Closing the Intention-Behaviour Gap: Effect of a Dual-Process Digital Intervention on Physical Activity Behaviour, Intention and Habits

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1 Introduction

Insufficient physical activity (PA) remains widespread and detrimental to health, with PA being central to chronic disease prevention; yet nearly a third of adults globally are insufficiently physically active. Many digital behavior change interventions (DBCIs) overemphasize reflective, deliberate motivation, which shows only moderate predictive power for maintenance and has performed poorly in attempts to sustainably increase PA (Zhu et al., 2024).

Behaviour is jointly determined by conscious (Type 2) and nonconscious (Type 1) processes, and bridging these processes is central to closing the intention-behaviour gap (Strobach et al., 2020). This planned study tests a dual-pathway digital intervention for adoption and maintenance of PA. It is aligned with calls to integrate dual process theory, modern habit theory (how these processes combine to determine habitual behaviour), and goal setting theory (informs goal-setting strategies that drive habit formation through repetition) (Pinder et al., 2018).

To operationalize this integration, this study will use implementation intentions; concise if-then plans that link a specified cue to a desired action. They are well suited to a dual-pathway approach because they start as explicit, goal-directed strategies (Type 2) that heighten the accessibility of the intended response and, with rehearsal in stable contexts, can automatize into cue-triggered impulses (Type 1). This allows a single intervention to target both intention formation and habit development.

2 Methodology and Research Questions

We will conduct a a randomized, parallel-group study comparing an implementation-intentions intervention to a monitoring-only control. We will enroll participants who report insufficient PA and randomly assign them to one of two groups. Both groups will receive public PA guidelines and the same assessment timing, with intervention group also identifing situational cues and creating if-then plans for chosen physical activities using standardized templates and examples, with brief automated reminders to revise plans weekly.

The primary outcome is level of PA (minutes of moderate-to-vigorous PA/week); secondary outcomes include PA habit strength, PA intention, and behavioural consistency for PA. All constructs will be assessed using validated self-report measures at baseline (pre-intervention), at 4 weeks (post-intervention), and at a 2-month follow-up (maintenance).

We will examine whether an intervention that targets both Type 1 and Type 2 processes improves levels of PA, PA intentions, behavioral consistency for PA, and PA habit strength post-intervention and at follow-up relative to control.

3 Expected Findings and Implications

Integrating dual-process, habit, and goal-setting perspectives, we expect to see improvements in levels of PA, PA intention, PA habit strength, and behavioural consistency for PA. We also expect some improvement from baseline within the control group on at least some outcomes due to assessment reactivity. Given the empirical gaps in DBCIs, their moderating factors as well as practical challenges such as imprecise context detection we expect small to moderate effect sizes. To account for potential heterogeneity in our data, we will explore interindividual differences and how changes in intention, habit, and behavioural consistency co-vary. Our findings will inform health behaviour change theory and practice and may guide future studies that examine dual-pathway approaches.

References

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