



Development and validation of the Decisional Balance Scale for problematic Prescription Drug use (DBS-PD)-20

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ABSTRACT

The purpose of this study was to develop a Decisional Balance Scale (DBS) for Prescription Drugs (PD), the DBS-PD-20, to examine its factorial structure and test its reliability and external validity by comparison across Stages of Change. A sample of 126 general hospital inpatients with either regular use of PD (more than 60 days within the last three months) or abuse of or dependence on PD was recruited in a northern German city. Exploratory principal components analysis revealed a two-factor structure, the Pros and Cons of PD intake, as expected. While the DBS-PD-20 showed good reliability (Cronbach's alpha = 0.91 for the Pros and = 0.89 for the Cons), external validity could be proven for the Cons (significant increase from precontemplation to contemplation/action), whereas the Pros showed an insignificant increase. Although further validation is needed, the DBS-PD-20 may be helpful for interventions and research.

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1. Introduction

In the general population, the prevalence of prescription drug (PD) dependence is estimated between 0.5% and 2.0% (Blanco et al., 2007; Huang et al., 2006). Problematic PD use is defined varyingly, ranging from non-prescribed use (Substance Abuse and Mental Health Services Administration, 2010) over problematic use according to a questionnaire (Kraus, Pabst, Piontek, & Müller, 2010) to long-term use (Neutel, 2005). For problematic PD use, prevalence rates between 2.8% and 4.1% are found in the general population (Kraus et al., 2010; Neutel, 2005; Substance Abuse and Mental Health Services Administration, 2010).

Considering the high prevalence, PD dependence is rarely treated. In Germany, only 0.8% of all individuals treated in outpatient addiction treatment facilities had a dependence on PD (Sonntag, Bauer, & Hellwich, 2007).

Several factors hamper detection and treatment of dependence on PD. Both physicians and patients may have tendencies to deny the problem. A conflict of interest may occur in the physician prescribing PD who is at the same time supposed to recognize and treat the dependence. Over 80% of all long-term benzodiazepine prescriptions are filled in by one single physician (Holzbach, Martens, Kalke, & Raschke, 2010). Especially in benzodiazepines, low-dose dependence is a problem in the detection of dependence, and withdrawal symptoms can be mistakenly interpreted as reoccurrence of the anxiety

symptoms that led to an intake of benzodiazepines in the first place (O'Brien, 2006).

Considering high prevalence, low treatment rates and missing awareness of PD dependence, supporting the individual's motivation to change is an important goal.

An major construct related to motivation to change is *Decisional Balance*, which was developed from Janis and Mann's conflict theory of decision (Janis & Mann, 1977). The authors posited that the decision about a specific behavior is based on the individual's weighing of the potential gains and losses. The Pros and Cons of Decisional Balance are broadly applied in the field of addiction counseling and treatment. In Motivational Interviewing, they have shown to be the most efficacious specific technique (Apodaca & Longabaugh, 2009).

Decisional Balance has also been integrated into the *Transtheoretical Model* (TTM), which describes changes in behavior and its underlying motivation (Prochaska, DiClemente, & Norcross, 1992). The TTM posits 5 *Stages of Change*, Precontemplation (no intention to change), Contemplation (intention to change within the next 6 months), Preparation (intention to change within the next month/first steps toward change are taken), Action (consistent behavior change for less than 6 months), and Maintenance (behavior change is perpetuated for more than 6 months). Although some authors have criticized the concept of Stages of Change (Sutton, 2001; West, 2005), questioned if stage-matching renders interventions more effective (Aveyard, Massey, Parsons, Manaseki, & Griffin, 2009) and a Cochrane review showed that stage-based interventions for smoking cessation were no more effective than standard versions (Cahill, Lancaster, & Green, 2010), the TTM is broadly applied in health behavior and addiction research (Painter, Borba, Hynes, Mays, & Glanz, 2008; Vilela, Jungerman, Laranjeira, & Callaghan, 2009).

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In a study on 12 problem behaviors, the weighing of the Pros and Cons was compared across the Stages of Change (Prochaska et al., 1994). A consistent pattern was found, with the Pros of changing increasing over stages by one standard deviation (called the “strong principle”) and the Cons decreasing by 0.5 standard deviation (the “weak principle”) (Prochaska, 1994). These principles could be confirmed in a meta-analytic examination across 48 health behaviors (Hall & Rossi, 2008).

Thus, an adequate measure for Decisional Balance cannot only help understand the individual’s decision whether to change or not, but should also be an indicator for progression through the stages. Interventions that influence Decisional Balance should affect change as well. In the field of PD use disorders, a measure for Decisional Balance, to our knowledge, does not exist.

The aim of the present study was to develop an instrument to assess Decisional Balance for prescription drug use disorders, to examine its factor structure and to evaluate the relationship between its subscales and the Stages of Change.

2. Methods

The current study was carried out as part of a randomized controlled trial examining Motivational Interviewing in somatic inpatients with problematic prescription drug use. The study was approved by the local ethics committee of the University of Lübeck.

2.1. Sample recruitment

In the original study, patients (N=10,900) from 20 different wards of one general and one university hospital in Lübeck, Germany, were recruited consecutively between March 29, 2006 and June 29, 2007. All patients aged between 18 and 69 years and capable of answering the questions were asked to fill in a screening questionnaire. This screening consisted of an adjusted version of the Severity of Dependence Scale (SDS; de las Cuevas, Sanz, de la Fuente, Padilla, & Berenguer, 2000) and a questionnaire for prescription drug misuse (Kurzfragebogen Medikamentenmissbrauch, KMM; Watzl, Rist, Höcker, & Miehle, 1991). Subjects screening positive (cut-off >4 for SDS and/or >2 for KMM) were asked the names of their prescription drugs and thereon asked for informed consent for further diagnostic investigation in case of potentially addictive drugs. In detail, relevant drugs after Anatomical Therapeutic Classification (ATC) consisted of the following groups: Benzodiazepine sedatives, hypnotics (N05CC-CF, N05CM) and anxiolytics (N05BA-BC, N05BE), opioids (N02AA-AC, N02AE, N02AX) and caffeine (N06BC01). Altogether, 264 patients (64%) gave their informed consent and underwent further investigation, consisting of the computer-assisted Munich-Composite Diagnostic Interview (M-CIDI; Wittchen et al., 1995) and the section E of the Structural Clinical Interview for DSM-IV Axis I Disorders (SCID-I; Wittchen, Wunderlich, Gruschwitz, & Zaudig, 1997). In order to be included into the present analysis, either a diagnosis of abuse of or dependence to psychoactive prescription drugs or an intake of such drugs during at least 60 days in the past three months was necessary. Patients who matched these inclusion criteria and gave written informed consent formed the sample of the present study. Exclusion criteria were terminal illness, polysubstance dependence and utilization of substance-related help. Hereby, 138 persons were excluded, of which 50.7% were false-positive (no diagnosis). 126 patients out of 264 (47.7%) could be included. The study is described in more detail in Zahradnik et al., 2009.

2.2. The questionnaire

In order to enable a selection of the best items, a large item pool of 45 items was generated. 11 items of the German version of the 20-item ADBS (Hannöver, Rumpf, Meyer, Hapke, & John, 2003; King &

DiClemente, 1993) were modified by replacing “drinking” with “taking medicine”, while the other 34 items were generated by an expert panel. All 45 items were rated on a 5-point Likert scale ranging from “not important at all” (1) to “very important” (5).

2.3. Analysis of data

In a first step, items with unsuitable selectivity scores or item difficulties were excluded for further analysis. Using the remaining items, an exploratory principal components analysis with Kaiser–Guttman criterion and Varimax rotation was executed using SPSS 17.0 for Windows. Subsequently, the number of factors was reduced applying the scree test. By computing Cronbach’s alpha, internal consistency of the scales was assessed. Item-total-correlation was calculated for each subscale in order to eliminate the items that showed the least correlation with their subscale.

External validity of the resulting questionnaire was examined by comparison with the Stages of Change, measured by the RCQ-6 (Crackau et al., 2010).

2.4. Factor structure of other Decisional Balance measures

Decisional Balance measures have been developed for various behaviors, such as smoking (Velicer, DiClemente, Prochaska, & Brandenburg, 1985), unhealthy alcohol consumption (King & DiClemente, 1993), quitting cocaine, weight control, safer sex, exercise acquisition, mammography screening (Prochaska et al., 1994) and others. While Janis and Mann conceptualized four categories of Pros (instrumental gains for self and others, approval from self and others) and four categories of Cons (instrumental losses for self and others, disapproval from self and others), empirical research could only confirm two factors in most cases, the *Pros and Cons* (for example: King & DiClemente, 1993; Mauriello et al., 2007; Migneault, Pallonen, & Velicer, 1997; Prochaska et al., 1994; Velicer et al., 1985). In single studies, three-factor solutions were found – Coping Pros, Social Pros and Cons in a sample of adolescent smokers (Plummer et al., 2001), Pros, Cons concerning actual and concerning future consequences in immoderately drinking college students (Migneault, Velicer, Prochaska, & Stevenson, 1999). A different approach led to a Decisional Balance proportion based on the count of participant-reported Pros and Cons of both maintaining and reducing drinking among at-risk college drinkers (Collins, Carey, & Otto, 2009).

3. Results

3.1. Sample description

The sample population (N=126) was predominantly female (61.9%), married (56.4%) and retired (69.1%). 44.4% of the participants had less than ten years, 37.3% had ten years and 13.5% had more than ten years of schooling. Mean age was 55.13 years (SD=11.59, range=30–69). The mean defined daily dosage was 1.68 (SD=2.43, range=0.1–14.7). For detailed sample description see Zahradnik et al., 2009.

3.2. Item difficulty and selectivity scores

Item difficulty and selectivity scores were computed. An item difficulty below 0.2 or above 0.8 or selectivity scores equal to or below 0.3 led to an exclusion of the item for further analysis. For item difficulty, items number 1, 3, 5, 6, 21, 23, 28, 30, 32, 33, 35 and 38 did not perform well and were therefore excluded. In consequence of its low selectivity score, item 41 was accepted.

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