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Metaphor can influence meta-thinking and affective levels in guided meditation

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Abstract
Inducing a state of meditation through conceptual metaphors used in the language of guided meditation instructions can have distinctive effects on well-being and meta-thinking. We hypothesized that the use of novel deliberate metaphor in the instructions of a guided meditation in which participants are invited to pay attention to thoughts would help novice meditators increase their meta-thinking activity and change their affective state during a guided meditation session. We conducted a study to test this hypothesis, using four experimental conditions (novel deliberate metaphor, conventional deliberate metaphor, non-metaphorical, silence) in micromeditation sessions with 324 university students. Results validate the instructions exploiting novel deliberate metaphor to activate meta-thinking activity and improve the affective state. These findings enhance our understanding of the short-term effects of guided meditation instructions, particularly regarding how the use of conceptual metaphor in the language of instructions can influence the meta-cognitive and affective levels of meditators, and open new directions both in applied metaphor studies and meditation research.

Keywords Meditation · Instructions · Metaphor · Attention to thought · Meta-thinking · Affect

Introduction

Contemplative practices involve the learning and training of meditation, for which the language of instruction mediates the development of desirable attitudes and skills. Metaphors are used widely in meditation training and pedagogical talk. In instructional settings, for example, and particularly in early training stages in which novice meditators have little or no experience, the instructors need to explain the basic procedures leading to effective practice – while also fostering appropriate attitudes towards present-moment experience – in simple, clear, and vivid ways. In this endeavor, it is common for them to draw on different kinds of metaphors which are often used with the intention of promoting understanding and facilitating adaptation to practice (Silvestre-López, 2016; Silvestre-López & Navarro, 2017). For instance, when dealing with the awareness of inner events or the "objects" of consciousness, it is frequent to talk of the process of "observation" of thought (as if thoughts could literally be observed) and the nature and role of "the observer", where the meditator is often pictured as the "observer" of their own experience and "the observed" as something ontologically different from them. This can be described through metaphorical language evoking basic sensory perception imagery and the objectification of thought (e.g. "you just need to remain *watchful* of your experience right now, and if you catch yourself thinking, kindly become aware of this, *observing* and *letting go* of this thought"), but it is also common to find metaphors grounded in more vivid and elaborated imagery emphasizing the disengagement of the observer and the observed, for which the "sky", the "ocean", or even the "movie theater" metaphors (picturing thoughts, feelings, sensations or emotions as clouds drifting the sky, as waves moving in the ocean, or as images flowing on a screen) are well-known examples, as in the following excerpt from a guided meditation by Williams and Penman (2011, track 5, min. 3.38-4.40): "There's no need to try to control your thoughts in any way, letting them come and go on their own [...]. So, when thoughts arise in the mind,

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seeing them coming and going like clouds passing across the sky: your mind like the sky, your thoughts like the clouds, sometimes large, sometimes small, sometimes dark, sometimes light. But the sky remains. Whatever thoughts there are, seeing if it's possible to see them as events that are arising in the mind, staying around a while, and then dispersing".

Beyond pedagogical talk, metaphors are also common in the language of guided meditation instructions with cases ranging from the simple objectification of inner events (e.g., treating thoughts or feelings as things or entities we can "observe") to more elaborated cases of guided meditations picturing thoughts as bubbles (e.g., Kabat-Zinn, 2012), or full guided meditations grounded in stronger imagery like the "lake" and "mountain" meditations (Kabat-Zinn, 2005) used in the Mindfulness-Based Stress Reduction (MBSR) program. In this context, language is the means of transmission of what meditation is, and metaphors can be regarded as central nodes of the description of meditation practice, and an important share of guided meditation instructions. The study presented here addresses the potential effects of metaphorical language use in guided meditation instructions.

The adequate use of language (including the appropriate choice of metaphors) in meditation instruction contexts can help to generate more vivid first-person experiences through greater imagery (Cf. Gibbs, 2014; Gibbs & Colston, 2012; Gibbs et al., 2002), which might help to optimize the execution of common practices in instructional settings, as for example guided meditation exercises proposed to novice meditators. Despite their importance in facilitating the observation of inner events, little attention has been paid to the relationship between the mechanisms behind the linguistic instructions provided in guided meditations and their effects on participants.

Studying the language that we use offers a way to access the conceptualizations with which we model experience, and subjective and abstract experiences are often conceptualized and "talked about" through metaphor (Cf. Gibbs, 2008; Lakoff, 1993, 2008, 2014; Semino, 2008). Linguistic metaphors are commonly used when addressing abstract concepts in discourse. Thus, when talking about thoughts, emotions, or our inner world, the mere use of language (linguistic level) often triggers a range of underlying conceptual metaphors (conceptual level) (Lakoff & Johnson, 2003). For example, expressions like "I can't get this thought out of my mind" or "Just let your thoughts pass by, don't go with them" are grounded in conventional conceptual metaphors like THOUGHTS ARE OBJECTS and THE MIND IS A CONTAINER FOR IDEAS[1]; it is through conceptual metaphors that we are able to produce and understand expressions like these without even realizing or thinking about their metaphorical nature (Barnden, 1997; Lakoff, 1993).

We ordinarily speak of "watching" or "observing" thought in meditation discourse to refer to the experience of paying attention to the nature of thought while meditating. This metaphor (i.e., "observing" mental objects) is reproduced in meditation contexts because, on a daily basis (in everyday language), we also activate metaphors like the mentioned above to talk about the mental apprehension of inner events. This study tries to explore to what extent the recruitment of everyday external perception models (such as vision or observation of mental contents) by the use of metaphor in guided meditation instructions can help the mental apprehension of these phenomena in inexperienced meditators, and thus facilitate the initial practice of attending to thought in guided meditations in which novice meditators are invited to pay attention to thoughts.

Conceptual metaphors are subserved by cognitive mechanisms through which relatively abstract or complex areas of experience can be modeled, experienced, and understood in terms of more concrete, meaningful or familiar ones, thereby helping to construct particular representations of the world (Lakoff, 1993, 2014). Deliberate Metaphor Theory (Steen, 2015, 2017, 2018) suggests that the use of deliberate metaphor in discourse allows the concept or topic under discussion (target domain) to be considered from the perspective of an alien area of experience (source domain), which may favor the understanding of a message. Conceptual metaphors seem particularly relevant in meditation instruction not only because metaphorical language is the natural way we have to talk about internal events (Cf. Kövecses, 2000; Lakoff & Johnson, 2003), but also because the intentional use of metaphor can facilitate communication about them (and how we relate to them). In pedagogical and training contexts, for example, metaphor can be particularly useful in helping to set bridges between the realms of shared (communicated) knowledge and lived (first-person) experience, not only at the level of understanding but also at the level of attitudes, feelings and affect (Johnson-Carissimo, 2020; Lakoff, 1996; Modell, 2009; Tay, 2013). In this sense, using appropriate deliberate metaphors in guided meditation instructions could enhance the meditative experience by tapping more efficiently into the novice meditator's personal phenomenological world (Silvestre-López, 2016, 2019), hence providing a more efficient guide in their own handling of the internal events addressed by the meditation (e.g., self-regulation of attention, adopting a particular attitude towards present moment experience, etc.).

In the area of metaphor reception studies, perceived aptness and novelty have been addressed as important aspects to gauge the effects of metaphor use on receivers. Perceived aptness refers to how "apt" a metaphor is perceived to be by receivers; in terms of target-source domain interaction, aptness refers to whether a specific source domain is well chosen

[1] Following the conventions in conceptual metaphor literature, conceptual metaphors are represented in small capitals with the formula TARGET DOMAIN IS SOURCE DOMAIN.

or insightful for the target domain (Thibodeau et al., 2017; Thibodeau & Durgin, 2011). Aptness is a key feature in metaphorical language reception, and a metaphor perceived as apt is more likely to be accepted by receivers (Roncero et al., 2016). Perceived novelty refers to how conventional or new (novel) a metaphor is perceived to be (Boeynaems et al., 2017; Steen, 2015; Thibodeau et al., 2017). Novel metaphors have been suggested to have a potential to influence receivers' affective responses to the messages they are exposed to (Boeynaems et al., 2017). Novel metaphors introduce a non-conventionalized, creative, or unexpected source domain perspective to describe the topic, which can result in more vivid or greater imagery upon which to consider the target domain; thus, using novel metaphors in the instructions of a guided meditation exercise prompting the meditator to consider thoughts (target domain) as if they were soap bubbles (source domain of the metaphor) may facilitate not only the observation of thought but also, through the particular kind of imagery aroused by the metaphor, the non-identification of thinker and thought. In other words, a guided meditation about the observation of thoughts grounded in novel metaphorical language like the described above might have different effects than a more conventional observing-thoughts meditation in which participants are invited to observe their thoughts as entities that pass by, but with no explicit or creative image upon which thoughts can be compared.

In the field of clinical psychology, the importance of figurative language and the creative use of metaphor has been emphasized as a resource to attain therapeutic goals (Varra et al., 2009; Eisendrath et al., 2011; Hayes et al., 2012; Segal et al., 2013; Stoddard & Afari, 2014; see also Tay, 2020). However, despite the importance of metaphor in guided meditation instructions and clinical contexts, the potential differential effects of the use of particular types of metaphor in the meditative experience have not been explored independently in previous research. Similarly, whereas several studies have been conducted on the effects of conceptual metaphor in reasoning, judgement, and persuasion (Cf. Brugman et al., 2019; Lakoff, 2014; Sopory & Dillard, 2002; Thibodeau et al., 2017; Van Stee, 2018), to the best of our knowledge, the effects of the use of metaphor in meditation instructional contexts have not been studied. We propose that analyzing the role of metaphor in guided meditation instructions can help to understand the relationship between the language of instructions and the mental apprehension of inner events like thoughts in guided meditations about attention to thought. Since metaphor can provide for more concrete thinking, it may also be helpful in inducing meta-thinking states more easily than other linguistic resources.

Meditation practices involving the observation of thought are within the range of exercises that can help to cultivate mindfulness (Kok & Singer, 2017). Mindfulness promotes general awareness of first-person experience without attachment to cognitive or emotional events (Isbel & Mahar, 2015). Besides connoting deliberate awareness and non-discursive, non-analytic observation of ongoing experience (Kabat-Zinn, 2003), mindfulness training implies the development of the ability to be aware of inner and outer stimuli and events as phenomena, "rather than as the objects of a conceptually constructed world" (Olendzki, 2005, p. 253). Mindfulness training has the potential to develop meta-thinking activity, and therefore to generate a distance from discursive thinking. There are many ways to develop that potential, most of which entail the use of language that is either self-administered or guided by another person. The mindful mode of processing involves meta-thinking, a skill concerned with how one perceives and relates to the contents of consciousness, the skill to discriminate between attention and the objects of attention in a phenomenological way (Karremans & Papies, 2017). It has been described as a mental process related to awareness which entails the bare registering of what is happening, rather than engaging with the semantic content and cognitive representation of the observed (Shear & Jevning, 1999), and whose effect is "the introduction of a mental gap between attention and its objects, including self-relevant contents of consciousness" (Brown et al., 2007, p.216). In this sense, the self-regulation of this activity can be fostered by instruction.

The objective of this study was to verify whether deliberate-metaphor-based instruction can induce higher meta-thinking activity and a change in affective state after a single guided meditation session. When the meditation process is purposefully guided by an instructor, the result regarding the subjective experience of self-observation of thought and affective state may vary depending on the kind of language used in the instructions. We believe that the use of deliberate metaphors varying in terms of novelty (i.e., novel deliberate and conventional deliberate metaphors) in guided meditation instructions may have differential effects on participants. Concretely, we hypothesize that novel deliberate metaphor will help novice practitioners increase their meta-thinking activity and change their affective state during a guided meditation exercise in which participants are invited to pay attention to thoughts.

Method

Participants

The sample is made of 324 university students, who were randomly assigned to one of the four different groups as detailed in Table 1: novel deliberate metaphor group, conventional deliberate metaphor group, non-metaphor group, and silence group. The distribution of the sample has a bias as regards sex: 22.8% ($N = 76$) are men, while 77.2% ($N = 257$)

are women. The average age is 24.32 years ($SD = 8.04$), ranging between 18 and 53 years. Nonetheless, there are no differences between groups in terms of either sex ($\chi^2 = 3.181$, $df = 3$, $p = .365$) or age ($F = 0.801$, $df = 3$, $p = .494$). Altogether, 123 of the participants have some experience meditating with an average total of $M = 554.46$ ($SD = 2181.71$) minutes of meditation throughout their life.

As far as we know, there are no similar studies testing the use of metaphor in guided meditation instructions. We pre-defined a priori statistical significance of alpha = 0.01, statistical power of 0.8, and a theoretical statistical power of 0.95 for an ANOVA with main effects, fixed effects, and interactions. The estimated total sample size was 148 using G-Power software. However, given the possibility of recruiting a larger sample, we extended the recruitment up to 324 subjects.

All participants were asked to inform about any previous or current psychological or medical condition or treatment. All participants signed a written informed consent. This research was approved by the Institutional Review Board and conducted with an approved protocol and informed consent process. Confidentiality of personally identifiable information has been maintained to safeguard privacy.

Materials

A unifactorial design was used to evaluate the effect of the type of metaphoric instruction in guided meditation, with four experimental conditions consisting of four versions of a guided meditation in which participants are invited to pay attention to thoughts: 1.- "Novel Deliberate (NDM)", 2.- "Conventional Deliberate (CDM)", 3.- "Non-metaphorical (NM)", and 4.- "Silence (S)". Each condition consists of one audio lasting 11 min in which a guided meditation is performed. The structure of the audios has two parts. In the first part, a brief body scan instruction (3 min) is performed, which is the same in all four conditions. The second part lasts 8 min and includes the contents of each experimental condition. In the first condition (NDM), participants are invited to consider and observe thoughts as if they were observing soap bubbles (THOUGHTS ARE SOAP BUBBLES) ($N = 77$). In the second condition (CDM), participants are guided in the observation of thought through conventional metaphorical language exploiting the THOUGHTS ARE OBJECTS metaphor ($N = 89$). In the third condition (NM) participants are guided to pay attention to thought without the use of metaphors related to the observation of thought ($N = 84$). Finally, in the fourth condition (S), participants are prompted to practice in silence without guidance ($N = 74$). Written transcriptions are provided as Electronic Supplementary Material (ESM1).

Procedure

The conditions involving deliberate metaphorical language were designed considering the factors suggested to modulate influential metaphors by Thibodeau et al. (2017) and the suggestions by Boeynaems et al. (2017) concerning metaphor extendedness and repetition as means to yield potentially effective metaphors. The source domains developed in each condition were also chosen in alignment with the particular type of meditation tackled in this study, that is, a guided meditation where participants are expected to pay attention to their experience with a particular focus on thoughts. The idea of "observing thoughts" in an observing-thoughts meditation (Singer & Engert, 2019) is grounded in the conception that thoughts can be "observed", as if perceived with the "mind's eye". This conception draws on elementary sensory (visual) perception conceptual metaphors like MENTAL INVESTIGATION IS VISUAL PERCEPTION, THOUGHTS ARE OBJECTS, or THE MIND IS A CONTAINER FOR IDEAS (Barnden, 1997; Lakoff et al., 1991), through which we can represent mental contents as though they were physical objects moving through the space of our mind (see also Briñol et al. 2013). These conceptual metaphors license expressions like "She got a brilliant idea" or "That thought never crossed my mind" and are conventional ways of talking about thought in everyday language. In the context of meditation, the whole scenario (Musolff, 2006) has also become a conventionalized way of representing thought in contemplative practices. In observing-thoughts guided meditation exercises, the meditator is often represented as the observer of their own experience (THE MEDITATOR IS AN OBSERVER, MEDITATING IS OBSERVING) so that the experienced phenomena can be framed as things or objects to be observed without reacting or becoming entangled in them (EXPERIENCED PHENOMENA IN MEDITATION ARE OBJECTS THAT CAN BE OBSERVED/THAT THE MEDITATOR CAN INTERACT WITH). Metaphor thus helps to construe the *observer's model*, in which thoughts are represented as entities that, despite being part of the meditator, are *different from* them. By creating such a *distance* (the observer's perspective), the distinction between thinker and thought (meditator is not thought) becomes emphasized.

Focused attention practices like the observation of thought can help novice meditators to gain the perspective of a non-reactive observer of their experience (Dahl et al., 2015), and the kind of visual imagery evoked by metaphorical language has been suggested as one potentially relevant factor in deliberate metaphor processing (Reijnierse et al., 2018). The question therefore arises as to what extent modeling thought metaphorically (hence as the target domain of a conceptual metaphor) in a novel way as a relatively well-defined kind of source domain object – for example, as soap bubbles floating by – in a meditation focusing on the observation of thought may have differential effects than the conventional version of

observing-thoughts meditations. By "conventional version", we are referring to meditations in which the participants are guided to pay attention to thoughts but no explicit external image (source domain) to which thoughts can be compared or reconsidered is brought to the fore.

Based on the previous considerations, we created two meditations exploiting the observer's model to guide two exercises focusing on the observation of thought. In the 8-min experimental condition, each meditation develops an equivalent version of the THOUGHTS ARE OBJECTS metaphor, with different degrees of source domain elaboration and explicitness. The meditation for the NDM condition develops the source domain through creative visual imagery that pictures thought as a well-defined concrete entity which is different from the meditator (that is, the novel metaphor THOUGHTS ARE SOAP BUBBLES). The meditation for the CDM condition develops the conventional metaphor THOUGHTS ARE OBJECTS and exploits conventional uses of metaphorical language.

Deliberate Metaphor Theory poses that the use of deliberate metaphors in a message invites the addressee to redirect their attention momentarily from the target domain to the source domain, and to use the latter as a referent for the interpretation of the message (Steen, 2018). In prototypical deliberate metaphors, this can be signaled in language with discourse elaborations like direct metaphor, extendedness, or repetition, among others (Cf. Reijnierse et al., 2018; Steen, 2015). In this study, the conceptual metaphor contents in the metaphorical condition texts (NDM and CDM guided meditation instructions) are developed in language as prototypical deliberate metaphors that differ in terms of novelty, but that are elaborated in the same way through direct (A IS B) metaphor repeated and extended over the text in both conditions.

To confirm the metaphorical nature of the language of the instructions, the Deliberate Metaphor Identification Procedure (DMIP) (Reijnierse et al., 2018) was applied for conditions NDM, CDM and NM. DMIP has proved to be a reliable method to identify potential cases of deliberate metaphor as used in discourse (Cohen's Kappa = .70/.73) (Reijnierse et al., 2018), and is the standard procedure used to identify deliberate metaphor uses in linguistic production analyses.

Standardization

Once the deliberateness of both metaphorical conditions had been linguistically evaluated with DMIP, a rating study was performed to evaluate how the metaphorical language of conditions NDM and CDM would be received in terms of novelty and aptness in the guided meditations. Gauging perceived aptness and perceived novelty in a standardization stage responds to our intention of guaranteeing that both productions would be relatively likely to reach receivers during guided meditation, while keeping differences in terms of novelty. Eighty-nine participants (33 males; age range 16–61) were asked to rate the metaphors using a scale ranging from 1 (*Not at all*) to 7 (*Very much*), according to their perceived novelty and aptness. Both conditions were counterbalanced. The NM and S conditions were not tested, as they were created for the sake of controlling for unknown effects in the final experiment. The results indicate significant differences in the conditions evaluated both for Novelty ($M_{NDM} = 4.98$; $SD_{NDM} = 1.55$; $M_{CDM} = 4.21$; $SD_{CDM} = 1.65$; $t = 3.29$; $p < .001$) and for Aptness ($M_{NDM} = 5.29$; $SD_{NDM} = 1.36$; $M_{CDM} = 4.71$; $SD_{CDM} = 1.46$; $t = 2.92$; $p < .01$). Despite differences in novelty, both conditions were perceived as apt, which predicted that they would be received properly in the guided meditations. Both novelty and aptness were re-evaluated during the experiment, together with other parameters related to the reception of metaphors, described below.

Measures

The participants listened to the meditation instructions in a previously recorded audio. Before and after following the meditation instructions induced by the audio, they were asked to complete a battery of self-report questionnaires with different measurements (see description below). Specifically, before the meditation, the participants filled in the STAI-S and meditation experience questions. After the meditation, they completed the following: meditation check question, intensity of the meditation question, number of estimated thoughts question, difficulty of the meditation question, wellness with meditation question, description of thoughts reported questions, STAI-S, metaphor reception questions, EQ, FFMQ.

STAI

State anxiety was assessed using the State-Trait Anxiety Inventory (STAI-S; Spielberger et al., 1970), on a 5-point Likert-type scale ranging from 0 (not at all) to 4 (very much). We applied a short STAI-S form including four items which was validated to be used to facilitate state anxiety assessment (Buela-Casal et al., 2011). The STAI-S inventory was used both before and after the experimental condition ($M = 1.08$; $SD = .62$; $\alpha = .64$) and after it ($M = .75$; $SD = .59$; $\alpha = .62$). This test was the only one evaluated before and after the guided meditation. The rest of the measures were applied after the guided meditation.

Trait Mindfulness

The Five Facet Mindfulness Questionnaire – Short Form (FFMQ-SF; Bohlmeijer et al., 2011) was used to measure the general tendency to be mindful. This scale is composed of 24 items divided into five subscales or facets: Non-reactivity, Observing, Acting with Awareness, Describing, and Non-judging. In this study, only the Non-reactivity and Acting with

Awareness subscales were used. The Non-reactivity subscale includes five items that measure, according to Baer et al. (2008, p. 330), "the tendency to allow thoughts and feelings to come and go, without getting caught up in them" ($M = 2.85$; $SD = .81$; $\alpha = .83$). De Bruin et al. (2012, p. 189) refer to the Acting with awareness facet as "bringing full awareness and undivided attention to current activity or experiences"; it is measured with five items ($M = 2.57$; $SD = .89$; $\alpha = .84$). Each Likert-type subscale ranges from 1 (*Never or very rarely true*) to 5 (*Very often or always true*). Higher scores represent lower levels of mindfulness.

Decentering

This was assessed using the Experiences Questionnaire (EQ) (Fresco et al., 2007) on a 5-point Likert-type scale ranging from 1 (*Never*) to 5 (*All the time*). It is an 11-item self-report instrument that assesses the construct of decentering. Sample items include "I am better able to accept myself as I am" and "I can observe unpleasant feelings without being drawn into them". It assesses one's thoughts and feelings as temporary, objective events in the mind, as opposed to reflections of the self that are necessarily true. Higher scores indicate greater decentering ($M = 3.45$; $SD = .65$; $\alpha = .85$).

Metaphor Reception for each Instruction Condition

Three different aspects of the reception of metaphor were evaluated (novelty, aptness, and utility). Each of the aspects consists of a single item. These qualities are of interest to assess metaphorical conditions, but they were assessed in all conditions to allow for comparability. For each aspect, the same question was posed in all conditions. To make sure it was understood correctly and in the same way by all participants regardless of the condition they had been assigned to, the question was preceded by a statement addressing them to think of the kind of instruction used in the guided meditation, so that it would become the focus of the question: "In the meditation you have just done, the instruction invited you to pay attention to thoughts" … (i) … "as if they were objects that move around" (NDM); (ii) … "as if they were soap bubbles that move around" (NDM); (iii) … "in a particular way" (NM, S).

Novelty In order to measure perceived novelty ($M = 4.32$, $SD = 1.71$), participants were asked the following question "To what extent did this instruction seem new to you?", which they were asked to answer using a scale of 1 (*Not new at all*) to 7 (*Very new*).

Aptness In order to measure perceived aptness ($M = 5.47$, $SD = 1.22$), participants were asked to answer the question "To what extent did this instruction seem apt for this exercise?" with a scale of 1 (*Not apt at all*) to 7 *(Very apt*).

Utility In this study, utility ($M = 5.07$, $SD = 1.43$) refers to how useful the guided meditation was perceived to be as a whole as a means to keep their attention active during the meditation. For the evaluation of utility, the following question was used: "To what extent did you find this instruction useful to keep your attention actively focused on the practice?", their answers to be given using a scale with values from 1 (*Not useful*) to 7 (*Very useful*).

Meta-Thinking Activity

We evaluated the participants' experience to observe the thoughts that appeared in their mind during meditation. To do so, we used two different forms of evaluation that were presented to participants right after the meditation practice.

Estimated Number of Thoughts Participants were asked about the "Estimated number of thoughts" ($M = 8.25$; $SD = 10.07$) they had had during the guided meditation practice through the following question: "Now, estimate how many thoughts you think you have had: _____ thoughts". To have a maximum that was equivalent in all conditions, we limited these variables to a total number of 100 thoughts, so that any responses higher than that number were recoded with a value of 100. People with calm minds are less reactive to thoughts, even when they have many of them in their minds (Tang et al., 2015). Therefore, we expected participants with a quieter mind to feel less involved in thoughts, estimating fewer of them.

Description of Thoughts Reported Participants were asked to describe the thoughts they had had, up to a total of 5 thoughts. Each participant was free to choose the thoughts they wanted to describe ($M = 3.87$, $SD = 1.42$).

Characteristics of the Experience

The following aspects of the experience of meditation were evaluated after the experimental conditions.

Wellness with Meditation First of all, participants were asked about their perception of "Wellness with meditation" through the question "In general, I have felt..." ($M = 2.78$, $SD = 1.20$), responding on a scale of 1 (*Very well*) to 7 (*Very bad*).

Difficulty with Carrying out the Meditation The "Difficulty with carrying out the meditation" was evaluated ($M = 4.31$, $SD = 1.49$) by asking participants to answer the question "Think about the meditation you have just done. To what

extent has it been easy or difficult for you to carry out this practice?" with a scale of 1 (*Very difficult*) to 7 (*Very easy*).

Content Understanding

In order to make sure that all participants in the study followed the meditation and paid attention to the guidelines, at the end of the practice they were asked to think about the topic of the audio and choose the option that best matched the meditation they had just done: 1.- "The meditation you have just done prompts you to pay attention to and observe thoughts as if they were soap bubbles", 2.- "The meditation you have just done prompts you to pay attention to and observe thoughts as if they were things or objects that come and go through our mind", 3.- "The meditation you have just done gives you some instructions and then leaves you a few minutes 'alone' to practice on your own", and 4.- "The meditation you have just done simply prompts you to pay attention to thought during the meditation". This was immediately followed by the questions for each aspect of metaphor reception. Participants who did not answer correctly were excluded from the sample.

Results

The ANOVA indicates that there are no differences in age between groups, nor are there differences between the metaphorical conditions as a function of the minutes spent on meditation in the person's life. The MANOVA that analyses whether there is an interaction between the four experimental conditions and the meditative experience does not offer significant results (*Wilks* $\lambda = 1.068$; $df = 42$; $p = .358$; $\eta^2 = .048$). Thus, the results indicate that the meditative experience does not have a different response effect to the instructions. It seems reasonable that this should be the case because, in the cases in which the subjects have some experience, it is so low (just 500 min on average) that they can still be considered novice meditators (Cf. Sedlmeier et al., 2012).

The MANOVA that evaluates the effect of the metaphorical condition on the variables studied yields a significant model (Table 1) according to the Wilks' Lambda criterion ($F = 3.284$, $df = 33$, $p < .000$, $\omega^2 = .104$). The Levene test for equality of error variance is fulfilled in all variables except for "Estimated number of thoughts" ($p = .022$), "Description of thoughts reported" ($p < .000$) and "Aptness" ($p = .043$). Additionally, Box's M indicates that the variance matrices of the dependent variables are different for each group ($M = 364.884$, $p < .000$).

Regarding the language of instructions, the Tukey post hoc comparison (Table 2) indicates that the meditation that develops the soap-bubble metaphor (NDM) presents optimal metaphorical qualities. It is perceived as the most novel and insightful (apt) of the two metaphorical conditions as well as in relation to the other meditation instructions.

With regard to thought and state change, the results (Table 2) indicate that, after performing the exercise with the audios, the participants who received the NDM condition audio were aware of a greater number of thoughts, in terms of the number of thoughts that they reported, and that they estimated they had had. Both measures of the number of thoughts reflect awareness of the activity of thought, which appears as more significant in the condition of instruction with novel deliberate metaphor. The participants in the NDM condition have higher scores in the experience of non-identification with thoughts (decentering). They are also the group that reports a greater change in state anxiety, thus improving the affective state. Likewise, participants indicate greater distance from thinking. Being more distanced is consistent with the consciousness of

Table 1 MANOVA of the effects of the type of meditation instruction

	NDM (N=77)	CDM (*N*=89)	NM (*N*=84)	S (*N*=74)	ω^2
Aptness***	6.03(1.00)	5.27(1.24)	5.27(1.21)	5.35(1.22)	**.066**
Novelty***	5.40(1.34)	4.30(1.67)	3.88(1.72)	3.73(1.60)	**.140**
Utility	5.39(1.42)	4.92(1.42)	5.12(1.36)	4.85(1.48)	.021
EQ-Decentering*	3.67(0.58)	3.45(0.65)	3.39(0.73)	3.42(0.58)	**.028**
FFMQ- Acting with Awareness	2.73(0.98)	2.63(0.89)	2.50(0.81)	2.43(0.88)	.016
FFMQ-Non-reactivity	2.81(0.85)	2.76(0.80)	2.87(0.88)	3.00(0.86)	0.11
STAI Change T2-T1*	−.41(0.58)	−.27(0.53)	−.15(0.68)	−.22(0.49)	**.027**
Wellness with meditation (inverse)	2.74(1.20)	2.83(1.18)	2.79(1.17)	2.76(1.28)	.001
Number of estimated thoughts (ET)*	11.06(11.18)	8.39(10.52)	6.39(4.81)	7.24(12.06)	**.030**
Description of thoughts reported (RT) ***	4.34(1.08)	3.97(1.32)	3.52(1.56)	3.65(1.55)	**.048**
Difficulty of the meditation	4.49(1.50)	4.36(1.33)	4.24(1.49)	4.16(1.65)	.007
Intensity of the meditation*	6.18(1.46)	5.75(1.62)	5.49(1.62)	5.65(1.42)	**.025**

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

Table 2 Post-hoc Comparison between Conditions

Variables compared	Tukey p
Aptness	
NDM– CDM	**.000**
NDM - NM	**.000**
NDM– S	**.000**
Novelty	
NDM– CDM	**.000**
NDM - NM	**.000**
NDM– S	**.000**
EQ-Decentering	
NDM - NM	**.031**
STAI Change T2-T1	
NDM - NM	**.020**
Estimated number of thoughts	
NDM - NM	**.017**
Description of thoughts reported	
NDM - NM	**.001**
NDM– S	**.014**

thinking. In the same way, being more aware of the presence of thoughts but feeling more disengaged from them can favor improvements in affective well-being.

Discussion

This study addresses the role of metaphorical language in meta-thinking activity and in affective state in the context of guided meditation instructions. Metaphorical language is the most natural choice to signal internal events (Gibbs, 2008; Kövecses, 2000; Lakoff, 1993). Generally, instructors use language with the intention of changing the way of relating to internal events to approach an attitude that is more beneficial for novice practitioners, or at least more appropriate for the meditative practice. From this perspective, we have tested the hypothesis that the proper choice of metaphors drawing on ordinary external perception models (like the visual perception of external entities) in the instructions of guided meditations dealing with attention to thoughts can facilitate the novel practitioners' relationship with some of the most abstract aspects of the practice, such as the experience of meta-thinking. The study has validated the use of instructions exploiting a novel deliberate metaphor to activate meta-thinking activity and to improve the affective state after a short guided meditation exercise. By providing initial evidence of the potential short-term effects of the use of different types of conceptual metaphor in guided meditation instructions, these findings set new research directions both in conceptual metaphor studies and in meditation research.

The metaphor THOUGHTS ARE SOAP BUBBLES in the NDM condition instructions was found as the best suited to activate awareness of the presence of thoughts and induce a state change after the guided meditation exercise tested in this study. This is a prototypically deliberate metaphor at the level of reception regarding optimal ratings in perceived aptness and novelty. The results concerning affective state and meta-thinking activity presented here indicate that prototypical deliberate metaphors received as such in a guided meditation exercise can affect receivers in ways that go beyond reasoning. Furthermore, by enhancing meta-thinking activity, such metaphors may also have the potential to inhibit reactive pathways related to judgement or persuasion. Considering this, it seems feasible that prototypical deliberate metaphors with similar reception rates may also have differential effects in other aspects of meditation practice that have not been considered in this study, and perhaps even in other spheres of social interaction and communication.

This study has unveiled some of the effects that the use of metaphor can have in guided meditation exercises in which participants attend to thoughts. However, the whole range of aspects that may render metaphorical language mostly influential in guided meditation instructions remain unexplored. Our findings, thus, underscore the need to further explore the connections among metaphor reception and rates, and whether optimal reception rates may lead to differential effects on receivers with different meditative profiles and in specific guided meditation contexts, for example, as guided meditation exercises intended to help novel practitioners in the observation of thought introduced in the framework of mindfulness introductory courses or standardized mindfulness programs. Regarding perceived aptness and novelty, in the absence of empirical evidence, common sense and practical experience suggests that the instructions commonly used in meditation contexts are often perceived as *apt* by experienced participants and, to a certain extent, also as relatively *conventional* due to habitual use. However, what may be perceived as apt and conventional by an experienced meditator may not be so for a novice meditator. The participants in our sample are largely unfamiliar with meditation. As it draws on metaphorical models used in everyday communication, the thought-objectification metaphor deployed in the CDM condition instructions is likely to be regarded as conventional in most contexts. On the other hand, the THOUGHTS ARE BUBBLES metaphor may work as a conventional metaphor in meditation discourse for experienced meditators (or even for those who are relatively familiar with meditative practices) who may have been exposed to this or similar metaphors before (e.g., THOUGHTS ARE CLOUDS IN THE SKY, THOUGHTS ARE WAVES IN THE OCEAN, THOUGHTS ARE IMAGES ON A MOVIE THEATRE SCREEN) in meditation courses or literature, for example; however, this metaphor is more likely to be perceived (as it was in this study) as novel by those who are largely unfamiliar with

meditation. Besides, it is worth noting here that the use of metaphorical models should be conceived as an aid to foster understanding, tap into novice practitioners' areas of first-person experience, and develop desirable effects and/or skills in the *early* stages of meditation practice. More studies are needed to explore whether (and if so, how and to what extent) conventional and novel deliberate metaphors like the ones tested here are effective for meditators with *different levels* and *backgrounds* of experience.

This study has shown that the instruction used in the soap bubbles guided meditation (the one holding the most desirable reception rates) is relevant in the perception of the wandering experience. The experience of meta-thinking is a way of being in the present, as it affords conscious awareness of the very process of thinking without becoming entangled in the narratives of their own thought. In this study, the soap bubbles metaphorical instruction in the NDM condition has been shown as the most effective one. Just as we can have an idea about soap bubbles, we can also have an idea of *what it is to be thinking* (Leary and Tangney, 2012). Mrazek et al. (2013) have shown that improving awareness of mind wandering via meditation reduces mind wandering itself. The findings indicate that the participants in the NDM condition perceive the presence of thoughts more consciously and realize that thoughts are there. This awareness is assessed quantitatively, by estimating the number of thoughts present during meditation, which could be associated with rumination. However, the number of thoughts perceived is accompanied by a greater sense of decentering of these thoughts, suggesting that there is awareness of them, but no union between them and the observer. This distancing reinforces the idea that the subjects know that they are thinking without getting involved in the train of thought, which is in line with the concept of observing the present, in this case the person's cognitive present. The interaction of one thought with another could lead to the analysis that what we have observed in the participants is a wandering mind. Mind wanderers are unhappy (Killingsworth & Gilbert, 2010), and wandering minds are related to negative affect (Smallwood & Schooler, 2015). The participants in the study generated thoughts related to the task demanded, self-observation of the activity of thinking, and in accordance with what is expected for this type of activity, the affective state is not negative but positive. Novel metaphors have been suggested to influence positively affective responses to message exposure (Boeynaems et al., 2017). Our results corroborate this perspective, with improvements in the reduction of state anxiety and affective state, which suggests that the effects of using this kind of metaphors in guided meditation exercises may tap into areas beyond cognitive appreciation. Altogether, these results suggest that the person is not in a state of wandering mind, but a self-attentive mind. The results regarding decentering, although weak, support this conclusion. The fact that the NDM condition introduces a relatively creative image (the novel metaphor) which participants are invited to consider and apply in their observation of thought may have favored the process of observation itself, and by the same token (by promoting the observer's perspective), facilitated non-identification with thought.

The results point to the need to further explore the role of attention to thoughts during meditations based on the observation of the mental process. This type of observation is considered to bring about well-being as a result of mental silence. However, we see that the well-being reported in this study is associated with detachment from thought rather than its absence. Perhaps the observation of the presence of thoughts is a preliminary path to the state of calmness of mind predicted in meditation practices. Living the present of unconscious discourse implies observing thought consciously. More controlled studies are needed to test this hypothesis and to analyze the role that the observed increase in detached thinking plays in obtaining a state of calm and personal well-being.

Overall, the results in this study suggest that neutral domains may be less effective for projecting the mechanism of self-observation in a short guided meditation. In view of this, it might be worth exploring in further research the nature of the source domains involved in metaphor-based instructions and the domain elements highlighted through source-onto-target mappings. Factors to be considered include source domain choice according to prospective receivers' background knowledge, personal preferences, or guided meditation type (Dahl et al., 2015; Matko & Sedlmeier, 2019), and the potential expected effects the instruction or practice is designed to work on. For example, exclusively attentional practices might benefit from particular types of conceptual metaphor that may not necessarily work as well with other generative-like ethical enhancement practices like loving kindness and compassion meditations, where subjects are prompted to generate particular images to cultivate certain attitudes or states. Thus, it is possible that attentional practices might benefit from exploiting relatively basic ontological metaphors (Lakoff, 1993) that help to reify phenomena of attention as more mentally apprehensible entities, whereas generative practices like the loving-kindness meditation might be more effective with more elaborated source domain scenarios. Future research should also clarify whether novel and conventional deliberate metaphors are functional in procuring emotionally beneficial metacognitive mental states only when their metaphorical semantics implies peace, calm, or tranquility.

Limitations

It is important to highlight the role of the experimental context in this study. The participants were exposed to the stimuli materials in the context of a guided meditation exercise they had been invited to do, that is, a context in which participants

usually pay careful attention to the instructions. While this is not per se an inherent limitation in this study, the role of the experimental context is also a factor to be addressed in further research, as a context where the participants are expected to pay deliberate attention to the unfolding of experience moment by moment (this including the instructions and what they feel by following them) is potentially different from a context where such a shift in the quality of attention is not necessarily involved during the exposure to the stimuli materials, as for example, a study in which the participants are asked to, say, read a text and then perform some tasks afterwards.

A second limitation relates to the use of explicit recall after explicit encoding as an indicator of meta-thinking. Although the participants were not prompted to retain information appearing during the practice, we reasoned that attention to it involves self-awareness as an indirect indicator of the degree to which they were attending or "observing" their thoughts distanced from the flow of mind contents. Nonetheless, we cannot externally validate the accuracy of these memories and they should be cautiously interpreted in terms of self-perceptual reports.

A third limitation regarding the way we assessed metaphor reception aspects (novelty, aptness, and utility) in the guided meditation instructions is related to the way we formulated the set of questions. Although the instructions were different in terms of metaphorical contents across conditions, we had to devise a coherent set allowing the same questions to be posed in all conditions, while also facilitating their correct reception and understanding regardless of the condition they had been assigned to. As far as we know, this has never been tested before in the context of guided meditation instructions and further studies would be necessary to analyze the degree of appropriateness of this procedure. Nonetheless, the same procedure was applied twice in the standardization and in the main study, offering similar results.

We suggested earlier that the results could be affected by individual differences like the meditative experience of the participants, but it could also be worth exploring other differences regarding personality or motivational aspects such as the intention to meditate with different objectives (psychological well-being, mental control, quality of life, improving mental health standards, etc.). This study did not consider differential aspects. For example, the participants in this study do not have significant experience in the practice of meditation, but no comparison is made with expert meditators. Additional comparative analyses are required to reveal the limits of generalization in trained population. Likewise, further research should also survey individual differences as potential factors of influence.

A fourth limitation of the study concerns the duration of the effects measured in it. The effects of meditation are usually evaluated after repeated practice and over extended periods of time that may amount to several weeks. This study endeavored to evaluate the effects of the use of metaphor during meditation, for which the simplest design was to evaluate short-term effects after a single guided meditation session. It might be interesting to know more about the lasting effects of metaphor use in this context, but the present study, by design, cannot provide information beyond immediate effects. Future research would thus be needed to test the potential effects of the use of metaphor in the context of longer interventions, for example also as integrated in the frame of standardized 8-week programs like MBSR, by comparing the effects of the implementation of the standard program to a novel intervention of the program enriched with an increased number of metaphors in guided meditations like the ones tackled in this study.

Regarding the scales used to test the effects of each condition, both FFMQ and STAI are typically used as measures of improved mindfulness and state anxiety in interventions involving several sessions. Both scales were used in our study, as FFMQ and state anxiety are sensitive to immediate changes in the person's state (Allen & Knight, 2005; Baer et al., 2006; Van Dam et al., 2014) which may be due to mood variations stimulated by contextual factors, such as the practice of a guided meditation exercise. Whereas this does not imply that these changes last over time, they allowed us to observe that they appear, in a period of immediacy, with more intensity in one condition than another. Nonetheless, as suggested earlier, this study did not evaluate how long they remain in the person, which might be surveyed in potential designs involving longer interventions like the above-mentioned ones. In relation to the FFMQ, the limitation is that the questionnaire is not adapted to measure a state after a single meditation, but rather to changes involving longer periods of time after meditation practices. This implies that some items are not fully applicable to the task proposed in this work. No adaptation was made in this study to overcome this difficulty, so the response to some of these items may involve a mindfulness trait rather than state, which suggests a cautious interpretation of the results.

A final limitation of the study concerns the application of self-report measures, which did not allow us to exclude memory or social desirability effects. This is a cross-sectional study which does not allow for causal inferences on the patterns of observed associations. However, given the number of conditions and the measures applied, we decided to apply a cross-sectional design. We would like to overcome this limitation in future studies using a longitudinal counterbalance of at least three conditions using measures that may be less sensitive to repeated administration.

Conclusion

Our study has shown that the novel deliberate metaphor THOUGHTS ARE BUBBLES received with high novelty and aptness rates was effective in activating meta-thinking and

inducing a positive change of state in novice meditators when used in guided meditation instructions. These findings support the argument that the appropriate use of particular types of conceptual metaphor in the language of meditation instructions may be beneficial for novice meditators. This is, however, the first study to survey potential effects of deliberate metaphor in guided meditation instructions, and therefore highlights the need for further investigation both in the areas of applied metaphor studies and meditation research. Joint efforts in these areas might help to reveal potential ways in which metaphor may be an effective tool in the context of meditation instruction.

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Code Availability Not applicable.

Authors' Contributions AJSL developed the conceptualization of the study, contributed to the study design, drafted and edited the stimuli materials, collected data and wrote the first draft of the manuscript. DPC contributed to the study design, supervised the stimuli materials, collected and analysed data, and wrote the first draft of the manuscript. ABL supervised the study design, collaborated with the analysis of data, and provided critical revisions on the first and last drafts. All authors read and approve the final manuscript.

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Data Availability The datasets generated and/or analyzed during the current study are available in the Figshare repository: https://figshare.com/s/5075879a2b4f01342c36 (ESM1_Transcripts) and https://figshare.com/s/dd633f9c035c76e5598a (ESM2_Dataset).

Declarations

Ethics Approval The authors agree with established ethical standards. The study was approved by the Institutional Review Board at University Jaume I in 2019 (CD_45/2019).

Consent to Participate Informed consent was obtained from all individual participants included in this study.

Consent to Publish Not applicable.

Conflict of Interest The authors declare no conflicts of interest with respect to the authorship or the publication of this article.

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