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Distress and retaliatory aggression in response to witnessing intergroup exclusion are greater on higher levels of collective narcissism

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Abstract

The negative consequences of personal exclusion have been demonstrated by multiple studies. Less is known about the consequences of witnessing one's own group being excluded by other groups, although studies suggest exclusion can be experienced vicariously and negatively affects members of the excluded group. Results of the present lab-based experiment ($N = 153$) indicate, in line with our predictions, that witnessing intergroup exclusion (a national majority excluded by a minority, manipulated by an adapted intergroup Cyberball paradigm) produced a sense of personal exclusion. It also increased self-reported distress and behavioral aggression measured in the Taylor Aggression Paradigm), especially among participants high on collective narcissism: a belief that the exaggerated greatness of the in-group is not sufficiently appreciated by others. Contrary to expectations, a short mindful decentration intervention (instructing participants to observe thoughts and emotions as transient mental products without engaging with them) delivered while participants were witnessing intergroup exclusion (vs. inclusion) produced changes in heart rate variability reactivity indicative of emotional arousal, especially among collective narcissists. We concluded that collective narcissism is associated with distress in the face of intergroup exclusion, aggressive retaliation, and in consequence, it is a risk-factor predisposing group members to stress-related health and psychosocial problems. Furthermore, a mindful decentration, despite being an effective strategy to reduce maladaptive stress in most people, may be counterproductive in addressing high collective narcissists' responses to threat to the in-group's image.

KEYWORDS

aggression, collective narcissism, emotional distress, heart rate variability, intergroup exclusion, mindfulness

1 | INTRODUCTION

Members of marginalized social groups report higher levels of distress than members of advantaged social groups (Matheson et al., 2019). Some group members radicalize toward violent actions by perceived exclusion of the in-group from mainstream society (Kruglanski et al., 2013; McCauley & Moskalenko, 2017). Exclusion, the experience of being ignored or rejected by others (Riva & Eck, 2016) causes negative emotions (Eisenberger, 2012, 2015) and provokes immediate reactions including retaliatory aggression (DeWall & Richman, 2011; Ren et al., 2018; Williams & Nida, 2011; Williams & Wesselmann, 2011). While consequences of being personally excluded are relatively well understood (Wesselmann et al., 2019; Williams, 2007, 2009), less is known about consequences of group-based exclusion, that is, witnessing exclusion of the in-group without being personally excluded.

Better understanding of these consequences is important to elucidate social identity processes behind distress of social marginalization and radicalization toward political violence. For example, leaders of extremist organizations are rarely personally marginalized (Jaśko & LaFree, 2020), but they evoke vicarious pain of exclusion of the in-group to mobilize followers (Ginges & Atran, 2011; Kruglanski et al., 2013). Only some members of marginalized social groups become mobilized toward political violence. Members of radicalized social networks who report high levels of collective narcissism are more likely to support terrorist violence (Jaśko et al., 2020).

Given such findings, in the present study, we test whether collective narcissism (i.e., a belief that the in-group is exceptional but not sufficiently appreciated by others, Golec de Zavala et al., 2009, 2019) augments the effects of witnessing the in-group's exclusion on distress and retaliatory intergroup aggression. Initial findings of online studies align with this prediction with respect to distress indicating additionally that individual narcissism (i.e., inflated self-image contingent on external validation; Rhodewalt & Morf, 1998; Sedikides, 2020) does not moderate the effects of witnessing the in-group's exclusion on distress or intergroup hostility (Golec de Zavala, 2021). Going beyond the limitations of the online studies, in line with the best practice in the field (van Beest & Sleegers, 2019), we use a controlled, lab-based experiment and combine self-report and physiological (high-frequency heart rate variability) measures to assess group members' emotional reactions to witnessing the in-group's exclusion. Moreover, we use a behavioral measure of intergroup aggression to overcome the social desirability bias associated with declarative self-report measures of aggressive behavioral intentions (Barry et al., 2017).

In addition, we test whether the initial finding that a short mindfulness experience ("body scan") reduces distress of exclusion on high levels of collective narcissism (Golec de Zavala, 2021) generalizes beyond this specific method of inducing the mindfulness experience. Mindfulness—a contemplative practice of intentionally directing attention to experience in a non-judgmental way (Kabat-Zinn, 1994)—is likely to address the deficits in the regulation of negative emotions associated with collective narcissism (Golec de Zavala, 2019; Golec de Zavala et al., 2020). We test whether a short practice of a specific aspect of mindfulness—decentration (i.e., a mental process of distancing oneself from one's immediate experience and re-evaluating it as a constructed reality of the self, not an unchangeable truth; Kessel et al., 2016)—can mitigate emotional and physiological distress of exclusion among collective narcissists.

1.1 | Vicarious experience of exclusion

People experience exclusion vicariously. They recognize when others are excluded and feel distressed by witnessing another person experiencing exclusion. This effect is stronger when the target of exclusion is emotionally close to observers and when observers are high in trait empathy (Beeney et al., 2011; Wesselmann et al., 2013). Negative reactions to personal exclusion intensify when people attribute interpersonal exclusion to their group membership (Bernstein et al., 2010; Schaafsma & Williams, 2012; Wirth & Williams, 2009). In addition, aggressive retaliation generalizes to all group members when personal exclusion is perceived as perpetrated by a group instead of an individual (Gaertner et al., 2008). Witnessing exclusion of the in-group may distress group members because group membership is psychologically consequential.

Group identities account for a part of people's self-concept and their sense of identity (Brewer, 2001; Tajfel & Turner, 2001). Group members experience emotions in reaction to events that affected the in-groups (Mackie & Smith, 2002; Veldhuis et al., 2014) or even symbolic representations of the in-groups such as flags (Muldoon et al., 2020; Schatz & Lavine, 2007). Threat to in-group's image is one of the basic forms of intergroup threat that motivates group members to defensive reactions and out-group derogation (Branscombe et al., 1999). However, not all group members respond to such a threat in a similar way. In-group's image threat produces hostile responses especially on high levels of collective narcissism (in comparison to collective self-esteem or other aspects of positive in-group identification, social dominance orientation, right wing authoritarianism, and individual narcissism, Golec de Zavala et al., 2013, 2016; Guerra et al., 2020).

1.2 | Collective narcissism and reactions to witnessing the in-group's exclusion

Collective narcissism is an aspect of in-group identification (i.e., the extent to which group membership is psychologically consequential, Leach et al., 2008). It pertains to an unrealistically positive evaluation of the in-group and can be theoretically, statistically, and functionally differentiated from private collective self-esteem (or in-group satisfaction), a positive evaluation of the in-group (Golec de Zavala et al., 2009, 2019; Golec de Zavala & Lantos, 2020). Collective narcissism robustly and uniquely predicts intergroup hostility (in comparison to other aspects of positive in-group identification and individual narcissism, Golec de Zavala et al., 2009, 2019) and prejudice (in comparison to in-group satisfaction and individual narcissism, Golec de Zavala & Bierwiaczonek, 2020; Golec de Zavala et al., 2020, 2021).

Given that it emphasizes the lack of external recognition of the in-group's exaggerated greatness, collective narcissism is associated with hypersensitivity to the in-group image threat (also in contrast to other aspects of positive in-group identification and individual narcissism, Dyduch-Hazar et al., 2019; Golec de Zavala et al., 2016). Collective narcissism (rather than positive in-group identification) promotes conspiratorial ideation about alleged resentment and interference from others to explain the in-group's flaws and misfortunes (Golec de Zavala, 2020; Golec de Zavala & Federico, 2018). Given this evidence, we hypothesize that as the in-group's exclusion poses a threat to the in-group's positive evaluation (Branscombe et al., 1999), it is likely to be more distressful to collective narcissists who invest their sense of self-importance in their in-group's greatness (Golec de Zavala et al., 2020, 2021; Golec de Zavala & Lantos, 2020). While other aspects of in-group identification may also be involved in vicarious reactions to group-based exclusion, we focused on collective narcissism as the most likely predictor of the most problematic, aggressive reactions. We expected that collective narcissism will predict higher retaliatory aggression in response to the witnessed exclusion of the in-group.

In line with this prediction, an online experiment has demonstrated that witnessing exclusion of a minimal in-group produced stronger distress on a high level of collective (but not individual) narcissism (including vulnerable narcissism and rivalry and admiration forms of grandiose narcissism, Golec de Zavala, 2021). Some evidence indicates that individual narcissists (whose self-image is overly positive and contingent on external validation; Rhodewalt & Morf, 1998; Sedikides, 2020) are prone to respond aggressively to personal exclusion (Twenge et al., 2001) and other forms of self-image threat (Bushman & Baumeister, 1998). Nevertheless, studies confirm that as far as in-group's image threat and intergroup hostility and aggression are concerned, it is collective, not individual narcissism that matters (Golec de Zavala et al., 2013, 2016, 2021).

1.3 | Mindfulness to reduce collective narcissists' distress

We focus on collective narcissism to test an intervention likely to reduce intergroup hostility among people who are the most prone to it. Collective narcissism is robustly linked to intergroup hostility because of its hypersensitivity to the in-group threat (Dyduch-Hazar et al., 2019; Golec de Zavala et al., 2013, 2016; Guerra et al., 2020). In addition, collective narcissism is characterized by a vulnerable sense of self-worth, self-criticism, and a negative emotionality that underlies their exaggerated reactions to negative events involving the in-group (Golec de Zavala, 2019; Golec de Zavala et al., 2020). We propose that mindfulness practice may help address specific problems with emotional regulation associated with collective narcissism and thus, may reduce its association with retaliatory intergroup hostility.

Mindfulness is the ability to intentionally direct attention to internal and external phenomena in a non-judgmental way (Kabat-Zinn, 1994). Mindfulness practice facilitates emotion regulation, especially reducing the reactivity to threatening stimuli (Arch & Craske, 2006; Brown & Ryan, 2003; Kabat-Zinn, 1982, 2005). It addresses deficits in the ability to constructively regulate negative emotions in the face of adversity (for a review, see Guendelman et al., 2017). Even short mindfulness interventions increase the ability to regulate negative emotions (Howarth et al., 2019). In one previous study, a short, introductory mindfulness intervention ("body scan") produced a small decrease in vicarious distress of group-based exclusion among collective narcissists (Golec de Zavala, 2021). In the present study, in an attempt to isolate the specific aspect of mindfulness that produced this change, we focused on decentration, a specific mindful practice of metacognitive awareness (Lebois et al., 2015). Decentration helps to perceive thoughts and emotions as transient mental products, which can help make them less engaging and threatening (Fresco et al., 2007; Hayes et al., 1999). It mitigates negative processing of stressful events (Lebois et al., 2015) and reduces impulsivity (Papies & Barsalou, 2015; Papies et al., 2012). We tested whether this aspect of mindfulness practice drives the effects on distress among collective narcissism.

1.4 | Present study

The aim of this study was to examine the affective, physiological, and behavioral responses to witnessing the in-group's exclusion among group members low versus high in national

collective narcissism. We also examined whether a short decentration practice would mitigate the adverse effects of witnessing the in-group's exclusion among collective narcissists. To ensure that witnessing the in-group's exclusion momentarily in our study does not confound any chronic experiences of personal exclusion due to the same group membership, we tested the effect of exclusion of the majority in-group by a minority out-group.

We expected that in contrast to low collective narcissists, high collective narcissists would react with more self-reported distress (Hypothesis 1a) and a psychophysiological indicator thereof (Hypothesis 1b) as well as more retaliatory aggression toward the members of the excluding out-group (Hypothesis 2). We also hypothesized that a brief mindfulness intervention would mitigate the distress of exclusion on high levels of collective narcissists, reducing emotional, psychophysiological, and behavioral differences between group members with high versus low collective narcissism (Hypothesis 3).

To operationalize aggression, we used a behavioral aggression task based on the Taylor Aggression Paradigm (e.g., Chester & Lasko, 2019). To operationalize distress—a negative emotional response to witnessing the in-group's exclusion, we used a self-reported scale (Wirth & Williams, 2009), pretested in previous studies in Poland (Golec de Zavala, 2021; Lantos & Golec de Zavala, 2021). We also used a psychophysiological indicator of responses to stressful situations associated with emotion regulation: high-frequency heart rate variability (HF HRV; Di Simplicio et al., 2012; Shaffer & Ginsberg, 2017; Sloan et al., 2017). Decreased HF HRV is a commonly examined indicator of the parasympathetic activity of the autonomic nervous system in response to stressful events (Shaffer & Ginsberg, 2017).

Despite considerable literature reporting the psychological correlates of collective narcissism, no prior research has examined whether individuals low and high on collective narcissism differ in their physiological responses to threatening situations. Previous studies indicated that individual narcissism is associated with a maladaptive physiological stress response in face of everyday adversity (Cheng et al., 2013; Sommer et al., 2009). Given this evidence and the fact that collective narcissism is associated with behavioral displays of distress in response to the in-group's image threat (Golec de Zavala et al., 2013), we expected that collective narcissists may exhibit a maladaptive physiological stress response (indicated by decreased HF HRV) when witnessing the in-group's exclusion. According to the neurovisceral integration model, relatively low HF HRV can be considered an indicator of reduced behavioral flexibility or inability to generate a fast enough appropriate response to changing situational demands in stressful situations (Thayer & Lane, 2007). A meta-analysis found that negative social interactions elicit decreases in HF HRV compared to baseline levels (Shahrestani et al., 2015). This pattern was also found for other instances of social stress, like having to prepare and deliver a speech in front of an audience (Shahrestani et al., 2015). Moreover, low HF HRV was associated with negative affect in a large study (Sloan et al., 2017) and HF HRV was found to decrease in response to stressful situations (Balzarotti et al., 2017). Given that decreased HF HRV has been used as an index of negative emotionality or distress in various contexts (including interpersonal exclusion research relevant to this article, Liddell & Courtney, 2018), we used this psychophysiological index in our study.

2 | METHOD

The study used a quasi-experimental, mixed design with a two-condition within factor (witnessing the in-group's inclusion vs. exclusion), and two 2-group between factors (collective narcissism group: low vs. high scorers; mindfulness condition: control vs. mindful decentration). Figure 1 graphically summarizes the study design.

We used the extreme groups approach to dichotomize collective narcissism after a priori considering advantages and disadvantages associated with dichotomizing of the continuous variable (Preacher et al., 2005). We used this approach for cost efficiency and to increase the power of the complex lab-based study to detect whether the hypothesized moderation exists in the hypothesized direction. We selected extreme participants at recruitment following the procedure recommended in the literature (DeCoster et al., 2011; Preacher et al., 2005). We restricted our focus to extreme ends of the distribution of collective narcissism after the moderation by continuous collective narcissism in the predicted direction was supported by independent studies on the effects of intergroup exclusion (Golec de Zavala, 2021) and multiple studies on the effects of the in-group image threat (for review, Golec de Zavala et al., 2019).

2.1 | Participants

The study was approved by the SWPS University of Social Sciences and Humanities ethics committee. To establish low and high cutting points for collective narcissism in the target population that would enable a quasi-experimental grouping variable in the main study, we pretested 918 Polish participants. In the pretest, we marked the cutoff scores indicating the lower ($X < 2.03$) and upper 20% (>4.25) of the Collective Narcissism Scale mean scores (e.g., "I will not rest until Poles are met with the recognition they deserve"; Golec de Zavala et al., 2009; answered on a scale from 1—*completely disagree* to 7—*completely agree*). Based on the cutoff values, we invited participants to the main study. Ultimately, 80

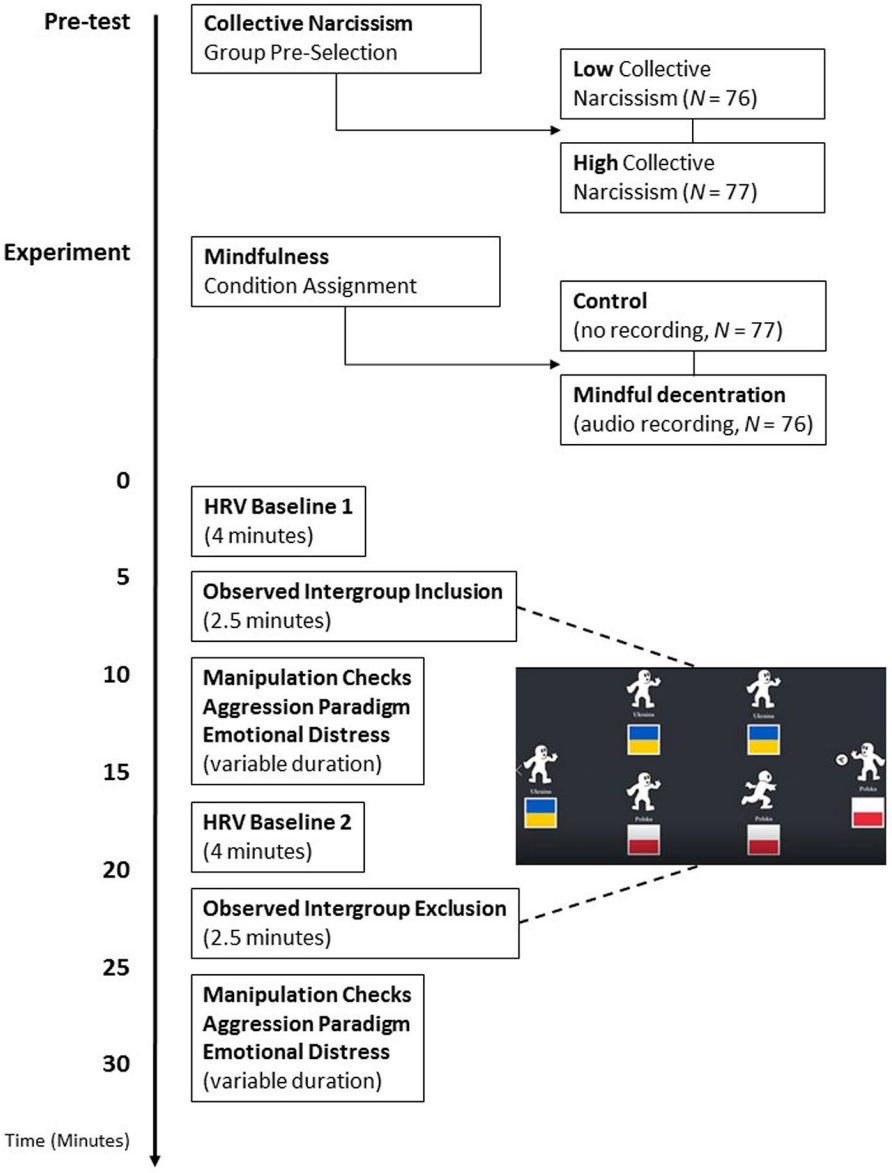

FIGURE 1 Study design flow chart. HRV, heart rate variability

participants who scored below the low cutoff point (<2.03, to form the low collective narcissism group) and 86 participants who scored above the high cutoff point (>4.25, to form the high collective narcissism group) participated in the main study. We excluded 11 participants whose collective narcissism score in the main study was above or below the cutoff scores obtained by those participants in the pretest. We also excluded data from two participants who participated twice due to a clerical error (see OSF for syntax to replicate analyses without exclusions).

The final sample comprised 153 participants (79.70% female) between 18 and 43 years old (M = 22.95, SD = 4.25). Participants were Polish students recruited from universities in Poznan via the university's research participant pool, in-person approaches, e-mails, posters, and Facebook advertising. Each participant received two cinema tickets worth 50 PLN as compensation for completing the study. After all, data were collected, participants were probed for guessing the purpose of and having any suspicions about the study. To ensure the accuracy of the pretest division into low and high collective narcissism groups, we used the Collective Narcissism Scale in the main study as per the pretest (Golec de Zavala et al., 2009; see above). In line with the logic of the pre-assignment to collective narcissism (low vs. high), the mean collective narcissism score in the high group was M = 4.49, SD = 0.61, whereas the mean in the low group was M = 1.67, SD = 0.37; $t(125.49)$ = 34.43, p < .001, d = 5.55, 95% CI_d (4.85, 6.25). High and low collective narcissists did not significantly differ on age (p = .40).

Power analysis with G*Power 3.1 (Faul et al., 2009) indicated a necessary sample size of 100 participants to detect moderate effect sizes of f = 0.20 with α = .05, 80% power, a moderate correlation among repeated measures (r = .30), nonsphericity correction of 1, and two measurements in a four-group repeated measures ANOVA. We assumed

moderate effect size for the HF HRV variable based on previous studies that found a moderate effect with a comparable similar methodology (Iffland et al., 2014; $\eta_p^2 = .11$) and the large effect size for self-reported distress and behavioral measure of aggression based on the Cyberball literature ($d = 1.36$; Hartgerink et al., 2015).

2.2 | Measures

2.2.1 | Manipulation checks

We collected a standard manipulation check for the Cyberball paradigm:

"What percentage of all ball throws did your group receive in the Cyberball game (choose a number between 0 and 100)?". The item was scored on a 100-point visual analog scale ranging from 0 to 100, anchored with 10-point increments (i.e., at 0, 10, 20, etc.). A sense of exclusion after Cyberball was also assessed with two items scored on a 7-point scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). The first item assessed perceived personal exclusion ("I felt excluded"); Cyberball inclusion: $M = 2.54$, $SD = 1.71$; Cyberball exclusion: $M = 4.22$, $SD = 2.00$. The second item assessed perceived group exclusion ("I had the impression that my group was excluded"); Cyberball inclusion: $M = 1.87$, $SD = 1.14$; Cyberball exclusion: $M = 6.05$, $SD = 1.38$.

To assess the effectiveness of the mindfulness manipulation, we measured state mindfulness after the Cyberball exclusion game. We used a 6-item short version of the Toronto mindfulness scale containing items 2, 5, 6, 7, 10, and 11 (e.g., "I was receptive to observing unpleasant thoughts and feelings without interfering with them", Lau et al., 2006). Items were scored on a 7-point scale ranging from 1 (*completely disagree*) to 7 (*completely agree*), and a mean score was calculated from all items, $\alpha = .75$, $M = 5.48$, $SD = 0.73$; mindfulness: $\alpha = .79$, $M = 5.51$, $SD = 0.81$, control: $\alpha = .69$, $M = 5.45$, $SD = 0.64$.

2.2.2 | Emotional distress

Distress was assessed by six items assessing participants' experience during the previous Cyberball game ("While observing the game I felt…"), ending in "good", "happy", "relaxed", "resentful", "upset", and "outraged". Items were scored on a 7-point scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). The first three items were reverse coded and an overall mean distress score was created; Cyberball inclusion: $\alpha = .80$, $M = 2.59$, $SD = 0.85$; Cyberball exclusion: $\alpha = .90$, $M = 3.85$, $SD = 1.35$.

2.2.3 | Physiological responses as an index of emotional arousal

We used high-frequency heart rate variability (HF HRV) as an indicator of psychophysiological activation associated with emotional arousal. We recorded cardiac activity with the Biopac MP160 system (Biopac Systems, Inc., Goleta, CA, USA), which includes electrocardiography (ECG) electrodes, a wireless signal transmission system, and a receiver unit including an A/D converter. ECG data were recorded with Ag–AgCl surface electrodes within standard configuration (Sherwood et al., 1990), sampled at 500 Hz, wirelessly transmitted and received by the BioNomadix system, converted to a digital signal and stored on a computer using data acquisition and analysis system (iMotions software, Copenhagen, Denmark). RR peaks were identified automatically by the HRV analysis 2.0.2 module in LabChart 8.1 software (ADInstruments, NewZealand). The relevant segments were visually inspected and corrected for false or undetected R-waves, movement artifacts, and ectopic beats, and corrected manually when necessary. We calculated the HF HRV using Fast Fourier Transformation with a frequency of 0.15–0.40 Hz. HF HRV reflects parasympathetic modulation of the heart (Malik et al., 1996). The HF HRV was reported in microseconds squared (μs^2) for the 0.15–0.40 Hz band.

HF HRV was computed for the 150 s of the two Cyberball games and for the last 150 s of each of the respective baseline periods. The measurement periods were set to 150 s to allow for the computation of a meaningful measure of ultra-short high-frequency HF HRV (Shaffer & Ginsberg, 2017) while also minimizing the participant task disengagement risk. Consistent with previous research in psychophysiology, HRV outliers were winsorized to be 1% more extreme than the next non-outlying value (Shimizu et al., 2011, see OSF folder for syntax). Data points were considered outliers at ≥3 *SD* distance from the mean (Stevens, 2009). We created baseline-to-intergroup exclusion condition HF HRV difference scores by subtracting the mean of the last 150 s of each baseline period from the mean of the 150 s of the respective intergroup exclusion condition. Using difference scores is a standard strategy for the study of autonomic responses to psychological factors (e.g., Gross & Levenson, 1995; Kaczmarek et al., 2019; Kreibig et al., 2013). Stronger decreases in HF HRV indicated a more maladaptive physiological stress response.

2.2.4 | Aggression

Participants completed six trials of the modified Taylor Aggression Paradigm (Warburton & Bushman, 2019), using a variation of the procedure described by Chester and Lasko (2019). In this paradigm, participants engage in an alleged competitive reaction time task. As per the standardized

procedure, during each trial participants watch three consecutive rectangle signs: green indicating that their opponent was ready, yellow indicating that the game is about to start and players should focus, and red indicating that the player should react as fast as possible by clicking on the rectangle. Instructions indicated that the participant who clicked the red rectangle faster would win the trial. Participants were informed that they were competing against one of the out-group players from the previous Cyberball game (i.e., the team that had just included/excluded the participant's in-group). Each trial began by indicating the desired duration and intensity of the next noise blast to be administered to the opponent in case of successful performance. If participants lost, they heard a white noise blast allegedly administered by the opponent.

Before the game started, the participant heard a low- (3 s, 65 dB), medium- (4 s, 75 dB), and high-intensity (5 s, 85 dB) sample of white noise. The intensity was previously calibrated using the Bruel & Kjaer 4128C Head & Torso simulator and Bluedio T6 ANC wireless headphones, which were also used in the remainder of the study. Before each trial, participants chose the desired duration of the noise blast to be administered to their opponent on a scale from 0 (*0* s) to 10 (*5* s) with 0.5-s increments; and desired volume from 1 (*55* dB) to 10 (*95* dB) with 5-db increments. Participants received bogus feedback after each trial about whether they won or lost. In trials 1, 3, and 5, they lost. In trials 2, 4, and 6, they won. After all trials, the participant saw the configuration of the noise blast supposedly waiting for them in case of an unsuccessful trial. The duration and intensity of noise blasts delivered by the computer were gradually increasing after every two trials representing low provocation (trials 1–2), medium provocation (trials 3–4), and high provocation (trials 5–6).

We used average volume to operationalize aggressive behavior in the Taylor Aggression Paradigm as this is the most commonly used operationalization (Elson, 2016). It also aligns with the definition of aggression as behavior intended to harm another person who does not want to be harmed (Anderson & Bushman, 2002) and the findings that the average Taylor Aggression Paradigm volume was positively associated with real-world aggression (Anderson et al., 2008; Ferguson et al., 2008).

2.3 | Procedure

Upon arrival at the laboratory, participants provided their informed consent to take part in a study that allegedly examined the effect of mindfulness practice and temperamental type (to justify the physiological assessment) on their ability of mental visualization during intergroup coordination online (to justify to the Cyberball paradigm and the Taylor Aggression Paradigm). First, the experimenter placed sensors to measure physiological activity on participants' torsos. Next, participants were invited to relax while the experimenters appeared to wait for other participants to arrive at nearby cubicles. Next, participants were asked to take part in the intergroup interaction online using a computer. They were led to believe they were randomly allocated to the role of the observer (vs. player) in this interaction. All participants were observing the game and instructed to visualize it (imaging the settings, its participants, etc.) in detail. Participants observed the Cyberball game (under the impression that players were all participants in the same lab) played supposedly in real-time by Polish and Ukrainian (expatriates living in Poland) participants. The login information to the game was presented in Polish, English, and Ukrainian to increase the credibility of the cover story. For the same reason, before the game, participants saw a screen presenting information about other participants in nearby cubicles logging in to the game.

2.3.1 | Intergroup exclusion

We used an adapted intergroup Cyberball paradigm like in previous studies (Golec de Zavala, 2021; Golec de Zavala et al., 2020; Lantos & Golec de Zavala, 2021). In the interpersonal Cyberball paradigm (Hartgerink et al., 2015; Williams et al., 2000), participants are led to believe that they play an online ball-tossing game with two other participants. In our study, participants were led to believe that they were randomly allocated to observe two national teams tossing the ball to each other. The screen showed the Polish team (three white avatars with the Polish flag beneath them, and the word "Polska" written above the flag) playing with the Ukrainian team (three white avatars with the Ukrainian flag beneath them, and the word "Ukraina" written above the flag, Figure 1).

According to the standard procedure for using physiological and neural measures in the Cyberball paradigms (van Beest & Sleegers, 2019), participants first watched a preprogrammed game in which their national in-group's (i.e., the Polish) team was fairly treated in the game (50% of throws were thrown to the Polish players). Analyses indicate that this level of inclusion is an adequate control condition for testing the effects of exclusion (Dvir et al., 2019). Next, they watched the game in which their national in-group was excluded (only 10% of initial throws went to Polish players; the Ukrainian players passed among themselves for the rest of the game). Analyses indicate that this order to presentation is adequate to test the effects of exclusion and that changing the order of presentation of the exclusion and the control condition does not change the results in any meaningful way (Tang & Richardson, 2013). Each game took approximately 2.5 min. After each game participants responded to manipulation check questions, the self-report measure of distress, and took part in the Taylor Aggression Paradigm to which they were

allegedly allocated as players. All participants were players in this part but they were also asked to visualize all aspects of the interaction just as when observing the ball-tossing game.

2.3.2 | Mindful decentration intervention

The mindfulness intervention employed a decentration technique (observing one's thoughts without judgment) and was randomly allocated to 76 participants who listened to an audio recording prepared by an experienced mindfulness trainer. As the Cyberball game unfolded in the inclusion and exclusion conditions, the recording instructed participants to observe all thoughts, emotions, assessments, and comments without engagement, as passing creations of the mind (verbatim transcript in online Supporting Information S1). The other 77 participants were randomly allocated to a control condition without any recording.[1] The mindfulness manipulation check was collected after witnessing the in-group's exclusion.

2.4 | Analytical strategy

To check whether the manipulation of intergroup exclusion in the Cyberball paradigm had the intended effect of making participants perceive exclusion of the Polish team, as well as feel personally excluded in response to witnessing the in-group's exclusion, we perform paired-samples *t*-tests comparing the observed percentage of throws received by the Polish team during the Cyberball game and personal and group exclusion between the inclusion and exclusion condition. To check the effectiveness of mindful decentration manipulation (especially on high levels of collective narcissism), a 2 × 2 ANOVA tests the main and interaction effects for the decentration versus control condition and collective narcissism group on state mindfulness. We used an independent-samples *t*-test to check for the intended differences in collective narcissism between the low and high collective narcissism groups.

For the main analyses, we employed three 2 × 2 × 2 mixed-model ANOVAs with witnessing the in-group's exclusion as the within factor, collective narcissism level, and mindful decentration condition as between factors, and all interaction effects. Emotional distress after witnessing the in-group's in-/exclusion, aggression volume after witnessing the in-group's in-/exclusion, and baseline-to-witnessing the in-group's in-/exclusion HF HRV reactivity were the respective dependent variables. Significant effects were followed up with Bonferroni-corrected pairwise comparisons. The significance level was .05 for all analyses.

3 | RESULTS

3.1 | Manipulation checks

Relative to witnessing the in-group's inclusion, participants felt more excluded on the personal and on the group level after witnessing the in-group's exclusion; personal-level inclusion-exclusion difference: $M = -1.68$, $t(152) = -10.48$, $p < .001$, $d = -0.85$; group-level inclusion-exclusion difference: $M = -4.18$, $t(152) = -30.04$, $p < .001$, $d = -3.43$ (across collective narcissism level and mindful decentration conditions). A paired-samples *t*-test of the observed percentage of throws received by the Polish team during the inclusion versus exclusion stage of the Cyberball game also confirmed the effectiveness of the intergroup exclusion manipulation, as there was a significantly higher observed percentage of throws received by the Polish team in observed intergroup inclusion than in exclusion; mean difference: $M = 40.99$, $t(152) = 30.10$, $p < .001$, $d = 4.05$. These effects were not moderated by the between-factors (all ps > .15).

The mindful decentration manipulation check (see Table S2) showed no significant main effect for mindful decentration condition, $F(1, 149) = 0.33$, $p = .57$, $\eta_p^2 < 0.01$. However, it did reveal a significant mindful decentration by collective narcissism condition interaction effect, $F(1, 149) = 4.20$, $p = .04$, $\eta_p^2 = 0.03$. Pairwise comparisons indicated that mindful decentration was more effective for low than for high collective narcissists. Precisely, there was a trend for low collective narcissists in the mindful decentration condition to score higher on state mindfulness than low collective narcissists in the control condition, $p = .07$, $d = 0.40$, 95% CI_d (−0.06, 0.85), whereas there was no difference between high collective narcissists in the mindful decentration and the control condition ($p = .30$). The interaction effect also resulted in higher mindfulness scores in low (compared to high) collective narcissists in the mindful decentration condition, $p < .01$, $d = 0.67$, 95% CI_d (0.20, 1.12). In contrast,

[1]To ensure that the audio recording in the mindful decentration (vs. no audio in control) condition did not introduce additional differences in cognitive load between these conditions, we compared psychophysiological markers of cognitive load between the conditions (i.e., pupil dilation and eye blink rate). Those measurements were taken during the study that took eye tracker data for the purpose of testing a different research question (procedure is explained in the online Supporting Information). During the in-group inclusion, participants in the mindful decentration condition produced significantly more eye blinks than participants in the control condition. There was no difference in the number of blinks or pupil dilation between the mindful decentration conditions during the in-group exclusion. There were no control-mindful decentration differences in pupil dilation between the exclusion conditions (for detailed results see Table S7). Thus, participants in the mindful decentration condition were likely habituated to listening to the audio recording by the time of witnessing the in-group's exclusion (which was the key part of the experiment) and did not require any more cognitive resources than control participants.

no such difference was observed in the control condition (p = .78). Thus, high collective narcissists appeared resistant to the mindful decentration manipulation, whereas it worked for low collective narcissists.

3.2 | Main analyses

Table 1 reports correlations between key variables.

3.2.1 | Emotional distress

We used a 2 × 2 × 2 (witnessing the in-group's exclusion x collective narcissism level x mindful decentration condition) mixed-model ANOVA to test the hypothesis that high (vs. low) collective narcissists react to witnessing the in-group's exclusion (in comparison to inclusion) with more distress (Hypothesis 1a). We also used this analysis to test the hypothesis that mindful decentration mitigates the negative effects of witnessing the in-group's exclusion among participants who score high on collective narcissism, reducing differences between those who score low versus high on collective narcissism (Hypothesis 3). The results are graphically summarized in Figure 2.

We found a significant main effect for the within-subjects factor (witnessing the in-group's inclusion vs. exclusion), $F(1,149) = 127.95$, $p < .001$, $\eta_p^2 = 0.46$, indicating that participants felt more distressed after witnessing the in-group's exclusion than after witnessing its inclusion. In line with Hypothesis 1a, we found a significant observed intergroup exclusion by collective narcissism interaction, $F(1,149) = 4.49$, $p = .04$, $\eta_p^2 = 0.03$. The distress of high collective narcissists increased more than that of low collective narcissists from observed intergroup inclusion to exclusion, High: $p < .001$, $d = 1.14$, 95% CI_d (0.80, 1.48); Low: $p < .001$, $d = 0.75$, 95% CI_d (0.42, 1.08). After inclusion, there was no significant emotional distress difference between participants who scored high versus low on collective narcissism ($p = .86$), whereas group members who scored high on collective narcissism reported significantly more distress after witnessing the in-group's exclusion than those who scored low on collective narcissism, $p = .02$, $d = 0.37$, 95% CI_d (0.05, 0.69).

TABLE 1 Correlations between key variables

Variable	*M*	*SD*	1	2	3	4	5
1. Emotional distress (inclusion)	2.59	0.85	–				
2. Aggression (inclusion)	3.28	2.20	0.24**	–			
3. ΔHF HRV (inclusion)	−114.36	594.50	0.07	0.05	–		
4. Emotional distress (exclusion)	3.85	1.35	0.27***	0.24**	0.16	–	
5. Aggression (exclusion)	3.79	2.46	0.28***	0.89***	0.06	0.31***	–
6. ΔHF HRV (exclusion)	−147.48	748.12	0.04	−0.10	0.09	−0.02	−0.06

Note: Δ = Witnessing the in-group's in-/exclusion minus baseline mean change score.

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

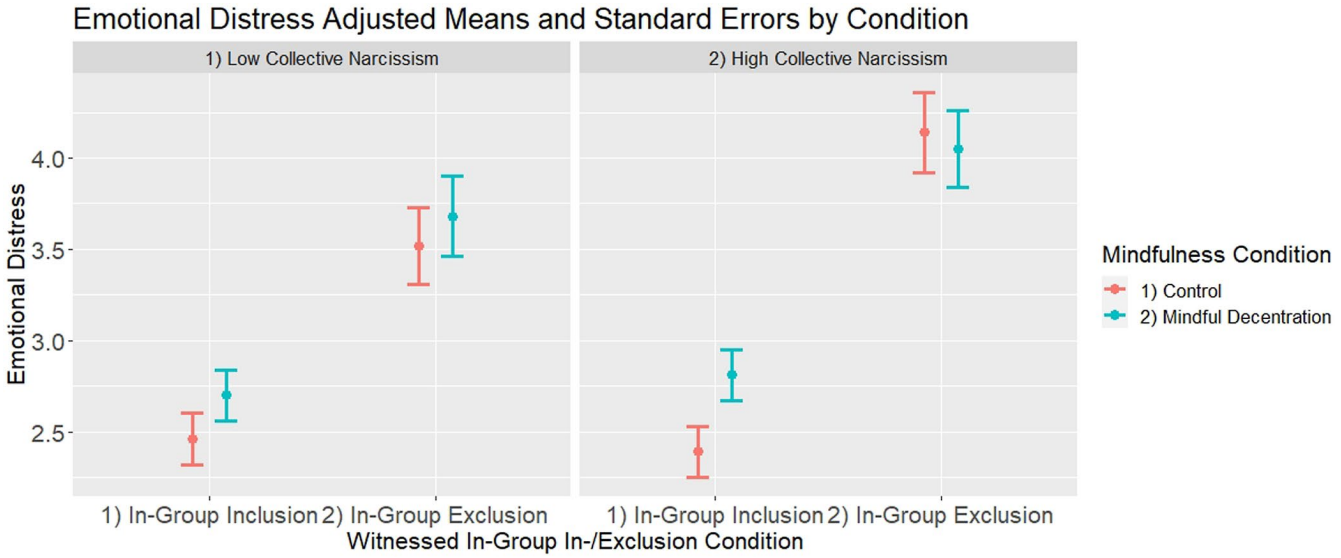

FIGURE 2 Emotional distress adjusted mean values by experimental condition. Error bars represent standard errors

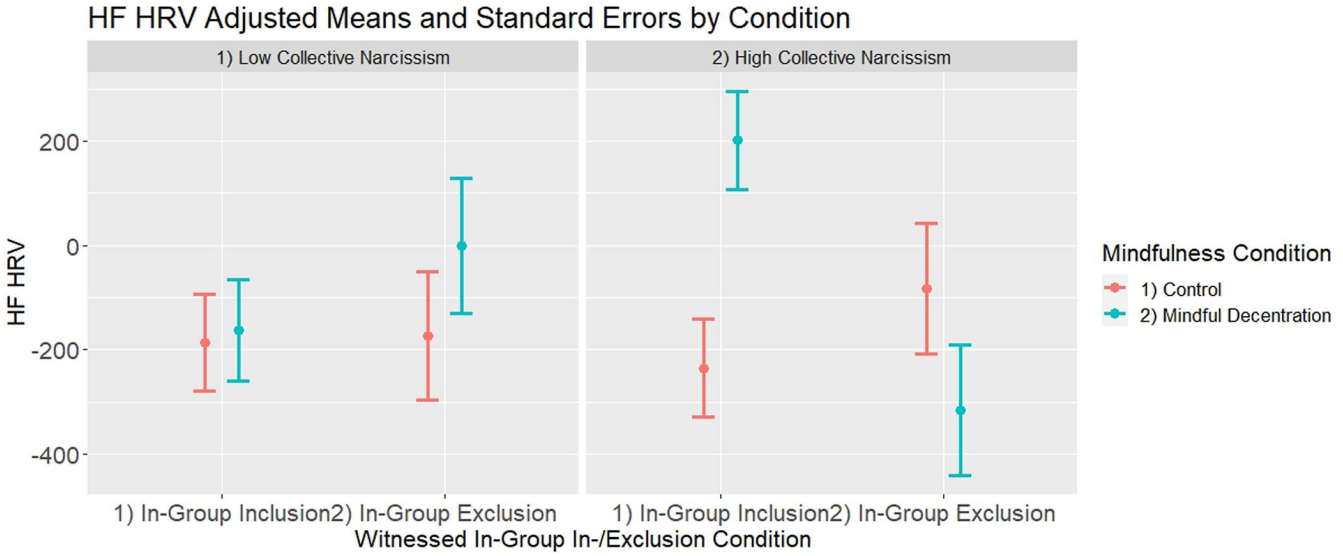

FIGURE 3 High-frequency heart rate variability reactivity adjusted mean values by experimental condition. Error bars represent standard errors

The analyses yielded no support for Hypothesis 3, as the effect of the mindful decentration manipulation was not significant (see Table S3, "Observed Intergroup Exclusion * Mindfulness Condition" and "Observed Intergroup Exclusion * Mindfulness Condition * Collective Narcissism Group").

3.2.2 | HF HRV

We used a 2 × 2 × 2 mixed-model ANOVA to test whether people scoring high (vs. low) on collective narcissism display more psychophysiological arousal in response to the in-group's exclusion than to their in-group's inclusion (Hypothesis 1b). We also used this analysis to test the hypothesis that mindful decentration mitigates the negative effects of witnessing the in-group's exclusion among participants who score high on collective narcissism (Hypothesis 3). The results are graphically summarized in Figure 3.

The results did not support Hypothesis 1b. Collective narcissists did not display higher psychophysiological arousal when witnessing the in-group's exclusion (vs. inclusion), as the expected effect only approached significance (see Table S4, "Observed Intergroup Exclusion * Collective Narcissism Group"). Pairwise comparisons showed that HF HRV reactivity became marginally more negative between the inclusion and exclusion condition among high collective narcissism group members, $p = .08$, $d = -0.19$, 95% CI_d (−0.51, 0.14). For low collective narcissism group members, the inclusion-to-exclusion difference did not approach statistical significance despite a similar effect size magnitude (for an effect of opposite direction), $p = .40$, $d = 0.20$, 95% CI_d (−0.13, 0.53). Also of interest to the hypothesis, the pairwise comparison of high and low collective narcissism scorers in the in-group exclusion condition did not show any significant difference, $p = .37$, $d = 0.14$, 95% CI_d (−0.18, 0.47).

The results did not support Hypothesis 3 although the analysis revealed a significant 3-way interaction effect (see Table S4, "Observed Intergroup Exclusion * Mindfulness Condition * Collective Narcissism Group"). This effect was due to a greater inclusion-exclusion difference between participants who scored low versus high on collective narcissism in the mindful decentration than in the control condition. However, this effect was different than hypothesized. Specifically, group members who scored high on collective narcissism in the mindful decentration condition (not in the control condition, as was expected) exhibited a significant inclusion-exclusion decrease in HF HRV reactivity, $p < .001$, $d = -0.57$, 95% CI_d (−1.04, −0.10). Other inclusion-exclusion changes were not significant; low collective narcissism-mindful decentration $p = .28$, $d = 0.59$, 95% CI_d (0.10, 1.07); high collective narcissism-control $p = .30$, $d = 0.15$, 95% CI_d (−0.31, 0.61); low collective narcissism-control condition of mindful decentration, $p = .93$, $d = 0.02$, 95% CI_d (−0.43, 0.48).

The 2-way interaction effect involving mindful decentration condition approached significance, but it was also contrary to the hypothesized direction (see Table S4, "Observed Intergroup Exclusion * Mindfulness Condition"). Participants in the mindful decentration condition showed marginally decreased HF HRV reactivity from in-group inclusion to exclusion, $p = .09$, $d = -0.27$, 95% CI_d (−0.60, 0.06); whereas there was no such effect in the control group, $p = .42$, $d = 0.10$, 95% CI_d (−0.22, 0.43). Furthermore, in the in-group exclusion condition, there was no difference in HF HRV reactivity between the mindful decentration and the control condition, $p = .81$, $d = 0.05$, 95% CI_d (−0.28, 0.37).

FIGURE 4 Aggression adjusted mean values by experimental condition. Error bars represent standard errors

3.2.3 | Aggression

We used a 2 × 2 × 2 (witnessing the in-group's exclusion x collective narcissism level x mindful decentration condition) mixed-model ANOVA of aggressive behavior to test the hypothesis that group member who score high (vs. low) on collective narcissism react to witnessing the in-group's exclusion (in comparison to witnessing its inclusion) with more aggression (Hypothesis 2). We also used this analysis to test Hypothesis 3 (mitigation of the negative effects of exclusion among collective narcissism high scorers). The results are graphically summarized in Figure 4.

We found a significant main effect of witnessing the in-group's exclusion, $F(1,149) = 31.05$, $p < .001$, $\eta_p^2 = 0.17$, evidencing that participants were generally more aggressive toward the out-group members after witnessing the in-group's exclusion, than inclusion. In line with Hypothesis 2, we found a significant intergroup exclusion by collective narcissism interaction, $F(1,149) = 4.03$, $p = .05$, $\eta_p^2 = 0.03$. Evident in differential inclusion-exclusion changes in aggression, group members who scored high on collective narcissism were more affected by witnessing the in-group's exclusion, $p < .001$, $d = 0.26$, 95% CI_d (−0.05, 0.58) than those who scored low on collective narcissism, $p = .01$, $d = 0.15$, 95% CI_d (−0.16, 0.47).

Moreover, the effect of witnessing exclusion of the in-group on aggression toward the out-group was influenced by the interaction of collective narcissism level (low vs. high) and mindful decentration condition (control vs. mindful decentration), $F(1,149) = 4.27$, $p = .04$, $\eta_p^2 = 0.03$. In the mindful decentration condition, people who scored high on collective narcissism reacted with more aggression after exclusion than exclusion, $p < .001$, $d = 0.37$, 95% CI_d (−0.08, 0.81), whereas those who scored low did not ($p = .21$). In the control condition, both those who scored low on collective narcissism, $p = .02$, $d = 0.18$, 95% CI_d (−0.26, 0.63), and those who scored high reacted with a significant inclusion-exclusion increases in aggression, $p = .03$, $d = 0.16$, 95% CI_d (−0.29, 0.61). The magnitude of these increases was only about half of that of high collective narcissists in the mindful decentration condition, though. Thus, there was no support for Hypothesis 3.

4 | DISCUSSION

The present study tested whether collective narcissism moderates emotional and behavioral responses to witnessing the in-group's exclusion. We hypothesized that collective narcissism should predict distress (or negative emotional reactions) and retaliatory intergroup aggression in response to witnessing the in-group being excluded (vs. included) by others. The present results align with those expectations. We also predicted that collective narcissism should be associated with higher psychophysiological arousal when witnessing the in-group's exclusion. This effect was found only when participants were instructed to pay attention to their thoughts and experiences while observing the game in which their in-group was excluded. Finally, we expected that the short mindful decentration practice should reduce emotional distress and psychophysiological reactions to witnessing the in-group's exclusion as well as aggression especially on high levels of collective narcissism. Instead, we found this intervention had a soothing effect (on psychophysiological measure) only on low levels of collective narcissism and did not affect aggression.

4.1 | Collective narcissism and emotional reactions to witnessing the in-group's exclusion

Participants scoring high on collective narcissism reported significantly more negative emotions after witnessing their national in-group being excluded in the virtual ball-tossing game by a national minority, a team of Ukrainian immigrants. Note that this manipulation does not confound the momentary in-group's exclusion in the lab with the chronic in-group marginalization in the real-life. Group members who score high on collective narcissism may find it difficult to downregulate their negative emotions in reaction to the in-group's image threat that witnessing the in-group's exclusion poses. Such results extend previous correlational findings highlighting the deficits in the ability to regulate negative emotions associated with collective narcissism (Golec de Zavala, 2019). They also extend previous experimental findings indicating higher sensitivity and stronger emotional responses to the in-group's image threat on higher levels of collective narcissism (Golec de Zavala et al., 2013, 2016, 2020). The present findings suggest more severe emotional reactions to visualized momentary marginalization of the in-group among group members high on collective narcissism. Together with previous findings indicating higher levels of collective narcissism among members of radicalized social groups (Jaśko et al., 2020), those results indicate collective narcissism as a risk factor increasing the probability of radicalization among group members facing chronic marginalization of their in-group.

The self-report findings indicative of distress after witnessing the in-group's exclusion are paralleled by the increase in a psychophysiological response (HF HRV) associated with stress-related emotional arousal. This response was stronger among participants who scored high on collective narcissism, especially when they were instructed to focus on their experiences and feelings while witnessing the in-group's exclusion. Such results suggested also that mindful decentration manipulation did not work as intended for those participants. The short mindful decentration practice did not produce a state of mindfulness among participants high on collective narcissism. Instead, it might have increased their attention to their negative emotional responses to witnessing the in-group's exclusion, which translated into more psychophysiological reactivity.

Our HF HRV results hold implications for the health status of high collective narcissists, as they offer a first look at the psychophysiological correlates of collective narcissists' emotional responses to in-group image threat. For example, previous research has associated reduced HF HRV in response to challenging situations with impaired glucose regulation and hypothalamic-pituitary-adrenal axis function, inflammation (Thayer & Sternberg, 2006), a risk for cardiovascular disease and stroke (Thayer & Lane, 2007), and all-cause mortality and morbidity (Liao et al., 2002). Thus, the observed HF HRV response of high collective narcissists in the mindful decentration condition might imply a heightened risk of developing potentially critical health problems when exposed to stress in intergroup situations.

4.2 | Collective narcissism and retaliatory aggression after witnessing the in-group's exclusion

The analysis of aggressive behavior also presents a reason to be concerned about collective narcissists' responses to witnessing the in-group's exclusion. The present results align with Hypothesis 2 indicating that collective narcissists are more likely to aggress against the members of the out-group that exclude their in-group. The average volume of white noise blasts administered to the alleged out-group member after group members witnessed their in-group's exclusion was a function of collective narcissism. Thus, collective narcissism may be a health risk factor to group members exposed to their in-group's marginalization but collective narcissism is also a risk factor to those who may be perceived as perpetrators of marginalization. Our findings might indicate that group members who endorse collective narcissism may be more likely to engage in violent retribution after perceived offences to their in-group (Golec de Zavala & Keenan, 2020). They may also be more likely to join violent or extremist groups and advocate terrorist violence (Jasko et al., 2020).

Results indicating that collective narcissism moderates the effect of vicarious intergroup exclusion on retaliatory intergroup aggression may also suggest that collective narcissists use aggression to regulate negative emotions. Indeed, findings suggest that retaliatory aggression after interpersonal exclusion serves a palliative function (Chester & DeWall, 2017). Collective narcissists may engage in retaliatory intergroup aggression due to its perceived palliative and in-group image-defending function. Existing evidence aligns with this interpretation suggesting that collective narcissism is associated with the belief that aggressive revenge in the name of the in-group is "sweet" and should be pleasant (Dyduch-Hazar & Mrozinski, 2021; Golec de Zavala & Lantos, 2020).

4.3 | The unexpected impact of mindful decentration

The present study tested a mindful decentration practice as a potential intervention to reduce collective narcissists' distress and aggression after vicarious intergroup exclusion. However, our findings indicate that this intervention was not successful in producing the mindfulness state on high levels

of collective narcissism, although it produced the heightened mindfulness state among participants who scored low on collective narcissism. Such findings suggest a constraint to previous results indicating that mindfulness interventions are effective in reducing stress on the physiological as well as psychological level (Hoge et al., 2018; Shearer et al., 2016). Collective narcissism is an individual difference variable that may undermine the effectiveness of such interventions or at least undermine the effectiveness of the mindful decentration intervention.

Our failure to induce the mindfulness state among group members who endorse collective narcissism can be explained by the literature, which suggests that the mindfulness practice sometimes increases instead of reducing fear or anxiety (Baer et al., 2019; Cebolla et al., 2017; Van Dam et al., 2018). Short mindfulness interventions can produce unpleasant thoughts or agitation (Clarke & Draper, 2020; Lomas et al., 2015) observed also on the physiological level (increased level of cortisol, Creswell et al., 2014). It is plausible that certain characteristics predispose people to such adverse reactions. For example, physiological stress reactions (increased level of cortisol and decreased level of HRV) were observed among highly self-critical people during contemplative practice (Rockliff et al., 2008). Our results may indicate that collective narcissism is another such variable. The short mindful decentration intervention we used might have increased emotional distress among participants who scored high on collective narcissism because they paid more attention to the witnessed exclusion and their (negative) emotional reactions to it. Future studies would do well examining this possibility further, especially in light of results indicating that collective narcissists respond well to other forms of mindfulness intervention such as the basic "body scan" practice (Golec de Zavala, 2021).

As noted earlier, contrary to our expectations, group members who scored high on collective narcissism exhibited a significant reduction in HF HRV reactivity from witnessing the in-group's inclusion to exclusion, *especially* when they were instructed to observe their thoughts and feelings as passing, without engaging with them. This may suggest that instead of inducing a mindfulness state we might have prompted collective narcissists to pay more attention to their negative emotional reactions to witnessing the in-group's exclusion and more positive emotional reactions when witnessing the in-group's inclusion. Indeed, when instructed to focus on their experiences and reactions, participants high in collective narcissism showed an HF HRV reactivity change of positive direction after witnessing the in-group's inclusion. This suggests that witnessing in-group's inclusion (especially when instructed to pay attention) may reduce negative emotional reactions among group members who endorse collective narcissism (Sloan et al., 2017). Future studies would do well examining such an intervention to reduce distress and intergroup hostility among collective narcissists.

4.4 | Limitations

Despite providing several novel insights, this study was limited by a few issues. First, collective narcissism was dichotomized using extreme responders, thereby ignoring individuals representing the middle of the population. Although this method also represents certain strengths when done (like in the present research) a priori (Preacher et al., 2005), it also has shortcomings. While our findings regarding the hypothesized effects and their direction are reliable, the effect sizes reported in the present study should be interpreted with caution, as they may be inflated due to the extreme group approach (Preacher et al., 2005). The effect sizes should be seen in the context of other results pertaining to the collective narcissism as a moderator of the reactions to witnessing the in-group's exclusion and the in-group's image threat (Golec de Zavala, 2021; Golec de Zavala et al., 2019) and to the main effects of witnessing the in-group's exclusion on distress and intergroup hostility (Golec de Zavala, 2021; Golec de Zavala et al., 2020; Lantos & Golec de Zavala, 2021).

The previous studies also clarify another limitation of the present research, which is a lack of robustness check of collective narcissism as the moderator. It was not applied to the present study due to the power concerns. However, other studies indicate that individual narcissism does not moderate the effects of intergroup exclusion (Golec de Zavala, 2021) or the in-group's image threat (Golec de Zavala et al., 2013). The present investigation focused on specific moderation by collective narcissism based on extensive evidence indicating that collective narcissism predicts hypersensitivity and exaggerated reactions to the in-group's image threat (for review, Golec de Zavala et al., 2019). We believe that the a priori disentangling collective narcissism as an aspect of in-group identification increases precision in our understanding of the mechanism underlying its associated reactions. Nevertheless, future studies would do well investigating other aspects of in-group identification as possible moderators of the effects of witnessing the in-group's exclusion to uncover alternative mechanisms to the one investigated here. Previous studies indicate no such moderation by in-group satisfaction (Golec de Zavala, 2021).

Another methodological limitation is the lack of counterbalancing of the inclusion and exclusion conditions in the Cyberball paradigm. This was done to ensure the commensurability of the physiological data in the entire sample. Although it could have provided insight into potential order effects or ameliorative effects of post-exclusion inclusion, the size of the study did not permit this additional condition. Apart from being beyond the scope of this study, such comparisons

have been done elsewhere (see Tang & Richardson, 2013, who mitigated concerns about potential confounds like time- or fatigue-related effects). Nevertheless, we suggest replicating these comparisons in the intergroup Cyberball context for further support for the present procedure. Our findings are also similar to results from between-participants experimental designs that explored the effects of intergroup exclusion on distress and intergroup hostility (Lantos & Golec de Zavala, 2021), and the moderating role of (continuous) collective narcissism (in comparison to individual narcissism and in-group satisfaction, Golec de Zavala, 2021).

Another limitation of our findings is that the self-report measure of distress and the physiological responses associated with emotional arousal in stressful situations were not associated. However, this is frequently the case in studies assessing distress in response to social exclusion. Such physiological and self-report measures are rarely associated despite both showing hypothesized responses to exclusion (Cascio et al., 2014; Chester et al., 2014; Masten et al., 2011). The self-report and physiological assessment of emotional arousal in response to a distressing intergroup situation may reflect somewhat different aspects of emotional responses to intergroup exclusion. The physiological measure may capture the immediate, broad arousal while the self-reported measure may capture a reflective aspect of the experience (Masten et al., 2011).

The simple and short mindful decentration intervention constitutes another limitation. A short mindful decentration intervention might have produced a different effect than a longer and more comprehensive mindfulness training comprising multiple sessions and/or additional techniques. The proper assessment of the effectiveness of the mindful decentration manipulation was also limited by the absence of neutral auditory stimuli in the control condition, which could have produced a cognitive load more comparable to that in the mindfulness condition. To reduce concerns that applying auditory stimuli in the experimental conduction might have produced a potential confound of cognitive load, we performed additional analyses on physiological data associated with cognitive effort (pupil dilation and eye blink rate, see Supporting Information S6 & S7) between the mindful decentration and control condition. Those analyses indicate no significant differences between the conditions, increasing our trust in the validity of the decentration manipulation. Nevertheless, future studies would do well examining the effects of different forms of mindfulness interventions and their different durations.

4.5 | Conclusion

This study corroborated existing literature indicating that people scoring high on collective narcissism react more extremely to witnessing the in-group's exclusion in terms of experienced emotional distress. Going beyond such findings, it indicated that collective narcissism increases the risk of aggressive actions against the excluding out-group. The study also advanced the literature by examining psychophysiological responses associated with reactivity to witnessing the in-group's exclusion. It showed that focusing on experienced emotions when observing the in-group's exclusion provoked reactions in high collective narcissists associated with potential health risks. Future studies could extend these findings further elucidating the psychological, behavioral, and physiological responses of high collective narcissism scorers to witnessing or only imagining a threat to the in-group's image. This could eventually help develop effective interventions to mitigate high collective narcissism scorers' distress when facing an intergroup threat.

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AUTHOR CONTRIBUTIONS

Adrian Hase: Data curation; Formal analysis; Writing-original draft; Writing-review & editing. **Maciej Behnke:** Conceptualization; Methodology; Software; Supervision; Writing-review & editing. **Magdalena Mazurkiewicz:** Methodology; Writing-review & editing. **Kamil Kordian Wieteska:** Data curation; Investigation. **Agnieszka Golec de Zavala:** Conceptualization; Funding acquisition; Methodology; Project administration; Resources; Supervision; Writing-review & editing.

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SUPPORTING INFORMATION

Additional Supporting Information may be found online in the Supporting Information section.

Supplementary Material

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