. Study 1a) capturing the mechanistic form of metadehumanization. A sample item is "In my sport/On social networks, people treat me as if I were an object."

Stress

In order to assess participants' stress, we used the scale developed by House and Rizzo (1972) to measure job-induced stress. This scale includes 7 items, one of which is specifically dedicated to professional meetings and was therefore excluded from the study due to its excessive contextualization. The other 6 items were straightforwardly adapted to the social networks domain. A sample item is "I have felt fidgety or nervous as a result of my job/social networks". For the sport domain, however, as it is very unlikely that practicing a sport *per se* makes one nervous or tense, we slightly adapted the items by specifying that quantification practices could be the cause of stress. A sample item for the sport domain is thus "I have felt fidgety or nervous as a result of quantification practices in my sport".

Disidentification

To measure participants' disidentification, we relied on the 6-item scale developed by Kreiner and Ashforth (2004) to measure organizational disidentification. These items were straightforwardly adapted to the social networks domain. A sample item is "I am embarrassed to be part of this organization/to be on social networks". Again, because it is highly unlikely that participants would respond that they are embarrassed to play a sport, we adapted the items to specifically address quantification practices in the sport setting. A sample item for the sport domain is thus "I am embarrassed of the quantification practices at play in my sport".⁴

Competitiveness

We used the four competitiveness items from the vertical individualism scale developed by Triandis and Gelfand (1998) to measure this personality trait of participants. A sample item is "When another person does better than I do, I get tense and aroused".

Tender-mindedness

Participants' personality trait of tender-mindedness was measured using the 8-item sub-scale from the Revised NEO Personality Inventory (Costa et al., 1991). A sample item is "I am hard-headed and tough-minded in my attitudes" (reverse).

Control variables

We examined the empirical relationships between the various control variables (i.e., gender, age, level of education in all three samples; organizational tenure and organizational size in Sample A; number of minutes of sports practice per week and number of sports in Sample B; and frequency of social network use, number of minutes per day, and number of

⁴ In Sample B (i.e. in the sport domain), we also measured a construct that is theoretically close to disidentification, namely disillusionment, using and adapting the 6-item scale of Santinello (2007). As the results were essentially identical with this dependent variable, we did not include them in the manuscript. However, they are available in Tables S3 and S4 in Supplementary Material. In all three samples, we also measured task and relational conflicts (Jehn, 1995). Because results on these dependent variables are unstable across samples, we opted for not including them in the manuscript. The raw data for these measures are nevertheless available on OSF.

social networks in Sample C) and the dependent variables (i.e., metadehumanization, stress, and disidentification). Level of education is positively correlated with metadehumanization and disidentification, while organizational size is positively related to metadehumanization in Sample A (see Table 1A). Age is negatively correlated with stress, whereas level of education is positively related to disidentification in Sample B (see Table 1B). Gender is negatively correlated with disidentification (i.e., females disidentified less than males), while age was negatively related to metadehumanization, stress and disidentification, and frequency of use, number of minutes per day and number of social networks were positively correlated with stress in Sample C (see Table 1C). Following Becker et al.'s (2016) recommendations, we performed the analyses with and without these control variables. The results were essentially identical and did not change the interpretation of the findings. Therefore, the results reported here are free from any control variables to reduce model complexity.

Results

Descriptive Statistics and Correlations Among Variables

Tables 1A, B and C display the descriptive statistics and the correlations among variables included in the organizational, sport and social networks domains, respectively. As it can be shown, performance quantification and metadehumanization are significantly and positively correlated in all three samples, which is in line with Hypothesis 1.

Test of the Hypotheses

We used the PROCESS macro for SPSS (5,000 bootstrap resamples, and 95% confidence intervals) to test our hypotheses. First, Models 4 were performed to confirm the relationship between performance quantification and metadehumanization (Hypothesis 1) and the mediating effect of metadehumanization in the relationships between performance quantification and the two outcomes (i.e., stress and disidentification; Hypothesis 2).

Results of these analyses with their effect sizes are displayed in Tables 2 and 3. As it can be seen, performance quantification is significantly and positively related to metadehumanization, which is in turn significantly and positively related to both stress and disidentification in all three samples. Importantly, the results also indicated that the indirect effects of performance quantification on both stress and disidentification through metadehumanization are significant. Taken together, these findings fully support Hypotheses 1 and 2.

Second, Models 7 were used to test the moderated mediations assumed through Hypothesis 3, i.e. the moderating role of both competitiveness and tender-mindedness on the first stage of the suggested mediations⁵. Results of these analyses are displayed in Tables 4, 5, 6 and 7. They first revealed that the two-way interaction between performance quantification and competitiveness on metadehumanization was not significant. That is, there was no evidence that performance quantification interacted with participants' competitiveness to influence their feelings of being dehumanized and hence any of the outcomes (i.e., stress and disidentification; see Tables 4 and 5).

The results then indicated that the two-way interaction between performance quantification and tender-mindedness on metadehumanization was significant in Sample A but not in the other two samples (see Tables 6 and 7). In the organizational domain, results indeed showed that the effect of performance quantification on metadehumanization was stronger among participants reporting high tender-mindedness than among participants with low tender-mindedness. The moderating effect of tender-mindedness on the performance quantification-metadehumanization relationship is illustrated in Figure 2. The simple slopes

⁵ Although not pre-registered, we also ran Models 8 on an exploratory basis (i.e. models where moderation on the direct link between the independent variable and the dependent one is added). The results of these analyses are presented in Tables S5, S6, S7 and S8 in Supplementary Material. As no reliable patterns emerge from these additional analyses, we have decided to retain and discuss in the body of the manuscript the results of Models 7, which were pre-registered.

tests indicated that the relationship between performance quantification and metadehumanization was significant at +1 SD ($B=.95, p < .001$; 95% CI = [.82; 1.08]) and -1 SD ($B=.55, p < .001$; 95% CI = [.41; .69]) of the mean of tender-mindedness. Additionally, the index of moderated mediation confirms that the indirect effects of performance quantification on outcomes (i.e., stress and disidentification) via metadehumanization were conditional upon tender-mindedness. More precisely, the effects of performance quantification on metadehumanization and, ultimately, on the two outcomes were stronger at higher levels of tender-mindedness (see Tables 6 and 7).

There is, however, no evidence of these effects in the other two samples, suggesting that the mediating effects of metadehumanization in the performance quantification – outcomes relationships do not vary depending on the level of participants' tender-mindedness in sports and social networks domains. Overall, these findings partially support Hypothesis 3.

Discussion

In the present paper, we have investigated the relationship between performance quantification and metadehumanization in three spheres of the society: organizations, sport, and social networks. In all three domains, the same theoretical model was tested, one in which performance quantification positively related to stress and disidentification with the domain at play via an increase in dehumanization feelings. In addition, we also tested for the moderating effects of two individual variables in the relationship between performance quantification and metadehumanization, and on their consequences.

Results of our research are highly consistent across domains. First, whether in organizations, in sport or on social networks, we have shown that the more performance is quantified, the more metadehumanization people report. This result is consistent with theoretical propositions that have linked quantification practices with dehumanization and it complements empirical research that had shown that performance quantifiers perceive the

targets of quantification in a dehumanized way, as socially-empty individuals to whom normal human compassion does not need to apply (e.g., McCabe, 2016). These findings underline how much the way humans shape their environments influences their dehumanizing experience. In particular, it shows that the overall propensity of contemporary societies to approach human activities and performance via numbers and statistics (Pérezts et al., 2021) can be profoundly related to people's experience of humanity.

Second, results of our three samples also shed light on some important outcomes of the performance quantification-metadehumanization link. Indeed, in three contexts, we replicate the mediating effect of metadehumanization in the relationships between performance quantification, on the one hand, and stress and disidentification, on the other. That is, the more people report being dehumanized as a function of their performance being quantified, the more stress they experienced and the more they attempted at psychologically distancing themselves from the quantifying contexts. These results highlight the backfiring consequences of performance quantification practices. While the effects of performance quantification and metadehumanization on stress are well established (see, Kalischko & Riedl, 2021, and Sarwar et al., 2021, for the two phenomena, respectively), their effect on disidentification had not been envisaged before or only been theorized (for such theoretical proposition on metadehumanization, see Brison et al., 2022). As far as performance quantification is concerned, its positive relationship with disidentification supports earlier propositions that performance quantification, while aiming at improving people's performance in a domain, might in fact be counterproductive (Barker-Ruchti et al., 2021) in that it ironically leads people to withdraw from that domain. Importantly, one should notice that the effect sizes related to the mediation analyses are large in the organizational domain but small in the sport and social network domains (see Tables 2 and 3). These important differences in effect sizes might be attributed to the way performance quantification and metadehumanization were

measured in the three domains. Indeed, in the organizational domain, the assumed perpetrator of performance quantification and dehumanization was identical (i.e., the organization). In contrast, in the sport and social network domains, performance quantification was measured at the system level (e.g., “in my sport, everything is quantified”) while metadehumanization was assessed at the level of interpersonal relationships (e.g., “in my sport, people treat me as if I were an object”). The low correspondence in the latter two domains between the measures of performance quantification and metadehumanization might have artificially weakened their relationships.

Third, unexpectedly, the moderating effects of our two individual moderators were, for the most part, non-significant. Indeed, individuals’ tendency for competition did not modify the relationship between performance quantification and metadehumanization in any of our contexts. Although unexpected and apparently in contradiction with the literature on person-environment fit theory (Edwards et al., 2006), this absence of moderation across contexts is stable and suggests that both high and low competitors experience dehumanization when their performance is quantified. That is, although competitive people might fit better, and indeed perform better in competitive environments (Spurk et al., 2019), this better fit might not be powerful enough to stop them from feeling negatively about the quantifying environment. Similar results were previously found in the literature. For instance, Fletcher and colleagues (2008) found interactive effects of trait competitiveness and competitive climate on job satisfaction and organizational commitment but not on stress.

With regards to our second moderator, tender-mindedness only influenced the performance quantification-metadehumanization link in the organizational domain. At work, those that were tender-minded experienced higher dehumanization levels following performance quantification than employees that scored lower on this variable. This higher metadehumanization then resulted in higher stress and disidentification levels. Further

empirical efforts should aim at a better understanding the inconsistent moderation finding found for tender-mindedness across samples. This could indeed have been produced for different reasons. On the one hand, it could result from a Type I Error, reflecting an effect that does not in fact exist. On the other hand, it could also highlight a context-specific phenomenon in which tender-mindedness would moderate the performance quantification-metadehumanization link only in work situations because, for instance, of the higher relevance of the feeling-thinking continuum in these contexts. Future studies should be conducted to probe these two potential explanations, especially as in the two samples that provided non-significant results, Cronbach alphas on the tender-mindedness scale were below the recommended threshold (Nunnally & Bernstein, 1994), which is a methodological limitation.

There are several key strengths in our paper. First, it examines the psychological outcomes of a very pervasive (Pérezts et al., 2021), yet much unexplored, contemporary phenomenon, i.e., performance quantification. While previous research on performance monitoring had already shown that human activities' surveillance might have detrimental effect by increasing individuals' stress levels (Ball, 2021), we add to this literature by identifying an underlying mechanism for this effect and exploring another detrimental outcome of performance quantification, namely disidentification. Nevertheless, the present article is probably flawed by its one-way vision as we unitarily looked at the negative outcomes of quantification practices. Yet, quantification can also positively impact people by, for instance, increasing their performance or by, as suggested by the Care discourse of Sewell et al. (2012), reducing free-riding in social, cultural, and organizational systems. In fact, negative and positive effects of quantification could occur in parallel via, for instance, a metadehumanization pathway, on the one hand, and an increased motivation pathway, on the other. Alternatively, quantification could show curvilinear relationships with some outcomes,

producing for instance an increase in performance at moderate levels of quantification and a decrease in performance when quantification becomes too overwhelming. Such hypothesis is reminiscent of various empirical studies that have shown, for instance, curvilinear relationships between job stress and job involvement or job satisfaction (e.g., Addae & Wang, 2006). Future empirical research should, for sure, adopt a broader and more nuance perspective on the various consequences of quantification practices.

The second major strength of our research is that the same theoretical model was tested in three different contexts allowing for more integrated perspectives on how broad phenomena, like performance quantification and metadehumanization, affect human functioning independently of contextual variations (Jones, 2002; Molan et al., 2019). The generalizability of our findings across situations is further reinforced by the fact that our model holds despite of several variations in concept operationalization (for similar endeavor see, Demoulin, Nguyen, et al., 2021). Interestingly, developing such integrative cross-situational methodologies also helps researchers identifying situational specificities which they did not think of beforehand. This is the case for instance, when a given effect holds in one context but not in others, as we observe here with the inconsistent moderating effect of tender-mindedness.

A third important strength is that our research participates to the current research efforts that aim at increasing our understanding of dehumanization victims (Stinglhamber & Demoulin, 2023). Indeed, while dehumanization research is now well developed on the side of perpetrators, victim perspectives are still scarce (Baldissarri et al., 2022; Demoulin, Maurage, & Stinglhamber, 2021; Moradi, 2013). Focusing on metadehumanization in our three samples, we have added to the scientific literature that has examined the important role of metadehumanization as an explanatory mechanism in the relationship between important social, organizational and cultural variables and their consequences. Admittedly, however, it

should be noted that the average levels of metadehumanization in our samples were low (in the sport and social networks domains) to moderate (in the organizational domain). As a point of comparison, previous research on metadehumanization have shown that, among workers, metadehumanization levels generally range from 3.07 to 4.14 with significant peaks in specific professions like prison (5.26) or police (4.63) officers (Stinglhamber et al., 2022; AUTHORS, raw data). Nevertheless, better understanding the factors of emergence of even low to moderate levels metadehumanization is important as it affects the way human interactions ultimately unfold. Indeed, research has underlined the fact that metadehumanization experiences relates to both reciprocal (Kteily et al., 2016) and displaced (Lagios et al., 2023) hostility (Bustillos et al., 2023) and recent studies have shown that the experience of dehumanization might even trickle to unrelated targets, such as family members (Lagios et al., 2023).

Our research has broad practical implications across the three domains under study. In workplaces, it underscores the need for reevaluating performance metrics and adopting more human-centric management approaches. In sports, a balanced approach to training, mental health support, and athlete empowerment would be essential to mitigate the effects of unavoidable quantification practices. In the context of social networks, it suggests the importance of user education, customizable privacy settings, and the promotion of qualitative rather than quantitative online interactions.

Limits and Future Research

Despite these undeniable contributions, our study also has some limitations. First, we relied on three convenient samples via a snowball procedure (Sample A) or using Prolific academics (Samples B and C). Regarding the latter, and in line with scientific recommendations (Landers & Behrend, 2015), we ensured that no participants took part in

more than one of our samples. Yet, more representative samples might be considered in future research.

Second, our study relied on self-reported measures. Although self-report measures are well-suited to assess perceptions, cognitions and attitudes, they are nevertheless submitted to the common variance bias (Podsakoff et al., 2012). We took several precautions to reduce the risk of such a bias (e.g., anonymity, validated scales; Conway & Lance, 2010, Podsakoff et al., 2012) but we cannot exclude that it impacted our results.

Third, we used cross-sectional designs throughout which leaves unanswered the question of causality. Future studies should vary the methodology relying, for instance, on experimental designs in which participants' quantification would vary across conditions and measuring metadehumanization and its outcomes with other measures than self-reports.

Fourth, and as detailed in our methodological section, the particularities of the sport context forced us to slightly adapt our dependent measures including direct reference to quantification practices in sport as the presumed reason for increased stress/disidentification. This specific reference to quantification practices might have been expected to slightly inflate the link between our independent and dependent variables. However, the correlational results contradict this intuition as the relationships between the independent and the dependent variables were lower in the sport domain than in the organizational one and of a similar magnitude when compared to the social networks domain. Nevertheless, future research might consider referring to quantification in a similar way in all contexts.

Fifth, our research was conducted in Western contexts (in ANONYMIZED for Sample A and in the UK and the US for Samples B and C). In these cultures, quantification practices might be either more or less common than in other parts of the world. The prevalence or perceived normality of quantification in a given culture might affect its negative effects, either increasing (by strengthening their links) or decreasing (by weakening their relationships due,

for instance, to a habituation phenomenon) them. Future research should therefore tackle the cultural generalizability of our findings.

That being said, our research opens interesting avenues for future research. Indeed, metadehumanization represents only one of two victim perspectives in dehumanization research, self-dehumanization being the another one (Demoulin, Maurage, & Stinglhamber, 2021). The specific focus of the present study on performance quantification is particularly interesting in this respect as quantification is a practice that not only affects the way we treat other human beings but more and more a practice that also (or mostly) applies to the way we analyze ourselves. Indeed, with the development of technology, human beings have now at their disposition technological tools that can help them quantify and statistically analyze basically all aspects of their own lives (e.g., physiological parameters, physical or social activities) (see for instance, Feng et al., 2021). These enhanced measurement capacities have led to a movement call the “quantified self” (Lupton, 2016). If performance quantification relates with metadehumanization as we have shown, it is likely that self-quantification would relate with self-dehumanization and with the various consequences that self-dehumanization entails as, for instance, reduced belief in free will (Baldissarri et al., 2017), increased conformism (Andrighetto et al., 2018) and social distancing (Ruttan & Lucas, 2018), higher displays of immoral behaviors (Kouchaki et al., 2018), and anxiety and depression symptomatology (Fontesse et al., 2021).

In addition, future empirical work should be conducted that aims at addressing the underlying mechanisms responsible for the performance quantification-metadehumanization link. One such mechanism is fundamental needs’ thwarting. Indeed, research has shown that metadehumanization relates to the thwarting of the fundamental human needs of control and autonomy, relatedness and belonging, and esteem and competence (Demoulin, Nguyen, et al., 2021), all of which could be affected by performance quantification. For instance,

performance quantification is overly associated with surveillance practices that increase external control on individuals (Zuboff, 2015), thereby limiting their own sense of autonomy. Similarly, the socially-empty (Barker-Ruchti et al., 2021) individuals that performance quantification create might undermined recipients' need of belonging and when quantification leads to systematic upward-comparisons, as is often the case in social networks (Vogel et al., 2014), it might detract recipients' feeling of competence and self-esteem. In sum, future research should investigate whether the performance quantification-metadehumanization link is well explained by the thwarting of fundamental human needs.

Finally, and because the effects of our tested moderators were either non-significant or inconsistent across contexts, the effects of other potential individual or situational moderators could also be assessed. In a review on the effects of electronic performance monitoring at work, Kalischko and Riedl (2021) identified potential candidates that could affect the impact of quantification on its outcomes. For instance, age has been shown to positively relate to stress responses (Mallo et al., 2007) whereas a comprehensive announcement of the used technology or a rational explanation of it are likely factors of stress reduction (Bartels & Nordstrom, 2012).

Conclusion

In the present paper, we took the endeavor to explore the backfire effects of performance quantification in an integrative way by testing the same theoretical model across three highly different contexts. We did so by exploring how the shaping of human environments in numerical ways relates to people's perception that they are being dehumanized. Our findings suggest that the performance quantification-metadehumanization link is evidenced in the various spheres in which quantification applies and leads to similar negative effects in terms of stress and domain disidentification.

References

- Addae, H. M., & Wang, X. (2006). Stress at work: Linear and curvilinear effects of psychological-, job-, and organization-related factors: An exploratory study of trinidad and tobago. *International Journal of Stress Management*, 13(4), 476–493. <https://doi.org/10.1037/1072-5245.13.4.476>
- Andrighetto, L., Baldissarri, C., Gabbiadini, A., Sacino, A., Valtorta, R. R., & Volpato, C. (2018). Objectified conformity: Working self-objectification increases conforming behavior. *Social Influence*, 13(2), 78-90. <https://doi.org/10.1080/15534510.2018.1439769>
- Baldissarri, C., Andrighetto, L., Gabbiadini, A., & Volpato, C. (2017). Work and freedom? Working self-objectification and belief in personal free will. *British Journal of Social Psychology*, 56, 250-269. <https://doi.org/10.1111/bjso.12172>
- Baldissarri, C., Demoulin, S., & Kteily, N. (2022). Introduction to the special issue: Less than human: what people who are dehumanized think, feel, and do. *Group Processes and Intergroup Relations*, 25(8), 1927-1938. <https://doi.org/10.1177/13684302221139414>
- Ball, S. J. (2003). The teacher's soul and the terrors of performativity. *Journal of Education Policy*, 18(2), 215-228. <https://doi.org/10.1080/0268093022000043065>
- Ball, K. (2021). Electronic monitoring and surveillance in the workplace: Literature review and policy recommendations. *Publications Office of the European Union*, Luxembourg. <https://doi.org/10.2760/5137>.
- Barker-Ruchti, N., Svensson, R., Svensson, D., & Fransson, D. (2021). Don't buy a pig in a poke: Considering challenges of and problems with performance analysis technologies in Swedish men's elite football. *Performance Enhancement & Health*, 9(1), 100191. <https://doi.org/10.1016/j.peh.2021.100191>
- Bartels, L. K., & Nordstrom, C. R. (2012). Examining big brother's purpose for using electronic performance monitoring. *Performance Improvement Quarterly*, 25(2), 65-77. <https://doi.org/10.1002/piq.20140>

- Bastian, B., & Haslam, N. (2010). Excluded from humanity: The dehumanizing effects of social ostracism. *Journal of Experimental Social Psychology*, 46, 107–113.
<https://doi.org/10.1016/j.jesp.2009.06.022>
- Bastian, B., & Haslam, N. (2011). Experiencing dehumanization: Cognitive and emotional effects of everyday dehumanization. *Basic and Applied Social Psychology*, 33, 295–303.
<https://doi.org/10.1080/01973533.2011.614132>
- Beattie, M. A., & Turner, B. A. (2022). The impact of athlete-coach fit on the athletic satisfaction of NCAA Division II college athletes. *Journal for the Study of Sports and Athletes in Education*, 1-17. <https://doi.org/10.1080/19357397.2022.2084324>
- Becker, T. E., Atinc, G., Breugh, J. A., Carlson, K. D., Edwards, J. R., & Spector, P. E. (2016). Statistical control in correlational studies: 10 essential recommendations for organizational researchers. *Journal of Organizational Behavior*, 37, 157-167.
<https://doi.org/10.1002/job>
- Becker, J. C. & Tausch, N. (2014). When group memberships are negative: The concept, measurement, and behavioral implications of psychological disidentification. *Self and Identity*, 13(3), 294-321. <https://doi.org/10.1080/15298868.2013.819991>
- Beilock, S. L., & McConnell, A. R. (2004). Stereotype threat and sport: Can athletic performance be threatened? *Journal of Sport and Exercise Psychology*, 26(4), 597-609.
<https://doi.org/10.1123/jsep.26.4.597>
- Bell, C. M., & Khoury, C. (2011). Organizational de/humanization, deindividuation, anomie, and in/justice. In S. Gilliland, D. Steiner, & D. Skarlicki (Eds.), *Emerging perspectives on organizational justice and ethics* (pp. 167–197). Information Age.
- Bell, C. M., & Khoury, C. (2016). Organizational powerlessness, dehumanization, and gendered effects of procedural justice. *Journal of Managerial Psychology*, 31, 570–585.
<https://doi.org/10.1108/jmp-09-2014-0267>

- Brison, N., Stinglhamber, F., & Caesens, G. (2022). Organizational dehumanization. *Oxford Research Encyclopedia in I/O Psychology*.
<https://doi.org/10.1093/acrefore/9780190236557.013.902>
- Bustillos, A., Demoulin, S., Rodríguez, L. L., Vázquez, A., & Zlobina, A. (2023). Approaching dehumanizing interactions: Joint consideration of other-, meta-, and self-dehumanization. *Current Opinion in Behavioral Sciences*, 49, 101233.
<https://doi.org/10.1016/j.cobeha.2022.101233>
- Caesens, G., Nguyen, N., & Stinglhamber, F. (2019). Abusive supervision and organizational dehumanization. *Journal of Business and Psychology*, 34(5), 709–728.
<https://doi.org/10.1007/s10869-018-9592-3>
- Caesens, G., & Stinglhamber, F. (2019). The relationship between organizational dehumanization and outcomes: The mediating role of emotional exhaustion. *Journal of Occupational and Environmental Medicine*, 61(9), 699-703.
<https://doi.org/10.1097/JOM.0000000000001638>
- Caesens, G., Stinglhamber, F., Demoulin, S., & De Wilde, M. (2017). Perceived organizational support and employees' well-being: The mediating role of organizational dehumanization. *European Journal of Work and Organizational Psychology*, 26(4), 527-540. <https://doi.org/10.1080/1359432X.2017.1319817>
- Carayon, P. (1993). Effect of electronic performance monitoring on job design and worker stress: Review of the literature and conceptual model. *Human Factors*, 35(3), 385-395.
<https://doi.org/10.1177/001872089303500301>
- Chevallereau, T., Maurage, P., Stinglhamber, F., & Demoulin, S. (2021). Sex-based and beauty-based objectification: Metadehumanization and emotional consequences among victims. *British Journal of Social Psychology*, 60(4), 1218-1240.
<https://doi.org/10.1111/bjso.12446>

- Conway, J. M., & Lance, C. E. (2010). What reviewers should expect from authors regarding common method bias in organizational research. *Journal of Business and Psychology*, 25, 325-334. <https://doi.org/10.1007/s10869-010-9181-6>
- Costa Jr, P. T., McCrae, R. R., & Dye, D. A. (1991). Facet scales for agreeableness and conscientiousness: A revision of the NEO Personality Inventory. *Personality and Individual Differences*, 12(9), 887-898. [https://doi.org/10.1016/0191-8869\(91\)90177-D](https://doi.org/10.1016/0191-8869(91)90177-D)
- Crowe, M. L., Lynam, D. R., & Miller, J. D. (2018). Uncovering the structure of agreeableness from self-report measures. *Journal of Personality*, 86(5), 771–787. <https://doi.org/10.1111/jopy.12358>
- Demoulin, S., Brison, N., & Stinglhamber, F. (2023). Perceived sexualization of the work environment's influence on wellbeing, attitudes and behaviors: The roles of organizational dehumanization and enjoyment of sexualization. *Journal of Applied Social Psychology*. <https://10.1111/jasp.12992>
- Demoulin, S., Maurage, P., & Stinglhamber, F. (2021). Exploring metadehumanization and self-dehumanization from a target perspective. In M. Kronfeldner (Ed.), *The Routledge handbook of dehumanization* (pp. 260–274). Routledge.
- Demoulin, S., Nguyen, N., Chevallereau, T., Fontesse, S., Bastart, J., Stinglhamber, F., & Maurage, P. (2021). Examining the role of fundamental psychological needs in the development of metadehumanization: A multi-population approach. *British Journal of Social Psychology*, 60(1), 196-221. <https://doi.org/10.1111/bjso.12380>
- Edwards, J. R., Cable, D. M., Williamson, I. O., Lambert, L. S., & Shipp, A. J. (2006). The phenomenology of fit: linking the person and environment to the subjective experience of person-environment fit. *Journal of Applied Psychology*, 91(4), 802. <https://doi.org/10.1037/0021-9010.91.4.802>

- Everett, C. (2017). *Numbers and the making of us: Counting and the course of human cultures*. Cambridge, MA: Harvard University Press.
- Feifel, H., & Strack, S. (1989). Coping with conflict situations: Middle-aged and elderly men. *Psychology and Aging*, 4(1), 26. <https://doi.org/10.1037/0882-7974.4.1.26>
- Feng, S., Mäntymäki, M., Dhir, A., & Salmela, H. (2021). How self-tracking and the quantified self-promote health and well-being: systematic review. *Journal of Medical Internet Research*, 23(9), e25171. <https://doi.org/10.2196/25171>
- Ferreira, C., Robertson, J., & Reyneke, M. (2022). How Many Likes Are Good Enough? An Evaluation of Social Media Performance. *Journal of Internet Commerce*, 21(3), 341-363. <https://doi.org/10.1080/15332861.2021.1966724>
- Fletcher, T. D., Major, D. A., & Davis, D. D. (2008). The interactive relationship of competitive climate and trait competitiveness with workplace attitudes, stress, and performance. *Journal of Organizational Behavior*, 29(7), 899-922. <https://doi.org/10.1002/job.503>
- Fontesse, S., Demoulin, S., Stinglhamber, F., de Timary, P., & Maurage, P. (2021). Metadehumanization and self-dehumanization are linked to reduced drinking refusal self-efficacy and increased anxiety and depression symptoms in patients with severe alcohol use disorder. *Psychologica Belgica*, 61(1), 238–247. <https://doi.org/10.5334/pb.1058>
- Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science*, 18(3), 233-239. <https://doi.org/10.1111/j.1467-9280.2007.01882.x>
- Gräve, J. F. (2019). What KPIs are key? Evaluating performance metrics for social media influencers. *Social Media+ Society*, 5(3), 1-9. <https://10.1177.2056305119865475>
- Goodhart, D. (2020). *Head hand heart: The struggle for dignity and status in the 21st century*. Penguin UK.

- Haslam, N. (2006). Dehumanization: An integrative review. *Personality and Social Psychology Review, 10*(3), 252-264. https://doi.org/10.1207/s15327957pspr1003_4
- Haslam, N., & Loughnan, S. (2014). Dehumanization and infrahumanization. *Annual Review of Psychology, 65*, 399-423. <https://doi.org/10.1146/annurev-psych-010213-115045>
- House, R. J., & Rizzo, J. R. (1972). Toward the measurement of organizational practices: Scale development and validation. *Journal of Applied Psychology, 56*(5), 388-396. <https://doi.org/10.1037/h0033444>
- Jehn, K. A. (1995). A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly, 256*-282. <https://doi.org/10.2307/2393638>
- Jones, G. (2002). Performance excellence: A personal perspective on the link between sport and business. *Journal of Applied Sport Psychology, 14*(4), 268-281. doi:10.1080/10413200290103554
- Kalischko, T., & Riedl, R. (2021). Electronic performance monitoring in the digital workplace: conceptualization, review of effects and moderators, and future research opportunities. *Frontiers in Psychology, 1457*. <https://doi.org/10.3389/fpsyg.2021.633031>
- Kouchaki, M., Dobson, K. S., Waytz, A., & Kteily, N. S. (2018). The link between self-dehumanization and immoral behavior. *Psychological Science, 29*(8), 1234-1246. <https://doi.org/10.1177/0956797618760784>
- Kteily, N., Hodson, G., & Bruneau, E. (2016). They see us as less than human: Metadehumanization predicts intergroup conflict via reciprocal dehumanization. *Journal of Personality and Social Psychology, 110*, 343-370. <https://doi.org/10.1037/pspa0000044>
- Kreiner, G. E., & Ashforth, B. E. (2004). Evidence toward an expanded model of organizational identification. *Journal of Organizational Behavior: The International Journal of*

Industrial, Occupational and Organizational Psychology and Behavior, 25(1), 1-27.

<https://doi.org/10.1002/job.234>

Kristof-Brown, A. L., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of individuals' fit at work: A meta-analysis of person–job, person–organization, person–group, and person–supervisor fit. *Personnel Psychology*, 58(2), 281-342.

<https://doi.org/10.1111/j.1744-6570.2005.00672.x>

Lachowicz, M. J., Preacher, K. J., & Kelley, K. (2018). A novel measure of effect size for mediation analysis. *Psychological Methods*, 23(2), 244–261.

<https://doi.org/10.1037/met0000165>

Lagios, C., Caesens, G., Nguyen, N., & Stinglhamber, F. (2022). Explaining the negative consequences of organizational dehumanization: The mediating role of psychological need thwarting. *Journal of Personnel Psychology*, 21(2), 86–93.

<https://doi.org/10.1027/1866-5888/a000286>

Lagios, C., Nguyen, N., Stinglhamber, F., & Caesens, G. (2022). Dysfunctional rules in organizations: The mediating role of organizational dehumanization in the relationship between red tape and employees' outcomes. *European Management Journal*. Advance online publication. <https://doi.org/10.1016/j.emj.2022.06.002>

Lagios, C., Restubog, S. L. D., Garcia, P. R. J. M., He, Y., & Caesens, G. (2023). A trickle-out model of organizational dehumanization and displaced aggression. *Journal of Vocational Behavior*, 141, 103826. <https://doi.org/10.1016/j.jvb.2022.103826>

Landers, R. N., & Behrend, T. S. (2015). An inconvenient truth: Arbitrary distinctions between organizational, Mechanical Turk, and other convenience samples. *Industrial and Organizational Psychology*, 8, 142-164. <https://doi.org/10.1017/iop.2015.13>

- Landry, A. P., Ihm, E., & Schooler, J. W. (2022). Hated but still human: Metadehumanization leads to greater hostility than metaprejudice. *Group Processes & Intergroup Relations*, 25(2), 315-334. <https://doi.org/10.1177/1368430220979035>
- Lemke, T. (2011) *Biopolitics: An Advanced Introduction* (trans. EF Trump). New York, NY: New York University Press.
- Luczak, T., Burch, R., Lewis, E., Chander, H., & Ball, J. (2020). State-of-the-art review of athletic wearable technology: What 113 strength and conditioning coaches and athletic trainers from the USA said about technology in sports. *International Journal of Sports Science & Coaching*, 15(1), 26-40. <https://doi.org/10.1177/1747954119885244>
- Lupton, D. (2016). *The quantified self*. UK: Polity Press.
- Major, B., Spencer, S., Schmader, T., Wolfe, C., & Crocker, J. (1998). Coping with negative stereotypes about intellectual performance: The role of psychological disengagement. *Personality and Social Psychology Bulletin*, 24(1), 34-50. <https://doi.org/10.1177/0146167298241003>
- Mallo, J., Nordstrom, C. R., Bartels, L. K., & Traxler, A. (2007). The effect of age and task difficulty. *Performance Improvement Quarterly*, 20(1), 49-63. <https://doi.org/10.1111/j.1937-8327.2007.tb00431.x>
- Manley, A., & Williams, S. (2022). ‘We’re not run on Numbers, We’re People, We’re Emotional People’: Exploring the experiences and lived consequences of emerging technologies, organizational surveillance and control among elite professionals. *Organization*, 29(4), 692-713. <https://doi.org/10.1177/1350508419890078>
- Marr, B., Schiuma, G., & Neely, A. (2004). Intellectual capital—defining key performance indicators for organizational knowledge assets. *Business Process Management Journal*. <https://doi.org/10.1108/14637150410559225>

- McCabe, D. (2016). Numericalizing the other: A critical analysis of a strategy discourse in a UK bank. *Organization*, 23(4), 525-549. <https://doi.org/10.1177/1350508415581443>
- McCosker, C., Otte, F., Rothwell, M., & Davids, K. (2022). Principles for technology use in athlete support across the skill level continuum. *International Journal of Sports Science & Coaching*, 17(2), 437-444. <https://doi.org/10.1177/17479541211033471>
- McNall, L., & Roch, S. (2009). A social exchange model of employee reactions to electronic performance monitoring. *Human Performance*, 22(3), 204-224. <https://doi.org/10.1080/08959280902970385>
- Mekawi, Y., & Watson-Singleton, N. N. (2021). Examining racial discrimination's association with depressive symptoms through metadehumanization among African Americans: Does racial identity matter? *Journal of Black Psychology*, 47(2-3), 91-117. <https://doi.org/10.1177/0095798420983664>
- Michell, J. (2003). Epistemology of measurement: The relevance of its history for quantification in the social sciences. *Social Science Information*, 42(4), 515-534. <https://doi.org/10.1177/0539018403424004>
- Molan, C., Kelly, S., Arnold, R., & Matthews, J. (2019). Performance management: A systematic review of processes in elite sport and other performance domains. *Journal of Applied Sport Psychology*, 31(1), 87-104. <https://doi.org/10.1080/10413200.2018.1440659>
- Moor, A., Ben-Meir, E., Golan-Shapira, D., & Farchi, M. (2013). Rape: A trauma of paralyzing dehumanization. *Journal of Aggression, Maltreatment & Trauma*, 22, 1051-1069. <https://doi.org/10.1080/10926771.2013.848965>
- Moradi, B. (2013). Discrimination, objectification, and dehumanization: Toward a pantheoretical framework. In S. J. Gervais (Eds.), *Objectification and (de)humanization: 60th Nebraska*

symposium on motivation (pp. 153-181). New York, NY: Springer New York.

https://doi.org/10.1007/978-1-4614-6959-9_7

Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.

Pérezts, M., Andersson, L., & Lindebaum, D. (2021). Numbers and Organization Studies: Book Review Symposium Editorial. *Organization Studies*, 42(8), 1351-1356.

<https://doi.org/10.1177/0170840621989214>

Perugini, M., & Gallucci, M. (1997). A hierarchical faceted model of the Big Five. *European Journal of Personality*, 11(4), 279–301. [https://doi.org/10.1002/\(SICI\)1099-0984\(199711\)11:43.0.CO;2-F](https://doi.org/10.1002/(SICI)1099-0984(199711)11:43.0.CO;2-F)

Plester, B., Sayers, J., & Keen, C. (2022). Health and wellness but at what cost? Technology media justifications for wearable technology use in organizations. *Organization*, <https://doi.org/10.1177/13505084221115841>.

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, 63, 539-569. <https://doi.org/10.1146/annurev-psych-120710-100452>

Ravid, D. M., Tomczak, D. L., White, J. C., & Behrend, T. S. (2020). EPM 20/20: A review, framework, and research agenda for electronic performance monitoring. *Journal of Management*, 46(1), 100-126. <https://doi.org/10.1177/0149206319869435>

Ruttan, R. L., & Lucas, B. J. (2018). Cogs in the machine: The prioritization of money and self-dehumanization. *Organizational Behavior and Human Decision Processes*, 149, 47-58. <https://doi.org/10.1016/j.obhdp.2018.08.007>

Santinello, M. (2007). Link Burnout Questionnaire, Manuale. *Firenze: Organizzazioni Speciali*, 1–39.

Sarwar, A., Khan, J., Muhammad, L., Mubarak, N., & Jaafar, M. (2021). Relationship between organizational dehumanization and nurses' deviant behaviors: A moderated mediation

model. *Journal of Nursing Management*, 29(5), 1036-1045.

<https://doi.org/10.1111/jonm.13241>

Schaubroeck, J. M., Lam, L. W., Lai, J. Y., Lennard, A. C., Peng, A. C., & Chan, K. W. (2018).

Changing experiences of work dirtiness, occupational disidentification, and employee withdrawal. *Journal of Applied Psychology*, 103(10), 1086.

<http://dx.doi.org/10.1037/apl0000330>

Sewell, G., & Barker, J. R. (2006). Coercion versus care: Using irony to make sense of organizational surveillance. *Academy of Management Review*, 31(4), 934–961.

<https://doi.org/10.5465/amr.2006.22527466>

Sewell, G., Barker, J. R., & Nyberg, D. (2012). Working under intensive surveillance: When does ‘measuring everything that moves’ become intolerable? *Human Relations*, 65(2), 189-215. <https://doi.org/10.1177/0018726711428958>

Sherif, K., & Al-Hitmi, M. (2017, August 10-12). *The moderating role of competition and paradoxical leadership on perceptions of fairness towards IoT monitoring*. 23rd Americas Conference on Information Systems (AMICS), Boston, Massachusetts, USA.

Sigelman, L., & Tuch, S. A. (1996). Metastereotypes: Blacks’ perceptions of Whites’ stereotypes of Blacks. *Public Opinion Quarterly*, 61, 87-101. <https://doi.org/10.1086/297788>.

Spurk, D., Keller, A. C., & Hirschi, A. (2019). Competition in career tournaments: Investigating the joint impact of trait competitiveness and competitive psychological climate on objective and subjective career success. *Journal of Occupational and Organizational Psychology*, 92(1), 74-97. <https://doi.org/10.1111/joop.12238>

Stinglhamber, F., & Demoulin, S. (2023). Enlarging the victim’s perspective on dehumanization. *Current Opinion in Behavioral Sciences*, 50, 101248.

<https://doi.org/10.1016/j.cobeha.2023.101248>

- Stinglhamber, F., Nguyen, N., & Josse, M., & Demoulin, S. (2022). The development of prison officers' job satisfaction and its impact on depersonalization of incarcerated persons: The role of organizational dehumanization. *Criminal Justice and Behavior*, 49(11), 1600-1617. <https://doi.org/10.1177/00938548221087182>
- Tafreshi, D., Slaney, K. L., & Neufeld, S. D. (2016). Quantification in psychology: Critical analysis of an unreflective practice. *Journal of Theoretical and Philosophical Psychology*, 36(4), 233. <https://doi.org/10.1037/teo0000048>
- Taskin, L., Parmentier, M., & Stinglhamber, F. (2019). The dark side of office designs: Towards de-humanization. *New Technology, Work and Employment*, 34(3), 262-284. <https://doi.org/10.1111/ntwe.12150>
- Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of personality and social psychology*, 74(1), 118. <https://doi.org/10.1037/0022-3514.74.1.118>
- Vogel, E. A., Rose, J. P., Roberts, L. R., & Eckles, K. (2014). Social comparison, social media, and self-esteem. *Psychology of Popular Media Culture*, 3(4), 206. <http://dx.doi.org/10.1037/ppm0000047>
- Xiao, L., & Mou, J. (2019). Social media fatigue-Technological antecedents and the moderating roles of personality traits: The case of WeChat. *Computers in Human Behavior*, 101, 297-310. <https://doi.org/10.1016/j.chb.2019.08.001>
- Yzerbyt, V. Y., Provost, V., & Corneille, O. (2005). Not competent but warm. Really? Compensatory stereotypes in the French-speaking world. *Group Processes & Intergroup Relations*, 8, 291–308. <https://doi.org/10.1177/1368430205053944>
- Zuboff, S. (2015) 'Big other: Surveillance capitalism and the prospects of an information civilization. *Information Technology Journal* 30(1): 75–89. <https://doi.org/10.1057/jit.2015.5>

Table 1A*Descriptive Statistics and Intercorrelations among Variables in Sample A (Organizations)*

	<i>M</i>	<i>SD</i>	Min	Max	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Gender	1.73	.45	1	2	--										
2. Age	41.29	10.06	20	64	.07	--									
3. Tenure	10.83	8.54	.30	40	.08	.67***	--								
4. Level of Education	3.56	.63	2	5	.05	-	-	--							
						.28***	.30***								
5. Organizational Size	4.15	2.18	1	9	-.04	-.12	-.03	.22**	--						
6. Performance Quantification	4.42	1.67	1	7	-.07	-.14*	-.15*	.15*	.33***	(.92)					
7. Competitiveness	3.17	1.19	1	6.75	-.24***	.06	.04	.00	.06	.11	(.75)				
8. Tender-mindedness	5.52	.74	2.38	6.88	.26***	.00	.08	-.01	-.06	.02	-.38***	(.72)			
9. Metadehumanization	3.75	1.76	1	7	.02	-.10	-.13	.22**	.32***	.73***	.05	.07	(.97)		
10. Stress	4.47	1.64	1	7	.08	-.01	-.03	.11	.12	.56***	.04	.13	.71***	(.94)	
11. Disidentification	2.44	1.39	1	6.83	.11	-.09	-.05	.17*	.12	.47***	-.08	.11	.68***	.55***	(.93)

Note. *N*=204. Reliability alpha values are on the diagonal. Gender was coded 1 for *male* and 2 for *female*. Level of 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 1,000-1,999 employees, 7 for 2,000-4,999 employees, 8 for 5,000-9,999 employees, and 9 for 10,000 employees and more.

p*<.05. *p*<.01. ****p*<.001.

Table 1B*Descriptive Statistics and Intercorrelations among Variables in Sample B (Sport)*

	<i>M</i>	<i>SD</i>	Min	Max	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	.11
1. Gender	1.28	.45	1	2	--										
2. Age	35.80	11.56	18	76	-.13*	--									
3. Level of Education	3.88	.95	1	6	-.04	.04	--								
4. Number of minutes of practice per week	210.97	167.40	4	1380	-.06	.05	-.12*	--							
5. Number of sports	1.66	.80	1	5	-.13*	-.05	.16**	.00	--						
6. Performance Quantification	4.01	1.38	1	7	-.11	.02	-.07	.20***	-.07	(.90)					
7. Competitiveness	4.22	1.08	1	6.75	-.02	-.09	-.01	.13	-.03	.19**	(.67)				
8. Tender-mindedness	5.17	.74	2.25	6.88	-.01	.08	.04	-.08	.07	.03	-.19***	(.65)			
9. Metadehumanization	2.14	.96	1	5.63	-.08	-.06	.01	.03	-.07	.26***	.12*	-.18**	(.91)		
10. Stress	2.43	1.18	1	6.67	.03	-.19**	.00	.11	-.06	.24***	.15**	-.17**	.45***	(.89)	
11. Disidentification	2.39	1.14	1	6.33	.02	-.06	.13*	.06	-.04	.11	.05	-.02	.36***	.52***	(.91)

Note. $N=300$ (except for Number of minutes of practice per week, $N = 297$; and for Gender and Number of sports, $N=299$). Reliability alpha values are on the diagonal. Gender was coded 1 for *male* and 2 for *female*. Level of 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.”.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 1C*Descriptive Statistics and Intercorrelations among Variables in Sample C (Social Networks)*

	<i>M</i>	<i>SD</i>	Min	Max	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Gender	1.68	.47	1	2												
2. Age	37.61	12.94	18	85	.04											
3. Level of Education	3.69	1.09	1	6	.09	-.07										
4. Frequency of use	4.36	.77	2	5	.16**	-.22***	-.15**									
5. Number of minutes per day	109.71	93.73	1	540	.08	-.29***	-.09	.43***								
6. Number of social networks	3.27	1.35	1	7	.03	-.43***	-.01	.36***	.30***							
7. Performance Quantification	4.32	1.14	1.33	7	.08	-.21**	.08	.05	.07	.14*	(.82)					
8. Competitiveness	3.65	1.10	1	6.75	-.11	-.13*	.08	.11	.00	.05	.16**	(.71)				
9. Tender-mindedness	5.24	.67	2.63	7	.15*	.06	-.00	.02	-.02	.04	.01	-.11	(.64)			
10. Metadehumanization	2.87	1.22	1	7	-.03	-.18**	-.04	-.10	.05	.05	.46***	.14*	-.01	(.91)		
11. Stress	3.22	1.43	1	6.67	.02	-.33**	-.04	.18**	.22***	.28***	.39***	.17**	.06	.44***	(.89)	
12. Disidentification	3.50	1.17	1	6.50	-.13*	-.12*	.06	-.07	.00	.02	.29***	.11	.12*	.49***	.41***	(.81)

Note. $N=297$ (except for Gender, $N = 290$; for Frequency of use, $N = 296$; and for Number of minutes per day and Number of social networks, $N = 295$). Reliability alpha values are on the diagonal. Gender was coded 1 for *male* and 2 for *female*. Level of 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.”.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2

Results of Models 4 for Stress as the Dependent Variable in all Three Samples

	Sample A (Organization)				Sample B (Sport)				Sample C (Social networks)			
	MetaDH		Stress		MetaDH		Stress		MetaDH		Stress	
Direct effect	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Quantif	.77***	.05	.08	.07	.18***	.04	.11*	.05	.49***	.06	.30***	.07
MetaDH	--	--	.61***	.07	--	--	.50***	.07	--	--	.39***	.07
Indirect effect	.47 [.35; .60]				.09 [.05; .14]				.19 [.11; .28]			
Effect size (v) ¹	.23				.01				.02			

Note. N_s = 204 for Sample A (Organization), 300 for Sample B (Sport), and 297 for Sample C (Social networks). Quantif = Performance quantification; MetaDH = Metadehumanization.

¹ Computed based on Lachowicz et al. (2018).

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3

Results of Models 4 for Disidentification as the Dependent Variable in all Three Samples

	Sample A (Organization)				Sample B (Sport)				Sample C (Social networks)			
	MetaDH		Disidentification		MetaDH		Disidentification		MetaDH		Disidentification	
Direct effect	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Quantif	.77***	.05	-.05	.06	.18***	.04	.01	.05	.49***	.06	.08	.06
MetaDH	--	--	.57***	.06	--	--	.42***	.07	--	--	.43***	.06
Indirect effect	.44 [.33; .56]				.08 [.04; .12]				.21 [.14; .29]			
Effect size (v) ¹	.28				.01				.04			

Note. N_s = 204 for Sample A (Organization), 300 for Sample B (Sport), and 297 for Sample C (Social networks). Quantif = Performance quantification; MetaDH = Metadehumanization.

¹ Computed based on Lachowicz et al. (2018).

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4

Results of Models 7 for Stress as the Dependent Variable and Competitiveness as the Moderator in all Three Samples

	Sample A (Organizations)				Sample B (Sport)				Sample C (Social networks)			
	MetaDH		Stress		MetaDH		Stress		MetaDH		Stress	
Direct effect	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Quantif	.76***	.05	.08	.07	.17***	.04	.11*	.05	.48***	.06	.30***	.07
Competitiveness	-.04	.07	--	--	.07	.05	--	--	.08	.06	--	--
Quantif x Compet	-.05	.04	--	--	.03	.03	--	--	.03	.05	--	--
MetaDH	--	--	.61***	.07	--	--	.50***	.07	--	--	.39***	.07
Index of moderated mediation	-.03 [-.07; .02]				.02 [-.02; .06]				.01 [-.04; .06]			

Note. *N*s = 204 for Sample A (Organizations), 300 for Sample B (Sport), and 297 for Sample C (Social networks). Quantif = Performance

Quantification; MetaDH = Metadehumanization; Compet = Competitiveness.

p* < .05. *p* < .01. ****p* < .001.

Table 5

Results of Models 7 for Disidentification as the Dependent Variable and Competitiveness as the Moderator in all Three Samples

	Sample A (Organizations)				Sample B (Sport)				Sample C (Social networks)			
	MetaDH		Disidentification		MetaDH		Disidentification		MetaDH		Disidentification	
Direct effect	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Quantif	.76***	.05	-.05	.06	.17***	.04	.01	.05	.48***	.06	.08	.06
Competitiveness	-.04	.07	--	--	.07	.05	--	--	.08	.06	--	--
Quantif x Compet	-.05	.04	--	--	.03	.03	--	--	.03	.05	--	--
MetaDH	--	--	.57***	.06	--	--	.42***	.07	--	--	.43***	.06
Index of moderated mediation	-.03 [-.07; .02]				.01 [-.01; .06]				.01 [-.04; .07]			

Note. *N*s = 204 for Sample A (Organizations), 300 for Sample B (Sport), and 297 for Sample C (Social networks). Quantif = Performance

Quantification; MetaDH = Metadehumanization; Compet = Competitiveness.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6

Results of Models 7 for Stress as the Dependent Variable and Tender-Mindedness as the Moderator in all Three Samples

Sample A (Organizations)					Sample B (Sport)				Sample C (Social networks)					
MetaDH					Stress				MetaDH				Stress	
Direct effect	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE		
Quantif	.75***	.05	.08	.07	.19***	.04	.11*	.05	.49***	.06	.30***	.07		
Tender-mindedness	.15	.11	--	--	-.23**	.07	--	--	-.03	.09	--	--		
Quantif x Tender	.27***	.06	--	--	-.09	.05	--	--	-.03	.08	--	--		
MetaDH	--	--	.61***	.07	--	--	.50***	.07	--	--	.39***	.07		
Index of moderated mediation			.16 [.08; .27]				-.05 [-.10; .01]				-.01 [-.10; .07]			
Conditional indirect effects of quantif on stress														
via metaDH:	Tender-mindedness at -1SD		.34 [.22; .46]											
	Tender-mindedness at +1SD		.58 [.44; .74]											

Note. *Ns* = 204 for Sample A (Organizations), 300 for Sample B (Sport), and 297 for Sample C (Social networks). Quantif = Performance

Quantification; MetaDH = Metadehumanization; Tender = Tender-mindedness.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 7

Results of Models 7 for Disidentification as the Dependent Variable and Tender-Mindedness as the Moderator in all Three Samples

Sample A (Organizations)					Sample B (Sport)				Sample C (Social networks)			
MetaDH		Disidentification			MetaDH		Disidentification		MetaDH		Disidentification	
Direct effect	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Quantif	.75***	.05	-.05	.06	.19***	.04	.01	.05	.49***	.06	.08	.06
Tender-mindedness	.15	.11	--	--	-.23**	.07	--	--	-.03	.09	--	--
Quantif x Tender	.27***	.06	--	--	-.09	.05	--	--	-.03	.08	--	--
MetaDH	--	--	.57***	.06	--	--	.42***	.07	--	--	.43***	.06
Index of moderated mediation			.15 [.08; .24]				-.04 [-.09; .00]				-.01 [-.12; .08]	
Conditional indirect effects of quantif on disid												
via metaDH:	Tender-mindedness at -1SD		.31 [.21; .44]									
	Tender-mindedness at +1SD		.54 [.42; .67]									

Note. *N*s = 204 for Sample A (Organizations), 300 for Sample B (Sport), and 297 for Sample C (Social networks). Quantif = Performance

Quantification; MetaDH = Metadehumanization; Tender = Tender-mindedness.

* $p < .05$. ** $p < .01$. *** $p < .001$.

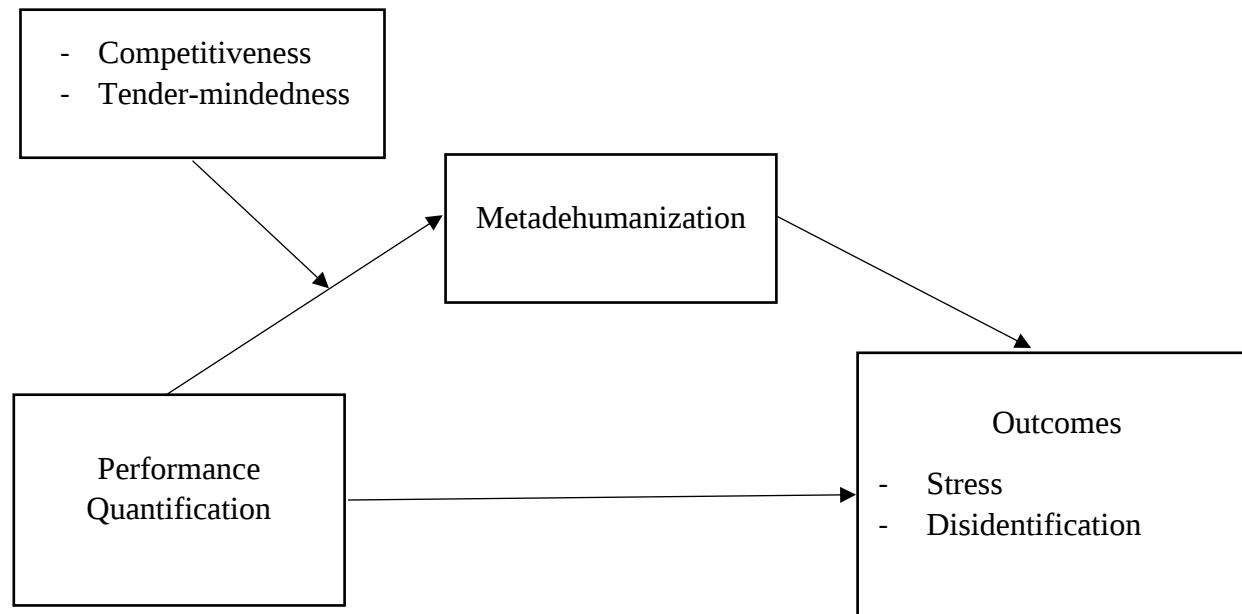
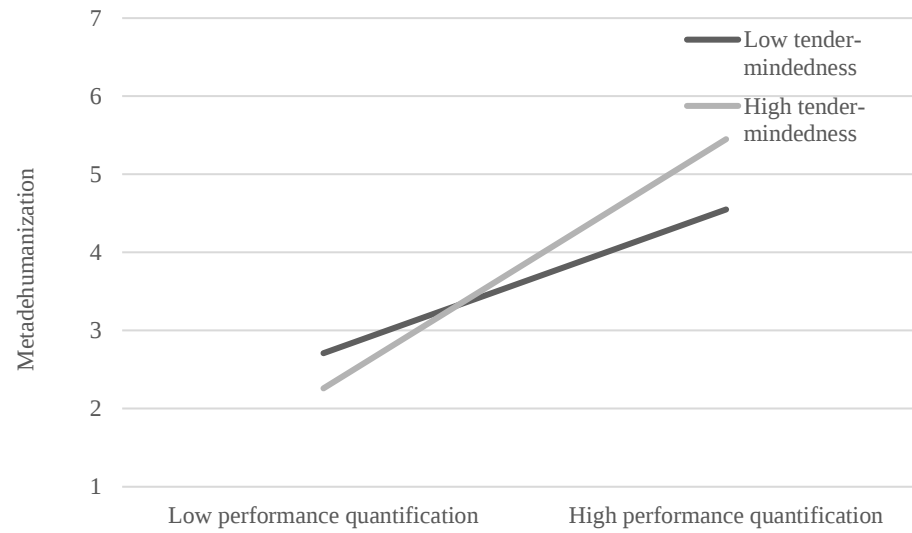
Figure 1*Theoretical Model*

Figure 2

Relationship Between Performance Quantification and Metadehumanization as a Function of Tender-Mindedness in Sample A (Organizations)



Note. $N = 204$. High and low tender-mindedness are, respectively, 1 SD above and 1 SD below the mean.