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University of Glasgow
Institute of Neuroscience & Psychology

“Waving your thoughts goodbye”: A two-minute and instant mindfulness approach for decreasing female body dissatisfaction

Aikaterini Manoli

Supervised by: Dr Esther K. Papies

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“Waving your thoughts goodbye”: A two-minute and instant mindfulness approach for decreasing female body dissatisfaction

ABSTRACT

Body dissatisfaction is prevalent in females, leading to detrimental physical and psychological outcomes. Mindfulness might successfully reduce body dissatisfaction through decentering, the metacognitive aspect of viewing thoughts as transient mental events. Most previous research has examined the effects of extended acceptance-based mindfulness interventions on body dissatisfaction, with very few studies considering the effectiveness of brief decentering approaches. This study examined whether radically short (two-minute or “instant”) mindfulness interventions could decrease body dissatisfaction compared to a control condition in 102 females (18-30 years), after exposure to “ideally thin” body dissatisfaction trigger-stimuli. It was hypothesised that both two-minute and instant approaches would decrease body dissatisfaction, while being equally effective. Results supported the prediction that both interventions would decrease body dissatisfaction. Additionally, Bayesian analysis provided anecdotal evidence that both interventions were equally effective. In addition to demonstrating that brief decentering interventions can protect from body dissatisfaction, the study is the first to support the feasibility of an instant mindfulness approach, opening the way for future research.

KEY WORDS:	MINDFULNESS	BODY DISSATISFACTION	DECENTERING	BISS	BAYESIAN

1. INTRODUCTION

1.1 Body Dissatisfaction and Its Consequences

Body dissatisfaction refers to negative evaluations of one's body size, shape and appearance, whether that entails one's figure as a whole or specific body parts (Menzel, Krawczyk & Thompson, 2011). Even though body dissatisfaction is present in males (Fallon, Harris & Johnson, 2014), it is predominantly a gendered experience, affecting a great portion of female populations (Frederick, Peplau, & Lever, 2006; Maphis, Martz, Bergman, Curtin, & Webb, 2013) of any cultural and socio-economic background (Swami et al., 2010) and any age group (Calzo et al., 2012).

A key aspect of body dissatisfaction is constant comparison of one's figure to those of others who are considered more attractive. Meta-analytic reviews (Groesz, Levine & Murnen, 2002; Talbot, Gavin, van Steen & Morey, 2017; Want, 2009) have shown that constant exposure to images of slender women in mass media results in automatic self-comparison and negative own-body evaluations in females. This means that, through continuous exposure to thin body images, females develop an attentional bias towards thinner bodies (Glauert, Rhodes, Fink & Grammer, 2010), in which they internalise thinness as the ideal beauty standard (Nagar & Virk, 2017; Vartanian & Dey, 2013). Self-comparison to the "thin-ideal" exacerbates and perpetuates body dissatisfaction, with a range of adversary outcomes, both psychological (depression, decreased self-esteem, excessive body surveillance tendencies) and physical (disordered eating, weight gain, bulimic symptoms or dietary restraint) (Bearman, Martinez & Stice, 2006; Bucchianeri, Arikian, Hannan, Eisenberg & Neumark-Sztainer, 2013; Mond, van den Berg, Boutelle, Hannan & Neumark-Sztainer, 2011).

1.2 Mindfulness and Body Dissatisfaction

Mindfulness, a state of awareness of present-moment thoughts, feelings and experiences in a non-evaluative manner (Bishop et al., 2004; Kabat-Zinn, 1990), can help alleviate body dissatisfaction, as it involves shifting one's perspectives through *decentering*. Decentering is a metacognitive process, through which individuals perceive their thoughts, emotions and experiences as transient mental events (Feldman, Greeson & Senville, 2010). By viewing their thoughts as temporary through decentering, individuals do not get engrossed in them; they distance themselves from their thoughts, thus experiencing them as less subjectively real (Lebois et al., 2015; Papies, van Winckel & Keesman, 2016). In a body dissatisfaction context, decentering can involve perceiving negative own-body evaluations as mental patterns that arise and dissipate in the moment. In this light, such negative evaluations are not considered necessarily true representations of the self, thus not requiring emotional reactivity.

A variety of interventions has combined the non-evaluative awareness component of mindfulness with acceptance-based treatments to decrease body dissatisfaction. From a clinical perspective, Acceptance and Commitment Therapy (ACT) in a high-body-dissatisfaction female sample helped relieve body-related anxiety and weight-preoccupation, by encouraging acceptance -rather than criticism- of participants' bodies (Pearson, Follette & Hayes, 2012). Similarly, acceptance-based Dialectical

Behaviour Therapy (DBT) in a clinical sample of females with eating disorders helped decrease comorbid distress about appearance compared to waiting-list controls (Telch, Agras & Linehan, 2001). Similar interventions have also been effective in non-clinical samples. Delinsky & Wilson (2006) found that combining mirror-exposure of females with mindfulness training decreased emotional body-image-reactivity over the course of three training sessions: participants developed higher appearance-related positivity by progressively becoming more lenient towards their body evaluations. More recently, compassion- and gratitude-based mindfulness training was also found to significantly decrease body dissatisfaction (Albertson, Neff & Dill-Shackleford, 2015; Wolfe & Patterson, 2017): by expressing self-compassion towards their bodies and feeling grateful about previous achievements and positive experiences, participants' body satisfaction and appearance-related self-worth increased over the course of a few weeks.

Even though the abovementioned studies suggest that acceptance-based mindfulness interventions can be successful in decreasing body dissatisfaction, the literature does not directly address the effect of decentering on its own, outside of an acceptance-related context. It is important to note that decentering does not necessarily entail acceptance, as it refers to stepping back and disengaging from thoughts, without seeing them in a certain positive or negative light (Bernstein et al., 2015). Evidence suggests that decentering tendencies alone could act as a mediator of body dissatisfaction: recent correlational studies have shown that decentering in everyday experiences is negatively related with body shape and size shame and overall body dissatisfaction in female populations (Mendes, Ferreira & Marta-Simões, 2017; Ferreira, Palmeira & Trindade, 2014). This means that everyday tendencies not to be overwhelmed by experiences, thoughts and emotions could by themselves act as a protective factor against body dissatisfaction, without explicitly training individuals to be accepting and compassionate towards themselves. Notwithstanding this correlational evidence, no study has empirically tested the direct effect of decentering itself on body dissatisfaction, creating a substantial gap in the existing literature.

1.3 Exploring Brief Mindfulness Interventions

A further gap in the literature is the absence of studies that test the effect of brief, rather than extended mindfulness interventions. The majority of studies have focused on multiple-session mindfulness training, given that this approach can successfully alter psychological states as well as underlying neural activity (Hölzel et al., 2011; Lebois et al., 2015), producing robust results that remain consistent after week- or month-follow-ups (e.g. Albertson et al., 2015; Pearson et al., 2012). Nonetheless, an increasing amount of evidence is in favour of immediate benefits produced via short mindfulness interventions (Dickenson, Berkman, Arch & Lieberman, 2013; Tincher, Lebois, & Barsalou, 2015; Zeidan, Gordon, Merchant & Goolkasian, 2010). In Papies, Barsalou and Custers (2012), and Papies, Pronk, Keesman, and Barsalou (2015), a fifteen-minute decentering approach attenuated the link between hunger and reactivity towards desirable, unhealthy foods, by reducing the desire to consume them. With regards to negative affect, a recent study (Keesman, Aarts, Häfner & Papies, 2017, in preparation) has provided promising evidence for the effectiveness of a two-minute mindfulness intervention in reducing reactivity to previously experienced unpleasant events: by disengaging from their

unpleasant memories after visualising thoughts as the continuous stream of a waterfall, participants reported reduced negative affect compared to controls.

In the context of body dissatisfaction, very few studies have tested the effect of brief mindfulness approaches. Adams et al. (2012) demonstrated that a ten-minute acceptance and decentering intervention could attenuate negative body evaluations in addition to smoking urges in a sample of female smokers who tried on bathing suits. Similarly, Margolis and Orsillo (2016) showed that self-compassionate recall of a single negative body image experience after a twenty-minute mindfulness training audio significantly decreased body-related anxiety and the feeling that participants were defined by their appearance. Despite these two brief acceptance-based approaches, more evidence is needed to explore the effect of short mindfulness interventions on body dissatisfaction. Again, special emphasis should be put on the decentering aspect, independently of combinations with acceptance. This is because the underlying cognitive mechanisms of decentering (e.g. less neural activity in the subgenual cingulate cortex and ventral anterior cingulate cortex brain areas, associated with self-relevance and subjective realism) could suffice to reduce reactivity to thoughts that lead to distress, even after a brief training session (Lebois et al., 2015; Westbrook et al., 2013). Specifically for body dissatisfaction, this could mean that the cognitive mechanisms of decentering could provide a protective effect against stimuli and thoughts that trigger comparison to the thin-ideal and thus negative own-body evaluations on an everyday basis. Testing the effect of brief decentering interventions would have important clinical implications, as supporting evidence could pave the way for new ways of coping with negative body perceptions and increasing well-being.

1.4 The Present Study

As very few studies have used brief decentering interventions on female body dissatisfaction, the present study aimed to examine the effect of brief decentering on reducing negative own-body evaluations in females.

Even though most tested brief mindfulness interventions range between ten to twenty minutes, Keesman et al. (2017) showed that much shorter approaches might be comparably effective. By applying two-minute decentering instructions on how to visualize thoughts as a dissipating stream of a waterfall, participants were able to distance themselves from thoughts about unpleasant memories. Thus, by seeing thoughts as coming and going mental phenomena that would disappear by themselves, participants became less reactive to their content. It would be interesting to see if this approach also works in the context of body dissatisfaction, given that negative own-body evaluations also lead to distress and emotional reactivity.

Keesman et al.'s (2017) research also raised a substantial question about brief decentering approaches. It is important to see if decentering is effective only after thorough explanation of the concept (e.g. disengaging from thoughts after linking them to a waterfall analogy), or if participants can just be given a simple decentering instruction without much explanation. Thus, in addition to brief approaches that include conceptual explanations, the effectiveness of even briefer, "instant" approaches should be considered. Specifically for body dissatisfaction, this could

mean instantly disengaging from negative body-related thoughts after a single instruction.

In light of this reasoning, the present study used two brief decentering approaches on a sample of females, after manipulating their body dissatisfaction: a two-minute approach, adapted from Keesman et al. (2017), and a one-sentence, “instant” approach, introduced for the purposes of this research. One hundred and two 18-to-30-year-old females first viewed “ideally” thin female images in a control/thought-immersion condition and either of the two brief decentering conditions, and then completed body dissatisfaction measures. Immersion in thoughts was chosen for the control condition because it implies exploring thoughts fully, and as such it could aid with triggering body dissatisfaction, by increasing subjective realism and the intensity of experiencing thoughts (Baquedano et al., 2017; Papies et al., 2012). While the waterfall analogy was maintained in the two-minute approach, for the instant approach participants were instructed to “wave” their thoughts “goodbye”, facilitating disengagement much more directly. It was hypothesized that both the two-minute and the instant approach would successfully decrease body dissatisfaction triggered by the thin-ideal images compared to the control condition, while being equally effective.

2. Methods

2.1 Design

Data was collected for a 2x2x2 mixed design, with condition (control – mindfulness) as a within-subjects factor, and mindfulness type (two-minute – instant) and condition order (control followed by mindfulness and vice versa) as between-subjects factors, with random allocation to mindfulness type and random allocation to order. The dependent variable was body dissatisfaction after viewing “ideally” thin female images while applying the instructions in the control and mindfulness conditions.

2.2 Participants

Before data collection, a priori power analysis was conducted on G*Power 3.0 (Faul, Erdfelder, Lang & Buchner, 2007) to determine the desired sample size for the present study. Power analysis revealed that at least 76 participants were required to achieve maximum power, with power level $1-\beta=0.95$ and $\alpha=0.05$. The original sample included 106 females recruited online either through Glasgow University’s subject pool (awarded with course credits) or social media platforms (without compensation). Four participants that completed only one intervention were removed from the sample, as the aim was to examine how body dissatisfaction was affected between a control and a brief decentering condition.

The sample used for the analysis contained 102 females (80% heterosexual; 85% binary/cis-gender). Fifty-one participants were assigned to the two-minute mindfulness condition, and fifty-one to the instant mindfulness condition. The study only included females, as body dissatisfaction is more prominent among members of this sex (Albertson et al., 2015). The sample’s age range was 18-30 years (M=22, SD=2.61), as body dissatisfaction is more prevalent to young adult women

under 30 (Runfola et al., 2013). The mean Body Mass Index (BMI= kg/m^2) was 23.26 (SD=4.91), corresponding to normal weight values. With regards to ethnicity, 50% of participants were Asian, 47% were Caucasian, and 3% Black. One participant identified as Hispanic. With regards to occupation, 87% of participants were undergraduate or graduate students, 7% employed professionals and 6% unemployed. Individuals with present or past eating disorders and/or Body Dysmorphic Disorder were not recruited for this study. Recruitment was approved by the ethics committee of the University of Glasgow.

2.3 Materials

Stimuli. Body dissatisfaction was triggered through a slideshow of twenty images depicting the female thin-ideal. Selection of images was based on the following criteria (Cusumano & Thompson, 1997; Homan & Tylka, 2015): (a) photographs portrayed only one woman; (b) at least three-quarters of the woman's body were visible and not obscured by baggy clothing; (c) the woman was positioned so that she was within forty-five degrees of facing the camera; (d) the woman appeared to be at least 18 years old; and (e) the woman was not pregnant. Based on these criteria, images were selected from the "#thingirls" Instagram section (with credit to the owner of the image). The images included females of various ethnicities (ten Caucasian, six Asian and four Black), dressed in clothes that displayed their physique (sportswear, beachwear, tight clothing), and in poses emphasising different parts of their body (e.g. stomach, legs, bottom), to ensure that dissatisfaction would be triggered for participants feeling uncomfortable with certain body parts. Poses and clothing were matched for control and mindfulness conditions and randomised in each slideshow (with each participant viewing the same random pose and clothing order). To ensure that social comparison would be triggered more effectively (i.e. participants considering the females depicted as their peers), no images of well-known celebrities or models were included in the study. Examples of the stimuli can be seen in Figure 1.

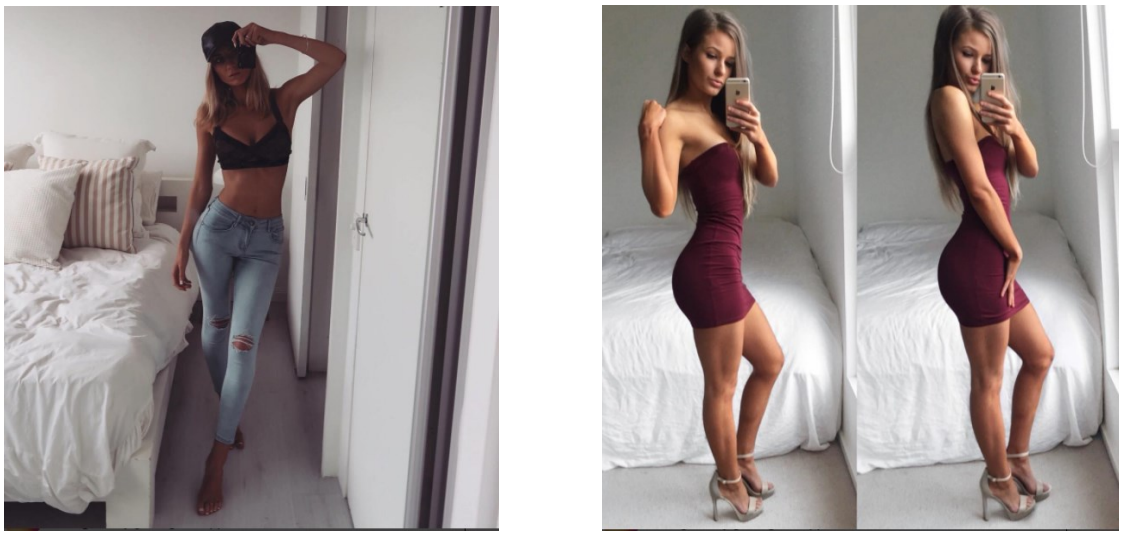

Figure 1: Examples of the thin-ideal stimuli used in the study.

Control and mindfulness interventions. In all interventions, participants were told to apply instructions on all kinds of thoughts, emotions and experiences they might have had while looking at the images in the slideshows. Specifically, in the control intervention, participants were told that, if they had "any thoughts, emotions or experiences while looking at the images in the slideshows, [they] should simply immerse [themselves] in them". To achieve that, they were prompted to let their mind "be absorbed by all thoughts and emotions that arise while looking at the images" (also suggested by Lebois et al., 2015). Similarly, in the instant mindfulness intervention, participants were only given the single instruction to "wave any thoughts, emotions or experiences [they] might have while looking at the images goodbye".

As mentioned earlier, the two-minute mindfulness intervention used the decentering instructions from Keesman et al. (2017, in preparation), translated from Dutch by Papies (2017). In this task, participants were first introduced to a waterfall analogy, in which they were instructed to "imagine a continuous, coming and going waterfall, the constant stream of which was like [their] thoughts". They were told that they should neither resist this waterfall, nor pretend that it does not exist. Rather, they were prompted to "step behind the waterfall stream and look at all the water passing by". After that, participants were prompted to observe their thoughts in the same way as they observed the waterfall stream. They were instructed to "notice the thoughts, physical reactions, and emotions" that came up in them, "while realising that they were merely mental events, merely passing phenomena" that were being produced by their brain. And, because of that, they were told that they "[did] not have to do anything about them"- these thoughts would "disappear by themselves". Participants were also instructed not to "suppress or avoid thoughts" that might have been confronting while viewing their thoughts as dissipating mental events. Instead, they were told that they "do not have to react to such thoughts", the same way they "do not have to react to a few water drops". Similarly, in case they got carried away by their thoughts, they were instructed to "just let go of them and again adopt the perspective of observing [their] thoughts as temporary mental events". Lastly, participants were encouraged to "remain aware of the current situation", for example "how [their] feet rest on the ground or [their] body on their chair", if it helped them apply the instructions.

Body dissatisfaction assessment. Body dissatisfaction was measured through the Body Image States Scale (BISS; Cash, Fleming, Alindogan, Steadman & Whitehead, 2002), used to assess participants' momentary evaluative body image experiences. The BISS consists of six items that require participants to rate their experiences of overall physical appearance, body size and shape, weight, and physical attractiveness–unattractiveness ''right now, at this very moment'' (e.g. "Right now I feel extremely dissatisfied with my physical appearance"; "Right now I feel neither dissatisfied nor satisfied with my weight"; "Right now I feel a great deal better than the average person looks"). Items five and six specifically compare participants' current, as opposed to usual, feelings about their looks, and their current evaluation of their appearance, as opposed to the average person's appearance. All items are rated on nine-point Likert-type scales ranging from one (extremely dissatisfied) to nine (extremely satisfied), with reverse scoring of items

two, four and six. Item scores are averaged to produce overall individuals' score, with lower scores reflecting greater body dissatisfaction. Excellent reliability of the BISS has been demonstrated (Cash et al., 2002; Mills, Fuller-Tyszkiewicz & Holmes, 2014; Rudiger, Cash, Roehrig & Thompson, 2007). In the present study, analysis in SPSS version 24 revealed that Cronbach's α for BISS scores ranged from 0.82 to 0.91.

Exploratory questions about mood, mindfulness experience and stimuli-induced negative affect. Additional questions were asked after all interventions for exploratory analysis of factors that could have affected participants' body dissatisfaction during the study (as suggested by Mills et al., 2014). Participants' previous mindfulness experience and underlying mood during the study were measured as factors that could have been related with the effects of each intervention. Previous mindfulness experience was measured through a one ("Not at all experienced") to three ("Very experienced") Likert-type question. Similarly, underlying mood was measured through a one ("Extremely negative") to five ("Extremely positive") Likert-type question. An extra exploratory question measuring negative affect induced by the stimuli was repeated after the end of control and after the end of mindfulness interventions. Participants were asked "How much did it bother you to look at the images?", rating the degree in which they were bothered on a one ("Not at all") to five ("Extremely") Likert-type scale.

Open-ended questions about experiences during the study. The following open-ended questions were also asked, to explore how participants practically applied the control and mindfulness instructions and how the stimuli and each intervention affected them: 1."What thoughts and/or experiences did you have while looking at the images in the slideshows?"; 2."Before one of the slideshows, you were asked to immerse yourself in your thoughts. How exactly did you do that?"; 3."Before one of the slideshows, you were asked to view your thoughts as passing mental events OR wave your thoughts goodbye. How did you achieve that?"; 4. "What happened when you applied the instructions to wave your thoughts goodbye OR to see your thoughts as mere mental events?"; 5."What do you think this study was about? What are we trying to investigate?".

2.4 Procedure

Participants received a link to the study (labelled as "relationships between body image portrayals in social media and well-being") on advertisements posted on Glasgow University's subject pool or on social media platforms (Facebook and Twitter), and completed the study online on their own computers. After giving their informed consent, participants were instructed to complete the experiment in one session (i.e. without leaving and returning to complete the experiment later), paying attention to all instructions given and all the pictures in the slideshows, sitting in a quiet room, without possible distractions (like their phone or other people) and without rushing. Control or mindfulness instructions were then assigned at random. Before receiving the instructions, participants were informed that images like the ones they would see "may trigger all kinds of thoughts and experiences, including thoughts about [themselves]". To ensure social comparison would be triggered effectively, they were also told that the images belonged to university students (rather than professional models) from the United Kingdom. Participants were then

asked to apply the control or mindfulness instructions on their thoughts and experiences while looking at the images in the slideshows.

In the control condition, completed by all participants, they were instructed to simply immerse themselves in all thoughts, emotions or experiences while looking at the images. In the mindfulness condition, participants randomly received the instructions for either the two-minute or the instant mindfulness intervention. For each control and mindfulness condition, they subsequently viewed a forty-second slideshow of ten pictures that "ideally" thin females had posted on the social medium Instagram (each picture shown for four seconds, on a 480x680 pixel frame, in 16:9 resolution), and completed the BISS immediately after. Upon completion of the BISS, the question "How much did it bother you to look at the images?" was repeated in both control and mindfulness conditions.

Between control and mindfulness conditions, there was a five-minute distraction interval, in which participants answered questionnaires, the scores of which were not included in the main analyses. This was to ensure that the effects of the first condition would pass before participants moved on to the next one, as suggested by previous research (Ata, Thompson & Small, 2013). Participants completed the NEO Personality Inventory (NEO-PI-R; Costa & McCrae, 1985), measuring personality characteristics, and the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen & Griffin, 1985), measuring their subjective well-being.

After completing the control and mindfulness conditions, participants were asked whether they had actually paid attention to the instructions by eliminating distractions, to ensure their efficient participation. They were also asked what their underlying mood during the study was, and how experienced they were with mindfulness prior to the study. As described earlier, participants then answered open-ended questions (requiring short text answers) about how they actually applied the instructions in the control and mindfulness conditions, what thoughts they had while watching the slideshows, how they were affected by the mindfulness interventions and what they thought the study was about. Demographic questions about participants' age, occupation, ethnicity, biological sex, gender identity, sexual orientation, weight and height, as well as a debriefing message appeared at the very end. The whole process adhered to the ethical code of the British Psychological Society.

3. Results

3.1 Data Analysis

Main and exploratory data analyses were performed in R version 3.4.4 (R Core Team, 2018). A 2x2x2 mixed-design ANOVA was chosen as an appropriate method for null hypothesis significance testing. However, since part of the predictions was that there would be no difference between the effects of the two mindfulness types (i.e. a null hypothesis), a Bayesian approach was followed, in addition to the frequentist null hypothesis significance testing. The Bayesian approach is comparative in nature, meaning that data likelihood is considered under both the alternative and the null hypothesis. The null and alternative hypothesis probabilities are compared through the Bayes factor (BF_{01}), a ratio that

contrasts the likelihood of data under the null hypothesis with the likelihood of data under the alternative hypothesis (Kass & Raftery, 1995; Rouder, Morey, Speckman, & Province, 2012). Thus, the higher the Bayes factor, the higher the likelihood of the data occurring under the null hypothesis, as opposed to the alternative hypothesis. For instance, a BF_{01} of six means that the data are six times more likely under the null hypothesis than the alternative hypothesis. Conversely, if the inverse of the Bayes factor ($1/BF_{01}$) is six, the data are six times more likely under the alternative hypothesis than the null. The Bayes factor can therefore be in favour of either the alternative or the null hypothesis, or even favour neither (if the probability ratio of the alternative and null hypotheses is one). Thus, this approach has an advantage over "traditional" frequentist statistics, in which the *p*-value is only used for rejecting the null hypothesis (Wagenmakers, 2007). In the present study, Bayes factors were calculated in JASP version 0.8.6 (JASP Team, 2018), using JASP's default priors (as suggested by Wetzels, Raaijmakers, Jakab, & Wagenmakers, 2009). Bayes factors were interpreted based on Jeffreys' (1961), and Schönbrodt and Wagenmakers' (2017) suggestions for interpretation.

Before the main analysis, data were evaluated for possible presence of outliers and normality assumptions. The data were in line with the assumptions of the general linear model, including absence of outliers and normality. As half of participants received instructions for two-minute decentering and half for instant decentering, and as all participants participated in the control condition, a last step before the main analysis was to ensure that there was no difference between the control condition in the two-minute and instant mindfulness participant groups. For this purpose, an independent-samples *t*-test was performed on body dissatisfaction scores of the control condition in the two-minute group, and body dissatisfaction scores of the control condition in the instant group. There was no significant difference between the two groups' control condition, with $t(98)= -0.84$, $p=0.4$.

3.2 Effects of Brief Mindfulness Interventions on Body Dissatisfaction

It was hypothesised that body dissatisfaction would decrease in the mindfulness condition compared to the control condition, with both mindfulness types (two-minute – instant) being equally effective. A 2x2x2 mixed-design ANOVA was performed to test the effect of condition (control – mindfulness), mindfulness type (two-minute – instant) and order (control followed by mindfulness and vice versa) on body dissatisfaction scores. There was a significant main effect of condition, $F(1, 190)=34.92$, $p<0.001$, $d=0.9$. As also seen in Figures 2 and 3, body satisfaction in the mindfulness condition is about one unit higher than body satisfaction in the control condition. There was also a significant main effect of mindfulness type, $F(1, 190)=10.23$, $p=0.02$, $d=0.64$. As Figures 2 and 3 suggest, body satisfaction in the two-minute mindfulness type is above body satisfaction in the instant type by about 0.1 unit. There was no significant main effect of order, $F(1, 190)=0.02$, $p=0.9$, meaning that the order in which conditions were presented did not affect body dissatisfaction. There were also no significant interactions of condition-order, $F(1, 190)=0.59$, $p=0.44$, condition-mindfulness type, $F(1, 190)=0.007$, $p=0.94$, order-mindfulness type $F(1, 190)=1.82$, $p=0.18$, and condition-order-mindfulness type, $F(1, 190)=0.04$, $p=0.84$. This means that the significant main effects of condition and mindfulness type on body dissatisfaction did not depend on the levels of any of the factors. Indeed, as far as the main effect of condition is concerned, Figure 2

demonstrates that body satisfaction increased at the same rate (one unit) from control to mindfulness condition for both instant and two-minute mindfulness types. Accordingly, regarding the main effect of mindfulness type, body satisfaction in the two-minute mindfulness type was higher than body satisfaction in the instant mindfulness type by approximately 0.1 unit in both control and mindfulness conditions.

Figure 2*:* Mean body satisfaction scores (on a scale from one to nine) per condition (control – mindfulness) and mindfulness type (two-minute – instant), with error bars representing the standard error.

Figure 3: Participants' individual body satisfaction scores (on a scale from one to nine) per condition (control – mindfulness) and mindfulness type (two-minute – instant).

The Bayes factor for the hypothesis that there would be a difference between body dissatisfaction scores in control and mindfulness conditions (taking both two-minute and instant interventions into account) was BF_{10}=5202, providing strong support for the effect of mindfulness on body dissatisfaction. Additional Bayes factors were calculated for the effect of each individual mindfulness type on body dissatisfaction scores. The Bayes factor for the two-minute type was BF_{10}=7719, while the one for the instant type was BF_{10}=3205. These two Bayes factors also provide strong evidence for the effect of each of the mindfulness types on body dissatisfaction.

Frequentist null hypothesis significance testing indicated a significant difference between the effect of the two-minute and instant mindfulness types, with the two-minute approach being more effective. However, the Bayes factor for the hypothesis that both types would be equally effective was BF_{01}=0.66. This provides anecdotal evidence that both mindfulness types were equally effective, as opposed to the two-minute type being more effective.

3.3 Exploratory Analyses

Further analyses were performed to explore additional factors that could have been related to participants' body dissatisfaction scores. A multiple linear regression was conducted to test whether participants' mood during the study and BMI would predict body dissatisfaction scores. There was no significant effect of either of the predictor variables, with adjusted R^2= -0.01, $F(2, 215)=0.26$, $p=0.77$.

To see if participants' body dissatisfaction scores were affected by their mindfulness experience prior to the study, a multiple linear regression was conducted, with mindfulness type and mindfulness experience as predictors, and score differences between control and mindfulness conditions as the outcome variable. The results of the regression indicated that the two predictors explained 15% of the variance, with adjusted R^2=0.15, $F(2, 97)=5.01$, $p=0.008$. It was found that mindfulness type significantly predicted score differences, $\beta=0.2$, $t(97)=2.06$, $p=0.04$, such that score differences rose by 0.2 units in the two-minute mindfulness type compared to the instant type. Additionally, mindfulness experience significantly predicted body dissatisfaction score differences, β= -0.32, $t(97)=2.31$, $p=0.02$, such that, as mindfulness experience rose, score differences between control and mindfulness conditions dropped by 0.32 units. As also seen in Figure 4, the higher the mindfulness experience of participants, the less their body satisfaction rose from control to mindfulness condition.

Further analysis demonstrated that mindfulness experience did not only predict how body dissatisfaction differed between control and mindfulness conditions, but individual body dissatisfaction scores in the control and mindfulness conditions as well. An additional multiple linear regression was conducted, with body dissatisfaction scores in the control and mindfulness conditions as the outcome

variable, and mindfulness experience and mindfulness type as predictors. Results showed that mindfulness experience and mindfulness type explained body dissatisfaction variance by 20%, with adjusted R^2=0.2, F(2, 196)=6.04, p=0.03. It was found that mindfulness type, β=0.1, t(196)=2.51, p=0.02, significantly predicted control and mindfulness body dissatisfaction scores, such that scores in the two-minute mindfulness type were higher than the ones in the instant type by 0.1 unit. In addition, mindfulness experience also significantly predicted scores in each condition, β=0.4, t(196)=2.07, p=0.01. This means that, as participants' mindfulness experience rose, body satisfaction in the control and mindfulness conditions increased by 0.4 units. As Figure 4 also shows, the more experienced participants were with mindfulness, the higher their body satisfaction was in both control and mindfulness conditions.

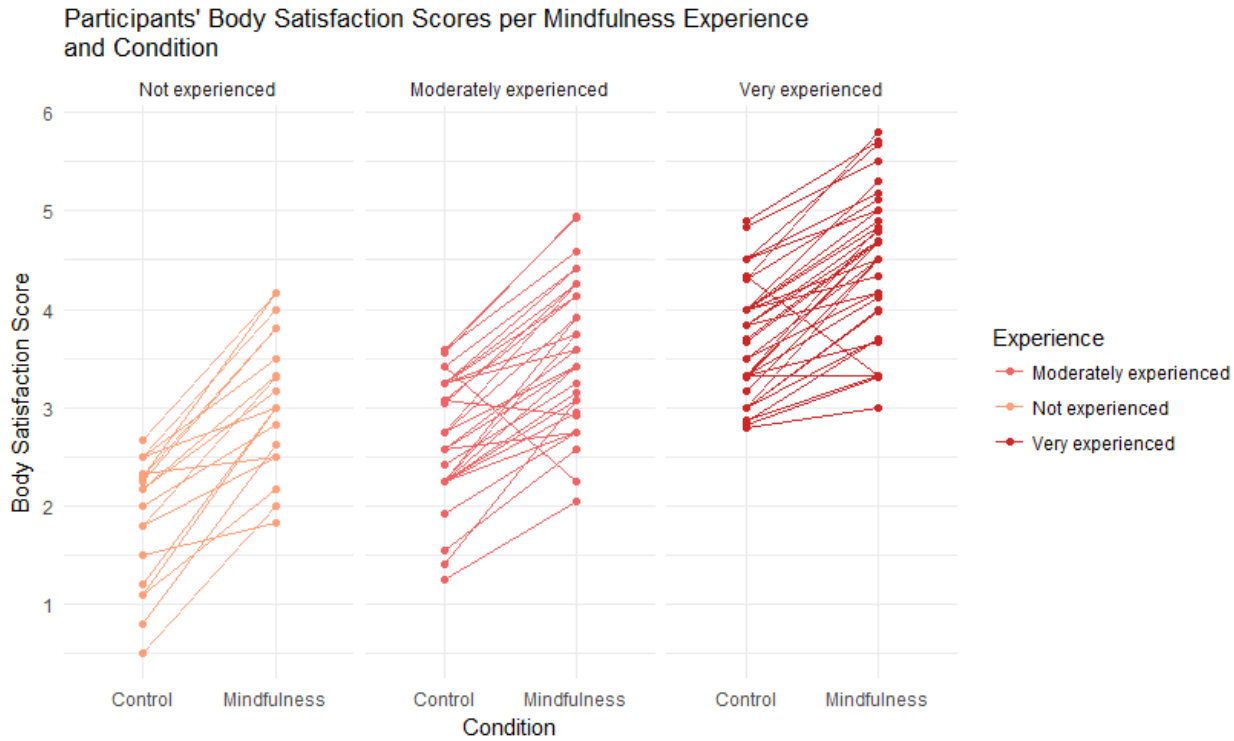

Figure 4*:* Participants' individual body satisfaction scores (on a scale from one to nine) per mindfulness experience (not experienced – moderately experienced – very experienced) and condition (control – mindfulness).

Additionally, a 2x2 mixed ANOVA was conducted to test the effect of mindfulness type (two-minute – instant) and condition (control – mindfulness) on participants' scores on the exploratory question "How much did it bother you to look at the images?". There was no significant main effect of mindfulness type, F(1, 220)=2.14, p=0.15, or condition, F(1, 220)=0.47, p=0.5, and no significant mindfulness type and condition interaction, F(1, 220)=0, p=1. This means that participants were not significantly bothered by the stimuli in either mindfulness condition or mindfulness type.

Lastly, it was observed that two participants' scores dropped substantially from control to mindfulness in the two-minute mindfulness intervention (see the two dropping lines in the "two-minute" part in Figure 3). Additionally, two participants admitted not to have paid enough attention during the study in the post-intervention questions. Quantitative ratings of these participants were traced, and participants who admitted not to have paid attention were found to coincide with participants whose body dissatisfaction increased after decentering. The main analysis on the effect of mindfulness type and control-mindfulness conditions on body dissatisfaction was conducted one more time excluding these two participants, to see if results would differ without their responses. Results were almost identical to the ones obtained in the main analysis: there was a significant main effect of condition, $F(1, 186)=35.2$, $p<0.001$, $d=0.92$, and a significant main effect of mindfulness type, $F(1, 186)=10.51$, $p=0.019$, $d=0.65$. There was no significant main effect of order, $F(1, 186)=0.3$, $p=0.8$, no significant interactions of condition-order, $F(1, 186)=0.87$, $p=0.43$, condition-mindfulness type, $F(1, 186)=0.287$, $p=0.93$, order-mindfulness type $F(1, 186)=2.1$, $p=0.17$, and condition-order-mindfulness type, $F(1, 186)=0.32$, $p=0.83$. As results were extremely similar to the results obtained in the main analysis, the observed body satisfaction drop in the two-minute mindfulness condition was not considered to significantly affect the main analysis results, and was attributed to the two participants' lack of attention.

3.4 Qualitative Analysis

3.4.1 Qualitative Approach

Qualitative data were obtained after the interventions to explore participants' thought process and actions during the study, in order to examine how they were affected by the interventions and how they applied the given instructions. The following research questions (also mentioned in the Materials section above) were developed: 1. What thoughts did participants have while looking at the "ideally" thin images in the slideshows?; 2. How did participants immerse in their thoughts before the slideshow in the control condition?; 3. How did participants apply the two-minute or instant mindfulness instructions in the mindfulness condition?; 4. What happened when participants applied the two-minute or instant mindfulness instructions?; 5. What did participants think the study was about?

Responses were analysed using the grounded theory approach (Glaser & Strauss, 1967; Strauss & Corbin, 1990). The present study aimed to explore participants' thoughts and feelings during the different stages of the experiment inductively, without a pre-defined specific conceptual framework. Thus, grounded theory was deemed an appropriate approach, as it is "a qualitative strategy of inquiry in which the researcher derives a general, abstract theory of process, action, or interaction grounded in the views of participants in a study" (Creswell, 2009). This means that a "bottom-up" explorative analysis would be possible through this approach, suitable for the study's objectives.

3.4.2 Qualitative Data Analysis

Data were analysed based on the main principles of grounded theory (Strauss & Corbin, 1990, 1998). Analysis happened in two stages: firstly, all responses were

scanned so that a broader understanding of data would be obtained and initial patterns would be observed; secondly, data were coded to isolate interesting incidents and generate broader recurring themes between responses. As recommended by Strauss and Corbin (1990), three types of coding were employed: *open coding, selective coding,* and *theoretical coding*.

Open coding is the process in which the data are broken down, examined, compared and conceptualised (Strauss & Corbin, 1990). At this stage, data were examined in depth and unfiltered; no response was excluded, in order to observe and organise responses under broader emerging categories. This was achieved through line-by-line coding of all data and constant comparison of all responses to identify common patterns.

Selective coding was applied at the next stage, after recurring themes had become more apparent. Selective coding involves filtering and coding data that are considered more relevant to categories that emerged during open coding. This process adds extra depth and focus to the research, as categories become more concrete, resulting to conceptual saturation and completeness, with a feeling that nothing new can be added to the study (Glaser, 2001). In light of this, only the most pertinent lines of responses were used and coded at this stage.

The last stage of data analysis was theoretical coding, in which conceptual relationships among emerged categories were examined. During theoretical coding, the “fragmented” pieces of data that were broken down during open coding are knit back together for interpretation under a broader theoretical framework (Glaser, 2005). In the present study, theoretical coding was applied by examining all categories and organizing them under broader themes based on common patterns. In this way, causal relationships between different categories could be examined, and a more integrative scope could be achieved.

3.4.3 Findings

Three over-arching themes emerged from theoretical coding: 1) ways of applying control and mindfulness instructions; 2) thoughts and feelings after control and mindfulness interventions; and 3) overall thoughts regarding the study. Presentation of findings involves the organisation of categories under those three broader themes.

Ways of applying control and mindfulness instructions

This theme highlights how participants understood and applied the instructions they were given in the control and mindfulness conditions. As parallel techniques were employed for control and mindfulness conditions, this theme can be divided into a sub-category for each condition.

Control condition. In this condition, participants were asked to immerse themselves in their thoughts while looking at the “ideally” thin image stimuli. Interpretive codes such as “eliminating distractions”, “concentrating on thoughts” and “lingering on thoughts” defined ways of achieving immersion in this category. As one participant stated:

> "First, I sat in a quiet place and I focused on my inner voice. I did not filter my thoughts, but I let them stay in my head without brushing them off".

Another participant reinforced this statement by providing more details about their thought process:

> "I tried not to focus on my phone or the people around me. I concentrated on my thoughts and they started to sound louder in my head. I tried to perceive them immensely by giving a name to each thought and feeling and letting them consume me. I didn't think what I *should* be thinking, but let everything in".

Therefore, immersion in one's thoughts was achieved through a combination of both internal (e.g. intensified introspection) and external factors (e.g. elimination of environmental distractors), in which participants employed different techniques at the same time.

Mindfulness condition. In this condition, participants were either asked to follow a two-minute technique involving visualising their thoughts as a waterfall or instantly "wave" their thoughts "goodbye". The ways in which participants applied these instructions were highly consistent between the two mindfulness conditions, with interpretive codes such as "letting go of thoughts and feelings", and "taking a distance from thoughts and feelings" defining this category. As one participant said:

> "I established a mental barrier between me and my thoughts- I tried to see them as separate from me and didn't dwell on them. I started separating my thoughts from my emotions, and looked at them objectively without letting them affect me".

A similar response, emphasising detachment from thoughts after viewing them as dissipating events, was obtained by another participant:

> "I saw all my thoughts passing by and detached myself from them the moment they arose. Every time I thought of something, I said 'okay, bye, let's move on' inside my head. This way I stopped overthinking and looked at my thoughts as if they were someone else's".

Some other participants highlighted the importance of environmental and textual context, by mentioning "focusing on surroundings" and "literally visualising the instructions" as factors that helped them apply the instructions. According to one participant:

> "I literally imagined a waterfall of thoughts entering and leaving my head. At one point, the thoughts became bubbles that I could mentally pop to make them go out of my head. Focusing on the silence in my room and on the here and now helped a lot".

Another participant reinforced literal application of the instructions and focus on the present as ways of applying mindfulness instructions:

> "I saw a mini version of myself living in my head and saying goodbye to every thought. If I got too caught up into them, I tried focusing on how each part of my body felt. This way, my thoughts of being unattractive stopped affecting me".

Nonetheless, a few participants reported having a hard time while trying to apply the instructions of both mindfulness types, apparent through interpretive codes like "uncertainty whether instructions were followed correctly", "difficulty visualising thoughts", "difficulty letting go of thoughts". As one participant characteristically said:

> "I found the instructions kind of hard to follow. It was hard for me to identify every single thought in my head, let alone let go of it. I'm not sure if I did it correctly".

Despite this, participants who considered themselves successful in applying the instructions seemed to also employ a variety of internal (e.g. visualisation of thoughts) and external techniques (e.g. focusing on their body) while doing so, as in the control condition: one's inner conceptualisation of the instructions, as well as environmental factors helped participants apply the instructions in both conditions, irrespective of the fact that the control condition focused on holding on to thoughts rather than letting them go.

Thoughts and feelings after control and mindfulness interventions

This theme highlights how participants were affected while applying the instructions for the control and mindfulness interventions, i.e. how they perceived themselves and the stimuli after following the instructions for each condition. As participants were affected in a different way in each condition, this theme can be divided into a separate sub-category for control and mindfulness conditions.

Control condition. After immersing themselves in their thoughts, participants experienced a variety of emotions while looking at the "ideally" thin images. Key interpretive codes that indicate this are "feeling jealous and unworthy", "feeling intimidated and self-conscious", "feeling inspired and motivated", "feeling apathetic", and "feeling annoyed and judgmental".

The vast majority of participants reported that the images had a negative effect on them:

> "Looking at the pictures of all those slim and fit women made me feel inadequate and unfit. Immersing in my thoughts made me compare myself to them a lot, and that was quite detrimental to my self-esteem. I kept thinking that I can never look like that!".

According to another participant, some particular images exacerbated this negative effect compared to others:

> "I didn't mind as much when the photos emphasised body parts that I'm quite confident with. However, when areas that I'm not so happy about were pronounced, I felt that I'm lacking".

Interestingly, a few participants reported that the negative effect of the stimuli on them consisted of feeling annoyed at the women in the pictures, judging their intentions and the social connotations of the images:

> "I thought that all those women are vain and insecure, constantly looking for validation through social media just based on their image. Can people not be satisfied without likes?".

Another participant reinforced this perspective, by linking their perceived intentions of the women in the pictures with social commentary:

> "I felt that the women in the images were in need of attention. This perpetuates society's beauty norms, that women need to be skinny to be worthy of something".

Nonetheless, few participants mentioned that the images had a positive, motivational effect on them:

> "I was inspired- those girls looked so fit and healthy! I admire women who can maintain such a figure, and the images made me want to go to the gym and start eating healthier".

Lastly, a handful of participants reported having a neutral, apathetic response to the stimuli; they claimed that the images did not have a particular effect on them, as they did not engage in comparison with the women in the pictures:

> "To be honest, I felt apathetic. My body has not been a priority since my teen years, as I feel that there's more to life one can invest on."

Indeed, as another participant noted, comparison to the photos might not necessarily be based on the bodies depicted, but also the context of the images:

> "I feel like different kinds of images could have worked better on me. My identity is rooted more on 'hipster' and artsy photos, so seeing women in these kinds of surroundings rather than the gym could have affected me more".

Thus, it is obvious that participants' thoughts and feelings towards the stimuli in the control condition were highly divided between negative (self-consciousness or judgement), positive (motivation) and neutral (apathetic), with the majority of responses reporting a negative affect after exposure to the thin-ideal. Nonetheless, those different kinds of responses have as a common factor participants' engagement with social comparison. By perceiving the images as self-relevant, either in a positive or a negative light, without explicitly being asked to do so in the instructions, participants experienced feelings of inadequacy, criticism, inspiration, or apathy.

Mindfulness condition. Thoughts and feelings across the two mindfulness types were consistent, the most prominent ones being “relief and relaxation”, “boosted mood and self-esteem”, “self-awareness”, and “detachment from thoughts”. The vast majority of participants reported being affected in a positive way:

> “I noticed feeling relieved. I stopped comparing myself to the women in the images and that made them seem less daunting. My thoughts just stopped affecting me as much as they did before”.

Another participant reinforced that view, pointing out that positive feelings during the intervention had an impact on their self-awareness:

> “My mood improved immediately, I stopped being so sorry for myself. I felt relaxed by focusing on every part of my body. This made me realise that my thoughts shouldn’t influence me, because they’re irrelevant to who I am. I think I became more self-aware”.

Interestingly, quite a few participants claimed that the positive feelings they experienced after the intervention were the result of detachment from their thoughts:

> “I felt a lot happier. I tend to overthink and get consumed by my thoughts, but for once I realised that my thoughts are fleeting. They’re something separate from who I am and not something I should dwell on”.

However, some participants reported concerns related to the effect of the instructions:

> “I felt good momentarily, but my negative thoughts would constantly come back and I’d have to change my perspective again”.

As another participant pointed out:

> “It generally felt as if I was pushing a problem to the side, because I would keep worrying about it later, when I was no longer applying the instructions”.

Thus, the effect of mindfulness was generally positive, improving participants’ mood and self-esteem. The driving force behind those feelings seemed to be the decentering component of mindfulness, which made participants detach from their thoughts, even though some participants were concerned with the brief duration of the effect.

Overall thoughts regarding the study

This theme highlights participants’ opinions regarding the study’s objectives, i.e. what they believed the study intended to examine. Key interpretive codes include “influence of social media on body image”, “female body dissatisfaction”, “different ways of dealing with one’s thoughts” and “the effect of individual differences on

body image". Most participants thought that the study was a diagnosis of how beauty ideals in social media shape everyday beauty intuitions. As one participant said:

> "I think the study wanted to test how people perceive themselves after social media exposure. Maybe how women feel after seeing all those skinny women online".

Another participant took this perspective further, directly linking it to female body dissatisfaction:

> "The study's purpose was to explore the power that social media exert on the perception of oneself. Being constantly brainwashed with intimidatingly thin images puts pressure on women who don't look like the 'ideal' and makes them dissatisfied with their own body".

A lot of participants reported that the study was about exploring different ways of thinking and how it affects one's body perception:

> "The study probably tried to test how a 'fleeting' way of thinking can alter perception, and specifically perception of the self and the body".

However, not all participants related those different ways of thinking to body image, but to individual differences:

> "I think that you wanted to see how one's personality and/or depression influence how well they can perceive their thoughts and how much they can detach from them".

Another participant reinforced this view:

> "Maybe the purpose was to show how someone's positivity and well-being affects how much they're influenced by social media through generating more abstract patterns of thought".

Therefore, it seems like participants did not fully guess the objectives of the experiment: most of them related the interventions to the effects of social media on body perception, while some were misled by the "distractor" personality and well-being questionnaires between the interventions (which made them relate the study to them). However, no one explicitly mentioned mindfulness as being the objective of the study.

4. Discussion

As mentioned before, mindfulness is a state of non-evaluative awareness of present thoughts, feelings and experiences, which has been found to decrease body dissatisfaction, either through extensive or brief interventions. In the present study, it was hypothesised that two brief (two-minute and instant) decentering-oriented mindfulness interventions would decrease body dissatisfaction after

exposure to thin-ideal stimuli, compared to a control/thought-immersion condition. The two interventions were also predicted to be equally effective. The results provided strong support for the effectiveness of both brief decentering interventions in decreasing body dissatisfaction compared to the control condition. Additionally, Bayesian analysis provided anecdotal support for the equal effectiveness of the interventions.

4.1 Relation of Findings with Previous Mindfulness and Body Dissatisfaction Research

Results were in line with research suggesting the alleviating effect of mindfulness on negative own-body evaluations (e.g. Albertson et al., 2015; Margolis & Orsillo, 2016; Pearson et al., 2012). Importantly, the present study expanded on previous findings by being the first to explore the effect of decentering on body dissatisfaction on its own, unlike previous research that combined decentering with acceptance-based approaches. Specifically, it was demonstrated that decentering, by facilitating detachment from negative body-related thoughts, sufficed to decrease body dissatisfaction. This provides further support for recent correlational evidence suggesting that decentering tendencies can protect from body dissatisfaction (Mendes et al., 2017; Ferreira et al., 2014).

Additionally, the present study contributed to the growing amount of evidence for the benefits of brief mindfulness approaches. As in previous studies (Papies et al., 2012; Papies et al., 2015), brief decentering inductions were capable of decreasing emotional reactivity to thoughts, experiences and emotions. Specifically for body dissatisfaction, and in line with previous research (Adams et al., 2012; Margolis & Orsillo, 2016), this meant decreasing the subjective realism of negative own-body evaluations. Importantly, the present research expanded on previous evidence for the effectiveness of brief decentering by further reducing the duration of decentering interventions. Even though most previous studies used decentering inductions that lasted ten-fifteen minutes, current findings showed that radically briefer (two-minute or instant) interventions can be successful.

4.2 Underlying Mechanisms Allowing Rapid Implementation of Decentering

The effectiveness of both approaches in the current study has substantial implications for the underlying mechanisms of decentering. As suggested by Lebois et al. (2015), decentering reduces emotional reactivity by attenuating activity in brain areas associated with intensity and self-relevance of thoughts. The fact that reactivity to negative body-related thoughts was reduced within two minutes or less suggests that this process can be rapid, causing immediate changes in subjects' perception. This could imply that all individuals have some sort of mental predisposition towards decentering, enabling them to disengage from their thoughts without excessive training. Indeed, the vast majority of participants experienced less body dissatisfaction after applying the decentering instructions in the present study. Importantly, this effect was present across all levels of previous mindfulness experience, meaning that even non-experts in mindfulness could effectively apply and benefit from the meta-cognitive aspect of thought disengagement. From a

clinical perspective, this might mean that decentering can be successfully applied within seconds to any thought that leads to negative affect on a daily basis, without requiring lengthy interventions or combinations with other techniques like acceptance and self-compassion.

It is necessary to note that Bayesian analysis pointed towards the equal effectiveness of both two-minute and instant approaches. As explained earlier, while frequentist analysis suggested that the two-minute approach was more effective, Bayesian analysis has an advantage over frequentist approaches for testing the significance of a null hypothesis (Rouder et al., 2012; Wagenmakers, 2007). Thus, there seemed to be a small amount of evidence in favour of the equality of both approaches, also insinuated by the overlap of the standard errors of the mean (see Figure 2), something that might suggest that two measures do not differ significantly (Payton, Greenstone & Schenker, 2003). This evidence has interesting implications for the application of decentering. The fact that participants were able to grasp and apply a single decentering instruction in the instant condition as successfully as the elaborate instructions in the two-minute condition might suggest that decentering can work without detailed explanation of the concept. As such, individuals may be able to disengage from their thoughts within seconds, just through a simple instruction that allows them to visualise them as dissipating mental events. This might indicate an even stronger mental predisposition towards decentering, in which individuals can understand and implement the concept without elaborate training. In this sense, it seems like decentering is something that can appear almost natural to individuals. This might be justifiable from an evolutionary perspective: decentering and thus ability to focus on the present could be an adaptive mechanism for humans, as it can protect them from the psychopathological outcomes of persistent negative affect (Naragon-Gainey & DeMarree, 2017). Even so, it should be noted that evidence for the equality of the two interventions was still anecdotal, which can suggest that more data may need to be collected to test this hypothesis (Wetzels & Wagenmakers, 2012).

4.3 Implications of Exploratory Analysis for Body Dissatisfaction

Exploratory analyses demonstrated that, for the most part, body dissatisfaction was triggered effectively. First of all, participants' mood did not confound with body dissatisfaction ratings. Additionally, qualitative responses were in line with previous research suggesting increased negative affect after thought-immersion (Lebois et al., 2015), and a boost in self-esteem after mindfulness inductions (Adams et al., 2012). Even though some participants reported having difficulty with the decentering instructions, most participants reported successfully applying the instructions. Importantly, no participant guessed that the study was related to mindfulness, meaning that responses were not subject to priming or demand characteristics.

Unlike previous studies (e.g. Albertson et al., 2015; Mills et al., 2014), participants' BMI did not significantly predict body dissatisfaction scores, in a way that higher BMI would predict higher body dissatisfaction. A possible explanation could be that the majority of participants fell within the normal weight range, contrary to previous studies, which used both normal-weight and overweight participants. Thus, the fact

that BMI did not predict body dissatisfaction could be attributed to the small discrepancy between BMI scores in the sample.

Surprisingly, even though body dissatisfaction fluctuated between conditions (i.e. increased in control and decreased in mindfulness), participants did not significantly report being affected by the stimuli in the question “How much did it bother you to look at the images?”. A possible explanation could be a different interpretation of the word “bother”. Even though the question meant reactivity to negative self-relevant thoughts arising during exposure to thin-ideal stimuli (e.g. self-consciousness), qualitative responses suggested that participants could have interpreted “bother” as annoyance at the women in the pictures. Lack of reported “bother” could further support the internalisation of the thin-ideal (Nagar & Virk, 2017). In this sense, participants did not admit being “bothered” or annoyed because they had accepted that the stimuli portrayed how the “ideal” woman should look. Thus, instead of being annoyed, they either blamed themselves for not looking like the stimuli, or used the stimuli as a motivation to become slimmer (as also evidenced by qualitative responses).

Participants’ previous mindfulness experience emerged as a significant predictor of body dissatisfaction. Interestingly, more experienced participants experienced a smaller decrease in body dissatisfaction after applying the decentering instructions, compared to inexperienced participants. However, this does not necessarily mean that the decentering interventions were not as efficient for participants with mindfulness experience. Contrarily, it could mean that experienced participants were affected less by the decentering interventions due to a ceiling effect: their body satisfaction was already high prior to the interventions, which could have prevented it from getting higher. This is in line with previous research suggesting that mindfulness experience is positively correlated with reduced overall negative affect and increased self-confidence (Khusid & Vythilingam, 2016).

4.4 Limitations Concerning Participants’ Trait Body Dissatisfaction and Ethnicity

A significant limitation of present findings is that trait body dissatisfaction was not taken into account. The current research only measured changes in participants’ state body dissatisfaction, assuming that brief decentering would manage to attenuate momentary negative own-body evaluations, regardless of participants’ trait predisposition to body dissatisfaction. Even though most participants did experience a decrease in body dissatisfaction after decentering, this effect could have been larger, if the study had controlled for trait body dissatisfaction. Indeed, if the current sample contained many participants with high trait body dissatisfaction, the effect of decentering could have been falsely deflated, given that individuals high in trait body dissatisfaction generally evaluate their body more negatively (Hargreaves & Tiggemann, 2003).

A further limitation could be that half of participants were of Asian ethnicity. This could have been a confounding variable affecting the effective triggering of body dissatisfaction, as Eastern cultures have different beauty ideals compared to the West. For instance, the Asian ideal body size is slimmer than the Caucasian thin-ideal (Gluck & Geliebter, 2002). It should be noted that, even though the stimuli

included women from a variety of ethnic groups, the images chosen corresponded primarily to the Caucasian thin-ideal, which could have made the induction of body dissatisfaction in participants with a different ethnicity less successful. Thus, the effect of decentering could have appeared somewhat larger than it was, given that body dissatisfaction was lower in the first place due to inefficient self-comparison.

4.5 Directions of Future Research

Even though brief decentering had a positive effect on almost all participants in the present sample, the current research does not explain why the decentering interventions worked better for some participants compared to others. Thus, future research could examine factors that make some individuals more successful in the implementation of brief decentering. For instance, Mendes et al. (2017) and Paul et al. (2013) suggested that trait-like mindfulness tendencies make individuals less susceptible to self-related negative evaluations. This could mean that participants higher in trait mindfulness might have an advantage in applying brief decentering instructions, as they naturally tend not to be overwhelmed by negative thoughts and emotions. Thus, it would be interesting to see whether trait mindfulness characteristics can lead to a better grasp of brief decentering instructions.

Additionally, current findings suggested that decentering might be a basic capability of individuals, as it can be applied almost instantly. Nonetheless, more insight is needed to explain why decentering is such a robust process, that it can be grasped without detailed explanations. As suggested earlier, decentering may confer evolutionary advantages by protecting from psychopathological effects of negative affect (Naragon-Gainey & DeMarree, 2017), which could explain its salience among individuals. However, it could be the case that decentering is a basic ability of individuals just by virtue of being the opposite of another basic ability, thought-immersion: just as individuals might tend to instantly get absorbed in their thoughts on an everyday basis, they might also instantly be able to detach from them and return to reality (Papies et al., 2015). Given these two possible explanations, more research is needed to determine why individuals are predisposed to decentering.

Lastly, following some participants' concern that the effects of brief decentering would only be temporary, it is important to examine how the two-minute and instant interventions could affect individuals in the long-term. Previous research suggests that lengthy mindfulness interventions have robust positive effects after yearly follow-ups, decreasing overall reactivity to unpleasant thoughts and experiences (Hofmann, Sawyer, Witt & Oh, 2010). However, it remains to see whether comparable long-lasting effects can occur through radically shorter interventions as well, or if their effect is just momentary. Indeed, even though it might take seconds to initially train someone to detach from thoughts that lead to distress, it might take a better-trained mind to be able to retrieve and apply brief decentering inductions (Papies et al., 2015), especially when overwhelmed with negative affect.

4.6 Conclusion

Individuals appear to have the ability to detach from thoughts that lead to emotional reactivity through the meta-cognitive process of decentering. The present research suggested that this process can occur almost instantly, by demonstrating the

success of a two-minute and an instant decentering approach in decreasing female body dissatisfaction. Anecdotal evidence of the approaches' equal effectiveness suggested that decentering can be equally successful with or without elaborate conceptual explanations. This might mean that most individuals have a strong mental predisposition towards decentering. The current findings contribute to the amount of evidence for the alleviating effect of brief decentering on body dissatisfaction, while being the first to demonstrate the feasibility of radically brief – almost instant- decentering approaches. This renders the present research a considerable expansion of the literature, which sheds further light on the underlying mechanisms of mindfulness.

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