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Determinants of Teachers' Intentions to Teach Physically Active Physical Education Classes

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The purpose of the present investigation was to examine determinants of teachers' intentions to teach physically active physical education classes (i.e., spend at least 50% of class time with the students engaged in moderate to vigorous physical activity). Based on the theories of reasoned action, planned behavior, and self-efficacy, a model was examined hypothesizing that teachers' intentions were determined by subjective norm, attitude, perceived behavioral control, and self-efficacy. Using hierarchical regression analyses, the theories of reasoned action and planned behavior were supported by accounting for 65% of the variance in intention due to the main effects of attitude and subjective norm, as well as their interaction effects. The role of perceived behavioral control and self-efficacy theory were not supported.

Researchers in physical education and the exercise sciences have assembled an impressive body of research demonstrating the importance of physical activity (Caspersen, 1989; Dishman & Buckworth, 1996; Kujala, Kaprio, Sarna, & Koskenvuo, 1998; Ross & Gilbert, 1985; Sallis et al., 1997). People who are physically active have a reduced risk of cardiovascular disease, live longer, and enjoy an enhanced quality of life (Sallis & Owen, 1999).

Unfortunately most adults are inactive or irregularly active (U.S. Department of Health and Human Services [USDHHS], 1996). Children's and adolescents' physical activity habits are also discouraging as many children are inactive and become less active as they grow older (Ross & Gilbert, 1985).

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Scientists investigating the relationships among physical activity, fitness, and health have suggested that school physical education is one institutional setting where most children can be consistently active (Sallis et al., 1997). Most states, for instance, have physical education programs (National Association of Sport and Physical Education [NASPE], 1997) and most children and adolescents attend school (USDHHS, 1996).

Sallis and colleagues (1997) reported that a health based physical education curriculum successfully increased children's physical activity. Almond and Harris (1998) found that all eight intervention based studies they examined were successful in increasing physical activity in physical education classes. A review by Malina (1996) found low to moderate correlations between early and middle childhood, and between adolescent and adult physical activity patterns. Cumulatively, the above findings suggest that physical activity interventions have potential for increasing current, and possibly future, physical activity behaviors although no researchers have specifically examined school physical activity levels in relation to adult physical activity patterns.

Representatives of leading physical education and health and physical activity organizations all recognize the importance of providing physical activity. The Council for Physical Education for Children (Corbin & Pangrazi, 1998), The Healthy People 2010 report (USDHHS, 2000), and The National Center for Chronic Disease Prevention and Health Promotion (USDHHS, 1996) all support promoting physical activity in school physical education.

In brief, school physical education provides an excellent opportunity for children to be physically active (McKenzie et al., 1995). Although we are focusing on physical activity in the current research project, there are many other important outcomes from physical education programs, such as motor skill development, individual development, learning how to learn, and social development. Teachers are usually charged with making curriculum decisions and determining what outcomes are of the most worth for their programs (Ennis, 1992). This often requires choosing among several viable curricular alternatives for their lessons. The decisions teachers make are influenced by their value orientations or the relative importance of various outcome goals for physical education (Ennis, 1992).

Teachers often have several outcome priorities for their programs (Ennis & Zhu, 1991; Kliebard, 1998). In this study, determinants of teachers' intentions to teach classes with high levels of MVPA were investigated. Teaching physically active classes does not preclude teachers from also focusing on other important outcome goals for their programs (e.g., motor skill development). Hopefully, teachers will work toward providing physically active classes (when possible) as well as other important outcome goals with the overriding goal of developing students with the skills, attitudes, knowledge, and behaviors they will need to be physically active for a lifetime (NASPE, 1997).

Teachers are a major determinant of whether children in physical education classes engage in physical activity. More specifically, teachers' intentions to teach classes that are physically active are critical because intentions are major determinants of behavior (Ajzen & Madden, 1986).

Understanding the determinants of teachers' intentions is an important first step toward increasing children's physical activity participation. Unfortunately, little is known about physical education teachers' intentions or the determinants of

those intentions. To address the lack of research in this area, we designed the current study. We used the theory of reasoned action (TRA; Fishbein & Ajzen, 1975), the theory of planned behavior (TPB; Ajzen, 1991), and the self-efficacy theory (SET; Bandura, 1997) to develop our hypotheses.

According to both the TRA and the TPB, teachers with strong intentions to teach physical activity are likely to provide classes with high levels of physical activity (Godin & Shephard, 1986; Wurtele & Maddux, 1987). Intentions, according to the TRA and the TPB, are influenced by the social environment and developed as the result of individuals' attitudes toward the behavior. Teachers with positive attitudes and a supportive social environment (e.g., school administrators) are likely to have strong intentions. Kulinna and colleagues point out the important role of teachers' attitudes in their line of research (Kulinna & Silverman, 1999; Kulinna & Silverman, 2000; Kulinna, Silverman, & Keating, 2000).

Recognizing that not all behaviors are under people's volition led Ajzen (1991) to add perceived behavioral control to the TRA resulting in the TPB. Thus, the TRA is a submodel of the TPB. Teachers with a strong sense of control over their lessons will develop strong intentions. Finally, according to SET, teachers who feel efficacious about providing students with high levels of physical activity will be more likely to do so compared to teachers who are less efficacious (Bandura, 1997).

Although perceived behavioral control and self-efficacy are sometimes considered similar (Ajzen, 1991), their definitions are not identical (Ajzen, 1991; Bandura, 1997) and they are assessed separately (Courneya, 1995; McAuley & Mihalko, 1998). In the current study, perceived behavioral control refers to how much control teachers have over what they teach. In contrast, self-efficacy refers to how confident teachers feel in their ability to teach.

Exercise scientists have supported the TPB (Dzewaltowski, 1989; Gatch & Kendzierski, 1990; Godin, 1994; Kimiecik, 1992; Schifter & Ajzen, 1985; Yordy & Lent, 1993). Gatch and Kendzierski (1990), for instance, reported that subjective norm, attitude, and perceived behavioral control all predicted female students' intentions to participate in aerobics. Godin (1994) reviewed 12 studies and reported that intention accounted for 30% of the variance in exercise behavior indicating that intention is a moderately good predictor of physical activity. Finally, a meta-analysis using 31 exercise based studies also found support for TPB (Hausenblas, Carron, & Mack, 1997).

Research in non-sport and exercise settings has also supported the TRA. In a meta-analysis of 87 studies, Sheppard, Hartwick, and Warshaw (1988) found the average correlation between attitude/subjective norm and intention was 0.66.

Meta-analyses have supported the role that self-efficacy cognitions play in human functioning (Holden, Moncher, Schinke, & Barker, 1990; Multon, Brown, & Lent, 1991; Stajkovic & Luthans, 1998). Stajkovic and Luthans (1998) conducted a meta-analysis of 114 studies and found self-efficacy was a strong predictor of work performance. Multon and colleagues (1991) reported on a meta-analysis of 68 studies examining student self-efficacy and academic performance over a 12-year period and found a significant effect size. Holden and colleagues (1990) conducted a meta-analysis of 25 studies on self-efficacy functioning among children and adolescents while Ross (1994) reported on 87 investigations of teacher efficacy in his meta analysis. Both of these investigations supported the beneficial influence of self-efficacy on human functioning.

Unfortunately, education research in self-efficacy has been plagued by methodological and conceptual shortcomings (Bandura, 1997; Woolfolk & Hoy, 1990). Thus, there is a need for a sound teacher efficacy measure based on the theoretical underpinnings of social cognitive theory (Bandura, 1997).

Numerous definitions of teacher self-efficacy (e.g., Hoover-Dempsey, Bassler, & Brissie, 1987; Hoy & Woolfolk, 1990) have confounded self-efficacy with outcome expectations and locus of control (Guskey & Passaro, 1994) making it difficult to reach substantive conclusions. Nevertheless, it appears that teacher self-efficacy is positively related to perceptions of parental (e.g., home tutoring) involvement (Hoover-Dempsey et al., 1987), administrative attention and support (Ashton & Webb, 1986; Chester & Beaudin, 1996), colleague collaboration (Chester & Beaudin, 1996; Hoy & Woolfolk, 1993) and a rigorous academic climate (Hoy & Woolfolk, 1993).

Researchers examining all variables from TRA, TPB, and SET have supported this approach. Yordy and Lent's (1993) research, for instance, found that intention and self-efficacy were important predictors of exercise status. Combining key constructs from TRA, TPB, and SET is viewed as an excellent method to determine the relative importance of various psychological variables (Dzewaltowski, 1989; Dzewaltowski, Noble, & Shaw, 1990; Hausenblas et al., 1997). Examining the TRA, TPB, and SET has empirical and theoretical support as well as the potential to parsimoniously explain physical education teachers' intentions.

In summary, our goal was to examine the ability of perceived behavioral control, subjective norm, attitude, and self-efficacy to predict perceived behavioral intention of teachers to teach physically active physical education lessons. By examining these theories, it is hoped that support will be provided for their usefulness in understanding teaching in physical education. Furthermore, knowing how important social psychological variables are related to intentions should provide a basis for understanding how teachers develop intentions about what to teach and provide a basis for further investigations of physical education teachers' intentions related to various outcome goals. Findings may also provide beneficial information to teacher education programs.

Method

Participants

Participants were 187 physical education teachers from a Midwestern state. Participants were mostly younger ($M = 39.5$, $SD = 9.4$), Caucasian (93%) females (63%) and males (37%). Educational level was split with approximately 50% of respondents holding bachelor degrees and 50% holding masters degrees. Teachers averaged almost 10 years of experience ($M = 9.5$, $SD = 9.4$), and the majority (80%) of teachers taught physical education classes either daily (40%) or twice a week (40%). Most of the remaining teachers (14%) taught classes once a week.

Many teachers (45%) taught classes that ranged from 40–55 min in length, whereas another significant group (21%) taught classes lasting 26–30 min in duration. Almost half the teachers taught at the elementary level, and the remaining teachers taught either middle or high school or at multiple levels. Finally, 72% of the sample reported that they averaged between 25–36 students per class. The

remaining teachers either taught a large group of students (37–55) or a moderate number of students (20–24). A few teachers reported teaching between 4 and 18 students.

Instrument

The questionnaires employed in this investigation first instructed participants to report their gender, age, ethnicity, educational level, and years of teaching. Grade level, length, and number of physical education classes taught per week and average number of students per class were also estimated by respondents. Questionnaire instructions defined “large amounts of physical activity” as being at least 50% of class time. We used 50% of class time as a reference point to prevent unsystematic measurement error due to respondents defining large amounts of physical activity differently. We also used the criterion of 50% of class time in order to be consistent with the Healthy People 2010 objectives for school physical education programs stipulating that 50% of class time should be spent being physically active (USDHHS, 2000).

Finally, the development of our instruments is consistent with how many researchers over the last 20 years have assessed variables from all the theories used in the current study. Based on this large body of research establishing validity, we are confident of the validity of our present instruments which have been adapted slightly to be valid for physical education teachers.

Behavioral Intention (BI). The BI scale was developed for the current study. Participants responded to a total of 5 items on a 7-point Likert-like scale with anchors of *definitely will not/definitely will* for the statement, “I will try to teach lessons that provide large amounts of physical activity,” and anchors of *definitely do not/definitely do* for the statements, “I intend to teach . . .” and “I plan to teach . . .” The anchors of *definitely false/definitely true* were used for the statements, “I am determined to teach . . .” and “I have decided to teach . . .” We used these statements because they have been recommended by Ajzen (1991), and previous research in the exercise domain has successfully measured intention with these items (Dzewaltowski, 1989).

Self-Efficacy (SE). The SE scale is a 7-item measure specifically designed to assess teachers’ efficacy for teaching physically active physical education classes. We asked participants to rate “How confident are you in your ability to teach lessons that provide physical activity for 20% of the class time?” on a 0–100% scale. Six similar questions substituted the numbers 30%, 40%, 50%, 60%, 70%, and 80% for 20%. Thus, we assessed strength of self-efficacy for seven levels of increasing difficulty. The final strength of self-efficacy score, ranging from 0 to 100, was obtained by adding each strength (0–100) score and dividing by the number of levels (i.e., questions). Our measure of self-efficacy reflects a micro-analytical hierarchical task approach to assessing behavioral self-efficacy (see Bandura, 1997; Maddux, 1995; McAuley & Mihalko, 1998).

Attitude (ATT). The 7-item attitude scale was developed to assess teachers’ attitudes toward providing large amounts of physical activity in their physical education classes. Teachers responded to the statement, “Providing large amounts of physical activity (i.e., at least 50% of class time) during my lessons is . . .” Participants then responded on a 7-point Likert-like scale with anchors listing opposing affective adjectives as recommended by Ajzen and Madden (1986) and

successfully used in previous research (Kimiecik, 1992). The pairs of adjectives used were bad/good, unpleasant/pleasant, harmful/beneficial, useless/useful, unenjoyable/enjoyable, unhealthy/healthy, and not important/important.

Control (CON). This 7-point Likert-like scale was modeled after similar scales used in previous research studies (Ajzen & Madden, 1986; Dziewaltowski et al., 1990; Yordy & Lent, 1993). Participants were asked three questions with the following three stems: "How much control do you have over whether you include . . ." (absolutely no control/complete control), "It is mostly up to me whether I include . . ." (strongly disagree/strongly agree); "If I want to, I can have . . ." (strongly disagree/strongly agree). Each stem was completed with the following phrase ". . . large amounts of physical activity (i.e., at least 50% of class time) in my lessons."

Subjective Norm (SN). As stipulated by the TPB, subjective norm was determined by multiplying respondents' perceptions of important social groups' (i.e., administrators, fellow teachers, parents, and students) beliefs, by their motivation to comply with those beliefs. Based on the four groups noted above (derived from previous research studies: see Chester & Beaudin, 1996; Hoover-Dempsey et al., 1987; Hoy & Woolfolk, 1993), we developed an 8-item scale consisting of four pairs of questions. An example of one pair of questions, with appropriate anchors following, stated, "The administrators (e.g., principal, supervisor) at my school believe that it is important that I include large amounts of physical activity (i.e., at least 50% of class time) in my lessons" (strongly disagree/strongly agree) and "How motivated are you to comply with the belief of your school's administrators (e.g., principal, supervisor) that you should include large amounts of physical activity (i.e., at least 50% of class time) in your lessons?" (not at all motivated/extremely motivated). Three subsequent pairs of questions replaced "administrators" with teachers, parents, and students. Participants responded on a 7-point Likert-like scale.

Procedures

Physical education teachers ($n = 615$) belonging to a Midwestern state association affiliated with the American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) were mailed a packet of materials containing a cover letter explaining the study, an informed consent form, instructions for completing materials, all questionnaires, and a self-addressed stamped envelope. Participants were assured of anonymity and confidentiality. The return rate ($n = 187$) was 30% with all participants providing informed consent.

Researchers have had difficulty determining what constitutes an adequate return rate for mail surveys, although 50% is often used as a benchmark (Erdos, 1990). Thus, the current return rate is low and limits the ability to generalize our findings.

Data Analysis

We first examined the psychometric properties of the measurement instruments by examining internal and test-retest reliability. Descriptive statistics were calculated by summing items and dividing this sum by the number of items per subscale. This procedure insures that the means and standard deviations are consistent with the likert scale scoring procedure described for each scale in the

instrument section and enhances interpretability. Finally, we conducted our correlational and regression analyses.

Results

Internal and Test-Retest Reliability

Coefficient alpha (Cronbach, 1951) for each of the scales shared a high level of inter-item agreement. The alpha coefficients for behavioral intention (0.98), control (0.89), subjective norm (0.86), attitude (0.88) and self-efficacy (0.85) were all considered adequate based on Nunnally's (1978) criteria of 0.70.

Fifteen subjects completed all measures a second time 2 weeks after the initial data collection. Intraclass correlations for behavioral intention ($r = 0.76, p < .01$), control ($r = 0.64, p < .01$), subjective norm ($r = .70, p < .01$), and attitude ($r = .74, p < .01$) were considered adequate. We did not assess test-retest reliability for self-efficacy because it is situation specific.

Descriptive Statistics

Means, standard deviations, and range of scores for all psychological variables are presented in Table 1. Teachers had very positive attitudes, and strong intentions, toward teaching classes with large amounts of physical activity. Teachers also reported a strong sense of control in being able to teach classes that included high levels of physical activity and to teach it efficaciously. Finally, teachers indicated that they were motivated to comply with important social groups' wishes that they should teach large amounts of physical activity. Means, standard deviations, and range of scores for the 4 groups constituting subjective norm can be found in Table 2.

Correlations Among Variables in the Model

Correlations among the variables can be found in Table 3. Additional correlational results indicated that intention was differentially related to the four sources of subjective norm. For instance, the pattern of correlations indicated some similarity ($r = 0.46\text{--}0.55, p < .01$) among the adult subjective norm sources (i.e., parents, administrators, colleagues) compared to students ($r = 0.65, p < .01$).

As a result of the above observation, we examined the difference between the correlation for intention and subjective norm for students compared to the next largest ($r = 0.55, p < .01$) correlation (i.e., parents) using a Fisher's z transformation (Cohen & Cohen, 1983). We found a small to moderate effect size (Cohen, 1988) indicating that teachers' intentions were more strongly related to student subjective norm than they were to parent subjective norm and thus, by extension, to the other two adult groups (i.e., administrators, colleagues).

Hierarchical Regression Analyses

Two hierarchical regression analyses were conducted. In the first regression, attitude and subjective norm were the first variables entered as a block, to evaluate the TRA. The TPB was then evaluated by entering perceived behavioral control on the second step. Self-efficacy was entered next to determine if self-efficacy would

Table 1 Means, Standard Deviations, and Ranges for all Variables in the Model

Variable	<i>M</i>	<i>SD</i>	Ranges
BI	6.5	.8	2.0–7.0
ATT	6.5	.6	3.9–7.0
SN	36.9	9.5	8.4–49.0
SE	90.0	11.9	35.0–100.0
PBC	6.7	.6	4.0–7.0

Note. *N* = 187; BI = Intention, ATT = Attitude, SN = Subjective Norm, PBC = Perceived Behavioral Control, SE = Self-Efficacy.

Table 2 Means, Standard Deviations, and Ranges for Subjective Norm Sources

Variable	<i>M</i>	<i>SD</i>	Ranges
Students	5.8	1.4	1.0–7.0
Parents	5.0	1.6	1.0–7.0
Colleagues	5.1	1.8	1.0–7.0
Administrators	5.2	1.7	1.0–7.0

Table 3 Correlations Among the Variables in the Model

	BI	ATT	SN	SE
BI				
ATT	.67**			
SN	.64**	.57**		
SE	.21**	.30**	.26**	
PBC	.17*	.09	.15*	.06

Note. BI = Intention, ATT = Attitude, SN = Subjective Norm, SE = Self-Efficacy, PBC = Perceived Behavioral Control.

* $p < .05$, ** $p < .01$, *df* = 185

contribute above and beyond the TRA and the TPB variables. All two-way interactions were entered in the fourth step. Potential three- and four-way interactions were not evaluated.

Table 4 presents the results of this analysis. Interestingly, the TRA model predicted behavior as well as the TPB and SET augmented TRA model. Perceived behavioral control and self-efficacy did not contribute significantly to the prediction of perceived behavioral intention above and beyond the TRA variables because their entry was not statistically significant. Reinforcing this observation were the results of the two-way interaction terms wherein only the two-way interaction between attitude and subjective norm contributed unique variance to the prediction of perceived behavioral intention. A substantial portion of the intention variance was accounted for in the model ($R^2 = 0.65$).

Because of the difference in the correlation between student subjective norm and intention and the correlations for the three adult sources of subjective norm and intention, we conducted a second regression analysis. We conducted this regression in order to examine how much variance was accounted for from subjective norm due to student influence, versus subjective norm due to adult influence (i.e., parents, administrators, and colleagues). A second purpose of this analysis was to determine the independent contribution of attitude toward predicting intention.

We first entered attitude, followed by student subjective norm, and then adult subjective norm as represented by parents, colleagues, and administrators. Table 5 contains the results of this analysis. Attitude accounted for 45% of the variance in intention followed by a contribution of 5% by student subjective norm and 5% by adult subjective norm.

Table 4 Results of Hierarchical Regression on the Prediction of Behavioral Intention Using TRA, TPB, and SET

Step	Variable	R ²	F	df	p <	ΔR ²	B at entry	p at entry
1	ATT	.56	198.45	2,313	.001	.56	.53	.001
	SN						.29	.001
2	PBC	.61	160.96	3,312	.001	.05	.25	.001
3	SE	.61	122.78	4,311	.001	.00	.07	.051
4	ATT × SN	.65	56.39	10,305	.001	.04	1.00	.008
	ATT × PBC						-.18	.725
	ATT × SE						.29	.573
	SN × PBC						-1.33	.000
	SN × SE						-.16	.640
	PBC × SE						.87	.026

Note. TRA = Theory of Reasoned Action, TPB = Theory of Planned Behavior, SET = Self-Efficacy Theory, ATT = Attitude, SN = Subjective Norm, PBC = Perceived Behavioral Control, SE = Self-Efficacy.

Table 5 Results of Hierarchical Regression on the Prediction of Behavioral Intention Using the TRA

Step	Variable	R ²	F	df	p <	ΔR^2	B at entry	p at entry
1	ATT	.45	149.19	1,185	.001	.45	.67	.001
2	SN*	.50	92.33	2,184	.001	.05	.35	.001
3	SN**	.55	73.42	3,183	.001	.05	.26	.001

Note. TRA = Theory of Reasoned Action, ATT = Attitude, SN* = Subjective Norm of Students, SN** = Subjective Norm of Adults

Discussion

The major purpose of this investigation was to determine the antecedents of perceived behavioral intention using variables representing the TRA, TPB, and SET. We found strong support for the TRA and the TPB and specifically attitude and subjective norm, as both variables accounted for 55% of the variance in perceived behavioral intention due to their combined main effects. A further 10% of the variance was accounted for by their interactive effects. Neither perceived behavioral control, representing the TPB, or self-efficacy (i.e., SET) contributed to the prediction of perceived behavioral intention.

The second regression analyses provided further insight regarding the relative contributions of attitude and subjective norm sources. For instance, attitude accounted for a major part (45%) of the variance in intention. Subsequent variance accounted for by students, via subjective norm, was equal (5%) to that attributable to all 3 combined (5%) adult sources of subjective norm.

Physical education teachers who had positive attitudes toward teaching highly active physical education classes or perceived that their fellow teachers, administrators, parents, and particularly students wanted them to teach highly active classes were likely to report strong behavioral intentions toward teaching active classes. Teachers who expressed less positive attitudes or perceived that important people (e.g., students) in their social environment (i.e., subjective norm) did not hold the belief that it was important for them to teach active classes were less likely to indicate a strong behavioral intention to teach those types of classes.

The interaction between subjective norm and attitude suggested that the effects of attitude and subjective norm were strongest when teachers expressed both a positive attitude and perceptions of a social environment (i.e., subjective norm) that strongly endorsed highly active classes.

Students' subjective norms were as predictive of teachers' intentions as were all 3 adult social norm sources (e.g., parents). The frequent contact that teachers have with students and the ability that students have to create a positive or negative class environment would seem to provide a plausible explanation for this relationship. The powerful influence of students on teachers' decisions has been demonstrated in previous studies of mathematics (Raymond, 1994) and physical education teachers (Cothran & Ennis, 1997). Additionally, teachers may influence

students' behaviors, which may subsequently be perceived by teachers as a salient set of beliefs and motivations (i.e., subjective norm) toward physically active classes. As Bandura (1997) explains, the paths of influence among people is typically bidirectional. Clearly teachers should be aware of the potential influence students can have on shaping their behaviors (e.g., lesson content) as well as how they may influence students' beliefs and motivations.

Teachers are also sensitive to the wishes of adult figures such as fellow teachers, parents, and administrators and strive, in part, to comply with these adult figures' educational desires for their students. These results substantiate position statements by health and physical education organizations (Corbin & Pangrazi, 1998; NASPE, 1997; USDHHS, 1996) supporting the importance of enlisting significant others to promote physical activity. For instance, improved communication (e.g., letters to parents) at the community level as well as political lobbying (e.g., letters to state representatives) are worthy efforts designed to influence the social and political forces that impact teachers.

The results of the regression analyses showed that self-efficacy and perceived behavioral control failed to contribute to the prediction of intention. As the descriptive results illustrate, most teachers reported high levels of perceived behavioral control as well as a strong sense of self-efficacy. It is possible that because most teachers felt in control and capable of teaching lessons characterized by high levels of physical activity, these cognitions exerted little influence in their decision (i.e., intention) to teach those type of classes. At the same time it should be recognized that teachers' positive attitudes and receptiveness to social influence didn't limit the ability of these variables to predict intention.

It's certainly conceivable that if more teachers felt a lack of control for the content they taught or harbored feelings of limited efficacy, then both the TPB and SET may have been more relevant models. From an applied perspective, these results indicate that teachers believe they can teach highly active lessons and that lesson content is up to their discretion.

It is important to recall that teachers often have multiple and sometimes competing objectives for their physical education programs. Teachers may focus on important curricular objectives other than physical activity. For example, increased physical activity may simply be a complimentary benefit stemming from helping students develop important lifelong motor skills and structuring the practice conditions to support high levels of successful student practice. Similarly, physical activity levels may, at times, be largely irrelevant for teachers helping students learn important social skills through physical education. In the current study, teachers who had stronger attitudes about the importance of physical activity as an outcome goal for physical education were more likely to intend to provide students with large amounts of MVPA in their classes.

The self-efficacy level of the teachers in this study reflected a high degree of confidence in their ability to construct and deliver lessons that provided high levels of activity for at least 50% of the class time. Although this result is certainly encouraging, it is puzzling because it is contrary to research findings (Martin & Kulinna, 2000) with a similar population of teachers who believed a lack of knowledge about how to teach physically active lessons represented a barrier to their ability to teach. Strong expressions of efficacy are ideally rooted in a realistic appraisal of one's knowledge and capabilities (Bandura, 1997). Self-efficacy judgements, however, can often be rooted in self-knowledge based on perceptual

distortions, faulty cognitive processing, or selective memory recall (Bandura, 1997). Future investigations aimed at understanding how teachers develop self-efficacy judgements in physical education settings would clearly provide insight into this apparent contradiction.

In summary, three significant points from the current investigation warrant highlighting. First, we found clear support for the theories of reasoned action and planned behavior as evidenced by the predictive power of subjective norm and, particularly, attitude on intentions. Although we supported the theory of planned behavior because attitudes and subjective norm were predictive, we did not support the role of perceived behavioral control. As Ajzen (1991) acknowledges, when perceived behavioral control is not relevant, then its influence is negligible. Self-efficacy theory was not supported. Second, within the various social groups constituting the measurement of subjective norm, students were as strongly related to teachers' intentions as were all three adult sources of influence (e.g., parents).

Finally, some limitations and future research directions warrant discussion. The potential conflicting goals in physical education programs that may influence teachers' intentions to provide physically active classes were not addressed in this study. We also did not test the intention-teacher behavior link, and research efforts examining this critical relationship are important. Furthermore, because student development is the ultimate educational goal, research examining student behavior is vital. Additional research efforts replicating the current study with larger and more diverse groups is recommended. Finally, investigations focusing on the determinants of other important curriculum objectives (e.g., intentions to teach social skills) would certainly complement and expand our current findings.

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