

Does Situation-Specificity Affect the Operation of Implementation Intentions?

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Interventions that encourage people to link critical situations with appropriate responses (i.e., “implementation intentions”) show promise in increasing physical activity.

The study tested whether implementation intentions designed to deal with generic situations are more effective than implementation intentions designed to respond to specific situations.

One hundred thirty-three participants either: (a) formed implementation intentions using a volitional help sheet with 10 critical situations (i.e., standard volitional help sheet); (b) formed implementation intentions using a volitional help sheet with one generic situation (i.e., single situation volitional help sheet); or (c) did not form implementation intentions (i.e., control condition).

Participants who formed implementation intentions reported more physical activity and greater self-regulation than those in the control condition. There were no differences between participants who were provided with one generic critical situation and those who were provided with 10 specific critical situations.

Implementation intentions successfully increased self-reported physical activity irrespective of critical situation specificity. The implication is that implementation intention-based interventions are robust and require minimal tailoring.

Ethical Approval. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent. Informed consent was obtained from all individual participants included in the study.

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PHYSICAL INACTIVITY AND HEALTH

Physical inactivity contributes to numerous physical (e.g., ischaemic heart disease, stroke, type 2 diabetes, various cancers) and mental (e.g., psychological distress, depression) health conditions and is responsible for 9% of premature deaths worldwide (HSE, 2012; Lee et al., 2012). Physical inactivity is also commonplace: In England, 45% of women and 33% of men aged 16 and over were not meeting the physical activity guidelines in 2012; moreover, 26% of women and 19% of men were classified as inactive (HSE, 2012). There is a need to develop tools that both increase physical activity and are quick and easy to administer in a large population.

Interventions for physical activity typically include multiple behavior change techniques (BCTs) delivered in multiple sessions by a health care professional. For example, a meta-analysis of physical activity interventions showed that on average 6.6 BCTs were used per intervention, 94% of interventions consisted of multiple sessions over an average of 24 weeks, and 46% of interventions were delivered by a health care professional (Michie et al., 2009). Interventions that consist of multiple sessions delivered by a health care professional are time-consuming and expensive, and the simultaneous delivery of multiple BCTs obscures any unique effects of individual BCTs. It would therefore be valuable to develop less costly interventions that are based upon the BCTs that have been shown to be most effective.

Concurrent with the growing crisis surrounding physical inactivity, a large-scale nationally representative

survey found that 95% of U.K. adults thought physical activity was important for health and 67% wanted to do more physical activity (HSE, 2007). These figures show that many people are motivated to become physically active and may benefit from interventions that focus on translating motivation into action.

IMPLEMENTATION INTENTIONS

Implementation intentions (Gollwitzer, 1993) are one means of translating motivation into action. When people form implementation intentions (Gollwitzer, 1993), they are asked to link critical situations (“if’s”) with appropriate responses (“then’s”). The principle is that by linking critical situations (e.g., “if it is lunchtime”) with appropriate responses, the response (e.g., “then I will go for a run”) will be triggered automatically when the critical situation (e.g., lunchtime, in the above example) is encountered in the future. Implementation intention-based interventions such as these have increased physical activity in cancer survivors (McGowan et al., 2013), people with myocardial infarctions (Luszczynska, 2006), people with spinal cord injuries (Latimer et al., 2006), in healthy populations (Andersson & Moss, 2011; Prestwich et al., 2009), people with low socioeconomic status (Armitage & Arden, 2010) and among school children (Armitage & Sprigg, 2010). Recent meta-analyses have indicated that implementation intentions are effective at increasing physical activity. Belanger-Gravel et al. (2013) found 19 studies, which had an overall small effect at follow-up, $d = .24$, and a slightly larger effect, $d = .31$, when physical activity was measured immediately after the last intervention session. Carraro and Gaudreau (2013) found eight studies that showed a large overall unique effect of implementation intentions, $d = 1.03$, on physical activity.

THE VOLITIONAL HELP SHEET

Volitional help sheets (e.g., Armitage, 2008) give participants the raw ingredients with which to form implementation intentions. Volitional help sheets present participants with a choice of specific critical situations and appropriate responses based on Prochaska and DiClemente’s (1983) transtheoretical model. The situations and responses are presented in two columns, and participants are asked to draw a line between a situation that is relevant to them and a response that they think will work for them, thus linking critical situation with appropriate response. Participants in the control condition are similarly presented with a volitional help sheet but are asked to tick critical situations and appropriate responses that are relevant. This ensures that participants in the

control group are exposed to the same situations and responses as the intervention group, but without forming a link between the situation and the response.

Volitional help sheets have been used successfully to improve a range of behaviors: to increase quitting in smokers (Armitage, 2008, 2016), reduce alcohol consumption in the general population (Armitage & Arden, 2012), reduce binge-drinking in students (Arden & Armitage, 2012), reduce speeding among drivers (Brewster et al., 2015), increase weight loss (Armitage, Norman, et al., 2014), reduce suicidal ideation and behavior among patients hospitalized after self-harming (Armitage et al., 2016), and increase physical activity (Armitage & Arden, 2010).

The physical activity volitional help sheet consists of up to: (a) 20 situations (e.g., If I’m tempted not to be physically active because I am busy) adapted from Marcus et al. (1992a) and Hausenblas et al.’s (2001) temptation not to exercise scales, and (b) 20 appropriate responses adapted from Marcus et al. (1992b) processes of change questionnaire. In Armitage and Arden’s (2010) study, manual workers were randomized either to form implementation intentions using the volitional help sheet or not. Extent of engaging in moderate physical activity was measured prior to and at 1 month after the intervention. Participants in the intervention group reported a significant increase in their moderate physical activity after 1 month compared to the control group ($d = .14$).

SITUATION SPECIFICITY

A strength of the volitional help sheet is that the cues and responses are provided for the participant, ensuring that the plan has appropriately formed situations and solutions. This is important as health behavior change was found to be more successful when the solutions used in the implementation intentions are specific (de Vet, Oeneman, & Brug, 2011; van Osch, Lechner, Reubsæet, & De Vries, 2010). There has been little research on the specificity of the situations; one study found that people tended to neglect the situation when forming an implementation intention (de Vet et al., 2011).

However, one potential limitation of the standard volitional help sheet (and implementation intentions generally) is that it includes many situations to choose from that could: (a) create a burden for the participant, and (b) preclude responses being activated when a nonspecified situation occurs. Consistent with the latter line of reasoning, there is laboratory evidence to suggest that people are worse at identifying additional cues to action after they have formed an implementation intention. Parks-Stamm et al. (2007) were interested in the speed with which

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