

Brief Reports

Mindfulness-Based Stress Reduction as a Method for Personnel Development: A Pilot Evaluation

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Mindfulness-Based Stress Reduction (MBSR) is a potential candidate for learning to cope with stress in a high-stress professional environment. In a pilot study the authors evaluated the potential of MBSR for stress management. Workers participated in an MBSR training for stress-related problems (treatment, $n = 12$) or waited for such a course (control, $n = 11$). The authors conducted interviews and measured coping and well-being. Qualitative interviews indicated that subjects had attained more awareness of work-related problems contributing to stress and had grown more critical toward their work environment. In the treatment group, positive strategies of coping with stress increased and negative strategies of coping decreased (significant difference at post treatment: $p = .039$ compared to control). Eighty-two percent of the participants reported having reached their personal goal.

Keywords: mindfulness, meditation, personnel development, stress reduction

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Demands in the workplace are increasing. This can lead to a feeling of inability in coping, especially if demand is high and control low (Karasek, Theorell, Schwartz, Pieper, & Alfredsson, 1982; Siegrist, Peter, Junge, Cremer, & Seidel, 1990). Objective demand, however, is only one side of the situation (Ursin & Eriksen, 2004). The perceived capacity to be able to cope (Lazarus & Folkman, 1984) is often the only viable way for employees. Knowledge about chronic diseases induced through long-term stress at the workplace is increasing (Joksimovic et al., 1999; Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002; Richter & Hacker, 1998). Stress in the workplace often leads to inappropriate coping during leisure time. Costs of stress at the workplace are estimated at \$300 billion per year in the United States, and 13 million workdays lost have been calculated to occur in the United Kingdom. One obvious remedy would be to alter the underlying mechanisms that lead to stress in the first place. However, this would involve large macroeconomic and political decisions not at the disposal of single individuals.

Stress reduction can be a helpful intervention. Meditation techniques have occasionally been appraised as potentially helpful installing a habit of stress control in the daily life of individuals (Patel et al., 1985). Transcendental meditation (TM) has already been shown to be effective (Alexander et al., 1993; Carrington et al., 1980; Frew, 1974). However, the TM program also requires some ideological commitments which some people refuse to make.

Mindfulness-Based Stress Reduction (MBSR) has recommended itself over the past decades as an alternative (Kabat-Zinn, 1994). It has been adopted to suit a secular society and scientific standards. MBSR has shown some efficacy in many clinical interventions, especially in conditions which are exacerbated by stress (Astin, 1997; Miller, Fletcher, & Kabat-Zinn, 1995; Speca, Carlson, Goodey, & Angen, 2000). In a recent meta-analysis a significant effect size of $d = 0.5$ has been shown (Grossman, Schmidt, Niemann, & Walach, 2004). Informal experience has long suggested that it may be a good program for personnel development, and a recent controlled trial supports this experience (Davidson et al., 2003).

Mindfulness refers to a state of kind and benevolent attention to all contents which arise in the mind. It is an attitude that can be adopted with every single mental occurrence, even if it should be a revengeful impulse (Buchheld, Grossman, & Walach, 2001). Through practicing mindfulness a person first of all starts to notice what happens in the mind. Over and above paying attention and noticing, this practice also leads to a partial decoupling between mental events and voluntary or involuntary actions, including physiological reactions. As a consequence, a more serene and balanced emotional and affective state can be reached on the long run, which in turn is a good precondition for stress resistance and resilience (Teasdale, Segal, & Williams, 1995). MBSR is widely known and taught and, through its manualization, can be comparatively easily replicated and implemented.

We have previously seen good results with a MBSR training for chronically ill patients or persons in recovery (Majumdar, Grossman, Dietz-Waschkowski, Kersig, & Walach, 2002). We therefore hypothesized that MBSR might be a good intervention for personnel development in a high-stress professional setting.

One such high-stress setting is a service center, where agents have to make telephone calls after a fixed schedule and are often paid according to the number of calls made or proportional to the number of contracts following these calls (Scherrer, 2001). A request of one such firm to offer such an MBSR training course gave us the framework for evaluating the effectiveness of MBSR as a potential personnel development method. It also restricted the potential room for methodological freedom in implementing an optimal evaluation method. This article reports on the results of this first evaluation of MBSR in a professional setting outside the United States.

The questions to be studied were:

Is MBSR accepted by employees within the framework of a professional personnel development scheme?

Are employees willing to spare their free time (8 evenings at 2.5 hours, half an hour per day for practice, plus one extra day for a retreat) for such a training?

Does the training have an effect on stress reduction or perception or both?

Are employees happy with the program and its effects?

Is the evaluation concept feasible for further studies?

METHOD

Participants

The service center offered the training program to all of its 185 employees. Of 29 volunteers, 12 subjects comprised the treatment group and a further 17 persons signed up for a second course and formed the control group. Thus, 16% of all employees expressed a spontaneous interest.

Procedures and Design

Courses lasted for 8 weeks. The treatment assignment (first course, treatment vs. second course, control) was quasirandom. The setting also limited the number of potential participants. Subjects received the courses

free of charge but were required to donate their free time in the evening plus 6 hours on a Saturday for a retreat. Part of the research interviews and filling out of questionnaires could be done during work.

We opted for a mix of extensive quantitative measures and intensive qualitative interviews to document the effects of the program, and we took great care to lose as few persons as possible to follow-up.

Measurement and interview points were before the beginning of the training (T1), after the 8-week MBSR course (T2), and again 2 months later at follow-up (T3). At T1 all participants of the treatment and control group were interviewed for approximately 45 minutes by one of the junior researchers (coauthors EN or CZ) together with one of the MBSR trainers (coauthors BD or SK). During the first 30 minutes, the course and its requirements were explained to prospective participants, and questions regarding health and commitment were raised. The last 15 minutes of the interview was concerned with explaining the evaluation methodology and informed consent for participating in the research. After that, questions regarding the work situation were posed. Participants received a closed envelope with all questionnaires and an information leaflet. A preaddressed envelope was included which guaranteed that the questionnaires were addressed back to the research team and not to the firm. The same procedure was followed with participants of the control group. At the end of the course at T2, all subjects were again given a set of questionnaires with preaddressed envelopes. Additionally, a telephone interview was conducted. The same set of questionnaires was again handed out at T3, and a face-to-face interview was conducted with participants of the treatment group. During the course, the treatment group also filled in a journal that documented their amount of meditation practice.

Interview and Measurement Instruments

Interviews

We conducted semistructured interviews. Only the initial interview was with all subjects, while the other interviews were only with participants of the program. Besides sociodemographics, the pretreatment interviews covered questions about motivation, personal goals for the treatment, experience with meditation and yoga-techniques, willingness to practice, and health issues.

Phone interviews immediately after the course asked about experiences with the course, attainment of personal goals, changes in handling stress, compliance, and satisfaction with the course. Final interviews covered questions about changes in perceiving and managing stress, personal attainment of goals, compliance, and satisfaction with the course.

Questionnaires

The following well-validated and widely used German language questionnaires were employed:

Coping with stress. A 120-item questionnaire on coping with stress (SVF 120), which asks about 10 positive strategies of coping with stress, 6 negative strategies, and 4 neutral strategies, each one covered by 6 items (Janke & Erdmann, 1997).

The test has good retest-reliability (between .70 and .86), and internal consistency is between .44 and .91; all scales except the medication scale have good internal consistency. Scales are not correlated with each other and have negligible correlations with personality traits. It is the most comprehensive validated battery of coping available in the German language.

Salutogenetic Subjective Analysis of the Workplace (SALSA). This is a special battery of tests built on Antonovsky's concept of salutogenesis (Antonovsky, 1987), especially adapted to the work situation (Rimann & Udris, 1997). The conceptual formulation of the questionnaire focuses on the active production of a dynamic balance between environmental factors of stress and inner resources of coping. We used one part of the battery covering job characteristics; job demand and stress; organizational resources; social resources in the work place.

The single scales show sufficient internal consistency between .50 to .90. The instrument has been validated in more than 1,600 employees of different firms and sectors and can be considered sufficiently valid and reliable.

Locus of control. The Fragebogen zu Kontrollüberzeugungen (FKK) is a German reconception based on the well-known IPC questionnaire (locus of control, Krampen, 1991) that allows the construction of a secondary scale "self-efficacy." It has good reliability (alpha between .65 and .90; split half reliability between .63 and .87; retest reliability between .70 and .88 after 2 weeks and .58 and .74 after 6 months).

Complaints. We used the subscales General Complaints, Tension, Tiredness of the Freiburg Complaint List (FBL; Fahrenberg, 1994). The scales have good internal consistency (alpha between .73 and .90). Retest reliability after 4 weeks is between .62 and .88 and between .48 and .76 after one year.

Satisfaction with life. The Fragebogen zur Lebenszufriedenheit (FLZ) asks about satisfaction with 10 dimensions of life (Fahrenberg, Myrtek, Schumacher, & Brähler, 2000). We used the scales Health, Financial Satisfaction, Leisure, Own Person, and Friends and Social Relations. This scale is gauged and has good reliability of alpha between .82 and .94 for the single scales. Retest reliability is between .66 and .87.

Journal. The journal consisted in an agenda-like listing of days with the request to list the exercise practiced and duration of practice on each day.

Additional questions. At each measurement point a short questionnaire was added asking about days off work, visits to the doctor, medications, and consumption of coffee, alcohol, and cigarettes.

A German language report documenting the questionnaires and instructions and further methodological details is available from the first author (Nord & Zier, 2003).

MBSR Intervention

The intervention followed the generic MBSR manual, adapted for the situation in a workplace (i.e., healthy persons subjected to stress). It was given outside the workplace by trainers (coauthors BD & SK), who are licensed clinical psychologists, therapists, and MBSR trainers. The course consists of eight evening classes of 2.5 hours plus one 6-hour day of mindfulness. The usual costs of the course were covered by the service center. Only participants willing to practice at least 5 days a week for at least 20 minutes each were admitted to the course. Classes comprise a mix of teaching and formal meditation practice, as well as sharing experiences. Formal meditation consists of a progressive sequence and mix of body exercises and formal mindfulness meditation practice while seated and moving. Subjects were given audio CDs to help with practice at home.

The study had Institutional Review Board approval of the Institute of Psychology at the University of Freiburg, as it was conducted as graduate thesis work.

Statistics

No formal hypotheses were tested, and the whole approach was exploratory. Thus, all statistical tests have to be taken as orienting. Therefore, only very robust, nonparametric tests were employed, Mann–Whitney tests for independent and Wilcoxon's tests for dependent comparisons. The data were analyzed descriptively, by calculating and reporting effect sizes, d , calculated as mean differences standardized by the pooled standard deviation. Intensive monitoring of data assured good quality questionnaire data with 94% return rate.

RESULTS

In each group, one person was taken ill and withdrew, and data of these persons are not reported. Thus, the final sample comprised 11 persons in the treatment group and 16 persons in the control group.

Description of the Participants

Six subjects in the treatment and 10 in the control group were female. The treatment group was significantly older (mean age 41.3 years, $SD = 4.9$) than the control group (mean age 33.7 years, $SD = 8.2$). In the treatment group 73% of the participants reported stress-related problems, in the control group 75%. Only one person in the treatment and three subjects in the control group reported no stress symptoms. Roughly one third in each group had previous experience with yoga or meditation, and the rest had some experience with other forms of body work like autogenic training, Tai Chi, biofeedback, or psychotherapy. Thirty-six percent of the treatment group and 44% of the control group suffered from some chronic disease.

Results of the Interviews

The two groups showed different motivations. Although the experimental group wanted to improve their way of coping with demand characteristics in the workplace, the control group was focused on reduction of tension and drawing a line between job and private life. The demand characteristics of the job had not changed for both groups over the period of the study. Participants reported mainly positive experiences during the course: the experience of stillness and one's own reactions as well as that of the environment point toward a realization of mindfulness.

Most respondents reported changes in the way they coped with stress. Most responses referred to more mindful ways of dealing with stress such as not experiencing immediate panic, or taking some time before answering phone calls. Also "disidentification" was reported: having reached a position of observer, not having to react immediately, not having to bring job problems home to the family; tackling problems within the firm and talking to superiors about difficult demand characteristics of the job were mentioned. Three respondents reported no changes. At follow-up the results were very similar: 9 of 11 participants thought the course was a useful instrument to learn coping skills at the work place. This was mirrored in the attainment of personal goals: Directly after the course, 82% of the participants indicated they had attained their personal goals, and 73% so indicated at T3. Of the participants, 6 of the 11 indicated at follow-up that their behavior toward others had changed. Subjects were also asked for what percentage of their colleagues they thought the course would fit as a permanent program. Fifty-six percent was the mean estimate, with a range of 40% to 80%. Ninety-one percent of the participants opted for a continuation of the program, and most thought that a continuing service would be helpful.

Questionnaire Data

Coping With Stress

Table 1 gives the results of the stress questionnaire. In the treatment group, positive strategies increased and negative strategies of coping decreased, while in the control group the coping strategies employed remained more or less stable. Initial differences between the groups were present, but not significant and small ($d = 0.35$). The difference between groups was significant at T2 ($p = .039$) and showed a significant tendency at T3 ($p = .067$) for positive coping strategies. Group differences were not significant for negative coping strategies. Effect sizes of the difference between groups at t2 was $d = 0.98$ and at T3 $d = 0.77$ for positive strategies and practically zero for negative strategies.

Salutogenetic Subjective Analysis (SALSA). There were no significant differences between the groups at T1. The treatment group viewed their work situation more critically than the control group after the treatment. These differences were small and nonsignificant.

Locus of Control (IPC/FKK). The self-concept of the treated group increased significantly ($p = .032$; $d = 0.75$). Also self-efficacy ($d = 0.55$) and internality ($d = 0.31$) increased for the treated group between T1 and T3, while externality decreased ($d = -0.34$), although those effects were not significant.

Complaints (FBL). There were no changes.

Satisfaction With Life (FLZ). There were small changes for course participants of $d = 0.29$ for satisfaction with health and $d = 0.43$ for Satisfaction with Self.

Compliance and satisfaction. During the program subjects practiced an average 5 times a week for 30 minutes. At T3, subjects practiced once or twice a week on average. Four participants said at follow-up they would

Table 1. Results of the Stress Questionnaire SVF 120

Strategy	Pretreatment	Posttreatment	Follow-Up
Positive strategies			
Treatment	51.7 (13.6)	57.6 (9.8)*	54.2 (11.9)
Control	47.9 (7.6)	48.4 (10.7)	45.9 (9.8)
Negative strategies			
Treatment	50.6 (9.9)	44.5 (6.8)	45.0 (7.4)
Control	47.2 (9.7)	44.7 (8.4)	46.9 (8.3)

Note. Mean and standard deviation (*SD*) at Pretreatment (T1), Posttreatment (T2), and at 2-month Follow-up (T3) for the treatment group ($n = 11$) and the control group ($n = 16$); Composite Scores of Positive and Negative Strategies of Coping with Stress. SVF = 120-item questionnaire on coping with stress.

* $p < .05$.

continue practicing unconditionally, while another four said they would practice on demand.

Satisfaction with the course was rated on average 8.6 after the course and as 8.8 at follow-up.

DISCUSSION

We report here the first implementation of MBSR as a training program for stress reduction in the high-demand environment of a service center in Germany. The qualitative data show that the participants found the training useful in helping them cope with their situation, that they recommend it as a general personnel development measure, and that they were able to implement it in their everyday life. Mindfulness and distance to problematic situations has increased. Our interviews also reveal an element in the data that was not captured by the quantitative instruments: The training sensitized participants for the specific situations in their work environment that produced the stress in the first place. Such empowerment is potentially valuable and would necessarily come via an initial increase of dissatisfaction with a work situation.

With the quantitative instruments, we found some effects in the way subjects coped with stress. Participants in the program showed an increase in positive strategies and a decrease in negative coping strategies. Effect sizes are medium to large and compare well to the ones that were found in a recent meta-analysis of mindfulness in clinical conditions (Grossman et al., 2004). Since conditions for the control group did not change much during the same time period, the consistent changes seen in the treated group are likely to be because of the intervention offered. Subjects increased their self-efficacy mainly because of an increase of internal control attributions and a decrease of external attributions.

The coarse-grained estimate of 80% attainment of personal goals and more than 80% satisfaction can be considered a very good result. Hence, what might be a good option for future evaluations could be a formal goal-attainment scaling (Kiresuk & Sherman, 1968) or "Measure Your Medical Outcome Profile—MYMOP" (Paterson, 1996).

Those persons who had found the training valuable attributed the changes they had experienced clearly to the program. There was only 1 in 11 participants who was decidedly negative about the effects and a majority of participants was clearly positive. In that sense, the MBSR program can certainly be seen as an intervention which is perceived as useful by most of the people participating, provided they comply with the need to practice regularly.

From our pilot data we conclude that MBSR can be implemented with success in a high-demand and high-stress professional environment as a personnel development and training program to teach coping skills. First results point to the fact that effects are relevant and positive. Positive strategies of coping with stress may be enhanced, while negative strategies may be decreased in tendency. At the same time awareness for problematic situations in the work place conducive to stress may be enhanced. The program was well accepted and compliance was high in this application. This intervention deserves further attention also in the workplace.

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