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Using Social Cognitive Theory to Predict Behavior

by

Gretchen Walker and Amy Posner

James B. Wise, Faculty Mentor

Abstract

The purpose of this study was to test a theoretical model where self-efficacy is hypothesized to influence people's behavioral intentions directly and indirectly through effects on outcome expectancy. Data on self-efficacy, outcome expectancy, and intention to jog two consecutive miles were collected from 115 college students enrolled in general education classes. As anticipated, path analyses indicated that efficacy had both a direct impact on intention and an indirect impact through its effects on outcome expectancy. The more efficacious people were, the more positive the outcomes they associated with jogging and the surer they were they would jog. The model tested in this study holds potentially important implications for health professionals. Based upon the model, professionals can increase the likelihood people will perform healthy activities by developing interventions that lead to stronger self-efficacy and greater awareness of positive outcomes associated with the activities.

Key words: Behavior, Health Promotion, Idiosyncratic Beliefs, Sedentary Lifestyle

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The message, loud and clear, is that Americans are sedentary. This characteristic can lead to potentially serious health conditions such as heart disease and diabetes which, in turn, can create financial strain on society's resources (U.S. Department of Health and Human Services, 2002). To prevent these costly conditions, health professionals are directing their efforts toward designing and implementing programs to help citizens become more physical active. One theory which can guide the efforts of health professionals is social cognitive theory (Bandura, 1986, 1998; Dzewaltoski, 1994). According to the theory, people perform behaviors (i.e., physical activities) they are confident they can and that produce desired consequences. Within the theory, confidence and consequences are represented by the constructs of self-efficacy and outcome expectancy, respectively (Bandura, 1986).

Self-efficacy is the confidence people have in their abilities to achieve a specified level of achievement in a particular context (Bandura, 1986, 1997). People who are more efficacious try new behaviors, expend more effort on those behaviors, and persevere longer when they encounter challenges (Bandura, 1997).

Perceptions of efficacy are influenced by four sources of information: performance accomplishments, vicarious experiences, verbal persuasive messages, and physiological signals (Bandura, 1986, 1997). In general, efficacy is strengthened when a person successfully performs a behavior, observes a similar other successfully perform the behavior, receives positive verbal statements from a competent other, and interprets bodily

signals (e.g., increased heart and respiratory rates) as indicators of impending achievement.

Outcome expectancy is a judgment that a behavior will result in one or more consequences (Bandura, 1986). These consequences or outcomes are classified as physical, social, or self-evaluative (Bandura, 1986, 2001). Physical outcomes include bodily sensations (e.g., muscle soreness). The behaviors exhibited by other people (e.g., shouts of encouragement) constitute a second class of outcomes while feelings of pride, satisfaction, dissatisfaction, and guilt are examples of self-evaluative outcomes.

Self-efficacy affects outcome expectancy (Anderson, Winett, & Wojcik, 2001; Anderson, Winett, Wojcik, Winett, & Bowden, 2001; Bandura, 1986, 1997, 1998; Conn 1998, Dilorio, Dudley, Soet, Watkins, & Maibach, 2000). People who are more efficacious tend to envision positive rather negative outcomes. For example, consider two rollerbladers, one efficacious and one inefficacious, poised at the top of long, steep decline. The confident rollerblader anticipates the exhilaration of speeding the down the hill while the less confident one ruminates on how painful the inevitable falls are going to be.

Both self-efficacy and outcome expectancy influence people's intentions to perform a behavior and intentions are accurate predictors of behavior (Ajzen & Fishbein, 1980; Bandura, 1998; Fishbein & Ajzen, 1975). People who intend to perform a behavior are apt to do so.

In summary, people's intention to participate in an active, health promoting behavior (i.e., jogging 2 consecutive miles) should be accurately predicted by their self-efficacy and outcome expectancy (Bandura, 1998). Therefore, the purpose of this study was to examine the hypothesized relationships between the constructs of self-efficacy, outcome expectancy, intention, and behavior.

Method

Participants

The 115 participants were students enrolled in general education classes at a mid-sized public university in the midwestern United States. The mean age of the 39 women and 76 men was 21.55 years (*S.D.* = 3.48). The group contained primarily sophomores (37), juniors (35), and seniors (31).

Procedure

First, participants were briefed on the study's topic and informed their participation was voluntary. Second, they completed a series of measures that had been approved by the institution's human subjects review board. The measures collected data on demographic variables, and self-efficacy, outcome expectancy, and intention to jog two consecutive miles. Finally, in two of the classes, four days later, participants reported their jogging behavior for the previous four days.

Measures

Self-efficacy. In accordance with established guidelines, self-efficacy toward jogging two consecutive miles was measured with an 8 item scale (Bandura, 1997). The items asked participants how confident they were they could jog despite a variety of impediments. Two items were "I can jog 2 consecutive miles when there are other interesting things to do" and "I can jog 2 consecutive miles when the weather is bad." The response scale ranged from 0 (*certainly cannot*) to 100 (*certainly can*). Self-efficacy was the mean of the eight responses. A Cronbach's coefficient alpha of .95 revealed that the scale items tended to measure a single construct.

Outcome expectancy. Most outcome expectancy instruments list consequences associated with a behavior and ask respondents to indicate how strongly they agree or disagree that each consequence will occur if the behavior is performed (e.g., Dilorio et al., 2000; Resnick, Zimmerman, Orwig, Furstenburg, & Magaziner, 2001; Sechrist, Walker, & Pender, 1987; Williams & Bond, 2002). However, for numerous reasons, the format of a traditional outcome expectancy scale does not fully capture the idiosyncratic nature of people's beliefs (Cervone, 1997; Cervone, Shadel, & Jencius, 2001). First, a fixed list does not allow people to add outcomes that are relevant for them. Second, responding to a list may create saliency. Before viewing an outcome on a list, people may not have associated that outcome with the behavior and therefore the outcome would not have played a role in their decision to perform the behavior. Third, people may believe the listed outcomes are likely to occur for other people but not for them personally (Resnick et al., 2001). Fourth, the outcomes, while likely to occur, may not play an important role in determining whether or not they perform the behavior. Finally, scales tend to place outcomes in either positive or negative categories but different people can possess widely disparate views about an outcome's valence (i.e., degree of positivity).

The outcome expectancy instrument used in the present study attempted to address the limitations of traditional scales. The instrument was composed of three sections. First, participants listed, in a free response format, the outcomes they believed would most likely occur as a result of jogging two consecutive miles. Second, they rated the valence of each outcome. Valence values ranged from -3 (*very negative*) through 0 (*neutral*) to +3 (*very positive*). The final section asked for the degree of importance they assigned to each outcome when deciding whether or not to jog (Anderson, 1996). Importance values were

drawn from a scale that ranged from 1 (*slightly important*) to 6 (*very important*).

Outcome expectancy was derived by summing the products that were obtained by multiplying valence and importance values for each outcome (Rodgers & Brawley, 1996). Larger outcome expectancy values signified perceptions that jogging resulted in more positive outcomes and these outcomes were influential in determining whether or not one decided to jog.

Intention. Intention was measured with a single item that requested participants to specify how certain they were they were going to jog two consecutive miles at least once during the following 4 days. The endpoints of the response scale were 0 (*certainly will not*) and 100 (*certainly will*).

Jogging behavior. Jogging behavior was solicited with the single item “Did you jog 2 consecutive miles at least once during the last four days (Thursday, Friday, Saturday, Sunday)?” The only possible responses were *yes* or *no*.

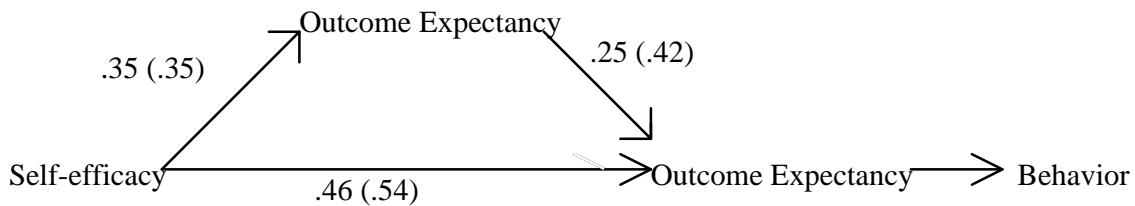
Statistical Analyses

First, descriptive statistics for the demographic items were computed. Next, Pearson zero-order correlations between the main variables were obtained. Third, multiple regression analyses were run to determine path coefficients (Pedhazur & Schmelkin, 1991). Finally, to assess the internal consistency of the efficacy scale, a Cronbach’s alpha was calculated.

Results

Prior to determining path coefficients, zero-order correlations between the main variables were examined to make sure the variables were related to one another as hypothesized. All of the correlations were strong and statistically significant.

Figure 1 - Model Tested with Path Analysis



Notes: The first value on each path is the path coefficient. The second value, in parentheses, is the corresponding zero order correlation.

All values significant at the $p < .01$ level.

The researchers only gathered jogging behavior from 64 participants but the correlation between intention and behavior was very strong.

Path coefficients, listed in Figure 1, were the standardized betas generated by regression analyses (Pedhazur & Schmelkin, 1991). The pattern of relationships exhibited by the correlations and was repeated with the path coefficients. Self-efficacy had a strong, positive, direct effect on intention and indirectly through its influence on outcome expectancy which, in turn, was strongly and positively related to intention. Because only limited data were collected, the path coefficient from intention to behavior was not computed.

Discussion

The findings were consistent with social cognitive theory and previous research (Anderson, Winett, & Wojcik, 2001; Anderson, Winett, Wojcik, Winett, et al., 2001;

Bandura, 1986, 1997, 1998; Conn, 1998; Dilorio et al., 2000). Self-efficacy had a direct effect on intention and indirectly through its influence on outcome expectancy. Also, outcome expectancy directly affected intention which, in turn, accurately predicted behavior. Participants who were more confident in their abilities to jog two consecutive miles despite a variety of impediments associated more positive outcomes with jogging, reported stronger intentions to jog, and were more likely to jog.

Understanding the pattern of relationships among these constructs can help health professionals as they design programs to increase Americans' involvement in physical activities. Accordingly, programs should concentrate on altering perceptions of efficacy and outcome expectancy.

Fortunately, techniques to strengthen efficacy and alter outcome expectancies have been discussed at length in the literature (Bandura, 1997). To strengthen efficacy, people can observe a model jogging and then jog steadily increasing distances themselves. After they finish jogging, a health professional should deliver verbal messages that indicate successful performances were due to joggers' personal abilities. Finally, those who are beginning a jogging program will experience sore muscles and fatigue so they need to be made aware that these signals are natural consequences of involvement and do not indicate personal inability.

Although strengthening efficacy should have a positive effect on outcome expectancy, outcome beliefs can also be explicitly addressed. The idiosyncratic information gathered by the outcome instrument allows a basic jogging program to be custom tailored. For example, suppose an individual believes the only outcomes of jogging 2 consecutive miles are muscle soreness, vomiting, and sweating. This same individual views all of these

outcomes as very negative. Professionals would try to increase the individual's awareness of positive outcomes associated with jogging (e.g., improved level of fitness, weight loss) and decrease the negative valence linked to outcomes or the total number of negative outcomes.

As a consequence of implementing these techniques, people should be more willing to jog. More willingness should translate into them actually jogging (Ajzen & Fishbein, 1980; Bandura, 1998; Fishbein & Ajzen, 1975).

While the results are promising, there are a couple of caveats to consider. First, this study was limited to the activity of jogging. The relationships between the constructs may not hold true with other physical activities. Second, the outcome expectancy instrument still needs refinement. For example, one concern is with how the two response scales are numbered. The importance scale did not include zero because with zeros in both scales the product of zero (valence multiplied by importance) could indicate three different scenarios. It could mean the outcome was neutral, it could also mean the outcome was not important, or it could mean the outcome was neutral and not important. In retrospect, the valence scale should range from 1 (*very negative*) to 7 (*very positive*) and the importance scale should range from 0 (*not important*) to 6 (*very important*). With these response scales, a product of zero would mean the outcome is not important, regardless of valence, when deciding whether to perform the behavior of interest.

The findings of this study are limited in their generalizability but they offer exciting possibilities for health professionals who are seeking solutions to the problem of a sedentary lifestyle. Time will tell if the possibilities become reality.

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