



Development of a scale to assess the meditation experience

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ABSTRACT

This paper describes the initial development of a scale to assess the effects of meditation. The scale consists of two sections: Experiences During Meditation (EOM-DM) and Effects of Meditation in Everyday Life (EOM-EL). Scale evaluation on 236 participants involved factor analysis, reliability and validity analysis. The EOM-DM scale had five subscales: *Cognitive effects*, *Emotional effects*, *Mystical experiences*, *Relaxation* and *Physical discomfort*. The physical, emotional, expanded consciousness and cognitive item groups of the EOM-EL were analysed separately. Each scale had a single factor structure whereas analysis of the EOM-EL-cognitive scale identified four factors: *Social relations*, *Cognitive ability*, *Non-judgemental acceptance* and *Behaviours and habits*. Construct validity was explored by assessing correlations with existing measures: Mindful Attention Awareness Scale, FACIT *Spiritual wellbeing* subscale and POMS-Short Form. Although further development is required, the scale showed adequate psychometric properties and may be useful for clinicians and researchers to improve understanding of the effects of meditation practices.

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1. Introduction

Meditation, which may be defined as the “intentional self-regulation of attention from moment to moment” (Kabat-Zinn, 1982, p. 33) has become increasingly popular, both to promote wellbeing and to treat specific medical and psychological problems. There has been a trend to de-emphasize the religious/spiritual dimensions of practice and to focus on the physiological and psychological effects of meditation.

Meditation techniques may be divided into two broad categories: those with an emphasis on (a) concentration (e.g. Transcendental Meditation) and (b) mindfulness (e.g. vipassana and mindfulness-based stress reduction). Concentration-based approaches involve focusing attention on a particular stimulus, such as a mantra, sound, object or sensation. Mindfulness meditation techniques emphasize non-judgemental attention to constantly changing internal (bodily sensations, cognitions, perceptions, and emotions) and external (sights and sounds) stimuli as they arise. Mindfulness may be viewed as a multifaceted, naturally occurring characteristic, with some facets more greatly affected by meditation than others (Baer, Smith, & Allen, 2004; Brown & Ryan, 2003).

Meditation has been shown to have beneficial physiological, cognitive and behavioural effects (Cahn & Polich, 2006; Vaitl et al., 2005). The cognitive aspects of meditation may underlie some clinical applications, with increased awareness bringing about improved self-management through changes in habitual

cognition and patterns of responding (Wenk-Sormaz, 2005). Meditation-based interventions may help alleviate health problems and improve psychological functioning (Kabat-Zinn, Lipworth, Burney, & Sellers, 1986; Teasdale, Segal, & Williams, 1995).

Meditation is a complex, multifaceted intervention with specific and non-specific effects. It is difficult to standardise, quantify, authenticate and research (Caspi & Burleson, 2005). Meditation practices vary and may produce different physiological and psychological effects, complicating comparisons across studies (Gillani & Smith, 2001). Meditators vary widely in their subjective reports and how rapidly they experience effects. A common description is that of a very relaxed but alert state, while some meditators have mystical experiences that are difficult to describe (Osis, Bokert, & Carlson, 1973). In addition, data from inexperienced practitioners may not reflect the experiences of longer-term meditators (Goleman, 1978–1979). A significant factor in continued practice is participant reaction to the intervention and whether they feel that meditation is effective in daily life (Kabat-Zinn et al., 1986). Several research studies have involved the use of questionnaires to explore the meditation experience (Brown & Engler, 1980; Kohr, 1977–1978; Maliszewski, Twemlow, Brown, & Engler, 1981; Osis et al., 1973; Piron, 2001), although these have not been widely used or validated.

A number of mindfulness measures have been developed, including The Mindful Attention Awareness Scale (MAAS) (Brown & Ryan, 2003), The Freiburg Mindfulness Inventory (FMI) (Buchheld, Grossman, & Walach, 2001) and The Kentucky Inventory of Mindfulness Skills (KIMS) (Baer et al., 2004). These measures generally examine mindfulness without reference to

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meditation and have been criticized for failing to cover all facets of the construct (Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, 2006) and for not including other aspects of meditation, including the physical and the spiritual. History traditionally links meditation with the concept of a spiritual reality larger but inclusive of the personal self. Kabat-Zinn (2003) notes that meditation is concerned with cultivation of awareness, insight, and compassion, yet these concepts are not often the focus of research.

They may be incorporated by examining the psychological and phenomenological changes that occur during meditation and in everyday life. This may help to understand processes and links to psychological symptoms and wellbeing (Roemer & Orsillo, 2003). Standardized measurement of the impact of meditation may facilitate comparisons across studies, aid teaching and assessment of change over time. As the quality of the meditation experience may be more important than quantity in achieving beneficial effects, there is a need to assess quality of meditation, rather than merely compliance.

The aim of this study was to develop a scale to assess the cognitive, physical, emotional, and spiritual effects of meditation both during meditation and in everyday life. This is in contrast to most currently available scales which tend to focus on mindfulness alone. This paper describes the development of the Effects of Meditation scale (EOM), including the creation of the item pool, administration, scale evaluation and refinement.

2. Item development

In the initial construction of the EOM scale, potential items were drawn from five main sources:

- (a) an unvalidated questionnaire used by an experienced meditation teacher;
- (b) a review of the literature of different meditation traditions;
- (c) existing meditation-related scales;
- (d) interviews with expert meditators and teachers;
- (e) an open-ended questionnaire distributed at a meditation forum.

The proposed scale was divided into two main sections: Effects of Meditation-During Meditation (EOM-DM) and Effects of Meditation in Everyday Life (EOM-EL). Two separate initial pools of items were generated covering both experiences within meditation (69 items) and effects in everyday life (68 items). In each section, items covered four domains: (a) physical effects, (b) cognitive effects, (c) emotional effects and (d) expanded consciousness effects. A six-point Likert-type scale was used for both scales (EOM-DM: 1 = almost never, to 6 = almost always; EOM-EL: 1 = not true for me to 6 = true for me).

2.1. Methods

A questionnaire was made available online and in paper form. Invitations to participate were sent to a variety of institutions teaching meditation, internet newsgroups, and personal contacts. Potential participants were directed to the online site or provided with questionnaire booklets, depending on their preference.

2.1.1. Participants

The sample comprised 236 adults (93 men, 39%; 143 women, 61%). The mean (SD) age of the sample was 45.2 (12.1) years and the median age was 47. The majority of participants (127, 53.9%) were partnered, 176 (74.6%) were employed and 183 (77.5%) were tertiary educated. All participants had some previous meditation experience. Mean minutes per week spent meditating was 265.2

(SD = 521.9). Sixty (25.4%) had between one and five years meditation experience and 141 (59.7%) participants had over five years experience. Type of meditation varied widely with 60 (25.4%) participants listing mindfulness as the main type of meditation practised. The majority of participants ($n = 207$: 88%) completed the questionnaires online.

2.1.2. Measures

Questionnaires contained the EOM items and additional questions relating to demographic characteristics (gender, age, education, employment and relationship status) and meditation experience and current practice. A number of validated measures were included to assess the construct validity of the EOM scales. These were selected on the basis of the relevance of their central constructs to the effects of meditation, namely mindfulness, spirituality and effects on emotion regulation.

The Mindful Attention Awareness Scale (MAAS) (Brown & Ryan, 2003), is a 15-item questionnaire which focuses on awareness of what is occurring in the present moment (e.g. "I rush through activities without being really attentive to them"). It uses a six-point Likert scale ('almost always' to 'almost never') and has been shown to have adequate reliability and validity. The 12-item *Spiritual wellbeing* scale of the Functional Assessment of Chronic Illness Therapy (FACIT) focuses on the existential aspects of religiosity and spirituality (e.g. "I feel a sense of purpose in life") (Brady, Peterman, Fitchett, Mo, & Cella, 1999) but does not assume a belief in God. Two items referring to illness were removed as participants in this study were not necessarily ill. The 37-item Profile of Mood States Short Form (POMS-SF) (Shacham, 1983) was developed with items drawn from the 65-item POMS (McNair, Lorr, & Droppelman, 1992). Internal consistency estimates (Cronbach's alpha) range between .76 and .95 for the subscales.

3. Results

3.1. Exploratory factor analysis of the EOM scale

The factorability of the data for both scales was supported by highly significant Bartlett's Test of Sphericity tests and Kaiser Meyer Olkin test of sampling adequacy values exceeding the minimum recommended value of .60 (Tabachnick & Fidell, 2007) (EOM-DM scale: .85, EOM-EL scale: .95). To enhance the reliability and efficiency of the scales, four items were removed from the EOM-DM item pool and three from the EOM-EL pool because of extreme mean scores, high skewness values (above 1) or a restricted range of responses. The remaining items were subjected to exploratory factor analysis (EFA) using SPSS (Version 15), after first confirming that the dataset was suitable for factor analysis. Principal axis factoring (PAF) was used to extract the factors followed by oblique rotation of factors using Direct Oblimin rotation ($\delta = 0$). The number of factors to be retained was guided by three decision rules: Kaiser's criterion (eigenvalues above 1), inspection of the Screeplot (Cattell, 1966), and by the use of Horn's parallel analysis (Horn, 1965). In parallel analysis the size of the eigenvalues are compared with those obtained from a randomly generated data set of the same size using software developed by Watkins (2000). Only factors with eigenvalues exceeding the values obtained from the corresponding random data set are retained for further investigation. The reliability of the resulting subscales was assessed using Cronbach's (1951) coefficient alpha.

PAF of the 65 EOM-DM items revealed five factors with eigenvalues above 1, the Screeplot indicated that four factors be retained, while parallel analysis suggested three factors. Following the recommendations of Tabachnick and Fidell (2007), a range of alternative solutions were assessed, ranging from two to five fac-

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