



Implicit attitudes towards exercise and physical activity behaviour among in-patients with psychiatric disorders



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ABSTRACT

The current body of evidence suggests that in healthy participants, implicit attitudes towards physical activity explain variance in exercise behaviour beyond explicit cognitive processes. However, such relationships have not been examined in psychiatric patients, although this may contribute to a better understanding of the motivational and volitional resources needed to self-regulate their exercise behaviour. Therefore, the present cross-sectional study aimed to assess implicit attitudes towards exercise among psychiatric in-patients, and to correlate these implicit attitudes with their physical activity levels. Patients (N = 101) showing a psychiatric disorder, but no severe cognitive impairment, were directly recruited from psychiatric clinics. Their physical activity levels were assessed using both accelerometers and self-reports. Additionally, patients reported psychiatric symptoms and performed a single-target implicit association test (ST-IAT) with exercise employed as the target category. Of all patients, 39% showed a preference for exercise, whereas 13% showed an aversion towards exercise. The implicit attitudes of the remaining participants were equally strong for both concepts. Based on correlational analysis (correcting for age, sex, psychiatric symptoms severity, and ST-IAT sequence), no association was found between ST-IAT score, or self-reported and objectively assessed physical activity. Consequently, the link between exercise behaviour and implicit attitudes towards physical activity found in healthy participants could not be observed in psychiatric patients.

1. Introduction

Psychiatric disorders are highly prevalent in Western societies, and show a high comorbidity with other chronic medical conditions, all of which put a considerable burden on the health care system (GBD, 2015 Disease and Injury Incidence and Prevalence Collaborators, 2016; Trautmann, Rehm, & Wittchen, 2016). Biological mechanisms that link psychiatric disorders and other somatic conditions include the hypothalamic-pituitary-adrenal axis and sympatho-medullary hyperactivity (Holsboer & Ising, 2010). Other possible mechanisms are lower heart rate variability, higher platelet reactivity, vascular inflammation,

and endothelial dysfunction (Goldstein et al., 2015). Additionally, it has been observed that patients with psychiatric disorders report lower receipt of high-quality physical health care, and show poorer compliance with medical recommendations. Furthermore, modifiable behavioural risk factors, such as physical inactivity, are more prevalent in this specific population (Vancampfort et al., 2015).

Given this background, several institutions have recommended exercise as a front-line strategy in the treatment of psychiatric disorders (Lawlor & Hopker, 2005; Rethorst, Wipfli, & Landers, 2009). This claim seems legitimate as exercise training has favourable effects on psychiatric symptoms (Lawlor & Hopker, 2005; Noordsy, Burgess, Hardy,

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Yudofsky, & Ballon, 2018; Rosenbaum, Tiedemann, Sherrington, Curtis, & Ward, 2014; Schuch et al., 2018), and also contributes to clinically relevant increases in cardiorespiratory fitness (Stubbs, Rosenbaum, Vancampfort, Ward, & Schuch, 2016). Despite these encouraging findings, several studies show that people with psychiatric disorders tend to have less physically active lifestyles (Gerber, Jonsdottir, Lindwall, & Ahlborg, 2014; Lindwall, Gerber, Jonsdottir, Börjesson, & Ahlborg, 2014) and lower fitness levels than healthy controls (Gerber, Lindwall, Lindegård, Börjesson, & Jonsdottir, 2013; Voderholzer et al., 2011).

As highlighted by Banting, Dimmock, and Lay (2009), people often have good intentions to be physically active. However, they ultimately fail to integrate sufficient amounts of physical activity into their lifestyles. In line with this notion, researchers have pointed towards a considerable nonadherence rate (up to 50%) in exercise interventions, even if participants initially took part on a voluntary basis (Schmidt, Gruman, King, & Wolfson, 2000; Stiggelbout, Hopman-Rock, Tak, Lechner, & van Mechelen, 2005; Stubbs, Vancampfort, et al., 2016; Young & Stewart, 2006). For people with psychiatric disorders, integrating regular physical activity in their daily lives might be even more difficult (Gerber, Holsboer-Trachslers, Pühse, & Brand, 2016), because they often have limited motivational and volitional resources that regulate exercise behaviour, including lower exercise self-efficacy, stronger negative outcome expectations, reduced intentions to exercise, poor maintenance self-efficacy and increased perception of situational barriers (Krämer, Helmes, & Bengel, 2014; Krämer, Helmes, Seelig, Fuchs, & Bengel, 2014; Pomp, Fleig, Schwarzer, & Lippke, 2012).

Currently, our understanding of how physical activity can be sustainably increased among patients with psychiatric disorders is extremely limited. Although a multitude of motivational theories exists that can guide interventions (Biddle & Mutrie, 2006), we are aware of only one randomized controlled trial in which the effects of individually-tailored physical activity counselling through professionally trained physical activity facilitators were tested in patients with psychiatric disorders (Baxter et al., 2010; Chalder, Wiles, Campbell, Hollinghurst, Searle, et al., 2012; Chalder, Wiles, Campbell, Hollinghurst, Haase, et al., 2012). In this intervention, the patients were provided with individually tailored support. A range of motivational interviewing techniques and goal-setting strategies was used in order to improve patients' attitudes towards physical activity. While this approach is in line with contemporary physical activity promotion efforts (Nigg, 2013; van Achterberg et al., 2011), in which decision-making is typically considered as deliberative and rational (Calitri, Lowe, Eves, & Bennett, 2009), scholars have recently suggested that physical activity motivation theories might be enhanced by integrating automatic, subconscious processes (Hyde, Doerksen, Ribeiro, & Conroy, 2010). For several reasons, such a wider focus seems promising: First, social psychologists have highlighted that reflective evaluative processes may be biased due to issues associated with self-presentation, self-deception, and self-ignorance (Gregg, Banaji, & Seibt, 2006). Second, an exclusive focus on motivational factors that are accessible through introspection obscures the fact that many behaviours are influenced by impulsive behavioural processes (Hyde et al., 2010). Third, the reflective system requires self-regulatory resources in order to influence behaviour, which may hinder the efficacy of interventions in individuals with limited self-regulatory resources (Vohs, 2006).

Given this background, researchers have suggested that future research should examine the potential of fostering positive automatic evaluation (e.g., implicit attitudes towards exercise behaviour) (Calitri et al., 2009). This seems a plausible avenue of investigation because positive automatic evaluations have proven to be associated with more physical activity and exercise in non-psychiatric samples of children (Craeynest et al., 2005) and adults (Berry, Spence, & Clark, 2011; Bluemke, Brand, Schweizer, & Kahlert, 2010; Calitri et al., 2009; Conroy, Hyde, Doerksen, & Ribeiro, 2010). Moreover, a study with 142 patients in pulmonary rehabilitation showed that positive implicit

attitudes at the end of the rehabilitation phase were significantly related to higher post-rehabilitation physical activity levels (Chevance, Héraud, Varray, & Boiché, 2017). This finding was supported in a study with university students, showing that improvements in implicit attitudes over time are paralleled by increases in physical activity (Hyde, Elavsky, Doerksen, & Conroy, 2012). Finally, previous research has highlighted that automatic evaluations towards exercise and physical activity behaviour can be experimentally manipulated through guided imagery (Markland, Hall, Duncan, & Simatovic, 2015) or evaluative conditioning (Antoniewicz & Brand, 2016).

In summary, previous research suggests that automatic evaluations such as implicit attitudes towards physical activity explain variance in exercise behaviour beyond explicit cognitive processes and that implicit attitudes can be purposely manipulated through intervention. Nevertheless, all of the existing knowledge is based on non-psychiatric samples. Because psychiatric patients often lack motivational and volitional resources needed to self-regulate their exercise behaviour, targeting implicit attitudes could be a practical way to promote physical activity in this population. Therefore, the main purpose of this study was to assess implicit attitudes towards exercise among psychiatric inpatients, and to correlate these implicit attitudes with their self-reported and objectively assessed physical activity levels.

2. Methods

2.1. Participants and procedures

Potential participants were recruited at three psychiatric clinics in the German-speaking part of Switzerland. All participants were enrolled in in-patient treatment at the relevant sites at the time of recruitment into the study. All participants were receiving treatment as usual following national treatment recommendations involving any combination of pharmacological, psychotherapeutic and group-based treatments. Potential participants were identified and referred to the research team by the respective treating clinicians. The study procedures were carried out by experienced members of the research team not involved in direct clinical care, after obtaining written informed consent, which could be withdrawn by participants any time during the study without disclosing reasons. Ethical approval was obtained from the local ethics committee (Ethical commission of Northwestern and Central Switzerland, EKNZ Nr. 2016–01547) to ensure that all procedures were in line with current Swiss legal requirements. Moreover, all procedures met the ethical requirements defined in the Declaration of Helsinki and its later amendments.

Inclusion criteria were: a) aged 18–65 years, b) current in-patient of a psychiatric clinic, and c) meeting ICD-10 criteria for a mental disorder. Exclusion criteria were: a) evidence of significant cardiovascular, neuromuscular or endocrine disorders limiting regular ambulation (as per American College of Sports Medicine absolute contraindications to exercise), b) current diagnosis of anorexia nervosa or bulimia, c) current diagnosis of an organic brain disorder, and d) estimated MoCA (Montreal Cognitive Assessment; www.mocatest.org) score < 26 (indicating presence of at least mild cognitive impairment).

Based on a power size calculation, at least 109 patients were needed to detect moderate-sized correlations between implicit attitudes and self-reported or objectively assessed physical activity levels (sample size estimated with G*Power 3.1: Correlation: Point biserial model, effect size: $r = 0.30$, $\alpha = 0.05$, Power = 0.90).

In total, 116 participants were recruited. However, due to missing values in one or more of the study variables, 15 participants had to be excluded from data analyses, leaving a final sample of 101 patients (49 women, 52 men, $M = 39.5$ years, $SD = 11.95$). Almost all of the participants with missing data were excluded because they did not have valid accelerometer data. Since they did not differ ($p > .05$) from the other participants with regard to any of the other study variables, we decided not to impute missing data. From the 101 participants, 24 were

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