UNIVERSITEIT TWENTE
ENSCHEDE

Mindfulness and experiential avoidance in fibromyalgia patients

Bachelor thesis

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Student: Christina Kim Laura Henke s0159190
Tutors: Dr. Erik Taal
Dr. Martine Veehof

Abstract (EN)

Objective: Previous research has presented mindfulness- based therapies as a promising approach in the treatment of fibromyalgia. The purpose of this study was to examine the convergent validity of the Dutch version of the Five Facets Mindfulness Questionnaire (FFMQ) in fibromyalgia patients. The FFMQ assesses mindfulness via the five facets *observe, describe, act aware, nonjudging* and *nonreacting to inner experience*. Methods: 119 patients with a self- reported diagnosis of fibromyalgia were recruited via the website of the fibromyalgia patient association. Mindfulness was assessed online using the FFMQ as well as experiential avoidance (EA) using the Acceptance and Action Questionnaire (AAQ). Pearson correlations between the mindfulness subscales and EA were conducted. The mindfulness facets describe and act aware were expected to be moderately negative correlated to EA. A strong correlation with nonjudging and nonreacting to inner experience was anticipated. The observe scale was estimated to be positively or nonsignificantly correlated to EA. Results: All correlations are in the expected direction and strength except for the nonreacting which is only moderately related to EA. Conclusion: Findings support adequate convergent validity of the Dutch version of the FFMQ in fibromyalgia patients.

Abstract (NL)

Doel: Uit eerder onderzoek bleek dat op mindfulness gebaseerde therapieën, veelbelovend zijn voor de behandeling van fibromyalgie. Het doel van deze studie was de convergente validiteit van de Nederlandse versie van de Five Factor Mindfulness Questionnaire (FFMQ) in fibromyalgie patiënten te bepalen. De FFMQ meet minfulness in vijf facetten: observeren, beschrijven, bewust handelen, niet oordelen en niet reactief zijn. Methoden: 119 patiënten, die zelf aangaven fibromyalgie te hebben, namen via de website van de fibromyalgie patiëntenvereniging deel. Mindfulness en experimentele vermijding (EA) werden online gemeten. Pearson correlatiecoëfficiënten tussen de mindfulness subschalen en EA werden berekend. Het werd verwacht dat de mindfulness facetten beschrijven en bewust handelen negatief matig met EA correleren. Bij de facetten niet oordelen en niet- reactief zijn werd aangenomen dat ze een hoge negatieve correlatie met EA zouden vertonen. De subschaal observeren werd verwacht positief of niet significant met EA to correleren. Resultaten: Alle correlaties blijken in de verwachte sterkte en richting te liggen met uitzondering van het niet - reactief facet die alleen matig aan EA gerelateerd bleek te zijn. Conclusie: Er wordt een adequate convergente validiteit van de Nederlandse versie van de FFMQ bij fibromyalgie patiënten aangetoond.

Introduction

Fibromyalgia

According to the Dutch Arthritis Association more than 2.3 million people in the Netherlands are currently affected by one or more types of rheumatic disease. Most of the patients (1.2 million) suffer from osteoarthritis, a condition by which the articular cartilage is degenerating. 150,000 people are affected by rheumatoid Arthritis, a type of inflammatory rheumatism, and approximately 500,000 people are afflicted with fibromyalgia (Reumafonds, 2007).

Fibromyalgia is a chronic illness which is characterized by widespread pain as well as pain in different tender point sites. The American College of Rheumatology defined pain as *widespread* if it is present in the left and the right side of the body as well as above and below the waist. In order to be diagnosed with fibromyalgia the pain has to be present for at least three months.

Furthermore the patient needs to have pain in 11 of 18 tender point sites, which are points that are painful when palpated with a force of 4 kg. Many patients also suffer from sleep disturbance, fatigue and stiffness. Fibromyalgia is often associated with anxiety, depression or irritable bowel syndrome. However these symptoms do not have to be present in order to diagnose fibromyalgia (Wolfe et al., 1990). It still remains unclear what causes fibromyalgia. This might be the reason why the right treatment of fibromyalgia remains controversial.

On the one hand Abeles, Solitar, Pilliger, & Abeles (2008) reviewed the effects of medical and non-medical treatments for fibromyalgia and found that effects of treatment are often disappointing. They did not find any drug that is particularly effective for treating fibromyalgia patients. The only drug approved by the US Food and Drug Administration (FDA) for treating fibromyalgia is Pregabalin, which inhibits excitatory neurotransmitter release such as substance P. The reviewed non-pharmacological interventions, such as physical training, either seemed not to be significantly effective for reducing pain, improving psychological symptoms or functional disability or suffered from serious methodological drawbacks. On the other hand Rossy et al. (1999) conducted a meta-analysis which was not included in the review of Abeles et al. in 2008. They found that fibromyalgia could be treated with antidepressants and muscle relaxants. Furthermore they recommended including non-pharmacological interventions to the treatment of fibromyalgia, for example cognitive-behavioral interventions, as they seem to improve the physical status, fibromyalgia symptoms, the psychological status and the daily functioning. A promising approach to the treatment of fibromyalgia symptoms are meditation- based therapies (Kaplan, Goldenberg, Galvin- Nadeau, 1993).

Mindfulness

One of the meditation- based therapies is based on the concept of mindfulness. Mindfulness has its roots in Buddhism and it´s primary goal is to bring one's complete attention to what one is doing at the present moment without judging or reacting to it and just accepting one's feelings or thoughts (Baer, Smith, Hopkins, Krietemeyer, Toney, 2006; Shigaki, Glass, &Schopp, 2006; Kabat- Zinn, Lipworth,& Burney, 1985). The Mindfulness- Based Stress Reduction Program (MBSR) was first developed by Kabat- Zinn et al. (1985) for chronic pain patients. The patients took part in a mindfulness meditation practice. During this training they learned to direct their attention to one or more aspects of the present moment experience. For instance, pain patients learn to observe their pain experience and to pay attention to the sensation without thinking about or judging the experience. This might enable patients, as Kozak (2008) puts it to "come to a place where pain, although unpleasant, no longer is a problem". When patients have complete contact with the present moment experience, they might be able to accept pain as sensation that does not define them. Through mindfulness meditation people might realize that their thoughts and emotions are not defining them and thus be able to be less controlled by pain, depression or anxiety. Although it is still not fully understood by which mechanisms mindfulness is working (Shapiro, Carlson, Astin & Freedman 2006), it has been demonstrated by various studies that mindfulness can be effective for treating fibromyalgia patients.

Grossman, Niemann, Schmidt, & Walach (2004) conducted a meta- analysis for the MBSR program for different clinical populations including fibromyalgia and chronic pain as well as nonclinical stressed populations. In general they found effect sizes of approximately 0.5 showing that MBSR has a positive effect on mental and physical health, helping people to cope with disability and distress as well in everyday life as with various chronic diseases and problems.

Furthermore Grossman, Tiefenthaler- Gilmer, Raysz, & Kesper (2007) found that female fibromyalgia patients who took part in the MBSR program showed improvement in pain, coping with pain, quality of life, physical symptoms, anxiety and depression compared with a control group. In a three year follow- up analysis it was found that these effects were still present. Further support for the effectiveness of MBSR for fibromyalgia patients is provided by a randomized clinical trial study. Women with fibromyalgia showed significant improvement in depressive symptoms after they followed an eight week MBSR intervention compared to control participants (Sephton et al., 2007).

In order to assess the effects of mindfulness training on mindfulness it is necessary to have a reliable and valid method for measuring mindfulness (Dimidjian & Linehan, 2003). Until 2006 mindfulness was operationalized in different self- report questionnaires assessing mindfulness either as a single

factor construct or as consisting of four different facets (Baer et al., 2006). Combining the five existing mindfulness questionnaires Baer et al. (2006) found that conceptualizing mindfulness as a multifaceted construct was advisable. For this reason, they developed a new mindfulness questionnaire, the Five Facets Mindfulness Questionnaire (FFMQ).

Five Facets Mindfulness Questionnaire

Through explorative factor analysis Baer et al. (2006) derived the following five facets of mindfulness: *Observing* which means being able to observe, notice and devote attention to internal and external stimuli. *Describing* denotes the ability to express, label and put the observed phenomena into words. *Acting with awareness* includes attending to the present moment experience completely without being distracted and concentrating on just one thing. *Nonjudging of inner experience* refers to the acceptance of the present moment experience without judging or evaluating it or trying to avoid, change or escape from it. *Nonreactivity to inner experience* is the ability to allow thoughts and feelings to come and go without reacting to them.

Next internal consistency was computed for each of these five subscales obtaining the following alpha coefficients: Observing= 0.83, Describing=0.91, Acting with awareness=0.87, Nonjudging=0.87 and Nonreacting = 0.75. This reveals that all subscales have adequate to good internal consistency. Furthermore Baer et al. (2006) reported that the different subscales correlated only modestly with each other as was expected if the scales have non-overlapping content. In order to evaluate the construct validity they conducted correlations between the mindfulness subscales and various other variables. One aspect of construct validity is convergent validity. This type of validity denotes to what extent the construct is related to what it is theoretically expected to be related to. Baer and his colleagues (2006) found moderate to large correlations, for example between mindfulness and self-compassion as well as mindfulness and emotional intelligence, which were almost entirely consistent with their predictions except for the observe facet. Thus, good convergent validity of the FFMQ was revealed.

The ‘observe’ subscale showed a weak or non-significant positive correlation to different concepts when a negative relationship was expected. In a more recent study Baer et al., (2008) showed that the relationship between the ‘observe facet’ and psychological adjustment tended to vary with different levels of meditation experience. As one becomes more experienced with meditation the positive relationship between the observe facet and symptoms tend to become nonsignificant or negative.

An explanation for these findings might be that the positive relationship between symptoms and the observe facet stem from selective self-focused attention in non- meditating individuals, which can be maladaptive (Watkins & Teasdale, 2004). As meditation teaches to observe a wider range of stimuli,

one might learn not only to focus on the unpleasant ones (Baer et. al 2008). Since self-focus can be either maladaptive or adaptive, it has been suggested that there are distinct varieties of self- focus. Watkins and Teasdale (2004) demonstrated that experiential rumination tends to be a maladaptive form of self-awareness while analytical (mindful) self-focus tends to be adaptive in depressive patients. In contrast to mindful self-awareness where one can preserve the benefits of self-focused attention such as knowing what one is thinking and feeling, in ruminative, experiential self-focus one concentrates on symptoms and their implications. As a result of ruminative self-focus one might try to redirect one's attention away from maladaptive thoughts, which might actually reinforce recurrence. Attempts not to focus on negative thoughts or feelings are called experiential avoidance (EA), which tends to be maladaptive (Hayes, Follete, & Linehan, 2004).

Experiential avoidance

EA is usually defined as tendency to try to alter the frequency, form or situational sensitivity of thoughts or feelings (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Thus someone who is engaging in EA would try not to think about for example negative memories (Jacobs, Kleen, De Groot, & A-Tjak, 2008). As people try not to think about thoughts or feelings, the unwanted thoughts or emotions tend to occur even more frequently (Gross&Levenson, 1997). Patients who suffer from chronic pain often engage in EA and try to avoid or control their painful sensations. Hence avoiding an unpleasant thought can have the opposite effect; EA eventually might intensify suffering (McCracken, Vowles, & Eccleston, 2005). There is empirical evidence that EA is detrimental to health and quality of life. In a meta- analysis conducted by Hayes et al. (2006) the relationship between psychopathology amongst others depression and anxiety, psychological well-being, job performance, pain management and EA was assessed. EA has a negative relationship with psychological well-being and is associated with several behavioral problems. Moreover laboratory studies (Zettle et al., 2005; Feldner et al., 2004) supported these findings showing that individuals who score high on EA are less able to tolerate pain during a cold pressor task compared to controls.

Mindfulness and experiential avoidance

Mindfulness represents a construct that influences the experience of emotions and thoughts in an accepting and nonjudging way. In contrast to mindfulness, EA is characterized by non-accepting and judging of one's thoughts or feelings (Mitmansgruber, Beck, Hoefer, & Schuessler, 2009).
While mindfulness has its origins in Eastern philosophy, namely Buddhism, EA stems from functional contextualism (Mitmansgruber et al., 2009). EA is also implicated in MBSR, since it has the purpose to learn to stay in touch with unpleasant thoughts without evaluating or reacting to them instead of

avoiding them (Chawla & Ostafin, 2007). As mindfulness and EA reflect two contrary processes one would expect them to be negatively correlated. Jacobs, Kleen, De Groot, & A- Tjak (2008) found a negative relationship between mindfulness as assessed with the Mindfulness Attention Awareness Scale (MAAS) and EA in a clinical sample.

Moreover, Baer et al. (2006) observed the following relationships between the five mindfulness subscales of the FFMQ and EA in a nonmeditating sample: Observe: 0.12, Describe:-0.23, Act with awareness:-0.30, Nonreacting:-0.39 and Nonjudging: -0.49. The correlations between mindfulness and EA as assessed with the Acceptance and Action Questionnaire (AAQ) were in the predicted negative direction, except for the 'observe' subscale. The positive relationship between EA and the 'observe' facet might stem from lack of meditation experience. Baer et al.'s (2006) participants might have engaged in ruminative self- focused attention, which can be maladaptive in nonmeditating individuals.

The mindfulness facets and EA might be negatively correlated, when one is acting mindful one is not trying to avoid certain thoughts, but to observe, describe and accept them, in contrast to EA. As Shapiro et al. (2006) propose through mindfulness one learns to *reperceive* and what was subject (the thoughts) becomes object. Instead of viewing negative thoughts as defining oneself, they are seen as objective and can be labeled as such, for example "it is just a thought".

Mindfulness includes acting with awareness which becomes possible through re-perceiving because as one just observe one's thoughts or feelings automatic responses are less likely. Furthermore re-perceiving allows you to see emotions and thoughts as states that are "arising and will in time pass away" thus enabling you not to react to them and not to judge them. Instead of trying to alter thoughts and emotions as in experiential avoidance you change the relationship to them.

Since fibromyalgia is characterized by widespread pain, EA seems to be a maladaptive way to cope with the disease. While trying not to think of pain rather increases the sensation of it (Hayes et al., 2004), mindfulness allows patients to be with the pain "instead of being defined by" it (Shapiro et al., 2006).

The present study

The FFMQ was translated into Dutch and has been tested in a sample of 407 students and 288 individuals with meditation experience (Muskens, 2009). The emanating results showed that the facet structure, the internal consistency as well for the whole questionnaire as for the subscales, convergent and discriminant validity except for the 'observe' scale, as well as predictive validity for psychological symptoms were adequate. All in all the results were in accordance with the findings by Baer et al. (2006, 2008). To assess the effects of mindfulness training in the Netherlands as well as

establishing the cross- cultural generalizability, reliable and validated translation of the FFMQ were needed (Dimidjian & Linehan, 2003). The psychometric properties of the Dutch version of the FFMQ needed to be assessed in a clinical sample as well. Patients might differ significantly from a nonclinical population because of their experience with constant pain. Baer et al. (2006) recommended investigating the use of the FFMQ in a clinical sample as most mindfulness- based interventions are employed to address health problems and therefore are used in a clinical context. The aim of the present study was to assess the convergent validity as one aspect of the psychometric properties of the Dutch version of the FFMQ in a clinical sample.

In order to examine the convergent validity we investigated the correlation between the five mindfulness facets measured with the Dutch version of the FFMQ and EA in fibromyalgia patients. Based on the assumption that mindfulness includes acceptance, the opposite pole to EA (Germer, Siegel, &Fulton, 2005), a moderate to strong negative correlation between EA and mindfulness facets, was anticipated. The 'describing', 'acting with awareness', 'nonjudging' and 'nonreacting to inner experience' subscales were expected to be moderately to strongly negative related to EA, consistent with the result of the study Baer et al. (2006) conducted. As a result the following hypothesis evolved

Hypothesis 1: Experiential avoidance has a moderate to strong negative correlation to the describing, acting with awareness, nonjudging and nonreacting to inner experience subscale.

Since the 'nonjudging and nonreacting to inner experience' facets seem to be a possible way to operationalize acceptance (Baer et al., 2006), these subscales are estimated to be particularly strong related to EA that can be seen as the opposing end of the acceptance dimension (Hayes, et al., 2004). Also, Baer et al. (2006) found that EA highly correlated to the 'nonjudging' and 'nonreacting' subscale. This led us to our second hypothesis

Hypothesis 2: EA correlates stronger with the nonjudging and nonreacting subscale than with the describing, acting with awareness and observe subscale.

Since we did not anticipate many fibromyalgia patients to have any experience with meditation the correlation between the 'observe' subscale and EA might be nonsignificant or positive. Given that the 'observe' facet was not expected to correlate significantly with experiential avoidance, this aspect does not actually contribute to assess convergent validity, but might assess discriminant validity. According to Baer et al. (2008) meditators learned to observe a wide range of stimuli in an adaptive way while people without meditations experience might engage in self-focus that is maladaptive. This is why the correlation between the 'observe' subscale and EA tends to change with experience in meditation, resulting in hypotheses 3 and 4

Hypothesis 3: The correlation between EA and the observe subscale is weakly positive and

nonsignificant.

Hypothesis 4: If patients have mediation experience, the correlation between EA and the observe subscale is weakly negative.

Method

Participants and Procedure

Participants were recruited via the website of the Dutch national fibromyalgia association http://www.fibromyalgiepatientenvereniging.nl/. Here we posted a request to take part in our research project about mindfulness and fibromyalgia with a short explanation about the study. Patients, who were willing to take part, could follow a link on the website and fill-in the questionnaire online. Participants who completed the study had a chance of winning one of 10 vouchers for local stores. Inclusion criteria was a self- reported diagnosis of fibromyalgia, according to 1990 American College of Rheumatology criteria.

Participants were 192 fibromyalgia patients. Of these participants eleven did not answer whether they were diagnosed by a physician, four were not diagnosed by a physician. These participants were excluded from the study. Questionnaires, where one or more items of the FFMQ or AAQ were missing, were not considered. A total of 119 patients were included in the analysis.

The data was treated confidentially as stated on the website. Patients averaged 43.6 years of age (SD= 11.1) and were mostly female (93.3%).Demographic and clinical data are shown in Table 1.

Measures

To asses five factors of mindfulness a Dutch version of the FFMQ 39 item self- report questionnaire -*the Five Facet Mindfulness Questionnaire (FFMQ- NL)* (Muskens, 2009) is used. The five subscales measure the following five facets. The first facet *Observe* contains eight items (*When I am running, I deliberately notice the sensations of my body moving).* Further, *Describing* (8 items) (e.g. *I am good at finding words to describe my feelings*) and *Acting with awareness* (8 items) (e.g. *I am easily distracted*- reverse scoring), were assessed. Besides, *Nonjudging to inner experience* (8 items) (e.g. *I criticize myself for having irrational or inappropriate emotions*- reverse scoring), and *Nonreacting to inner experience* (7 items) (e.g. *I perceive my feelings and emotions without having to react to them*) were measured. The items were assessed on a 5- point- Likert- scale ranging from 1(= *never or almost never true*) to 5 (= *very often or always true).* In order to compute scores on the subscales, scores on specific items for every facet were added up, e.g. scores on items 1, 6, 11, 15, 20, 26, 31, 36 yielded the score of the observe facet. Scores were also assessed for the different facets ranging from 8- 40 for the observe, describe, act aware and nonjudging subscale and 7-35 for the non-reacting to inner experience- subscale respectively. A higher score meant higher e.g. observing skills. Items were distributed so that they roughly alternated among the five subscales. In general the

psychometric properties as well of the FFMQ (Baer et al., 2006) as of the Dutch version of the FFMQ (Muskens, 2009) are adequate.

Table 1

Demographic and clinical characteristics of self- reported pain and functional limitations (N=119)

Characteristics	N (%)
Age, mean ± SD years	43.6 ± 11.1
Gender	
No. female	111 (93.3%)
Years since diagnosis[a], mean ± SD years	10.8 ± 8.4
Education	
Primary education	1(.8%)
Junior secondary vocational education (LBO, huishoudschool, LEAO, LTS)	18 (15.1%)
Lower general secondary education (MAVO, (M)ulo, 3 year HBS, VMBO)	19 (16%)
Intermediate Vocational Training (e.g. MTS, MEAO)	41 (34.5%)
Higher Vocational Education (5 year HBS, athenaeum, HAVO, MMS, gymnasium)	8 (6.7%)
College degree	25 (21%)
University level	7 (5.9%)
Work situation	
Employed	64 (53.8%)
Household	14 (11.8%)
Studying/ school	6 (5%)
Unemployed	3 (2.5%)
Occupational disabled (WAO)	31 (26.1%)
Retired (AOW, VUT)	1 (.8%)
Marital status	
Married	65 (54.6%)
Unmarried, Cohabitating	21 (17.6%)
Unmarried, not cohabitating	19 (16%)
Divorced	14 (11.8%)
Fibromyalgia symptoms	
Pain[b], mean ± SD (0-10)	7± 1
Degree to which disease impacts well-being, mean ± SD (0-10)	6±2
Meditation experience	
Yes	53 (44.5%)
No	53 (44.5%)
Not answered	13 (10.9%)

[a]n= 117. [b]=115.

The internal consistency of the English version of the FFMQ is good to adequate, ranging from an alpha .75- .91 for all facets (Baer et al. 2006), the Dutch version showed similar results (Muskens, 2009). In the present study the internal consistency (Cronbach's α) was found to be adequate to good.Since the FFMQ has only been used for students and people experienced with meditation it was not sure if less educated patients were able to understand all questions without problems. Therefore, a small group of eleven rheumatic patients were asked to complete the questionnaires while thinking aloud and afterwards interviewed individually in order to detect difficulties. The interviews revealed that patients had problems to understand at least one item in each subscale. Thus, the problematic items 4, 5, 9, 11, 14, 15, 18, 19, 20, 22, 35 and 39 were modified to make them understandable for the clinical population.

Acceptance and action questionnaire (AAQ-2): a Dutch version of 10- item self- report measure designed to assess experiential avoidance as conceptualized in Acceptance and Commitment therapy. The first version which consists of nine items was developed by Hayes et al. (2004), the second revised version consists of ten items and emphasizes psychological flexibility (Hayes, 2005). The second version was translated into Dutch and validated by Jacobs et al. (2008). It has a good internal consistency (Cronbach's alpha= 0.89). The items were assessed on a 7- point scale ranging from 1(= never true) to 7 (=always true) (for example "*I have control over my life").* The scores were added up to yield a total score, whereby the items 2, to 5, and 7 to 9 needed to be scored reversively. The scores ranged from 10- 70 with a higher score indicating less EA (Jacobes et al. 2008). Thus, we did in fact expect a positive correlation between the scores on the FFMQ and the AAQ meaning a negative correlation between mindfulness and EA.

Demopraphic and clinical data: the participants were asked about their age, gender, work situation, as well as years of education. They were asked since when they did suffer from fibromyalgia as well as whether they had any experience with meditation (one item "do you have meditation experience?"). Furthermore, they had to report how much pain due to their disease they felt the last week (1 item) and how much their disease influences their lives (1item). Pain ("*How much pain did you feel last week due to your disease"*) was assessed on a 10 point VAS- scale ranging from 0 (= no pain at all) to 10 (= unbearable pain). How much the disease influences daily life and well-being *("when you think about the degree to which your condition affects you, how do you feel?")* was assessed on a 10 point scale ranging from 0 (= very well) to 10 (= very badly).

Data analysis

Data were analyzed using SPSS. The internal consistency of the AAQ-2, the FFMQ and its subscales were analyzed using the Cronbach's alpha. The Kolgomorov- Smirnow test was used to

determine whether the data did have an approximate normal distribution. For data that did not differ significantly from a normal distribution, the correlation between the total score of the FFMQ as well as its subscales and the total score of the AAQ-2 were assessed by Pearson's correlation coefficient. Correlations were considered weak, if their coefficient lay between .00 -.30, moderate .30- .50 and strong between .50-1.00 (Levin, Fox, & Forde, 2010). Whether the correlations between the AAQ and the nonreacting and nonjudging to inner experience subscale were significantly higher than between the AAQ and the describe and act aware subscale, was estimated using the online version of the test of significance by Meng, Rosenthal & Rubin (1992) assessed with the procedure by Stöber modified by Hahn (2010).

First, data were analyzed including all respondents (N= 119); second data were analyzed for patients with meditation experience only (N= 53), in order to assess whether the Correlation to the Observe facet with the AAQ differ for patients with meditation experience.

Results

First the internal consistency (Cronbach's α) was examined, showing adequate to good internal consistency as well for the total FFMQ (α =. 89) as for the subscales Observing (α= .63), Describing (α= .91), Act aware (α= .88), Nonjudging (α =. 89) and Nonreacting to inner experience (α=.73). The internal consistency of the AAQ was .87. Further, the distribution of the facets of the FFMQ as well as of the AAQ did not differ significantly from a normal distribution. Thus, Pearson correlation seemed to be adequate. Mean scores and standard deviations of the FFMQ subscales are shown in table 2.

Table 2

Mean scores of the mindfulness facets in a sample of fibromyalgia patients (N= 119)

Facet	Score (mean ± sd)
Observe	28.22 ± 4.2
Describe	26.99 ± 6.7
Act aware	24.89 ± 6.1
Nonjudging	26.06 ± 6.8
Nonreacting	21.94 ± 4.1

Correlations between the total score of the FFMQ and the AAQ were significant (r=.67, p<.01). Table 3 shows the correlations between the mindfulness facets and the AAQ. As predicted, EA was most strongly related to the 'nonjudging to inner experience' subscale, to a lesser degree to the 'act with awareness', 'nonreacting to inner experience' and 'describing' subscale. The 'observe' subscale was

negatively correlated to the AAQ. However, the correlation was not significant at the 0.01 level. Contradictory to the predictions the 'nonreacting to inner experience' subscale was not strongly related (r =.45) to EA.

We expected the correlations between the 'nonjudging and nonreacting to inner experience' subscale and the AAQ to be significantly higher than between the 'describing' and 'act aware' subscale and the AAQ. According to the test of significance by Meng et al. (1992) using the version by Hahn (2010) only the correlations between the AAQ and the 'describe' subscale differed significantly ($z = -2.39$, $p < .05$) from the correlations between the AAQ and the 'nonjudging to inner experience' subscale. Correlations between AAQ and the 'act aware' did not significantly differ from correlations between the AAQ and 'nonjudging to inner experience' subscale ($z = -1.75$, $p > .05$). The 'nonreacting to inner experience' subscale was not stronger correlated to the AAQ than the 'act aware' subscale, neither was the 'nonreacting' facet significantly higher related to the AAQ than the 'describe' subscale ($z = .18$, $p > .5$).

Table 3

Pearson- correlations between Mindfulness Facets of the FFMQ and the Action and Acceptance Questionnaire (AAQ) (N= 119)

Facet	r
Observe	-.01
Describe	.43**
Act aware	.50**
Nonjudge	.66**
Nonreact	.45**
Totalscore	.67**

**p< .01.

Next, only data from participants who had experience in meditation (n= 53) was included in the analysis. The correlations were in the same directions as for the total group. EA correlated most strongly with the 'nonjudging to inner experience' subscale, to a lesser extent to the 'act aware' subscale, followed by the 'nonreacting to inner experience' and the 'describing' subscale. As predicted, the 'observe' subscale was positively related to the AAQ, in a nonsignificant way, though. Table 4 presents correlations between mindfulness facets and the AAQ in patients with meditation experience.

Table 4

Correlations between Mindfulness Facets and the Action and Acceptance Questionnaire (AAQ) in patients with meditation experience (N= 53)

Facet	r
Observe	.18
Describe	.43**
Act aware	.57**
Nonjudge	.60**
Nonreact	.46**
Totalscore	.72**

**p<0.1
Note: Meditation experience was assessed using a single item ("Do you have meditation experience?")

Discussion

This study examined the convergent validity of the Dutch version of the FFMQ for a clinical population. Results support adequate convergent validity of the Dutch version of the FFMQ by assessing the correlations between the FFMQ and the AAQ. Relationships between the mindfulness facets and experiential avoidance were almost all consistent with our predictions. As expected the mindfulness facets describing, act aware, nonjudging and nonreacting to inner experience all correlated moderately to strongly negative with experiential avoidance. This confirms our first hypothesizes. These findings are consistent with research in psychometric properties of the FFMQ (Baer et al., 2006; Baer et al., 2008; Muskens, 2009), as explained earlier in the introduction. Further, it was hypothesized that the 'nonjudging' and 'nonreacting to inner experience' subscales correlated stronger with the AAQ than the 'describe' and 'act aware' subscales. The 'nonjudging to inner experience', as expected, correlated more strongly to the AAQ than the 'describe' and 'act aware' facets. However, the 'nonreacting to inner experience' was only moderately related to the AAQ. Surprisingly, the 'act aware' subscale was even higher related to the AAQ than the 'nonreacting' subscale. Also, only the difference between the correlations of the 'nonjudging' facet and the 'describe' facet to the AAQ were significant. These findings only partly support our second hypothesis. Our results are not consistent with previous studies by Baer et al. (2006) and Muskens (2009). In contrast to the present study, they found a stronger relationship of the 'nonreacting to inner experience' with EA than with the 'act aware' facet. Both 'nonreacting and nonjudging to inner experience' might be possible operationalizations of acceptance (Hayes, et al., 2004). Therefore, a strong relationship to EA had been anticipated. However, the samples in the studies Baer et al. (2006)

and Muskens (2009) conducted, consisted of students, in the present study fibromyalgia patients were participating. According to Hoogstraten (1999) students might differ significantly in their participation motivation from the general population. A possible explanation for the 'nonreacting' subscale not to be strongly negative correlated to the AAQ might be that this relationship differs particularly in fibromyalgia patients.

Thirdly, the relationship between the 'observe' facet and EA in the whole sample was not significant. These results are in line with previous findings (Baer et al., 2006; Baer et al., 2008; Muskens (2009). Baer et al. (2006) supposed that the 'observe' facet is sensitive to changes in meditation experience. Hence, its relationship to other psychological variables tends to alter as meditation experience increases or decreases. Earlier mentioned studies by Baer et al. (2008) and Muskens (2009) supported this view. Consistent with these findings, we found that the relationship between the 'observe' facet and EA changed in patients with meditation experience. When only data from patients with meditation experience was analyzed, the correlation between the AAQ and the 'observe' subscale became positive, although not significantly. However, the sample size was quite small (n=53). Demographically, the participants of this study are comparable to participants of other studies about fibromyalgia (Wolfe et al., 1990; Septhon, et. al., 2007). Thus, our findings might be generalizable to other fibromyalgia patients.

Several limitations of the study need to be mentioned. First of all, the diagnosis of fibromyalgia by a physician was only assessed by the self- reported information of the patients. Whether the diagnosis was right could not be tested. Next, this study might have suffered from a self- selection bias since interested participants could take part on a voluntarily basis. According to Hoogstraten (1999) self-selection bias might prevent from generalization. Probably participants of this study had a proactive attitude as they needed to visit the website of the Dutch fibromyalgia association in order to take part. Assessment of mindfulness using other methods than self- reporting questionnaire should be considered in the future. Baer et al. (2006) suggested experience sampling methods as an alternative. Another possible shortcoming of this study was that meditation experience was assessed using a single item; no questions about the nature of meditation were assessed.

Further research is needed to establish psychometric properties of the Dutch version of the FFMQ. More studies about correlations with related constructs are needed to establish the convergent validity. Also, divergent as well as incremental validity of the Dutch version of the FFMQ need to be investigated. The temporal stability of the questionnaire needs to be assessed as well. The modified version for the use in a clinical population needs to be further investigated. Additionally, research in Dutch meditating patients is needed to further establish the variations in the observe subscale with

varying meditation experience.

All in all our findings provide some support for a good convergent validity of the Dutch version of the FFMQ. It may contribute to the assessment of mindfulness in Dutch patients.

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