

# Observing as an Essential Facet of Mindfulness: A Comparison of FFMQ Patterns in Meditating and Non-Meditating Individuals

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**Abstract** One of the most comprehensive measures of mindfulness is the Five Facet Mindfulness Questionnaire (FFMQ) with five factors—Observing, Describing, Acting with awareness, Non-judging, and Non-reactivity. Hierarchical confirmatory factor analyses, however, have suggested that only four of the FFMQ factors (i.e. all except Observing) were components of “an overall mindfulness construct”—which is puzzling because Observing represents a core aspect of all definitions of mindfulness. The purpose of the present study was to approach this problem by a person-oriented approach, focusing on patterns on the FFMQ scales, rather than linear associations between them. Data on the FFMQ were collected on 817 individuals. Cluster analysis according to the LICUR procedure was used to group these participants in 13 clusters, according to their profiles of scores on the five FFMQ scales. Of the participants, 325 were categorized as meditators and 317 as non-meditators. To test hypotheses about the relation between Observing and mindfulness (which we assumed should be higher among meditators), the meditators/non-

meditators categorization was cross-tabulated with the FFMQ clusters. The results showed that all clusters in which meditators were over-represented had high scores on Observing, and all clusters in which meditators were under-represented had low scores on Observing—which supports the hypothesis that mindfulness is related to high levels of Observing. The relationship between Observing and Non-judging, however, was found to be more complex than expected. The results are discussed in terms of mindfulness seen as a multidimensional skill, which may develop differently in various subgroups of individuals.

**Keywords** Mindfulness · Cluster analysis · FFMQ · Meditators · Non-meditators

## Introduction

Most definitions of mindfulness are formulated in terms of a combination of several different components. A widely cited definition is that of Kabat-Zinn (1994), who defined mindfulness as “paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally” (p. 4). These elements are also reflected in the two-component model of mindfulness proposed by Bishop et al. (2004), where the first component involves the self-regulation of attention so that it is maintained on immediate experience, and the second component involves adopting a particular orientation toward these experiences, characterized by curiosity, openness, and acceptance. These two components are seen in the instructions that are common to most mindfulness exercises. For example, participants are asked to focus their attention on their sense impressions (sounds, sights, body sensations) or on some ordinary activity (e.g. breathing, walking, eating, etc.) and to observe their experiences carefully. They are

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also instructed to notice that their attention will eventually wander away into thoughts, memories, or fantasies—and when this occurs, to simply observe in a non-evaluative way that this has happened and to resume attending to their experiences in the present moment. Similarly, if urges, desires or emotions arise, participants are instructed to observe them carefully, without trying to eliminate or change these experiences, but also without necessarily acting on them—and if acting, to act with awareness, again observing their experiences in a non-judgmental way. Although seldom mentioned, it should be noted that this process requires the participants to keep these instructions “in mind”, that is, to store them as self-instructions easily available in working memory.

This means that mindfulness basically involves at least two “components”: (1) An intentional activity of attending to, and observing, the experiences that unfold in the present moment. (2) Doing this in a non-evaluative stance, with open, friendly curiosity, accepting the experiences without trying to change them, and without judging or criticizing oneself. In addition, there is a third component essentially involved in the training of mindfulness during meditation: Keeping the mindfulness instructions easily activated in working memory, so that the meditating individual can be “kept on track”. A pivotal point in this process is when the intended process fails, either because (a) the person’s attention is drawn away from present experience (e.g. by preoccupation with memories, fantasies, plans, worries, etc.) or (b) the person loses the non-evaluative stance, and thinks self-critical thoughts, for example, about his/her inability to stay mindful. In both cases, however, the state of mindfulness can be reinstated by the activation of the mindfulness instructions in working memory, leading to continued non-judgmental observing of what is occurring.

An important question here is if mindfulness represents one multidimensional skill, or a combination of separate skills. In one approach to this question, Baer et al. (2006) set out to factor analyse existing instruments that were intended to measure mindfulness. On the basis of factor analyses of the combined pool of items from five such questionnaires, they identified five factors—Observing, Describing, Acting with awareness, Non-judging of experience, and Non-reactivity to inner experience—which led to the construction of the Five Facet Mindfulness Questionnaire (FFMQ). Of these facets, *Observing* (Observe, for short) refers to the noticing or attending to internal and external experiences (sights, sounds, smells, sensations, cognitions, emotions, etc.), whereas *Describing* (Describe) refers to labeling internal experiences with words. *Acting with awareness* (Actaware) includes attending to one’s activities of the moment, in contrast to behaving mechanically while attention is focused elsewhere. *Non-judging of inner experience* (Non-judging) refers to taking a non-evaluative

stance toward thoughts and feelings, whereas *Non-reactivity to inner experience* (Non-reactivity) refers to the tendency to allow thoughts and feelings to come and go, without getting caught up in or carried away by these.

Being able to differentiate the construct of mindfulness into five such factors, or facets, however, does not necessarily mean that they correspond to five different skills that can be trained separately from each other. For example, if mindfulness represented a combination of separate skills, we would expect to find mindfulness training programs where one session was designed to train observational skills, another session was designed to train acceptance/non-judgmental skills, a third session designed to train non-reactivity to inner experience, etc. On the other hand, if mindfulness represents one multidimensional skill which is generally trained as a whole, we would have to formulate Baer et al.’s (2006) five different factors not as separate skills but as aspects of one complex skill. Another implication is that high degrees of mindfulness would correspond to patterns of high scores on all the FFMQ scales.

In terms of research methodology, it could be argued that research on mindfulness with multidimensional instruments like the FFMQ could produce new and interesting information by focusing on *patterns* of scores on the FFMQ scales. In particular, it is possible that such an approach may cast light on some paradoxical findings in previous research. An example is the hierarchical confirmatory factor analyses carried out by Baer et al. (2006), which suggested that four of the FFMQ factors (i.e. all except Observing) were components of “an overall mindfulness construct”. Their results also showed that four of these facets (again all of them, except Observing) were consistently related in the expected ways to a variety of other variables. For example, Describing showed a strong positive association with emotional intelligence (which, among other things, includes the ability to describe feelings), whereas Acting with awareness showed strong negative associations with dissociation and absent-mindedness. Also as expected, Non-judging was strongly negatively associated with neuroticism and thought suppression, and Non-reactivity was strongly positively associated with self-compassion. Observing, however, showed *positive* correlations with psychological symptoms, dissociation, absent-mindedness, and thought suppression.

In view of commonly used definitions of mindfulness, these results on Observing represent a clear anomaly. All existing definitions refer to the activity of observing (or paying attention to) one’s external and internal experiences as belonging to the very core of mindfulness, and the practice of mindfulness meditation clearly involves a focus on observing one’s experiences. Yet, in Baer et al.’s (2006) study, the FFMQ scale Observing failed to fit in as a component of the overall mindfulness construct. This result was also replicated in a Swedish study by Lilja et al. (2011).

Observing's lack of fit with the hierarchical mindfulness model is also exemplified by its non-significant (and weakly negative) correlation with *Non-judging*.

One possible explanation of these puzzling findings is that they are due to a particular methodological approach that is not well suited to research on holistic phenomena like mindfulness. What is needed in this context may be what Bergman and Magnusson's (1997) referred to as a person-oriented approach rather than a variable-oriented approach. A variable-oriented approach relies primarily on the study of linear associations between psychological variables (as seen, for example, in correlational analysis, linear regression analysis, factor analysis, and structural equation modeling). According to a person-oriented approach, linear associations can be misleading because a certain value on a specific variable may have very different meaning depending on the pattern, or "Gestalt", that it is part of (Bergman and Magnusson 1997), and other methods (cluster analysis, configuration analysis, latent class analysis, etc.) are advocated as a complement to variable-focused methods. In research with the FFMQ, for example, a high score on Observing may have very different meaning depending on the respondent's scores on the other FFMQ scales; whereas one person may have high scores on Observing in combination with *high* scores on Non-judging as the result of long experience in the practice of mindfulness, another person may have equally high scores on Observing in combination with *low* scores on Non-judging as part of the kind of self-critical, ruminative observation that is known to be characteristic of depressed individuals (Nolen-Hoeksema 2000). By focusing on patterns, or profiles of values on a set of variables, a person-oriented approach should be able to clearly differentiate between individuals who show these two different kinds of patterns.

Starting from common definitions of mindfulness (e.g. Bishop et al. 2004; Brown and Ryan 2003; Kabat-Zinn 1994), it may be argued (a) that observing lies at the very heart of mindfulness and (b) that high levels of mindfulness imply a complex skill of being able to observe and attend to one's experiences while taking a non-evaluative stance toward these experiences, and allowing experiences to come and go without getting carried away by them. In terms of the FFMQ scales, this would represent a pattern of high levels of Observing, Non-judging, and Non-reactivity—or high levels of Observing in combination with at least normal levels of Non-judging and Non-reactivity. That is, a high level of Observing in combination with a *low* level of Non-judging and/or Non-reactivity would not be compatible with a high level of mindfulness.

The purpose of the present study was to approach these questions by means of an advanced procedure for cluster analysis developed by Bergman (1998). More specifically, the purpose was to identify different subgroups (clusters) of individuals with different profiles of values on the FFMQ

scales, and then to compare meditators and non-meditators with regard to how frequently they show these different FFMQ profiles. On the assumption that meditating individuals in general show a higher degree of mindfulness than non-meditating individuals, four predictions were made with regard to the Observing facet. Based on the assumption that observing is *an essential aspect of mindfulness*, we expected (1) that all FFMQ profiles in which meditators are over-represented would be characterized by high scores on Observing and (2) that all cluster profiles in which meditators are under-represented would be characterized by low scores on Observing. Further, if mindfulness is *a multidimensional skill* which involves high levels of non-judgmental and/or non-reactive forms of observing, it may be expected (3) that all FFMQ clusters in which meditators are over-represented would combine high scores on Observing with high scores on Non-judging and/or Non-reacting. Finally, based on the assumption that high levels of Observing may also occur in contexts not characterized by mindfulness but by *high self-criticism and a ruminative self-focus*, we expected that (4) if the analysis would identify FFMQ profiles with high scores on Observing in which meditators were *not* over-represented, then these cluster profiles should be characterized by low scores on Non-judging and/or Non-reactivity.

## Method

### Participants

The participants represented a combination of several different samples, recruited as part of four other studies on mindfulness: (1) The Gothenburg sample. This was a heterogeneous sample of 498 individuals (including both university students and participants from meditation centers, as well as others) who were recruited as part of a validation study of the Swedish version of the FFMQ carried out at the Department of Psychology, Gothenburg University (Lilja et al. 2011). (2) The yoga sample. A number of yoga centers in Malmö, Sweden, were contacted, asking if they wanted to participate in a study on meditating individual's experiences. Five different centers (Classic Yoga, Natha Yoga, Yoga Kendra, Bikram Yoga, and Manfrinato Yoga) responded positively to this request, and a research assistant visited these centers in connection with yoga classes, asking participants to fill out a questionnaire that included the FFMQ and some questions about age, gender and experiences of meditation. In total 153 individuals from the yoga centers filled out the questionnaire. (3) The Vipassana sample. This was a sample of 85 individuals from a Vipassana center in Stockholm, who participated in a quasi-experimental study of changes in self-reported mindfulness after participating in a silent meditation retreat arranged by

this center (Falkenström 2009); the present study used data from the participants as well as the comparison group before the retreat (all participants had taken part in at least one earlier silent retreat). (4) The attention study sample. This was a sample of 92 participants collected as part of a study by Josefsson and Broberg (2011), comparing 47 experienced meditators (recruited from eight Swedish Buddhist centers located in Malmö, Lund, Gothenburg, and Stockholm, and from two non-religious meditation groups in Halmstad) with non-meditators (45 students from the Social Science & Health section at Halmstad university college) on tasks of sustained and executive attention.

Of these 828 participants, there was full data on the FFMQ for 817 individuals (516 women, 295 men, and 6 individuals who did not report their gender). All these 817 participants answered questions about their experience of meditation. Of these, 317 responded that they had no experience of meditation and were therefore included in the non-meditating group. Of the remaining participants, 325 responded that they had at least one year's experience of meditation (in the yoga sample and the Vipassana sample), or that they had at least "fair amount" or "extensive" experience of meditation (in the Gothenburg sample and the attention study sample). The remaining participants reported either that they had "little" experience of meditation (in the Gothenburg sample and the attention study sample) or that they had less than 1 year's experience of meditation (in the yoga and Vipassana samples), and therefore fell outside the comparison groups. There were significantly more women than men among the meditators (227 vs. 97) than among the non-meditators (173 vs. 142),  $\chi^2(1)=15.6, p<.001$ . All participants from the yoga sample (Sample 2), the Vipassana sample (Sample 3), and the meditator subsample of Sample 4 were currently practicing meditation at the time of the study; we did not, however, have information about current meditation practice from the meditator subsample of Sample 1.

### Instruments

All participants completed the FFMQ (Baer et al. 2006), which has five subscales referring to five facets of people's general tendency to be mindful in daily life: Observing, Describing, Acting with awareness, Non-judging of experience, and Non-reactivity to inner experience. Items are rated on a 5-point Likert-type scale ranging from 1 (*never or very rarely true*) to 5 (*very often or always true*). All five scales showed good internal consistency: Observing  $\alpha=0.75$ , Describing  $\alpha=0.90$ , Acting with awareness  $\alpha=0.89$ , Non-judging  $\alpha=0.89$  and Non-reacting  $\alpha=0.75$  (Lilja et al. 2011).

### Statistical Analyses

Cluster analysis was used to group the participants on the basis of their different profiles of scores on the five FFMQ

scales, according to the LICUR procedure (Bergman 1998). This was done in four steps. First, 14 multivariate outliers were identified by means of the residue procedure in the statistical package for pattern-oriented analyses SLEIPNER 2.1 (Bergman and El-Khoury 2002). Second, Ward's hierarchical clustering method was applied, using the CLUSTER module in SLEIPNER. Four criteria formulated by Bergman (1998) were used to decide on the optimal cluster solution: (a) theoretical meaningfulness of the cluster solution; (b) if a distinct drop in the explained error sum of squares (EESS) occurs when a cluster solution is extracted this may imply that two not so similar clusters were merged to a non-optimal cluster solution; (c) the number of clusters should not be more than 15 and should not be expected to be less than five; and (d) the size of the EESS for the chosen cluster solution should preferably not be less than 67 %, and at the very least exceed 50 %. Third, a data simulation by means of the SIMULATE module in SLEIPNER was undertaken to verify that the explained ESS was higher than could be expected on a random data set with the same general properties as the data set used in the real analysis. Fourth, a non-hierarchical relocation procedure (Wishart 1987) by means of the RELOCATE module in SLEIPNER was carried out in order to improve the homogeneity of the clusters and to increase the variance explained by the cluster solution.

The samples of meditators and non-meditators were then cross-tabulated with these clusters, and the observed frequency in each cell was compared with the frequency that should be expected by chance alone, and tested for significance with exact single cell tests according to the fixed-margins model (Bergman and El-Khoury 1987) using the EXACON module in SLEIPNER.

### Results

All participants ( $n=817$ ) with full data on the FFMQ were included in a cluster analysis, carried out according to Bergman's (1998) LICUR procedure. First, 14 multivariate outliers were identified and excluded by the residue procedure, thus leaving 803 individuals for the cluster analysis. Second, the application of Ward's hierarchical clustering method, together with Bergman's (1998) criteria, resulted in the choice of a 13-cluster solution, which explained 60.1 % of the total error sum of squares (ESS). Third, a data simulation showed that the explained ESS of the cluster solution was significantly higher than expected by chance ( $p<.0001$ ). Fourth, a non-hierarchical relocation procedure to improve the homogeneity of the clusters resulted in a 13-cluster solution that was found to explain 65.0 % of the variance.

Table 1 shows the profiles of the FFMQ scales (item means and standard deviations) for these 13 clusters, in rank order according to their total FFMQ scores, together with



**Table 1** The 13-cluster solution: Item means (and SD) for the various clusters on the FFMQ scales

|  | Observe     | Describe    | Act aware   | Non-judge   | Non-react   | Total FFMQ  |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| A. High on all FFMQ scales ( <i>n</i> =44)                                 | 4.52 (0.35) | 4.14 (0.61) | 4.42 (0.30) | 4.50 (0.38) | 4.08 (0.46) | 4.34 (0.42) |
| B. High on all FFMQ scales, except Observe ( <i>n</i> =37)                 | 3.44 (0.40) | 4.33 (0.44) | 3.76 (0.43) | 4.53 (0.34) | 4.19 (0.33) | 4.05 (0.39) |
| C. High on Observe, Describe, Non-react ( <i>n</i> =62)                    | 4.21 (0.33) | 4.36 (0.34) | 3.54 (0.32) | 3.51 (0.43) | 3.61 (0.35) | 3.85 (0.34) |
| D. High on Non-judge, Non-react, Observe ( <i>n</i> =81)                   | 3.69 (0.33) | 3.79 (0.35) | 3.48 (0.26) | 4.31 (0.34) | 3.58 (0.32) | 3.78 (0.32) |
| E. High on Describe, Observe, Actaware, low on Non-react ( <i>n</i> =53)   | 3.78 (0.34) | 4.24 (0.42) | 3.66 (0.33) | 3.99 (0.47) | 2.68 (0.34) | 3.70 (0.38) |
| F. High on Act aware Non-judge, Describe, low on Observe ( <i>n</i> =51)   | 2.82 (0.36) | 4.08 (0.44) | 3.87 (0.32) | 4.38 (0.43) | 3.20 (0.36) | 3.67 (0.38) |
| G. High on Observe, low on Non-judge, and Describe ( <i>n</i> =83)         | 3.78 (0.36) | 3.35 (0.34) | 3.51 (0.34) | 3.32 (0.38) | 3.27 (0.31) | 3.45 (0.35) |
| H. Low on Acting with awareness ( <i>n</i> =85)                            | 3.20 (0.33) | 3.67 (0.33) | 2.93 (0.32) | 3.68 (0.37) | 3.28 (0.34) | 3.36 (0.19) |
| I. High on Non-judge, low on Observe, and Non-react ( <i>n</i> =46)        | 2.29 (0.41) | 3.45 (0.41) | 3.60 (0.45) | 4.47 (0.40) | 2.62 (0.46) | 3.29 (0.41) |
| J. High on Non-judge, low on Describe, and Actaware ( <i>n</i> =45)        | 3.28 (0.44) | 2.59 (0.42) | 3.10 (0.36) | 4.19 (0.41) | 3.22 (0.34) | 3.28 (0.39) |
| K. Low on Non-judge, Actaware, Non-react, high on Describe ( <i>n</i> =71) | 3.50 (0.42) | 3.93 (0.37) | 2.83 (0.35) | 2.59 (0.48) | 2.90 (0.44) | 3.15 (0.40) |
| L. Low on Observe, Describe, Non-judge, Non-react ( <i>n</i> =93)          | 2.80 (0.43) | 3.05 (0.49) | 3.31 (0.34) | 3.22 (0.46) | 2.66 (0.37) | 3.03 (0.37) |
| M. Low on Describe, Actaware, Non-judge, Non-react ( <i>n</i> =52)         | 3.26 (0.43) | 2.70 (0.44) | 2.46 (0.36) | 2.68 (0.47) | 2.83 (0.48) | 2.77 (0.45) |
| All participants ( <i>n</i> =817)  | 3.42 (0.66) | 3.64 (0.68) | 3.37 (0.56) | 3.70 (0.76) | 3.2 (0.59)  | 3.47 (0.65) |

Rank ordered according to total FFMQ scores

the means for the whole sample. In Fig. 1, the profiles of *z* scores for each cluster (defined as the differences between the cluster means and the total group means, divided by the SD of the total group) is shown, first with regard to 4 clusters characterized by high mindfulness scores, then with 5 clusters characterized by mixed high-low scores on different FFMQ scales, and finally with regard to 4 clusters characterized by low mindfulness scores. *z* values of .40 and −.40 were chosen as cut-offs for classifying scores on an FFMQ scale as “high” or “low”, respectively.

The analysis identified one cluster (Cluster A, with 44 participants) that showed high scores on all FFMQ scales. In addition, there were also three clusters that had high scores on at least some FFMQ scale, and low scores on none. Cluster B (with 37 participants) showed high scores on all FFMQ scales except Observing, where they scored close to average. Cluster C (with 62 participants) showed high scores especially on Observing and Describing, but also on Non-reactivity. Cluster D, finally, scored high particularly on Non-judging and Non-reactivity, but also on Observing.

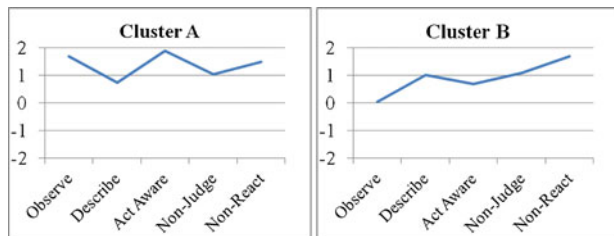
Among the clusters with mixed high-low scores, a number of different profiles were found. In terms of single variables, the most variation was seen on the scales Observing and Non-judging. Whereas two of the clusters (E and G) scored moderately high on Observing, two of the other clusters (F and I) scored very low on Observing. Similarly, whereas three clusters (I, J, and F) scored high on Non-judging, there was also a cluster (G) that scored low on this scale. Also with regard to Describing, there were two clusters (E and F) with high scores, and one (J) with very low scores. It may be noted that the scores on Observing and Non-judging most often went in opposite directions in these clusters (in four of five cases, if the one scale had a positive score the other had a negative score).

Finally, there were four clusters with low scores on at least one FFMQ scale, and high scores on none. Although there was no cluster with low scores on all scales, clusters L and M came fairly close by showing low scores on all but one scale (Acting with awareness in cluster L and Observing in cluster M). One cluster (H) scored low only on Acting with awareness, and another (K) scored low on Non-judging, Acting with awareness and Non-reactivity (and slightly elevated scores on Describing).

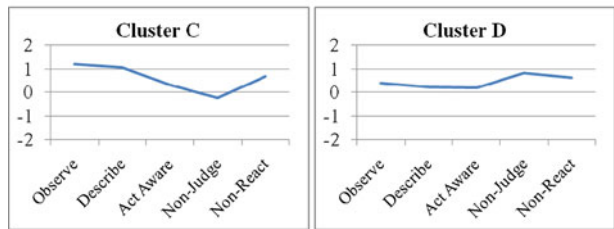
#### FFMQ Clusters in Which Meditators were Over- or Under-Represented

Table 2 shows a cross-tabulation of the two categories of meditating and non-meditating individuals with the thirteen FFMQ clusters. To test the hypotheses, the observed frequency in each cell was compared with the frequency that should be expected by chance alone, and one-tailed

**a** CLUSTERS CHARACTERIZED BY HIGH FFMQ SCORES

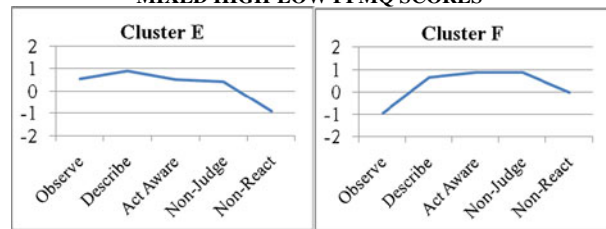


Cluster A. High on all FFMQ scales. Cluster B. High on all FFMQ scales, except Observe.

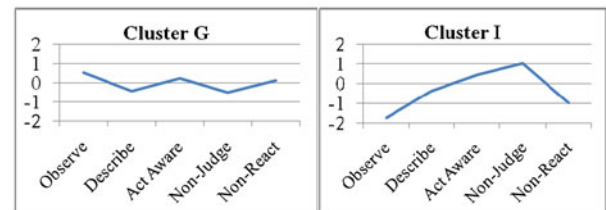


Cluster C. High on Observe, Describe, Nonreact. Cluster D. High on Nonjudge, Nonreact, Observe.

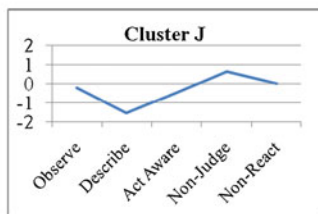
**b** CLUSTERS CHARACTERIZED BY MIXED HIGH-LOW FFMQ SCORES



Cluster E. High on Describe, Observe, Actaware, low on Nonreact. Cluster F. High on Actaware, Nonjudge, Describe, low on Observe.



Cluster G. High on Observe, low on Nonjudge and Describe. Cluster I. High on Nonjudge, low on Observe and Nonreact.

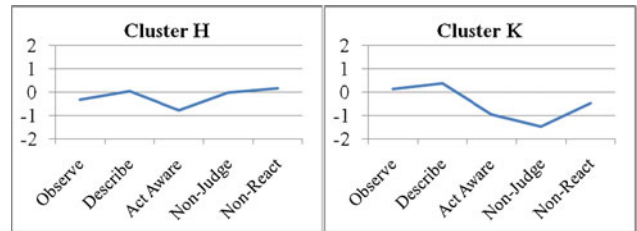


Cluster J. High on Nonjudge, low on Describe and Actaware.

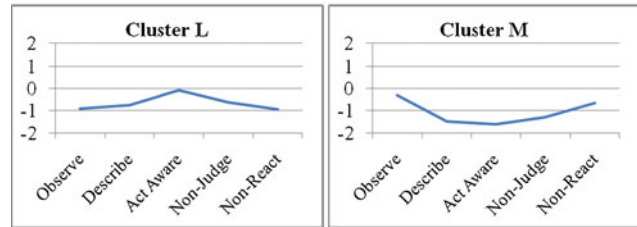
**Fig. 1** Profiles of the thirteen FFMQ clusters, in terms of z scores (where z=0 corresponds to the sample mean on each FFMQ scale)

probabilities were computed according to the fixed-margins model using EXACON (Bergman and El-Khoury 1987). As

CLUSTERS CHARACTERIZED BY LOW FFMQ SCORES



Cluster H. Low on Actaware. Cluster K. Low on Nonjudge, Actaware and Nonreact, high on Describe.



Cluster L. Low on Observe, Describe, Nonjudge, Nonreact. Cluster M. Low on Describe, Actaware, Nonjudge, Nonreact.

**Fig. 1** (continued)

shown in Table 2, significant findings were obtained with regard to seven clusters.

According to Hypothesis 1, all FFMQ profiles in which meditators were over-represented should be characterized by high scores on Observing. As seen in Table 2, this hypothesis was clearly confirmed: we found four clusters (A, C, D, and G) in which meditators were over-represented, and all of these scored high on Observing.

There was similar unambiguous support for Hypothesis 2, which stated that in all cluster with low scores on Observing meditators should be under-represented. As seen in Table 2, three clusters (F, I, and L) were characterized by low scores on Observing, and meditators were under-represented in all three.

On the other hand, Hypothesis 3 was not supported; according to this hypothesis, all FFMQ clusters in which meditators were over-represented should combine high scores on Observing with high scores on Non-judging and/or Non-reactivity. Actually one cluster that was over-represented among meditators (cluster G) showed a combination of high scores on Observing and low scores on Non-judging, which is clearly against the hypothesis.

Finally, Hypothesis 4 stated that if the analysis would identify FFMQ profiles with high scores on Observing in which meditators were *not* over-represented, then these cluster profiles should be characterized by low scores on Non-judging and/or Non-reactivity. As seen in Table 2, there was one cluster (E) that scored high on Observing in which meditators were not over-represented; this cluster was also characterized by low scores on Non-reactivity, which means that the hypothesis was supported.

**Table 2** Cross-tabulation of FFMQ clusters and the categories of meditating and non-meditating individuals, with a comparison between observed and expected frequencies in each cell (expected frequencies in parentheses)

| FFMQ clusters  | Meditators | Non-meditators |
|--|------------|----------------|
| A. High on all FFMQ scales                               | 39 (21)*** | 2 (20)***      |
| B. High on all FFMQ scales, except Observe               | 19 (16)    | 13 (16)        |
| C. High on Observe, Describe, Non-react                  | 29 (21)**  | 12 (20)**      |
| D. High on Non-judge, Non-react, Observe                 | 49 (35)*** | 21 (35)***     |
| E. High on Describe, Observe, Actaware, low on Non-react | 22 (21)    | 19 (20)        |
| F. High on Actaware, Non-judge, Describe, low on Observe | 13 (20)*   | 27 (20)*       |
| G. High on Observe, low on Non-judge and Describe        | 45 (32)*** | 19 (32)***     |
| H. Low on Acting with awareness                          | 35 (33)    | 30 (32)        |
| I. High on Non-judge, low on Observe and Non-react       | 3 (20)***  | 37 (20)***     |
| J. High on Non-judge, low on Describe and Actaware       | 14 (19)    | 23 (18)        |
| K. Low on Non-judge, Actaware, Non-react, high Describe  | 24 (25)    | 25 (24)        |
| L. Low on Observe, Describe, Non-judge, Non-react        | 14 (37)*** | 59 (36)***     |
| M. Low on Describe, Actaware, Non-judge, Non-react       | 15 (20)    | 25 (20)        |

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

## Discussion

A basic assumption of the present study was that the unexpected results with the FFMQ scale Observing—i.e. Observing not being a component of an overall mindfulness construct (Baer et al. 2006; Lilja et al. 2011)—would not appear within a person-oriented approach which focuses on *patterns* of values at the FFMQ scales. The results from the present study support this assumption. By using a person-oriented analysis method we found strong support for the assumption that Observing is an essential dimension of mindfulness. According to Hypothesis 1, all FFMQ clusters in which meditators (who may be assumed to have a higher degree of mindfulness skills than others) were over-represented should be characterized by high scores on Observing. This hypothesis was clearly confirmed; as the four clusters in which meditators were over-represented all had high scores on Observing. There was similar unambiguous support for Hypothesis 2, which stated that all FFMQ clusters in which meditators were under-represented would be characterized by low scores on Observing. These results are clearly consistent with the general idea that meditation practices develop/enhance the person's ability to notice and attend to (i.e. observe) internal and external experiences in a mindful way.

The hypotheses on the relations between Observing and Non-judging/Non-reactivity, on the other hand, were not equally well supported. Although Hypothesis 4 gained support, Hypothesis 3 did not. Why, then, was Hypothesis 3 not supported? This hypothesis stated that all FFMQ clusters in which meditators were over-represented should combine high scores on Observing with high or at least medium scores on Non-judging and Non-reactivity. Inconsistent with this hypothesis, there was one cluster (G) in which meditators were over-represented, which combined high scores on Observing with *low* scores on Non-judging. Why should

a pattern of high Observing and low Non-judging be over-represented among meditators? One possible clue to an explanation is perhaps seen in the fact that cluster G belonged to the group of clusters with “mixed high and low FFMQ scores” (see Fig. 1). In fact, this was the only cluster in which meditators were over-represented which did not also belong to the “high mindfulness clusters”. One possibility is that this represents a subgroup of individuals with strong self-judgmental tendencies who have started to meditate and have learned to observe their own self-judgmental tendencies (perhaps to such an extent that they are even more aware of these tendencies than before and compared to other less mindful individuals). This is pure speculation, however, in the absence of any additional data on these individuals that could help describe the psychological characteristics of this subgroup. It should also, however, be noted that the pattern characterizing cluster G (high Observe, low Non-judge, low Describe) is not very pronounced when compared with the other clusters of the mixed group. As seen in Fig. 1, the value on Observing for cluster G was only slightly above the  $z$  cut-off value .40, and the value on Non-judging was only slightly below the cut-off value of  $-.40$ . In other words, if we had set a stricter cut-off for what would count as high and low  $z$  scores, the evaluation of this hypothesis might have been different. Still, even if the effects are not strong, it cannot be denied that the pattern of scores on Observing and Non-judging in cluster G goes in the opposite direction to the hypothesis.

As to Hypothesis 4, the results identified one cluster that scored high on Observing without being over-represented among meditators, and this cluster was characterized by low scores on Non-reactivity, which was consistent with the hypothesis. It is possible that the high scores on Observing in this cluster represent the kind of high self-conscious observation and rumination that has been found among some people with depression and anxiety, and that the low scores on Non-

reactivity represent the inability to “decenter” from one’s thought contents and perceive these as mere thoughts rather than reality that is associated with this kind of ruminative self-awareness (Watkins and Teasdale 2001, 2004).

To summarize, although the use of a person-oriented approach to the study of patterns of FFMQ in the present study gave unambiguous support to the assumption that Observing is an essential dimension of mindfulness skills, it did not support the assumption that the practice of mindfulness (as seen in meditators) would be incompatible with a pattern of high Observing and low Non-judging. More generally, the results indicate that the relation between Observing and Non-judging is more complex than expected. This is also seen in the finding that even among the clusters with *high* mindfulness scores (i.e. clusters A, B, C, and D), only two clusters (A and D) scored high ( $z > .40$ ) on *both* Observing and Non-judging. This indicates that even among individuals with relatively high overall levels of mindfulness, the abilities to observe and to keep a non-judgmental attitude do not always go hand in hand.

It is also interesting to note that, among the clusters with mixed high-low scores on the FFMQ scales (i.e. clusters E, F, G, I, and J), the most variation was clearly seen on Observing and Non-judging. In fact, the scores on these two scales in these clusters most often went in opposite directions: in four of five cases, if the one scale had a positive  $z$  score the other had a negative  $z$  score. One possible way of understanding these results is to think of mindfulness as the development of a multidimensional skill, which may differ from one individual to another depending, among other things, on individual differences in baseline tendencies to attend/observe on the one hand, and to keep an accepting non-judgmental attitude to experience on the other hand. In fact, the present results are what might be expected if problems with attention/observation and problems with keeping an accepting/non-judgmental attitude are (1) both a hindrance to the development of mindfulness skills and (2) are often found in *different subgroups* of individuals. In other words, if attention problems and problems with keeping an accepting non-judging attitude to experience tend to occur in different categories of individuals in the general population, then Observing and Non-judging are not likely to correlate positively, and may even correlate negatively. In fact, a significant *negative* correlation between Observing and Non-judging (as measured by the corresponding scales from the Kentucky Inventory of Mindfulness Skills, KIMS) was demonstrated by Baer et al. (2004), and was replicated in a study with the Swedish translation of the KIMS (Hansen et al. 2009). And with regard to the FFMQ scales, Baer et al. (2006) as well as Lilja et al. (2011), found a weakly negative correlation between Observing and Non-judging. It is possible that this pattern illustrates one of the great challenges of mindfulness

—the difficulty of combining high levels of (self)observation with a high level of a self-acceptance.

Difficulties with attending/observing or being non-judgmental may take time to overcome, which means that they may show up even in people who have begun to practice mindfulness meditation. Moreover, these two kinds of difficulties may be expected to get focused during different phases of this development. The practice of mindfulness often starts by applying mindful non-judgmental observation to external sense impressions and body sensation; this is reflected in the contents of the FFMQ Observing facet, which refer primarily to relatively pleasant or neutral sense impressions and body sensations, where the ability to be non-judgmental is not put to any more severe test. Soon, however, mindfulness skills are to be applied to other areas, including the non-judgmental observation of disturbing thoughts and painful feelings. It is interesting to note that the FFMQ scales Non-judging and Non-reactivity not only tap different *aspects* of mindfulness skills than the Observing facet, but also different *areas of application* of mindfulness skills. For example, the items on the Non-judging and Non-reactivity facets do not refer to sense impressions or body sensations (which are highly focused by the items on the Observing facet), but to distressing emotions, perceptions, feelings, thoughts, images, and ideas. Therefore, it may be argued that the Non-judging and Non-reactivity facets, in fact, are designed to measure more difficult applications of mindfulness skills than the Observing facet.

One possible hypothesis is that whereas difficulties with attention/observation may be a real hindrance during the first phase of mindfulness training, difficulties with keeping an accepting, non-judgmental attitude is probably less of a problem at this stage. Highly self-critical individuals may find it difficult to keep an accepting, non-judgmental attitude when they note that their thoughts drift away during a mindfulness exercise, or when they perceive their own self-critical thoughts and think that they should not have such thoughts. Although this may occur even at an early stage of mindfulness training, these kinds of difficulties probably get much more in focus during later stages. Individuals with low tendencies to self-criticism, on the other hand, may probably experience less of this kind of difficulties, not being equally disturbed by failures to perform. This means that we may expect the development of mindfulness skills to follow different developmental trajectories in different individuals, depending upon their pre-existing abilities and difficulties.

On the other hand, with the gradual acquirement of mindfulness skills, we should expect a successive “convergence” between the ability to attend/observe and to keep a non-judgmental attitude, so that these abilities would go together among the most highly mindful individuals. In the present study, such a convergence is clearly seen in the cluster with the highest mindfulness scores (cluster A),



which contains individuals who score high on all FFMQ facets. In this context it is also interesting to note that Baer et al. (2008) found a high positive correlation between Observing and Non-judging ( $r=.49$ ) in a sample of meditators.

This also suggests that it may be of interest for future research to try to identify different subgroups with various kinds of difficulties in learning mindfulness, and eventually, to test various versions of mindfulness programs that are tailor-made for individuals with various kinds of such difficulties. Difficulties with self-acceptance and in keeping a non-judgmental attitude, for example, might be expected to be found in highly self-critical individuals with a tendency to depression and anxiety. But where should we expect to find subgroups of individuals with difficulties in attending/observing? One candidate might be individuals with attention-deficit disorders. Empirical data (Smalley et al. 2009), however, have indicated that individuals with attention-deficit hyperactivity disorder (ADHD) tend to score low only on the FFMQ facet Acting with awareness—which is measuring the ability to be mindfully attentive to one's practical everyday activities—but did not score low on the Observing facet. This means that it remains a task for future research to analyse what characterizes individuals with low scores on Observing. In the present study, we found three clusters (F, I, and L) with distinctively low scores on Observing; it would be interesting to know what characterizes these individuals in terms of psychological profile and well-being.

Although the present discussion has focused very much on the FFMQ facets Observing and Non-judging, the Non-reactivity scale is also of interest here. As Baer et al. (2006) pointed out; both can be seen as ways of operationalizing acceptance. More specifically, to accept an experience, such as feeling depressed, might include refraining from self-criticism about having this experience (Non-judging) and at the same time refraining from impulsive reactions to the experience (Non-reactivity). In this sense, not only Non-judging but also Non-reactivity to inner experiences can be seen as measuring more complex applications of mindfulness skills than Observing, and may need extensive meditation practice to develop. In the present study, it is interesting to note that all four high-mindfulness clusters (A, B, C, and D) were characterized by high scores on Non-reactivity, whereas three clusters in particular (clusters E, I, and L) were characterized by very low scores on Non-reactivity. It would be interesting to find out what characterizes the latter three clusters in terms of psychological well-being and possible psychopathology; one conjecture would be that highly impulsive individuals are to be found in at least some of these clusters.

In conclusion, this study shows that a person-oriented approach may contribute new perspectives on the understanding of mindfulness skills and their development. Most important,

the use of a person-oriented approach strongly supports the assumption that Observing is an essential dimension of mindfulness skills that can be cultivated by meditation practice. Second, although the results did not support the hypothesis that the practice of mindfulness (as seen in meditators) would be incompatible with a pattern of high Observing and low Non-judging, the results concerning the patterns of Observing and Non-judging that were found in the various clusters suggest some hypotheses to be tested in further research that might possibly advance our understanding in this area. A more general implication is that research with multidimensional measures of mindfulness may lead to misleading conclusions if they are only based on variable-oriented methodologies (correlations, regression, structural equation analysis, etc.) which rely entirely on the study of linear associations. To the extent that we are interested in the profiles of mindfulness skills of individual participants and how they develop over time, variable-oriented methods need to be complemented by person-oriented methods (e.g. hierarchical cluster analysis).

The study also has some clear limitations. First, because the present study combines data from four different data sets that were not calibrated in terms of the questionnaire measures used, the inclusion criteria for categorizing someone as a “meditator” differed between the yoga/Vipassana samples (at least 1 year's experience of meditation) and the Gothenburg/attention study samples (“some” or “extensive” experience of meditation). An alternative would have been to include only those from the latter samples who reported “extensive” experience; this, however, would only have removed 13 participants from the sample, and the results would not have been substantially altered. Second, although most of the meditating participants reported that their practice did not involve the use of a mantra, and most likely involved some form of mindfulness meditation, rather than concentration-based methods, this was not controlled for. Third, because the four different data sets did not share any additional measures (on psychological well-being, personality or psychopathology), we were not able to compare the clusters on any such variables; this, however, would be an interesting task for future research. Among other things, such research might cast new light on subgroups with different patterns on the FFMQ and their various difficulties with developing mindfulness skills, as well as the different developmental trajectories of different individuals in their way of acquiring mindfulness skills.

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