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## Young Investigator Special Issue 1

### Research article

# UNDERSTANDING THE ROLE OF BEHAVIOR AND COGNITIONS IN A GROUP EXERCISE SETTING

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#### ABSTRACT

The first purpose of the present study examined whether individuals with different exercise behaviors (classified by attendance) experienced different or similar cognitive patterns. It was hypothesized that different behavior would lead to different cognitive appraisals. It was predicted that there would be a difference between the three behavioral frequency groups with regard to self-efficacy measures and goal measures. The second purpose of the study was to describe, evaluate and observe whether social factors were associated with participating in exercise in groups. It was hypothesized that those who engage in exercise classes would elicit a social focus. Participants for the study included 39 females who registered in-group fitness classes at a mid-sized university. Attendance over the 10-week course was assessed and participants completed a self-report questionnaire during week seven. The attendance data were used to create 3 exercise frequency groups (regular attenders, sporadic attenders, and dropouts) based on ACSM's exercise guidelines. Analysis of Variance (ANOVA), means and frequencies were used to describe the data. There were no significant differences on measures of self-efficacy, goal measures, enjoyment, and external motivation among the three groups (all  $p$ 's > 0.05). An analysis of the whole group (N=39) discovered a low social focus and high ratings of self-efficacy. Continued research is necessary to investigate the benefit of social support in a group exercise setting, as well as to better understand how self-regulation through self-efficacy and goal factors influences and is influenced by actual behavior.

**KEY WORDS:** Self-efficacy, goal influence, social interaction.

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#### INTRODUCTION

Regardless of the known psychological and physiological benefits of regular physical exercise, many individuals have sedentary lifestyles. Of those individuals who do choose to be physically active, sixty-five percent self-report prefer to participate in a group setting (Stephens and Craig, 1990). Unfortunately, group exercise participants do not tend to adhere to group exercise past 6 months. More specifically, approximately fifty percent of group exercisers withdraw from an exercise program within the first six months of initiating exercise (Dishman, 1988).

A considerable amount of research has been directed towards understanding exercise participation patterns; however, an individual's ability to incorporate regular exercise into their lifestyle remains a challenge (Estabrooks and Courneya, 1997; Biddle, 1999; Dawson et al., 2000; Estabrooks, 2000; Dawson, 2001; Fraser and Spink, 2002; Lowe et al., 2002). In an effort to help better understand exercise participation rates, many cognitive-based theories have been developed including the Trans-Theoretical model (Prochaska and DiClemente, 1986), Theory of Planned Behaviour (Ajzen and Madden, 1986), and the Social-Cognitive Theory (Bandura, 1986).

The central tenet of these theories is that cognition influences behavior. More specifically, an individual's perception of their volitional control over the behaviour or their convictions of personal capabilities will ultimately influence the targeted behaviour. Self-efficacy, or perceived behavioural control has been found to be a significant predictor of exercise behaviour (Dawson and Brawley, 2000).

The majority of exercise-related research has used cognitive measures to predict exercise behaviour. Previous research has demonstrated how cognitions influence behaviour with respect to exercise (Dawson and Brawley, 2000). However, it is not well understood how behavior, or exercise frequency affects cognitions, specifically self-efficacy and goal-related cognitions. That is, does the exercise behavior patterns of group exercisers differentially influence important cognitive variables such as self-efficacy, goals, enjoyment and participation influence?

The first purpose of the present study examined whether individuals with different exercise behaviors (classified by attendance) experienced different or similar cognitive patterns. It is hypothesized that different behavior would lead to different cognitive appraisals. The second purpose of the study was to describe and evaluate a group of exercise participants who self-selected group physical activity, and to observe whether social factors predisposed these individuals to select group exercise. It was assumed that individuals will select to exercise as part of a group for a social experience.

## METHODS

### *Participants*

Thirty-nine female undergraduate students (Mean = 21, SD = 1.2) were randomly selected to participate in this study. They were drawn from individuals who had already registered for fitness classes at a mid-sized university. Ninety-seven participants completed the questionnaire, however, only thirty-nine participants completed both the questionnaire and accurately recorded their attendance throughout the program. A convenience sample was used to examine this group. It was not intentional to have an all female group for this study; however, there were not any males who chose to register for the group fitness program. The *Background* portion of the questionnaire revealed that eighty-four percent of participants had previously engaged fitness activity as part of a group. Immediately prior to enrolling into the group fitness program, 90% of participants reported to engaging in various types of fitness activities (e.g. "exercising at a health and fitness club", "participating in group fitness classes", and "exercise not in a health and fitness club"). This

indicated that the majority of participants were not new to the exercise experience.

### *Measures*

#### *Self-efficacy*

Self-efficacy was conceptualized as the participant's belief that she is competent at succeeding at a particular task. The measure used in the present study was designed to assess three aspects of exercise-related self-efficacy. The first being participant's perception of their ability to complete various in-class exercise components. The second, perceptions of their ability to organize, plan, and schedule regular exercise sessions, and third participant's perceptions of their ability to overcome specific barriers in order to exercise regularly. DuCharme and Brawley (1995) found that three types of self-efficacy appraisals improved the predictability of self-efficacy with respect to group exercise behaviour. Their 19-item scale was used to measure self-efficacy in the current study.

Participants rated their perceived level of self-efficacy for 19 statements (5 in-class, 10 perceived, 4 behavioural) on 0% to 100% confidence scales. A rating of 0 indicated that the participants were not at all confident in their ability, while a rating of 100 denoted that the participants were very confident in their ability. Sample self-efficacy statements included "complete the warm-up and stretching component of each class", "overcoming school commitments and still attending my scheduled exercise class", "taking time out for myself and exercising regardless of my other commitments", and "bring fitness clothes to the university for each class". A mean of the nineteen statements signified self-efficacy (Mean = 80.17; SD = 11.98; Cronbach's alpha = 0.92).

#### *Goal confidence*

Participants were instructed to list their "major goal for participating in group fitness classes this semester". Specific goals emerged from the participants. These categories included weight loss, appearance, social, aesthetic experience (fun), and training benefit. The most common goal was to increase strength and/or tone muscles (51.3%). Approximately one-third (33.3%) of the participants also recorded general health goals (to maintain health or increase health and/or fitness levels). Following the statement of their major goal, participants were then asked to rate their confidence in achieving their goal in the next ten weeks on a 0% to 100% confidence scale. A rating of 0 indicated that the participants were not at all confident in achieving their major goal, while a rating of 100 denoted that the participants were very confident in

achieving their major goal. Mean goal confidence was 78.92 percent (SD = 13.2).

### *Enjoyment*

Participants were asked to indicate their level of enjoyment regarding participation in group fitness on a 7-point Likert scale. A rating of 1 indicated a 'not very enjoyable' experience of the specific statement, whereas a rating of 7 suggested a very enjoyable experience of the specific statement. Seven statements described both individual and social factors related to group exercise. Examples of the statements included participants indicating how much they enjoyed socializing with others, stress relief, and learning new things. An overall mean of the statements measured the various enjoyment factors affecting group fitness (Mean = 5.74; SD = 0.77).

### *Participation influence*

Participants indicated how influential seven specific factors were with respect to their participation in university group exercise classes. A 7-point Likert scale was used. A rating of 1 indicated specific factors were not very influential, and 7 indicated that the specific statement was very influential towards group exercise participation. These statements, like the enjoyment measurement scale, included both individual and group factors to assist in determining the importance of a social focus in participation of group exercise participants. Example statements included participants indicating whether motivation from instructor, music, and/or participation with friends influenced their participation. The overall mean indicated the level of influence for all statements (Mean = 6.13; SD = 0.59).

### *Procedure*

Students could register to participate in all 25 classes of exercise each week. Participants chose to participate in any frequency or combination of classes over the duration of the ten-week program. All classes were 60 minutes in duration, and all followed the same format including a 10 minute warm-up, 35 minute cardiovascular training session, a 10 minute muscle conditioning component and a 5 minute cool-down, including flexibility training.

The exercise instructor stamped each participant's attendance card when they attended an exercise class. Questionnaires were distributed during weeks seven and eight of the group exercise program. Time was given at the end of their exercise class to complete the questionnaires. The questionnaires took an average of ten minutes to complete. At the conclusion of the 10-week exercise program, participation cards were gathered and matched with the coinciding questionnaire. A team

of ten female, certified group fitness instructors taught the classes. All instructors received the same group fitness certification. Instructors had an average of three years experience of leading group exercise classes.

### *Data analysis*

The attendance data were used to categorize the participants into three behavioural frequency groups: regular attenders, sporadic attenders, and dropouts. Categorization of exercise frequency groups was based on the American College of Sports Medicine's (ACSM) 1998 Position Stand that recommends regular exercise be at a frequency of three to five times per week. Therefore, regular exercisers were defined as those participants who attended group exercise classes three or more times per week for nine out of the ten-week program. A second cluster of behavior patterns emerged where exercisers maintained similar frequency of exercise per week, but differed from the regular exerciser in that they missed more than one full week of group exercise classes. This group was labelled 'sporadic exercisers'. Finally, 'drop-outs' were classified as attending 1-3 classes during the first two weeks of the group exercise program, but did not continue to attend group exercise classes for the remainder of the ten weeks. Of the thirty-nine participants, 9 were categorized as regular attenders, 12 were considered sporadic exercisers, and 18 were categorized as dropouts. Three groups were used because any other form of categorization would not properly represent the group's true attendance behavior.

Analysis of Variance (ANOVA) tests were used to evaluate whether the three behavioural frequency groups differed on the four cognitive variables (self-efficacy, goal confidence, enjoyment and participation influence). T-tests were used to further distinguish differences between extreme groups (regular vs. drop out). Descriptive data (e.g. means, standard deviation) were used to evaluate the group's efficacy patterns and social focus.

## **RESULTS**

Data were initially analyzed via ANOVA tests to determine the differences among cognitive variables based on exercise frequency. Results of the ANOVA tests indicated that overall self-efficacy, goal influence, enjoyment and participation influence were not significantly different among the three exercise behaviour groups (regular, sporadic, and dropout). Table 1 depicts the F values and significance levels of each measure. Although the exercise participants could be differentiated by the frequency of their exercise behavior, the group appeared to be very similar cognitively. Therefore,

the second purpose of the study was to better understand cognitive and motivational factors of the entire group.

**Table 1.** ANOVA results (evaluating the differences between regular, sporadic and dropout exercisers on the cognitive variables) of self-efficacy, enjoyment, goal confidence and participation influence.

Measure (n = 39)	F value	P value
Self-efficacy (overall)	.50	.60
Goal Confidence	.45	.96
Enjoyment	1.26	.30
Participation influence	.64	.53

Overall self-efficacy was high for the entire group regardless of exercise frequency (Mean = 80.17; SD = 11.98). To better understand individuals, specific self-efficacy appraisals were divided into the three specific aspects (in-class, planned and barrier) for further analysis in order to see if there were differences in each category of self-efficacy. Table 2 demonstrates the differences among these three means. Post-hoc t-tests were computed to determine where the specific differences lie. In-class self-efficacy was significantly different from planning self-efficacy ( $t=3.28$ ,  $p < 0.01$ ), and barrier self-efficacy ( $t= 4.31$ ,  $p < 0.001$ ). Planning and barrier self-efficacy were not significantly different ( $t = 2.66$ ,  $p < 0.05$ ).

**Table 2.** Comparison of the three self-efficacy appraisals.

Self-Efficacy	Mean	SD
In-Class *	85.85	11.07
Planned *	79.35	13.35
Barrier	75.02	17.49

\*  $p < 0.05$

A comparison for the means of both enjoyment and influence indicated that individual factors were evaluated as more enjoyable and more influential ( $p < 0.05$ ). See Table 3 for details. Recall that the enjoyment and participation influence variables contained both individual and social factors. Participants in the current study appeared to participate fitness classes in groups for individual rather than social reasons. These findings do not support the original hypothesis, which states that individuals will participate in exercise in groups with a social focus.

## DISCUSSION

The primary purpose of this study was to examine whether exercise behaviour differentiated individuals in terms of cognitive factors. The results

of this study do not support the first hypothesis. Evaluations of self-efficacy, goal-confidence, enjoyment and participation influence were not differentiated by exercise behavior. Likewise, the data does not support the secondary hypothesis that group fitness participants engage in exercise classes for a social experience. By contrast it was discovered that participants in this study exercised for personal, instrumental reasons rather than to feel part of a group.

**Table 3.** Comparison of individual and social factors with respect to enjoyment and participation influences.

Variable	Mean	SD	T	P
<b>Enjoyment</b>				
Social (3 items)	5.67	1.30	-4.31	.00
Individual (4 of items)	6.15	.93		
<b>Participation Influence</b>				
Social (2 of items)	5.67	1.66	4.37	.48
Individual (5 of items)	6.31	.96		

### *Exercise frequency and self-efficacy*

All exercisers reported relatively high self-efficacy scores regardless of whether they actually exercised frequently or not. During the time the questionnaire for this study was distributed (Week 7 and 8 of a ten-week program), attendance had declined, while the self-efficacy of participants remained high. Results from the current study show that in-class self-efficacy is higher than planning and barrier efficacy for all groups. This may be due to the fact that the participants attended the classes in which they felt they were able to succeed. What appeared more difficult was actually overcoming obstacles and planning to attend the fitness classes. Although the values for planning and barrier efficacy were lower than in-class efficacy, they were still relatively high despite sporadic attendance. These findings are interesting as the participants seem to have difficulty with self-regulation. The participants deceive themselves by feeling highly efficacious despite infrequent attendance to group fitness classes.

### *Social interaction and support*

Participants did not appear to engage in exercise sessions in groups for social reasons. This contradicts the findings of Carron et al. (1996) in which social support had a moderate to large effect on group exercise adherence behavior. Perhaps, if participants had more social support and interaction during group exercise classes, exercise adherence would increase.

One important source of support is derived from the group exercise leader. Support from a

positive and influential leader can influence self-efficacy, adherence and positive mood states (Turner et al., 1997). The current study did not control for instructor support/non-support; therefore, it would be interesting to investigate the relationship in greater depth. Instructor variation could also be an influential factor. Group fitness participants may only select classes that are taught by a specific instructor. If that instructor only teaches once per week, for example, then the participant may only exercise once per week. Future studies may want to control for such variables as it may influence attendance.

Lowe et al. (2002) examined the influence of instrumental and affective beliefs on exercise behaviour and intentions. They discovered that the affective beliefs (e.g. pleasant, unpleasant, etc.) predicted intention more powerfully than instrumental beliefs (e.g. healthy, unhealthy, etc.). The current study investigated reasons for enjoyment of group exercise classes. It was discovered that participants enjoyed more instrumental factors (goal achievement, becoming more healthy, etc.) than affective factors (meeting new people, music, etc.). Individual motivational orientations influence participation even in group exercise settings.

### ***Limitations and future directions***

The group size ( $n = 39$ ) of the study was small, which may not have fully reflected the true nature of the total number of group fitness participants ( $n = 400$ ). The use of university-aged, female participants also limits the generalizability of the study. Future studies would benefit in investigating adherence via community exercise centres, in addition to university exercise centres.

A second limitation was the use of self-report methods for both the behavioral (attendance) data and the questionnaire. Attendance data may have been inaccurate due to the fact that participants may have forgotten to record their attendance for each day they took part in exercise classes. Thirdly, the current study did not control for instructor support/non-support; therefore, it would be interesting to investigate this in greater depth as instructor variation could also be an influential factor.

### **CONCLUSIONS**

The current study evaluated group participation, however, it may be questioned as to whether these individuals reflect a true group or more realistically a collective group of individuals. The participants exercised together in the same room with one instructor, but there was minimal interaction

between the group members. Each participant could achieve their goals without the assistance of other group members. The exercises participant may not have perceived herself as part of a group and, therefore, participation was not socially influenced. Analysis of social versus individual factors certainly supported this contention.

More emphasis needs to be placed on socialization factors and group cohesion/group efficacy with regard to group exercise. Group exercise classes continue to be a popular medium for exercise, thus group cohesion and tools to increase cohesion and social support in group exercise classes need to be explored. Perhaps the instructor can be seen as a source of social support for group fitness participants. The instructor may be able to motivate and educate individuals in a group exercise class towards compliance to an exercise program.

Understanding group fitness attendance remains a complicated task. The relationship between action and thought is clearly complex. This group of exercise participants were highly efficacious, and confident regarding their goals and abilities; however, exercise attendance was poor for thirty of the thirty-nine exercisers. Although self-efficacy was rated high overall, planning and overcoming barriers remain obstacles to participants. Individuals enjoyed the exercise program and participated in the classes for individual reasons as compares to social ones. Continued research is necessary to investigate the benefit of social support in a group exercise setting, as well as to better understand how self-regulation through self-efficacy and goal factors influences and is influenced by actual behavior.

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## KEY POINTS

- Exercise behavior did not seem to differentiate individuals in terms of cognitive factors.
- Results show low social focus and high self-efficacy in group exercise classes.
- Continued research is needed to better understand how self-regulation through self-efficacy and goal factors influence and is influenced by exercise behavior.

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