



Familiarity, Attitudes, and Self-Regulatory Challenges Related to Mindfulness

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Abstract

Objectives Despite growing evidence demonstrating the benefits of mindfulness for physical and mental health, little is known about the barriers that dissuade individuals from practicing mindfulness. The present study sought to examine the self-regulatory barriers that most commonly prevent mid-life adults from engaging in mindfulness practice.

Methods The present study surveyed a nationally representative sample of 385 mid-life adults (ages 50–64) in the USA to assess familiarity, attitudes, and prior experiences with mindfulness, as well as self-regulatory challenges that may hinder consistent practice. Specifically, this research focused on the self-regulatory elements of (i) goal setting, (ii) limiting beliefs, (iii) habit formation, (iv) willingness to engage, and (v) self-monitoring.

Results Findings demonstrated that 79% of mid-life adults are familiar with the term mindfulness, yet only 34% are confident in their understanding of the term. Despite this lack of confidence, associations with the term were fairly positive, and the majority of mid-life adults expressed having tried to incorporate mindfulness into their lives. Due to this familiarity, positive perception, and attempted incorporation, one might expect that adopting a consistent mindfulness practice would be an easy next step. However, there was an indication that dramatically fewer individuals had taken the key self-regulatory steps toward developing a consistent mindfulness practice.

Conclusions This study revealed key self-regulatory challenges, such as failing to set a specific goal and create a habit, that may interfere with mid-life adults adopting a consistent mindfulness practice. Implications of these challenges are discussed, particularly for intervention design and education.

Keywords Self-regulation · Mindfulness · Mid-life adults · Mindfulness training

Over the past 50 years, mindfulness has gained increasing popularity and become widely integrated into mainstream culture (Mani et al. 2015; Shapiro 2009). Despite this increasing popularity, it remains unclear whether mid-life adults (MLAs; ages 50–64) in the USA have the knowledge they need to establish a successful mindfulness practice. Prior research suggests that this demographic, which consists of 40–70 million people (Howden and Meyer 2011), may be a subgroup of the American population highly susceptible to stress

compared to other age groups (Blanchflower and Oswald 2008). Stress is especially problematic for MLAs because they are at a heightened risk for chronic illness (Multack 2013). Mindfulness training may be a promising solution to down-regulate high levels of stress among this population.

Given the growing popularity of mindfulness, one might assume that most MLAs (i) are familiar with the term, (ii) have positive associations with it, and (iii) have a clear understanding of what mindfulness entails. However, the degree to which MLAs have a generally positive perception and clear understanding of mindfulness remains unknown even though these factors may predict engagement and exploration of the practice.

Even when individuals have accurate and positive perceptions of mindfulness, many still struggle to develop a regular and sustained mindfulness practice. This struggle can largely be attributed to a failure in self-regulation, the ability to bring

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thoughts and behaviors in line with goals and intentions (Vohs and Baumeister 2016). There are at least five self-regulatory elements that may impact the initiation and longevity of one's mindfulness practice: (i) goal setting, (ii) limiting beliefs, (iii) habit formation, (iv) willingness to engage, and (v) self-monitoring.

Goal setting is a useful but often neglected strategy for effective self-regulation (Locke and Latham 1990, 2002). Goal setting that emphasizes strategies and progress can minimize frustrations related to delayed success and can foster intrinsic motivation for long-term mastery of a skill or practice (Zimmerman and Kitsantas 1997, 1999). Goal setting may be particularly important during the early stages of skill acquisition, as goals help individuals avoid discouragement when facing challenges (Filby et al. 1999).

In addition to goal setting, releasing limiting beliefs can boost self-regulation. One of the most well-studied limiting beliefs is a fixed mindset which entails the belief that some attributes, such as intelligence—or in this particular case, mindfulness—are unchangeable (Hong et al. 1995). This limiting belief can have significant effects on learning outcomes (Mangels et al. 2006), reactions to setbacks (Dweck and Leggett 1988; Henderson and Dweck 1990), investments of effort (Dweck et al. 1995), and the goal orientation a person adopts toward learning (Burnette et al. 2013). Accordingly, endorsing a fixed mindset about one's ability to be mindful may reduce willingness to engage in mindfulness practice, particularly when it feels challenging. People may hold other limiting beliefs that shape their attitude toward mindfulness. For example, an individual may believe, "I'm not the kind of person who can stay focused," or, "I get more easily distracted than the average person."

Habit formation is another key element to successful self-regulation. A habit can be defined as a process by which an automatic impulse toward action is generated in response to a stimulus (Gardner 2015). This process is strengthened by learned associations (e.g., every day when I drink my first sip of coffee, I mindfully notice each unique sensation). Habits entail clear action or behavior (Nilsen et al. 2012), and this action occurs consistently when triggered by an environmental cue (Wood and Neal 2009). Habits promote goal pursuit by reducing reliance upon both conscious awareness and motivation to perform the intended behavior (Galla and Duckworth 2015; Lally et al. 2011). Developing a habit of mindfulness practice may allow individuals to consistently practice despite inevitable fluctuations in motivation.

Although often overlooked, willingness to engage in a behavior is another fundamental aspect of successful self-regulation. Willingness refers to an individual's ready intent to engage with something. Previous research indicates that willingness is based on the subjective value perceived in an activity (Gorges et al. 2013). Willingness to engage serves as both a key prerequisite for engagement in new activities and

commitment to existing goals (Gorges et al. 2013; Brunstein 1993; Crocker et al. 2006). It is therefore unsurprising that a willingness to engage enhances overall goal attainment (Locke and Latham 2002; Sheldon and Elliot 1998). Presumably, the self-regulatory state of being willing to practice mindfulness may considerably influence whether newcomers take the initiative to develop a mindfulness practice.

In addition to goal setting, releasing limiting beliefs, forming a habit, and being willing to engage, self-monitoring is a useful self-regulatory element. In the context of goal pursuit, self-monitoring involves the process of recording descriptive elements about the type, frequency, duration, or intensity of a behavior (Michie et al. 2011). Self-monitoring can take a variety of forms such as keeping a journal or tracking the frequency of the target behavior on an app. Research suggests that self-monitoring can assist in successful goal pursuit (Aittasalo et al. 2006; Burke et al. 2011; McFall 1970), and may, therefore, serve as a useful tool to promote a sustained mindfulness practice.

In the present research, the three primary aims were to assess MLAs' (1) familiarity with the term "mindfulness", (2) positive/negative associations with the term, and (3) self-regulatory challenges with actually practicing mindfulness. With regard to the first aim, we hypothesized that the majority of MLAs would be familiar with the word "mindfulness" and confident in knowing what the term meant. For the second aim, we hypothesized that, on average, MLAs' associations with the term would be fairly neutral (neither positive nor negative). For the third aim, we hypothesized that the majority of MLAs would struggle with at least one of the self-regulatory barriers assessed.

Method

Participants

Four hundred forty-six mid-life adults were recruited to participate through Qualtrics Panel Management. These volunteers were recruited online using overall demographic quotas based on census percentages to ensure a nationally representative sample based on gender, income, and geographical location (Boas et al. 2018). Given that data collected online can vary in degrees of quality, we included several attention checks and quality thresholds as inclusion eligibility requirements. Failing the quality threshold entailed not adequately completing at least one of the open-ended responses (e.g., typing "xxx" or something nonsensical). Six participants were excluded for failing an attention check, and 55 participants were excluded for failing the quality threshold. The remaining 385 volunteers (50.65% female, $M_{age} = 56.98$ years, age range = 50 to 64) were included in analyses. Informed consent was obtained from all individual participants included in the study.

Procedure

Participants first reported their familiarity and associations with the term “mindfulness”. Next, participants read a provided definition of mindfulness to use when answering subsequent questions. Although there are many definitions of mindfulness, the purpose of including a single definition was to facilitate standardized responses across participants. Specifically, participants read: *Throughout the rest of this survey, by the word ‘mindfulness’ we mean: When your mind is fully present with what you are doing right now.* We chose this particular definition for two reasons. First, we predicted that a parsimonious definition would better facilitate high levels of comprehension. Second, we attempted to be as inclusive as possible to all forms of mindfulness practice. Given that present-moment awareness is central to diverse forms of mindfulness practice and the exclusive element of some forms of practice, we relied upon this general criterion in our definition. We recognize that no universally agreed-upon definition of mindfulness exists (Van Dam et al. 2018; Williams and Kabat-Zinn 2011), and that this utilized definition is no better than other existing definitions, including those that emphasize non-judgmental acceptance. To facilitate comprehension of this definition, participants were asked to type this definition of mindfulness verbatim. Next, participants reported their prior experience with mindfulness and various self-regulatory challenges relevant to their engagement with mindfulness.

Measures

Familiarity, Associations, and Prior Experience with Mindfulness Participants were first asked to indicate whether they had ever heard of the term “mindfulness” [yes/no] and were then asked to indicate how confident they were that they knew what the term mindfulness means on a scale from 1 (very unconfident) to 6 (very confident). Participants who indicated familiarity with the term mindfulness then completed a one-item measure of their pre-existing associations with the word “mindfulness” on a scale from 1 (highly negative) to 10 (highly positive). Participants were then asked if they had ever tried to practice mindfulness in the past [yes/no]. Specifically, participants were asked: “When we say ‘practice mindfulness’, we mean to deliberately try to increase your ability to be fully present with what you are doing. Have you ever tried to practice mindfulness?”

Goals All participants were asked to provide information on whether they currently had a specific goal related to mindfulness [yes/no]. If they indicated yes, they were asked to describe the goal and then rate how successful their goal pursuit had been so far on a scale from 1 (very unsuccessful) to 6 (very successful).

Limiting Beliefs Participants were informed that people have a variety of subtle beliefs about who they are that sometimes show up in how they describe themselves. Three limiting beliefs were provided: “I’m not the kind of person who can stay focused”; “I can’t be focused on the present moment because I have too much going on”; “I get more easily distracted than the average person”. Participants then indicated whether they believed each of these independent statements to be true about themselves [yes/no].

Habits All participants were asked to provide information on their habits related to mindfulness. Participants first reported whether or not they currently had any habits that helped them practice mindfulness regularly [yes/no]. If they indicated yes, they were asked to describe their most helpful habit. After reviewing the responses, it became clear to the research team that many participants interpreted the term “habit” loosely. Four researchers coded participant responses on four criteria to identify responses that met our threshold for what constitutes a habit. The four criteria included: (1) action: referring to actively doing something (rather than an abstract concept); (2) consistency: entailing a regularly repeated nature; (3) cue: action was triggered by a specific stimulus; and 4) ultimate goal: action was closely aligned with the end goal rather than a means to some other unrelated end goal (e.g., “I practice meditation” rather than “I garden”). The first three criteria were defined a priori from the literature to differentiate habits from enacted behavior alone (Gardner, 2013). The fourth criteria emerged during discussions among the research team to distinguish behaviors that were pursued to clearly deepen one’s mindfulness practice from behaviors that were enacted mindfully but with a different goal in mind. Responses were coded for each criterion as No = 0, Yes = 1. Reliability analyses across the four coders suggested that these criteria were well agreed upon: action: $a = 0.71$; consistency: $a = 0.95$; cue: $a = .85$; ultimate goal: $a = .78$.

Next, the values for each criterion were averaged across the four coders, which provided a new action value, a consistency value, a cue value, and an ultimate goal value for each participant’s open-ended description of their habit. The sum of these four values was then used to determine the degree to which a reported habit indeed met our threshold for habitual behavior. These sums are referred to as “habit scores”, and they range from 0 to 4.0. A score of 4.0 met all four criteria according to all four coders and was considered to represent true habitual behavior. Examples of participant responses that received a habit score of 4.0 include: “I set a buzzer every morning to give me my 30 min to do meditation” and “Before I start my day, I meditate in a quiet space and also practice deep breathing.”

Willingness to Engage All participants then indicated whether or not they would be interested in trying any of the following

activities for 10 min daily: “Take a walk and practice mindfulness”; “Listen to music and practice mindfulness”; “Eat a meal and practice mindfulness”; “Have a conversation and practice mindfulness”; “Clean your home and practice mindfulness”; and “Take a shower and practice mindfulness.” Participants responded separately [yes/no] for each of the six statements. Next, without pointing to any particular activity, participants reported whether they would be willing to take 10 min out of their day to practice mindfulness regularly [yes/no]. Later in the survey, participants reported whether they would be willing to commit to a 26-h online course on mindfulness spread over 8 weeks. We included this particular question to gauge whether participants would consider a commitment equivalent to the typical length of the widely-known Mindfulness-Based Stress Reduction (MBSR) program.

Self-Monitoring The participants that indicated prior experience with mindfulness then reported whether they had kept track of the frequency of their practice in the past (e.g., in a journal or with an app) [yes/no]. Next, all participants were asked to indicate on a scale from 1 (extremely burdensome) to 5 (not burdensome at all) how burdensome it would feel to take 30 s each evening to record on a cell phone app how much they had practiced mindfulness that day.

Minutes of Mindfulness Practice Each Day Participants were asked to estimate, on average across the days of the week, how much time they spend each day deliberately practicing mindfulness. They were provided with this example: *If you deliberately practice mindfulness for 70-minutes on Monday and no other time all week, that would be an average of 10-minutes per day.* Participants rated their average practice time on a sliding scale from 0 to 120 min.

Data Analyses

The majority of the data collected in this survey was quantitative and is reported descriptively. Percentages were calculated to assess binary response options [yes/no], while means and standard deviations were calculated to assess responses to rating scale items. Regression analyses were used to assess the relationships between variables.

Qualitative data were analyzed using a standard inductive coding approach. Four members of the research team first read through all responses to identify data-driven themes (Bryman and Burgess 2002). Following widely used recommendations, four themes were identified and translated into a coding scheme (Creswell 1998; Saldaña 2015; Thomas 2003). A team of coders scored all qualitative responses on the identified themes. Sufficient interrater reliability using Cronbach's alpha was found for all themes (see Habit section above). All data are available at the Open Science Framework (<https://osf.io/6rtj2/>).

Results

Familiarity, Associations, and Prior Experience with Mindfulness

The majority of participants (79.2%) were familiar with the term mindfulness, yet a minority (34.2%) were confident they knew what the term meant. Among the individuals who were familiar with mindfulness, individuals reported relatively positive associations with the term ($M = 7.93$, $SD = 1.73$). A large portion of participants (64.4%) had previously tried practicing mindfulness.

Goals

The minority of participants (22.6%) reported setting a goal related to mindfulness. Of those that indicated the presence of a specific goal, a majority (78.2%) said that they were somewhat successful to very successful at reaching this goal (17.7% of the total sample).

Limiting Beliefs

Across the total sample, 40.8% endorsed at least one of the three limiting beliefs described in the survey. Specifically, 19.7% of the total sample held the limiting belief that they are the kind of person who cannot stay focused, 21.3% held the limiting belief that they are the kind of person who has too much going on to be focused on the present moment, and 26.8% held the limiting belief that they get more easily distracted than the average person.

Habits

Across the total sample, 46% of participants reported that they currently have a habit that helps them practice mindfulness regularly. These participants then provided an open-ended response describing their habit. Each of these responses was given a “habit score” derived from qualitative coding intended to characterize the extent to which these self-reported habits met the criteria described in the “Method” section above. Among those reporting having a habit, only 0.7% of participants described a process that qualifies as a habit by our criteria (e.g., received a habit score of 4.0). Based on our coding scheme, it appears that many participants used a loose interpretation of the word “habit” because the average habit score was quite low ($M = 1.42$, $SD = 0.92$). Using a habit score threshold of 3.0, 11.1% of participants who reported having a habit indeed had cultivated one. By any of these interpretations, forming a habit to practice mindfulness was a self-regulatory strategy used by only a minority of participants.

Willingness to Engage

Across the total sample, a majority of participants (88.8%) reported that they would be willing to take 10 min out of their day to regularly practice mindfulness. Many participants also indicated that they would be willing to incorporate mindfulness into certain common activities, like taking a walk (80.0%), listening to music (81.3%), eating a meal (56.6%), cleaning their home (62.9%), having a conversation (69.3%), or taking a shower (73.8%). Findings also revealed that about half of participants (50.9%) indicated that they were willing to commit 26 h to an online mindfulness course, the typical length of an MBSR program.

Self-Monitoring

Of the participants who had practiced mindfulness (64.4% of the total sample), a small minority (7.3%) kept track of how often they practiced. Participants were then asked on a scale from 1 (extremely burdensome) to 5 (not burdensome at all) how burdensome it would feel to take 30 s each evening to record their practice on a cell phone app. On average, participants reported that it would be slightly to moderately burdensome ($M = 3.45$, $SD = 1.25$).

Self-Regulatory Challenges, Perceptions of Mindfulness, and Amount of Practice

Using logistic regression, we also explored whether participants' perceptions of mindfulness were associated with their self-regulatory behavior. We used logistic regression here because most of the self-regulatory variables were binary, and we used separate regressions for each analysis. Greater positive perceptions of mindfulness were associated with a greater tendency of (i) setting a goal around practicing mindfulness

($B = 0.28$, $p = .01$) and (ii) being willing to practice mindfulness for 10 min every day ($B = 0.38$, $p = .06$). Positivity of perception was not associated with holding limiting beliefs ($B = 0.12$, $p = .77$) nor self-monitoring ($B = 0.12$, $p = .94$). Using linear regression, we assessed whether participants' perceptions of mindfulness were associated with forming a habit to practice as indexed by their habit score (e.g., the coded variable described above). Indeed, positive perceptions were associated with the formation of a habit ($B = 0.13$, $p = .01$).

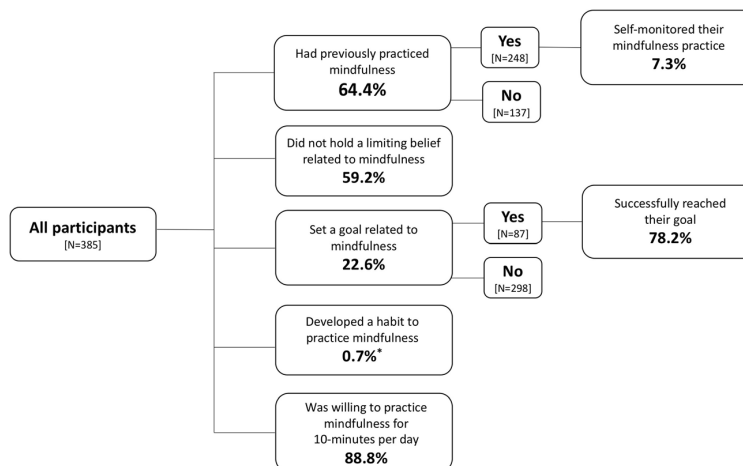
As mentioned, 64.4% of the sample reported that they had tried to practice mindfulness. We next examined whether, within this subset of participants, there was an association between perceptions of mindfulness and the amount of daily practice. The amount of daily practice was operationalized as the number of minutes a participant practiced mindfulness per day on average. Positive perceptions were significantly associated with the amount of daily practice ($B = 4.45$, $p = .003$).

Discussion

Mindfulness can provide numerous benefits, but these benefits emerge from practicing mindfulness. Exploring the barriers that hinder consistent practice is, therefore, a crucial part of understanding how people can benefit from mindfulness. The present research suggests that the majority of MLAs in the USA have heard of mindfulness, yet they are not confident in their understanding of the term. And despite holding a predominantly positive view of the practice, significant self-regulatory obstacles may interfere with developing a consistent mindfulness practice (Fig. 1).

Many of these obstacles consist of preventable self-regulatory failures. For example, roughly 75% of the participants had neglected to set a goal related to mindfulness. Almost half of the participants endorsed at least one limiting

Fig. 1 Summary of self-regulatory frequency of use. The flowchart depicts the frequency of use of each self-regulatory element. Percentages of the appropriate sample or sub-sample are reported. Note: * This number represents the percentage of participants with a habit score rating of 4.0



belief that would likely hinder their engagement, the most common being, "I get more easily distracted than the average person." Additionally, less than 1% of the sample had formed a habit to practice. Finally, less than 10% of mindfulness practitioners had used self-monitoring to track their mindfulness practice, even though the majority of our sample did not view self-monitoring as a burdensome task. Results also suggested that several self-regulatory elements, and the amount of practice itself, may be associated with the positivity of one's perceptions of mindfulness.

Limitations and Future Research

These findings relate specifically to MLAs throughout the USA and may not generalize to other demographics. Future research in this area should expand the scope of the populations surveyed, addressing differences in age, education, occupation, socioeconomic status, and ethnicity. Understanding how relationships with mindfulness differ across demographics will help mindfulness educators optimize learning outcomes by providing increasingly personalized instruction.

It is also important to note that the definition of mindfulness provided in this study may limit the generalizability of the research. The definition provided described mindfulness as "when your mind is fully present with what you are doing right now." Notably, the definition does not include aspects of non-judgmental awareness typically incorporated in definitions of mindfulness. The decision to define mindfulness in this way was in response to the diversity of mindfulness-based practices, including practices that do not incorporate non-judgmental awareness (Lutz et al. 2015). In contrast, most forms of mindfulness do emphasize bringing awareness to the present moment. Accordingly, our definition sought to capture as many practitioners of mindfulness as possible by finding common ground across the diverse forms of mindfulness practice. Notwithstanding our rationale, defining mindfulness in this way does not allow our research to speak specifically to the perceptions and experiences of MLAs who practice mindfulness in a way not captured by the definition provided.

Additionally, the research did not attempt to investigate factors that might influence perceptions of mindfulness or key self-regulatory elements. For example, a history of chronic pain or psychological trauma might reduce willingness to engage or fortify limiting beliefs. MBSR classes have been developed to provide a safe and supportive environment for patients dealing with chronic pain and stress to explore and reduce their symptoms through mindfulness and yoga practices (Garmon et al. 2014). Additionally, the study did not evaluate constructs such as readiness to change found in commonly used therapeutic change models, such as the Transtheoretical Model of Health Behavior Change (Prochaska and Velicer 1997). The research also did not

investigate the role individual differences may play in shaping beliefs about one's ability to pay attention. For example, individuals demonstrating high levels of absorption may hold fewer limiting beliefs and consequently be more willing to engage in mindfulness practice (Owens et al. 1999). These are all interesting areas for future research.

Further, the measures used in this study were not taken from previously validated scales but were developed by the research team. Although the lack of validated measures suggests additional caution in interpreting the findings of this research, we were unable to rely on validated scales because existing scales designed to answer the research questions of this study have yet to be developed or empirically validated. Additionally, the data came from cross-sectional self-report questionnaires, which only permit an examination of associations between measures without inferring directionality, or causality.

Finally, due to its reliance on self-report in a single survey, this study may suffer from common method bias (Podsakoff et al. 2003). Presenting multiple scales within the same survey can lead to spurious correlations due to participants' response styles or social desirability. Although statistical techniques (e.g., Harman single-factor test, the marker variable technique; see Podsakoff et al. 2003) have been used to control for common method bias, these techniques pose a substantial risk of false conclusions.

Cumulatively, these findings suggest that efforts to promote mindfulness among MLAs should aim to strengthen the self-regulatory skills that could help individuals translate an interest in mindfulness into sustained practice. Positive perceptions of mindfulness should also be actively strengthened during initial phases of learning because positive perceptions of mindfulness are related to goal setting, willingness to practice, and amount of daily practice. Based on the results from this study, some specific implications for mindfulness teachers to consider include (i) providing a clear definition of mindfulness, as well as conducting comprehension checks to correct misunderstandings, (ii) highlighting the immediate and long-term benefits of mindfulness to boost the positivity of perceptions, (iii) counteracting limiting beliefs by promoting a growth mindset, (iv) encouraging practitioners to set goals related to their practice, (v) highlighting the importance of developing a mindfulness habit and providing habit formation guidelines, and (vi) supplying or suggesting resources to help individuals self-monitor their progress.

Author Contributions Both AJM and MDM contributed to the study design, data collection, data analysis, manuscript writing, and manuscript revision. LEA contributed to the data coding and manuscript writing. JNC contributed to the data coding, manuscript writing, and manuscript revision. AMH contributed to the data coding, manuscript writing, and manuscript revision. TCM contributed to the data coding, data analysis, manuscript writing, and manuscript revision. JWS contributed to the study design and manuscript writing.

Funding Information This work was supported by the John Templeton Foundation (grant number 52071).

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Human and Animal Rights and Informed Consent This research involves only human participants, all of whom provided informed consent before the study. The consent materials were all approved by the University of California Santa Barbara's Human Subject's Committee.

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