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Point-of-decision prompts for increasing park-based physical activity: a crowdsource analysis

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Abstract

Objective—To examine the potential efficacy of using point-of-decision prompts to influence intentions to be active in a park setting.

Methods—In June 2013, participants from across the U.S. (n=250) completed an online experiment using Amazon's Mechanical Turk and Survey Monkey. Participants were randomly exposed to a park photo containing a persuasive, theoretically-based message in the form of a sign (treatment) or an identical photo with no sign (control). Differences in intentions to engage in moderate-to-vigorous physical activity within the park were examined between the two conditions for multiple gender, age, and race groups.

Results—Participants who were exposed to the park photo with the sign reported significantly greater intentions to be active than those who viewed the photo without a sign. This effect was especially strong for women compared to men, but no differences were observed across age or race groups.

Conclusion—Point-of-decision prompts are a relatively inexpensive, simple, sustainable, and scalable strategy for evoking behavior change in parks and further testing of diverse messages in actual park settings is warranted.

Introduction

Parks are important resources for promoting physical activity (PA) given their low cost, accessibility throughout communities, and wide appeal (Bedimo-Rung et al., 2005;

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Conflict of Interest Statement
The authors declare that there are no conflicts of interest.

Kaczynski & Henderson, 2007). However, a substantial percentage of park users are observed as sedentary (Cohen et al., 2007; Floyd et al., 2008; Kaczynski et al., 2011), suggesting that potential exists to increase the contribution of parks to population-level energy expenditure and the mitigation of obesity and chronic diseases (Besenyi et al., 2013).

Point-of-decision-prompts (PODPs), such as signs promoting stair use, employ persuasive education and information messages to influence health-related or other behaviors (Boen et al., 2010; Coleman & Gonzalez, 2001; Dolan et al., 2006). Strong evidence exists to support the effectiveness of such strategies (Soler et al., 2010; Task Force on Community Preventive Services, 2002) and PODPs were found to be the most cost-effective type of PA intervention (Wu et al., 2011). In park settings, signage and other forms of communication (e.g., brochures) have been effective in encouraging or discouraging a variety of behaviors (e.g., littering, off-trail hiking, picking up pet waste; Cialdini et al., 2006; Marion et al., 2008; Martin, 1992; Winter, 2006). However, no studies have explored the utility of PODPs for increasing PA in parks. Therefore, the purpose of this exploratory study was to examine the potential efficacy of PODPs for influencing intentions to be active in a park setting. Such data are critical in testing the success of this inexpensive, easily scalable intervention for increasing PA participation amongst the large segment of the population who use community parks.

Methods

Study Design and Data Collection

This study, which occurred in June 2013 and was approved by the University of Missouri Institutional Review Board, employed an online experiment using Amazon's Mechanical Turk (www.mturk.com) and Survey Monkey (www.surveymonkey.com). Mechanical Turk (MTurk) is a crowdsourcing marketplace allowing people to be paid to complete small, computer-based Human Intelligence Tasks (HITs) which are posted to the MTurk website that provides an interface for requesters and workers (Buhrmester et al., 2011; Hipp et al., 2013). Workers were randomly assigned to one of two experimental scenarios and directed to Survey Monkey where they completed the remainder of the protocol.

Two park photos comprised the control (Figure 1a) and treatment (Figure 1b) conditions. The photos showed a bench, two intersecting paths, and several trees, and were identical except that the treatment photo contained a green sign. White text on the sign read, "Take a walk around the park! Doctors recommend that being active just 30 minutes per day can help you maintain a healthy weight and ward off many diseases." This theoretically-based message was developed using the Integrated Model of Behavioral Prediction, which posits that three primary constructs – attitudes, perceived norms, and self-efficacy – determine one's behavioral intentions (Fishbein & Capella, 2006). The specific components of the message were based on feedback from focus groups with 41 residents of a midwestern U.S. city that explored key attitudinal outcomes (e.g., maintaining a healthy weight), perceived norm referents (e.g., doctors), and self-efficacy facilitators and barriers (e.g., knowledge, time) that influence park-based PA (Groshong et al., 2014).

Participants

Participants were restricted within MTurk to US citizens over the age of 18 years and to Mechanical Turk Masters, an "elite group of workers who have demonstrated accuracy on specific types of HITs on the Mechanical Turk marketplace" (www.mturk.com). Participating workers were compensated $0.25 to their Amazon.com account.

Measures

After being exposed to the treatment or control photo, participants answered a comprehension check question to confirm that they had viewed the photo. Participants were then asked to rate the likelihood of engaging in moderate-to-vigorous PA in the park using a scale ranging from 1 (very unlikely) to 9 (very likely). It was explained that "Moderate and vigorous physical activities refer to activities that cause small or large increases in your breathing or heart rate (e.g., brisk walking, jogging, biking)." A brief demographics section asked about gender, age, race, ethnicity, and state of residence.

Analyses

Descriptive statistics explored characteristics of the sample and key variables. An independent samples t-test was used to examine differences between the treatment and control conditions with respect to intentions to engage in moderate-to-vigorous PA in the park, with these analyses also disaggregated by gender, age group (18–34; 35+), and racial group (White only; all other races).

Results

250 participants provided data for the key outcome variable about intentions to engage in park-based PA. Of these, 132 were part of the treatment condition (photo with sign) and 118 viewed the control photo (no sign). Just over half (50.4%) of participants were female, 65.8% were between 18–34 years old, they originated from 46 different U.S. states, and 8.8% were of Hispanic or Latino origin. The most reported racial groups included White (78.2%), Asian (7.1%), and Black (6.7%).

As shown in Table 1, those who were exposed to the park photo with the sign containing the PODP message reported significantly greater intentions to be active than those who viewed the photo without a sign. Further, when disaggregated by gender, the effects of exposure to the PODP message were much greater for females than males. However, there were no differences in PA intentions between the treatment and control groups for any specific age or race groups.

Discussion

Our findings provide preliminary evidence of the efficacy of theoretically-based messages for improving intentions to be active in park settings. Given the large numbers of residents who use parks and the significant amount of sedentary behavior that occurs therein, this relatively simple strategy has the potential to significantly improve energy expenditure and health at the population level.

Moreover, the effect of viewing a sign was especially poignant among women compared to men, which is important given that women traditionally have lower levels of PA overall and within park settings (Cohen et al., 2007; Floyd et al., 2008; Kaczynski et al., 2011; Trost et al., 2002). Future research is needed to better explain this finding, but some studies suggest that women may be particularly sensitive and responsive to other environmental PA aids (e.g., bike lanes; Garrard et al., 2008) and at least one study found that stair prompt signs were more effective for women as well (Dolan et al., 2006). It is plausible that the particular message we tested may have been more relevant to females than males, whereas other combinations of outcomes, referents, facilitators, and barriers may produce greater influences on other demographic groups, thus necessitating the need for broader message development and testing.

Conclusion

To our knowledge, this is the first study examining the efficacy of PODPs for influencing intentions to be active in parks. However, our experiment was limited in that it involved a single message and exposure in a laboratory-like context and it remains to be seen whether increased exposures would have even more positive or perhaps diluted effects. Moreover, our outcome variable focused on intentions to be active rather than actual behavior and respondents were limited to those over the age of 18. Although the present findings are promising, more research is needed to generate and test diverse theoretically-based messages and evaluate their effectiveness for increasing PA in actual park contexts among diverse user groups. PODPs are a relatively inexpensive, simple, sustainable, and scalable strategy for evoking behavior change and warrant greater consideration as a population-level approach to enhancing PA in parks and other community settings.

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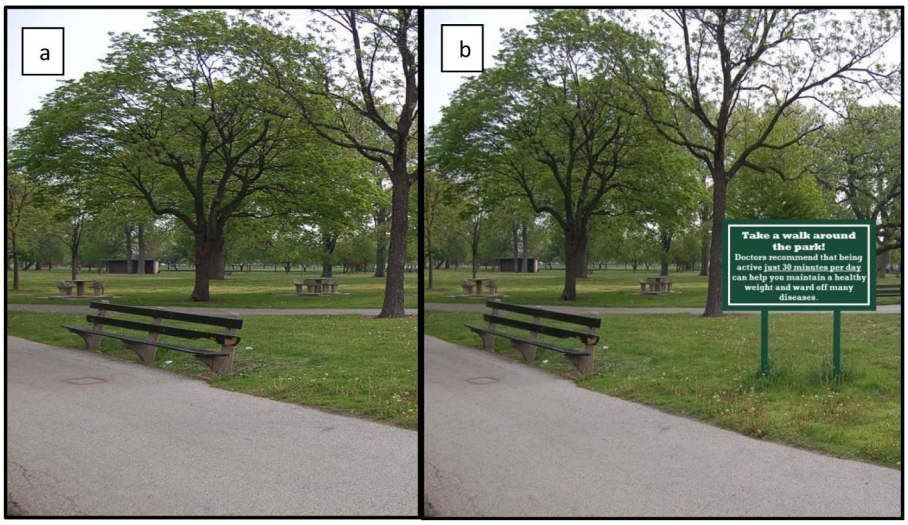

Figure 1.
Park photo in control condition (a) and treatment condition (b)

Table 1

Differences between Control and Treatment Conditions in Intentions to be Active in Park[1]

Condition	N	Mean[2] (s.d.)	t	p
Full Sample				
Control (no sign)	118	6.03 (2.15)	2.14	0.03
Treatment (sign)	132	6.55 (1.63)		
Females				
Control (no sign)	55	5.85 (2.28)	2.60	0.01
Treatment (sign)	64	6.77 (1.49)		
Males				
Control (no sign)	55	6.33 (1.97)	0.17	0.86
Treatment (sign)	62	6.39 (1.66)		
18–34 years				
Control (no sign)	64	6.11 (2.11)	1.59	0.11
Treatment (sign)	94	6.57 (1.56)		
35 years or older				
Control (no sign)	49	6.08 (2.14)	1.04	0.30
Treatment (sign)	33	6.55 (1.68)		
White				
Control (no sign)	93	6.00 (2.13)	1.45	0.15
Treatment (sign)	93	6.40 (1.57)		
All other races				
Control (no sign)	25	6.12 (1.97)	1.55	0.12
Treatment (sign)	39	6.90 (1.66)		

Notes:

[1] Data collected June 2013 online from U.S. participants using Amazon's Mechanical Turk

[2] Outcome variable was intentions to be active in the park shown in the photo rated on a 9-point scale (1=very unlikely, 9=very likely).