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Mindfulness Meditation: A Preliminary Study on Meditation Practice During Everyday Life Activities and its Association with Well-Being

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Abstract

Past research has shown that mindfulness meditation is useful for the attenuation of psychological and physical suffering in clinical populations. In structured mindfulness-based interventions, patients engage in meditation exercises to refine their attentional skills and to learn to purposefully relate to the present moment experience in a non-judgemental manner. Following the development of such interventions, mindfulness has also received considerable attention in academic psychology, where it has been incorporated in the self-determination theory (SDT). According to SDT, the cultivation of mindfulness may warrant effective need gratification and consequently yield enhanced well-being in healthy individuals. In this context, in the current study, we examined the association between mindfulness meditation, self-reported trait mindfulness and their predictive value for psychological well-being in a non-clinical sample. Individuals who engaged in mindfulness meditation regularly ($N = 30$) were compared to individuals without meditation experience ($N = 30$) on various scales which assessed trait mindfulness and psychological well-being. Meditators reported higher emotional well-being, which was predicted by frequency and duration of practice. Especially those practitioners, who made efforts to implement mindfulness practice in activities of everyday life showed enhanced emotional adjustment. In an explorative analysis, mindfulness was identified as a putative partial mediator of the relationship between meditation practice and well-being. Despite methodological constraints, results of the current study suggest that mindfulness meditation, in a non-clinical context, is associated with increased psychological well-being, and as such worth to be explored in more detail by future research. The study and its results might be relevant for the clinical sector as well, since they provide some information on how individuals with e.g., subclinical residual symptoms can protect themselves complementarily to CBT, but without participating in a completely structured mindfulness-based intervention.

Keywords: mindfulness meditation, regular and irregular meditators, Mindfulness awareness scale, emotional well-being, cognitive therapy

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With the accumulation of studies which indicate that mindfulness meditation (MM) is beneficial for various clinical populations, mindfulness-based interventions have been established as useful in the clinical field (Baer, 2003; Williams, Russell, & Russell, 2008). Interventions such as Mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1990) or Mindfulness-based cognitive therapy (MBCT; Segal, Williams, & Teasdale, 2002) are nowadays regarded as possibly alleviating psychological and physical suffering brought about through conditions as diverse as chronic pain, anxiety, eating and depressive disorders, as well as medical problems such as fibromyalgia and psoriasis (Grossman, Tiefenthaler-Gilmer, Raysz, & Kesper, 2007; Hofmann, Sawyer, Witt, & Oh, 2010; Kabat-Zinn et al., 1998; Kristeller & Bolinsky, 2010; Rosenzweig et al., 2010).

Mindfulness, which is rooted in Buddhist philosophy, is commonly defined as a certain way of paying attention, in which attention is purposefully and non-judgmentally brought to the present experience on a moment-to-moment basis (Kabat-Zinn, 1990). Bishop et al. (2004) have provided an elaborate model to explain pathways, which may yield beneficial effects of mindfulness. According to this two-component model, mindfulness yields elevated attentional resources, affect tolerance, emotional awareness, and reduced avoidance. In line with this assertion, it has been shown that structured mindfulness training seems to be effective in reducing ruminative thought patterns and in improving attention and self-regulation (Deyo, Wilson, Ong, & Koopman, 2009; Jha, Krompinger, & Baime, 2007; Ramel, Goldin, Carmona, & McQuaid, 2004).

With the apparent efficiency of mindfulness-based interventions, the concept has also become of increasing interest to academic psychology. Firstly, theories of self-regulation seem to resemble the original notion through their assertion that a certain degree of awareness is necessary for adaptive functioning (e.g., Kaplan & Berman, 2010). In addition, attempts have been made to incorporate mindfulness into existing contemporary theories. Brown and Ryan (2003) embedded the mindfulness concept in the self-determination theory (SDT; Deci & Ryan, 1985). SDT is an approach to human motivation and personality, which focuses on the human resource to self-enhance, bring about personality development and self-regulation. SDT seeks to examine these human tendencies of growth and required circumstances. Necessities particularly include the satisfaction of the needs for competence, relatedness and autonomy. Satisfaction of these needs seems to yield appropriate conditions for growth, and adaptive personal and social development (Chirkov, Ryan, Kim, & Kaplan, 2003; Patrick, Knee, Canevello, & Lonsbary, 2007). In contrast, the undermining of need satisfaction seems to be associated with an inhibition of growth tendencies (Ryan & Deci, 2000). How does mindfulness relate to the described notions? According to SDT, the state of open awareness can be seen as essential in promoting choices of behavior, which are congruent with personal needs and values. Mindfulness involves enhanced awareness of any given experience. It therefore may also enhance an individual's ability to monitor her

current state and action, as well as the congruence of the latter with given needs. Following this notion, it has been argued that mindfulness represents a basis for healthy self-regulation in the context of SDT (Brown & Ryan, 2003; Brown, Ryan, & Creswell, 2007a, 2007b).

As indicated, meditative exercises are traditionally seen as a mean to enhance mindfulness. This holds true for numerous Buddhist traditions (Hanh, 1996; Nyanaponika, 1988) as well as for secular interventions derived from Buddhist meditation, such as MBSR and MBCT. With evidence for beneficial effects of MM in clinical populations consolidating, the question to what extent non-clinical populations may benefit from MM practice comes to mind. It seems especially important to shed light on the question what a possible dose-effect relationship of meditation and subjective well-being might look like, hence, how long and frequently healthy individuals need to meditate to experience positive effects, and which element of the practice and its circumstances may play an important role. These questions are in the focus of this preliminary research. Even though it appears to be unrealistic to find a definite answer to the question of a dose-effect relationship, there are several aspects of meditation, which might be shown to be essential for efficient meditation practice. A review of meditation instructions given in Buddhist traditions, and the adapted instructions made use of in contemporary clinical interventions, points out the importance to engage in meditation practice during everyday life activities. In various Buddhist traditions, monks and practitioners are explicitly motivated to "transport" their mindfulness training from the formal sessions on the meditation cushion into activities of everyday life (Hanh, 1996; Nyanaponika, 1988). Instructions given in mindfulness-based interventions resemble this task through homework, e.g., to engage in meditation practice while performing actions such as household maintenance (Kabat-Zinn, 1990; Segal, Williams, & Teasdale, 2002). Supporting the usefulness of these instructions, Brown and Ryan (2003) detected higher levels of mindfulness in non-clinical meditation practitioners, especially for those who implemented their practice in everyday life. In terms of the model devised by Bishop et al. (2004), the task to engage in continuous practice is plausible. Continuous practice ought to yield an ongoing orientation to experience and self-regulation of attention, which should result in affect tolerance, emotional awareness, reduced avoidance and more attentional resources. One can also rephrase these notions in terms of SDT, according to which ongoing efforts to be mindful ought to be associated with continuous monitoring of individual needs and their gratification.

Aims of the Study

Though Brown and Ryan (2003) were able to show that mindfulness appears to be higher in practitioners of contemplative practices, such as practitioners of Zen-meditation, in the latter research no direct link has been established as to how this practice is related to outcome measures of adaptive characteristics. It has also not been verified, whether the effort made when engaging in contemplative exercises predicts mindfulness and adaptive characteristics. In the current study, we sought to gather initial information related to these questions.

The first goal was to replicate findings provided by Brown and Ryan (2003), according to which a positive relationship between mindfulness and emotional well-being, and a negative relationship between mindfulness and emotional discomfort is given on a trait level. In addition, we compared two groups, namely a group of meditation practitioners and a group of individuals without meditation experience. A focus was placed on mindfulness and subjective well-being. We predicted higher levels of mindfulness and well-being for meditation practitioners.

Secondly, the relation of practice intensity and subjective well-being was to be explored. We assumed that those practitioners whose practice is more intense (longer session duration and higher frequency) ought to profit more than those with less intense practice, reflected in higher mindfulness and well-being scores. Assuming a mediating function of mindfulness, we predicted that the relation between intensity of practice and well-being ought to depend on trait mindfulness.

Finally, it was to be verified, whether subjective well-being of meditation practitioners varies with their effort to be mindful during activities of everyday life, as has been suggested by others (Kabat-Zinn, 1990; Segal, Williams, & Teasdale, 2002). We predicted that those practitioners with pronounced efforts to implement practice during daily activities would display relatively increased subjective well-being. In terms of clinical psychology, the current study and its results may be relevant as well, since information may be gathered on how individuals with subclinical symptoms can protect themselves from symptom deterioration.

METHOD

Participants and Procedure

The study included 60 participants, which made up two groups, labeled meditators ($N = 30$, 15 female; $M_{\text{age}} = 24.6$, $SD = 3.7$) and non-meditators ($N = 30$, 15 female, $M_{\text{age}} = 25.8$, $SD = 4.8$). The meditators were meditation practitioners who were recruited in a Buddhist University in Budapest, Hungary, while the non-meditators were students of ELTE University, Budapest. Meditators participated in meditation courses regularly as part of their curriculum. These courses focused on

Satipatthana and Vipassana Meditation, both of which are immediately related to the cultivation of mindfulness (Nyanaponika, 1988).

Questionnaires were handed out to students before classes. Participants were told that the questionnaires were related to a study in the field of psychology that deals with meditation training. After the completion of the questionnaires, participants were debriefed and told that the research topic referred to a possible connection between meditation practice and well-being.

Measures

The set of questionnaires, completed by all participants, included the followings:

Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003) is a 15-item scale. Participants indicate how frequently they experience phenomena described in each item, making use of a 6-point Likert-type scale (1 = almost always, 6 = almost never). Questions assess how aware participants are of various phenomena related to the monitoring and regulation of emotions, thoughts, behaviors, sensations and activities, e.g., "I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.", "I snack without being aware that I'm eating." The final score is computed by summing up all single-item scores. High scores reflect a higher degree of mindfulness. The factor structure and reliability of the MAAS have been confirmed in various studies including student as well as adult populations (Brown & Ryan, 2003), and in our analysis the MAAS showed sufficient internal consistency ($\alpha \geq .80$).

Positive and Negative Affect Schedule, extended version (PANAS-X; Watson & Clark, 1994) is a 60-item Likert-type scale on which participants are supposed to indicate to which extent they have felt in line with given terms describing emotional states, during the last weeks. Correspondence of personal experience and given adjectives is to be indicated on a scale ranging from 1 (very slightly or not at all) to 5 (extremely). The device yields four clusters of basic scales. The first of these basic scales are referred to as the *General dimension scales* and include the *Negative* and *Positive affect scales*. The second group of scales is referred to as the *Basic negative emotion scales* and includes the *Fear, Hostility, Guilt* and *Sadness scales*. The third cluster is labeled *Basic positive emotion scales* and includes the *Joviality, Self-assurance* and *Attentiveness scales*. Finally, the fourth cluster is referred to as *Other affective states* and contains the *Shyness, Fatigue, Serenity* and *Surprise scales*. Sufficient internal consistency was found for all subscales of the PANAS-X ($\alpha \geq .70$).

The *Beck Anxiety Inventory* (BAI; Beck & Steer, 1990) consists of 21 items, all of which describe common symptoms of anxiety, e.g., *fear of worst happening, hands trembling, feeling of choking*. The instrument was developed to reliably discriminate anxiety from depression. Respondents are asked to rate the degree to

which they have been bothered by each symptom over the past month by making use of a 4-point scale which ranges from 0 (never) to 3 (all the time). In order to compute the final score, scores of all items are summed. The total score can range from 0 to 63 where a score of 0-21 indicates *low*, 22-35 *moderate* and a score exceeding 36 points indicates *high* anxiety. The BAI showed sufficient internal consistency ($\alpha \geq .80$).

Subjective Vitality Scale (SVS; Bostic, Rubio, & Hood, 2000). Subjective vitality was assessed with the trait version of the Subjective Vitality Scale (Ryan & Frederick, 1997). Subjective vitality is defined in terms of feeling alert, alive and having energy available to the self. The trait of subjective vitality has been shown to be positively related to self-actualization and self-esteem on the one hand and negatively to depression and anxiety on the other (Ryan & Frederick, 1997). The scale consists of 7-items which are to be rated on a Likert-type scale ranging from 1 (not at all true) to 7 (very true). The items consist of statements referring to ones feeling of vitality, e.g., "*Sometimes I feel so alive I just want to burst*" or "*I look forward to each new day.*" The scoring occurs through averaging over the 7 items. Using confirmatory factor analysis, Bostic, Rubio, and Hood (2000) were able to show that the validity of the scale increased for a 6-item solution (omitting item two of the original scale). This finding is taken into consideration in the analysis and scoring occurs accordingly. The SVS showed sufficient internal consistency ($\alpha \geq .80$).

For the purpose of comprehensibility, we grouped the involved scales and their subscales into two clusters, which we labeled *Positive* and *Negative emotionality*. The former comprised the subscales positive affect, positive emotion (joviality, self-assurance, attentiveness), serenity and surprise of the PANAS-X, as well as the SVS. The latter consisted of the subscales of negative affect, negative emotion (fear, hostility, guilt, sadness) shyness and fatigue of the PANAS-X, as well as of the BAI.

In order to assess frequency, duration and meditation experience, specific questions needed to be answered referring to meditation practice in a forced-choice manner. In particular, if a participant reported to ever have engaged in meditation practice and to have done so at least once in the past eight weeks, she was assigned the label "*meditator*". If a participant had never had any experience with meditation, or had some experience but this experience did not occur at least once per week within the past eight weeks, she was labeled a "*non-meditator*". It should be noted that all participants recruited in the Buddhist University fell into the category meditator. All other participants fell into the category non-meditator. The choice of the time interval is based on MBSR and MBCT, intervention programs that last eight weeks and for which beneficial effects have been reported.

With regard to the duration of the meditation sessions, meditators could indicate that they meditated 10-15 minutes (*short-term meditators*), 15-30 minutes (*medium-term meditators*), 30 minutes or more (*long-term meditators*) per session.

Meditators could further report to have meditated once (*low-frequency mediator*), twice (*moderate mediator*), or three times or more (*advanced mediator*) per week in the past eight weeks.

It was of special interest, whether there would be differences in well-being between meditators who engage in meditation practice during everyday life activities, as compared to those who meditate only in a certain setting. Therefore, meditators were subdivided into "*restricted practitioners*", who included those who reported not to practice during everyday life, and "*everyday life practitioners*" who contained all meditators who reported to meditate during everyday life activities.

RESULTS

Subsequently, a correlation analysis was conducted for the whole sample to test for an association of the involved parameters using one-tailed tests. Since directional hypotheses were formulated, in line with Field (2009), one-tailed tests were used. In order to test for differences in mindfulness and well-being across groups, independent-samples t-tests were used, incorporating MAAS, PANAS-X, BAI and SVS scores. Wilcoxon rank-sum tests were used if parametric test criteria were violated. Scores of each scale were tested for normality of distribution by means of the Kolmogorov-Smirnoff test. Meditation frequency and duration were correlated with the scores of all scales by means of Pearson correlations or Kendall's Tau, if indicated. In order to explore whether mindfulness might represent a mediator between meditation practice and well-being, the constellation of associations between meditation frequency, mindfulness and well-being measures was examined. If the constellation allowed for the assumption, that mindfulness might function as mediator, partial correlations were conducted between meditation frequency and relevant outcomes, controlling for mindfulness. The same was done in case of session duration. Even though a Sobel-test (Sobel, 1982) and multiple regression analyses in line with Baron and Kenny (1986) would be sound procedures for a mediation analysis, the involved sample size does not warrant their usefulness. Hence, testing for a putative mediation effect of mindfulness was just explorative and conducted via partial correlations, which involve clear interpretative limitations. The difference in subjective well-being between everyday life practitioners and restricted practitioners were assessed through independent samples t-tests with the above named scales.

Mindfulness and Well-Being

In the positive emotionality cluster, mindfulness significantly correlated with positive affect, positive emotion, joviality, attentiveness and vitality. Detailed results are displayed in Table 1.

Table 1. Correlations of mindfulness and positive emotionality

Scale	Subscale	Pearson r	Kendall's τ
PANAS-X	Positive affect		.22**
	Positive emotion	.32**	
	Joviality	.23*	
	Self-assurance		.14
	Attentiveness		.34**
	Serenity	.10	
	Surprise		.15
Vitality		.30**	

* $p < .05$; ** $p < .01$ (one-tailed)

In the negative emotionality cluster, mindfulness was significantly correlated with anxiety. Anxiety decreased, as the level of mindfulness increased. Detailed results are shown in Table 2.

Table 2. Correlations of mindfulness and negative emotionality

Scale	Subscale	Kendall's τ
PANAS-X	Negative affect	.04
	Negative emotion	.07
	Fear	.04
	Hostility	.15
	Guilt	-.13
	Sadness	.10
	Shyness	.06
	Fatigue	-.05
	BAI	-.26**

** $p < .01$ (one-tailed)

Meditators vs. Non-meditators

On average meditators scored higher on the MAAS than non-meditators. This difference was non-significant. Meditators however scored significantly higher on five of the scales of the positive emotionality cluster. In particular, meditators scored significantly higher on the positive affect, positive emotion, attentiveness and surprise scale. Detailed results are shown in Table 3 and 4. Meditators and non-meditators did not differ on any scales of the negative emotionality cluster.

Table 3. Mean differences between meditators and non-meditators in MAAS, positive affect, positive emotion and vitality

Scale	Meditators		Non-meditators		t
	M	SD	M	SD	
Mindfulness (MAAS)	4.23	0.54	4.07	0.64	1.08
Positive affect	31.53	7.34	27.37	8.17	2.08*
Positive emotion	18.44	4.49	16.33	4.82	1.76*
Vitality	5.43	0.97	4.17	1.08	4.75**

*p < .05; **p < .01

Table 4. Mean differences between meditators and non-meditators in attentiveness and surprise

Scale	Meditators		Non-meditators		z
	Median	Mean rank	Median	Mean rank	
Attentiveness	13	35.27	11	25.73	2.13
Surprise	6	35.67	4	25.33	2.34

Session Duration

Session duration was not significantly correlated with mindfulness scores, however, there was a trend in the data which indicated that mindfulness scores increased with session duration ($r = .13$). Session duration was significantly correlated with positive affect ($\tau = .25$), attentiveness ($\tau = .27$), and surprise ($\tau = .30$). It further showed associations with positive emotion ($r = .31$), and vitality ($r = .57$). The constellation of associations allows for the suggestion that mindfulness might function as a putative partial mediator between session duration and the indicated measures. Limited support for this assertion was revealed through partial correlations, which indicated that when mindfulness was controlled, session duration ceased to be significantly correlated with positive affect, attentiveness and surprise.

Frequency of Practice

Frequency of practice significantly correlated with positive affect ($\tau = .29$), attentiveness ($\tau = .25$), and positive emotion ($r = .28$). Further it was associated with vitality ($r = .48$). Since there was no indication that frequency of practice was also correlated with mindfulness, in this case mindfulness could not be assumed to function as a mediator.

Practice During Activities of Everyday Life

Out of the 30 meditators, 14 reported to practice during activities of everyday life, whereas 16 reported not to engage in everyday life practice. Independent t-tests revealed that on average, everyday life practitioners scored slightly higher on mindfulness than restricted practitioners, but this difference was not significant. Everyday life practitioners scored significantly higher on all scales of the positive emotionality cluster, as well as on the vitality scale than restricted practitioners.

DISCUSSION

Concerning the first goal of our study, to show up a relationship between mindfulness and psychological well-being, our first hypothesis was confirmed. Individuals, who scored high on the MAAS, also scored high on numerous scales of well-being. The pattern of correlations was consistent across scales of the positive emotionality cluster. These results confirm findings previously reported by Brown and Ryan (2003) and lend further support to the association between mindfulness and well-being. The fact that the highest correlation was obtained between mindfulness and attentiveness, is noteworthy, since it is a good indicator of the convergent validity of the MAAS. By definition, attentiveness is an essential feature of mindfulness (Bishop et al., 2004), and the fact that the two are clearly associated, supports the role of the MAAS as an appropriate measure. The consistent pattern of correlations indicates that the MAAS might be a strong predictor of various measures of emotional well-being, which has been demonstrated before (Brown & Ryan, 2003). Even though scores in the negative emotionality cluster did not vary with mindfulness to the same extent, the significant negative association between mindfulness and anxiety further supports the assertion that mindfulness tends to be associated with emotional well-being. The finding is also in line with results obtained in the clinical field, according to which mindfulness training is efficient in reducing symptoms of anxiety (Kabat-Zinn et al., 1992).

One of the main questions of the current study concerned the role of meditation practice. Meditation practitioners tend to score slightly higher on the MAAS than non-meditators. Even though this difference was not significant, the direction was expected and it resembled a small-sized effect ($r = .14$). It should be taken into consideration that the sample size used in this preliminary study is small and that the trend given in the data may well have become significant if a larger sample had been involved. This question however remains to be verified by future research.

In addition, in line with our hypotheses, meditators scored significantly higher on several well-being scales than non-meditators. Naturally, the two groups may differ in various aspects, such as life-style and health behavior, both of which have

been shown to vary across meditators and non-meditators (Alexander et al., 1993) and which were not controlled in this preliminary study. For this reason, interpretations are clearly limited and results ought to be seen as descriptive and as such putatively useful for future research. Clearly, the current design does not allow us to draw the conclusion that the differences are genuine results of meditative exercises.

For the group of meditators, session duration with mindfulness did not correlate significantly, however a trend for a relationship between the two was obtained, which had the direction, which was assumed. Session duration and various well-being outcomes showed significant correlations as expected. The relation between psychological well-being and session duration gives a hint that the effort made in meditation practice may play an important role. Though again, one cannot rule out the possibility that other underlying factors may be responsible for the relationship, the fact that controlling for mindfulness reduced the predictive value of session duration in case of positive affect, attentiveness and surprise, gives some limited support that mindfulness might function as a partial mediator of the relation between effort of practice and psychological well-being.

The most important finding of the current study might be seen in the fact that the effort to be mindful in activities of everyday life was clearly associated with numerous outcomes of well-being. In line with previous findings (Brown & Ryan, 2003), individuals who reported to make efforts to transport their practice into activities of everyday life also scored higher on several scales of well-being. This finding gives support to the usefulness of meditation instructions given in both, Buddhist traditions and derived clinical interventions. The models of mindfulness at hand can be used to interpret some of the results obtained in this study. Despite the fact that numerous factors such as life-style and health behavior cannot be ruled out, one may argue that the results obtained in this research are generally consistent with the conceptualization of mindfulness and its effects provided by Brown & Ryan (2003) and Bishop et al. (2004). Limitations of the study design do not allow us to draw any conclusions about causation of the apparent relation between mindfulness and psychological well-being. Further studies, which include larger non-clinical samples and more powerful designs, are needed to gain further information.

Conclusion

Summarizing one may say that individuals who engage in meditation exercises report higher emotional well-being. Well-being appears to increase especially for those practitioners who practice more frequently and with longer session duration. Mindfulness could be a candidate for a putative mediator of this relationship between increased well-being and meditation practice. Especially those meditators

who report to make efforts to be mindful and hence transport their meditation practice into everyday life might derive benefits concerning their emotional well-being. Meditation, in a non-clinical context, may be a basis for increased psychological well-being.

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