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Planning and preparatory actions facilitate physical activity maintenance

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ABSTRACT

Objective: Many people do not behave in line with their self-imposed goal to be more physically active. To bridge this intention–behavior gap, detailed planning is regarded as being instrumental. Moreover, preparatory actions are supposed to facilitate physical activity in conjunction with planning. Thus, preparatory actions are seen as mediators between intention and behaviors. The present study examines whether intention is translated into physical activity stepwise via planning as well as via preparatory actions.
Design: At three points in time, physical activity, planning, preparatory actions, and the intention to be physically active were assessed in 338 participants.
Methods: By means of structural equation modeling, it was examined whether the pathway from intention to physical activity includes a mediating sequence of planning as well as preparatory actions.
Results: The sequential mediation model confirmed pathways from intention to planning, from planning to preparatory behaviors, and from preparatory behaviors to follow-up physical activity, while controlling for baseline indicators. Furthermore, there was an indirect effect of intention on preparatory actions via planning, an indirect effect of planning on physical activity via preparatory actions, and an indirect effect of intention on physical activity via planning and preparatory actions thus, confirming the hypothesized sequence.
Conclusions: Individuals who are motivated to be physically active are likely to make a plan, and if they do so, they are more likely to take preparatory actions, resulting in a higher chance to perform the target behavior.

Introduction

As the benefits of physical activity are widely known many people hold strong intentions to increase or maintain their activity level. However, they often struggle to translate their intentions into behavior or, once initiated, fail to maintain their activity level. Therefore, health psychological research strives to detect those self-regulatory processes that are required forth adoption and maintenance of an active lifestyle. As it is crucial to find out which processes bridge the so called intention–behavior gap, a growing number of studies focused on mechanisms that explain how intentions are translated into behavior (Orbell & Sheeran, 1998). A promising mechanism that has been repeatedly shown to increase the likelihood of intended physical activity is planning (Carraro & Gaudreau, 2013; Conner, Sandberg, & Norman, 2010; Koring et al., 2012; Lippke, Ziegelmann, & Schwarzer, 2004; Sniehotta, Scholz, & Schwarzer, 2005). Therefore, planning is a key component in some recent health behavior models (for an overview see Hagger & Luszczynska, 2014). It is defined as a self-regulatory strategy that links an anticipated situation with the intended behavior. Encountering the situation is then supposed to trigger the initiation of the behavior (Sniehotta, Schwarzer, Scholz, & Schüz, 2005). Thus, engaging in planning helps individuals to use environmental cues and act upon their intention.

The present study, based upon the health action process approach (HAPA; Schwarzer, Lippke, & Luszczynska, 2011), focuses on action planning: the specification of when, where and how a behavior is intended to be performed. If such when–where–how plans are

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prompted in interventions they result in medium to large effects on health behaviors (e.g., Gollwitzer & Sheeran, 2006; Kwasnicka, Presseau, White, & Sniehotta, 2013). Furthermore, there is strong empirical evidence that self-reported planning mediates between intention and physical activity in various populations such as adolescents (Luszczynska et al., 2010), university students (Carraro & Gaudreau, 2011) and rehabilitation patients (Fleig et al., 2013). Planning constitutes a proven intervention technique, and reflects a working mechanism of how individuals act upon their intentions. Although the relationship of intention, planning and physical activity has attracted a great deal of research (Hagger & Luszczynska, 2014), less attention has been paid to the question of how planning actually translates into behavior. In studies on safer sex, the performance of various preparatory actions has been proposed to explain the planning-behavior association. In the safer sex context, buying and carrying a condom is regarded as one of the most proximal predictors of condom use (Bryan, Fisher, & Fisher, 2002). Some recent studies corroborated the role of preparatory behaviors in condom use beyond behavioral intentions. Turchik and Gidycz (2012) found that preparatory behaviors were among the best discriminating factors between intenders who did engage and those who did not engage in condom use. De Vet et al. (2011) investigated the interplay of planning and preparatory behaviors on condom use. Their results showed that making plans for preparatory behaviors resulted in higher quality of plans and was a stronger predictor of condom use than making plans of the behavior itself. In the context of physical activity, the acquisition of a pedometer may serve as a preparatory behavior. In a study on physical activity in university students, participants were informed that they had won a pedometer but many of them did not show up to collect their prize. However, those who picked up their free pedometer, attained higher levels of activity later on as opposed to those who did not (Koring et al., 2013).

For regular physical activity, preparatory actions such as signing up for a fitness course, purchase of sports clothes, setting a date with a sport's partner or preparation of one's sports bag, are necessary as well. Preparatory behaviors might help translate intentions and plans into behavior in diverse ways depending on the kind of preparation performed. For example, signing up for a fitness course or a date with sports partners adds a firm commitment to the plan by raising social expectations. Purchasing sports equipment reflects an investment that needs to pay off. Furthermore, a prepared sports bag waiting at the door can serve as a cue to action.

Aims

In this study we aim to examine the most proximal role of preparatory behaviors by investigating whether they explain how intention is translated into physical activity via planning: First, we assume that planning mediates the relation between intention and physical activity which would replicate previous research (Hagger & Luszczynska, 2014). Our second hypothesis is that preparatory behaviors serve as a mediator between planning and behavior. Overall, we hypothesize that intention is associated with planning, stimulating preparatory behaviors, which in turn makes physical activity more likely. In other words, in line with the HAPA we examine a sequential mediation process in which planning is followed by preparatory behaviors, while both constructs serve as mediators between intention and action.

Method

Participants and procedure

The audience of a TV transmission on New Year's resolutions was provided with a link inviting them to take part in an online survey on physical activity. At the first measurement point in time (Time 1, T1), 729 participants gave informed consent, completed the online questionnaire and provided their e-mail address for invitation to the follow-up assessments. The second questionnaire two weeks later (Time 2, T2) was completed by 555 persons. The third measurement point in time (Time 3, T3) took place five weeks after T1 and the questionnaire was completed by 338 respondents who constituted the final longitudinal sample for the analyses. They had an average age of 41.5 years (SD = 12.8, range 16–90 years), a mean body mass index (BMI) of 24.6 kg/m^2 (SD = 4.3, range 16.9–40.9 kg/m^2), and 63.6% were women. The majority had graduated from high school (73.4%) and lived with a partner (67.8%).

Measures

In the following description of measures, all item examples were translated from German. Physical activity was measured at T1 and T3 with a part of the Godin Leisure–Time Activity Questionnaire (Godin & Shephard, 1985) and with the Office in Motion Questionnaire (OIMQ, Mäder, Martin, Schutz, & Marti, 2006). In the Godin Leisure–Time Activity Questionnaire, participants were supposed to indicate the frequency and the average duration of vigorous physical activity per week. The OIMQ asks for the frequency and duration of specific sports within the last week. For each of these two questionnaires a sum score of frequencies and durations of the reported strenuous activities was computed, indicating the total minutes of physical activities per week. Both scores served as indicators for the latent variable physical activity.

The scales measuring intention and planning were adapted from Schwarzer et al. (2011) with response formats ranging from (1) completely disagree to (4) completely agree.

Intention to perform physical activity was assessed at T1 with three items (Cronbach's α = .84): "I strongly intend to exercise", "I strongly intend to be physically active regularly", "I strongly intend to be physically active several days a week (e.g., endurance sports and strength training)".

Planning was assessed at T1 and T2 by four items (Cronbach's α = .76). The item stem "I have planned in detail..." was followed by the items: "... how, when and where I will be physically active", "... how often I will be physically active", "... with whom I will be physically active", "...what I will do if something interferes with my plans".

Preparatory behaviors were assessed at T2 and T3 by five items. The preparatory behavior scale was developed in a pilot study with 254 students who were asked to indicate which kind of physical activity-related preparatory behaviors they had performed during the last week. Based on these answers, a group of four experts developed the items. The stem "During the last week, how often have you..." was followed by the items "... set a date with a sports partner?", "…taken your sports equipment with you to school or work?", "… gathered information on sports courses or fitness clubs?", "…bought new sports equipment?" and "…prepared your sports equipment well in time?". The response format ranged from (1) never to (5) very often. Retest-reliability was r_{tt} = .78, and Cronbach's α was .64, reflecting the heterogeneous nature of the construct preparatory behaviors. Intercorrelations, factor loadings, means, and standard deviations of all constructs are displayed in Table 1.

Data analysis

For structural equation modeling, AMOS 20 was used; all other analyses were performed with SPSS 20. Missing data were handled with Full Information Maximum Likelihood (FIML). Goodness-of-fit