Exploring the Construct Validity of the Transtheoretical Model to Structure Physical Activity Interventions for Individuals with Serious Mental Illness

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Objective: Physical activity intervention research involving individuals with serious mental illness are often not based on any theoretical framework. This study examined the construct validity of the Transtheoretical Model (TTM) in individuals with serious mental illness to guide future physical activity interventions.

Methods: Fifty-four individuals completed surveys that asked about their current stage of change for physical activity, self-efficacy, and perceived advantages and disadvantages of being more physically active.

Results: Most individuals reported being in the preparation stage of the TTM. As individuals approached the action and maintenance stages, self-efficacy and perceived benefits of physical activity increased significantly. Although perceived disadvantages decreased with each successive stage, this change was not significant.

Conclusions: This study’s findings support the TTM’s application in this population to structure physical activity interventions given that self-efficacy, perceived benefits of and barriers to physical activity differed across stages and changes were in the direction predicted by theory.

Keywords: serious mental illness, Transtheoretical Model, physical activity, weight management
Construct Validity of the Transtheoretical Model to Structure Physical Activity

Objective

The purpose of this study was to examine the construct validity of the TTM in this population using a cross-sectional survey and determine whether self-efficacy or belief to engage in a particular behavior and decisional balance, one's ability to identify the advantages, rather than the disadvantages, to changing a particular behavior.

The use of the TTM to structure exercise programs has been explored in the general population and has been found to be more effective than non-staged interventions (Spencer, Adams, Malone, Roy, & Yost, 2006). Within the serious mental illness population, no research has examined the constructs of the TTM including self-efficacy, and the perceived benefits and barriers to being physically active.

Methods

Participants and Procedures

After receiving institutional ethics approval, individuals between the ages of 18 and 70 years who had a diagnosis of a serious mental illness and attended an outpatient satellite clinic were recruited with the assistance of case-workers.

Survey

Clients were asked to provide information on their age, sex, employment status, cultural background, and living arrangements. Stage of change was assessed using a modified version of the stage of change question from the Patient-Centered Assessment and Counseling for Exercise (PACE) questionnaire (Long et al., 1996). For this study, physical activity was defined as moderate activity, an intensity which makes you breathe somewhat harder than normal, for 30 minutes on most days of the week. Participants chose one of five options: “I’m not physically active and I don’t intend to start” (precontemplation); “I’m not physically active but I’m thinking about starting” (contemplation); “I’m active occasionally” (preparation); “I’m active regularly and started in the last 6 months” (action); and “I’m active regularly and have been for longer than 6 months” (maintenance). The stages of change were then collapsed to form three groups: precontemplation and contemplation; preparation; and action and maintenance.

The constructs of self-efficacy and perceived benefits and barriers of physical activity were measured using questions from the PACE survey. Items were rated on a 5-point Likert scale with higher values indicating greater confidence or importance. Three single global scores for overall self-efficacy, perceived benefits, and perceived barriers were calculated and all measures were found to be reliable with Cronbach alphas of .84, .74, and .75, respectively.

Analysis

Trends in the data were analyzed by plotting the means of the data and by performing planned contrasts using an analysis of variance based on the theoretical relationships between the stage of exercise and the constructs of the TTM. It was hypothesized that each construct would demonstrate a linear change at a $p < 0.05$ level across the different stages of change.

Results

Demographic Data

The sample consisted of 36 males and 18 females. Age ranged from 22 to 68 years with a mean age of 46.7 years ($SD = 12.1$). Most participants were not working (72.2%), White (61.1%), and living independently (53.7%).

Stages of Change

The majority of individuals reported being in the preparation stage (44.4%), while 24.1% were in the precontemplation and contemplation stages and 31.5% were either active or maintaining their physical activity.

Self-Efficacy

Participants indicated they were most confident about setting aside time for their physical activity ($M = 3.3$, $SD = 1.2$) and least confident about doing physical activity in poor weather ($M = 2.7$, $SD = 1.3$). The global score for self-efficacy was $M = 3.1$, $SD = .89$, with minimum and maximum values of 2.8 and 3.3, respectively.

Perceived Benefits and Barriers

Participants perceived health improvement to be the greatest benefit of physical activity ($M = 4.4$, $SD = .86$). Not having anyone to engage with while being physically active was perceived to be the largest barrier to physical activity ($M = 2.7$, $SD = 1.1$). The global score for perceived benefits was $M = 4.0$ ($SD = .62$), with minimum and maximum values of 3.9 and 4.2, respectively; while global score for barriers was $M = 2.3$ ($SD = .73$), with minimum and maximum values of 2.1 and 2.5, respectively.
Comparing Stages of Change and Self-Efficacy, Benefits, and Barriers

There was a significant increase in self-efficacy across the three collapsed stages, $F(2, 53) = 4.1, p = .02$, with self-efficacy increasing from $M = 2.9$ ($SD = 1.1$) in precontemplation and contemplation to $M = 3.6$ ($SD = .79$) in action and maintenance. A Bonferroni post-hoc analysis confirmed that self-efficacy was significantly different between the preparation group and the action and maintenance group ($p = .02$). There was also a significant difference between groups with respect to perceived benefits, $F(2, 53) = 8.6, p = .001$. A Bonferroni post-hoc analysis showed that the precontemplation and contemplation group differed significantly from both the preparation stage ($p = .04$) and action and maintenance group ($p = .00$). Overall, the importance of perceived benefits increased significantly as individuals approached the action and maintenance stages. With respect to perceived barriers, importance of perceived barriers decreased from precontemplation and contemplation ($M = 2.5$, $SD = .63$) to action and maintenance ($M = 2.0$, $SD = .73$), but the results were not significantly different between stages, $F(2, 53) = 2.4, p = .10$. These trends did not vary in additional analyses controlling for sex, race, and living and working arrangements. See Figure 1 for mean scores.

Conclusion

The findings of this study support the TTM’s application in this population as self-efficacy, perceived benefits and barriers to physical activity differed across stages and changes were in the direction predicted by theory. However, there was no significant decrease observed for perceived barriers which may have been due to a lack of power.

The findings of this study have several implications for physical activity promotion among individuals with serious mental illness. First, the determinants of physical activity are similar in this population as they are for the general population. These results suggest that successful physical activity behavior change strategies used in healthier populations should be offered to those with serious mental illness. Second, these results support the consideration of the TTM for structuring physical activity interventions for individuals with serious mental illness. The TTM fits well with the principles of recovery oriented services and psychosocial rehabilitation. Physical activity interventions can be developed that target the mediating variables of the TTM to empower clients to change their lives and become more active by improving their self-efficacy and decisional balance. Several researchers have already suggested that strategies be implemented to help individuals with serious mental illnesses acquire social support and overcome issues related to a lack of physical activity knowledge and confidence, low motivation, and poor scheduling ability (McDevitt, Snyder, Miller, & Wilbur, 2006).

Through the use of the TTM, processes of change can be incorporated into interventions to specifically help individuals address these mediating variables and barriers in order to help clients become more active (Marshall & Biddle, 2001). For instance, individual or group based interventions can be designed to first offer encouragement to clients in the precontemplation or contemplation stage that behavior change is possible. Clinicians can provide their clients with information on the benefits of physical activity that are relevant to the individual and current physical activity guidelines (e.g., that physical activity can be accumulated during the course of the day). Clients in the preparation stage could be assisted in developing plans to increase their physical activity to recommended levels and taking advantage of social and recreational programming offered in the community. Clients in the action stage could be encouraged to think about relapse prevention and put in place strategies to overcome lapses in regular physical activity. Ultimately, physical activity interventions need to be designed to help clients increase their self-efficacy.
and ensure that the advantages of becoming more active outweigh the disadvantages.

References


