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Embodied effects of mindfulness-based cognitive therapy☆

Mindfulness-based cognitive therapy (MBCT) [1] was developed as an intervention for relapse prevention in depression, and its effectiveness has been demonstrated in three randomized controlled trials [2–4]. One fundamental characteristic of MBCT is that patients practice mindfulness exercises that intensively train bodily awareness. But what could be the benefits of developing a heightened awareness of the body? MBCT proposes that the self-perpetuating patterns of ruminative, negative modes of mind that often lead to relapse are not solely cognitive in nature. Instead, they are characterized by complex configurations of negative mood, thoughts, and *body sensations* [1, p. 67]. This notion is supported by recent research emphasizing the close and reciprocal relationships between bodily and emotional processes. This research converges in the idea of the *embodied* nature of emotion [5].

We propose that the way people walk would convey proprioceptive information that might serve as bodily feedback in emotional processing and depression. In earlier research, a comprehensive three-dimensional analysis of gait characteristics in patients suffering from a *current* episode of major depressive disorder showed that five features most strongly differentiated gait of currently depressed from never-depressed (ND) participants [6]: depressed patients showed reduced walking speed, smaller arm-swing amplitudes, smaller amplitude of vertical movements of the upper body, larger amplitudes of lateral body sway, and a slumped, forward-leaning posture. (An animation that visualizes the differences can be viewed at http://biomotionlab.ca/Demos/BMLdepression.html.)

The major aims of the current study were twofold. First, we investigated whether individuals with a history of depressive episodes but no current depression would show gait patterns that resemble those of currently depressed patients. The second aim of our study was to investigate whether MBCT normalizes gait patterns in formerly depressed (FD) patients. Mindfulness as practiced in MBCT might assist patients in recognizing and disengaging from negative movement patterns, which might play a role in the escalating process of depressive relapse.

Twenty-three FD patients (5 male and 18 female) participated in the study (average age=47.1 years; SD=10.3, the sample of the present study was a subsample of the study of Michalak et al. [7]). Inclusion and exclusion criteria corresponded to those of the study by Ma and Teasdale [3]. However, in contrast to the study of Ma and Teasdale [3], we restricted our analyses to patients with three or more previous episodes of major depression because the previous trials have shown that MBCT is especially effective for this subgroup of patients. Moreover, we included patients (n=10) taking antidepressant medication.

Additionally, 29 ND participants (7 male and 22 female) were recruited. All control participants were screened using the Structured Interview for *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*) [8] and reported no prior or current history of depression (average age=46.3 years, SD=7.4).

Motion data were collected with an optical motion capture system that made it possible to track three-dimensional trajectories of 41 small, reflective markers attached to the participants' body. Participants walked on a red rug and chose their walking speed freely. Motion analysis was based on a framework developed by Troje [9,10].

The treatment protocol followed the MBCT manual, which was developed by Segal et al. [1]. Statistical analyses were conducted using SPSS 15.0. Because our hypotheses were directed, we performed one-tailed tests unless otherwise stated.

Of the 23 patients assessed at baseline, one dropped out of treatment and two did not attend posttreatment assessment. Thus, pre- and postanalyses were conducted with the remaining 20 patients.

Significant differences were found between FD and ND participants in speed and vertical up-and-down movements of the head. Formerly depressed individuals walked more slowly (FD: M=1.16 m/s, SD=0.12; ND participants: M=1.23 m/s, SD=0.14, t[50]=−2.05, P<.05) and showed reduced vertical movements as measured in terms of the

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vertical amplitude of the head (FD: M=35.28 mm, SD=8.80; ND: M=40.08 mm, SD=7.23, t[50]=−2.16, P<.05). In contrast, differences in arm swing, posture, and lateral body sway were small and nonsignificant.

Dependent t tests revealed that posttreatment patients had normalized their walking speed (baseline: M=1.16, SD=0.12; posttreatment: M=1.21, SD=0.13, t[19]=2.64, P<.01) and showed reduced lateral body sway (baseline: M=36.55, SD=10.26; posttreatment: M=34.46, SD=10.37, t[19]=3.39, P<.01). The increase in vertical movements of the upper body showed a marginally significant trend (baseline: M=35.60, SD=8.95; posttreatment: M=37.72, SD=9.20, t[19]=1.52, P<.08). Changes in arm swing and posture were small and nonsignificant.

Our results revealed that FD individuals continued to show deviations in two of the five characteristics most strongly differentiating gait of currently and ND individuals [6]. Limitations of our study should be noted. First, the small sample size might have reduced the power to detect more subtle changes in gait characteristics. Moreover, because of the uncontrolled nature of our design, changes in gait patterns cannot be attributed unambiguously to the effect of MBCT.

Keeping these methodological limitations in mind, we conclude that our study provides preliminary evidence that MBCT has normalizing effects on gait patterns of FD individuals. Even though the sizes of these changes were small, FD patients approximately halved the discrepancy between their performance and that of normal controls with regard to speed and vertical head movements. This normalization might be part of the causal chain that helps patients deescalate mood/body vicious cycles that lead to depressive relapse.

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The HSCL-20: One questionnaire, two versions

To the Editor:

The Hopkins Symptom Checklist Depression Scale (HSCL-20) is a widely used 20-item self-rated measure of depression severity, often assumed to be a subscale of the HSCL-90 [1]. Patients complete the HSCL-20 by reporting how distressed they have been by each of the listed symptoms over the preceding 2 weeks, using a five-point scale that ranges from "not at all" to "extremely." Its ease of administration and face validity have made the HSCL-20 a popular choice for researchers, and it has been used as a measure of depression severity in a number of major clinical trials of depression management, particularly those carried out in primary care and in nonpsychiatric settings [2–6].

During the course of our own research, we have discovered that two different versions of this scale are in use; 14 items are common to both but six differ. Table 1 shows the items included in each version and the origin of each item. Both versions have discriminated between treatment groups in clinical trials and have been shown to have reasonably good psychometric characteristics when compared to another commonly used depression measure [7,8]. However, we are unaware of any studies that have compared the two versions directly.

Meaningful comparisons of psychiatric research, particularly those that use data-pooling meta-analysis, rely on the use of standardized measures. We therefore recommend that researchers are clear which version they are using and