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When paying attention pays off: the mindfulness skill act with awareness promotes creative idea generation in groups

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ABSTRACT
Past work has linked mindfulness to improved individual-level creativity, but remained silent about group-level creativity. Of all mindfulness skills, the ability to observe and attend to various stimuli (Observation) is the most powerful predictor of individual-level creativity. Studies examining effects of specific mindfulness skills on factors pertinent to group creativity suggest that for group-level creativity, the ability to focus attention with full awareness (Act with awareness), may be equally, or even more, important. We tested the relation between mindfulness and group-level creative idea generation using two brainstorming studies: one exploratory and one confirmatory. Mindfulness skills were either measured (Study 1; N = 88 groups) or the Act with awareness skill was targeted with a short, incidental guided meditation session (Study 2; N = 68 groups). Results from both studies showed differential relations between mindfulness and group creative idea generation: Only Act with awareness positively predicted the originality of ideas (Study 1 and 2) and the number of creative ideas in groups (Study 2). How mindfulness skills relate to creativity thus depends on the particular mindfulness skill involved and whether creativity happens at the individual or group level.

Mindfulness, a state of conscious awareness resulting from living in the moment (Brown & Ryan, 2003; Kabat-Zinn, 1994), has many beneficial effects. Mindfulness is associated with improved stress regulation (Sedlmeier et al., 2012; Shapiro, Carlson, Astin, & Freedman, 2006), positive affect and well-being (Carmony & Baer, 2008; Jain et al., 2007), and a reduced fear of being judged by others (Carson & Langer, 2006). It has also been linked to improved cognitive abilities (Mrazek, Franklin, Phillips, Baird, & Schooler, 2013), enhanced task concentration (Lutz, Slagter, Dunne, & Davidson, 2008), and the ability to switch perspectives and be creative (Baas, Nevicka, & Ten Velden, 2014; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007). Notably, these improved affective and cognitive abilities, including positive affect (Lyubomirsky, King, & Diener, 2005), intelligence (Schmidt & Hunter, 1998), and creativity (Anderson, Potočnik, & Zhou, 2014), are integral for driving individual work performance (Good et al., 2016; Lomas et al., 2017).

Although these same factors also influence processes and performance of groups (Nijstad & Stroebe, 2006; Taggar, 2002), we know surprisingly little about the role of mindfulness for group performance in general, and group-level creativity in particular (Cleirigh & Greaney, 2015). This is unfortunate, particularly given that organizations increasingly use teams to think of creative solutions for complex problems (Anderson et al., 2014; Taggar, 2002). For instance, in hospitals doctors work together to find new ways of optimizing patient care, a team of directors looks for innovative strategies to chart out the course of a firm, and scientific insights often result from collaborations. The reason why teams are preferred to individuals in such cases is because complex problems often require the integration of expertise and thinking skills of people working together (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000). Indeed, teams are often more effective than individuals in successfully addressing changing environmental challenges (Katzenbach & Smith, 1992). As such, it is not surprising that creative problem solving in groups has increasingly gained traction and importance in research as well as in practice.

Here we focus on the link between mindfulness and group-level creativity—the production of ideas or products that are both novel and appropriate (Potočnik & Anderson, 2016; Runco & Jaeger, 2012). We build on the notion that mindfulness is not a unitary construct (Van Dam et al., 2018) but comprised of different components, including the ability to observe and attend to various stimuli (Observation skills) and the ability to focus attention with full awareness (Act with awareness skills; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). At the individual level, observation skills positively predict creativity, while the other mindfulness components show little effects (e.g., Baas et al., 2014; Lebuda, Zabelina, & Karwowski, 2016). Importantly, when group members are more creative as individuals, groups to which they belong tend to often, but not always, be more creative as well (Litchfield, Ford, & Gentry, 2015; Pirola-Merlo & Mann, 2004; Somech & Drach-Zahavy, 2013). From this it would follow that, similarly as for individual creativity, observation skills should positively predict group creativity. However, the reason that individual-level creativity does not always translate to the group level is that group-level creativity is heavily determined by group processes (Baer, Oldham, Jacobsbohn, & Hollingshead, 2008; Nijstad & Stroebe, 2006; Sawyer, 2011; Taggar, 2002). For example, higher levels of creativity emerge in groups whose
members build on each other’s ideas (Hargadon & Bechky, 2006), explore a limited number of perspectives more deeply to move past conventional thoughts (Nijstad & Stroebe, 2006), and pay close attention to each other’s ideas (e.g., Dugosh, Paulus, Roland, & Yang, 2000; Kohn, Paulus, & Choi, 2011). Therefore, when we take into account the research on group processes that facilitate group creativity, act with awareness skills may be an equally, or even more, important driver of creativity at the group level. In two group studies on brainstorming, we examine the relation between mindfulness and creative idea generation at the group level. In Study 1, using a cross-sectional design, we explore this relation and find that only the average level of act with awareness in a group positively predicts the creativity of ideas. In Study 2, using an experimental design, we confirm this finding and explore the underlying mechanism.

**Mindfulness**

Mindfulness is characterized by non-judgemental, sustained and alert awareness of experiences in the present moment (Grossman, 2008; Kabat-Zinn, 1994). In a mindful state, people calmly and clearly pay attention to arising thoughts, feelings, and sensations without evaluating ongoing experiences (Grossman, 2008; Sedlmeier et al., 2012). Mindfulness skills can be actively enhanced through meditation (Goldberg et al., 2019; Grossman, 2008; Kabat-Zinn, 1994). Two commonly practiced and researched meditation techniques are focused attention and open monitoring meditation (Lutz et al., 2008). During focused attention meditation, people direct and sustain their attention on a selected object (e.g., breathing, a sound, a raisin) and closely monitor mind wandering and distracting thoughts, feelings, and sensations. Once they become aware of their wandering mind, they shift their attention back to the selected object. During open monitoring meditation, people do not explicitly focus on a particular object, but monitor their bodily sensations, feelings, and thoughts as they arise in a non-evaluative way.

People can develop distinct mindfulness skills that can be estimated with questionnaires (Baer et al., 2006; Carmody & Baer, 2008). *Act with awareness* represents the ability to focus attention on one object or activity at a time with full awareness. This skill is targeted with focused attention meditation. *Observation* is the ability to closely observe, notice, or attend to internal experiences (e.g., bodily sensations, feelings) and external phenomena (e.g., sounds, smells) and is mostly targeted with open monitoring meditation. *Description* refers to the ability to verbalize observed phenomena without conceptual analysis in a non-evaluative way. Finally, *Accept without judgement* is someone’s ability to accept a present-moment experience without evaluating it (e.g., accept reality as it is, refrain from evaluating experiences as right or wrong).

There are different approaches to the role of mindfulness at the group level (Sutcliffe, Vogus, & Dane, 2016). In our approach, mindfulness constitutes individuals varying in their ability to pay attention in a non-judgemental way while working in a group. When, on average, individual group members have stronger mindfulness skills, groups are expected to pay more attention to the group task and to each group member’s contributions (cf. Dierynck, Leroy, Savage, & Choi, 2017; Yu & Zellmer-Bruhn, 2018). Therefore, individual mindfulness skills can be aggregated at the group level with stronger average mindfulness group scores reflecting stronger mindfulness ability in a group. Our approach is different from other approaches where mindfulness is seen as a property of the group itself (e.g., Dierynck et al., 2017; Sutcliffe et al., 2016). Yu and Zellmer-Bruhn (2018), for instance, view group mindfulness as a *shared belief* among group members that group interactions are characterized by awareness and attention to present events, and by experiential, non-judgemental processing of within-group experiences.

**Mindfulness and creativity**

Previous work shows that mindfulness skills differentially predict creative achievements and idea generation, at the individual level: The ability to observe, but not the other mindfulness skills, has been associated with increased creativity (e.g., Baas et al., 2014; Lebuda et al., 2016). Observation skills, both measured and temporarily enhanced through meditation, promote creativity through a broad attentional focus (Colzato, Sellaro, Samara, Baas, & Hommel, 2015) and increased flexibility of thought (Baas et al., 2014; Greenberg, Reiner, & Meiran, 2012). However, individual-level creativity does not necessarily translate to the group level because group creativity also depends on group functioning and various group processes that occur (Baer et al., 2008; Nijstad & Stroebe, 2006; Sawyer, 2011; Taggar, 2002). Based on work on the processes supporting group creativity that is discussed below, act with awareness may be an equally or even more important driver of creative idea generation in groups.

Group creativity is partly determined by the creativity of the input of the group members: Groups whose members are more creative at the individual level often also tend to be more creative at the group level (Litchfield et al., 2015; Pirola-Merlo & Mann, 2004; Somech & Drach-Zahavy, 2013). However, once a person’s idea is shared and considered and built on by others, it shapes subsequent ideas (Hargadon & Bechky, 2006). Therefore, group creativity relies even more on the factors that determine how group members share task-relevant knowledge and exchange, discuss, and integrate ideas and perspectives (Hargadon & Bechky, 2006; Hoever, Van Knippenberg, Van Ginkel, & Barkema, 2012; Nijstad & Stroebe, 2006). Some general group factors that are associated with the improved exchange, discussion, and integration of ideas include reduced evaluation apprehension (Diehl & Stroebe, 1987) and enhanced cooperation, cohesion, internal and external communication, perspective taking, and the constructive discussion of ideas (e.g., Bechtoldt, De Dreu, Nijstad, & Choi, 2010; Hoever et al., 2012; Hülsheger, Anderson, & Salgado, 2009).

Particularly relevant for the current study are the cognitive processes behind creative idea generation in groups (Coskun, Paulus, Brown, & Sherwood, 2000; Dennis, Valacich, Connolly, & Wynne, 1996; Deuja, Kohn, Paulus, & Korde, 2014; Nijstad & Stroebe, 2006). Groups benefit most from elaborating upon a limited number of ideas and perspectives (Mumford, Feldman, Hein, & Nagao, 2001). Having “trains-of-thought” (i.e., generating many incremental ideas that are semantically related within a particular thought domain) forces group members to move past conventional thoughts (Finke, Ward, & Smith, 1992) and reach more uncommon ideas through deeper exploration of only a few conceptual categories (De Dreu, Baas, & Nijstad, 2008;
Nijstad & Stroebe, 2006; Rietzschel, Nijstad, & Stroebe, 2007). However, these trains-of-thoughts can be easily disturbed by other group members offering ideas in entirely different conceptual domains (Nijstad, Stroebe, & Lodewijks, 2002), thereby inhibiting group creativity (Nijstad & Stroebe, 2006). The above studies thus highlight the importance of steering effort and idea generation within a relatively narrow domain. Moreover, it appears that paying close attention to each other’s ideas promotes the elaboration and integration of a limited number of ideas and perspectives and stimulates group creativity (Hargadon & Bechky, 2006; Kohn et al., 2011; Paulus & Brown, 2007). For instance, Dugosh et al. (2000) have reported higher creative idea generation in groups when group members were explicitly instructed to pay close attention to the ideas of others. This is particularly relevant for the current study, because paying attention is central to mindfulness in general, and the act with awareness skill in particular.

Specific mindfulness skills may downplay the processes that harm group creativity while at the same time supporting the processes that are beneficial for group creativity. All mindfulness skills are associated with reduced evaluation apprehension (Carson & Langer, 2006) and stronger cohesion and cooperation in groups (Cleirigh & Greaney, 2015), which all positively predict group creativity (Hülshegger et al., 2009; Nijstad & Stroebe, 2006). It thus follows that groups whose members have stronger mindfulness skills would also display higher creativity. Yet, other work implies that some mindfulness components may have stronger effects than others. Because the ability to observe associates with higher creativity at the individual level (Baas et al., 2014), groups whose members on average score higher on observation skills may be more creative than those with low scoring group members. In addition, act with awareness may play an important role in some of the core cognitive processes that steer group creativity. Act with awareness entails engagement of attentional processes to focus and sustain attention on an intended object or task and to shield potentially distracting thoughts (Lutz et al., 2008; Vago & Silbersweig, 2012). In the context of creative idea generation, groups whose members score higher on act with awareness skills may pay more attention to the ideas of others, build on them, and explore a few conceptual categories more deeply, thereby reaching higher creativity levels. Given that act with awareness is expected to directly impact group-level processes important for group creativity and not just processes important for individual level creativity, this mindfulness skill may be an equally, or even more, important driver of creative idea generation at the group level than observation.

Taking into account the multifaceted nature of mindfulness, in the current research we set out to uncover how specific mindfulness skills are related to group-level creativity. Study 1 was exploratory in nature. We investigated whether mindfulness facilitates group-level creative idea generation and, if so, whether it does so uniformly or differentially depending on mindfulness’ specific components. Additionally, we tested the often studied group processes cooperation and constructive discussion as potential mediators. Study 1’s findings show that only the average level of act with awareness in a group positively predicts the originality of generated ideas and that cooperation and constructive discussion do not mediate this effect. In Study 2, using an experimental design, we confirm these findings and show that the cognitive process of deep exploration of a few semantic categories (Nijstad & Stroebe, 2006) underlies the positive effect of act with awareness on group creative idea generation.

Study 1: exploratory correlational evidence

Participants
To uncover effects of medium magnitude (r = .30) with a Power of .80, and four mindfulness skills as predictors requires at least 84 groups (Cohen, 1992). To achieve this power in Study 1, we slightly oversampled and tested 90 groups. Two hundred and seventy University of Amsterdam undergraduate students (mean age = 21.7 years; SD = 2.8; 198 women) participated for course credit or payment (€10). Participants were randomly assigned to 90 three-person groups. Mindfulness and its subcomponents were measured and constituted our independent variables. Dependent variables were fluency, coded originality, self-reported constructive discussion, and self-reported group cooperation.

Procedure
Participants reported to the lab individually and were told that they would form triads for a study that involved several group tasks. Subsequently, the experimenter assigned three participants to a group and told them that before they start the group task, they would first individually fill out questionnaires. Participants were then seated in an individual cubicle where they filled out questionnaires on a computer. Once all three participants had finished, the three group members were seated together in a private room where, on a computer, they were given information about the group task. They learned that they, as a group, were supposed to generate as many alternative ideas about how to improve people’s health (Nijstad et al., 2002). They received Osborn’s (1957) brainstorming rules: They were instructed to generate as many ideas as possible, to not self-censor or criticize others, build on each other’s ideas, and that freewheeling was encouraged. Thereafter, group members brainstormed together and keyed their ideas into a computer. Finally, group members were returned to their individual cubicle where they filled out a short questionnaire, assessing group cooperation and constructive discussion. This study was part of a larger lab session than involved several studies. After finishing the brainstorming task and filling out the questionnaire groups engaged in other tasks. These tasks are not part of the current study and are therefore not discussed further. Finally, participants were paid, debriefed, and thanked for participation.

Group mindfulness
Participants filled out the 39-item Kentucky Inventory of Mindfulness Skills Scale (KIMS) that has four subscales (Baer et al., 2006). Participants rated items on a 5-point Likert scale (1: never or very rarely true to 5: almost always or always true). Sample items include “When I take a shower or a bath, I stay alert to the sensations of water on my body” for Observation; “I can easily put my beliefs, opinions, and expectations into words” for Description; “When I’m doing something, I’m only focused on what I’m doing, nothing else” for Act with Awareness; and “I criticize myself for having irrational or inappropriate emotions” for Accept without Judgement (reversed scored). For each group
member, we averaged the ratings into an index of total mindfulness skills (α = .81), and mindfulness’ subcomponents (α = .83 for Observation; α = .88 for Description; α = .79 for Act with awareness; and α = .87 for Accept without judgement). To obtain an index of group-level mindfulness skills, for each group we then averaged mindfulness scores across the three group members. Finally, as a measure of dispersion, we also calculated the standard deviation in total mindfulness skills for each group. The average group-level mindfulness skills represent our key predictors; in line with previous group research (e.g., Harrison & Klein, 2007), we also controlled for the standard deviation in total mindfulness skills in our analyses.

Creative idea generation indicators

The ideas generated by the groups were coded into two indicators of creative idea generation (Nijstad, De Dreu, Rietzschel, & Baas, 2010). First, an independent coder, a psychology student that received extensive training, counted the number of non-redundant ideas generated per group. This was our measure of fluency. To obtain a measure of originality, the same independent coder rated each idea for originality, defined as “an idea that is infrequent, novel, and original” (1 = not original at all to 5 = very original). A second expert coder, the first author, rated a subset of 125 ideas to establish interrater reliability. Interrater agreement was good following criteria by Cicchetti and Sparrow (1981); intraclass correlation, ICC [1] = .89. We aggregated ratings across ideas per group as an indicator of group originality.

Group process experiences

Constructive discussion was measured with three items (e.g., “While brainstorming, we openly discussed alternatives”) by Bechtoldt et al. (2010) that were answered on 5-point scales ranging from 1 = not at all to 5 = very much. Group cooperation was measured with 9 items (e.g., “I enjoyed interacting with this group very much”) that were sampled and adapted from validated questionnaires (Anderson & West, 1998; Evans, Jarvis, & Dawson, 1986). Both scales were measured reliably (Cronbach’s alphas = .86 and .89, respectively). The ICC(1,1) was .21, p = .001 for constructive discussion and .19, p = .002 for cooperation. This indicates that for each scale, part of the variance in participants’ judgements was determined by group membership (Bliwise, 2000). Consistent with our dependent variable (groups’ creative idea generation) and our independent variables (groups’ mindfulness skills), which were both at the group-level, we averaged ratings across individuals in each group in order to obtain an index of group-level process experiences.

Results

Screening of data

Due to a technical error, one group’s idea generation was not stored. Moreover, one group was identified as an outlier (more than 3 standard deviations from the mean for creativity indicators) and removed from further analyses, leaving 88 groups for analyses.

Descriptive statistics, correlations, and regressions

Table 1 shows the means and standard deviations, along with the zero-order correlations for all study variables. Of the mindfulness skills, only Act with awareness positively associated with originality of ideas, r = .29, p = .007. Additionally, total mindfulness positively associated with self-reported cooperation, r = .21, p = .050, and this correlation was mainly driven by Description (r = .28, p = .008). In addition, we conducted a multiple regression analysis in which we regressed the creativity indicators (i.e., fluency and originality) on the four mindfulness skills, while controlling for the standard deviation of total mindfulness skills in the group (Table 2). No reliable predictors were identified for fluency (p > .300). Of the four skills, Act with awareness was the only reliable predictor of originality, B = 0.21, SE = .080, t(82) = 2.67, p = .009, other ts < 1.27, ps > .20. As constructive discussion and cooperation did not significantly relate to originality (ps > .49), they do not qualify as mediators in the relation between act with awareness and originality.

Discussion and introduction to study 2

Findings from Study 1 show that specific mindfulness skills differentially predicted the quality but not the quantity of ideas in groups. Of the four mindfulness skills, only Act with awareness positively predicted the originality of ideas in groups. Self-reported cooperation and constructive discussion in groups did not play a mediating role. In Study 2, we had three aims. First, Study 1 was exploratory and provided correlational evidence, and Study 2 was designed as a confirmatory group experiment to show evidence for the causal role of Act with awareness in predicting group creativity. Therefore, in Study 2 we directly manipulated the Act with awareness facet of mindfulness and developed a brief guided meditation

Table 1. Descriptive statistics for Study 1.

<table>
<thead>
<tr>
<th>1. Total mindfulness</th>
<th>M</th>
<th>3.22</th>
<th>SD</th>
<th>0.20</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Total mindfulness SD</td>
<td>0.34</td>
<td>0.20</td>
<td>-0.03</td>
<td></td>
</tr>
<tr>
<td>3. Act with awareness</td>
<td>2.65</td>
<td>0.30</td>
<td>-0.31**</td>
<td>0.07</td>
</tr>
<tr>
<td>4. Accept w/o judgement</td>
<td>3.51</td>
<td>0.47</td>
<td>-0.45**</td>
<td>-0.11</td>
</tr>
<tr>
<td>5. Observation</td>
<td>3.34</td>
<td>0.36</td>
<td>-0.55**</td>
<td>-0.06</td>
</tr>
<tr>
<td>6. Description</td>
<td>3.44</td>
<td>0.44</td>
<td>-0.69**</td>
<td>-0.07</td>
</tr>
<tr>
<td>7. Fluency</td>
<td>23.32</td>
<td>8.99</td>
<td>-0.06</td>
<td>0.09</td>
</tr>
<tr>
<td>8. Originality</td>
<td>1.66</td>
<td>0.21</td>
<td>-0.13</td>
<td>0.01</td>
</tr>
<tr>
<td>9. Constructive Discussion</td>
<td>3.54</td>
<td>0.56</td>
<td>-0.06</td>
<td>-0.12</td>
</tr>
<tr>
<td>10. Group Cooperation</td>
<td>3.99</td>
<td>0.41</td>
<td>-0.21*</td>
<td>-0.19</td>
</tr>
<tr>
<td>11. Age group members</td>
<td>21.68</td>
<td>1.74</td>
<td>-0.11</td>
<td>0.01</td>
</tr>
</tbody>
</table>

N = 88 groups.

*p < .05; **p < .01
fragment that takes the group context into account (see “Meditation” in the Method section below). This is also in line with calls for operationalizing mindfulness using interventions rather than solely with questionnaires (Van Dam et al., 2018). Second, ideas in Study 1 were only coded for originality. Although originality is the hallmark of creativity, a truly creative idea is both original and useful (Runco & Jaeger, 2012). Therefore, Study 2's second aim was to code generated ideas for both originality and usefulness. This enabled us to examine effects of mindfulness meditation on these dimensions separately and also on the number of creative ideas (i.e., scoring both high on usefulness and originality). Third and finally, we tested the often studied self-reported group processes cohesiveness and fear of evaluation (Hülsheger et al., 2009) and the cognitive process deep exploration of a few semantic categories (see Nijstad & Stroebe, 2006 for a discussion) as potential mediators in an exploratory fashion. For instance, when groups generate many ideas within a particular conceptual category (i.e., deep exploration), they can build upon and integrate those ideas and move past more conventional thoughts (Finke et al., 1992; Nijstad & Stroebe, 2006; Rietzschel et al., 2007). For this reason, it may be that groups that pay more attention to the ideas of others, build on them, and explore a few conceptual categories more deeply, thereby reaching higher creativity levels.

**Study 2: confirmatory evidence for causality and process**

**Participants**

To uncover medium sized effects with two conditions, and a Power of .80 requires at least 64 groups (Cohen, 1992). Therefore, 204 undergraduate students (mean age = 22.4 years; SD = 4.2; 66% women) participated for course credit or pay-

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Fluency</th>
<th>Originality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>B</em></td>
<td><em>t</em></td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mindfulness SD</td>
<td>3.97</td>
<td>0.83</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mindfulness SD</td>
<td>4.31</td>
<td>0.87</td>
</tr>
<tr>
<td>Act with Awareness</td>
<td>−1.94</td>
<td>−0.55</td>
</tr>
<tr>
<td>Observation</td>
<td>0.79</td>
<td>0.25</td>
</tr>
<tr>
<td>Description</td>
<td>2.63</td>
<td>1.04</td>
</tr>
<tr>
<td>Accept w/o judgement</td>
<td>−1.20</td>
<td>−0.55</td>
</tr>
</tbody>
</table>

_N_ = 88.

unrelated group study on decision making. Following the group decision-making tasks, group members were seated in an individual cubicle and filled out decision-making questionnaires on a computer.

Then the study on mindfulness and creativity began. Groups were randomly assigned to one of two conditions. In the control condition, the three group members individually answered questions about positive feelings and arousal levels and were then placed in a private room together. In the act with awareness meditation condition, the three group members first listened to an audiorecorded Act with awareness meditation in their individual cubicles (see below for details). Once all three group members had finished meditating, they answered questions about positive feelings, arousal levels, and momentary mindfulness. They were subsequently put together in a private room. Once the three group members were seated in their private room, participants in both conditions were instructed that they, as a group, were supposed to generate as many alternative ideas about how to improve people’s health (Nijstad et al., 2002). As in Study 1, they were instructed to generate as many ideas as possible, to not self-censor or criticize others, build on each other’s ideas, and that freewheeling was encouraged (Osborn, 1957). Groups in both conditions received these written instructions on the computer, however, in the act with awareness meditation condition, group members read the instructions out loud, in line with the Act with awareness meditation method (see below).

Following the brainstorming instructions, group members brainstormed together and keyed in their ideas at a computer. Finally, group members individually filled out a short questionnaire in their individual cubicle, assessing fear of evaluation and group cohesion. Finally, participants were paid, debriefed, and thanked.

**Meditation manipulation**

A first question to address is how to design the control condition. In previous experimental work on mindfulness, respondents in the control condition either did nothing and immediately started the task that measured the dependent variables (see e.g., Spijkerman, Pots, & Bohlmeijer, 2016), were instructed to rather passively let their minds wander (Wilson, Mickes, Stolarz-Fantino, Evrard, & Fantino, 2015), or they actively listened to audio-fragments on varying topics, including body relaxation (Tang et al., 2007), excerpts from Tolkien’s The Hobbit (Zeidan, Johnson, Diamond, David, & Goolkasian, 2010) and educational excerpts from a public radio station (Cleirigh & Greaney, 2015). Each design of the control condition has its drawbacks. For instance, the topic that respondents listen to may inadvertently prime knowledge and cognitive processes that influence findings. In our experiment, we wanted to preclude inadvertent priming effects while at the same time making sure that group members were familiar with, and committed to each other before the start of the creativity task. The latter is important because familiarity and commitment promote group performance and creativity (Harrison, Mohammed, McGrath, Florey, & Vandersteen, 2003; Hülsheger et al., 2009). To satisfy these conditions, all participants were assigned to three-person groups and all groups first did an unrelated group decision making task, a hidden-profile task
where group members had to combine information to make the best decision possible (Nevicka, Ten Velden, De Hoogh, & Van Vianen, 2011). Afterwards, each group member individually filled out decision-making questionnaires and answered questions about positive feelings and arousal levels and then commenced the group creativity task. Participants in the meditation condition additionally listened to a guided meditation audio-fragment, see below.

Most meditations targeting Act with awareness direct practitioners to sustain their attention on a selected object (e.g., breathing) and closely monitor mind wandering and distracting thoughts, feelings, and sensations. Whereas these meditations direct attention inward (Kok & Singer, 2017), for group tasks it is important that group members focus their attention outward as well to pay attention to the task and each other’s ideas and suggestions. Analogous to existing focused meditations, we therefore created the “voice mirror” meditation in which practitioners are guided by a male voice for 8.5 minutes to direct and sustain their attention on his voice by silently repeating each said word in their heads (see Appendix 1). Similar to classic meditations focused on Act with awareness, participants are also instructed, in a step-by-step manner, to monitor the quality of attention, and bring their attention back to repeating the said words whenever their mind had wandered. Group members first individually listened to the “voice mirror” meditation and repeated each word of the instructor in their head. To reinforce meditation effects and embed the meditation within a group context, group members also applied the voice mirror technique themselves in their group. Group members got together and received brainstorming instructions on the computer screen. Groups in the control condition received the same instructions that they read together. However, in the voice mirror meditation condition, one by one, each group member read the instructions aloud while the other two group members closed their eyes and repeated the said words in their heads.

### Affect and Arousal

Brief mindfulness meditations strongly enhance positive feelings and lower arousal levels (Kok & Singer, 2017) and these indicators were used in Study 2 to compare the “voice mirror” meditation with the control condition. The Affect Grid (Russel, Weiss, & Mendelsohn, 1989) was employed to assess momentary arousal levels and positive feelings, both pre- and post-meditation in the act with awareness condition and once in the control condition. The centre of the 9 × 9 grid represents a neutral, everyday feeling that is neither positive nor negative. The vertical axis of the grid represents the degree of arousal and runs from maximum arousal to minimum arousal (higher scores reflect lower arousal). The horizontal axis of the grid represents the degree of positive feelings and runs from highly negative to highly positive feelings. Participants mark the position in the grid that represents their current emotional state.

### Creative Idea Generation Indicators

The ideas generated by the groups were coded into four outcome indicators of creative idea generation. First, an independent coder, a psychology student that received extensive training, counted the number of non-redundant ideas generated per group. This was our measure of fluency. Second, to obtain a measure of originality, the same independent coder rated each idea for originality, defined as “an idea or suggestion that is infrequent, novel, and original” (1 = not original at all to 5 = very original). A second expert coder, the first author, rated a subset of 123 ideas to establish interrater reliability. Interrater agreement was good following criteria as per Cicchetti and Sparrow (1981; ICC(1) = .83). We used the aggregated ratings across ideas per group as an indicator of group originality. Third, to obtain a measure of usefulness, an independent coder rated each idea for usefulness, defined as “an idea or suggestion that is feasible, effective, and appropriate” (1 = not useful at all to 5 = very useful). A second coder rated a subset of 123 ideas to establish interrater reliability. Interrater agreement was good following criteria as per Cicchetti and Sparrow (1981; ICC(1) = .79). We used the aggregated ratings across ideas per group as an indicator of group usefulness. Fourth and finally we counted the number of creative ideas per group, with creative ideas being defined to score 3 or higher on both originality and usefulness (Cheng, Baas, & De Dreu, 2018).

### Deep Exploration

To determine the extent to which groups deeply explored a limited number of conceptual categories, each idea was also coded by the same independent coder into semantic categories that cover the health topic (Rietzschel et al., 2007). 99 semantic categories are possible by crossing 11 possible goals (e.g., to reduce weight, to prevent nutritional deficits, to improve mental health) with nine possible means (e.g., food intake, changing lifestyle). The first author rated a subset of 123 ideas to establish interrater reliability, which was good (Cohen’s Kappa = .84). As a measure of deep exploration, we divided the total number of ideas by the number of surveyed categories during idea generation (Nijstad & Stroebe, 2006).

### Group Process Experiences

Fear of evaluation was measured with 9 items (e.g., “While brainstorming, I worried I was making a poor impression on others”) that were taken and adapted from Carleton, McCreary, Norton, and Asmundson (2006). Group cohesion was measured with 7 items (e.g., “Our group was characterized by a high degree of togetherness”) that were sampled and adapted from questionnaires by Kivimaki and Elovainio (1999) and Whitton and Fletcher (2014). Items from both scales were answered on 7-point scales ranging from 1 = not at all to 7 = very much. Both scales were measured reliably (Cronbach’s alphas = .82 and .93, respectively). The ICC(1, 1) was .01 (p = .40) for fear of evaluation and .20 (p = .001) for cohesion. Because we were interested in relationships with creativity, a group-level variable, we averaged ratings across individuals in each group for both cohesion and fear of evaluation.

### Results

**Screening**

Due to experimenter error, individual level data of six participants were not recorded, leaving a total of 198 participants for analyses at the individual level (e.g., affect and arousal). Of the six participants with missing data, four belonged to separate groups and for these cases, the group-level variables cohesion
and fear of evaluation were calculated on the basis of the responses by the other two group members. However, two participants with missing data belonged to the same group. Cohesion and fear of evaluation were not calculated for this particular group and omitted from group-level analyses.

**Descriptive statistics and correlations**

Table 3 shows the means and standard deviations, along with the zero-order correlations for all study variables. By and large, originality and usefulness were negatively correlated, but both were positively correlated with the number of creative ideas. Deep exploration was positively associated with the number of creative ideas, fluency, and originality. Group cohesion positively associated with the number of creative ideas and usefulness of ideas. The average age of the group members was positively correlated with the number of creative ideas. However, in the testing of the relation between meditation condition and creativity, entering age as a covariate did not change the pattern of the results below.

**Affect and arousal**

ANOVA showed main effects of condition on positive feelings and arousal. Pre-meditation, participants in the meditation and control condition did not differ in positive feelings \(F(1, 196) = 2.77, p = .098, \eta^2_{partial} = .01\) and arousal \(F(1, 196) = 0.46, p = .497, \eta^2_{partial} = .00\). Post-meditation and consistent with earlier work (e.g., Kok & Singer, 2017), participants in the Act with awareness condition reported more positive feelings \(M = 515.64, SD = 61.43\) and lower arousal levels \(M = 581.85, SD = 46.04\) than those in the control condition \(M = 470.93, SD = 60.25, F(1,196) = 26.72, p < .001, \eta^2_{partial} = .120, \) and \(M = 523.58, SD = 50.47; F(1,196) = 72.14, p < .001, \eta^2_{partial} = .269\) respectively. 1

**Creative outcomes**

We submitted fluency, usefulness, originality, and number of creative ideas to a MANOVA with condition as the between-subjects factor. The multivariate effect of condition was significant, \(F(4,63) = 4.89, p = .002, \eta^2_{partial} = .237\). Follow-up univariate analyses showed that whereas the effects of condition on fluency \(F(1,66) = 2.67, p = .107, \eta^2_{partial} = .039\) and usefulness \(F(1,66) = 2.58, p = .113, \eta^2_{partial} = .038\) were not significant, we did obtain significant effects for originality, \(F(1,66) = 5.25, p = .025, \eta^2_{partial} = .074\), and the number of creative ideas, \(F(1,66) = 11.67, p = .001, \eta^2_{partial} = .150\). As can be seen in Figure 1, groups in the Act with awareness condition were more original and generated more creative ideas than those in the control condition.

**Deep exploration**

We submitted deep exploration to a one-way ANOVA with condition as between-subjects factor. We obtained a main effect of condition on deep exploration, \(F(1,66) = 4.81, p = .032, \eta^2_{partial} = .068\). As can be seen in Figure 1, groups in the Act with awareness condition generated more ideas in relatively fewer conceptual categories than those in the control condition.

**Group process experiences**

We submitted fear of evaluation and group cohesion to a MANOVA with condition as between-subjects factor. The multivariate effect of condition was not significant, \(F(2,64) = 0.84, p = .438, \eta^2_{partial} = .025\).

**Mediation by deep exploration**

Findings thus far suggest that group process experiences do not qualify as mediators. However, deep exploration reflects a coordinated and efficient approach to deeply explore existing categories and have productive trains of thought (Nijstad & Stroebe, 2006). To explore the possibility that the effect of mindfulness on creative idea generation is mediated by deep exploration, we first computed a series of hierarchical regression analyses in which condition (control = 0; Act with awareness condition = 1) was the predictor. For deep exploration, we observed a main effect of condition, a significant change the pattern of the results below.

**Figure 1**

Findings thus far suggest that group process experiences do not qualify as mediators. However, deep exploration reflects a coordinated and efficient approach to deeply explore existing categories and have productive trains of thought (Nijstad & Stroebe, 2006). To explore the possibility that the effect of mindfulness on creative idea generation is mediated by deep exploration, we first computed a series of hierarchical regression analyses in which condition (control = 0; Act with awareness condition = 1) was the predictor. For deep exploration, we observed a main effect of condition, \(B = 0.46, t(66) = 2.19, p = .032\). Furthermore, when we regressed the number of creative ideas on condition after controlling for deep exploration, the previously significant effect of condition \(B = 1.41, t(66) = 3.42, p = .001\) dropped but remained significant \(B = 0.92, t(65) = 2.54, p = .013\); the effect of deep exploration was significant \(B = 1.06, t(65) = 5.20, p < .001\). This implies that deep exploration may partially play a mediating role (see Figure 1(d)). To examine whether this was indeed the case, we tested the indirect effect by generating bootstrap confidence intervals we generated bootstrap confidence intervals (Model 4; \(N_{boot} = 5,000\); Preacher & Hayes, 2008). The analyses indicated that the indirect effect was statistically significant at the .05 level (\(B_{boot} = 0.491, SE_{boot} = 0.278; 95\% CI = [0.079;1.190]\)).

**General discussion**

To uncover the role of mindfulness in group-level creative idea generation, we conducted two studies. In a cross-sectional group study, mindfulness skills of group members were linked to creative idea generation in groups in an exploratory fashion. This study shows that specific mindfulness skills differentially predicted the quality but not the quantity of creative ideation.
Of the four mindfulness skills, only Act with awareness positively predicted the originality of ideas, with the effect size being moderate. In a second, experimental group study, we followed up on this finding to provide confirmatory evidence for the causal role of Act with awareness in predicting group creative idea generation. Corroborating Study 1’s findings, a brief meditation session that focused on the act with awareness facet of mindfulness led to higher originality and a greater number of creative ideas as compared to a control condition, with the effect size being moderate to large and the number and usefulness of ideas being unaffected. Finally, we examined several group processes as mediators. Although self-reported cooperation, constructive discussion, cohesion, and fear of evaluation in groups did not play a mediating role in the link between act with awareness and group creative idea generation, we did identify that this link was mediated by deep exploration. Groups that engaged in a brief act with awareness meditation session explored a limited number of categories more deeply, and were more creative as a consequence. Implications, study limitations and avenues for future research are addressed in the remainder of this Discussion.

**Mindfulness in individual and group-level creativity**

Mindfulness is a multifaceted construct (Van Dam et al., 2018), comprised of different components, including the ability to observe and attend to various stimuli (observation skills) and the ability to focus attention with full awareness (act with awareness skills; Baer et al., 2006; Grossman, 2008). At the individual level, only observation skills positively predict creativity (Baas et al., 2014; Colzato, Ozturk, & Hommel, 2012; Lebuda et al., 2016). Although groups whose members are more creative as individuals are often more creative as well (Litchfield et al., 2015; Pirola-Merlo & Mann, 2004; Somech & Drach-Zahavy, 2013), we did not find evidence that observation skills predicted group-level creative idea generation. This fits the notion that individual-level creativity does not always translate to the group level because group creativity is heavily affected by group processes (Nijstad & Stroebe, 2006; Sawyer, 2011). Indeed, supporting earlier findings (e.g., Hülsheger et al., 2009; Nijstad & Stroebe, 2006), stronger self-reported group cohesion and deeper exploration were positively associated with creative idea generation. Importantly however, it was the deep exploration of a limited number of conceptual categories and problem perspectives, that explained why another mindfulness facet – act with awareness – rather than observation skills predicted group-level creative idea generation. Act with awareness refers to a mindfulness skill that supports people’s focused and sustained attention. In the context of creative idea generation, group members with stronger act with awareness skills seem to pay more attention to the idea generation task and the ideas shared by the other group members. By elaborating on, and integrating these ideas they are able to reach higher creativity levels (cf. Dugosh et al., 2000; Hargadon & Bechky, 2006; Kohn et al., 2011). Moreover, given the mediating role of deep exploration, our findings suggest that act with awareness allowed groups to benefit from focused generation of ideas within restricted conceptual domains. By being restricted to a few conceptual categories and being more uncommon ones, which would explain their higher creativity (De Dreu et al., 2008; Nijstad & Stroebe, 2006; Rietzschel et al., 2007).

Together with earlier findings on the link between mindfulness skills and creativity at the individual level (Baas et al., 2014; Colzato et al., 2012; Lebuda et al., 2016), the current findings show the importance of (a) distinguishing between
different mindfulness skills and meditations differentially targeting these skills and (b) distinguishing between mindfulness effects at the individual and group level.

**Practical implications**

Mindfulness can be momentarily enhanced through the practice of brief meditation (Baer et al., 2006; Carmody & Baer, 2008; Davidson & Dahl, 2018; Kabat-Zinn, 1994) and organizations increasingly encourage and offer mindfulness meditation routines to foster employee well-being and performance (Lomas et al., 2017). The current results indicate that a brief mindfulness meditation session can also be used as an effective tool to enhance organizational creativity. When it comes to picking particular mindfulness meditations to raise creativity, people should consider whether the creativity of individuals or groups is concerned. Open monitoring meditation, in which people monitor bodily sensations, feelings, and thoughts as they arise in a non-evaluative way (Lutz et al., 2008), targets observation skills and is especially beneficial for individual creativity (Baas et al., 2014; Colzato et al., 2012; Lebuda et al., 2016). Focused attention meditations, in which people direct and sustain their attention on a selected object and closely monitor mind wandering and distracting thoughts, feelings, and sensations (Lutz et al., 2008), targets act with awareness skills and may be ill-suited for enhancing individual level creativity. In fact, at the individual level some degree of self-directed mind wandering may foster creativity by activating new pathways and perspectives (Agnoli, Vanucci, Pelagatti, & Corazza, 2018; Baird et al., 2012; Gable, Hopper, & Schooler, 2019; Zedelius & Schooler, 2015).

The current findings, however, do show that focused attention meditations may be suitable to enhance group creativity through deep exploration. By focusing attention on each other’s ideas, focused attention meditation is associated with a more extensive exploration of a few conceptual domains and a greater likelihood to move past more conventional ideas within these domains. At the same time, this may increase the risk that groups become fixated on certain task approaches and an inability to switch perspectives. Thus, real-life creative achievements in organizations probably require a balance between focused attention to stimulate deep exploration and distractibility to trigger new pathways and perspectives.

It may also be important to embed the focused attention meditation in a group context. Whereas traditional focused attention meditations typically direct attention inward (Kok & Singer, 2017), for a group task it is important that group members focus their attention outward as well to pay attention to the task and each other’s ideas and suggestions. The meditation used in the current study had group members focus their attention outward, on what other people said. This is an activity that effectively improved group-level creative idea generation and that people can easily apply and practice in daily life (cf. Davidson & Dahl, 2018). Whether traditional focused attention meditations (e.g., those focused on breathing, a raisin in one’s hand) also cause more group creativity remains an empirical question. Finally, we should note that mindfulness meditation might just be one practical tool for enhancing focus and deep exploration during idea generation in groups, but there are others available (see e.g., Dennis et al., 1996; Kohn et al., 2011).

**Limitations and avenues for future research**

We only presented one study in which different mindfulness skills were associated with group-level creative idea generation (Study 1). Moreover, this study was cross-sectional in nature and relied on questionnaires to assess mindfulness skills. This prevents inferences about the causal role of different mindfulness skills in predicting group-level creative idea generation and it has been questioned whether people can accurately reflect and report on their mindfulness skills (Van Dam et al., 2018). Thus, to establish the differential link between mindfulness skills and group creativity, replication studies are required, preferably using experimental designs. In designing experimental studies, it may be important to embed traditional meditations in a group context. In addition, to uncover long term effects, studies using mindfulness training programmes of longer duration are needed (Van Dam et al., 2018).

Effects of other “more social” meditations, such as Loving kindness meditations, may also be considered. Loving kindness meditations do not target act with awareness or observation skills, but guide meditators to adopt a tender and kind attitude towards others (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). If loving kindness meditation would be associated with enhanced group creativity, it would therefore be less likely the result of deep exploration but more of innovative group climate factors, including strengthened cohesion and perspective taking (cf. Hoever et al., 2012; Hülsheger et al., 2009).

In the current studies, we used ad hoc groups mainly consisting of students. Whether the effects will generalize to existing teams at organizations should be addressed in future studies. Moreover, the current studies focused on creative idea generation. This is but one crucial stage in creative problem solving in which groups also have to define the problem to solve and, following idea generation, have to evaluate, select and implement an idea or product (Cheng et al., 2018; Perry-Smith & Mannucci, 2017; Reiter-Palmon & Murugavel, 2018). Future studies may establish the role of mindfulness in each of these stages of creative problem solving. For instance, because the implementation of an idea requires coordinated efforts of people (Perry-Smith & Mannucci, 2017), it may very well be that Act with awareness plays an equally important role in the implementation stage as in the idea generation stage.

**Conclusion**

Mindfulness plays a role in creativity. Importantly, the precise link between mindfulness skills and creative idea generation depends both on the particular mindfulness skill involved and whether creative thinking happens at the individual or group level. Previous work already showed that where individual level creativity is concerned, the ability to observe and attend to various stimuli is the most powerful predictor. The current set of studies shows that, at the group level, the ability to focus attention with full awareness is more important. When thinking about creative ideas in a group, it pays to pay attention.

**Note**

1. To provide a second validation of the effectiveness of our voice mirror meditation, we compared this meditation to a guided loving kindness meditation (Fredrickson et al., 2008). As part of a student’s research project, an independent sample of 100 participants (Mage =
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References


Appendix 1. Transcript of the Act with awareness meditation (Study 2)

Author note

Studies were conducted at a Dutch university and therefore study materials were in Dutch. Below, we present the transcript of the Act with awareness meditation (Study 2). Materials are first presented in Dutch, followed by a translation of the materials in English. If researchers wish to replicate our studies in another language than Dutch, we recommend running pre-tests first to validate the translated materials.

Meditation transcript in Dutch

Welkom.

In deze opening leer je hoe je je aandacht voor anderen kunt ontwikkelen door je aandacht op andermans stem te richten. Je krijgt ook aanwijzingen over hoe je met afleidingen kunt omgaan. Na deze oefening zal je je meer gefocust en rustiger voelen, met meer aandacht in het hier en nu, zowel voor jezelf als voor anderen.


Concentratie is je vermogen om te kiezen waar je je aandacht op richt of wat je juist negeert, en om je aandacht vast te houden waar je wil. Door steeds te focussen op mijn stem en de woorden die ik zeg in je hoofd te herhalen, kun je je concentratie verhogen. Als je merkt dat je afwaaalt, ga steeds terug naar mijn stem en begin de woorden die ik zeg weer opnieuw te herhalen, als een echo in je hoofd.


Ook als je het lukt om je woorden heel goed in je gedachten te herhalen, zal je vroeg of laat je focus verliezen. Nogmaals, dit is niet erg. Het belangrijkste is om jezelf dan niet te veroordelen of te bekritiseren. Alles wat je focus weghaalt is een afleiding. Dit kunnen je zintuigen, je gedachten of je emoties zijn. Je zult geluiken horen en sensaties in je lichaam voelen, en merken dat je nadenkt. Behandel ze allemaal op dezelfde manier; gewoon opmerken wat zich voordoet, laat het dan los, en breng je aandacht terug naar mijn stem. Begin de woorden die ik zeg weer opnieuw te herhalen, als een echo in je hoofd.

Deze focus kan je helpen om met je aandacht in het hier en nu te komen. Voor het bewust ervaren van wat je nu, op dit moment, voelt, ervaart en denkt. En ook voor bewuste aandacht voor anderen. Wat ze zeggen. Wat ze doen. Wat hun houding is. Om beter te zien wat ze echt bedoelen en wat ze je echt proberen te vertellen. Om in het moment met anderen te zijn, met aandacht voor elkaar.

Over enkele ogenblikken eenigebeelden we deze oefening. Voordat we dat doen, hoe je ogen nog iets langer gesloten, en probeer mijn woorden nog steeds in gedachten te herhalen.


Doen nu langzaam je ogen weer open. Merk op hoe je je voelt in vergelijking met toen je begon. Probeer dezelfde kwaliteit van bewustzijn vast te houden, ook als je ogen open zijn. En waardeer je inspanning.

Instruction to groups on computer screen <1>

Jullie gaan zo meteen als groep aan de slag om oplossingen te verzinnen. Voordat jullie dat gaan doen, vragen we jullie eerst nog even stil te staan bij de geduldsoefening die je net hebt gedaan.

Gerichte aandacht voor elkaar kan helpen om als groep beter en prettiger te functioneren. Daarom willen we zo een van jullie vragen om een tekst hardop voor te lezen. Aan de anderen willen we vragen om dan, met je ogen dicht, de tekst woord voor woord in gedachten te herhalen, als een echo in je hoofd.

De tekst volgt op de volgende pagina. Ieder van jullie leest een stuk tekst voor, terwijl de anderen met ogen dicht, de tekst woord voor woord in gedachten herhalen. Er wordt duidelijk aangegeven wiens beurt het is om de tekst voor te lezen. Laat als lezer voldoende pauzes vallen om de anderen in staat te stellen om de woorden in gedachten te herhalen. Deze pauzes worden ook aangegeven.

We willen nu het teamlid dat uiterst links zit vragen om de eerste tekst voor te lezen. De anderen kunnen hun ogen sluiten.

Instruction to groups on computer screen <2>

In dit onderzoek zijn we benieuwd … hoe individuen in groepen ideeën verzinnen … Daarom willen we jullie in een groep … laten nadenken over mogelijke manieren … om de gezondheid van mensen te verbeteren … Hier krijgen jullie tien minuten voor … ik vraag nu aan degene rechts naast mij … om de ogen te openen … en de volgende tekst voor te lezen … Ik sluit nu zelf mijn ogen.

Om jullie zoveel mogelijk goede ideeën te laten bedenken … is gekozen voor een specifieke procedure … Brainstormen … Het is bekend dat deze procedure effectief is … om creatieve ideeën te produceren … Brainstormen is dus zeer geschikt voor dit onderzoek … ik vraag nu aan degene rechts naast mij … om de ogen te openen … en de volgende tekst voor te lezen … ik sluit nu zelf mijn ogen.

Bij brainstormen zijn de volgende spelregels belangrijk … Bedenk zoveel mogelijk ideeën … Probeer zo origineel mogelijk te zijn … Stel kritiek op elkaars ideeën uit … En probeer elkaars ideeën te combineren en te verbeteren … ik vraag nu iedereen om de ogen weer te openen … en je inspanning te waarderen.

English translation

Welcome.

In this exercise, you will learn how to develop your ability to be attentive to others by focusing your attention on someone else’s voice. You will also get instructions on how to deal with distractions. After this exercise, you will feel more focused and calm, with clearer attention in the here and now, both for yourself and for others.

Let’s start. You are in a quiet place. A place where you will not be disturbed and where you can close your eyes without worrying. Sit in a comfortable position, with a straight back. Put your hands on your knees, or in your lap, with your palms upwards. And then close your eyes and just breathe, in a natural way.

Now focus your attention on my voice. I want you to ask, from now on, to repeat everything I say, word for word. Not out loud, just in your head. Like a kind of echo in your head. Try it. Word for word, like an echo, in your head.

At first, this may feel a bit weird. And maybe you feel that your mind is wandering. That is completely normal. Do not worry if your mind wanders. Do not criticize yourself if your mind wanders. Just notice that your mind has wandered and then bring your attention back again, and focus on my voice. In a gentle way, without judging yourself. And just repeat what I say, word for word, in your head.

Concentration refers to your ability to choose what you focus on or what you decide to deliberately ignore, and to keep your attention where you want it to be. By constantly focusing on my voice and repeating each word I say in your head, you increase your concentration. If you find that your mind starts to wander, always go back to my voice and start over by repeating the words I say, like an echo in your mind.

Continue breathing in a calm, natural way. Be sure to sit comfortably. You are relaxed, but attentive.

Even if you manage to repeat my words in your head very well, you will lose your focus sooner or later. Again, this is okay. The most important thing is not to condemn or criticize yourself. Everything that takes away your focus is a distraction. Your senses may distract you, or your thoughts, or your emotions. You will hear sounds and feel sensations in your body, and notice that you are thinking. Treat them all the same way; just notice that
you’re distracted, then let go, and bring your attention back to my voice. Start repeating the words I say again, like an echo in your mind.

This focus can help you to get your attention in the here and now. To consciously experience what you feel and think right now. And also to develop conscious attention to others. What they say. What they do. What they think. To better see what they really mean and what they really are trying to tell you. To be in the moment with others, paying attention to each other.

In a few moments we will finish this exercise. Before you do so, keep your eyes closed for a little longer, and try to repeat my words in your head. This exercise helps you to get your attention in the here and now. With better attention to yourself and to others. Try this repeating exercise with others as well and perhaps later at home. Especially if you find yourself distracted, or still busy with the past, or with all things that need to be done. Then just try to follow the voice of someone else and repeat what is said as an echo in your head. Then you will get back to the here and now again, with clear and conscious attention.

Now slowly open your eyes. Notice how you feel as compared to when you started. Try to hold the same quality of consciousness, even with your eyes open. And appreciate your effort.

Following the meditation, group members individually answer a short questionnaire and then get together as a group in a separate room. Here they receive instructions on a computer screen.

\textbf{<Screen 1>}

You are going to work as a group to generate solutions. Before you do that, we first ask you to consider the mindfulness exercise that you just did. Focusing your attention on each other can help to function better as a group.

Therefore, we want to ask one of you to read a text aloud. At the same time, we ask the others to close their eyes, and repeat each word that is being said, word for word, as an echo in your head.

The text follows on the next page. Each of you reads a piece of text, while the others close their eyes and repeat the words, word for word. It is clearly stated whose turn it is to read the text. As a reader, leave enough pauses to enable the others to repeat the words in their heads. To assist you, these pauses are indicated in the text.

We now request the team member to the extreme left to read the first text. The others can close their eyes.

\textbf{<Screen 2>}

In this research we want to know. . . . how individuals come up with ideas in groups. . . . That’s why we want you as a group . . . . . . to think about possible ways . . . . to improve people’s health . . . . You get ten minutes for this. . . . I now ask the person right next to me . . . . to open the eyes . . . . and read the next text . . . . I close my eyes myself.

In order to think of as many ideas as possible . . . . a specific procedure has been chosen . . . . Brainstorming . . .. . It is known that this procedure is effective . . . . to come up with creative ideas . . . . Brainstorming is therefore very suitable for this research . . . . I now ask the person right next to me . . . . to open the eyes . . . . and read the next text . . . . I close my eyes myself.

In brainstorming the following rules are important. . . . Think of as many ideas as possible . . . . Try to be as original as possible . . . . Refrain from criticizing each other’s ideas . . . . And try to combine and improve each other’s ideas . . . . I now ask everyone to open their eyes . . . . and appreciate your effort.