



Sensitivity to change of scales assessing symptoms of bulimia nervosa

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Abstract

Measures employed in a therapy study with a pre-post design must be sensitive to the detection of treatment-related changes. In the present study, the treatment sensitivity of 12 internationally established scales that assess bulimia-relevant aspects of eating and body concern is analyzed. The scales can be sorted along three dimensions (Disturbed Eating, Restrictive Eating Behaviors and Body Dissatisfaction). Measures of the same dimension were compared in a sample of 45 women with the diagnosis of bulimia nervosa. Patients completed the scales before and 6 weeks after the end of cognitive-behavioral therapy. Significant differences between scales with respect to treatment sensitivity occurred in all three dimensions. Post hoc analysis revealed that scales are particularly sensitive to change if they include disorder-relevant aspects beyond the main dimension of a scale. Implications of the findings for meta-analytical treatment research, for designing effectiveness studies, and for future research on the treatment sensitivity of outcome measures are discussed.

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1. Introduction

In the field of behavioral assessment, little effort has been addressed to the comparison of various outcome measures in their ability to detect treatment-related changes (Taylor, 1999). This lack of attention is rather surprising, given that it is common practice to employ psychometric questionnaires for therapy evaluation. Due to the lack of research on outcome measures,

the investigator is forced to choose more or less blindly among available scales when conducting therapy research with a pre-post design (Lambert et al., 1986). Moreover, any comparison of treatment outcomes based on different outcome measures is bound to remain inconclusive as long as there is no information about differences in the scales' sensitivity to change.

At least some strategies have been introduced to compare the treatment sensitivity of measures. For example, Lambert et al. (1988) simply compared effect sizes found on three measures of depression without employing any inferential statistics. A more sophisticated strategy was chosen by Denollet (1993). He employed a repeated measures analysis of variance (ANOVA) to examine changes on seven outcome

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measures after treatment. In his ANOVA, both the time and the outcome measures were within-subject factors. Based on a significant time by measures interaction, it can be concluded that there are differences between the outcome measures with respect to their sensitivity to change. The strategy chosen by Denollet (1993), however, does not allow a direct comparison of the sensitivities of any pair of measures. Therefore, it does not allow any conclusion about the superiority of one scale over another.

The procedure suggested by Taylor et al. (1997) does allow such conclusions. Implicit in their strategy is the computation of a standardized change score for each participant and for each measure. The standardized change score represents a common metric that is expressed as the difference between an individual's pretreatment and posttreatment scores, divided by the pretreatment standard deviation of the whole therapy group. The standardized change score is similar to the effect size as used in meta-analyses, since the mean standardized change score of a scale employed in a treatment condition equals the effect size for the treatment condition on the scale. Moreover, since the standard deviation served as the denominator in the formula, standardized change scores are directly comparable both between participants and between measures. Therefore, the strategy suggested by Taylor et al. (1997) allows a one-way ANOVA to be conducted with measures as within-subject factors and with the standardized change score as the dependent variable. A significant result would indicate differences with respect to the sensitivities of measures. However, opposed to the strategy suggested by Denollet (1993), the standardized change scores do allow comparisons of single measures in post hoc analyses. Thus, it is possible to draw conclusions about the superiority of a scale.

To the best of our knowledge, the standardized change score, up to now, has only been employed to compare measures for social phobia (Taylor et al., 1997; Ries et al., 1998). In these studies, factorial validity of the scales remained untested. This is understandable, since all the analyzed scales obviously assess core symptoms of social phobia. If scales assessing a multidimensional form of psychopathology were analyzed, however, it would raise the question of which scales should be compared with one another.

Bulimia nervosa must be considered such a multidimensional form of psychopathology because some evidence suggests that bulimia-relevant aspects of eating and body concern can be sorted along three dimensions in women with bulimia nervosa (Gleaves et al., 1993; Gleaves and Eberenz, 1995) as well as in healthy women (Varnado et al., 1995). The dimensions can be labeled Disturbed Eating, Restrictive Eating Behaviors and Body Dissatisfaction. A priori assignment of scales to these dimensions has appeared to be unsatisfactory. Therefore, before comparing scales that assess a multidimensional psychopathology, one must analyze which scales tap into the same dimension. Unfortunately, it is also uncertain whether a scale's underlying dimension is the same in clinical and nonclinical populations (e.g., Anderson, 1993). Given that after therapy successfully treated patients might belong to the healthy population, the scales' underlying dimensions should be analyzed in both a clinical sample and a sample of healthy controls.

In the present study, sensitivity to change of 12 internationally established scales that assess bulimia-relevant aspects of eating and body concern were analyzed. Data were taken from a sample of a recent evaluation study (Tuschen-Caffier et al., 2001). Before computing and comparing standardized change scores, a factor analysis of scale scores was conducted in a sample of women receiving the diagnosis of bulimia nervosa as well as in a healthy sample.

2. Methods

2.1. Subjects

Three data sets were analyzed: (1) Pretreatment data of a recent evaluation study (Tuschen-Caffier et al., 2001) were used to explore the factorial structure of the included scales in women with bulimia nervosa. The diagnoses were determined by a reliable and valid structured interview based on DSM-III-R (Margraf et al., 1994). It should be noted that data collection of the present study had started before a structured clinical interview for DSM-IV criteria was available in German. To avoid any change of diagnostic standard during an ongoing study, all participants were diagnosed on the basis of DSM-III-R. Of the 73 patients of Sample 1, 69 filled out all

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