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Cultivating Self-Transcendence Through Meditation Practice: A Test of the Role of Meta-Awareness, (Dis)identification and Non-Reactivity

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Data Availability Statement included at the end of the article

Abstract

In this paper, we present a study comprising two distinct stages to examine the extent to which metacognitive processes of decentering facilitate the emergence of self-transcendence experiences in everyday life (i.e., the frequency of self-transcendent emotions, flow proneness, and adopting an interconnected identity). In the course of conducting this research, the first stage ($N = 374$) focused on assessing the structure and validity of the French version of the Metacognitive Processes of Decentering Scale (MPoD-t). Building on this, the second stage ($N = 294$) examined the potential relationship between meditative practices and psychological decentering processes (i.e., meta-awareness, (dis)identification with internal experiences, and (non)reactivity to thought content) and explored whether these mechanisms explain the association between meditative practices and the experience of self-transcendent states. Overall, the results demonstrated satisfactory psychometric properties of the French version of the MPoD and provided enhanced insights into the distinct mediating roles played by various decentering components in the manifestation of self-transcendence experiences in daily life. Indeed, the findings revealed that the relationship between practice and the occurrence of self-transcendent emotions or flow was mediated by the meta-awareness component, while the association between practice and the development of an interconnected identity was explained by the (dis)identification with internal experiences component. The implications of these findings are discussed.

Keywords

Meditation, decentering, meta-awareness, (dis)identification, self-transcendent emotions, selflessness, flow

Introduction

Decentering, defined as the ability to shift experiential perspective from being immersed in one's internal experience to objectively observing that experience from a psychological distance, has been recognized as a crucial process in promoting mental health by a long tradition of scholars (Bernstein et al., 2015; Farb et al., 2007; Gu et al., 2015; King & Fresco, 2019; Safran & Segal, 1990). Interestingly, recent theoretical approaches (Dorjee, 2016; Garland & Fredrickson, 2019) suggest that this metacognitive process of "stepping out" from one's experience is also a potential pathway to facilitate self-transcendent emotions (i.e., awe, compassion, gratitude) and non-dual states of awareness (Dambrun, 2016; Dambrun et al., 2019; Hanley et al., 2018). As proposed by the Mindfulness-to-Meaning Theory (MMT; Garland et al., 2015; Garland & Fredrickson, 2019), the cognitive resources freed by the decentering process could empower individuals to more easily initiate savoring, reappraisal mechanisms, and engagement in absorptive experiences characterized by a decrease in self-salience and/or an increase in feelings of connectedness (Garland & Fredrickson, 2019; Yaden et al.,

2017). Nevertheless, as emphasized by Hanley et al. (2020a; see also Bernstein et al., 2015), due to the diverse conceptualizations and operationalizations of the decentering concept in the literature, it remains challenging to precisely identify the cognitive processes through which decentering promotes these favorable psychological outcomes. In the present study, we will specifically investigate the impact of three metacognitive processes of decentering, as identified by Bernstein et al. (2015), on understanding the occurrence of self-transcendent experiences among individuals who have engaged in meditative practices.

Meditative practices and self-transcendence experiences

Several theoretical frameworks and studies have proposed that the sense of self is modified during meditative practices (Berkovich-Ohana & Glicksohn, 2014; Farb et al., 2007; Holzel et al., 2011; Vago & Silbersweig, 2012). According to Yaden et al. (2017), temporary sensations of expansion and/or alteration of the self can be conceptualized as self-transcendence experiences (STEs), insofar as they are frequently characterized by a decrease in self-salience and/or an increase in feelings of connectedness. For example, studies have shown that expert meditators reported changes in their sense of body ownership, agency, and self-location (Droit-Volet & Dambrun, 2019). They tend to perceive their body as autonomous and functioning independently of their will, experience a decrease in identification with their body, and express difficulty in locating themselves (Ataria et al., 2015; Berkovich-Ohana et al., 2013; Dambrun et al., 2023; Dor-Ziderman et al., 2016). This profound alteration of bodily consciousness is characterized by a self-loss associated with full present-moment attention, as well as alterations in the sense of time and space (i.e., timelessness and spacelessness), and sometimes states of nondual awareness where the distinction between self and other is dissolved (Dambrun et al., 2019; Garland et al., 2022; Lindström et al., 2022). It is important to note that the self-loss that sometimes occurs during STEs is not considered here as a characteristic of mental illness, such as dissociative disorders (e.g., depersonalization, derealization; Killstrom, 2005; Simeon & Loewenstein, 2009). Indeed, while there is a certain degree of disturbance in the sense of self, dissociative disorders reflect more a failure to integrate emotions, memory, and cognition (Lynn et al., 2018). These disorders are rather associated with a range of negative consequences for well-being and mental health (Aksen et al., 2021). On the contrary, studies indicate that the experience of STEs is more often associated with positive outcomes, such as well-being (Dambrun, 2016; Yaden et al., 2017). For instance, in a brief attentional mindfulness meditation practice with novices, Dambrun et al. (2019, see also Dambrun, 2016) demonstrated a positive causal relationship between unified consciousness (i.e., self-transcendence) during practice and happiness.

According to the teachings of contemplative traditions, some theoretical approaches have suggested that these effects may not only appear during the practice, but also outside of formal practice times (Berkovich-Ohana & Glicksohn, 2017; Dambrun & Ricard, 2011; Garland et al., 2022; Wahbeh et al., 2018; Yaden et al., 2017). As

proposed by the MMT (Garland et al., 2017; Garland & Fredrickson, 2019), meditation practices enhance self-regulation abilities and executive functions, enabling a better capacity to direct and sustain attention, reduce self-referential mind-wandering, and modify how we approach our subjective experiences in daily life (Hodgins & Adair, 2010; Garland & Fredrickson, 2019; Hülshager et al., 2013; Lindsay et al., 2018; Shoham et al., 2017). Some studies have suggested, for instance, that mindfulness (either dispositional or through mindfulness training) is positively related to day-to-day self-transcendent emotions such as awe or gratitude (Du et al., 2019; Fredrickson et al., 2017; Sawyer et al., 2022). The cultivation of receptive attention to and awareness of present experiences facilitates the recognition and emergence of moments in which the feeling of oneness with other people and/or aspects of one's environment is particularly salient. In the same vein, high dispositional mindfulness has also been associated with a greater likelihood of experiencing flow (Schutte & Malouff, 2023). In their proposed classification of self-transcendent experiences, Yaden et al. (2017) suggest that flow is a transient mental state primarily marked by a decreased sense of self-salience (Ulrich et al., 2014). These experiences are associated with focused attention, loss of self-awareness (e.g., reduced self-reflective thoughts and fear of evaluation by others), altered sense of time, and profound enjoyment (Ullen et al., 2012; Csikszentmihalyi, 1998; Nakamura & Csikszentmihalyi, 2009). However, the association between mindfulness practice and the tendency to experience flow is subject to debate in the literature (Marty-Dugas et al., 2021; Shelton et al., 2015). Shelton et al. (2015) underlined that these two mental states are conceptually distinct, as flow involves losing the inner observer within an altered state of consciousness where the moment blurs into a continuous stream of activity. Conversely, some researchers have reported a positive association between dispositional flow and attentional abilities (Chen et al., 2022; Moore, 2013; Marty-Dugas et al., 2021; Schutte & Malouff, 2023). In a recent meta-analysis based on 17 studies, Schutte and Malouff (2023) indicated, for instance, that greater dispositional mindfulness is positively associated with higher levels of flow, particularly when measured as a disposition or trait. In other words, the tendency to experience flow in everyday life and dispositional mindfulness share the common features of being present, actively engaged, and non-judgmental (Kee & Wang, 2008; Marty-Dugas et al., 2021; Moore, 2013; Schutte & Malouff, 2023).

Finally, an interconnected and impermanent identity can also reflect a self-transcendent perspective characterized by a weak distinction between self and others, and between self and the environment as a whole, which manifests as a sense of connectedness (Aldwin et al., 2019; Dambrun et al., 2019; Dambrun & Ricard, 2011; Levenson et al., 2005; Sleight et al., 2023). In this context, the self is perceived as interdependent and interconnected with various elements of the environment, including others and different forms of life (Leary et al., 2008), as well as their profound personal aspirations. Over the past couple of decades, several studies have confirmed the idea that the practice of meditation and/or dispositional mindfulness can foster selfless identity (Dambrun et al., 2019; Dambrun & Ricard, 2011). For example, several correlational findings have suggested that the inclination to adopt an intentional,

present-moment attentional stance in daily life is associated with broader conceptualizations of the self (e.g., Adult Self-Transcendence Inventory, Quiet-ego, Meta-personal self) (Hanley et al., 2017; Leary et al., 2008; DeCicco & Stroink, 2007; Wayment et al., 2015).

The role of the decentering processes

Among the various mechanisms proposed to explain the beneficial effects of mindfulness on psychological and physical health, the process of decentering occupies an important role (Farb et al., 2007; Gecht et al., 2014; Gu et al., 2015; Safran & Segal, 1990; Shapiro et al., 2006; Vago & Silbersweig, 2012). Indeed, for the past thirty years, several researchers have suggested that developing a decentered perspective that allows one to observe the elements that arise in the mind with greater attention and psychological distance would facilitate the distancing from disturbing internal experiences (i.e., intense emotions, maladaptive self-related thoughts) (Bernstein et al., 2015; Lau et al., 2006; Shapiro et al., 2006). This change in perspective leads individuals to more easily recognize the transient nature of these internal events and to reduce the impact of thought content on other mental processes (e.g., attention, emotion, cognitive elaboration, motivation, motor planning). Data from both clinical and non-clinical samples have confirmed the close connection between mindfulness, decentering, and a decrease in maladaptive self-referential processes. For example, studies with clinical samples have demonstrated that the reduction in anxiety or depressive-related thoughts resulting from mindfulness training can be attributed to an increase in the decentered perspective (Bieling et al., 2012; Farb et al., 2018; Hargus et al., 2010; Hoge et al., 2015; O'Toole et al., 2019; Teasdale et al., 2002). However, as mentioned earlier, while the impact of decentering on mental health appears to be particularly robust, the reasons for its effectiveness remain challenging, given that the ability to decenter is comprised of a set of common cognitive processes that are qualitatively distinct. In this context, Bernstein and his colleagues (2015) have for instance recently proposed a new theoretical model to capture the common mental processes among decentering-related constructs identified in the literature (e.g., cognitive distancing, self-as-context, metacognitive awareness, self-distanced perspective). According to this approach, the ability to decenter can be conceptualized into three interrelated metacognitive processes: meta-awareness, (dis)identifying with internal experience, and (non)reacting to thought content. Building on previous research on mindfulness (e.g., decentering; Safran & Segal, 1990; reperceiving; Shapiro et al., 2006) and considerations regarding cognitive distancing (Beck, 1979), Bernstein et al. (2015) note that developing a decentering perspective often involves a prerequisite meta-awareness ability. They define this initial common process as an awareness of one's subjective experience and the processes of sensing, feeling, and thinking. In other words, this implies the ability to be conscious of the content of internal experiences, such as thoughts, feelings, or sensations, as well as a more 'meta' level of consciousness. This meta-awareness allows attention to be directed both to the content and to the process of thinking itself. For example, an

individual can be aware of the content of a negative thought (e.g., “I’m worthless”) or have a meta-awareness of the thought processes in which this negative thought content is occurring (e.g., “I’m thinking I’m worthless”). The second common process among various decentering-related constructs (e.g., self-distanced perspective, self-as-context, cognitive distancing) is the (dis)identification with internal experience. This ability refers to the capacity to create psychological distance from internal states, enabling individuals to view thoughts, emotions, and sensations as passing mental phenomena rather than necessarily true or identical to oneself. This mechanism is often perceived as unusual, given our tendency to identify with our internal states and view them as integral parts of ourselves. Through the process of identification, feeling anxious before a job interview can lead a person to define themselves as an anxious person (e.g., ‘I’m an anxious person’). In contrast, when a person is disidentified from the feeling of anxiety, they can simply perceive it as a transient event rather than an inherent or permanent aspect of the self (e.g., ‘I’m feeling anxious’). Finally, the last common characteristic of decentering is (non)reactivity to thought content. Psychological distancing facilitates reduced reactivity to negative thoughts and their impact on other mental processes, such as attention, cognitive elaboration, motivation, or motor planning. For example, reduced reactivity to a depressive thought (‘I’m worthless’) can limit the typical sequence of cognitive reactions (e.g., rumination), emotional reactions (e.g., sadness), bodily reactions (e.g., slowness), and behavioral reactions (e.g., social withdrawal) that reactivity could produce.

Meditation, decentering processes and self-transcendence experiences

Emerging empirical findings suggest that a decentered perspective is also a possible pathway to facilitate self-transcendence emotions (i.e., awe, compassion, gratitude) and non-dual states of awareness (Dambrun, 2016; Dambrun et al., 2019; Hanley et al., 2018). In a comparative study, Hanley et al. (2018) indicate, for example, that individuals who experience frequent non-dual experiences (i.e., higher scores on the Nondual Awareness Dimensional Assessment-State) report having a greater ability to decenter from those who rarely or never experience non-dual experiences. Similarly, a recent study on a five-mindfulness training intervention conducted by Hanley et al. (2020c) revealed that participants who were most effective at non-reactively observing their thoughts, feelings, and physical sensations during meditation were also more likely to experience a sense of profound connectedness, in which the sense of self is flexible or open. According to this approach, this new way of experiencing the self is partly explained by the reflective distance that emerges as a result of the practice. Indeed, in contrast to altered states of consciousness involving more directly positive or negative ego dissolution states (Lindström et al., 2022; Sleight et al., 2023; Yaden et al., 2017), it is important to specify that decentering is an effortful activity that involves a practice aimed at developing a quality of presence and self-reflectiveness (Safran & Segal, 1990). Thus, cultivating this distance is considered here as a practice that makes it easier for individuals to recognize the transitory nature of thoughts and to view them

less as constitutive of the self. This detachment from their habitual narrative scripts can lead to STEs insofar as there is a reconsideration of the subject/object perspective as the unique way of apprehending the sense of self (Berkovich-Ohana & Glicksohn, 2017; Garland & Fredrickson, 2019; Milliere et al., 2018). However, as previously mentioned, the data seem to indicate that the ability to “step out” from one’s experience is a major mechanism, but they do not allow for the precise specification of the respective roles of the various cognitive processes encompassed by the construct of decentering.

The Mindfulness-to-Meaning Theory (MMT; Garland et al., 2015; Garland & Fredrickson, 2019) and Bernstein’s model (2015, 2019) mentioned earlier appear to be particularly useful here for obtaining a more comprehensive understanding of the different mechanisms of decentering involved. For instance, these approaches suggest that the components of meta-awareness (i.e., awareness of subjective experience) and (non)reacting to thought content could provide insights into the attentional processes associated with decentering, likely initiating experiences of self-transcendence. Several studies have indicated that achieving psychological distance from habitual cognitive biases and automatic self-referential narrowing of attentional perspective leads to greater attentional availability (e.g., a clear working memory of stress appraisals) (Garland et al., 2015; Mrazek et al., 2013). According to MMT, these attentional processes would be particularly related to self-transcendent experiences as they initiate savoring and reappraisal mechanisms (Garland & Fredrickson, 2019). The attentional resources freed by the decentering process would enable individuals to orient themselves more easily, recognize the pleasant sensory features of a stimulus context, and engage in absorptive experiences that favor flow and transcendent emotions. Finally, the (dis)identification from internal experience component would provide more insight into the identity dynamics underlying experiences in which individuals feel interconnectedness or oneness with something greater than the self. As mentioned previously, by helping individuals see their thoughts, emotions, and sensations as transitory and separate from oneself, this component of decentering would attenuate, or even transcend, habitual self-referential processes. This self-reappraisal should thus be more specifically associated with a perception of the self as more interdependent, broader, and inclusive (Hanley et al., 2017; Leary et al., 2008; Wayment et al., 2015).

The present research

In this paper, we conducted a two-stage study to investigate the extent to which the Metacognitive Processes Model of Decentering, developed by Bernstein et al. (2015), could contribute to a better understanding of cognitive control and identity mechanisms underlying self-transcendent experiences among meditative practitioners in everyday life. Indeed, according to this approach, the ability to decenter can be conceptualized into three interrelated but distinct complementary metacognitive processes: meta-awareness, (dis)identifying with internal experience, and (non)

reacting to thought content. To date, no French validation of any decentering measure has been published. Therefore, the initial stage of the study (Stage 1) was carried out to validate the psychometric properties of the French version of the Metacognitive Processes of Decentering - Trait (MPoD-t, see [Hanley et al., 2020a](#)). The factorial structure of the scale was evaluated, as well as the internal consistency of the overall composite score and its three subscales. Convergent, discriminant, and criterion validity were also examined using a sample of 374 participants.

In Stage 2, we examined a sample of 294 participants to investigate (1) the relationship between meditation practice and the three decentering processes, and (2) whether these decentering processes underlie the association between meditation practice and various self-transcendent experiences. More precisely, we assessed three types of STE that can occur in daily life ([Yaden et al., 2017](#)). The ‘annihilation’ component (e.g., self-diminishment, focused attention, reduced self-reflective thoughts) was measured by the frequency with which individuals experience flow in their daily lives. The ‘relational’ component (e.g., feelings of oneness, connectedness, interdependence) was measured by the ASTI self-transcendent scale ([Koller et al., 2017](#); [Levenson et al., 2005](#)). Finally, we assessed emotional STE using the frequency with which individuals experience transcendent emotions such as awe and/or gratitude ([Stellar et al., 2017](#)). We hypothesized that meta-awareness and (non)reacting to internal experience would mediate the relationship between meditative practice and self-transcendent experiences, which involve self-diminishment and a sense of connectedness, such as flow experience and transcendent emotions. The (dis)identification component, on the other hand, would play a mediating role when the experience of self-transcendence involves a broader conceptualization of the self in daily life (e.g., ASTI self-transcendence).

Stage 1

Stage 1 overview

The objective of Stage 1 was to translate the original Metacognitive Processes of Decentering - Trait (MPoD-t) into French and assess its factorial validity and reliability. Consistent with its original conceptualization, we consider this measure as an individual difference that may vary over time and in different situations. As emphasized by [Hanley et al. \(2020a\)](#), one’s level of state decentering at any given time could be influenced by transient factors (e.g., context, mood, physical state, etc.) and/or individual differences (e.g., natural or trained abilities, tendencies, education). To specifically examine the convergent validity of the French version, correlation patterns between the MPoD-t and existing measures of decentering and closely related processes were explored ([Bernstein et al., 2015](#); [Hanley et al., 2020a](#)). Discriminant validity was assessed by expecting weak-to-non-significant correlations with measures of dissociation and self-awareness. Finally, the criterion validity of the French MPoD-t was evaluated by investigating whether individuals who reported engaging in

meditative/mindfulness practices scored higher on any of the three metacognitive processes of decentering compared to individuals who do not practice meditation.

Method

Participants selection. A total of 374 participants comprised the sample, including 335 women, 35 men, and 4 with missing gender information ($M_{age} = 19.6$, $SD = 3.19$). All participants were undergraduate psychology students at the University of Burgundy (Dijon, France). Among them, 19.1 percent reported engaging in meditative practice ($n = 70$) for an average of 2.6 hours per week ($SD = 1.26$). [Table 1](#) provides participant demographics.

Ethical considerations. Participants were informed of their right to refuse or withdraw from the study at any time without facing retaliatory action, in accordance with the Declaration of Helsinki. Electronic consent was obtained from all respondents before participation. Inclusion criteria required fluency in French, the ability to speak, read, and understand French, and a minimum age of 18. The study adhered to all ethical concerns outlined in the Helsinki Declaration, and ethical approval was granted by a French ethical committee (IRB00011540-2021-73).

Translation procedure. For the translation of the MPoD-t into French, we followed the recommendations proposed by Vallerand (1989, also see [Gregoire et al., 2020](#)). The authors of this article met multiple times to translate the instructions and items from English to French. Subsequently, without consulting the original version, they had the French version translated back into English by a professional translator (reverse translation). The authors then met again to review the translator's work and compare the new English version with the original version developed by [Hanley et al. \(2020a\)](#).

Power analysis. Using G*Power (version 3.1.9.7), we estimated the required sample size for sufficient correlations power (90%) with a medium size of 0.3. On the basis of the correlation between the original Metacognitive Processes of Decentering Scale and other extant decentering scales or subscales reported by [Hanley et al. \(2020a\)](#) (i.e., ranging from $r = .20$ to $r = .73$), the minimum required sample size was 112.

Procedure. Upon confirmation of consent, participants were asked to complete an online self-report survey using Qualtrics software (<https://www.qualtrics.com>). The first phase study was presented as an investigation into the impact of self-perception on psychological functioning and social behavior. Participants were informed in advance that they would be answering questions about their various feelings and emotions in daily life. The average time to complete the questionnaire was approximately 27 minutes. Sociodemographic questions were presented at the beginning, while questions regarding meditation practice were posed at the end of the questionnaire. All participants received course credit for their participation.

Table 1. Participants Characteristics.

Characteristics	Participants	
	Stage 1	Stage 2
N	374	294
Age (SD)	19.61 (3.19)	45.45 (11.90)
Female (%)	89	80
Educational background (%)		
Less than high school	—	2%
High school or equivalent	100%	11.9%
Associate's degree	—	11.6%
Bachelor's degree	—	27.2%
Graduate degree	—	40.8%
PhD degree	—	6.5%
Socio economic classifications (%)		
Farmers and operators	—	1%
Craftsmen, shopkeepers and business owners	—	6.5%
Executives or higher intellectual professions	—	34.4%
Intermediate or paramedical professions	—	20.4%
Employees	—	17.7%
Workers	—	0.7%
Retired	—	7.5%
Students	100%	5.8%
Other non-workers	—	6.1%
Meditation practice (%)	19.1%	43.5%

Measures

The Metacognitive Processes of Decentering Trait scale (MPoD-t) was developed by Hanley et al. (2020a, 2020b, 2020c). This 15-item scale provides a global score that reflects the ability of individuals to shift experiential perspective from being immersed in one's internal experience to objectively observing that experience from a psychological distance (see [supplemental materials](#)). Three scores specific to each metacognitive process of decentering identified by Bernstein et al. (2015) can also be obtained: (a) A meta-awareness score (5 items) measures the ability to become aware of subjective experience or the processes unfolding in consciousness (e.g., "I am able to watch myself thinking"), (b) A (dis)identification with internal experience score (5 items) captures the ability to experiencing of internal states, such as thoughts, emotions, and bodily sensations, as separate from one's self (e.g., "My sense of self is larger than my thoughts and feelings"), and (c) A (non)reactivity to thought content score (5 items) measures the capacity to attenuate the impact of thought content on other mental processes such as attention, cognitive processing, motivation or motor

planning (e.g., “When I have distressing thoughts or feelings I am able just to notice them without reacting”). The French MPoD-t is scored on a 5-point Likert scale (*1-never or very rarely true to 5-very often or always*) and demonstrated adequate internal reliability for the global scale ($\alpha = .85$), and for each dimension (respectively $\alpha = .77$ for meta-awareness, $\alpha = .76$ for (dis)identification and $\alpha = .70$ for (non)reactivity).

Convergent validity

The trait *Toronto Mindfulness Scale* (TMS; Davis et al., 2009) is a 13-item, 2-factor self-report measure of individual differences in dispositional mindfulness. The TMS-Curiosity (6 items, $\alpha = .85$) reflects an attitude of wanting to learn more about one’s experiences (e.g., “I was curious to see what my mind was up to from moment to moment”), and the TMS-Decentering (7 items, $\alpha = .66$) reflected an awareness of one’s experience with some distance rather than over-identifying with thoughts and feelings (e.g., “I was aware of my thoughts and feelings without over identifying with them”). The TMS is scored on a 5-point Likert scale (*1-not at all to 5-very much*).

The short *Five Facet Mindfulness Questionnaire* (FFMQ 15 items, Gu et al., 2016). It includes the same five facets as the long form: Observing ($\alpha = .52$), Describing ($\alpha = .83$), Acting with Awareness ($\alpha = .70$), Non-Judging of inner experience ($\alpha = .89$), and Non-Reactivity to inner experience ($\alpha = .76$) (Baer et al., 2006). The short FFMQ is scored on a 5-point Likert scale (*1-never or very rarely true to 5-very often or always true*) and demonstrated adequate internal reliability ($\alpha = .72$).

The *Self-as-Context Scale* (SACS 10-item, Zettle et al., 2018) is a measure of the ability to observe the continual flow of thoughts, emotions, sensations, memories, and other private events, while maintaining a distinction between such “seeing” and what is seen (e.g., “I am able to notice my changing thoughts without getting caught up in them”). The SACS is scored on a 5-point Likert-type scale (*1-strongly disagree to 5-strongly agree*), and demonstrated adequate internal reliability ($\alpha = .74$).

The *Experiences Questionnaire decentering subscale* (11 items, Fresco et al., 2007). The EQ-D is a measure that assesses the ability to observe one’s thoughts and feelings as temporary, objective events, as opposed to the reflection of the self or reality. The EQ decentering is scored on a 5-point Likert-type scale (*1-never or very rarely true to 5-very often or always true*), and demonstrated adequate internal reliability ($\alpha = .83$).

Divergent validity

The brief *Dissociative Experiences Scale* (DES, Carlson et al., 2018). The DES is an 8-item self-report measure to assess the degree to which subjects experience dissociation. Each item asks the individual receiving care to rate the severity of his or her dissociative experiences during the past 7 days (e.g., “I find myself staring into space and thinking of nothing”, $\alpha = .67$). Items are measured on 5-point scale from 0 (Not at all) to 4 (More than once a day).

The Situational Self-Awareness Scale (SSAS; Govern & Marsch, 2001) is a 9-item measure of self-awareness ($\alpha = .71$). The SSAS measures 3 subscales capturing sensitivity to private self-awareness like inner feelings or introspective behavior (e.g., “Right now, I am aware of my innermost thoughts.”; item 2 was deviant, so we excluded it from the analyses, $r = .30$ between item 1 and item 3), public self-awareness with one’s physical appearance and presentation (e.g., “I am concerned what other people think of me.”; $\alpha = .61$), and awareness of immediate surroundings (e.g., “Right now, I am keenly aware of everything in my environment”, $\alpha = .77$). Item are measured on 5-point scale from 1 (Totally Disagree) to 5 (Totally Agree).

Predictive validity

The General Health Questionnaire (GHQ, Goldberg & Williams, 1988). This 12-item questionnaire is a standardized tool for assessing the degree of psychological distress in individuals. Scores on this measure are frequently associated with the expression of symptoms related to depression, anxiety, insomnia, or social maladjustment. Participants were asked to estimate the frequency of the proposed statements on a scale ranging from = 1 “Never” to 5 “All the time” (e.g., “Have you been feeling unhappy and depressed?”; “Have you lost much sleep over worry”, $\alpha = .86$). Response options ranged from 0 (*not at all*) to 3 (*much more than usual*), with higher scores equaling greater distress.

Positive and negative emotions. Participants reported how much of each of positive and negative emotions that they felt during the last month (Fredrickson et al., 2003; see also Anderson et al., 2018). Each emotion was assessed with single item consisting of synonym clusters on a scale ranging from 0 (*none at all*) to 10 (*completely*). The positive emotions and their synonym clusters were as follows: awe (i.e., awe, amazed, wonder), amusement (i.e., amused, having fun, laughing), contentment (i.e., content, relaxed, peaceful), gratitude (i.e., grateful, appreciative, thankful), joy (i.e., joyful, excited, enthusiastic), pride (i.e., proud, sense of accomplishment, successful), and curious (i.e., curious, interested, wanting to explore) ($\alpha = .78$). The negative emotions and their synonym clusters were as follows: anxiety (i.e., nervous, anxious, worried), sadness (i.e., sad, depressed, down), stress (i.e., stress, overburdened, pressured), loneliness (i.e., lonely, isolated, solitary), irritability (i.e., angry, irritable, mad), and tiredness (i.e., tired, fatigued, low energy) ($\alpha = .78$). The analyses were performed with an average score of positive emotions and an average score of negative emotions.

Criterion validity

Meditation/contemplative practice. Participants were asked the two following questions: « Do you have a meditative practice? (meditation, yoga, etc.) » (1 « yes » - 2 « no »), and « If the answer is yes, do you have a regular practice? (from 1 “Not at all regular” to 5 “Very regular”)».

Data analysis

In order to replicate the original factor structure of the MPoD-t (Hanley et al., 2020a), confirmatory factor analysis (CFA) was used to evaluate the fit of the following series of models: (1) a single-factor model, (2) the three-factor correlated model, and (3) a bifactorial model testing whether the French MPoD consists of a general decentering factor and three specific factors.

The statistical analyses were conducted using the ‘Jamovi’ software and packages based on lavaan (semjlj-SEM). Given the low percentage of missing values within this data (i.e., <4%), we have decided to ignore them. Mardia’s test rejected multivariate normality (kurtosis >10, $p < .001$). Consequently, we opted for maximum likelihood with robust standard errors (MLR) to provide parameter estimates of the CFA model. Fit indices, including the root mean squared error of approximation (RMSEA; Steiger, 2013), confirmatory fit index (CFI; Bentler, 1990), and Tucker-Lewis Index (TLI), were used to evaluate model adequacy. Following convention, greater consensus exists regarding TLI and CFI scores, with 0.90 indicating an acceptable fit and a score over 0.95 indicating a good fit (Hu & Bentler, 1999). An SRMR between 0 and 0.05 indicates a good fit, while a value between 0.05 and 0.10 indicates an acceptable fit. Values for RMSEA close to 0.06 and 0.08 were considered as cutoffs for a well-fitting model (Steiger, 2013). The Akaike information criterion (AIC) was also used to compare the fit of different models, with the model having the lowest AIC value indicating the best fit to the data.

Results

Basic statistics, internal reliability for each factor, and inter-correlations among the three factors are reported in Table 2. Skewness and kurtosis analyses indicated that the data were fairly normally distributed for the decentering total score (skewness = 0.03), the Meta-awareness subscale (skewness = -0.09), the (Dis)identification subscale (skewness = 0.11), and the Non(reactivity) to internal experience subscale (skewness = 0.10). Compared to the data obtained by Hanley et al. (2020a), descriptive and correlation analyses within the present sample revealed lower average scores for the total scale and sub-dimensions, as well as slightly lower correlations between the (Dis)identification score and Meta-awareness ($r = .39$, $p < .001$) and between (Non)Reactivity and (Dis)identification ($r = .41$, $p < .001$).

Goodness-of-fit indices for each model are presented in Table 3. Using the cutoffs for the fit criteria mentioned above, it is evident that the single-factor model did not fit the data well, with a χ^2/df ratio of 6.36, an SRMR of 0.10, an RMSEA of 0.13, a CFI of 0.66, and a TLI of 0.61. Examination of the 3-factor model showed that although the model was approaching an adequate fit to the data, it did not meet the fit criteria, with a χ^2/df ratio of 3.95, an SRMR of 0.08, an RMSEA of 0.10, a CFI of 0.82, and a TLI of 0.79. As observed by Hanley et al. (2020a) using a different statistical approach, the bifactor model produced the best-fitting model with the lowest AIC value (15779), a CFI

Table 2. Descriptive Statistics, Reliability, and Correlations Among the Metacognitive Processes and Decentering Global Score (Stage I).

Variable	Meta-awareness	(Dis)Identification with internal experience	(Non)Reactivity to internal experience	M	SD	Skewness	Kurtosis	α
Meta-awareness	—			2.99	.88	-.09	-.33	.77
(Dis)Identification with internal experience	.39***	—		2.91	.80	.11	-.04	.76
(Non)Reactivity to internal experience	.57***	.41***	—	2.87	.77	.10	-.49	.70
Decentering total score	.83***	.75***	.82***	2.92	.65	.03	-.33	.85

Note. *** $p < .001$.

(0.87) and *TLI* (0.82), an *RMSEA* (0.09), and an acceptable *SRMR* of 0.06 compared to the 3-factor model and the single-factor model.

Convergent and predictive validity

To establish the convergent validity of the French MPoD-t, we examined its associations with other measures of decentering or closely related processes (see [Bernstein et al., 2015](#)). As shown in [Table 4](#), significant positive correlations were observed between the decentering total score and each of the MPoD-t subscales, as well as other scales that measure individuals' ability to step back from the content of subjective experience, such as the Toronto Mindfulness Scale, the Experiences Questionnaire's decentering subscale, and the Self-as-Context Scale. Taken together, the French MPoD-t demonstrated weak-to-moderate to moderate-to-strong correlations with each of the convergent measures ($r = -.15$ to $r = .74$). These results are consistent with the initial findings for the English version and provide support for the convergent validity of the French MPoD-t with this sample. Correlations with psychological distress and emotional well-being variables were in the expected direction with the MPoD-t scale but showed weak relationships (see [Table 4](#)). Specifically, the French MPoD-t scale displayed weak positive correlations with positive emotion ($r = .03$ to $r = .19$) and weak negative correlations with psychological distress ($r = -.04$ to $r = -.15$). Regarding negative emotions experienced during the last month, the analysis showed a marginal negative relationship with the (Dis)identification with internal experience dimension ($r = -.09$), but conversely, a positive relationship with the meta-awareness dimension ($r = .09$).

Divergent validity

Correlations for discriminant validity were either non-significant or weak (see [Table 5](#)). Consistent with expectations, the French MPoD-t scale did not show significant relationships with measures of situational self-awareness (i.e., private self-awareness, public self-awareness, self in surroundings). The analysis revealed a weak correlation with the dissociative experience scale (r ranged from .15 to .28).

Table 3. Goodness of Fit Statistics and Information Criteria for the French Metacognitive Processes of Decentering Scale (Stage 1).

Model	χ^2	df	χ^2/df	SRMR	CFI	TLI	RMSEA	AIC
Single Factor	572.07	90	6.36	.10	.66	.61	.13	16112
3-Factor	343.47	87	3.95	.08	.82	.79	.10	15851
Bi-factorial	268.64	75	3.58	.06	.87	.82	.09	15779

Note. RMSEA = Root Mean Square Error of Approximation, SRMR = Standardized Root Mean Square Residual, TLI = Tucker-Lewis Index, CFI = Comparative Fit Index, AIC = Akaike information criteria.

Table 4. Correlations Among the Metacognitive Processes of Decentering Scale and Measures of Decentering (Stage 1).

	Decentering total score	Decentering subscales		
		Meta-awareness	(Dis)identification with internal experience	(Non)reactivity to internal experience
TMS				
Decentering	.49***	.32***	.44***	.41***
Curiosity	.19***	.23**	.15**	.07
FFMQ				
Observing	.16**	.22**	.11*	.04
Describing	.07	.10*	.05	.04
Acting with awareness	-.15**	-.15**	-.14**	-.06
Non-judging	-.01	-.08	.03	.05
Non-reactivity	.65***	.45***	.39**	.74***
SAC				
SAC	.46***	.40***	.28***	.43***
EQ-D				
EQ-D	.40***	.29***	.34***	.35***
Positive emotions				
Positive emotions	.14**	.10*	.19***	.03
Negative emotions				
Negative emotions	.02	.09+	-.09+	.05
GHQ				
GHQ	-.09+	-.02	-.15**	-.04

Note. TMS = Toronto Mindfulness Scale; EQD = Experiences Questionnaire's decentering subscale; SAC = Self-as-Context Scale; short FFMQ = Five Facet Mindfulness Questionnaire; GHQ = General Health Questionnaire; * $p < .05$. ** $p < .01$. *** $p < .001$. + $p < .10$.

Criterion validity

To test the criterion validity, the levels of MPoD-t scores and their sub-dimensions were compared between participants who did and did not engage in meditative practice. One-way ANOVAs revealed a marginal effect of contemplative practice on the MPoD total score, $F(1, 364) = 3.41, p = .06, d = .25$. A significant effect was observed on the Meta-awareness dimension, $F(1, 364) = 10.24, p = .01, d = .42$. However, the analysis on (Dis)identification with internal experience scores or (Non)reactivity to internal experience scores did not show significant differences ($F < 1$). To complete the picture, it was found that the more regular the contemplative practice participants reported, the higher their scores on the MPoD-t ($r = .21, p = .06$) and on (Dis)identification with internal experience ($r = 0.25, p = .02$). No significant relationship was observed between practice regularity and the meta-awareness dimension ($r = .17, p = .12$) or the non-reactivity to internal experiences dimension ($r = .08, p = .49$).

Table 5. Correlations of the French MPoD to Discriminant Validity Measures (Stage 1).

	Decentering total score	Decentering subscales		
		Meta-awareness	(Dis)identification with internal experience	(Non)reactivity to internal experience
DES	.27***	.28***	.15**	.21**
SSA	-.01	.05	-.03	-.04
Private self-awareness	.07	.12*	.01	.02
Public self-awareness	-.03	-.01	.01	-.06
Self in surroundings	-.03	-.01	-.02	-.04

Note. DES = The Brief Dissociative Experiences Scale; SSA = Situational Self-Awareness Scale.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

The results of the first stage confirmed that the factorial structure and internal consistency of the global composite score and its three subscales of the French version were similar to those observed in the original version. The French MPoD-t scale showed significant and relatively high inter-correlations (ranging from .39 to .83) between subscales and captured a global decentering factor that coexists with the three analytically derived metacognitive processes of decentering: meta-awareness, (dis)identification with internal experience, and (non)reactivity to internal experience. The French adaptation of the MPoD-t also showed good convergent validity. Correlation analyses generally revealed convergent validity between the French MPoD-t and conceptually similar existing scales designed to assess decentering or related constructs (e.g., EQ-D, TMS-D, SAC) (Hadash et al., 2017; Hanley et al., 2020a; Naragon-Gainey & DeMarree, 2017). Furthermore, the data confirm that mindfulness involves multiple components (Dahl et al., 2015; Shapiro et al., 2006; Vago & Silbersweig, 2012). In this sample, primarily composed of individuals who do not practice meditation, the non-judging or describing component of mindfulness (Baer et al., 2006) are not or only weakly associated with the decentering processes measured by the MPoD-t. Concerning divergent validity, the obtained data are more nuanced. On the one hand, they confirm that the decentering processes do not reflect a tendency to focus on private or public aspects of themselves (Brown et al., 2007). On the other hand, the data also revealed a positive correlation with the Dissociative Experience Scale (Carlson et al., 2018). In other words, the more participants reported experiencing a shift in self-perspective (e.g., a detached observer perspective) in their daily lives, the more they also reported experiencing episodes of absorption or depersonalization. Additionally, the data also show that when examining the relationships with the types of emotions

experienced in daily life, decentering is not associated with the experience of negative emotions and is instead positively associated with the experience of positive emotions. It is only the tendency to experience dissociative episodes that appears to be associated with more negative emotions. Future research should be addressed towards a better understanding of these results and exploring how and when decentering is associated to dissociative experiences and positive/negative emotions.

Finally, it should be noted that the criterion validity does not appear to be entirely satisfactory. The results did not indicate significant differences in (dis)identification with internal experience and (non)reactivity to internal experience scores between participants who did and did not engage in meditative practice. Only an increase in meta-awareness is associated with meditation practice. However, given the characteristics of the sample (i.e., undergraduate students, a low rate of practitioners), this result should be treated with caution. The second stage will aim to examine this aspect with a more heterogeneous sample including a greater number of meditation practitioners.

Stage 2

Stage 2 overview

The aim of the second stage was to investigate (1) the relationship between meditative practice and the three meta-cognitive processes of decentering identified by [Bernstein et al. \(2015\)](#), and (2) to what extent the identification of these processes provides a more nuanced understanding of the psychological mechanisms underlying the association between meditative practice and self-transcendent experiences in everyday life. As mentioned previously, we expect that for self-transcendent experiences involving transient self-diminishment and a sense of connectedness, such as awe/gratitude, it is primarily the meta-awareness component that would mediate this relationship. We expected that the (dis)identification component would assume a more mediating role when the experience of self-transcendence involves the identity dimension of the 'relational' component of STEs ([Sleight et al., 2023](#); [Yaden et al., 2017](#)). For instance, ASTI self-transcendence, as a broader conceptualization of the self in daily life characterized by a weak distinction between self and others, and between self and the environment, should be particularly associated with the consideration that mental phenomena as transitory and not necessarily true or identical to oneself.

Method

Participants selection. We used purposive and snowball sampling through social media platforms such as Facebook and LinkedIn to reach participants interested and/or practicing meditation. This approach helped us invite both meditators and non-meditators to complete a questionnaire using the Qualtrics software. Data collection took place from February 2022 to March 2022. Out of the individuals who clicked on

the questionnaire link ($n = 516$), 507 provided their consent to participate. After inspecting the data, 213 respondents were excluded due to numerous missing values. The final sample consisted of 294 participants (237 women, 53 men, 3 non-binary, 1 missing; $\text{Mage} = 45.45$, $\text{SD} = 11.90$). This sample comprised 153 participants who do not practice meditation and 128 participants who do. Meditators reported an average meditative practice of 2.39 hours per week ($\text{SD} = 1.29$). Refer to [Table 6](#) for socio-demographic differences between meditation practitioners and non-practitioners.

Ethical considerations. This study was approved by a French ethical committee (IRB00011540-2021-73). Following to the guidelines of the Declaration of Helsinki, the participants were informed through an informational notice of their right to refuse or withdraw from the study at any time without any consequences. Electronic consent was obtained virtually from all respondents before participation. The inclusion criteria were to speak, read and understand French fluently and to be at least 18 years old. No incentives were offered to encourage participation.

Procedure. In this self-report survey, participants were asked to share their feelings and perceptions regarding a set of experiences commonly encountered in daily life. For certain aspects, such as experienced emotions or the flow state, participants indicated the frequency with which they recently experienced these phenomena. The study duration was approximately 35 minutes. To mitigate potential response biases, it is crucial to note that the term “meditation” was intentionally omitted from the study invitation. The study was presented as an investigation into self-perceptions and behaviors. Information about participants’ meditation practices was only requested at the end of the questionnaire. This approach aimed to, to some extent, prevent participants from linking the measures of self-transcendence with the rhetoric sometimes associated with meditation practices.

Measures

The French Metacognitive Processes of Decentering trait Scale (MPoD-t) described in the Study 1 was used. The 15 items demonstrated adequate internal reliability for the global scale ($\alpha = .89$), and for each dimension (respectively $\alpha = .84$ for meta-awareness, $\alpha = .83$ for (dis)identification and $\alpha = .76$ for (non)reactivity).

Meditation/contemplative practice. Participants were asked the following two questions: “Do you have a meditative or contemplative practice (e.g., meditation, yoga)?” (1 « yes » - 0 « no »). If the response was positive, they were then asked to “please provide the approximate number of hours you spend engaged in meditative/contemplative practice per week.”

Self-transcendence measures

ASTI - Self-transcendent (Koller et al., 2017; Levenson et al., 2005) was assessed with the dimension of self-transcendent wisdom identified by Koller et al. (2017) in the

Table 6. Differences in Sociodemographic Characteristics Between Meditative Practitioners and No Practitioners (Stage 2).

Characteristics	Meditation		t
	Practice (n = 128)	No practice (n = 153)	
Age (SD)	46.63 (11.54)	44.14 (12.02)	-1.75+
Female (%)	81.3%	80.4%	0.16
Educational background (%)			-2.05*
Less than high school	1.6%	2.6%	
High school or equivalent	8.6%	14.4%	
Associate's degree	10.9%	11.8%	
Bachelor's degree	27.3%	26.8%	
Graduate degree	41.4%	41.2%	
PhD degree	10.2%	3.3%	
Socio economic classifications (%)			1.18
Farmers and operators	0.8%	1.3%	
Craftsmen, shopkeepers, business owners	8.6%	5.2%	
Executives or higher intellectual professions	35.2%	33.3%	
Intermediate or paramedical professions	20.3%	21.6%	
Employees	18%	17%	
Workers	0.8%	0.7%	
Retired	7.8%	6.5%	
Students	3.9%	7.2%	
Other non-workers	4.7%	7.2%	

Note. * $p < .05$. + $p < .10$.

Adult Self-Transcendence Inventory (see also Pellerin et al., 2020). These 7 items assessed if individuals feel that the boundaries between them and others are permeable, and if they feel related to past and future generations, all human beings, and nature (e.g., “I feel that my individual life is part of a greater whole”, $\alpha = .80$). Items are rated on a 5-point Likert scale ranging from 1 (Totally Disagree) to 5 (Totally Agree).

Flow Proneness Questionnaire (FPQ, Ullén et al., 2012). The 21-item FPQ is a self-report measure of how frequently individual has flow experiences in different situations. Three sub-scales with 7 items each and assesses flow during work, during leisure activities, and during maintenance (e.g., “When you do something at work, how often does it happen that . . . you feel completely concentrated?”). Each item was rated on a five-point scale from 1 “Never” to 5 “Every day, or almost every day”. Internal consistency was high for the FPQ with .87.

Positive self-transcendent emotions. As in Study 1, participants reported how much of each of positive emotions that they felt during the last month on a scale from 0 (*none at*

all) to 10 (*completely*) (see Anderson et al., 2018). Each emotion was assessed with single items consisting of synonym clusters: awe (i.e., awe, amazed, wonder), amusement (i.e., amused, having fun, laughing), contentment (i.e., content, relaxed, peaceful), gratitude (i.e., grateful, appreciative, thankful), joy (i.e., joyful, excited, enthusiastic), pride (i.e., proud, sense of accomplishment, successful), and curious (i.e., curious, interested, wanting to explore). For this study, we were particularly interested in examining the frequency with which participants specifically experienced self-transcendent emotions (Stellar et al., 2017; Yaden et al., 2017). Therefore, we calculated an average score for the specific self-transcendent emotions, which included the awe and gratitude clusters ($\alpha = .73$).

Data analysis

In this study, descriptive statistics, mean differences, and Pearson's correlation analyses were selected. All tests were two-tailed, and significance was set at 0.05. All statistical procedures were completed using SPSS 21.0. Mediation analyses were performed to test the mediating role of decentering processes in the relationship between meditative practice (i.e., yes vs. no) and self-transcendence experiences. We used the SPSS macro PROCESS (model 4) for bootstrapping indirect effects (Hayes & Preacher, 2013). This macro provides indirect effect estimates for multiple mediators, standard errors (SEs), and the confidence intervals (CIs) derived from the bootstrap distribution. All indirect effects were subjected to follow-up bootstrap analyses with 5000 bootstrap samples and 95% bias corrected CI (95% CI). If the 95% CI did not contain zero, then the indirect effect was considered statistically significant (Hayes & Preacher, 2013).

Results

Differences in sociodemographic characteristics. Table 6 shows the sociodemographic differences between meditation practitioners and non-practitioners. Overall, the two groups are fairly equivalent in terms of gender ratio and socio-professional categories. However, the results indicate that participants who practice meditation are slightly older ($M = 46.63$, $SD = 11.54$) than those who do not ($M = 44.14$, $SD = 12.02$), $t(278) = 1.75$, $p = .08$. Regarding the level of education, analyses indicate a higher proportion of participants with a PhD degree among meditators (10.2%) compared to non-meditators (3.3%), $t(279) = -2.05$, $p < .05$.

Differences in means and correlations. Table 7 compares the study variables between meditation practitioners and non-practitioners. Almost all variables showed that meditation practitioners scored significantly higher than non-practitioners, with the exception of flow proneness, where the difference was marginal. The magnitude of the differences was moderate in decentering (Cohen $d = .55$), ASTI self-transcendence (Cohen $d = .58$), awe/gratitude (Cohen $d = .47$) and small for flow proneness (Cohen $d = .20$). Furthermore, the relationship between practice, decentering and self-

Table 7. Descriptive Statistics and Tests of Difference Between Meditation Practitioners and No Practitioners on Decentering and Subcomponents, ASTI Self-Transcendence, Awe/Gratitude, Flow Proneness (Stage 2).

	Total (<i>n</i> = 294)	Meditation practice (<i>n</i> = 128)	No practice (<i>n</i> = 153)	<i>t</i>	<i>d</i>
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)		
Decentering (MPoD)	3.10 (.70)	3.31 (.66)	2.95 (.66)	4.58***	0.55
Meta-awareness	3.15 (.82)	3.42 (.76)	2.96 (.82)	4.90***	0.59
(Dis)identification	3.18 (.86)	3.41 (.84)	3.00 (.85)	4.01***	0.48
(Non)reactivity	2.97 (.73)	3.10 (.74)	3.00 (.71)	2.51***	0.30
Self-transcendence					
ASTI self-transcendence	5.07 (1.07)	5.41 (1.04)	4.80 (1.02)	4.88***	0.58
Awe/Gratitude	5.40 (2.03)	5.94 (2.03)	5.02 (1.91)	3.89***	0.47
Flow proneness	3.49 (.55)	3.55 (.53)	3.44 (.57)	1.65+	0.20

Note. *** $p < .001$, ** $p < .01$, * $p < .05$, + $< .10$.

transcendence measures remains significant even when sociodemographic variables (i.e., age, sex, educational background, socio-economic classification) were added as covariates (all F 's > 6). Only the association between practice and daily experienced flow disappears in favor of an effect of age ($p < .001$) and type of employment ($p < .01$).

Before testing the mediation hypothesis, we conducted Pearson correlations between the variables of interest. Overall, an increase in decentering was positively correlated with an increase in ASTI self-transcendent scores ($r = .43, p < .001$), an increase in the frequency of experiencing awe and gratitude emotions ($r = .34, p < .001$), and a slight increase in experiencing flow ($r = .22, p < .01$). More specifically, the results showed stronger correlations between the decentering subscales and self-transcendent experiences in meditation practitioners. Among them, an increase in meta-awareness, (dis)identification with internal experience, and (non)reactivity were all positively correlated with an increase in ASTI self-transcendence ($r = .41, p < .001$; $r = .42, p < .001$; and $r = .44, p < .001$, respectively) and an increase in awe/gratitude emotions ($r = .42, p < .001$; $r = .17, p < .05$; and $r = .32, p < .001$, respectively). The propensity to experience flow was only associated with an increase in meta-awareness among practitioners ($r = .23, p < .05$). The detailed correlations between the decentering subscales and self-transcendent experiences as a function of meditation practice are presented in Table 8.

Changes in metacognitive processes of decentering mediate the relationship between meditative practice and self-transcendence experiences

Awe/gratitude emotions. Analyses confirmed a significant total effect of meditative practice on self-transcendent emotions ($b = .91, se = .23, p = .001$; $CI: 0.45, 1.38$). The

direct effect lessened once the three metacognitive processes were introduced ($b = .58$, $se = .23$, $p = .01$; CI : 0.13, 1.05). As hypothesized, only one variable significantly mediated the effect of the meditative practice on self-transcendent emotions. While the indirect effect was not significant in the case of (dis)identification (indirect effect $b = -0.06$, $se = 0.07$; CI : -0.22 , 0.08) and (non)reactivity components ($b = 0.10$, $se = 0.07$; CI : -0.01 , 0.25), it was significant in the case of meta-awareness ($b = 0.29$, $se = 0.10$; CI : 0.10, 0.50). Thus, the increase in meta-awareness ability significantly mediated the relationship between meditative practice and feeling awe (i.e., awe, amazed, wonder) or gratitude (i.e., grateful, appreciative, thankful) in everyday life. Bootstraps analysis of an alternative simple mediation model revealed a relatively weak indirect effect of meditative practice on decentering through feeling of awe/gratitude (indirect effect $b = .09$; CI : 0.04, 0.16).

ASTI - Self-transcendent. Analyses confirmed a significant total effect of meditative practice on ASTI self-transcendence ($b = .60$, $se = .12$, $p = .002$; CI : 0.36, 0.84). When the three meta-cognitive mediators were statistically controlled for, the direct effect of meditative practice on ASTI self-transcendence remains significant (direct effect $b = .39$, $se = .12$, $p = .01$; CI : 0.16, 0.63). More specifically, as partially expected, the bootstrap procedure was only significant for the indirect effect of meditative practice on ASTI self-transcendence through the (dis)identification component of decentering (indirect effect $b = .10$, $se = .05$; CI : 0.03, 0.21). The indirect effect of meta-awareness ($b = .05$, $se = .05$; CI : -0.04 , 0.16) and the (non)reactivity to internal experience components were not significant ($b = .05$, $se = .03$; CI : -0.01 , 0.12). Thus, only the (dis)identification process significantly mediated the effect of meditation practice on self-transcendence ASTI (see Table 9). We also find support for the alternative model in which ASTI self-transcendent mediates the effect of meditation practice on decentering (see Table 9).

Flow proneness. A marginal total effect was found of meditative practice on flow proneness ($b = .11$, $se = .07$, $p = .10$; CI : -0.02 , 0.24). This effect became non-significant once the three metacognitive processes were introduced ($b = .03$, $se = .06$, $p = .64$; CI : -0.10 , 0.17). As for awe/gratitude, the bootstrap test of indirect effects was only significant for the effect of meditative practice on flow proneness through the meta-awareness component of decentering (indirect effect $b = .06$, $se = .03$; CI : 0.00, 0.13). The indirect effect of (dis)identification ($b = .02$, $se = .02$; CI : -0.02 , 0.06) and (non)reactivity to internal experience were not significant ($b = -.00$, $se = .01$; CI : -0.04 , 0.02). Thus, only the meta-awareness ability significantly mediated the effect of meditation practice on flow proneness. No support was found for the alternative model in which flow proneness mediates the effect of meditation practice on decentering (see Table 9).

Discussion

In this second stage, we aimed to investigate the relationship between meditation practice and psychological decentering (i.e., meta-awareness, (dis)identification with

Table 8. Pearson's Correlations Between Decentering Subscales and Dependent Variables Among Meditation Practitioners and No Practitioners (Stage 2).

	Meditation practice (n = 128)		No practice (n = 153)	
	Meta-awareness	(Dis)identification with internal experience	(Non)reactivity to internal experience	(Dis)identification with internal experience
Self-transcendence experiences				
ASTI self-transcendence	.41***	.42***	.44***	.26***
Awe/gratitude	.42***	.17*	.32***	.13
Flow proneness	.23**	.13	.09	.18*
			.21**	.21**
			.26***	.29***
			.19*	.17*

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

Table 9. Indirect, Direct, and Total Effects of Simple and Multiple Mediation Models (Stage 2).

	Indirect effect	Direct effect	Total effect
Meditation → Decentering → ASTI	$b = .21$ $CI: .11, .32$	$b = .39$ $CI: .15, .62$	$b = .60$ $CI: .36, .84$
Meditation → Meta-awareness → ASTI	$b = .05$ $CI: -.04, .15$	$b = .40$ $CI: .16, .63$	$b = .60$ $CI: .36, .85$
→ (Dis)identification → ASTI	$b = .11$ $CI: .04, .20$		
→ (Non)reactivity → ASTI	$b = .05$ $CI: -.00, 0.11$		
Meditation → Decentering → Awe/gratitude	$b = .33$ $CI: .16, .53$	$b = .59$ $CI: .13, 1.04$	$b = .92$ $CI: .45, 1.38$
Meditation → Meta-awareness → Awe/gratitude	$b = .29$ $CI: .09, .53$	$b = .59$ $CI: .13, 1.05$	$b = .92$ $CI: .45, 1.38$
→ (Dis)identification → Awe/gratitude	$b = -.06$ $CI: -.22, .08$		
→ (Non)reactivity → Awe/gratitude	$b = 0.10$ $CI: -.01, .26$		
Meditation → Decentering → Flow	$b = .06$ $CI: .02, .11$	$b = .05$ $CI: -.08, .18$	$b = .11$ $CI: -.02, .24$
Meditation → Meta-awareness → Flow	$b = .06$ $CI: .00, .13$	$b = .03$ $CI: -.10, .17$	$b = .11$ $CI: -.02, .24$
→ (Dis)identification → Flow	$b = .02$ $CI: -.02, .06$		
→ (Non)reactivity → Flow	$b = -.01$ $CI: -.04, 0.02$		
<i>Alternative mediation models:</i>			
Meditation → ASTI → Decentering	$b = .14$ $CI: .07, .22$	$b = .22$ $CI: .07, .37$	$b = .36$ $CI: .21, .52$
Meditation → Awe/gratitude → Decentering	$b = .09$ $CI: .04, .16$	$b = .27$ $CI: .11, .42$	$b = .36$ $CI: .21, .52$
Meditation → Flow proneness → Decentering	$b = .03$ $CI: -.01, .09$	$b = .34$ $CI: .18, .49$	$b = .36$ $CI: .21, .52$

Note. Models supported by the data are indicated with a grey background. b = unstandardized beta coefficient; CI = 95% Confidence Interval (lower and upper bound).

internal experiences, and (non)reactivity to thought content), and if these decentering processes can explain the association between practice and self-transcendent experiences in everyday life. As expected, we observed that meditative practitioners in daily life displayed a higher score of decentering and experienced self-transcendent states more frequently than the participants who did not practice. Thus, in line with Bernstein et al.'s model (2015), meditative practice is associated with greater meta-awareness, weaker identification to subjective experience, and reduced reactivity to the thought content. Furthermore, compared to non-practitioners, the results also showed that the development of these decentering processes among practitioners was more strongly associated with experiencing self-transcendent emotions such as awe or gratitude, cultivating a self-transcendence identity (Koller et al., 2017; Levenson

et al., 2005), and to a lesser extent, experiencing states of flow in everyday life (e.g., at work, during leisure activities).

Mediation analyses confirm that the conceptualization of the decentering process into three qualitatively distinct components helps identify the reasons why meditation is linked to the occurrence of self-transcendent experiences. While the data indicate that the overall decentering process mediates this relationship, multiple mediation analyses also reveal specificities based on the attentional and identity processes measured by the sub-components of decentering. Thus, the data suggest that the relationship between meditative practice and experiencing self-transcendent emotions or flow more frequently in our daily lives is primarily mediated by the attentional regulation process of decentering (i.e., the meta-awareness component). By allowing one to distance oneself from habitual mental patterns, the awareness of the processes of sensing, feeling, and thinking would provide attentional resources to recognize and reevaluate when necessary, and to savor the feelings and experiences more directly as they unfold in the present moment (e.g., kindness, feelings of connection, profound enjoyment) (Garland & Fredrickson, 2019). Interestingly, it is only the increase in the capacity to experience internal states as separate from one's self (i.e., (dis)identification from internal experience component) that explains the relationship between meditation and the emergence of a selfless perspective. As expected, an increase in decentering would be associated with a self-view in which the perceived boundary between oneself and the environment is no longer as rigid and closed. This shift in identity perspective would lead to experiencing feelings of interconnectedness with past and future generations, all human beings, and nature. Finally, although associated with meditative practice, the reduced reactivity to thought content component does not appear to play a mediating role.

General discussion

In this study, we tested and found support for the hypothesis that meditation is related to the emergence of self-transcendence experiences in daily life through the development of a decentering capacity. These results have several implications. First, they highlight the existence of a positive relationship between meditation practice and the experience of mental states in which the subjective sense of one's own self as an independent individual diminishes, sometimes giving way to a sense of unity with other people or with one's environment (Ataria et al., 2015; Dambrun et al., 2019; Garland et al., 2022; Hanley et al., 2020c). Meditation appears to be associated not only with temporary experiences of self-transcendence, such as sensations of self-diminishment and/or connectedness during practice, but also, as the data indicate, with an increased likelihood of experiencing self-transcendence in everyday life. In this research, compared to non-practitioners, practitioners reported more frequent experiences of emotions like awe or gratitude. They also reported more often experiencing a sense of competence and enjoyment in various activities that make up their daily lives and appear to have developed a perspective in which the self is perceived as an interconnected transient event (Dambrun & Ricard, 2011). Secondly, as observed in the literature, the ability to

observe one's thoughts and feelings as temporary events in the mind is at the core of mindfulness practice (Brown et al., 2007; Shapiro et al., 2006; Vago & Silbersweig, 2012). Study 2 confirms and extends these observations by demonstrating that each of the three cognitive components recently identified for comprehensively understanding the concept of psychological decentering has been influenced by meditation (Bernstein et al., 2015, 2019).

Finally, this study provides new insights into the psychological consequences potentially associated with a decentered perspective in everyday life. Indeed, in line with recent findings observed by Hanley et al. (2020c), the present data suggest that an increase in decentering through meditation may serve as a first step toward experiencing self-transcendent states. However, as hypothesized, the data also reveal differences in the respective roles of each of the three metacognitive processes of decentering. Thus, when considering all three components, the increase in the meta-awareness component best explains why practitioners more frequently experience gratitude and awe in their daily lives. As the Mindfulness-to-Meaning Theory suggests (Garland & Fredrickson, 2019), the emergence of self-transcendent positive emotions is facilitated by the practice of metacognitive monitoring of the present moment. By reducing self-referential processes such as mind-wandering or rumination, and by broadening individuals' attentional focus, meta-awareness allows individuals to feel interconnected and shift from an egocentric focus to an allocentric focus. Our data also corroborate the recent meta-analysis by Schutte and Malouf (2023) in that the ability to be aware of subjective experience is associated with a greater likelihood of experiencing flow in various daily life contexts. Interestingly, the meta-awareness component of decentering seems to be less significant in explaining the development of an interconnected and impermanent identity. This time, as expected, it is the ability to (dis)identify with internal experience that explains why practitioners develop a perception of the self as more interdependent and connected. ASTI self-transcendence appears to result from an identity process of decentering that brings about a shift in how we apprehend what constitutes our identity. Thus, rather than considering our thoughts and feelings as a reflection of our deep selves, the development of the capacity to take a detached view of one's thoughts and emotions would lead to experiencing the self as an interconnected transient event.

To conclude, another noteworthy implication of this work is the validation of a reliable measure of psychological decentering processes in the French language. Indeed, the results of these studies suggest that the French Metacognitive Processes of Decentering Scale (MPoD-t) is a psychometrically sound and theoretically valid measure of decentering and its metacognitive processes, including meta-awareness, (dis)identification with internal experience, and (non)reactivity to internal experience. In other words, the structure of this scale provides the opportunity to obtain a global score (i.e., average or total score) reflecting an individual's overall tendency to be capable of decentering. Furthermore, based on the three scores obtained for each of the sub-dimensions of this scale, this measure also allows for the possibility to nuance and specify the respective role of each theorized metacognitive process of decentering on

psychological functioning. In summary, this scale will be particularly useful for researchers interested in gaining a better understanding of the mechanisms underlying the effects of meditation. It is also valuable for practitioners with a Francophone audience involved in psychotherapy or counseling, as they seek a concise and reliable measure of psychological decentering.

Limitations and future directions

Regarding the primary limitation of our present two-stage study, it's worth noting that both of our samples predominantly consisted of female participants. This gender bias hinders the generalizability of our findings. While we did not detect gender differences in the MPoD-t or self-transcendence scores within Stage 2, data from Stage 1, which involved a university sample, did indicate a slightly higher decentering score among men. It should be noted that we have also observed differences in terms of age and level of education between practitioners and non-practitioners in Stage 2. However, except for the tendency to experience flow, the relationship between meditative practice, decentering processes, and self-transcendence experiences remains significant when statistically controlling for these sociodemographic variables. Additional research with larger and more diverse community samples is necessary to enhance the generalizability of our findings. In future research, the use of stratified sampling techniques could help uncover variations in MPoD-t across different domains, including culture, religion, and clinical populations. As things stand, the data we have collected do not permit us to establish a causal relationship between meditative practice, the development of decentering, and self-transcendence experiences in daily life. To confirm this relationship, an experience sampling study could be a useful methodology (Hoffman & Stawski, 2009). This method would enable us to explore whether the decentering processes are positively associated with day-to-day self-transcendence experiences at both the within-person and between-person levels (see Pellerin et al., 2020; Pellerin et al., 2022). Future research will also be necessary to investigate whether decentering processes always precede STE or if these psychological states mutually reinforce each other. Indeed, the indirect effects observed in alternative mediation models (e.g., meditation, self-transcendent emotions, decentering) suggest that STE have the potential to reinforce decentering. Like other studies in this domain, these data do not allow us to entirely dismiss the possibility that meditators may be more aligned with self-report measures of decentering/meditation-related experiences because they recognize the rhetoric describing the practice and the expected effects (Dahl et al., 2015). In this study, despite our efforts to minimize biased responses by introducing the term 'meditation' at the end of the questionnaire, it remains possible that the data may have been influenced by self-presentation strategies among meditative practitioners. Future research should also examine the sensitivity of the MpoD-t instrument. Indeed, according to Hanley et al. (2020a), the MpoD-t assesses a stable tendency to decenter that is susceptible to being influenced by individual characteristics (e.g., disposition or cultivated abilities) and/or situational factors (e.g., meditative retreat). The decentering

scale proposed in this study, therefore, does not allow for capturing a state of decentering during interventions or practices but only long-term dynamics. A randomized experimental study should be conducted to validate a brief state French version (i.e., MPoD-s) to better understand how and when changes occur during specific practices.

In a similar vein, it is important to clarify that the MpoD-t should not be considered solely as a measure of mindfulness traits; these decentering abilities can be seen as reflecting cognitive processes that can be cultivated across various meditative practices or cognitive therapies (e.g., cognitive distancing). For instance, in the present research, the item we used to determine whether participants practice meditation or not does not allow us to precisely identify the type of meditation involved. In the Francophone context, the term “meditation” primarily refers to mindfulness meditation. Future studies are necessary to specify this aspect. One approach, for example, could be to investigate whether the processes of decentering following regular practice of deconstructive meditation practices (such as self-inquiry and non-dual practices) differ from those traditionally observed following attentional and constructive meditation practices (such as focused attention and open monitoring) (Dahl et al., 2015). This understanding could help comprehend how experiencing an expanded sense of self through decentering practices contributes to identity, well-being and has positive social implications.

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Ethical Statement

Ethical Approval

Ethical approval was granted by a French ethical committee (IRB00011540-2021-73). All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent

Informed consent was obtained from all individual participants included in the study.

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Data Availability Statement

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Supplemental Material

Supplemental material for this article is available online.

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Dr. Catherine Juneau is a FRQSC-funded postdoctoral fellow at McGill University. She has completed her PhD in France at Clermont-Auvergne University. She is

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Maya Corman (University Clermont Auvergne, LAPSCO CNRS UMR 6024) is a second-year PhD student in psychooncology under the supervision of Pr Michael Dambrun, Pr Regis Peffault Delatour and Jacques-Olivier Bay. Her thesis work focuses on a psychological approach of people with hemopathy and undergoing stem hematopoietic cell transplantation process. This topic has two issues: the first issue aims to identify deleterious (e.g anxiety) or protective (e.g optimism) psychological factors involved in the different steps of bone marrow transplantation process. The second aims to put in place preventive intervention focused on emotion and attention regulation in order to reduce psychological distress before hospitalization and provide to patients some emotional and attentional resources to cope with this event in an adaptive way. By proposing such an intervention via a digital platform this program aims to overcome hospitalization constraints like isolation and treatment side effects getting patients physically and psychologically vulnerable.

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