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Choosing to exercise more: Small choices increase exercise engagement

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ABSTRACT

Objectives: The purpose of the study was to examine whether individuals' motivation to exercise could be increased by providing them with an incidental choice.
Design: Experimental design with two groups.
Method: Two groups of participants were asked to perform four exercises (i.e., lunges, jumping jacks, bear crawls, medicine-ball throws). After a demonstration of each exercise, a choice group was given the opportunity to choose the order of exercises, while a control group performed them in a pre-determined order. Subsequently, all participants decided how many sets and repetitions of each exercise they wanted to complete.
Results: Choice group participants performed a significant greater number of total repetitions (sets × repetitions) of all exercises than did control group participants.
Conclusions: The finding suggests that individuals' need for autonomy can be supported by giving them small choices, which can positively affect exercise engagement.

Autonomy – or having a sense of choice and being able to determine one's own actions – is considered a fundamental psychological need (Deci & Ryan, 2000; 2008) and even biological necessity (Leotti & Delgado, 2011; Leotti, Iyengar, & Ochsner, 2010). It is essential to psychological well-being and quality of life (e.g., Langer & Rodin, 1976). Autonomy-supportive environments, in which individuals are given choices – even seemingly inconsequential ones (e.g., Tafarodi, Milne, & Smith, 1999) – and are free to make their own decisions, have been shown to increase individuals' motivation and performance in a variety of situations. The learning of motor skills, for example, is facilitated if performers are allowed to make decisions about the delivery of feedback, the frequency of skill demonstrations, practice schedules, the use of assistive devices, or other practice variables (for reviews, see Sanli, Patterson, Bray, & Lee, 2013; Wulf, 2007). Relative to yoked control groups with identical practice conditions but lack of opportunity for choice, so-called self-control groups typically show superior learning. In addition, they report greater motivation to learn (e.g., Chiviacowsky, Wulf, Lewthwaite, & Campos, 2012). Autonomy-supportive interventions have also been shown to facilitate tobacco abstinence (Williams, Niemiec, Patrick, Ryan, & Deci, 2009), increase the frequency of exercise (Thompson & Wankel, 1980), and adherence to rehabilitation protocols (Chan, Longsdale, Ho, Yung, & Chan, 2009).

In contrast, conditions that do not support people's need for autonomy (i.e., controlling environments) induce stress (Reeve & Tseng, 2011), and can even result in behavior that is opposite to what is desired (e.g., Chan, Lonsdale, Ho, Yung, & Chan, 2009; Stephens et al., 2013). For example, Stephens and colleagues found that persons with diabetes, who felt pressured by their spouses to follow dietary recommendations, experienced more worries and stress than did those whose spouses were more supportive, and they followed dietary advice to a lesser extent. The counter-productive effects of controlling conditions have potentially important implications for other health-related settings. In recent years, calls to engage in physical activity have increased as regular exercise has been shown to be associated with reduced risks of various medical conditions and chronic diseases (e.g., diabetes, stroke, breast cancer, osteoporosis) (e.g., Physical Activity Guidelines Advisory Committee, 2008; Sui et al., 2013; Warburton, Charlesworth, Ivey, Nettlefold, & Bredin, 2010). Yet, adherence to exercise regimens is often less-than-satisfactory (e.g., Rhodes & Fiala, 2009). Ironically, in an attempt to ensure that their clients engage in sufficient exercise, personal trainers, athletic trainers, or physical therapists tend to prescribe certain exercises,

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weights to be lifted, or numbers of sets and repetitions for given exercises. Yet, as Teixeira, Carraça, Markland, Silva, and Ryan (2012) have speculated, such an approach that "might be prevalent in fitness clubs or other settings where exercise is externally prescribed, could thus be partially responsible for the high dropout rate …. In fact, the pervasiveness of social and medical pressures toward weight loss, combined with externally prescriptive methods may be ill-suited to promote sustained increases in population physical activity levels" (p. 2).

Indeed, there is evidence that autonomy-supportive exercise settings have the potential to increase exercise motivation and behavior (for a review, see Teixeira et al., 2012). For example, fitness instructors' perceived interacting style has been shown to affect exercisers' perceptions of autonomy (Puente & Anshel, 2010), and autonomy-supportive behavior of physical therapists has been shown to be associated with patients' motivation and reported adherence to rehabilitation programs (Chan et al., 2009). Also, exercise and weight management interventions designed to support participants' need for autonomy by providing choices and using non-controlling language resulted in significantly higher levels of reported physical activity and weight loss after 12 months than those reported by a control group (Silva et al., 2010). Using structural equation modeling, Silva et al. (2011) were able to demonstrate a link between autonomy support and exercise behavior after 2 years. Similarly, Standage, Gillison, Ntoumanis, and Treasure (2012) demonstrated that students' perceptions of autonomy support from physical education teachers predicted satisfaction of their need for autonomy (as well as competence and social relatedness), which in turn predicted exercise motivation and actual exercise behavior. Interestingly, Thompson and Wankel (1980) demonstrated that even giving participants relatively small choices positively affected their adherence to exercise programs. Attendance of a 6-week exercise program was influenced by whether or not exercisers believed that their preference for certain exercises had been taken into account in the design of the program. Even though the exercise program was in fact identical for two groups, participants who had a greater perception of choice maintained higher attendance rates than did participants who were led to believe that their choices had not been taken into consideration.

In the present study, we went one step further. We asked whether the incorporation of a small and relatively trivial choice into an exercise program would be able to enhance individuals' motivation to exercise. Incidental choices (i.e., choosing names of characters to be used in a story) have been found to affect participants' confidence in their performance (reading comprehension) (Tafarodi et al., 1999). Yet, it is unclear whether they would have the potential to influence behavior – in this case exercise behavior. In the current study, two groups of participants were asked to complete a series of exercises. In one group (choice), participants were provided the opportunity to choose the order of exercises. In another group (control), rather than deliberately thwarting their feelings of autonomy (Thompson & Wankel, 1980), participants were simply informed about the order of exercise. We compared the number of sets and repetitions each group was willing to complete.

Methods

Participants

Twenty-nine university students with an average age of 24.7 years ($SD = 6.19$) participated in this study. Most participants were recruited from a university exercise class they were attending, while others had previously completed an exercise program ($N = 6$). The study was approved by the university's institutional review board. All participants gave their informed consent, and they were unaware of the specific purpose of the study and their assignment to a certain group.

Apparatus, tasks, and procedures

Participants were randomly (i.e., based on order of appearance in the laboratory) assigned to either a choice (11 females, 4 males) or control group (10 females, 4 males). To ensure comparable fitness levels, participants first completed a baseline fitness assessment which consisted of a resting heart rate measurement, a three-site skinfold analysis to determine body fat percentage following ACSM guidelines for women (i.e., triceps, abdomen, thigh) and men (i.e., chest, abdomen, thigh), respectively (American College of Sports Medicine, 2013), a 1-min push-up test, and a 1-min curl-up test. One day later, after a 10-min warm-up, participants completed a full-body workout program that consisted of four exercises: Lunges, jumping jacks, bear crawls, and medicine-ball throws. The exercises were chosen because they included a variety of full-body workouts. Although most participants were familiar with these exercises from the exercise program they (had) attended, they were given a demonstration of each exercise. Participants in the choice group were then asked to choose the order in which they would like to complete the four exercises. Control group participants were simply informed of the order of exercises (i.e., lunges, jumping jacks, bear crawls, medicine-ball throws). Subsequently, each participant was asked to decide how many sets and repetitions he or she would like to complete, with the restriction that the numbers be the same for all exercises. For example, a participant might have chosen to do 2 sets of 10 repetitions (i.e., a total of 20 repetitions), or 3 sets of 8 repetitions (i.e., a total of 24 repetitions), of each exercise. Definitions of a repetition for each exercise are provided in Table 1. Following the workout, participants were guided through a cool-down process.

Data analysis

To assess participants' fitness level, resting heart rate, body-fat percentage, and the number of repetitions on the push-up and curl-up tests were analyzed in univariate analyses of variance (ANOVAs). The main dependent variable of interest – the product of sets and repetitions (i.e., sets × repetitions, or the total number of repetitions) participants completed – was also analyzed in a univariate ANOVA.

Results

Fitness assessment

The choice and control groups did not differ in terms of resting heart rate (70.3 vs. 71.9, respectively), $F(1, 27) = .074$, $p > .05$, partial $\eta^2 = .003$, percent body fat (25.0 vs. 23.9), $F(1, 27) = .089$, $p > .05$, partial $\eta^2 = .003$, number of repetitions on the push-up test (37.2 vs. 38.2), $F(1, 27) = .043$, $p > .05$, partial $\eta^2 = .002$, or curl-up

Table 1
Exercises and definitions of a repetition.

Exercise	Repetition
Lunges	1 step taken (feet in alternating order)
Jumping jacks	1 complete motion (legs and arms starting and ending in same position)
Bear crawls	Completing a distance of 4.5 m
Medicine-ball throws	1 contact between the medicine ball and floor

test (32.4 vs. 39.4), $F(1, 27) = 1.25$, $p > .05$, partial $\eta^2 = .044$. Thus, both groups had similar fitness levels.

Total number of repetitions

All participants completed the number of sets and repetitions, which they had chosen at the beginning, for all exercises. The choice group had chosen to, and completed, a greater number of sets (3.00) and repetitions (13.20) than did the control group with a prescribed order of exercises (2.29 sets, 10.79 repetitions). The numbers of repetition and sets selected by individual participants in each group is illustrated in Fig. 1. Overall, the choice group performed a significantly greater number of total repetitions (39.60) than the control group (24.29), $F(1, 27) = 9.01$, $p < .01$, partial $\eta^2 = .250$ (see Fig. 2).

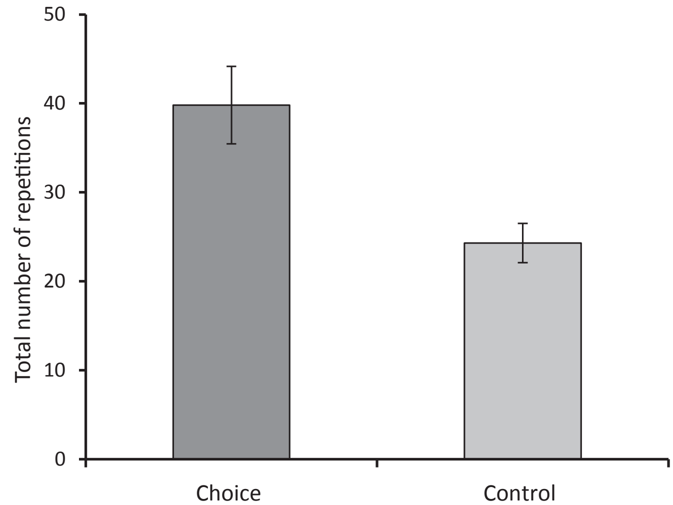

Fig. 2. Average number of total repetitions (sets × repetitions) performed by the choice and control groups. Note: error bars represent standard errors.

Discussion

Giving participants a relatively insignificant choice (i.e., order of exercises) increased their willingness to exercise: Choice group participants performed 60% more repetitions than did control group participants without a choice. Thus, granting participants a small choice was apparently sufficient to positively impact their motivation to work out. According to Katz and Assor (2007), choices are motivating if they correspond to individuals' interests and are not overwhelming. These criteria were met here as participants attended an exercise class and were asked to make a single, context-relevant choice. While Katz and Assor also argue that the desirability of making choices may be culture specific, others see the freedom of having a choice as a universal basic need (Deci & Ryan, 2000; 2008) and biological necessity (e.g., Leotti, Iyengar, & Ochsner, 2010).

Having control over one's own behavior – elicited by being able to choose and make decisions that affect one's life – is essential for personal well-being, intrinsic motivation (Deci & Ryan, 2008), performance and learning (e.g., Chiviacowsky et al., 2012; Cordova & Lepper, 1996). In one recent study, for example, participants who were given a choice about when to use an assistive device while learning a balance task reported not only greater motivation to learn the task but also more effective learning compared with a control group that did not have a choice (Chiviacowsky et al. 2012). Opportunities for choice seem to be inherently rewarding, as findings from studies with both animals (Catania, 1975; Catania & Sagvolden, 1980; Voss & Homzie, 1970) and humans (Tiger, Hanley, & Hernandez, 2006) suggest. A study by Leotti and Delgado (2011) indeed demonstrated that when participants were given a choice, or when they anticipated an opportunity for choice, increased activity was seen in brain regions that were directly involved in reward processing (e.g., ventral striatum). As the authors pointed out, if the need to be in control of one's destiny and having choices is biologically determined, activation of reward-related brain centers makes sense from an evolutionary perspective as it would promote behavior necessary for survival. Behavioral and self-report data also support the notion that choice is rewarding and beneficial for performance. Task instructions worded in an autonomy-supportive way – implying choices about how to approach a given task – elicited greater positive affect compared with

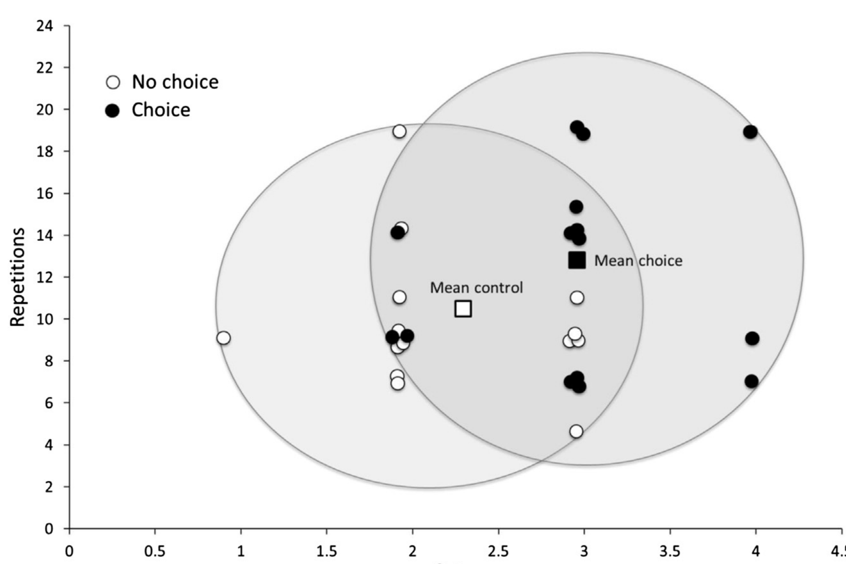

Fig. 1. Number of sets (*x*-axis) and repetitions (*y*-axis) chosen by individual participants in the choice and control groups, and means for each group.

controlling-language instructions (Hooyman, Wulf, & Lewthwaite, 2013; Reeve & Tseng, 2011), in addition to enhancing motor skill learning (Hooyman et al., 2013). The present findings extend the literature by demonstrating that even choices that are incidental to the task at hand can have a significant effect on behavior – in this case people's willingness to more exert effort during exercise.

The present findings have potentially important implications for exercise and physical activity settings. Personal or athletic trainers, physical therapists and others who see one of their roles as motivating clients to exercise can take advantage of the motivational impact of autonomy support. Instead of prescribing specific exercise or activity regimens, recognizing individuals' fundamental desire to be in control by providing them with choices (e.g., types of exercises, weights, number of repetitions, sets, or workouts) might go a long way toward motivating them to engage in further activities. Future studies may follow up on these findings by examining the influence of different choices, perhaps including ones that are unrelated to the task, and different dependent measures, including motivational variables (e.g., positive and negative affect) to provide further insight into mediating factors. Furthermore, it would be of interest to examine more long-term effects of exercise programs that include choices. The present results provide initial evidence that even seemingly minor choices can positively impact exercise engagement.

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