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Examining the Impact of Perceived Behavioral Control and Planning on Closing the Exercise Intention-Behavior Gap: Insights from a Meta-Analytic Structural Equation Modeling Study

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Data analysis.

Conflicts of interest - The authors declare that they have no conflicts of interest related to this study. All authors have contributed to the research and manuscript without any financial, personal, or professional influences that could have biased the work presented in this review. The study was conducted independently and objectively, with the sole aim of advancing scientific understanding and providing valuable insights into the exercise intention-behavior gap.

INPLASY registration number: INPLASY202450111

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 May 2024 and was last updated on 23 May 2024.

INTRODUCTION

Review question / Objective This study aims to integrate the Theory of Planned Behavior (TPB) and the Health Action Process Approach (HAPA) to investigate the role of perceived behavioral control (PBC), action planning, and coping planning in bridging the gap between exercise intention and behavior. By using a Meta-Analytic Structural Equation Model (MASEM), we quantify the specific effects of these variables and reveal their complex interactions to provide effective behavioral intervention strategies.

Condition being studied The focus of our study is on the exercise intention-behavior gap, which is a critical issue in the field of physical activity and health psychology. Despite having the intention to

engage in physical activity, a significant number of individuals fail to translate these intentions into actual behavior. This gap is a major concern because regular physical activity is essential for maintaining overall health, preventing chronic diseases, and enhancing mental well-being.

METHODS

Participant or population This review will include a diverse range of participants to examine the exercise intention-behavior gap.

Intervention This review will evaluate the following interventions to bridge the exercise intention-behavior gap:

Perceived Behavioral Control (PBC) Enhancement:

Self-Efficacy Training: Building confidence through mastery experiences and positive feedback.

Barrier Identification: Developing strategies to overcome obstacles to physical activity.

Action Planning:

Detailed Planning: Creating specific plans for when, where, and how to engage in physical activity.

Implementation Intentions: Forming specific "if-then" plans to link cues to behaviors.

Coping Planning:

Stress Management: Teaching strategies to handle stress and maintain activity plans.

Resilience Building: Enhancing the ability to recover from setbacks.

Comprehensive Programs:

Combined Approaches: Integrating PBC enhancement, action planning, and coping planning.

Behavioral Coaching: Personalized support through regular check-ins and goal setting.

These interventions will be assessed for their effectiveness in helping individuals translate exercise intentions into actual behavior.

Comparator In our study, the primary interventions focusing on perceived behavioral control (PBC) enhancement, action planning, and coping planning will be compared to standard physical activity promotion interventions. These standard interventions typically include general health education and advice on the benefits of physical activity without the specific focus on PBC, detailed action planning, or coping strategies.

Study designs to be included Randomized Controlled Trials (RCTs): To evaluate the effectiveness of interventions with a high level of evidence. Quasi-Experimental Studies: To include studies where randomization may not be feasible but still provide valuable insights. Longitudinal Cohort Studies: To assess the long-term effects of interventions on physical activity behavior. Cross-Sectional Studies: To capture a snapshot of the relationships between PBC, action planning, coping planning, and physical activity.

Eligibility criteria 1. The study must include at least one of the three constructs in addition to exercise intention and behavior: PBC, action planning, or coping planning. Each study must report Pearson correlations among at least the following three: (i) PBC with intention and behavior, (ii) Action planning with intention and behavior, and (iii) Coping planning with intention and behavior.

2. The study reports bivariate Pearson correlation coefficients (r) and sample size, and the selected papers must provide information on correlations between constructs or the data needed to derive correlations (standard regression coefficients or path coefficients, or other convertible metrics).

3. Literature eliminating conceptual ambiguity of research variables.

4. By classifying an article as the same study if it is published in multiple stages, repeated, or has the same sample, avoiding duplication.

5. Must have independent data sets (thus, articles containing the same data sets are excluded to avoid bias from multiple counts).

6. We only selected studies written in English.

Information sources Literature searches were conducted in the following databases: Academic Search Complete, Medline, PsychINFO, SPORTDiscus, Embase, and Web of Science, using keywords and phrases related to Intention and Physical activity modulation, including "Physical Activity," "Exercise," "perceived behavior control," "PBC," "Planning," "Implementation Intentions," "Action Planning," and "Coping Planning." To provide a representative literature base, we adopted a systematic search process consistent with previous researchers' recommendations and applied in prior meta-analyses.

Main outcome(s) The outcomes of the study "Examining the Impact of Perceived Behavioral Control and Planning on Closing the Exercise Intention-Behavior Gap" are multifaceted and significant. By integrating the Theory of Planned Behavior (TPB) and the Health Action Process Approach (HAPA), the study quantifies the effects of perceived behavioral control (PBC), action planning, and coping planning on the exercise intention-behavior relationship using a Meta-Analytic Structural Equation Model (MASEM). Key findings include:

Behavioral Intention and Behavior: Behavioral intention significantly positively affects behavior, action planning, and coping planning.

Action Planning: Action planning shows a negative but non-significant direct effect on behavior.

Coping Planning: Coping planning significantly positively affects behavior.

Perceived Behavioral Control (PBC): PBC significantly predicts behavioral intention and directly influences behavior. It also significantly predicts both action planning and coping planning.

Mediation Analysis: Intention significantly influences behavior through coping planning but not through action planning. PBC has a significant

positive indirect effect on behavior through intention and coping planning, but not through action planning.

Quality assessment / Risk of bias analysis The method of quality assessment in primary studies involved a thorough and systematic approach to ensure the reliability and validity of the included

studies. Selection of Studies: The primary studies were selected based on predefined inclusion and exclusion criteria. Studies had to report on at least one of the constructs related to exercise intention and behavior, such as perceived behavioral control (PBC), action planning, or coping planning, and provide necessary data such as Pearson correlation

coefficients. Quality Assessment Criteria: The quality of the primary studies was assessed using several criteria,

including: Sample Size: The adequacy of the sample size to ensure statistical

power. Study Design: Preference was given to studies with robust designs, such as longitudinal studies over cross-sectional

studies. Measurement Validity and Reliability: The use of validated and reliable measurement instruments to assess

constructs. Data Reporting: Clarity and completeness of reported data, including the correlation coefficients and other relevant

statistics. Bias Assessment: Evaluation of potential biases, such as selection bias, measurement bias, and publication

bias. Coding Process: Two authors independently coded the empirical studies to ensure data reliability and independence. Discrepancies between coders were resolved through discussion or by consulting a third

reviewer. Meta-Analysis Techniques: Meta-analytic techniques were applied to synthesize the results of the primary studies. This included calculating the correlation effect sizes and constructing an aggregated correlation matrix for subsequent

analyses. By employing these rigorous quality assessment methods, the systematic review aimed to provide a comprehensive and reliable synthesis of the existing research on the impact of perceived behavioral control and planning on closing the exercise intention-behavior gap.

Strategy of data synthesis This study employs two methods: (a) meta-analysis to calculate the correlation effect sizes of each relationship in the

model, and (b) MASEM to test the interrelationships among multiple variables in the research model. MASEM integrates all available evidence from different research fields, providing a "unique statistical power advantage", because it builds on findings from meta-analyses, which typically include larger sample sizes than primary structural models. Therefore, this study uses MASEM to test the hypothesized mediation model, a recommended and widely applied approach for analyzing theoretical models, especially mediation mechanisms.

Subgroup analysis We will examine the moderating effect of cultural differences on the relationships between these variables.

Sensitivity analysis This study did not include a sensitivity analysis.

Country(ies) involved China.

Keywords Perceived Behavioral Control; Planning; Intention-Behavior Gap; Physical Activity; Theory of Planned Behavior; Health Action Process Approach.

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