



Self-determination and stage of readiness to change physical activity behaviour in schizophrenia



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ARTICLE INFO

Article history:

Received 4 January 2014

Received in revised form

6 June 2014

Accepted 13 June 2014

Available online 20 June 2014

Keywords:

Physical activity

Exercise

Motivation

Schizophrenia

Psychosis

ABSTRACT

Purpose: The present study examined whether reasons for physical activity, as formulated by the self-determination theory, differed across the stages identified by the transtheoretical model of behaviour change.

Methods: A total of 129 persons with schizophrenia completed the Behavioural Regulation in Exercise Questionnaire-2 and the Patient-centred Assessment and Counselling for Exercise questionnaire. Multivariate and discriminant analyses were applied to determine whether reasons for physical activity differed between men and women and across the stages of change.

Results: Discriminant analyses indicated that persons with schizophrenia at the early stages of change are less autonomous in the regulation of their physical activity behaviour than those at the later stages. Multivariate analyses showed a difference in amotivation, external regulation, and autonomous regulation, but not introjected regulation across the different stages of change.

Conclusions: Our results suggest that autonomous motivation may have an important role to play in the adoption and maintenance of health promoting behaviours in persons with schizophrenia.

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Research is needed to develop our understanding of physical activity behaviours in persons with schizophrenia (Beebe et al., 2012; Vancampfort, Knapen, et al., 2012) since it has been found to yield a plethora of benefits (Gorczyński & Faulkner, 2010; Scheewe et al., 2013; Vancampfort et al., 2009; Vancampfort, Probst, et al., 2012). Despite this, there is a relatively high prevalence of physical inactivity (Faulkner, Cohn, & Remington, 2006; Lindamer et al., 2008; Vancampfort, Probst, et al., 2013). As a result, clinicians face the challenge of promoting physical activity behaviours in this population group.

One of the most commonly adopted models of behaviour change is the transtheoretical model (TTM) (Prochaska & DiClemente, 1983; Prochaska & Marcus, 1994). The model has been

successfully utilised to describe the different phases that individuals with schizophrenia pass through in the acquisition and maintenance of health behaviours (Archie et al., 2007; Gorczyński, Faulkner, Greening, & Cohn, 2010). The TTM provides a framework for categorising a person's readiness to change their behaviour and includes five stages. In the first stage, the pre-contemplation phase, individuals are physically inactive and are not thinking about becoming more active within the next six months. During the next stage, the contemplation stage, individuals think about becoming more active within the next six months. In the third stage, the preparation stage, individuals are engaging in some physical activity, while in the penultimate action stage individuals have been regularly active for less than six months. Lastly, the maintenance stage is characterised by an individual having sustained regular physical activity for more than six months. TTM also comprises a secondary dimension, the processes of change, which are perceived as techniques and strategies differentially employed by patients across the stages of change. Ten processes of change have received the most empirical support, separated into five cognitive processes

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of change (e.g., consciousness raising) and five behavioural processes (e.g., stimulus control) (Prochaska, Norcross, Fowler, Follick, & Abrams, 1992).

Although the TTM has been recognised as an important model for behaviour change in individuals with schizophrenia (Archie et al., 2007; Esterberg & Compton, 2005; Gorczynski et al., 2010), the model has limitations. For instance, it fails to explain why individuals engage in physical activity or remain inactive, nor does it identify the mechanisms that underlie physical activity adoption and/or maintenance. However, it is essential to gain insight in the reasons why some people are physically active while others in the same environment are not. Thus, it is important that research examines individuals' reasons for being physically active.

The self-determination theory (SDT) (Deci & Ryan, 1985, 2000; Vansteenkiste, Niemiec, & Soenens, 2010) is a motivational theory that provides an insight into reasons why persons adopt and maintain certain health behaviours. The theory proposes motivation is multidimensional and resides along a continuum of increasing self-determination. The lowest end of the continuum is identified as amotivation which represents a general lack of motivation to change behaviour due to discouragement. Following along the continuum, external regulation refers to exercising to avoid punishment or criticism or to obtain promised rewards or external appreciation. Introjected regulation refers to the imposition of pressures onto one's own functioning, for instance, by buttressing one's activity engagement with feelings of guilt, self-criticism, or contingent self-worth. More volitional or autonomous forms of functioning include identified regulation, which involves foreseeing the personal importance of the activity, and integrated regulation, which implies that physical activity is brought in harmony with other prevailing life values, such that being active becomes prioritised within one's lifestyle. Finally, intrinsic motivation involves engaging in physical activity for its own sake, that is, because one finds being active stimulating or enjoyable by itself.

In distinguishing SDT from TTM, the latter assumes, at least implicitly, a more quantitative perspective on motivation. That is, it can be derived from the TTM-framework that individuals who are at higher stages of change are more strongly motivated than those at lower stages of change. In contrast, SDT also highlights the importance of exercisers' type or quality of motivation, as it is maintained that engagement in physical activity can be regulated by autonomous or volitional, relative to more controlled or pressured reasons. The assumption is that when autonomous exercise regulations are supported, not only the initiation but also the regular (i.e. frequent) participation in physical activity will be better secured. That is, as far as the reasons for exercising get fully integrated within individuals' personal values and interests and, hence, become part of their living style, individuals are more likely to willingly exercise over longer periods of time. Consistent with this assumption, recently significant positive correlations were found between the level of physical activity participation during the previous week and amotivation ($r = -0.44$, $P < 0.001$), external regulation ($r = -0.27$, $P < 0.001$), and identified and intrinsic regulations ($r = 0.57$, $P < 0.001$) in a sample of patients with schizophrenia (Vancampfort, De Hert, Vansteenkiste, et al., 2013).

There are however three reasons why research is needed to investigate also intentions and maintained engagement in physical activity behaviour over a longer period of time (6-months). First, in light of the complex and dynamic nature of physical activity behaviour, it seems unfeasible that a 7-day recall of physical activity is able to truly capture a patient's behavioural patterns over a longer term. For example, due to the nature of their illness, patients with schizophrenia often experience lapses in trying to adhere to physical activity programmes (Vancampfort, De Hert, et al., 2012). Such drop-out from physical activity programmes could be partly attributed to

the motivation underlying physical activity behaviour (Sorensen, 2006). Second, the consideration of long-term engagement in physical activity is also interesting from a theoretical perspective. That is, although previous studies have found some forms of controlled (i.e., introjected) regulation to be positively associated with concurrent levels of physical activity (Teixeira, Carraça, Markland, Silva, & Ryan, 2012), these associations have been found to wane when the assessment period is extended, presumably because the pressured regulation is more readily undermining energy required for sustained engagement (Pelletier, Fortier, Vallerand, & Brière, 2001; Teixeira et al., 2012; Vansteenkiste, Simons, Lens, & Soenens, 2004). Although a longitudinal design would be ideal to answer this question, the maintained engagement in physical activity can be indirectly captured through the assessment of the stages of change. Third, apart from studying individuals' initiation and maintenance of physical activity behaviour, it is also interesting to find out whether some patients start to formulate intentions to engage in physical activity or do not consider doing so at all. The initial stages of change (pre-contemplation and contemplation) of the TTM precisely captures such emerging readiness to change in the future. For these reasons, it is useful to examine how SDT-based reasons for physical activity relate to stages of change in TTM, an issue that a few previous studies in the general population (Mullan & Markland, 1997; Rose, Parfitt, & Williams, 2005) and among specific populations including African American women (Landry & Solomon, 2004), and college students (Farmanbar, Niknami, Heydarnia, Hajizadeh, & Lubans, 2009) have shed preliminary light on.

The aim of this study was to evaluate in persons with schizophrenia the associations between the TTM stages of change and the reasons for being physically active as discerned within SDT. It was hypothesised that more autonomous forms of motivation (i.e. identified and intrinsic regulations) would be prevalent in more advanced stages of change (i.e. preparation, action and maintenance). In contrast, more controlling forms of motivation (i.e. external and introjected regulations) and in particular amotivation would be enhanced in the least advanced stages of change (i.e. pre-contemplation and contemplation).

1. Methods

1.1. Participants and procedure

A cross-sectional multi-centre design was used incorporating 13 centres that treat persons with schizophrenia (see acknowledgements). The centres were located across the five Dutch-speaking provinces of Belgium. All patients who had a DSM-IV diagnosis of schizophrenia (American Psychiatric Association, 2000) were invited to participate. The diagnosis was established by experienced psychiatrists responsible for the treatment. Individuals were included if they were: (1) inpatients or outpatients with schizophrenia, (2) had a full or partial remittance in symptoms, and (3) were able to concentrate for 20–25 min. Individuals were excluded if they were located within an intensive supervision unit. Also persons who experienced acute paranoid delusions were excluded. No incentive was provided for participation. The study procedure was approved by the 13 ethical committees based at each centre. All participants gave their written informed consent. More detailed information regarding to the demographical data of the included participants is presented elsewhere (Vancampfort, De Hert, Vansteenkiste, et al., 2013).

1.2. Behavioural Regulation in Exercise Questionnaire

The Behavioural Regulation in Exercise Questionnaire-2 (BREQ-2) (Markland & Tobin, 2004) is used as an interviewer-administered questionnaire. The questionnaire comprises of 19 items relating to

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