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A Multi-theoretical Analysis of Motivation in College Activity Courses

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A MULTI-THEORETICAL ANALYSIS OF MOTIVATION IN COLLEGE ACTIVITY COURSES

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ABSTRACT

College activity courses present an opportunity for physical educators to increase physical activity among young adults. Facilitating motivation in activity courses may lead to increased engagement and future participation in physical activities. The purpose of this study was to examine motivation in college activity courses utilizing a multi-theoretical approach in order to assess changes in physical self-concept and intention for participation in physical activities. It was hypothesized that a task-involved motivational climate would predict need satisfaction, which would in turn predict self-determined motivation. It was further hypothesized that this motivational sequence would predict changes in physical self-concept and intention to engage in physical activity.

Participants were 370 college students (300 female, 70 male; *M*= 20.4±1.3 years) enrolled in physical activity classes at a large university in the Southeastern United States. They completed questionnaires assessing physical self-concept and intention at the beginning of the semester. At the end of the semester, participants completed questionnaires assessing physical self-concept, intention, perceptions of the motivational climate, basic psychological need satisfaction, and self-determined motivation.

Path analysis and bivariate correlations were used to analyze the relationships among variables. Residual gain scores were calculated for physical self-concept and intention as a measure of change over time (Prochaska, Velicer, Nigg, & Prochaska, 2008). In path analysis, the hypothesized model represented a good fit for the data (S-B . χ^2 (8) 5.72, *p*= .68; CFI= .99; RMSEA= .01; SRMR= .026). The motivational sequence represented by the model predicted changes in physical self concept, but not intention. The modification index indicated that a direct path between basic psychological need satisfaction and intention would improve the

hypothesized model (Beta= .33; p< .01). A task-involved climate had a significant indirect effect on self-determined motivation and changes in intention. An ego-involved climate had a negative relationship with basic psychological need satisfaction, self-determined motivation, and intention.

Results of this study highlight the importance of facilitating a task-involved climate that satisfies basic psychological needs in order to elicit positive changes in physical self-concept and intention to participate in physical activities among young adults enrolled in college activity courses.

INTRODUCTION

Research has documented a lack of physical activity among college students can lead to increased health risks in later life (Centers for Disease and Control, 1997). Healthy People 2020 aims to reduce the proportion of adults who do not participate in leisure time activity and increase the proportion of adults who meet national physical activity guidelines (National Health Interview Survey, 2011). The college campus presents an opportunity for physical educators to intervene and influence physical activity behaviors of young adults. Students at colleges and universities are provided with countless opportunities to be active such as intramural sports, on-campus fitness facilities, and fitness clubs. Many colleges offer a wide variety of activity courses such as tennis, badminton, jogging, bowling, Pilates, weight training, golf, yoga, aerobics, soccer, skiing, and cycling as elective credits. Some degree programs may even require students to enroll in activity courses to graduate. A study by Cardinal, Sorenson, and Cardinal (2012) found that 39.55% of American four-year colleges require undergraduates to earn physical education credits.

A college activity course gives a physical educator an opportunity to teach young adults the fundamental skills and concepts necessary for them to successfully participate in a sport or leisure activity after the course is completed. Also, activity courses enable students to be more active while they are enrolled, because learning these activities requires bodily movement and physical exertion. Therefore, determining ways to facilitate motivation and encourage students to engage in these activities both during and after college should be a topic of interest among physical educators and public health professionals (Ntoumanis, 2001; Sallis & Mckenzie, 1991; Sallis et al., 2012; National Health Interview Survey, 2011).

Literature Review

When examining motivation, contemporary theorists utilize an interactionalist approach, acknowledging the influence of both individual characteristics and social-environmental factors on motivated behavior (Weiss & Ferrer-Caja, 2002). Thus, an individual's behavior does not rely exclusively on either personal traits or social interactions, but rather, both working together in combination. Several theoretical frameworks for examining motivation and behavior have been developed. These frameworks help guide and direct researchers as they investigate phenomena that occur in society. Self-concept theory, achievement goal theory, and self determination theory provide a basis in this study to examine how personal attributes and the physical education environment interact to influence behavior among college students enrolled in activity courses.

Self-Concept Theory

Global self-concept, often used interchangeably with self-esteem, is an individual's perceptions of him/herself. These perceptions are formulated through interactions with the environment and are influenced by contextual forces as well as significant others. Marsh (1997) suggested that self-concept research prior to 1980 largely focused on between-network studies rather than within-network investigations. That is, most researchers examined how self-concept was related to other constructs rather than first examining the characteristics of the primary construct in question. Through intuition, researchers knew that self-concept was psychologically significant and influenced behavior, yet the theoretical underpinnings of self-concept had not been defined. To address the "lack of theoretical basis in most studies, the poor quality of measurement instruments used to assess self-concept, methodological shortcomings, and a general lack of consistent findings" (Marsh, 1990, p. 79), Shavelson and his colleagues (1976)

conceptualized self-concept by delineating seven features: 1) self-concept is organized and structured; 2) self-concept is multifaceted; 3) self-concept is hierarchical in that general self-concept is at the apex and situational self-concepts are at the lower levels; 4) general self-concept is considered stable, but as one descends the hierarchy, situation-specific self-concept becomes less stable; 5) self-concept is developmental and changes as one grows older; 6) self-concept is evaluative, or based on evaluations made against an absolute or relative standard; and 7) self-concept is differentiable in that specific self-concepts are closely linked to the situations in which they occur.

Originally viewed as a single dimension, the work of Shavelson et al. (1976) facilitated a shift in the conceptualization of self-concept; from a unidimensional to a multidimensional, hierarchical model of self-concept. Because theory and measurement are intertwined (Marsh, 1997), valid instruments, such as Marsh's self-description questionnaires (Marsh, 1996; Marsh, Martin, & Jackson 2010) and Fox's self-perception profiles (Fox & Corbin, 1989), have since been developed in order to measure self-concept and its subdomains in a way that reflects its multidimensional nature.

Physical self-concept originated from the multidimensional model of self-concept (Shavelson et al., 1976), and is defined as an individual's perceptions of him/herself in the physical domain (Marsh, 1990). Importantly, the domains and subdomains in the levels beneath general self-concept adhere to the same conceptual underpinnings that Shavelson and colleagues (1976) originally established. Along with social and emotional self-concept, physical self-concept is designated as a non-academic domain of global self-concept. Physical self-concept is then subdivided further into physical ability and physical appearance. Within these subdivisions, physical self-concept consists of nine specific components: strength, body fat, activity,

endurance/fitness, sports competence, coordination, health, appearance, and flexibility (Marsh et al., 2010).

Recent research has linked physical self-concept with several variables, outcomes, and patterns of behavior. In their meta-analysis of studies examining physical activity and physical self-concept, Babic and colleagues (2014) presented evidence for a positive association between physical activity and physical self-concept among children and adolescents. Studies involving adolescent females have linked changes in physical activity to changes in physical self-concept (Lindwall, Asci, & Crocker, 2014), while a direct relationship between the two variables has also been demonstrated (Beasley & Garn, 2013). Craven and Marsh (2008) suggested enhancement of physical self-concept can be a catalyst for breaking sedentary patterns of behavior. Also, college students who perceived a caring, task-involved climate in their activity class were more likely to report higher levels of physical self-concept (Brown & Fry, 2014). Furthermore, enhancement of physical self-concept has been associated with positive outcomes regarding physical fitness, enjoyment, anxiety, and depression (Craven & Marsh, 2008; Crocker et al., 2003; Crocker, Sabiston, Kowalski, McDonough, & Kowlaski, 2006). Taken together, these studies show that physical self-concept can have a significant influence on a number of health outcomes. Therefore, it is important for researchers and practitioners to determine ways to facilitate increases in physical self-concept (Craven & Marsh, 2008).

Achievement Goal Theory

Achievement goal theory (Nicholls, 1984, 1989) can be used to examine the goal involvement of an individual or context. Examining the goal involvement of a person or context can provide insight about self-perceptions of ability and motivation. Specifically, an individual may be ego- or task-involved during physical education class. That is, a student's behavior may

be driven by the desire to attain norm-referenced standards (i.e. outperforming others) or by internal criteria (i.e. self-improvement). Likewise, the physical education environment can be structured to be ego-involved (i.e. focused on performance and competition) or task-involved (i.e. focused on skill mastery). The degree to which the environment facilitates student comparison or personal mastery is referred to as the motivational climate (Duda, 2005; Ntoumanis & Biddle, 1999).

The motivational climate can be thought of as the overriding psychological environment. That is, the motivational climate may cause students to be more focused on exhibiting internally referenced competence than externally referenced competence and vice versa (Ames, 1992; Duda, 2005). Findings have revealed that a task-involved motivational climate is associated with positive affect, belief in the efficacy of effort, adaptive coping strategies, improved performance, and persistence (Duda, 2005; Ntoumanis & Biddle, 1999; Papaioannou, 1995; Seifriz, Duda, & Likang, 1992). These studies also indicate positive patterns of behavior are less likely to occur in ego-involved climates (Solmon, 1996).

Competition in physical education is not always detrimental to students, but teachers need to careful about how they use competition. For example, competition is appropriate if the teacher is able to maintain personal improvement as the primary goal. However, a competitive environment often causes success to be defined as attaining elite standards (i.e. outperforming everyone else). Although these heightened standards may be attainable for a few highly-skilled students, many students, especially low-skilled students, may find the environment to be threatening. Establishment of internally referenced standards enables all students to achieve success by experiencing self-improvement (Solmon, 2006). Clearly, the consequences of a task-involved climate are beneficial for both students and teachers. Therefore, physical educators

should structure the motivational climate so that it is task-involved. Within this context, identifying ways to create a task-involved climate becomes an important endeavor.

Basic Needs Theory

Within self-determination theory [SDT], basic needs theory [BNT] has the potential to shed light on the relationships between the environment, the individual, and motivated behavior (Ryan & Deci, 2002). BNT underscores the importance of need satisfaction in attaining psychological well-being (Deci & Ryan 1991; Deci & Ryan, 2000; Garn, McCaughtry, Martin, Shen, & Fahlman, 2012). Deci and Ryan (1985) identified three key nutriments for attaining psychological well-being. Competence refers to one's sense of effectively interacting with the environment. Autonomy refers to a sense of being the source of one's actions. Finally, relatedness refers to a sense of belongingness and being cared for by others. Psychological well-being (i.e. satisfaction of competence, autonomy, and relatedness) has been associated with intrinsic motivation and positive behaviors in physical activity settings (Cox & Williams, 2008; Zhang, Solmon, Kosma, Carson, & Gu, 2011; Ryan & Deci, 2007). From a broad view of SDT, one can conclude that when an activity satisfies the needs of competence, autonomy, and relatedness, the individual will be intrinsically motivated to continue participation in that activity (Deci & Ryan, 1985, 2000).

Much research involving psychological need satisfaction utilizes Vallerand's Hierarchical Model of Motivation (1997), thereby demonstrating the interactions between the environment, the individual, and behavior in the physical education setting. The Hierarchical Model of Motivation follows the motivational sequence: social environmental factors > psychological need satisfaction > types of motivation > consequences (Vallerand, 1997, 2000; Vallerand & Lalande, 2011). The inclusion of motivation type in the sequence corresponds with organismic integration

theory [OIT], a mini-theory of SDT (Ryan & Deci, 2002). OIT asserts that three types of motivation, amotivation, extrinsic motivation, and intrinsic motivation, form the basis for a continuum of internalization. Furthermore, the natural process in which people transform external regulation into self-regulation is classified into six levels or types: a) non-regulation or amotivation, b) external regulation (having to do something), c) introjected regulation (feeling like you ought to do something), d) identified regulation (engaging out of choice, because you want to), e) integrated regulation (valuing an activity and integrating it to self-identity); and f) intrinsic motivation (engaging in an activity as an end in itself). In summary, certain outcomes can be explored through the use of models to see if specific pedagogical decisions or environmental factors lead to specific outcomes through the mediation of need satisfaction and motivation (Vallerand & Lalande, 2011).

Research evidence supports the notion that mastery climates (i.e. emphasizing improvement) enhance perceptions of competence, often leading to increased levels of intrinsic motivation. Positive outcomes associated with these models include effort, perseverance, enjoyment in physical education, happiness, intention to exercise, preference for challenging tasks, and concentration (Ferrer-Caja & Weiss, 2000; Gråstén, Jaakkola, Liukkonen, Watt, & Yli-Piipari, 2012; Ntoumanis, 2001; Standage, Duda, & Ntoumanis, 2003).

Satisfaction of autonomy has also been linked to intrinsic or self-determined motivation through the use of models (Standage et al., 2003; Cox & Williams, 2008). An origin climate (Standage et al., 2003) and perceived choice (Ntoumanis, 2001) have been identified as factors that increase perceptions of autonomy. However, Ntoumanis (2001) did not find a significant link between autonomy and intrinsic motivation in his model. In addition, the physical school environment, such as having a variety of equipment and facilities available for physical

education, has been found to influence intrinsic motivation through the mediation of autonomy satisfaction (Rutten, Boen, & Seghers, 2012), but the behavioral outcomes associated with an autonomy-enhancing physical school environment were not included in the model's design.

Factors such as teacher support, cooperative learning, peer acceptance, and friendship quality have been found to increase feelings of relatedness (Cox, Duncheon, & McDavid, 2009; Ntoumanis, 2001). Findings concerning the relationship between relatedness and intrinsic motivation are mixed (Cox & Williams, 2008; Rutten et al., 2012), but some studies have confirmed that relatedness predicts intrinsic motivation. Motivational outcomes and behaviors tested in these models include enjoyment, intention, and effort (Cox & Williams, 2008; Cox et al., 2009; Ntoumanis, 2001; Standage et al., 2003).

Thus, the use of models has highlighted the motivational significance of several social environmental factors and need-supporting variables, as well as the powerful mediation of need satisfaction in producing positive behavioural outcomes. In response to these findings, physical education teachers have been charged with structuring the environment and teaching in a way that satisfies the innate psychological needs of competence, autonomy, and relatedness.

Purpose

The purpose of my thesis project was to examine motivation in college activity courses using the theoretical frameworks described above. Specifically, I investigated the relationships between the environment, the individual, and behavior by utilizing constructs originating from achievement goal theory and self-determination theory. By examining these relationships, I determined the effectiveness of college activity courses in influencing changes in physical self-concept and future participation in physical activities.

Previous research indicates self-perceptions greatly influence behavior. Physical-self concept, or how an individual views him/herself in the physical domain, may influence how a person engages in physical activities. A person with a positive physical self-concept will feel more confident about their capabilities when exercising or participating in activities and sports. Therefore, it is possible that increasing physical self concept may give way to increased physical activity; a key objective for physical educators and health professionals.

The dichotomous view of achievement goal theory (Nicholls, 1984, 1989) examines the task orientations or ego orientations that individuals adopt in an achievement setting. Likewise, the motivational climate of a physical education class, which is controlled by the teacher, can be focused on mastery (task-involved) or on performance and competition (ego-involved). For example, a physical education teacher can choose to work on improving basketball skills through drills, repetition, modified games, and practice or by playing a 5 v 5 basketball game. These decisions about environmental structure can influence the degree to which students choose to adopt either a task or ego orientation. Thus, in college activity courses, the instructor is held responsible for the motivational climate and the degree to which students are focused on personal improvement or outperforming others.

BNT (Deci & Ryan, 1985, 2000) suggests that satisfaction of competence, autonomy, and relatedness leads to intrinsic motivation and psychological well-being. Physical educators can structure the environment in a way that promotes feelings of success and competence, makes students feel in control of their behavior, and helps students feel connected to others. Studies utilizing structural equation modeling often combine BNT and OIT to show that need satisfaction predicts intrinsic motivation, which in turn can lead to many adaptive patterns of

motivated behavior. Therefore, it would be beneficial for teachers to create a need-satisfying environment so that these positive behaviors can be elicited.

To examine motivation in college physical activity courses, the hypothesized model presented in Figure 1, which was based on achievement goal theory, basic needs theory, organismic integration theory, and Vallerand's (2000) motivational sequence, was tested. Changes in physical self-concept and intention over the course of a semester were measured as the outcome variables. I examined the effectiveness of college activity courses in influencing future participation in physical activities and improving physical self-concept. Specifically, I hypothesized the following: (1) a motivational climate that is task-involved would predict need satisfaction; (2) need satisfaction would predict self-determined motivation, as measured by the relative autonomy index (RAI); and (3) the motivational sequence would predict changes in intention and physical self-concept.

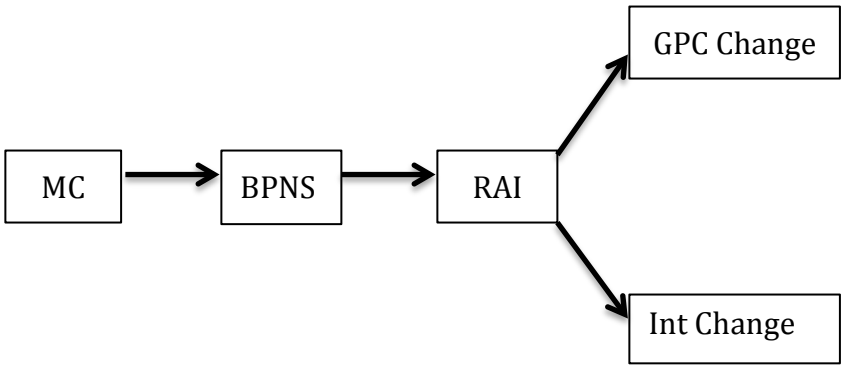

Figure 1. Hypothesized Model
Note: MC= motivational climate; BPNS= basic psychological need satisfaction; RAI= relative autonomy index; GPC Change = global physical self-concept residual gain scores; Int Change = intentions for physical activity residual gain scores.

METHODS

Participants and Setting

A sample of 370 college students (300 female, 70 male) was used in this study. All participants, aged 18 to 24 (M=20.4, SD=1.3), were enrolled in a college activity course at a public university in the southeastern United States. Questionnaires were collected from five different activity courses (weight training, zumba, aerobic dance, yoga, and jogging) and 13 different class sections. Approximately 72% of the participants were kinesiology majors, and as such, were enrolled in the course as a requirement of their degree plan, while the other 28% were non-kinesiology majors and earned elective credits through their enrollment. The participants reported their ethnicity as white/Caucasian (71%), black/African American (17%), or Other (12%). Approximately 37% were seniors, 34% were juniors, 28% were sophomores, and less than 2% were freshmen.

All instructors had experience teaching physical activities. Activity courses at this university met three days per week for 50 minutes. The typical structure for activity courses consisted of the instructor taking attendance, a warm-up routine, a practice or competition period, and dismissal from class.

Procedure

IRB approval was granted before data were collected, and all participants provided consent before completing questionnaires. Data were collected by the researcher at the beginning of class, at the location where the classes were normally held. Questionnaires were administered in September 2014 (Time 1) and November 2014 (Time 2). At Time 1, participants completed questionnaires assessing physical self-concept and intention. At Time 2, participants completed questionnaires assessing physical self-concept, intention, motivational climate, basic

psychological need satisfaction, and self-determined motivation. Questionnaires took less than twenty minutes to complete.

Instrumentation

Five instruments were used in the study. Sample items from each of the subscales for these instruments are presented in Table 1.

Physical Self-Concept

Marsh (1996) developed the Physical Self Description Questionnaire and its short form (PSDQ-S; Marsh, Martin, & Jackson, 2010) based on nine specific components of physical self-concept, a global physical self-concept scale, and a global self-esteem scale. Marsh et al. (2010) demonstrated the reliability and validity of all PSDQ-S scales in a sample of university students. The three-item global physical self-concept scale, consisting of declarative statements to which participants respond on a scale ranging from one (false) to six (true), was selected for this study.

Motivational Climate

The 33-item Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2; Newton, Duda, & Yin, 2000) was employed to assess students' evaluations of the prevailing motivational climate in their activity course. The questionnaire wording was modified accordingly. Participants responded on a Likert scale ranging from one (strongly disagree) to five (strongly agree). Previous studies conducted in sport and other physical activity settings have supported the reliability and factorial validity of the PMCSQ-2 (Newton et al., 2000).

Basic Psychological Need Satisfaction

Perceived competence satisfaction was assessed using five items from the competence subscale of the Intrinsic Motivation Inventory (McAuley, Duncan, & Tammen, 1989). Perceived autonomy was measured using three items developed by Sheldon and colleagues (2001). The

Table 1. Summary of Instrumentation

Questionnaire and Subscales	Stem and sample items	Response Scale
PSDQ-S		
-Global Physical	"Physically, I am happy with myself"	"false" (1) to "true" (6)
PMCSQ-2	"In this activity course…"	"strongly disagree" (1) to "strongly agree" (5)
-Task	**"**The instructor makes sure students improve on skills or movements they're not good at"	1-5
-Ego	**"**The instructor praises students only when they outperform other students"	1-5
Need Satisfaction		
-Competence	"I am satisfied with my performance in this activity"	"strongly disagree" (1) to "strongly agree" (7)
-Autonomy	In this activity course, I feel… "Free to do things my own way"	"Not at all" (1) to "Very much" (5)
-Relatedness	In this activity course, I feel… "Understood"	"strongly disagree" (1) to "strongly agree" (5)
BREQ		"Not true for me" (0) to "Very true for me" (4)
-External	"I exercise because other people say I should"	0-4
-Introjected	"I feel guilty when I don't exercise"	0-4
-Identified	"I value the benefits of exercise"	0-4
-Intrinsic	"I exercise because it's fun"	0-4
Intention	"I intend to engage in this activity after this class is over"	"strongly disagree" (1) to "strongly agree" (5)

Need for Relatedness Scale (Richer & Vallerand, 1998) was used to assess perceptions of relatedness. These scales have been used extensively among adolescents and adults in physical activity settings. For the purpose of this study, the stem "In this physical education class" was changed to "in this activity course", and the term "physical education" was changed to "this activity" or "physical activity" where necessary. For the purpose of this study, these scales were combined to create one need satisfaction variable. Because the competence scale ranged from one to seven, a rescaling formula was utilized which converted the relatedness and autonomy

scales to equivalent ranges. Specifically, Little (2013) provided implementation instructions for the formula: $R7 = (((O5-1)/4)*6)+1$.

Behavioural Regulation

The Behavioural Regulation In Exercise Questionnaire (BREQ) measures the continuum of behavioural regulation in exercise psychology research. The original BREQ (Mullan, Markland & Ingledew, 1997) was developed to measure external, introjected, identified and intrinsic forms of regulation of exercise behaviour based on Deci & Ryan's (1985, 1991) continuum, described by organismic integration theory. The BREC was employed to measure behavioural regulation along the continuum in this sample. Responses ranged from one (not true for me) to four (very true for me). Based on these responses, Relative Autonomy Index (RAI) was calculated for each participant. RAI is a single score derived from the subscales that gives an index of the degree to which respondents feel self-determined. Each subscale score is multiplied by its weight (external regulation= -2; introjected regulation= -1; identified regulation= 1; intrinsic regulation= 2), and then these weighted scores are summed. Higher, positive scores indicate greater relative autonomy while lower, negative scores indicate more controlled regulation (Mullan et al., 1997).

Intention

Intention to engage in the activity at the conclusion of the course was measured using a three items adapted from Lazuras and colleagues (2011). Responses to this item ranged from 1 (strongly disagree) to 5 (strongly agree).

Data Analysis

Descriptive statistics, bivariate correlations, and internal consistency estimates were calculated for all variables (SPSS 21.0). Standardized residual gain scores were calculated for

physical self-concept and intention as a measure of change over time (Prochaska, Velicer, Nigg, & Prochaska, 2008). Path analysis (EQS 6.2) was used to examine the hypothesized model. The following indices were used to determine fit of data to the proposed model: a) Satorra-Bentler Chi Square; b) Comparative Fit Index [CFI]; c) Root Mean Square Error of Approximation [RMSEA]; and d) Standardized Root Mean Square Residual [SRMR]. The Satorra-Bentler Chi Square (S-B χ^2) may be used for non-normal outcomes when multivariate kurtosis occurs (Satorra, 2000). A low, non-significant S-B χ^2 value indicates that the test model is not significantly different from the estimated population covariance. A CFI between .90 - .94 is considered acceptable while values between .95 and 1.0 are considered good (Kline, 2005). MacCallum, Browne, and Sugawara (1996) suggested RMSEA values of .01, .05, and .08 indicate an excellent, good, and mediocre fit, respectively. Likewise, a SRMR score below .08 indicates adequate fit, with lower scores equating to a better fit. Indirect pathways within the model were also examined.

RESULTS

Descriptive statistics, correlation matrix, and internal consistency estimates of all factors are found in Table 2. All variables except perceptions of an ego-involved motivational climate had mean scores above the midpoint of their respected scales.

Bivariate correlations showed a task-involved climate and basic psychological need satisfactions were significantly related to all variables. Both Time 1 and Time 2 measures of physical self-concept were significantly related to a task-involved climate, basic psychological need satisfaction, and RAI. Similarly, Time 1 and Time 2 intentions were significantly related to a task-involved climate, an ego-involved climate, basic psychological need satisfaction, and RAI. All significant relationships between variables were small to moderate except for task-involved climate and basic psychological need satisfaction, which shared a strong relationship ($r = .63$; $p < .01$). An ego-involved climate had a negative relationship with basic psychological need satisfaction, RAI, and intention at Time 1 and Time 2.

Table 2. Descriptive Statistics, Correlation Matrix, and Internal Consistency Estimates

Variable	TMC	EMC	BPNS	RAI	T1GPC	T2GPC	T1Int	T2Int
TMC	1.00							
EMC	-.15**	1.00						
BPNS	.63**	-.21**	1.00					
RAI	.20**	-.16**	.34**	1.00				
T1 GPC	.11*	-.02	.18**	.42**	1.00			
T2 GPC	.11*	-.01	.20**	.40**	.73**	1.00		
T1 Int	.18**	-.14**	.28**	.21**	.06	.06	1.00	
T2 Int	.29**	-.15**	.44**	.24**	.02	.05	.56**	1.00
M	4.06	1.37	5.61	21.96	4.01	4.15	4.20	4.17
SD	0.60	0.35	0.79	12.16	1.16	1.11	0.88	0.88
Skewness	-0.76	1.69	-0.53	-0.37	-0.33	-0.45	-1.07	-0.95
Kurtosis	0.85	3.21	0.41	-0.10	-0.35	-0.17	0.96	0.42
Cronbach α	0.92	0.80	0.87	--	0.92	0.92	0.90	0.91

Note: TMC= task-involved motivation climate; EMC= ego-involved motivational climate; BPNS= basic psychological need satisfaction; RAI= relative autonomy index; GPC= global physical self-concept; Int= intentions for physical activity; $N = 370$; *$p < .05$; ** $p < .01$

In path analysis, the hypothesized model represented a good fit for the data (S-B . χ^2 (8) 5.72, p= .68; CFI= .99; RMSEA= .01; SRMR= .026). Standardized beta coefficients and R^2 values can be found in Figure 2. The motivational sequence successfully predicted changes in physical self concept, but this was not the case for intention. However, the modification index indicated that a direct path between basic psychological need satisfaction and intention change would improve the model (Beta= .33; p< .01). Furthermore, analyses of indirect effects showed that a task-involved climate had a significant indirect effect on RAI and changes in intention (see Table 3).

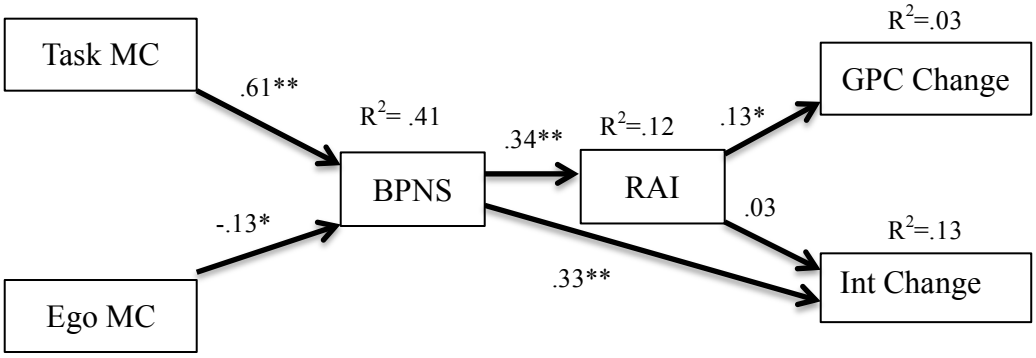

Figure 2. Results of Hypothesized Model
Note: S-B χ^2 (8) 5.72, p= .68, *CFI= .99, *RMSEA= .01, SRMR= .026. *p< .05; ** p< .01. MC= motivational climate; BPNS= basic psychological need satisfaction; RAI= relative autonomy index; GPC Change = global physical self-concept residual gain scores; Int Change = intentions for physical activity residual gain scores.

Table 3. Indirect Effects Predicting Changes in Physical Self-Concept and Intentions.

Variable	RAI	Δ GPC	Δ INT
TMC	.21**	.01	.21**
EMC	-.04	.01	.04
BPNS	---	.04	---

DISCUSSION

College activity courses, like grade school physical education, should enable students to acquire fundamental motor skills, promote physical fitness, and facilitate psychological growth and well-being (National Association of Sport and Physical Education, 2004). Using a number of theoretical constructs, this study examined motivation in college activity courses. Specifically, I investigated the relationships between the environment, the individual, and behavior by utilizing constructs originating from achievement goal theory (Nicholls, 1984, 1989) and SDT (Deci & Ryan, 1985). The goal of examining these relationships was to explore the effectiveness of college activity courses in influencing physical self-concept and future participation in physical activities.

This study provided evidence that perceptions of a task-involved climate have a strong, positive relationship with basic psychological need satisfaction (hypothesis 1). This adds to the body of literature which suggests a task-involved climate helps students feel more competent, autonomous, and connected to others (e.g. Alvarez, Balaguer, Castillo, & Duda, 2012; Cox & Williams, 2008). When a teacher establishes a task-involved climate, activities are focused on skill mastery, not competition. Because of this, perceptions of competence may increase, and this relationship has been documented in past research (Ntoumanis & Biddle, 1999). A task-involved climate also helps students feel in control and focused on their own learning and improvement, rather than worrying about achieving standards established by highly skilled peers. In this environment, students view peers as friends or colleagues, rather than rivals. In addition, students can sense that the teacher cares about them, because the teacher wants each student to improve. In an ego-involved climate, students may perceive the teacher as a type of judge, labeling students as winners or losers, since the focus is on competition. Appropriately, in the current

study, an ego-involved climate was negatively related to basic psychological need satisfaction. This indicates that an ego-involved climate may actually thwart need satisfaction.

Furthermore, a task-involved climate had a significant positive correlation with intention at both Time 1 ($r=.18$, $p< .01$) and Time 2 ($r=.29$, $p<.01$). The fact that the relationship became stronger over the course of the semester may be indicative that a task-involved climate can nurture intentions for future physical activity participation. In support of this finding, a task-involved climate also had a significant indirect effect on changes in intention. These results are consistent with a recent study by Alvarez and colleagues (2012). The path analysis in this study, which involved adolescent soccer players, also highlighted the indirect effect of a task-involved climate on intentions to continue playing soccer in the future.

The results of the current study show that basic psychological need satisfaction predicts RAI (hypothesis 2). RAI (Mullen et al., 1997) can be used to quantitatively assess an individual's location on the continuum of internalization (Ryan & Deci, 2007). Physical educators often find it necessary to promote certain healthy behaviors although these behaviors may not be interesting to students. In this situation, teachers face the challenge of how to interest students in engaging in the behavior, but more importantly, they face the challenge of facilitating self-regulation so that students will continue the healthy behavior outside of class. For example, 72% of the students in this study were enrolled in an activity course as a requirement of their degree, not by choice. If students are not initially interested in the activity (weight training, zumba, etc.), the instructor faces the challenge of how to engage the student during class and transform that engagement into self-regulated participation outside of class. This study provides evidence that need satisfaction can lead students to be intrinsically motivated. These results correspond with the tenets of SDT (Deci & Ryan, 1985, 1991;) as well as recent research (e.g. Zhang et al.,

2011). In regard to the current study, perhaps a college student feels very competent, autonomous, and connected to others in yoga class. Adhering to the tenets of SDT (Ryan & Deci, 2007), this student should greatly enjoy going to yoga class (intrinsic motivation), and therefore, pursue opportunities to participate in yoga outside of class.

Research has suggested individuals in physical activity settings who perceive themselves to be less competent, autonomous, and supported by others are less likely to continue participation in that activity (Guillet, Sarrazin, Carpenter, Trouilloud, & Curry, 2002; Jõesaar & Hein, 2011). On the other hand, the positive relationship between need satisfaction and physical activity intentions has also been documented (Ntoumanis, 2001; Standage et al., 2003). Path analysis in the current study suggested a direct path from basic psychological need satisfaction to intention change (Beta= .33; $p < .01$). That is, students who experienced need satisfaction in their activity course indicated they were more likely to participate in that particular activity after the course concluded. Need satisfaction in this model was even more influential than self-determined motivation in predicting intention. Facilitation of future engagement in physical activity is a priority for physical educators, so this piece of evidence should be regarded as a key finding in this study.

According to the fit indices used in this study, the hypothesized model represented a good fit of the data. Importantly, the motivational sequence, motivational climate > need satisfaction > RAI, successfully predicted positive changes in physical self-concept (hypothesis 3). From this evidence, one can assume that experiences in activity courses can change the way college students view themselves physically. Those who perceived a task-involved climate were more likely to have their needs satisfied, leading to positive changes in physical self-concept. Lindwall and colleagues (2014) showed that females (aged 14-15) who increased physical activity levels

over a three-year period were more likely to report increases in physical self-concept at the end of the three-year study (aged 17-18). Comparisons can be drawn to the current study due to the gender imbalance (300 females, 70 males) and proximity in age (M=20.4) of the two samples. Perhaps the change in physical activity (enrollment in the activity course) was enough to activate changes in physical self-concept. However, by utilizing a statistical model, evidence was provided which highlighted a task-involved climate and need satisfaction as facilitators of this change, adding value to the current study.

In summary, behavior changes in the physical domain are not limited to childhood and adolescence. This study shows that activity courses are an opportunity for practitioners to influence physical activity behaviors and self-perceptions among college-aged students. The results of this study stress the importance of establishing a task-involved climate in college activity courses in order to elicit positive outcomes. Likewise, basic psychological need satisfaction is an important mediator that can lead to future participation in physical activities and positive changes in physical self-concept.

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APPENDIX A
IRB APPROVAL

ACTION ON EXEMPTION APPROVAL REQUEST

Institutional Review Board
Dr. Dennis Landin, Chair
130 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.5983
irb@lsu.edu | lsu.edu/irb

TO: Louis Hines
Kinesiology

FROM: Dennis Landin
Chair, Institutional Review Board

DATE: August 8, 2014

RE: **IRB#** E8885

TITLE: A Multi-theoretical Analysis of Motivation in College Activity Courses

New Protocol/Modification/Continuation: New Protocol

Review Date: 8/8/2014

Approved X **Disapproved**_____

Approval Date: 8/8/2014 **Approval Expiration Date:** 8/7/2017

Exemption Category/Paragraph: 1, 2a

Signed Consent Waived?: No

Re-review frequency: (three years unless otherwise stated)

LSU Proposal Number (if applicable): _____

Protocol Matches Scope of Work in Grant proposal: (if applicable) _____

By: Dennis Landin, Chairman _____

PRINCIPAL INVESTIGATOR: PLEASE READ THE FOLLOWING –
Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
7. Notification of the IRB of a serious compliance failure.
8. SPECIAL NOTE:

**All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at http://www.lsu.edu/irb*

APPENDIX B
CONSENT FORM

CONSENT FORM

1. **Study Title**: A Multi-theoretical Analysis of Motivation in College Activity Courses
2. **Performance Site:** Louisiana State University and Agricultural and Mechanical College
3. **Investigators:** The following investigators are available for questions about this study, M-F, 8:00 a.m. – 4:30 p.m.
   Louis Hines 225-578-5714 lhines3@lsu.edu
   Dr. Melinda Solmon 225-578-2639 msolmo1@lsu.edu
   School of Kinesiology, LSU
4. **Purpose of the Study:** The purpose of this study is to examine motivation in college activity courses using three theories of motivation.
5. **Subject Inclusion:** College students, age 18-24, who are enrolled in an activity course.
6. **Number of Subjects:** 300
7. **Study Procedures:** Participants will be asked to complete questionnaires on three occasions. The questionnaires will concern the class environment, psychological need satisfaction, and motivation for physical activities. The questionnaires should take no more than twenty minutes to complete.
8. **Benefits:** This study may provide information that could help physical educators identify strategies that yield positive motivational responses from students.
9. **Risks:** Risks for participating in this study are similar to those risks that participants experience in ordinary life. Although the questionnaires are anonymous, some of the items call for personal responses about well-being and their instructor. In order to maintain the study's confidentiality, records will be kept in secure cabinets to which only the investigator has access.
10. **Right to Refuse:** Subjects may choose not to participate or to withdraw from the study at any time without penalty or loss of any benefit to which they might otherwise be entitled. Participants hold the right to stop participating in the study at any time.
11. **Privacy:** Results of the study may be published, but no names or identifying information will be included in the publication. The participant's identity will remain confidential unless disclosure is required by law.

12. **Signatures:**

The study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to the investigators. If I have questions about subjects' rights or other concerns, I can contact Dennis Landin, Institutional Review Board,(225) 578-8692, irb@lsu.edu, www.lsu.edu/irb. I agree to participate in the study described above and acknowledge the investigator's obligation to provide me with a signed copy of this consent form.

Subject Signature:_____Date:_____

APPENDIX C
QUESTIONNAIRES

First Name:		Last Name:			
Activity Course:			Date:		
Age:		Gender (Circle): M F	Race :		
Academic Classification (Circle):		Fr So Jr Sr Grad			
Major:					

PLEASE READ THESE INSTRUCTIONS FIRST

This is not a test - there are no right or wrong answers.

This is a chance to look at yourself. It is not a test. There are no right answers and everyone will have different answers. Be sure that your answers show how you feel about yourself. PLEASE DO NOT TALK ABOUT YOUR ANSWERS WITH ANYONE ELSE. We will keep your answers private and not show them to anyone. The purpose of this questionnaire is to see how people describe themselves physically. In the following pages you will be asked to think about yourself physically. For example, how strong you are, whether you exercise regularly, whether you get sick very often and so forth. Answer each sentence quickly as you feel now. Please do not leave any sentence blank.

		False					**True**
01	I am a physically strong person.	1	2	3	4	5	6
02	I am quite good at bending, twisting and turning my body.	1	2	3	4	5	6
03	I can run a long way without stopping.	1	2	3	4	5	6
04	I usually catch whatever illness (flu, virus, cold etc.) is going around.	1	2	3	4	5	6
05	I often do exercise or activities that make me breathe hard.	1	2	3	4	5	6
06	My waist is too large.	1	2	3	4	5	6
07	Physically, I am happy with myself.	1	2	3	4	5	6
08	I have a lot of power in my body.	1	2	3	4	5	6
09	My body is flexible.	1	2	3	4	5	6
10	I am sick so often that I cannot do all the things I want to do.	1	2	3	4	5	6
11	I have too much fat on my body.	1	2	3	4	5	6
12	I do physically active things (e.g. jog, dance, bicycle, aerobics, gym, swim) at least thee times a week.	1	2	3	4	5	6

		False					True
13	I am overweight.	1	2	3	4	5	6
14	Physically, I feel good about myself.	1	2	3	4	5	6
15	I get sick a lot.	1	2	3	4	5	6
16	I do lots of sports, dance, gym, or other physical activities.	1	2	3	4	5	6
17	I could do well in a test of strength.	1	2	3	4	5	6
18	I can be physically active for a long period of time without getting tired.	1	2	3	4	5	6
19	When I get sick, it takes me a long time to get better.	1	2	3	4	5	6
20	I do sports, exercise, dance or other physical activities almost every day.	1	2	3	4	5	6
21	I feel good about who I am physically.	1	2	3	4	5	6
22	I think I would perform well on a test measuring flexibility.	1	2	3	4	5	6
23	I am good at endurance activities like distance running, aerobics, bicycling, swimming, or cross-country skiing.	1	2	3	4	5	6
24	I have to go to the doctor because of illness more than most people my age.	1	2	3	4	5	6

Read each of the following items carefully and answer honestly. Your answers will not be shown to anyone. **Respond to each item in terms of how you view the typical atmosphere in this activity course. Please do not leave any sentence blank.**

	In this activity course…	**Strongly Disagree**		**Neutral**		**Strongly Agree**
1	The instructor wants us to try new skills/strategies/movements.	1	2	3	4	5
2	The instructor gets mad when a student makes a mistake.	1	2	3	4	5
3	The instructor gives most of their attention to the "stars".	1	2	3	4	5
4	Each student contributes in some important way.	1	2	3	4	5
5	The instructor believes that all of us are crucial to a successful activity/exercise/drill.	1	2	3	4	5
6	The instructor praises students only when they outperform other students.	1	2	3	4	5
7	The instructor thinks that only the best students contribute to the success of an activity/exercise/drill.	1	2	3	4	5
8	Students feel good when they try their best.	1	2	3	4	5

	In this activity course…	Strongly Disagree		Neutral		Strongly Agree
9	Students are penalized or removed from an activity if they make mistakes.	1	2	3	4	5
10	Students at all skill levels have an important role in each activity/exercise/drill.	1	2	3	4	5
11	Students help each other learn.	1	2	3	4	5
12	Students are encouraged to outperform the other students.	1	2	3	4	5
13	The instructor has his or her own favorites.	1	2	3	4	5
14	The instructor makes sure students improve on skills or movements they're not good at.	1	2	3	4	5
15	The instructor yells at students for messing up.	1	2	3	4	5
16	Students feel successful when they improve.	1	2	3	4	5
17	Only the best students get praised.	1	2	3	4	5
18	Students are punished when they make a mistake.	1	2	3	4	5
19	Each student has an important role.	1	2	3	4	5
20	Trying hard is rewarded.	1	2	3	4	5
21	The instructor encourages students to help each other.	1	2	3	4	5
22	The instructor makes it clear who he or she thinks are the best students.	1	2	3	4	5
23	Students are "fired up" (positively excited) when they perform better than fellow students.	1	2	3	4	5
24	If you want to participate in an activity, you must be one of the best students.	1	2	3	4	5
25	The instructor always emphasizes trying your best.	1	2	3	4	5
26	Only the top students "get noticed" by the instructor.	1	2	3	4	5
27	Students are afraid to make mistakes.	1	2	3	4	5
28	Students are encouraged to work on their weaknesses.	1	2	3	4	5
29	The instructor favors some students over others.	1	2	3	4	5
30	The focus is to improve every class.	1	2	3	4	5
31	Students really "work together".	1	2	3	4	5
32	Each student feels as if he or she is an important class member.	1	2	3	4	5
33	The students help each other to get better and excel.	1	2	3	4	5

Respond to the following statements considering your experiences as a student in this activity course over the semester.

		Strongly Disagree			Neutral			Strongly Agree
1	I think I am pretty good at this activity.	1	2	3	4	5	6	7
2	I am satisfied with my ability in this activity.	1	2	3	4	5	6	7
3	After practicing a particular skill/movement/exercise for a while, I feel pretty competent.	1	2	3	4	5	6	7
4	I am pretty skilled at this activity.	1	2	3	4	5	6	7
5	I can't do this activity very well.	1	2	3	4	5	6	7

The statements below allow you to think about how much the choices and decisions you make in this activity course are your own. Thinking back over the semester, **please indicate how much each statement is like you**.

	In this activity course, I feel…	Not at all		Somewhat		Very much
1	That my choices are based on my true interests and values.	1	2	3	4	5
2	Free to do things my own way.	1	2	3	4	5
3	That my choices express my "true self"/who I really am.	1	2	3	4	5

Please circle the answer that best describes how you feel when participating in this activity course over the semester:

	In this activity course, I feel…	Strongly Disagree		Neutral		Strongly Agree
1	Supported	1	2	3	4	5
2	Listened to.	1	2	3	4	5
3	Understood.	1	2	3	4	5
4	Valued.	1	2	3	4	5
5	Safe.	1	2	3	4	5

We are interested in the reasons underlying peoples' decisions to engage, or not engage in physical exercise. Using the scale below, please indicate to what extent each of the following items is true for you. Please note that there are no right or wrong answers and no trick questions. We simply want to know how you personally feel about exercise. Your responses will be held in confidence and only used for our research purposes.

		Not True for me		**Sometimes True**		**Very True for me**
1	I exercise because other people say I should.	0	1	2	3	4
2	I feel guilty when I don't exercise.	0	1	2	3	4
3	I value the benefits of exercise.	0	1	2	3	4
4	I exercise because it's fun.	0	1	2	3	4
5	I take part in exercise because my friends/family/partner say I	0	1	2	3	4
6	I feel ashamed when I miss an exercise session.	0	1	2	3	4
7	It's important to me to exercise regularly.	0	1	2	3	4
8	I enjoy my exercise sessions.	0	1	2	3	4
9	I exercise because others will not be pleased with me if I don't.	0	1	2	3	4
10	I feel like a failure when I haven't exercised in a while.	0	1	2	3	4
11	I think it is important to make the effort to exercise regularly.	0	1	2	3	4
12	I find exercise a pleasurable activity.	0	1	2	3	4
13	I feel under pressure from my friends/family to exercise.	0	1	2	3	4
14	I get restless if I don't exercise regularly.	0	1	2	3	4
15	I get pleasure and satisfaction from participating in exercise.	0	1	2	3	4

The following statements refer to the activity course in which you are currently enrolled. Indicate your level of agreement with the following statements concerning this activity course and **your future involvement in this type of physical activity**. Circle the number that corresponds with your level of agreement.

		Strongly Disagree		**Neutral**		**Strongly Agree**
1	I intend to engage in this activity after this class is over.	1	2	3	4	5
2	I will try to engage in this activity after this class is over.	1	2	3	4	5
3	I am determined to engage in this activity after this class is over.	1	2	3	4	5

VITA

Louis Hines, a Gulf Breeze, Florida native, received his bachelor's degree in physical education from Huntingdon College in 2012 while competing on the varsity men's soccer team. Feeling called to a career in higher education, he enrolled in the kinesiology graduate program at Louisiana State University in August 2013. After completing his master's degree in May 2015, Louis plans to teach grade school physical education for several years before returning to his doctoral studies.