

Measuring mindfulness and well-being in Adults: The role of age and meditation experience

Yetişkinlerde farkındalık ve iyi oluşun ölçülmesi: Yaş ve meditasyon deneyiminin rolü

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Abstract

Two Finnish versions of mindfulness measures were developed. Their validity, as well as relation to age and well-being were investigated. An online study of both the short version Freiburg Mindfulness Inventory (FMI) and the Mindfulness Process Questionnaire (MPQ) was carried out. An unselected sample of 749 adults aged 18–68 years participated. Of these, 416 reported that they had never meditated (Nonmeditators), whereas 333 had meditation experience (Meditators). The FMI-13 and MPQ-6 showed good internal consistency, and were highly inter-correlated, $r_s = .75-.76$, suggesting that despite their different origins, they tap the same underlying structure. The previously reported two-factor structure (Acceptance and Presence) of the FMI-13 was replicated. The FMI-13 and MPQ-6 showed expected and nearly identical correlational patterns with the validation criteria: self-esteem, depression symptoms, and subjective happiness. Compared to Nonmeditators, the Meditators scored higher on wellbeing and measures of mindfulness, with the exception of Presence. The results also tentatively suggest that mindfulness and well-being increase with age.

Keywords: Mindfulness, FMI, MPQ, nonmeditator, meditator, age

Özet

Farkındalık ölçeğinin Fince iki versiyonu geliştirilmiştir. Geçerlilik ve aynı zamanda yaş ve iyilik hali arasındaki ilişki incelenmiştir. Hem Freiburg Farkındalık Envanteri (FFE) hem de Farkındalık Süreç Ölçeği (FSÖ) online çalışmayla yürütülmüştür. Dana önceden belirlenmemiş yaşları 18-68 arasında değişen 749 yetişkin çalışmaya katılmıştır. Bunlardan 416'sı daha önce hiç meditasyon yapmadıklarını belirtmişlerdir (meditasyon yapmayanlar), öte yandan 333 kişinin meditasyon deneyimi vardır (meditasyoncular). Gerek FFE-13 gerekse FSÖ-6 iyi içsel tutarlılık göstermiş ve farklı kökenlere sahip olmalarına rağmen yüksek oranda ilişkili bulunmuştur, $r_s = .75-.76$, yani aynı temel yapıya sahiptir. FFE-13'ün daha önce bulunan iki faktörlü yapı (Kabul ve Hazır bulunuşluk) tekrarlanmıştır. FFE-13 ve FSÖ-6 beklenen ve öz-saygı, depresyon semptomları, ve öznel mutluluk olan geçerlilik kriteriyle nerdeyse aynı koreasyon örüntüleri göstermiş. Meditasyon yapmayanlarla karşılaştırıldığında hazır bulunuşluk dışında meditasyon yapanlar iyilik halinde ve farkındalık ölçeklerinde daha yüksek puanlar almışlardır. Bu sonuçlar aynı zamanda kesin olmasa da şekilde farkındalık ve iyilik halinin yaş ile arttığını ortaya koymuştur.

Anahtar Kelimeler: Farkındalık, FFE, FSÖ, meditasyon yapmayanlar, meditasyon yapanlar, yaş

Introduction

Mindfulness can be defined as “the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience of moment by moment” (Kabat-Zinn, 2003, p. 145). It originates in the Buddhist meditation tradition and is

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Received: 22.05.2014 Accepted: 15.01.2015

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considered to lie in the core of Buddhism (Kabat-Zinn, 1994; Kabat-Zinn, 2003). Although rooted in Buddhism, the western practice of mindfulness is strictly secular. It was first introduced into western countries by Jon Kabat-Zinn (1982) who developed the Mindfulness-Based Stress Reduction (MBSR) program to alleviate stress and emotional distress in patients with chronic pain. The usually eight-to-ten-week education program consists of instruction in various meditation techniques targeted “to develop a perspective on thoughts and feelings so that they are recognized as mental events rather than as aspects of the self or as necessarily accurate reflections of reality” (Bishop, 2002, p. 71).

The MBSR and a closely similar psychoeducational program, Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, Teasdale, & Kabat-Zinn, 2002), have been successful in treatment of different patient groups. Particularly, they have been effective in individuals with anxiety disorder or major depression (for reviews, see Chiesa & Serretti 2011; Hofmann, Sawyer, Witt, & Oh, 2010; Vollestad, Nielsen, & Nielsen 2012). In addition to the clinical applications of mindfulness (e.g., Fjorback, Arendt, Ørnbøl, Fink, & Walach, 2011; Hwang & Kearney, 2013), a wide spectrum of endeavors has also been put forward to increase the quality of life via mindfulness in non-clinical populations (see, Dunn, Hanieh, Roberts, & Powrie, 2012; Gold et al., 2010; Singh et al., 2010). Generally the practice of mindfulness training has a positive influence on psychological well-being (Brown, Ryan, & Creswell, 2007; Keng, Smoski, & Robins, 2011). For instance, in their review, Keng et al. (2011) state that mindfulness interventions and continuous practice of meditation lead to increase in self-compassion, life satisfaction, vitality, adaptive emotion regulation and sense of well-being. They also decrease negative affect and rumination. In the present study we further compared well-being in meditators and nonmeditators.

In addition to meditation practice, mindfulness has been described as a *trait* naturally occurring to varying extents in humans (Brown & Ryan, 2003). Several lines of evidence suggest that mindfulness is linked to psychological well-being even in nonmeditating individuals (for a review, see Keng et al. 2011). For instance, high mindfulness is linked to high self-esteem (Brown & Ryan, 2003; Hansen, Lundh, Homman, & Wangby-Lundh, 2009; Rasmussen & Pidgeon, 2011), high happiness (Hollis-Walker & Colosimo, 2011) and a low level of depression symptoms (Brown & Ryan, 2003; Desrosiers, Klemanski, & Nolen-Hoeksema, 2013; Erisman & Roemer, 2012; Kohls, Sauer, & Walach, 2009).

The self-report measures of mindfulness are necessary in verifying the effect of mindfulness interventions and also for assessing mindfulness in nonmeditating populations. Several measures of mindfulness trait have been developed and validated (e.g., Erisman & Roemer, 2012; Hansen et al., 2009), though none in Finland. Most of them have been created and employed in English-speaking societies. Many efforts to validate the measures in non-English speaking countries have, however, been made (e.g., Deng et al., 2012; Hansen et al., 2009; Trousselard et al., 2010). The present study was aimed at validating the measures of the mindfulness trait and at exploring the development of mindfulness and well-being related to it, in a large sample of Finnish adults.

The first aim of this study was to create Finnish versions of mindfulness instruments. After careful consideration, we chose two measures: the short form of the Freiburg Mindfulness Inventory (FMI-14) (Walach, Buchheld, Büttenmüller, Kleinknecht, & Schmidt, 2006), and the recently developed Mindfulness Process Questionnaire (MPQ) (Erisman & Roemer, 2012). The reasons for choosing these were as follows. The FMI has proven to be a consistent and reliable scale, and has been validated in diverse samples (Büssing, Walach, Kohls, Zimmermann, & Trousselard, 2013; Kohls et al., 2009; Sauer, Ziegler, Danay, Ives, & Kohls, 2013). It measures two different but closely related dimensions of mindfulness (Presence and Acceptance) in a short and useful manner. The MPQ is a measure of mindfulness as a process. It assesses how often mindfulness is intentionally employed rather than the benefits of being mindful (Erisman & Roemer, 2012).

A valid instrument can measure the attribute that it is theoretically supposed to measure (Trousselard et al., 2010). Studies on mindfulness have defined “well-being ” in various ways (e.g., Brown & Ryan, 2003; Erisman & Roemer, 2012). We validated the Finnish mindfulness instruments against aspects of well-being that could be expected to be associated with mindfulness: high self-esteem (Rosenberg, 1965), low depression (Beck & Beck, 1972; Raitasalo, 2007) and high subjective happiness (Lyubomirsky & Lepper, 1999). The construct validity of the mindfulness measures was further affirmed by comparing their correlational patterns with the three well-being scales.

Secondly, the research endeavored to discover possible age-related mindfulness changes in an adult population aged 18–68 years. Although mindfulness has been subject to intensive study, its developmental aspects in adulthood are largely undefined. Preliminary evidence (Hohaus & Spark, 2013; Trousselard et al., 2010) suggests that older adults may perform better than younger ones. Hence, we expected to find this trend in our data.

The study’s third objective was to compare mindfulness and well-being factors in two groups: adults who have never practiced meditation (henceforth *Nonmeditators*), and adults with ongoing or past meditation experience (henceforth *Meditators*). A vast amount of evidence suggests that mindfulness meditation increases trait mindfulness (Baer et al., 2008; Carmody & Baer, 2008; Kuyken et al., 2010; Shapiro, Oman, Thoresen, Plante, & Flinders, 2008). Mindfulness is positively related to self-esteem (Brown & Ryan, 2003; Hansen et al., 2009; Rasmussen & Pidgeon, 2011) but negatively related to symptoms of depression (e.g., Brown & Ryan, 2003; Erisman & Roemer, 2012; Kohls et al., 2009). Mindfulness as a trait is also positively related to happiness (Hollis-Walker & Colosimo, 2011) or well-being in more general terms (Baer et al., 2008; Brown & Ryan, 2003; Carmody & Baer, 2008; Erisman & Roemer, 2012). Accordingly, we expected that compared to Nonmeditators, the Meditators would score higher in mindfulness, self-esteem, and subjective happiness, but lower in depression.

In summary, employing a large sample of adults, the present study aimed to validate Finnish versions self-report mindfulness measures, explore age-related changes in mindfulness during adulthood, as well as compare mindfulness and well-being between Meditators and Nonmeditators.

Method

Data Collection, Participants, and Background Variables

An online questionnaire including all measures was created. The internet address of the questionnaire was published on a website at the University of Helsinki. It was available to students of the Open University as well as the general public. All individuals (18 years and older) who might have been interested were asked to participate. The respondents were asked to publicize the website that featured the questionnaire. Hence, the data collection was not restricted to any particular group of adults.

The questionnaire was open for two weeks in May 2013. A total of 749 eligible responses were received. Gender and age were requested: of the respondents, 601 (80.24%) were female and 148 (19.75%) were male. Age distribution is given in Table 1. To respondents who provided their e-mail address, depression and subjective happiness scores were mailed automatically. Guidelines for interpretation of the scores were provided, and participants scoring eight or higher on the depression scale were advised to seek professional help.

The participants were asked if they had ever practiced meditation. The choices were No = 0 and Yes = 1. Of the total of 749 participants, 416 (55.54%) reported never having practiced meditation (Nonmeditators) whereas 333 (44.46%) indicated that they had (Meditators). The proportion of Meditators was high because active meditation practitioners were particularly

interested in the investigation and circulated the questionnaire's website. There was no gender distribution difference between Nonmeditators and Meditators, $\chi^2(1) = 1.77, n.s.$, but compared to Nonmeditators, the Meditators were older, Mann-Whitney $U = 37035.50, z = -3.59, p < .001$ (see Table 1).

Measures

The mindfulness measures FMI and MPQ were translated from English into Finnish by the first author and back-translated into English by a professional translator naive to the purpose of the study. The back-translations were closely similar to the originals. The FMI was also translated with the help of the original German version (Walach et al., 2004).

The short version of the FMI (Walach et al., 2006) is a 14-item inventory of mindfulness. Every item, e.g., "I am able to appreciate myself," is evaluated using a four-point Likert-type scale (1 = Rarely, 4 = Almost always). The 13th item ("I am impatient with myself and with others"), which is the only inversely coded item in the inventory, has turned out to be problematic. For instance, in a French study the 13th item decreased internal consistency (Trousselard et al., 2010), and in a recent Rasch model analysis of the FMI (Sauer et al., 2013), the 13th item was particularly misfitting, and using the FMI without it was recommended. Based on the above-mentioned information, we decided to discard the 13th item and adopted the 13-item version of the inventory, the FMI-13. In it, two subscales, 'Presence' and 'Acceptance', can be found (Kohls et al., 2009; Sauer et al., 2013; Trousselard et al., 2010). The present study aimed at replicating that two-dimensional structure (cf. Trousselard et al., 2010).

The MPQ (Erisman & Roemer, 2012) includes eight items, of which Erisman and Roemer (2012) left out one (the 7th item) to improve internal consistency. We did the same. In our final data, also leaving out the second, reverse-coded, item ("I don't consciously try to be accepting of whatever thoughts and feelings I have"), improved internal consistency and psychometric abilities. Therefore it was left out as well. Hence, we used a 6-item version of the MPQ, the MPQ-6. Each item is (e.g., "I try to be open to whatever happens, as it's happening, instead of having my mind wander to other things") is rated on a scale of 1 (not at all characteristic of me) to 5 (entirely characteristic of me).

Depression symptoms were assessed using the Finnish version (Raitasalo, 2007) of the Short Form of the Beck Depression Inventory (Beck & Beck, 1972). It includes 13 items maximally yielding 39 points. The Rosenberg *self-esteem* scale (Rosenberg, 1965, p. 305-307) probes self-esteem using ten items. Responses were given on a 4-point Likert-type scale ranging from 1 (I totally disagree) to 4 (I totally agree). The *Subjective Happiness Scale* (Lyubomirsky & Lepper, 1999) is a 4-item inventory aimed at measuring global happiness. The response format is a 7-point Likert-type scale, and a single composite score is computed by summing up the four items, of which one is reverse-coded.

The composite scores of each measure were employed as indicators. Descriptive data on all measures including internal consistencies are presented in Table 1. None of the measures were normally distributed. Therefore nonparametric statistical analyses were adopted.

Table 1. Descriptive statistics for age of participants and scores for all measures

| Measure (range ^a) | α | All participants | | Nonmeditators | | Meditators | | Difference | |
|----------------------------------|----------|------------------|-----------|---------------|-----------|------------|----------|------------|-------------|
| | | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>S</i> | <i>U</i> | <i>p</i> |
| Age (18-68 years) | - | 39.27 | 10.55 | 38.04 | 10.62 | 40.80 | 10.29 | 58553 | < .000 |
| FMI-13 (13-52) | .88 | 35.91 | 7.02 | 35.03 | 7.13 | 37.01 | 6.73 | 58571 | < .000 |
| Presence (5-20) | .75 | 14.41 | 2.87 | 14.23 | 2.98 | 14.64 | 2.72 | 63720 | <i>n.s.</i> |
| Acceptance (8-32) | .86 | 21.50 | 4.85 | 20.80 | 4.91 | 22.37 | 4.63 | 56954 | < .000 |
| MPQ-6 (6-30) | .85 | 20.75 | 4.57 | 19.95 | 4.65 | 21.74 | 4.29 | 53550 | < .000 |
| Self-esteem (10-40) | .90 | 30.84 | 5.89 | 30.42 | 6.06 | 31.35 | 5.65 | 63193 | < .05 |
| Depression (0-39) | .87 | 4.01 | 4.88 | 4.39 | 5.03 | 3.53 | 4.66 | 61275 | < .01 |
| Sub. Happiness (4-28) | .86 | 19.57 | 5.13 | 18.90 | 5.46 | 20.40 | 4.53 | 58885 | < .000 |

Note. FMI-13 = Freiburg Mindfulness Inventory with 13 items. MPQ-6 = Mindfulness Process Questionnaire with 6 items. Nonmeditators, $n = 416$; Meditators, $n = 333$. ^a = theoretical range of the scores with the exception of age. α = Cronbach's alpha.

Results

The means and standard deviations for all measures are given in Table 1. The data were found to be acceptable for factor analysis (Kaiser–Meyer–Olkin = .92, Bartlett's test of sphericity $\chi^2(78) = 3369, p < .000$). To replicate the two-dimensional structure of the FMI, an exploratory factor analysis was carried out with a Generalized Least Square extraction. The factor structure was rotated using the Oblimin with Kaiser Normalization method. Setting the eigenvalue higher than 1 suggested a two-factor solution. Based on previous work (Kohls et al., 2009; Sauer et al., 2013; Trousselard et al., 2010), the factors were identified as subscales Presence (items 1, 2, 3, 5 and 7) and Acceptance (items 4, 6, 8, 9, 10, 11, 12 and 14). The model explained 42.88% of the variance. The correlation between the factors was .68. Accordingly, composite scores for both factors were calculated (see Table 1).

As summarized in Table 1, compared to Nonmeditators the Meditators scored higher on the FMI-13 and MPQ-6, as well as in self-esteem and subjective happiness, but lower in depression. However, there was no difference in Presence between the groups.

To validate the FMI-13 and MPQ-6, Spearman correlations among the variables were calculated separately for the Nonmeditators and Meditators, as shown in Table 2. The FMI-13 and MPQ-6 correlated highly significantly with each other in both groups ($r = .75-.76, ps < .001$). Hence the mindfulness measures tapped largely the same underlying construct. They also correlated strongly negatively with the symptoms of depression and strongly positively with self-esteem and subjective happiness. The correlational patterns for both the measures were nearly identical, suggesting that they both may be regarded as valid instruments. Of the two MPI-13 factors, Acceptance was more strongly related to the MPQ-6 than Presence. It also showed systematically stronger associations with self-esteem, depression, and subjective happiness than Presence did. Correlational patterns for the Nonmeditators and Meditators were nearly identical. Hence, the answer to the first research question is straightforward: The Finnish versions of the FMI-13 and MPQ-6 are valid measures of adult mindfulness.

Table 2. Spearman correlations among variables for nonmeditators (below diagonal) and meditators (above diagonal)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|-------------------|--------|---------|---------|---------|---------|---------|---------|---------|
| 1.Age | – | .13* | .15** | .10 | .17** | .19*** | –.06 | .15** |
| 2.FMI-13 | .14** | – | .85*** | .95*** | .75*** | .59*** | –.46*** | .58*** |
| 3.Presence | .13* | .83*** | – | .66*** | .61*** | .44*** | –.33*** | .48*** |
| 4.Acceptance | .13** | .94*** | .61*** | – | .73*** | .60*** | –.47*** | .55*** |
| 5.MPQ-6 | .15** | .76*** | .64*** | .72*** | – | .57*** | –.48*** | .51*** |
| 6.Self-esteem | .20*** | .63*** | .45*** | .65*** | .58*** | – | –.64*** | .60*** |
| 7.Depression | –.08 | –.58*** | –.43*** | –.59*** | –.51*** | –.70*** | – | –.56*** |
| 8.Subj. happiness | .18*** | .64*** | .48*** | .63*** | .60*** | .71*** | –.64*** | – |

Note. FMI-13 = Freiburg Mindfulness Inventory with 13 items. MPQ-6 = Mindfulness Process Questionnaire with 6 items. Nonmeditators, $n = 416$; Meditators, $n = 333$. * $p < .05$, ** $p < .01$, *** $p < .001$.

The second task was to determine whether there are age-related changes occur in adult mindfulness. The correlation coefficients in Table 2 suggest that mindfulness increases between the years of 18 and 68 regardless of whether the participants have meditation experience or not. To explore this possible developmental trend in detail, the Nonmeditators were divided into four groups representing roughly the age quartiles. A Kruskal-Wallis test revealed age-related changes in both the FMI-13 and MPQ-6, $\chi^2(3) = 7.84$; $\eta^2 = .02$, and $\chi^2(3) = 9.78$; $\eta^2 = .02$. Both ps were significant at the $p < .05$ level. Pairwise nonparametric comparisons between age groups using Bonferroni correction ($p < .008$) yielded only one significant group difference: on the MPQ-6, the oldest (46–68 years) participants scored higher than the youngest (18–30 years) participants. Hence our results suggest that mindfulness increases with aging, but in quantitative terms the change is small.

Discussion

Finnish Validation of the FMI-13 and MPQ-6

The present study found the Finnish versions of the FMI-13 and MPQ-6 to be valid and reliable measures of mindfulness. The estimates of internal consistency for both the measures and the subscales of the FMI-13 were higher than found in the literature (Erismann & Roemer, 2012; Kohls et al., 2009; Trousselard et al., 2010; Walach et al., 2006). The FMI-13 and MPQ-6 had a very high inter-correlation, higher than often found in studies on mindfulness measures (e.g., Brown & Ryan, 2003; Davis, Lau, & Cairns, 2009; Erismann & Roemer, 2012). Further, they both showed similar and predicted correlational patterns against the validation criteria of the present study: self-esteem (cf. Brown & Ryan, 2003; Hansen et al., 2009; Rasmussen & Pidgeon, 2011), depression (cf. Brown & Ryan, 2003; Desrosiers, Klemanski, & Nolen-Hoeksema, 2013; Erismann & Roemer, 2012; Kohls et al., 2009), and happiness (cf. Hollis-Walker & Colosimo, 2011). Thus, our results are consistent with rapidly growing evidence showing that mindfulness is closely related to human well-being (Baer et al., 2008; Baer, Lykins, & Peters, 2012; Brown & Ryan, 2003; Brown et al., 2007; Carmody & Baer, 2008; Hansen et al., 2009; Keng et al., 2011).

The FMI-13 and MPQ-6 seemed to work equally well with participants having meditation experience and in participants having none. Despite the parallel functioning, the origins of the measures are very different: the FMI arises from Buddhist psychology (Kohls et al., 2009; Sauer et al., 2013) and measures one's inclination towards mindful thinking, whereas the MPQ was

designed to explore how often a respondent truly acts mindfully. Our results suggest no difference between these approaches.

We were able to replicate the two-factor model of the FMI-13 and extracted the two subscales found in previous studies: Presence and Acceptance (Kohls et al., 2009; Sauer et al., 2013; Troussellard et al., 2010). In contrast to earlier findings, item 10, (“I watch my feelings without getting lost with them”) loaded on Acceptance rather than on Presence. The reason for this deviation is unclear; perhaps it is due to linguistic differences. We observed that compared to Presence, Acceptance was more strongly related to the MPQ-6, self-esteem, depression, and subjective happiness. This is in line with Kohls et al. (2009) concerning Acceptance in relation to depression and anxiety. We also found that no difference in Presence between Nonmeditators and Meditators. This contrasts, at least partly, with the literature. For instance, using another measure of mindfulness, Carmody and Baer (2008) demonstrated that all aspects of mindfulness increase during a meditation intervention program.

A philosophical or theoretical argument is taking place about the very nature of mindfulness and whether it is measurable (e.g., Grossman, 2008; Sauer et al., 2013). Although this debate lies outside the scope of the present paper, the criticism offered by Belzer et al. (2013) deserves attention. They carried out a qualitative study using a thinking-aloud procedure, which revealed that many of the FMI-14 items are easier to comprehend for participants with mindfulness experience than for those without such experience. Many of the difficult items are included in the Presence subscale of the FMI-14 (e.g., Kohls et al., 2009).

Possible poor comprehension in the Nonmeditators should lead to arbitrary answering and low internal consistency. We analyzed the α of the Presence subscale for the Nonmeditators and Meditators separately. The α turned out to be .75 for both groups. None of the items were skipped because the online procedure required all items to be answered. Our observation suggests that the Nonmeditators had no particular difficulty in understanding the Presence subscale items. However, that our research design was not tuned to detect such difficulties.

Age and Meditation Experience

Mindfulness increased with age in both the Nonmeditators and Meditators. This observation is in line with Troussellard et al. (2010) as well as Hohaus and Spark (2013), who also found that older adults/elderly participants scored higher than younger adults in mindfulness. Our results suggest that both measures, the FMI-13 and the MPQ-6, are also able to tap the age-dependent increase in mindfulness. The mindfulness enhancement seems, however, to be minor and should be studied further. In addition, Table 2 suggests that well-being strengthens somewhat in adulthood. In accordance with this finding, previous research has suggested that well-being increases with age (Hohaus & Spark, 2013; Jorm, 2000; Mroczek & Kolarz, 1998; Mroczek & Spiro, 2005; Orth, Robins, & Widaman, 2012) although the general enhancement of well-being does not begin until approximately after the age of 45 (Stone, Schwartz, Broderick, & Deaton, 2010).

Compared to Nonmeditators, the Meditators scored higher on measures of mindfulness (subscale Presence of the MRI-13 apart) and subjective happiness while their level of depression symptoms was lower. These findings are not surprising. Mindfulness meditation has been observed to increase during mindfulness interventions (e.g., Davis et al., 2009; Walach et al., 2006), and frequent meditators exhibit a higher level of mindfulness than participants with little or no meditation experience (Baer et al., 2012; Lykins & Baer, 2009; Walach et al., 2006). Compared to individuals with no meditation experience, long-term meditators score higher in well-being (Baer et al., 2012; Lykins & Baer, 2009). In general, meditation is positively related to psychosocial well-being (for reviews, see Brown et al., 2007; Keng et al., 2011). Our results with large samples of participants generally accord well with previous research.

Limitations

Our results with a large sample of Finnish adults are straightforward and in accordance with previous work. However, the research has limitations. First, the design is *cross-sectional* and therefore causal conclusions are dubious. For instance, one may argue that the Meditators have been selected in a way that these group members' well-being and mindfulness skills had been on a higher level than those of the Nonmeditators already before they began practicing meditation. We cannot rule this out, but consider it unlikely because meditation has been found to increase mindfulness and well-being in a number of short-term follow-up studies. As far as we know, no study has followed trait mindfulness and well-being over a period of years in a meditation group for beginners and in a control group. Such a longitudinal investigation would be most welcome, however laborious.

Second, mindfulness was assessed with only two measures, the two-dimensional FMI-13 and one-dimensional MPQ-6. Yet there is evidence of mindfulness including several other factors (Baer et al., 2008; Cardaciotto, Herbert, Forman, Moitra, & Farrow, 2008), which our measures presumably did not tap. Different validation criteria may vary in their relation to the subscales of mindfulness. For instance, using the Five Facet Mindfulness Questionnaire, Desrosiers et al. (2013) recently showed that distinct facets of mindfulness explain depression in different ways. Hence, multidimensional measures are also needed in Finnish.

Third, we did not control for the socioeconomic and educational status of the participants. Evidence suggests that participants with higher levels of education score better than participants drawn from the general population (Baer et al. 2008). Many mindfulness courses are relatively expensive in Finland. Well-educated and perhaps wealthier individuals may be better informed about mindfulness than less well-educated individuals. So it is possible that, compared to the Nonmeditators, our Meditators group may have been better educated and that their socioeconomic status may have been higher. In future studies, these factors should be properly controlled for, or research should be carried out on population-based samples.

In summary, the present paper reports the Finnish validation of two mindfulness measures, the FMI-13 and MPQ-6. They worked satisfactorily in a large population of adults. The measures were highly significantly inter-correlated and they produced nearly identical correlational patterns with the validation criteria: self-esteem, depression, and subjective happiness – regardless of whether the participants had meditation experience or not. The older participants were slightly more mindful than the younger participants. Compared to Nonmeditators, the Meditators scored higher on the FMI-13, the MPQ-6 and in subjective happiness, while their level of depression was lower.

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