

**EFFECTS OF PARTICIPATION IN A SUMMER SPORTS CAMP
ON AT-RISK BOYS: A SELF-DETERMINATION THEORY
PERSPECTIVE**

A Dissertation

by

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ABSTRACT

Summer camps have received recent attention as an intervention to increase adolescents' physical activity. To date, research has rarely focused how a summer camp influences at-risk boys' motivation and physical activity through a self-determination theory. The purpose of this study was to examine changes of motivational and physical measures for at-risk boys participating in a summer sports camp. This study also investigated whether initiative games provide instructor support for autonomy, competence, and relatedness for at-risk boys. One hundred at-risk boys, aged 10-13 years, participated in a summer sports camp located in southwest U.S. for three weeks. The boys participated in scheduled camp activities on daily basis during the three-week camp period. Three motivational measure questionnaires (Psychological Needs Perception; Behavioral Regulation in Exercise Questionnaire II – BREQ II; Perceived Instructor Support) and PACER (Progressive Aerobic Cardiovascular Endurance Run) test were completed by the boys at the beginning of camp as pre-test and then, at the end of camp, the boys completed all the measures in the same manner again as post-test. In addition, fifty boys who participated in the initiative games were interviewed about perceptions of instructor support for autonomy, competence, and relatedness and observations were conducted to collect instructor's supportive behaviors for autonomy, competence, and relatedness during initiative games. Results revealed the boys' amotivation increased and their intrinsic regulation decreased across the camp period. The boys' PACER test scores showed no significant changes across the two different time periods. Further, the boys

perceived the instructor's supportive behaviors (i.e., autonomy, competence, and relatedness support) during the initiative games. The findings suggest programs that allow more camper-centered options and de-emphasize competition may promote increased motivation and physical activity of at-risk boys through better meeting their needs.

DEDICATION

I dedicate this dissertation work and doctoral degree to my family. They have supported me throughout the doctoral study process.

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CHAPTER I

INTRODUCTION

Physical activity levels of adolescents have recognizably decreased over the past decade. Lack of physical activity has been regarded as a core cause of overweight and obese adolescents, causing harm to their health conditions (Zarrett, Sorensen, & Skiles, 2013). According to the Center for Disease Control and Prevention (CDC) (2013), over 30 % of adolescents aged 12 -19 are diagnosed as overweight or obese. In particular, at-risk adolescents from underserved backgrounds (low-income, ethnic minority) have the highest rates of overweight and obesity among youth (Ogden, Carroll, Kit, & Flegal, 2012). Since low physical activity levels are related to the rise in the prevalence of overweight and obesity among at-risk adolescents, it is crucial to understand how to increase at-risk adolescents' physical activity (Tremblay & Willms, 2003).

School physical education has been considered as one primary setting for positively influencing adolescents' physical activity levels. Unfortunately, students' participation in school physical education decreases over the school years and this decline is greater among at-risk adolescents (Fredricks & Eccles, 2002). Moreover, in-class time in school physical education does not meet the national recommendation that adolescents participate in at least 60 minutes of moderately intense physical activity on daily basis (CDC, 2013).

In attempts to understand the determinants of physical activity behaviors among youth populations, motivation has been counted as a crucial determinant of sustained participation in physical activity (Deci & Ryan, 2000; Martin, McCaughy, & Shen,

2008). Thus, it is important for researchers and practitioners to explore motivational factors that might influence behavioral changes (Daley & Duda, 2006). Biddle and Nigg (2000) investigated the motivational processes linked to the outset and continuation of physical activity relating to the changes of exercise behaviors. They provided insight into the mechanism that social environmental factors and motivational differences in individuals influenced changes in physical activity behaviors.

When considering social environmental factors (e.g., instructor behaviors and class structure) inherent in a summer camp and motivational processes mediated by those environmental factors, this study utilized Self-Determination Theory (SDT; Deci & Ryan, 2002) to examine changes in at-risk adolescents' motivational and physical activity measures during the summer camp.

Self-Determination Theory (SDT)

Self-determination theory explains facets of personality and behavioral self-regulation through interaction between individuals' innate needs and environmental aspects within social contexts (Ryan & Deci, 2000a). This theory has been used to understand correlates of physical activity motivation and behavior (Deci & Ryan, 2002). Specifically, SDT has been widely applied to physical activity and exercise studies for understanding youths' motivation and behavioral changes (Standage, Gillison, Ntoumanis, & Treasure, 2012).

SDT posits three basic psychological needs. They are the needs for autonomy, competence, and relatedness and are fundamental to self-determination theory. Autonomy refers to the need to make one's own decisions and be the origin of one's

behavior. Competence refers to the need to feel effective in producing required outcomes with environment. Relatedness refers to the need to feel connected, cared for, and close to others in a given community (Deci & Ryan, 2002).

Whether the three psychological needs are satisfied is determined by the variations in the quality of environmental functioning. If a central tenet of SDT in which the three psychological needs serve as nutrimental elements to optimal human functioning is hypothesized, then the social contexts that facilitate individuals' motivation and performance by satisfying the three psychological needs are important factors for understanding the tenet (Ryan & Deci, 2000a).

The social context implies an instructor's instructional style and behaviors (Taylor & Ntoumanis, 2007) that support perceptions of psychological needs for autonomy, competence, and relatedness. For example, teaching environments that students are allowed to make choices or teachers provide students with opportunities to express their opinions predict students' perceptions for autonomy. Instructional contexts that teachers provide clear feedback for performance improvement or students perceive feelings of success in learning predict students' perceived competence. Pedagogical environments that teachers promote cooperative learning among students or students perceive feelings of involvement with others predict students' satisfaction for relatedness (Treasure & Roberts, 2001). The social context influences student motivation through perceived satisfaction of psychological needs for autonomy, competence, and relatedness. According to self-determination theory, social contextual factors that meet the three psychological needs facilitate autonomous forms of motivation, whereas social

contextual factors that undermine the three psychological needs elicit controlled forms of motivation or amotivation (Ryan & Deci, 2000a).

Autonomous forms of motivation include motivational regulations with experiences of volition, psychological satisfaction or freedom, and reflective self-endorsement. They consist of intrinsic and identified regulation. Intrinsic regulation refers to engagement in an activity for its own sake because the activity is inherently interesting or exciting. Identified regulation refers to engagement in an activity for personal significance because the task is beneficial for personal reasons. In contrast, controlled forms of motivational regulations include introjected and external regulation. Introjected regulation implies engagement in an activity to avoid feelings of guilt, shame, and anxiety or to attain pride and ego enhancement. External regulation means engagement in an activity to gain rewards or to avoid punishment and blame. Amotivation occurs when one has little or no intention to engage in an activity or feels incapable of performing the activity (Aelterman et al., 2012).

The five types of motivation an individual internalizes may draw affective, cognitive, or behavioral outcomes such as value toward an activity, knowledge application, and effort. They occur when learners perceive psychological needs for autonomy, competence, and relatedness that, in turn, are supported by social contextual factors in a sequential manner. In the disposition of self-determination theory, it is predicted that individuals possessing intrinsic and identified regulations demonstrate positive affective, cognitive, and behavioral outcomes (Vallerand, 2000).

Research focusing on physical activity settings using a self-determination theory has found positive relationships between intrinsic and identified regulations and performance on physical activity among adolescent students. That is, the more intrinsically motivated students are, the more frequently and intentionally they engage in physical activity (Treasure & Roberts, 2001). In this vein, the importance of considering the positive relationships when trying to maximize students' potential performance in physical activity has been emphasized (Coakley & White, 1992).

However, findings from previous investigations have not provided clear evidence about the positive relationships between autonomous motivational regulations (i.e., intrinsic and identified regulation) and behavioral changes among at-risk adolescents through alternative physical activity programs such as a summer camp (Vierling, Standage, & Treasure, 2007).

Characteristics of At-risk Adolescents

Many adolescents in a modern society face increasing risk factors such as gang violence, crime, drug misuse, alcohol, and teenage pregnancy. These risk factors can reduce their possibility of pursuing education and completing a high school degree (Bonnette, McBride, & Tolson, 2001). McDill, Natriello, and Pallas (1986) identified these adolescents as at-risk learners. American at-risk adolescents generally are categorized as low socioeconomic status stricken and underserved backgrounds and ethnic minorities (Lawman, Willson, Van Horn, Resnicow, & Kitzman-Ulrich, 2011). They are more likely to encounter a variety of social and economic challenges than non at-risk adolescents (Close & Solberg, 2008). They also feel more alienated from school

and peers and face higher possibilities of experiencing failure at school than non at-risk adolescents (Lawman et al., 2011). Further, most at-risk adolescents are male, have uncertain views for their future, and are likely to have low self-confidence in school work (McBride & Bonnette, 1995).

Literature dealing with at-risk adolescents' social problems addresses a lack of success in their school work and links low self-confidence in school work to high dropout rates (Srebnik & Elias, 1993). These problems originate from the fact that at-risk adolescents have lower social supportive opportunities in their school work than their more successful peers (Passow, 1991). For example, Ryan, Stiller, and Lynch (1994) found that adolescents who felt cared for by and related to their teachers showed better academic outcomes and positive school-related behaviors than adolescents placed at risk whose lower teacher support they perceived in schools. Similarly, Solberg, Carlstrom, Howard, and Jones (2007) found high school students placed at risk were associated with lower academic and health outcomes when compared with non at-risk students.

Furthermore, according to recent reports, at-risk adolescents are less physically active in school as well as out of school environments than adolescents of not having at-risk conditions (Delva, Johnston, & O'Malley, 2007; Janssen et al., 2005). For example, Sallis, Zakarian, Hovell, and Hofstetter (1996) demonstrated adolescents placed at risk were more willing to do sedentary behaviors such as watching television or playing video games when they were in time outside of school than adolescents who were not placed at-risk. Likewise, Butcher, Sallis, Mayer, and Woodruff (2008) showed evidence that at-risk adolescents were less likely to meet the national physical activity

recommendations of sixty minutes each day during school hours including physical education than non at-risk adolescents.

Taken together, the relationships among low socioeconomic status, low physical activity levels, and low academic achievements are significant in at-risk adolescent populations rather than non at-risk adolescent populations. Relating to this study, it is important to understand how at-risk adolescents accrue affective, cognitive, and behavioral benefits through physical activity outside physical education. Because school physical education does not meet the national recommendation for physical activity levels of at-risk adolescents, a summer camp as an alternative afterschool program may provide at-risk adolescents with an opportunity to increase their physical activity.

Summer Camps

Within the U.S., over 11 million adolescents participate in summer camp programs each year. Like afterschool community-based youth development programs, the objective of most summer camp programs is providing opportunities that promote social, psychological, and physical development of youth (Bialeschki, Henderson, & James, 2007). For the summer camps, this approach targets tangible development of adolescents resulting in a combination of social skills and physical competency based on active engagement and high motivation in interesting activities (Judd, 2006). In particular, summer camps can provide at-risk youth with opportunities to increase physical and cognitive competence, and behavioral and social skills through a variety of activities in a social supportive environment (Purvis, Cross, Federici, Johnson, & Mckenzie, 2007).

Community-based afterschool programs typically emphasize promoting academic success with much less time for physical activity opportunities. Additionally, much of time allocated for physical activity opportunities is composed of unstructured free play where youth can select among space-limited activities such as basketball and non-active activities such as playing video games and computers (Harris, 2010). In contrast, summer camp programs primarily consist of active physical or recreational activities that are basically well-organized and varied, and require youth to spend minimal time on academic activities. Furthermore, the activities are typically more social supportive than afterschool programs, and youth are engaged in challenging missions to accomplish social, psychological, and physical development at daily activities which are believed to elicit the effects on participation in the camp (Bialeschki et al., 2007). As summer camps are recognized as social supportive contexts and providing various activities rather than community-based afterschool programs, participation in summer camp settings has the potential to benefit at-risk youth with social, psychological, and physical development (Bialeschki et al., 2007).

Research has produced evidence of the importance of motivational process to increase physical activity among at-risk adolescents in summer camp settings (Willson, 2009; Willson et al., 2005). For example, Mancuso and Caruso-Nicoletti (2003) investigated how summer camp interventions improved self-confidence and health behaviors during post-interventions period on young at-risk adolescents with Type 1 diabetes. Their findings showed evidence to support the effectiveness of camp interventions through self-competence in healthy behaviors, increased self-care, and

improved healthy eating and physical activity behaviors in the population.

In a similar pattern, Hill and Sibthorp (2006) examined the effects of recreational physical activities on at-risk adolescents diagnosed with Type 1 diabetes. They found that autonomy supportive factors in the activity context (e.g., choices within limits, encouragement toward autonomy, and involvement with others in decision making) were important predictors for perceptions of autonomy, competence, and relatedness among the populations, for managing diabetes in post-camp period, which in turn led to increased self-determination for productive behaviors such as exercise adherence. Their findings emphasized how increasing the level of autonomy support at camp was crucial for self-determined motivational mechanisms leading to behavioral changes in diabetes management among the participants.

In a related study, Ramsing and Sibthorp (2008) investigated the various mechanisms in at-risk adolescents' perceptions of autonomy support through competitive activities such as sports and non-competitive activities in a summer camp. The findings indicated that they perceived greater autonomy through autonomy supportive instructions given in non-competitive activities compared to those given in competitive activities. Specifically, the findings stressed that autonomy support provided by camp instructors could lead to self-determined motivational mechanisms that facilitated self-directed behaviors such as higher engagement and persistence in non-competitive physical activities.

Ullrich-French, McDonough, and Smith (2012) examined a physical activity-based program to address physical competence and personal and social attributions with

at-risk youth to evaluate how change in perceived social supportive constructs was associated with psychological and physical outcome variables. They found a summer camp program that emphasized personal improvement and individual success rather than competition and provided autonomy support influenced highly perceived physical competence levels in the population.

Zarrett et al. (2013) offered a significant extension to the previous studies explaining the effects of motivational processes on physical activities in a summer camp by objectively measuring the physical activities. They investigated how three major components (physical environment, social climate, and instructor behaviors) at a summer camp predicted at-risk adolescents' physical activity levels. Their findings showed that social climate features such as clear rules and high engagement influenced the improvement of physical activity levels across the camp's activities. These findings were consistent with previous research findings in school-based physical activity intervention (Wilson et al., 2011). That is, if activities required minimal management and facilitated continuous engagement by stimulating interest for at-risk adolescents, they would facilitate increases in physical activity levels.

Based upon the related research, this study assumes that physical activity-based interventions inherent in summer camps facilitated at-risk adolescents' motivational mechanism to yield a consequence such as behavioral changes through social supportive factors. To date, however, no study has measured motivational and behavioral changes among at-risk boys through participation in summer camp activities. The inquiry into this void can provide useful information on how participation in summer camp activities

influences at-risk boys' behavioral changes through specifically self-determined motivational processes.

Initiative Games

In an attempt to explore at-risk boys' self-determined motivational processes through social supportive elements based on SDT, this study also included initiative games defined as fun, cooperative, and challenging games in which a group is faced with a specific problem to solve (McBride & Bonnette, 1995) because research based on SDT has not offered empirical evidence whether initiative games provide instructor support for autonomy, competence, and relatedness. The objective of initiative games is to teach teamwork and leadership skills to learners, which helps promote the development of communication and problem-solving skills in groups. Initiative games require in most parts a process of critical thinking in challenging tasks that learners are asked to solve problems through group cooperation. Even if there might be competition involved in the contexts of initiative games, the initiative games are basically task-oriented with group-driven teambuilding (Orlick, 1982).

In task contexts of the initiative games, it is assumed that social supportive elements (e.g., instructor's supportive behaviors for autonomy, competence, and relatedness) for fostering learning in the tasks can promote self-determined motivation through supporting three psychological needs. For example, instructor behaviors to allow children choose their ideas during initiative games activities can provide opportunities to experience self-determined behaviors for children (i.e., autonomy), to stimulate feelings of efficiency in performances by scaffolding children's challenges can

provide opportunities for achievement in activity tasks (i.e., competence), and to help feel accepted by others and a sense of belonging to groups during the activities can provide opportunities for a connectedness of sense in groups (i.e., relatedness). Although previous research provided evidence on instructor support for autonomy, competence, and relatedness in physical activities, whether initiative games contexts provide the instructor support has not received attention from previous research.

Edmunds, Ntoumanis, and Duda (2008) has demonstrated that instructor behaviors and positive instructor-adolescent interactions in physical activity-based intervention programs may be crucial for satisfying the needs for autonomy, competence, and relatedness and for promoting intrinsic motivation among adolescents. Specifically, findings of activity-based interventions similar to intervening contexts in initiative games indicate that the integration of perceived autonomy, competence, and relatedness is essential for increasing adolescents' intrinsic motivation and engagement in physical activity (Chatzisarantis & Hagger, 2009).

Although some research has used self-reported measures and interviews to capture instructor support for autonomy, competence, and relatedness among adolescent populations during physical activity, no study has utilized observation data to offer ecological validity of instructor support for autonomy, competence, and relatedness. Understanding of instructor support for the three psychological needs from diverse perspectives through multiple data sources (i.e., observation, interview, and self-reported measure) during initiative games might provide plausible information about learner perceptions of teacher's supportive behaviors.

In sum, the review in this chapter indicated that underserved adolescents are more likely to be overweight and obese due to such conditions as low-income, less family support for participating in physical activity, and less access to physical activity opportunities. To lessen this problem, a summer camp can serve as an alternative out of school physical activity program to deal with their tendency to be less physically active. To explain how they are motivated and behave in camp activity settings, self-determination theory has provided empirical evidence about behavioral outcomes drawn from motivational processes on social contextual factors inherent to physical activity programs designed in a summer camp.

Although physical activity-based interventions at summer camps have been conducted with at-risk youth populations to explore motivational processes and changes in behavioral outcomes using the self-determination theory lens, no research has employed at-risk boys to examine the motivational mechanisms about changes in behavioral outcomes such as performance on physical activity. Such exploration may provide valuable information on how at-risk boys are motivated, adjust, and behave in physical activities in a summer camp context. Additionally, such knowledge could also be beneficial for camp instructors or designers with how to create effective teaching environments to promote at-risk boys' self-determined motivation, which in turn increases active engagement in physical activities during a summer camp.

Finally, this study examines whether and how initiative games provide instructor support for autonomy, competence, and relatedness through diverse perspectives. Such exploration can provide instructors with how and in what extent they need to exhibit

social supportive behaviors to promote self-determined motivation of at-risk boys, which subsequently allows better performance in corporative activities such as initiative games.

The purposes of this study are to examine: (a) the relationships between three psychological needs and five self-determined motivational regulations for at-risk boys participating in a summer camp, (b) mean level changes in self-determined motivational regulations for at-risk boys across a three-week camp period, (c) mean level changes in the performance on an endurance run (Progressive Aerobic Cardiovascular Endurance Run - PACER) test for at-risk boys across the camp period, (d) whether initiative games provide instructor support for autonomy, competence, and relatedness for at-risk boys, and (e) mean level changes in perceived instructor support for autonomy, competence, and relatedness for at-risk boys during initiative games.

The current study involves in a few limitations: (a) the findings of this study cannot be generalized to adolescent populations who have different demographic backgrounds and (b) the period of the camp program for three weeks may not be sufficient to test the expected results of study variables. The present study is also delimited to at-risk boys, aged 10-13 performing camp activities including ten initiative games in a summer camp setting located in South Central Texas.

CHAPTER II

THE STUDY

Introduction

From a public health and physical education perspective, adolescent children in the U.S. continue to exhibit low levels of physical activity (Vierling et al, 2007). These low levels of physical activity among adolescents pose significant health problems such as overweight or obesity (Power, Ulrich-French, Steele, Daratha, & Bindler, 2011). Reports indicate that 18% of U.S. youth are obese, and 16% of them are overweight (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). Higher levels of overweight and obesity are particularly noted among at-risk adolescents (Armitage & Sprigg, 2010). That can be more problematic because they are typically from lower income working families or underserved communities, have less access to physical activity opportunities, and less family support for participating in physical activity (Molnar, Gortmaker, Bull, & Buka, 2004). For all adolescents to engage in physical activity and enjoy it, it is crucial to understand why and how they might want to participate (Power, et al., 2011).

In recent years, one popular motivation framework used in educational settings is Self-Determination Theory (SDT: Deci & Ryan, 2002). SDT posits that human beings endeavor to satisfy three basic psychological needs for autonomy, competence, and relatedness (Deci & Ryan, 2002). Autonomy refers to the extent to which individuals regard themselves as the origin of their behavior and as being volitional for the initiation of the behavior. Competence is defined as being effective in activities that individuals engage and successful in desired outcomes. Relatedness indicates the degree to which an

individual feels connected or involved with others and experiences a feeling of belongingness to a given social community.

According to Ryan and Deci (2000a), individuals experience self-determined motivation to the extent they perceive how the fundamental three needs for autonomy, competence, and relatedness are met. For the three fundamental human innate needs to be met, it is necessary for individuals to perceive support from their social environments. Through the association of three social supportive factors (autonomy, competence, and relatedness support) and the three psychological needs, individuals can also posit differently leveled self-determined motivational regulations that lie on a continuum (Deci & Ryan, 2002). Ryan and Deci (2000b) identified five motivational states that range from amotivation to intrinsic regulation.

Amotivation represents the absence of both intrinsic and extrinsic motivation. It is the least autonomous self-determined motivational regulation representing an unwillingness to attain a goal (Ryan & Deci, 2000b). For example, if students do not know why they participate in physical activity programs, they may only join in passively or not at all.

External regulation refers to an extrinsically regulated motivation where an individual seeks to meet or avoid external contingencies such as rewards or threats of punishment (Ryan & Deci, 2000b). With this regulation, a learner initiates a behavior to attain or avoid certain outcomes associated with an assigned task (Ryan & Deci, 2000b). For example, students may participate in an endurance running event to get a donated reward even though they do not like running.

Introjected regulation refers to a partially internalized motivation in which an individual endorses the necessity of a behavior (Ryan & Deci, 2000b). With introjected regulation, the motive for certain action is controlled by self-imposed sanctions such as guilt or anxiety and ego enhancement (Standage, Duda, & Ntoumanis, 2005). For example, students may perform warm-up exercises at the beginning of a physical education lesson because that is the rule. Otherwise, they may feel badly or guilty in class.

Identified regulation is a more autonomous self-determined motivation where learners identify personally with the value or benefit of a behavior (Ryan & Deci, 2000a). Here, students may exercise regularly because they recognize or believe that doing so is beneficial to increase physical health and endurance.

Intrinsic regulation is the most autonomous self-determined motivational regulation. It refers to the voluntary engagement in activities for one's own interest, pleasure, and satisfaction (Deci & Ryan, 2002). When individuals are intrinsically engaged in activities, they are completely self-motivated (Deci & Ryan, 2002). Students may engage in physical activity for feelings of interest, enjoyment, and satisfaction gained.

The fundamental perspective of SDT is that when individuals are intrinsically motivated, they experience better affective, cognitive, and behavioral outcomes (Ryan & Deci, 2000a). SDT has a connection to physical activity outcomes in that the mechanism of the self-determined motivational regulations can affect the extent to which individuals are physically active (Bryan & Solmon, 2007). Research in physical activity settings

supports this theoretical perspective by showing intrinsically regulated motivation to be positively associated with increased behavioral persistence and performance (Standage et al, 2012).

There is evidence supporting the link between autonomous motivational regulations (i.e., intrinsic and identified regulation) and positive motivational consequences of physical activity (Wilson, Rodgers, Blanchard, & Gessell, 2003). Adolescent students who are more intrinsically motivated, for example, have been linked with higher levels of performance on endurance activities (Kowal & Fortier, 2000). Shen, McCaughtry, Martin, and Fahlman (2009) found that when adolescent students in middle schools were intrinsically motivated in physical education classes during one semester, they showed higher performance on an endurance activity such as PACER (Progressive Aerobic Cardiovascular Endurance Running) test (Kowal & Fortier, 2000). Further, Power et al. (2011) demonstrated adolescents showing intrinsic regulation in a school-based physical activity program scored significantly higher on the PACER test than those who had external and introjected regulation.

Although the behavioral outcomes from participation in physical activity have been extensively studied among adolescents, most research occurs in traditional school based physical education settings (Watts, Jones, Davis, & Green, 2005). Further, the research on the school based physical activity interventions has not shown significant effects on physical activity outcomes of adolescent populations (Gortmaker et al., 1999). If physical activity levels are not met through school physical education, we must look for other avenues where it may occur. For example, summer sports camp settings may

provide opportunities for increased physical activity, specifically among at-risk adolescents. To date, there has been a scarcity of studies investigating the relationships between three psychological needs and self-determined motivational regulations, and subsequently changes in self-determined motivational regulations and performance on physical activity among at-risk boys in sports camp settings such as a summer camp.

In addition to investigating the self-determined motivational processes among at-risk boys in a summer sports camp setting, this research also includes initiative games defined as challenging activities that require group cooperation and critical thinking (McBride & Bonnette, 1995). Initiative games have received little examination from the self-determination theory lens among at-risk adolescents. It is assumed that initiative games provide instructor support (i.e., support for autonomy, competence, and relatedness) that support relationships between adolescents' psychological needs and self-determined motivational regulations in terms of a need supportive structure embedded in the activities (e.g., opportunities for choices, activity contexts based on behavior-contingency feedback, and interpersonal teaching style).

Although some research has used self-reported measures and interviews to capture instructor support for autonomy, competence, and relatedness among adolescent populations during physical activity, no study has utilized observation data to offer ecological validity of instructor support for autonomy, competence, and relatedness. Understanding of instructor support for autonomy, competence, and relatedness from diverse perspectives through multiple data sources (i.e., observation, interview, and self-reported measure) during initiative games might provide plausible information about

learner perceptions of teacher's supportive behaviors.

In sum, this study attempts to assess mean level changes in motivational and physical variables drawn from SDT among at-risk boys who participated in a summer sports camp by examining the relationships between the three psychological needs and the five motivational regulations. Further, the findings of this research may reveal whether and how initiative games contexts provide instructor support for autonomy, competence, and relatedness for at-risk boys through a triangulation of data based on multiple sources. In particular, a deeper understanding about changes in self-determined motivational regulations among at-risk boys may be helpful for future programming by camp administrators.

The purpose of this study is first to examine the relationships between three psychological needs and five self-determined motivational regulations among at-risk boys participating in a summer camp. Second, this study examines whether participation in camp activities leads to changes in self-determined motivational regulations and performance on an endurance activity (PACET test) among at-risk boys across a summer camp period. Third, this study investigates whether initiative games provide instructor support for autonomy, competence, and relatedness for at-risk boys in a summer camp.

Specifically, in a three-week summer camp setting for at-risk boys, this study examines:

- (a) What are the relationships between three psychological needs and five self-determined motivational regulations?
- (b) Are there changes in self-determined motivational regulations?

- (c) Are there changes in the performance on an endurance run (PACER test)?
- (d) Do initiative games provide instructor support for autonomy, competence, and relatedness?
- (e) Are there mean level changes in perceived instructor support for autonomy, competence, and relatedness during initiative games?

Method

Participants and Setting

Participants consisted of 100 at-risk adolescent boys ($M = 11.4$ years, aged 10-13 years) enrolled in a summer sports camp located in the southwest USA. Ethnicity groups were 52% Hispanic American, 26% White, 17% African American, 1% Asian American, and 4% others. The camp consisted of two three-week sessions, Monday through Sunday. Boys participated in daily scheduled sports activities such as soccer, flag football, basketball, track & field, tennis, and baseball. Group games included capture the flag and Wild, Wild, West. Half of the campers participated in only scheduled camp activities. The other half participated in scheduled camp activities in addition to initiative games. The camp administrators divided the boys into groups by age, 10-11 & 12-13. Each group participated in all activities based on the same teaching context, which was instructor-centered. Prior to the study, permission came from the university review board, parents, and participants. Eight male full-time certificated instructors taught the scheduled camp activities during each camp session. One instructor, trained in initiative games, taught the activities in both sessions.

Instrumentation

Psychological Needs Perception Questionnaire (PNPQ) (Appendix A)

The PNPQ assesses the perceptions of the three psychological needs (autonomy, competence, and relatedness). The three constructs were slightly modified from the 16 items based on a physical activity context identified by Standage et al. (2005). Each construct includes four items, totaling in 12 items. The stem statement was reworded to capture the activities in a summer camp. The stem statement was modified as following: “In my activities at camp...” An autonomy example item is “I can decide which activities I want to do.” A competence example item is “I am satisfied with my performance.” A relatedness example item is “I feel valued by my group members.” All responses were recorded on a 5-point Likert scale ranging from 1 (Not at all true) to 5 (Very true).

Behavioral Regulation in Exercise Questionnaire (BREQ-II) (Appendix B)

The BREQ-II consists of the five motivational regulations: intrinsic, identified, introjected, external, and amotivation (Markland & Tobin, 2004). The stem statement was reworded to focus on the activities performed by participants and read, “I participate in camp activities because...” Each construct consisted of four items except for introjected regulation that had three items, totaling in 19 items. An example item of intrinsic regulation is “It’s fun.” An example item of identified regulation is “It is important to me to participate.” An example item of introjected regulation is “I feel bad when I don’t participate.” An example item of external regulation is “My family or friends say I should.” An example item of amotivation is “I think they are a waste of

time.” All responses were recorded on a 5-point Likert scale ranging from 1 (Not at all true) to 5 (Very true).

Perceived Instructor Support Questionnaire (PISQ) (Appendix C)

Perceived instructor support refers to the participants’ perception of autonomy, competence, and relatedness support provided by the instructor during the camp activities. The three constructs (autonomy, competence, and relatedness support) of the PISQ were adapted from the Interpersonal Behavior Scale version by Shen, McCaughtry, Martin, and Rukavina (2010). Each construct consisted of four items, totaling in 12 items. An example item of autonomy support is “My instructor provides me with opportunities to make decisions.” An example item of competence support is “The feedback I get from my instructor makes me feel confident in my ability to learn.” An example item of relatedness support is “I feel that my instructor sincerely cares about me.” Two items (No. 2 and 5) were scored in a reverse fashion. Half of the boys who participated in regular camp activities responded for instructors teaching the camp activities while the other half responded for an instructor teaching initiative games. All responses were recorded on a 5-point Likert scale ranging from 1 (Not at all true) to 5 (Very true).

Progressive Aerobic Cardiovascular Endurance Run (PACER)

The PACER was developed by the Cooper Institute (2007) and used to measure boys’ performance on an endurance activity. The objective of this test is to run back and forth across a 20 meter distance as many times as possible in a set time. An audio recorder with a beep tone controls the running pace. Participants must run the 20 meter

distance once the beep sounds. The beeps increase in tempo requiring participants to increase their pace. Total score is the number of times boys can run the 20 meter distance within two consecutive chances. Detailed test protocol can be confirmed in the FITNESSGRAM test administration manual (The Cooper Institute, 2007).

Psychological Needs Support Observation Form (Appendix D)

A modification of Teacher Observation Form – Critical Thinking (McBride & Bonnette, 1995) was used to record the frequency of instructor supportive behaviors for autonomy, competence, and relatedness during initiative games in both sessions. Criteria from previous research (Shen et al., 2010) on psychological needs support were reviewed and investigated for modification and content validity. The modified form, Psychological Needs Support Observation Form, includes three sections: autonomy, competence, and relatedness support.

The autonomy support section focuses on when boys have opportunities for self-directed decisions and when boys' opinions are considered or accepted in a teaching setting of initiative games. Examples of autonomy support include providing choices, encouraging boy's questions, and encouraging boy's opinions.

The competence support section focuses on instructor support for boys' feelings of mastery or efficiency of skill performance during initiative games activities. Examples of competence support include providing instructional information that assists boys' learning improvement and providing feedback. Providing feedback is divided into three sub-concepts: corrective (i.e., providing informative cues to lead successful performance in activity tasks), praise (verbal or non-verbal), and encouragement.

The relatedness support section focuses on when boys receive close, stable, secure, and nurturing feelings from an instructor in a teaching setting of initiative games. Examples of relatedness support include promoting teamwork or cooperation, interaction patterns, and personal interactions. Interaction patterns are divided into three sub-categories: individual, group, and a whole class. Personal interactions are also divided into two sub-categories: verbal or non-verbal and individual or group.

There are 14 blocks associated with each section in this observation form. Each block represents a two minute time span. During the two minutes, the three supportive behaviors (autonomy, competence, and relatedness support) provided by the instructor are observed and coded. During the two minutes, each time one of the behaviors is observed, a tally is coded. At the end of the two minutes, the recorder moves over to time segment two and repeats the process. Beep signals on an audio-cassette inform the recorder when to begin and end each two minutes time segment. At the closure of the class, frequency tally recordings of all instructor behaviors stop.

Interviews

Interviews assessed instructor support (autonomy, competence, and relatedness support) that boys (n=50) perceived during initiative games. Campers were interviewed using a semi-structured format. The format consisted of three questions and probing statements when necessary (Merriam, 1998). The three interview questions were:

(a) Did your coach allow you and your group to make choices in this challenge activity?

If yes: how? What kinds of choices did you make?

If no: why not?

Do you like being given choices?

If yes: why?

If no: why not?

(b) Did your coach help you and your group feel confident while completing this challenge activity?

If yes: how? What did you think while you were doing the challenge activity?

If no: why not?

(c) Do you think your coach cared whether you and your group were successful in this challenge activity?

If yes: how did he show that?

If no: why not?

Procedures

Data were collected during regularly scheduled camp activities in the summer of 2012. During Week one of each session, the boys completed the PACER test on the first day and the three questionnaires on the third day as pre-test. During Week two and three of each session, boys (n=50) who participated in initiative games in both sessions were interviewed. During Week three, the last week of each session, all boys completed the three questionnaires on the third day and the PACER test on the last day again as post-test.

The questionnaires were administered by the researcher to the boys in the camp cafeteria after scheduled camp activities. They were encouraged to answer as honestly as they could and to ask questions if they had difficulty understanding instructions or items

in the questionnaires. Boys were also notified that their instructors do not have access to their responses. To ensure the confidentiality of their responses, the researcher let boys disperse from each other so that they could not see each other's answers. The questionnaires took approximately 20 minutes to administer. The PACER test was administered to the boys by the research team consisting of four graduate students and assessed by camp coaches at a basketball court during scheduled camp activity classes. The PACER test was explained to the boys by the researcher before they performed it and encouraged to do their best.

The boys (n=50) participating in initiative games were interviewed individually at a private place away from the group after each initiative game. All interviews took 10-15 minutes. All interviews were audio-recorded and then transcribed for the purpose of data analysis.

To collect and record instructor's behaviors for autonomy, competence, and relatedness support during initiative games, the researcher used a video camera and Psychological Needs Support Observation Form. Ten different initiative games (see Appendix E) performed by the boys in both sessions were all video-recorded from the beginning through the end of each class. The researcher also took field-notes to record critical incidents reflective of the instructor's support for autonomy, competence, and relatedness during each initiative game. The research team consisting of four graduate students was trained to administer three questionnaires and PACER test prior to collecting the measures in the current study data.

Data Analysis

Questionnaire Data

To analyze the questionnaire data, the following steps were taken: all data were screened to exclude any outliers or missing data. Before conducting the preliminary analysis, a MANOVA was conducted to assess whether boys in both camp sessions were different at pre-test.

In the preliminary analysis, descriptive data were provided for all of the variables. Mplus .11 version program (Muthén & Muthén, 2007) was used to assess factorial structure validity of the scores provided by the three self-reported questionnaires (PNPQ, BREQ-2, and PISQ) using Confirmatory Factor Analyses (CFA). The fit of the data to the model was assessed by estimating the ratio of chi-square to degrees of freedom (X^2/df), comparative fit index (CFI), the root mean square error of approximation (RMSEA), and standardized root mean residual (SRMR) indices. The ratio of chi-square to degrees of freedom (X^2/df) should be smaller than 3.0 for an acceptable fit (Browne & Gudeck, 1993). Comparative fit index (CFI) values equal to or greater than .90 are considered a good fit (Byrne, 1998). The root mean square error of approximation (RMSEA) of $\leq .05$ is considered a good fit; $>.05$ to $\leq .08$, a reasonable fit; $> .08$ to $\leq .10$, a fair fit; $> .10$, poor (Byrne, 1998). Standardized root mean residual (SRMR) values less than or equal to .05 is considered a good fit; $>.05$ to $\leq .08$, a fair fit; $> .08$ to $\leq .10$, poor (Byrne, 1998). The internal consistency of all questionnaire data was confirmed using Cronbach's alpha index (1951). To describe the stability of study variables across two time points, variable correlations between pre and post-tests were

assessed.

Pearson correlation analyses were conducted to investigate the relationships among the four set of variables: psychological needs for autonomy, competence, and relatedness; perceived instructor support for autonomy, competence, and relatedness; five self-determined motivational regulations; PACER test performance. Multiple regression analyses investigated how autonomy, competence, and relatedness of the boys contributed to their five motivational regulations. Repeated measures MANOVAs examined changes in the five motivational regulations and the perceived instructor support for autonomy, competence, and relatedness across the three-week camp period. Finally, a dependent t-test examined PACER test score changes of the boys across the three-week camp period of time.

Observation Data

Observation data on instructor supportive behaviors for autonomy, competence, and relatedness were coded using a Psychological Needs Support Observation Form adapted from the Teacher Observation Form – Critical Thinking developed by McBride and Bonnette (1995). These observed data were first reported as frequencies of supportive behaviors for autonomy, competence, and relatedness. Then, they were analyzed by chi-square tests to determine if observed instructor supportive behaviors for autonomy, competence, and relatedness were different from one another in initiative games.

Prior to the coding, two observers were trained on the observation instrument. The training consisted of studying literature on instructor supportive behaviors for

autonomy, competence, and relatedness, reviewing a manual (see Appendix F), and two 2-hour practice sessions. The practice sessions included watching videotapes of initiative games not related to this study, discussing dimensions in three categories, and distinguishing the categories and their subcategories. After training, two trainees collaboratively coded instructor supportive behaviors for autonomy, competence, and relatedness in the videotaped initiative games. After that, they individually coded the instructor supportive behaviors from ten videotaped initiative games recorded at camp in both sessions.

During the coding process, instructor supportive behaviors were recoded every two minutes, signaled by a digital recorder arranged by the researcher. In terms of how often the instructor supportive behaviors appear or absent in every two minutes, they were coded into three categories: autonomy, competence, and relatedness support to indicate what the instructor was doing at the observation interval. The coded number for instructor supportive behaviors represented the frequencies the instructor modeled in each observed initiative game lesson.

To establish inter-observer reliability, the two observers separately coded five videotaped initiative games not related to this study. Reliability was calculated by $\frac{\# \text{ agreements} + \# \text{ disagreements}}{\# \text{ of agreements}} \times 100$. Inter-observer agreement averaged 86% within a range of 77 to 94%. Eighty-five percent was established as the minimum agreement level prior to actual coding (van der Mars, 1989).

Interview Data

Data were analyzed using constant comparison method (Lincoln & Guba, 1985)

that consisted of three stages. First, the transcribed interview data were unitized into identifiable pieces. Second, categories were created from the identifiable units and third, the categories were then merged into overarching themes. Three members of the research team transcribed all interview data and then identified meaningful units about the boys' perceptions toward their instructor support for autonomy, competence, and relatedness during initiative games. For example, the statement, "the instructor provided a choice for us in our activity" was placed in a category under a perceived autonomy theme, as "providing choices." The categories were then compared with others, merged into themes that were defined and refined. Disagreements among researchers were discussed until 100% agreement occurred, so that all final coding was consensual.

To ensure the findings were credible, four trustworthiness strategies (Lincoln & Guba, 1985) were utilized. First, peer debriefing was conducted with a graduate student familiar with qualitative research methods. Peer debriefing serves to disclose any overlooked interpretations and themes from the data. Second, a negative case analysis was conducted to confirm cases that do not fit into patterns defined as constructs in a study and may signify other possible explanations. Third, after completion of data analysis, the final interpretations from audio-recorded data were sent to a qualitative research method expert to ensure that all of the finalized interpretations were logically supported by the original data sources and theoretical framework. Fourth, triangulation from multiple data sources was utilized to elicit the diverse and divergent constructions of the world that exists within the study context.

Results

The results of this study are divided into two sections according to the method of investigation. The first section, based on the quantitative analyses, represents the relationships of three psychological needs and five motivational regulations, and the changes of five motivational regulations and an endurance performance (PACER test). The first section also provides the observation data about whether initiative games provide instructor support for autonomy, competence, and relatedness for the boys during initiative games. The first section further presents the changes of perceived instructor support for autonomy, competence, and relatedness across the initiative games period. The second section presents the qualitative analyses of the interview data about instructor support for autonomy, competence, and relatedness the boys who participated in initiative games perceived.

Section I: Quantitative Data

Preliminary Analysis

Preliminary analysis confirmed no outliers and five missing cases where a full of measure was omitted. The missing cases were eliminated from further analysis, which retained 95 recruited participants. The results of the MANOVA indicated there were no significant differences ($p > .05$) at the pre-test of both sessions, so data were collapsed. The CFAs revealed a good fit (Bentler, 1990; Hu & Bentler, 1999) between the model and data for PNPQ ($X^2/df = 1.40$, CFI = .93, RMSEA = .06, SRMR = .06), BREQ-2 ($X^2/df = 1.49$, CFI = .92, RMSEA = .07, SRMR = .07), and PISQ ($X^2/df = 1.53$, CFI = .92, RMSEA = .07, SRMR = .06). Alpha coefficients (Cronbach, 1951) for all the self-

reported measures ranged from .548 to .891 on the pre-test and from .520 to .855 on the post-test. One item from each of the external regulation and competence support subscale in pre-test were eliminated from further analysis due to low reliabilities. All study variables demonstrated acceptable internal consistencies (Peterson, 1994). The means, standard deviations, and internal consistency measures among the study variables are presented in Table 1. Further, correlations between each construct from the pre and post-tests significantly correlated with each other, $p < .01$, indicating stability of study's variables across the two time intervals (see Table 1).

As seen in Table 2, expected theoretical associations within each motivational variable set supported by the SDT tenet were confirmed in the pre-test data. In the psychological needs variable, autonomy, competence and relatedness were associated. In addition, perceived instructor support for autonomy, competence, and relatedness were positively correlated with one another. Further, proximal relationships consistency with a theoretical expectation in motivational regulations was supported. That is, intrinsic regulation was highly correlated with identified regulation; extrinsic regulation was associated with introjected regulation; introjected regulation was correlated with identified regulation. Also, amotivation was negatively correlated with intrinsic and identified regulation. Finally, autonomy, competence, and relatedness support were significantly correlated with PACER test scores.

Table 1

Descriptive Statistics, Internal Consistency, and Correlations of Pre & Post Variables

Variables	Mean (SD)	Mean (SD)	α	α	Correlations
	(Pre)	(Post)	(Pre)	(Pre)	(Pre & Post)
Autonomy	3.51 (.75)	3.48 (.68)	.578	.520	.609*
Competence	4.07 (.64)	3.83 (.73)	.741	.767	.698*
Relatedness	3.81 (.80)	3.54 (.86)	.818	.843	.468*
Autonomy Support	4.01 (.73)	3.82 (.72)	.690	.787	.677*
Competence Support	4.16 (.67)	3.88 (.75)	.700	.812	.435*
Relatedness Support	3.67 (.76)	3.76 (.83)	.734	.810	.523*
Amotivation	1.87(.88)	2.27 (.89)	.727	.760	.479*
External Regulation	3.11 (1.07)	3.13 (1.06)	.570	.650	.481*
Introjected Regulation	3.19 (1.18)	3.23 (1.14)	.608	.689	.567*
Identified Regulation	4.12 (.75)	3.95 (.86)	.548	.747	.449*
Intrinsic Regulation	4.53 (.71)	4.28 (.78)	.891	.855	.366*
PACER	30.52 (15.36)	32.79 (18.69)			

Note. * $p < .01$. SD = Standard Deviation. α =Cronbach's alpha coefficients.

Table 2

Bivariate Correlations Among Study Variables (Pre)

	A	C	R	AS	CS	RS	Am	Ex	Ij	Id	It	P
A		.39**	.33**	.18	.23*	.30**	-.01	-.00	.06	.15	.31**	.27**
C			.42**	.16	.27**	.43**	-.25*	-.00	.00	.19	.43**	.30*
R				.41**	.39**	.49**	-.02	.17	.21*	.35**	.31**	.13
AS					.62**	.68**	.07	.06	.32**	.40**	.24*	.13
CS						.49**	-.06	.08	.37**	.51**	.34**	.11
RS							.10	.25*	.29**	.35**	.22*	.22*
Am								.28**	.14	-.23*	-.31**	.06
Ex									.20*	.12	.08	-.01
Ij										.52**	.21*	.08
Id											.42**	.06
It												.18
P												

Note. A=Autonomy, C = Competence, R = Relatedness, AS = Autonomy Support, CS = Competence Support, RS = Relatedness Support, Am = Amotivation, Ex = External Regulation, Ij = Introjected Regulation, Id = Identified Regulation, It = Intrinsic Regulation, P = PACER.

* $p < .05$.

** $p < .01$.

Table 3

Bivariate Correlations Among Study Variables (Post)

	A	C	R	AS	CS	RS	Am	Ex	Ij	Id	It	P
A		.35**	.30**	.19	.23*	.16	-.08	.12	.14	.27**	.26**	.31**
C			.46**	.35*	.37**	.38*	-.12	.27**	.18	.57**	.45**	.26*
R				.59**	.57**	.61**	-.24*	.22*	.36**	.55**	.57**	.24*
AS					.64**	.75**	-.18	.13	.24*	.38**	.42**	.19
CS						.62**	-.30**	.12	.20	.41**	.51**	.26*
RS							-.15	.02	.15	.29**	.41**	.22*
Am								.10	-.14	-.20*	-.30**	-.02
Ex									.24*	.40**	.21*	.09
Ij										.61**	.30**	.28**
Id											.57**	.26*
It												.18
P												

Note. A=Autonomy, C = Competence, R = Relatedness, AS = Autonomy Support, CS = Competence Support, RS = Relatedness Support, Am = Amotivation, Ex = External Regulation, Ij = Introjected Regulation, Id = Identified Regulation, It = Intrinsic Regulation, P = PACER.

* $p < .05$.

** $p < .01$.

As shown in Table 3, autonomy, competence, and relatedness were all significantly correlated with intrinsic regulation and identified regulation in the post-test ($r = .26$ to $.57$, $p < .05$ for all). Stepwise multiple regressions examined how autonomy, competence, and relatedness predicted these two motivational regulations. As indicated in Table 4, identified regulation was predicted by competence and relatedness, $R^2 = 43\%$, $\beta = .400$, $p < .01$; $\beta = .33$, $p < .01$, respectively. Intrinsic regulation was predicted by relatedness and competence, $R^2 = 37\%$, $\beta = .458$, $p < .01$; $\beta = .237$, $p < .05$, respectively.

Results of the repeated measures MANOVA showed significant differences among the five self-determined motivational regulations across the three-week camp period, Wilks' $\lambda = .801$, $F(5, 86) = 4.286$, $p = .002$, $\eta^2 = .199$. Significant mean differences occurred in amotivation, $F(1, 90) = 16.875$, $p = .000$, $\eta^2 = .158$, and intrinsic regulation, $F(1, 90) = 8.510$, $p = .004$, $\eta^2 = .08$, across the two time periods. From pre to post-test, amotivation scores increased whereas intrinsic regulation scores decreased. With the data of boys ($n=50$) who participated in initiative games, results of an additional repeated measures MANOVA revealed no significant differences on the perceived instructor support for autonomy, competence, and relatedness, Wilks' $\lambda = .897$, $F(3, 43) = 1.644$, $p = .193$, across the camp period. Results of the dependent t-test showed no significant differences in the PACER test scores across the two testing sessions, $F(1, 86) = 2.604$, $p = .110$, $\eta^2 = .029$.

Table 4

Summary of Multiple Regression Analyses

Dependent Variable	Independent Variable	Step	B	β	t	R^2
Identified Regulation	Competence	1	.474	.400	4.457	.325
	Relatedness	2	.364	.363	4.044	.103
Intrinsic Regulation	Relatedness	1	.415	.458	4.887	.325
	Competence	2	.254	.237	2.527	.043

Note. β = standardized regression coefficients.

Observation Data

Chi-square tests examined whether instructor supportive behaviors for autonomy, competence, and relatedness were different in initiative games. As shown in Figure 1, the results of the chi-square tests on the observation data revealed a significant variance in the distribution of instructor supportive behaviors for autonomy, competence, and relatedness in the initiative games, $\chi^2 (2, N = 1245) = 177.58, p = .000$. The instructor provided more support for relatedness (41.86%) than for competence (37.99%) and autonomy (20.15%) during the initiative games. Further, each supportive behavior was significantly different from one another ($p < .01$).

In support for autonomy, the instructor encouraged the boys' opinions at the highest level, provided choices at a moderate level, and encouraged questions at the least level for the boys during the initiative games.

In support for competence, the instructor provided feedback at the highest level, instructional information and praise at a moderate level, and encouragement at the least level for the boys during the activities.

In support for relatedness, the instructor interacted with a whole class at the highest level to provide instructional information helping learning progress at the beginning of each class, and feedback and praise at the end of each class. Each boy was also provided feedback and praise and encouraged questions dependent on their performances during the activities at a high level of instructor interactions. The instructor interacted with the boys to encourage teamwork during the activities at a moderate level. Lastly, the instructor contacted with a boy by means of a personal

manner such as taking care of the boy's injury and a group of boys to offer feedback at the least portion of time during the activities (see Table 5).

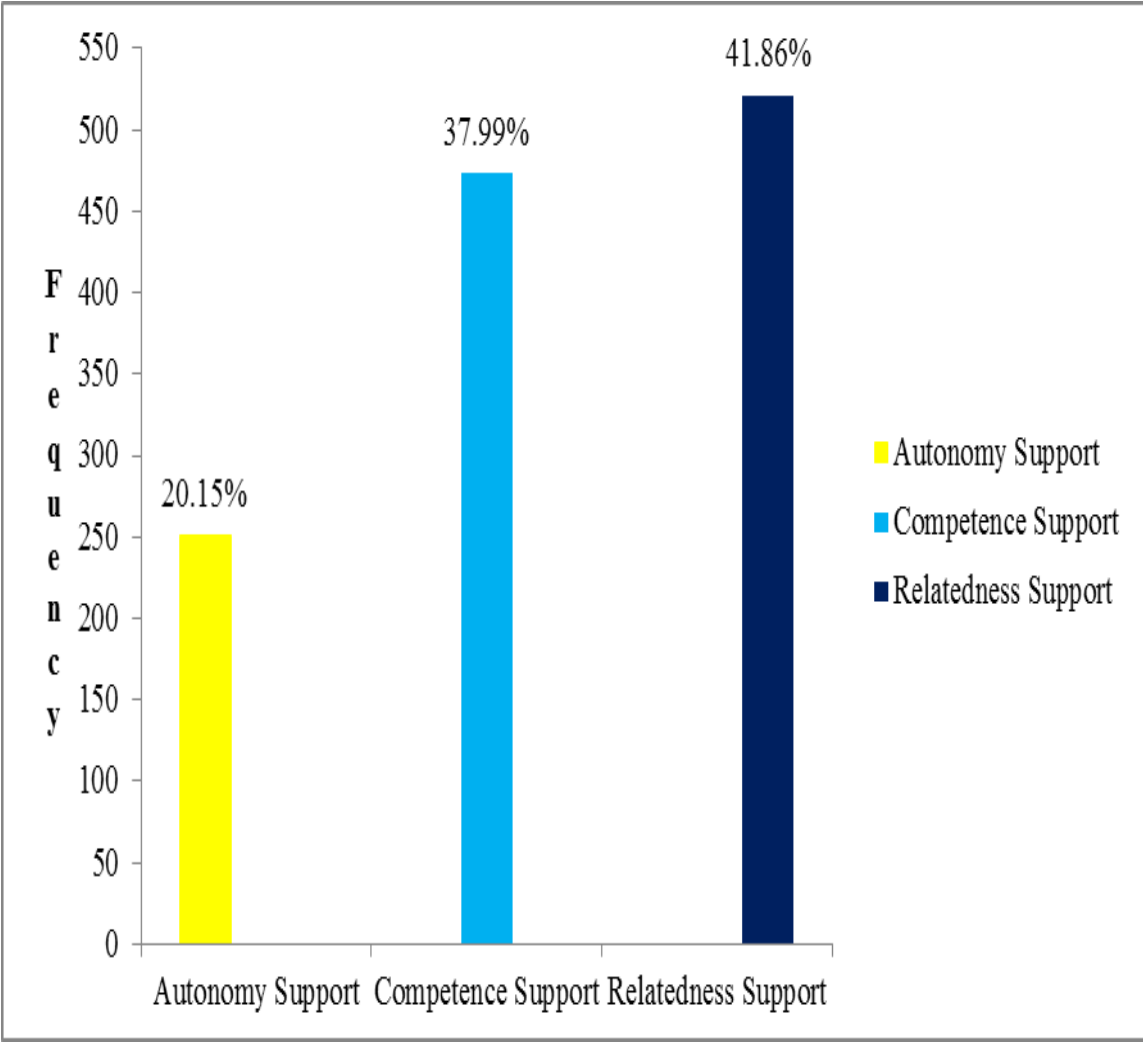


Figure 1. Frequency of instructor supportive behaviors during initiative games. Ten different initiative games in two sessions.

Table 5

Frequency of Three Instructor Supportive Behaviors (N=1245)

Autonomy Support (251)	Competence Support (473)	Relatedness Support (521)
Providing choices (52)	Instructional information (108)	Promoting teamwork (88)
Encouraging questions (30)	Feedback (197)	Interaction patterns Individual (178) Group (13) Class (233)
Encouraging opinions (169)	Praise (109)	Personal interactions Verbal/Individual (9)
	Encouragement (59)	

Note. () = frequency.

Section II: Qualitative Data

The interview data revealed boys' perceptions of their instructor support for autonomy, competence, and relatedness during the initiative games. From coded cards ($N=25$), three themes emerged and were labeled, "Perceived autonomy" (41.5%), "Perceived competence" (31.5%), and "Perceived relatedness" (27%). Each theme also included several categories grounded on its own dimensions.

Perceived Autonomy

Making choices. This category represented 69% response rate in the theme. The boys expressed how they felt about having their own decisions while conducting the challenges in the initiative games. The boys attributed the process of decision making to perceived autonomy, meaning that their activities were self-endorsed. Comments included, "I made a choice during the activity" (Ban, 11 years old), "During activity, I had freedom to express my ideas and make up rules" (John, 13 years old), and "I could choose what I can do" (Paul, 12 years old).

Providing choices. This category occupied 31% response in the theme. Providing boys with choices during the initiative games gave the boys an opportunity for autonomy. Related comments included, when asked what kinds of choices the instructor provided, Tom (10 years old) and Raul (11 years old) reported, "He let us choose our own ideas" and "He gave us any choices we have," and Alan (12 years old) also added "He let us to make decisions."

Perceived Competence

Instructional information. This category accounted for 35% reply in the theme.

The instructor offered necessary information to solve a problem in activities so that boys could understand what they were required to do and improve their performance during the initiative games activities. Providing instructional information made the boys feel more competent as they addressed the problem solving activities. Comments ranged from, “He told us what to do” (Pique, 10 years old), to, “He just talked to us like how to do it until we started playing the game” (Joe, 13 years old), and “He gave us specific objectives and what to do” (Rob, 12 years old).

Praise. This category corresponded to 35% response rate in the theme. The instructor provided positive verbal appraisal and expression during the boys’ actions when the boys were successful in solving the challenge or showed effort during each initiative game. Praise provided by the instructor could boost feelings of competence concerning the performance of their tasks and willingness to put forth efforts. Expressed comments included, “He said a good job when we performed well” (Dan, 10 years old), “He congratulated us when we were successful” (Paul, 13 years old), and “He said I was pleased and going to tell other people about our accomplishment (Bill, 11 years old).

Feedback. This category stood for 17% answer in the theme. The instructor provided the boys with information to help the boys improve and enhance their performance during the initiative games activities. Feedback from the instructor could enhance the boys’ competence by empowering them and expanding their capacity to meet more challenging tasks. When asked how the instructor provided feedback during the activities, Tom (10 years old) said, “He told us if we did something wrong and right,” “He made noises to make correction when we got a wrong way” (Ryan, 12 years

old), and “He gave us advice all the time” (Jack, 12 years old).

Confidence. This category matched 13% response in the theme. The boys felt they could solve the various tasks they faced while they were engaged in the initiative games. The confidence perceived by the boys can be linked to perceived competence in how they experienced some level of effectiveness or success with their performances supported by their instructor. Perceived responses included, “I thought I can do that (activity)” (Mao, 10 years old), “We thought we could do it (activity) and we just tried and we could do it” (Young, 12 years old), and “I felt it was easy to go by the end” (Norma, 11 years old).

Perceived Relatedness

Interactions with care. This category recorded 54% response rate in the theme. The instructor provided evidence of empathy when helping the boys feel worthy of performing their task during each initiative game. Demonstrating a caring disposition could make the boys feel connected to and trusting of their instructor and each other because of the perception of relatedness support. Supportive statements about their instructor included, “He let try to do again to complete the game” (Hugo, 12 years old), “He did not yell us whenever we messed up” (Tom, 11 years old), and “I feel safe because I could tell him to help me” (Guan, 13 years old).

Communication. This category formed 35% reply in the theme. The boys mentioned that it was essential to effectively interact with their group members while working on trying to solve the initiatives. The communication among the boys emphasized by their instructor was seen as perceived relatedness, reflecting a sense of

connection with and a feeling of being cared for by others. When asked how they communicated with each other, the boys revealed several strategies. “I was watching and listening to others during the activity” (Peter, 13 years old), “We paid attention to each other and did not argue” (Owen, 11 years old), and “I was talking to other group members like my own opinions about what to do and listening to their ideas” (Rye, 11 years old).

Teamwork. This category indicated 11% answer in the theme. The boys recognized the importance of working collaboratively with their teammates to make progress solving the group initiatives as encouraged by their instructor. Teamwork could be considered part of perceived relatedness, which posits a sense of belonging and involvement with others. Related comments included, “We tried to help each other during the activity” (Wang, 11 years old), “We did teamwork” (Kun, 10 years old), and “We were working together as a group” (Ryan, 12 years old).

Discussion

The purposes of this study were to first investigate the relationships between three psychological needs and five self-determined motivational regulations of at-risk boys attending a summer sports camp. Second, this study examined changes in self-determined motivational regulations and performance on an endurance run across a three-week camp session. Finally, this study examined whether initiative games provided instructor support for autonomy, competence, and relatedness through multiple data sources.

Correlations among the three psychological needs and the five motivation regulations at post-test showed that autonomy, competence, and relatedness were significantly correlated with intrinsic and identified regulation. The correlations indicate that the motivational processes in which the boys perceived autonomy, competence, and relatedness from their camp activity contexts were related to internalization of autonomous motivational regulations (i.e., intrinsic and identified regulation). Multiple regression analyses provided additional indicators of the three psychological needs on motivational regulations. Competence and relatedness were significant predictors of intrinsic and identified regulation.

These results are consistent with SDT studies based on students' perceptions of autonomy, competence, and relatedness in physical activity settings. That is, the psychological needs students perceived in a social supportive context predicted their autonomous motivational regulations versus controlled motivational regulations (i.e., external and introjected regulation) (Standage et al., 2005).

Ntoumanis, Barkoukis, and Thøgersen-Ntoumani (2009) found that adolescent students with high competence and relatedness need satisfaction in physical education classes perceived higher levels of intrinsic and identified regulation. Further, studies have found adolescent students' perceptions of competence and relatedness to be the salient predictors determining autonomous motivational regulations in physical education settings that were teacher-centered and lacked student choice similar to the camp environment (Ntoumanis, 2001; Standage, Duda, & Ntoumanis, 2003; Standage, Duda, & Ntoumanis, 2006).

Specifically, they have argued that perceiving competence and relatedness in team sports contexts such as those of the camp environment may elicit autonomous motivational regulations because feeling competent in the demonstration of physical ability in public and the development of feelings of connectedness to classmates could play an important role in shaping adaptive motivational dispositions. For the most part, the current study findings were consistent with these relationships.

Results also showed significant changes in the mean scores of amotivation and intrinsic regulation across the three-week camp period of time. Amotivation increased and intrinsic motivation decreased. The camp activities primarily involved competitive team sports such as soccer, basketball, and flag football. Instruction was instructor centered or controlled. In this environment, there are more likely to be fewer opportunities for student choice and involvement in decision making (McBride & Xiang, 2004). Thus, it is possible that the campers felt less autonomous in their environment that could, in turn, contribute to boredom, reduced engagement, or performance (Pelletier, Dion, Tuson, & Green-Demers, 1999). Under such circumstance, the boys may have been less likely to try their best, leading to increased amotivation and decreased intrinsic regulation during such activities (Kalaja, Jaakkola, Watt, Liukkonen, & Ommundsen, 2009).

Results from the PACER test yielded no significant changes across the camp period of time. Shen, McCaughtry, and Martin (2007) proposed that different activity domains such as learning environments and durations can largely influence youths' motivational status. The camp activity environment supported a competitive facet in

most activities, had an instructor-oriented teaching approach, and had an inflexible time schedule. The environmental combination of these conditions may not have stimulated the boys' motivational dispositions to yield significant changes on an endurance activity (Kalaja et al., 2009). In other words, because the boys were not intrinsically motivated by the camp activity contexts that did not promote their psychological needs for autonomy, competence, and relatedness, they might have been less likely to make significant changes in the endurance activity across the camp period (Shen et al., 2009).

To examine whether initiative games provide instructor support for autonomy, competence and relatedness for the boys, multiple data sources (observation, interview, and questionnaire) were used. Chi-square tests results revealed that the three supportive behaviors were provided by the instructor with different amounts of the supportive behaviors during the initiative games. Specifically, the instructor provided more support for relatedness than for competence and autonomy. Zhang, Solmon, and Gu (2012) found autonomy and competence support by physical education teachers in classes share variance with relatedness support in terms of corresponding occasions. Thus, it is assumed that relatedness support can be an incorporate dimension if a teacher provides autonomy and competence support in physical activity settings. Accordingly, it is reasonable that the instructor's behaviors for relatedness support during the initiative games showed the highest frequency on the observation form.

In addition, during the initiative games activities, the instructor would have needed to discriminately provide supportive behaviors for autonomy, competence, and relatedness based on the boys' psychomotor capacities and performances during each

game to help their learning progress. Thus, the discrete supportive behaviors may have been likely to lead to the divergence among frequencies of autonomy, competence, and relatedness support.

These results were also endorsed by the results of interview data collected from the boys who participated in the initiative games. They acknowledged that their instructor was very supportive of making choices (i.e., support for autonomy: “During activity, I had freedom to express my ideas and make up rules”) and providing instructional information (i.e., support for competence: “He gave us specific objectives and what to do”) and interactions with care (i.e., support for relatedness: “He let try to do again to complete the game”) during their activities. The results of the interview data analyses attested to the fact that the boys participating in the initiative games perceived support for autonomy, competence, and relatedness provided by their instructor.

However, the results of the self-reported measure did not show significant mean level changes in perceptions of instructor support for autonomy, competence, and relatedness across the initiative games period. Nevertheless, it is obvious that the instructor provided supportive behaviors for autonomy, competence, and relatedness in initiative games (i.e., frequencies), and the boys perceived the three supportive behaviors during the initiative games as stated in the three themes of interview results, “Perceived autonomy,” “Perceived competence,” and “Perceived relatedness.” It is recommended for future research to investigate an impact on participating in initiative games activities with a longer term period to prove significant changes in the self-reported measure.

In sum, the psychological needs (i.e., competence and relatedness) of the boys

participating in the camp activities showed a positive relationship with intrinsic and identified regulation. However, this positive relationship failed to yield significant changes in forms of self-determined motivation (i.e., intrinsic and identified regulation) and the endurance run over the course of the camp period. Finally, the initiative games were confirmed as a social supportive context capable of fostering psychological needs for autonomy, competence, and relatedness if the instructor was willing to provide the social supportive behaviors.

While notable findings among the boys occurred, there are some limitations to be noted. First, this study examined changes in study variables over a three-week period. This is a relatively short time to assess observable changes among the investigated study variables. This time frame may have contributed to the lack of significant changes in the self-determined motivation and the endurance performance among the boys. To assess the motivational processes and behavioral changes of participation in camp activities with an at-risk adolescent population, a longer time frame may be required. Second, this study was conducted with only at-risk male adolescents. Therefore, the present study makes no generalizations beyond the immediate population. Future research might expand the sample size, gender pool, and demographic backgrounds.

Nevertheless, these findings yield the practical implications that may help instructors or program managers understand the motivational processes and their effects on at-risk boys participating in a summer sports camp. First, the boys showed increased amotivation and decreased intrinsic regulation across the three-week camp session. Research has demonstrated instructional environments with low opportunities for

autonomy or choice may not be suitable for promoting motivation, learning, and development for adolescent students (Treasure & Roberts, 2001). Specifically, motivational climates that the teacher promotes can have a significant effect on the students' motivational processes (Valentini & Rudisill, 2004). It is suggested that camp instructors design positive learning contexts by providing greater autonomy such as promoting decision-making opportunities in activity tasks and valuing campers' senses of choice, volition, and willingness in activity contexts (Zhang, 2009). They can also provide more opportunities for choice to enhance intrinsic motivation and persistence in the camp activities. For example, instructors can accept campers' opinions in selecting groups for each activity and provide campers with opportunities for choosing their favorite activities.

Additionally, the boys may not be adaptively challenged by camp activities based on competitive camp environments (Pelletier et al., 1999). Adventurous or challenging activity programs emphasizing inter and intrapersonal facets rather than competitive aspects in a supportive environment might be added to the camp curriculum. Including such activities in camp programs might elicit campers' interests and active engagement, leading to greater social, cognitive, and psychomotor development.

Finally, the results obtained from multiple data sources provided evidence that at-risk boys perceived support for autonomy, competence, and relatedness if the instructor promoted the three psychological needs through supportive behaviors during initiative games. This may underscore an instructor's role to facilitate self-determined motivation through initiative games. Deci and Ryan (2002) asserted that in the physical

activity contexts, significant others such as physical education teachers can influence adolescents' cognitive processes, which in turn internalize into self-determined motivational regulations. It is worth emphasizing that instructor's supportive behaviors for autonomy, competence, and relatedness play a crucial role in shaping at-risk boys' self-determined motivation during corporate activities such as initiative games.

CHAPTER III

CONCLUSION

Overall, this study extends previous research findings in physical activity settings based on the self-determination theory (SDT) literature. Although previous research investigated whether physical activity settings or programs impact three psychological needs, self-determined motivational regulations, and physical activity outcomes, none focused specifically on at-risk male adolescent populations in a summer camp setting.

This study is one of the first to utilize multiple data collection methods, including instructor observation, interview, and self-reported questionnaire to examine support for autonomy, competence, and relatedness among a group of at-risk adolescent population during initiative games. Findings through the triangulation of data may offer an advanced perspective to the understanding of support for autonomy, competence, and relatedness of at-risk boys participating in initiative games.

This study is limited in the scope of a camp period and sample pool. Future research is needed to expand the understanding of the motivational processes that lead to self-determined motivation and subsequently a significant change in performance on physical activity with a longer camp period of time. Such investigation can be more necessary for promoting physically active behaviors in a summer camp environment with different demographic populations.

When considering practical implications for camp programs that encourage physically active lifestyles, this study provides additional evidence on motivational and behavioral changes supported by a theoretical viewpoint. By providing more

opportunities to meet a sense of autonomy in activity contexts and instilling novel and challenging activities, camp administrators might better promote self-determined motivation that boosts at-risk boys' engagement in camp activities. Doing so can, in turn, help them to sustain higher levels of intrinsic motivation that will transfer to enhanced performances across their camp experience.

Finally, summer camps basically provide physical activity opportunities for campers. The way to engage campers in physical activity opportunities may be improved through diverse routes such as instructor training, program formation, and environmental supports at camp. Future research is need to explore what other moderators influence campers' motivation and behavioral outcomes for ensuring that camp administrators serve an optimal camp environment for campers' physical benefits.

REFERENCES

- Aelterman, N., Vansteenkiste, M., Keer, H. V., Berghe, L. V., Meyer, J. D., & Haerens, L. (2012). Students' objectively measured physical activity levels and engagement as a function of between-class and between-student differences in motivation toward physical education. *Journal of Sport & Exercise Psychology, 34*, 457-480.
- Armitage, C. J., & Sprigg, C. A. (2010). The roles of behavioral and implementation intentions in changing physical activity in young children with low socioeconomic status. *Journal of Sport & Exercise Psychology, 32*, 359-376.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological bulletin, 107*, 238-246.
- Bialeschki, M. B., Henderson, K. A., & James, P. A. (2007). Camp experiences and developmental outcomes for youth. *Child Adolescent Psychiatric Clinics of North America, 16*(4), 769-788.
- Biddle, S. J., & Nigg, C. R. (2000). Theories of exercise behavior. *International Journal of Sport Psychology, 31*, 290-304.
- Bonnette, R., McBride, R. E., & Tolson, H. (2001). The differential effect of indirect instruction in the teaching of sport skills on critical thinking and self-esteem of early adolescent boys placed at-risk. *Sport, Education, and Society, 6*(2), 183-198.

- Browne, M. W., & Gudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structure equation models* (pp. 136-162). Newbury Park, CA: Sage.
- Bryan, C. L., & Solmon, M. A. (2007). Self-determination in physical education: Designing class environments to promote active lifestyles. *Journal of Teaching in Physical Education, 26*, 260-278.
- Butcher, K., Sallis, J. F., Mayer, J. A., & Woodruff, S. (2008). Correlates of physical activity guideline compliance for adolescents in 100 U.S. cities. *Journal of Adolescence Health, 42*, 360-368.
- Byrne, B. M. (1998). *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Centers for Disease Control and Prevention (CDC), (2013). *Overweight and obesity*. Retrieved August 14, 2013 from <http://cdc.gov/physicalactivity/index.html>
- Chatzisarantis, N., & Hagger, M. S. (2009). Effects of an intervention based on self-determination theory on self-reported leisure-time physical activity participation. *Psychology & Health, 24*(1), 29-48.
- Close, W., & Solberg, S. (2008). Predicting achievement, distress, and retention among lower-income Latino youth. *Journal of Vocational Behavior, 72*, 31-42.
- Coakley, J., & White, A. (1992). Making decisions: Gender and sport participation among British adolescents. *Sociology of Sport Journal, 9*, 20-35.

- Cooper Institute. (2007). *FITNESSGRAM®/ACTIVITYGRAM® test administration manual* (4th ed.). Champaign, IL: Human Kinetics.
- Cronbach, L. (1951). Coefficient alpha and the internal structure of test. *Psychometrika*, *16*, 267-334.
- Daley, A., & Duda, J. (2006). Self-determination, stage of readiness to change for exercise, and frequency of physical activity in young people. *European Journal of Sport Science*, *6*(4), 231-243.
- Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuit: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*, 227-268.
- Deci, E. L., & Ryan, R. M. (2002). Overview of self-determination theory: An organismic dialectical perspective. In E.L. Deci & R.M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3-36). Rochester, NY: University of Rochester Press.
- Delva, J., Johnston, L. D., & O'Malley, P. M. (2007). The epidemiology of overweight and related lifestyle behaviors: Racial/ethnic and socioeconomic status differences among American youth. *American Journal of Preventive Medicine*, *33*, 178-186.
- Edmunds, J., Ntoumanis, N., & Duda, J. L. (2008). Testing a self-determination theory-based teaching style intervention in the exercise domain. *European Journal of Social Psychology*, *38*, 375-388.

- Fredricks, J. A., & Eccles, J. S. (2002). Children's competence and value beliefs from childhood through adolescence: Growth trajectories in two male-sex-types domains. *Developmental Psychology, 38*, 519-533.
- Gortmaker, S. L., Peterson, K., Wiecha, J., Sobol, A. M., Dixit, S., Fox, M. K., ... Laird, N. (1999). Reducing obesity via a school-based interdisciplinary intervention among youth. *Archives of Pediatric and Adolescent Medicine, 153*(4), 409-418.
- Harris, E. (2010). 21st CCLC-funded afterschool programs. Research update. *Highlights School Time Database, 4*, 1-4.
- Hill, E., & Sibthorp, J. (2006). Autonomy support at diabetes camp: A self-determination theory approach to therapeutic recreation. *Therapeutic Recreation Journal 40*(2), 107-125.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.
- Janssen, I., Katzmarzyk, P., Boyce, W., Vereecken, C., Mulvihill, C., Robert, C., . . . Pickett, W. (2005). Comparison of overweight and obesity prevalence in school aged youth from 34 countries and their relationships with physical activity and dietary patterns. *Obesity Reviews, 6*, 123-132.
- Judd, B. (2006). *Incorporating youth development principles into adolescent health programs: A Guide for state-level practitioners and policy makers*. Washington, DC: The Forum for Youth Development, Impact Strategies, Inc. and the Alaska Department of Health and Social Services.

- Kalaja, S., Jaakkola, T., Watt, A., Liukkonen, J., & Ommundsen, Y. (2009). The association between seventh grade Finnish students' motivational climate, perceived competence, self-determined motivation, and fundamental movement skills. *European Physical Education Review, 15*(3), 315-335.
- Kowal, J., & Fortier, M. S. (2000). Testing the relationships from the hierarchical model of intrinsic and extrinsic motivation using flow as a motivational consequence. *Research Quarterly for Exercise and Sport, 71*, 171-181.
- Lawman, H. G., Wilson, D. K., Van Horn, M. L., Resnicow, K., & Kitzman-Ulrich, H. (2011). The relationship between psychosocial correlates and physical activity in underserved adolescent boys and girls in the ACT trial. *Journal of Physical Activity and Health, 2011, 8*, 253-261.
- Lincoln, Y., & Guba, E. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage Publications.
- Mancuso, M., & Caruso-Nicoletti, M. (2003). Summer camps and quality of life in children and adolescents with type 1 diabetes. *Acta-Biomedical: Atenei Parmensis, 74*(1), 35-37.
- Markland, D., & Tobin, V. (2004). A modification to the behavioral regulation in exercise questionnaire to include an assessment of amotivation. *Journal of Sport and Exercise Psychology, 26*, 191-196.
- Martin, J. J., McCaughtry, N., & Shen, B. (2008). Predicting physical activity in Arab American school children. *Journal of Teaching in Physical Education, 27*, 205-219.

- McBride, R. E., & Bonnette, R. (1995). Teacher and at-risk students' cognitions during open-ended activities: Structuring the learning environment for critical thinking. *Teaching and Teacher Education, 11*(4), 373-388.
- McBride, R. E., & Xiang, P. (2004). Thoughtful decision making in physical education. *Quest, 56*(3), 337-354.
- McDill, E., Natriello, G., & Pallas, A. (1986). A population of at-risk: Potential consequences of tougher school standards for student dropout. *American Journal of Education, 2*, 135-141.
- Merriam, S. D. (1998). *Qualitative research and case study application in education*. San Francisco, CA: Jossey-Bass.
- Molnar, B. E., Gortmaker, S. L., Bull, F. C., & Buka, S. L. (2004). Unsafe to play? Neighborhood disorder and lack of safety predict reduced physical activity among urban children and adolescents. *American Journal of Health Promotion, 18*, 378-386.
- Muth n, L. K., & Muth n, B. O. (2007). *Mplus User s Guide*. Sixth Edition. Los Angeles, CA: Muth n & Muth n.
- Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. *British Journal of Educational Psychology, 71*, 225-242.
- Ntoumanis, N., Barkoukis, V., & Thøgersen-Ntoumani, C. (2009). Developmental Trajectories of motivation in physical education: Course, demographic differences, and antecedents. *Journal of Educational Psychology, 3*, 717-728.

- Ogden, C. L., Carroll, M. D., Curtin, L. R., Lamb, M. M., & Flegal, K. M. (2010). Prevalence of high body mass index in US children and adolescents, 2007-2008. *Journal of the American Medical Association, 303*, 242-249.
- Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2012). Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. *Journal of the American Medical Association, 307*, 483-490.
- Orlick, T. (1982). *The Second Cooperative Sports and Games Book*. New York, NY: Pantheon Books.
- Passow, A. (1991). Urban schools a second or third time around: Priorities for curricular and instructional reform. *Education and Urban Society, 23*, 243-255.
- Pelletier, L. G., Dion, S., Tuson, K., & Green-Demers, I. (1999). Why do people fail to adopt environmentally protective behaviors? Toward a taxonomy of environmental amotivation. *Journal of Applied Social Psychology, 29*, 2481-2504.
- Peterson, P. A. (1994). A meta-analysis of Cronbach's coefficient alpha. *The Journal of Consumer Research, 21*(2), 381-391.
- Power, T. G., Ullrich-French, S. C., Steele, M. M., Daratha, K. B., & Bindler, R. C. (2011). Obesity, cardiovascular fitness, and physically active adolescents' motivations for activity: A self-determination theory approach. *Psychology of Sport and Exercise, 12*, 593-598.

- Purvis, K. B., Cross, D. R., Federici, R., Johnson, D., & McKenzie, L. B. (2007). A therapeutic summer day camp for adopted and at-risk children with special socio-emotional needs. *Adoption & Fostering, 31*(4), 38-48.
- Ramsing, R., & Sibthorp, J. (2008). The role of autonomy support in summer camp programs: Preparing youth for productive behaviors. *Journal of Park and Recreation Administration, 26*(2), 61-77.
- Ryan, R. M., & Deci, E. L. (2000a). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.
- Ryan, R. M., & Deci, E. L. (2000b). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology, 25*, 54-67.
- Ryan, R. M., Stiller, J., & Lynch, J. H. (1994). Representations of relationships to teachers, parents, and friends as predictors of academic motivation and self-esteem. *Journal of Early Adolescence, 14*, 226-249.
- Sallis, J. F., Zakarian, J. M., Hovell, M. F., & Hofstetter, C. R. (1996). Ethnic, socioeconomic, and sex differences in physical activity among adolescents. *Journal of Clinical Epidemiology, 49*, 125-134.
- Shen, B., McCaughy, N., & Martin, J. (2007). The influence of self-determination in physical education on leisure-time physical activity behavior. *Research Quarterly for Exercise and Sport, 78*(4), 328-338.

- Shen, B., McCaughtry, N., Martin, J., & Fahlman, M. (2009). Effects of teacher autonomy support and students' autonomous motivation on learning in physical education. *Research Quarterly for Exercise and Sport*, 80(1), 44-53.
- Shen, B., McCaughtry, N., Martin, J., & Rukavina, P. (2010). An amotivational model in physical education. *Journal of Teaching in Physical Education*, 29, 72-84.
- Solberg, V. S. H., Carlstrom, A. H., Howard, K. A. S., & Jones, J. E. (2007). Classifying at-risk high school youth: The influence of exposure to community violence and protective factors on academic and health outcomes. *Career Development Quarterly*, 55, 313-327.
- Srebnik, D., & Elias, M. (1993). An ecological interpersonal skills approach to dropout prevention. *American Journal of Orthopsychiatry*, 63(4), 115-123.
- Standage, M., Duda, J. L., & Ntoumanis, N. (2003). A model of contextual motivation in physical education: Using constructs from self-determination and achievement goal theories to predict physical activity intentions. *Journal of Educational Psychology*, 95, 97-110.
- Standage, M., Duda, J. L., & Ntoumanis, N. (2005). A test of self-determination theory in school physical education. *British Journal of Educational Psychology*, 75, 411-433.
- Standage, M., Duda, J. L., & Ntoumanis, N. (2006). Students' motivational processes and their relationship to teacher ratings in school physical education: A self-determination theory approach. *Research Quarterly for Exercise and Sport*, 77, 100-110.

- Standage, M., Gillison, F. B., Ntoumanis, N., & Treasure, D. C. (2012). Predicting students' physical activity and health-related well-being: A prospective cross-domain investigation of motivation across school physical education and exercise settings. *Journal of Sport & Exercise Psychology, 34*, 37-60.
- Taylor, I. M., & Ntoumanis, N. (2007). Teacher motivational strategies and student self-determination in physical education. *Journal of Educational Psychology, 99*(4), 747-760.
- Treasure, D. C., & Roberts, G. C. (2001). Students' perceptions of the motivational climate, achievement beliefs and satisfaction in physical education. *Research Quarterly of Exercise and Sport, 72*, 165-175.
- Tremblay, M. S., & Willms, J. D. (2003). Is the Canadian childhood obesity epidemic related to physical inactivity? *International Journal of Obesity, 27*, 1100-1105.
- Ullrich-French, S., McDonough, M. H., & Smith, L. A. (2012). Social connection and psychological outcomes in a physical activity-based youth development setting. *Research Quarterly for Exercise and Sport, 83*(3), 431-441.
- Valentini, N., & Rudisill, M. (2004). Motivational climate, motor-skill development, and perceived competence: Two studies of developmentally delayed kindergarten children. *Journal of Teaching in Physical Education, 23*, 216-234.
- Vallerand, R. J. (2000). Deci and Ryan's self-determination theory: A view from the hierarchical model of intrinsic and extrinsic motivation. *Psychological Inquiry, 11*, 312-318.

- van der Mars, H. (1989). Observer reliability; Issues and procedures. In P. W. Darst, D. Zakrajsek, & V.H. Mancini (Eds.). *Analyzing physical education and sport instruction* (pp. 54-80). Champaign, IL: Human Kinetics.
- Vierling, K. K., Standage, M., & Treasure, D. C. (2007). Predicting attitudes and physical activity in an “at-risk” minority youth sample: A test of self-determination theory. *Psychology of Sport and Exercise, 8*, 795-817.
- Watts, K., Jones, T. W., Davis, E. A., & Green, D. (2005). Exercise training in obese children and adolescents. *Sports Medicine, 35*, 375-392.
- Wilson, D. K. (2009). New perspectives on health disparities and obesity in youth. *Journal of Pediatric Psychology, 34*, 231-244.
- Wilson, D. K., Evans, A. E., Williams, J., Mixon, G., Sirard, J. R., & Pate, R. (2005). A preliminary test of a student-centered intervention on increasing physical activity in underserved adolescents. *Annals of Behavioral Medicine, 30*, 119-124.
- Wilson, D. K., Van Horn, M. L., Kitzman-Ulrich, H., Saunders, R., Pate, R., Lawman, H., Hutto, B., Griffin, S., Zarrett, N., Addy, C., Mansard, L., Mixon, G., ... Brown, P. (2011). Results of the “active by choice today” (ACT) randomized trial for increasing physical activity in low-income and minority adolescents. *Health Psychology, 30*(4), 463-471.
- Wilson, P. M., Rodgers, W. M., Blanchard, C. M., & Gessell, J. (2003). The relationship between psychological needs, self-determined motivation, exercise attitude, and physical fitness. *Journal of Applied Social Psychology, 33*(11), 2373-2392.

Zarrett, N., Sorensen, C, & Skiles, B. (2013). Environmental and social-motivational contextual factors related to youth physical activity: Systematic observations of summer day camps. *International Journal of Behavioral Nutrition and Physical Activity, 10*, 63-75.

Zhang, T. (2009). Relations among school students' self-determined motivation, perceived enjoyment, effort, and physical activity behaviors. *Perceptual and Motor Skills, 109*(3), 783-790.

Zhang, T., Solmon, M. A., & Gu, X. (2012). The role of teachers' support in predicting students' motivation and achievement outcomes in physical education. *Journal of Teaching in Physical Education, 31*, 329-343.

APPENDIX A

Psychological Needs (autonomy, competence, and relatedness) Perception

We want to know how you feel about the activities at Camp. With the scale below, please indicate how you feel about your activities at Camp. There are no right or wrong answers.

In my activities at Camp...

1(Not at all true) 2(Not true) 3(No idea) 4(True) 5(Very true)

1. I can decide which activities I want to do

1 2 3 4 5

2. I think I am pretty good at the activities we do

1 2 3 4 5

3. I feel supported by my group members

1 2 3 4 5

4. I am satisfied with my performance

1 2 3 4 5

5. I feel understood by my group members

1 2 3 4 5

6. I participate in the activities because I want to

1 2 3 4 5

7. I feel valued by my group members

1 2 3 4 5

1(Not at all true) 2(Not true) 3(No idea) 4(True) 5(Very true)

8. I have some choices in what I do

1 2 3 4 5

9. I feel able to do the activities

1 2 3 4 5

10. I feel safe with my group members

1 2 3 4 5

11. I feel our instructor gives us options

1 2 3 4 5

12. I am pretty skilled at the activities we do

1 2 3 4 5

APPENDIX B

Motivational Regulations

We are interested in the reasons why you participate or not in the activities at this camp. 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.

I participate in the Camp activities because...

1(Not at all true) 2(Not true) 3(No idea) 4(True) 5(Very true)

1. Others say I should

1 2 3 4 5

2. I feel bad when I don't participate

1 2 3 4 5

3. I enjoy the benefits of the activities

1 2 3 4 5

4. It's fun

1 2 3 4 5

5. I don't know why I should have to participate

1 2 3 4 5

6. My friends/family say I should

1 2 3 4 5

7. I don't feel well when I miss them

1 2 3 4 5

8. It is important to me to participate

1 2 3 4 5

1(Not at all true) 2(Not true) 3(No idea) 4(True) 5(Very true)

9. I can't understand why I should participate

1 2 3 4 5

10. I enjoy them

1 2 3 4 5

11. I do the activities to please others

1 2 3 4 5

12. I do not see why I should do the activities

1 2 3 4 5

13. I feel like a failure when I don't participate

1 2 3 4 5

14. I think it is important to participate in the activities as much as I can

1 2 3 4 5

15. I find the activities fun

1 2 3 4 5

16. I feel pressure from my friends/family

1 2 3 4 5

17. I get bored if I don't participate

1 2 3 4 5

18. I get pleasure from participating in the activities

1 2 3 4 5

19. I think they are a waste of time

1 2 3 4 5

APPENDIX C

Perceived Instructor Support (Autonomy, Competence, and Relatedness Support)

We want to know your thoughts or opinions about your instructors during activities at Camp. With the scale below, please indicate to what extent your instructor behaves as described in the items below. There are no right or wrong answers.

1(Not at all true) 2(Not true) 3(No idea) 4(True) 5(Very true)

1. I feel that my instructor sincerely cares about me

1 2 3 4 5

2. My instructor only tells me about my mistakes

1 2 3 4 5

3. When I ask my instructor for help, he asks me what I think before giving me his opinion

1 2 3 4 5

4. The feedback I get from my instructor makes me feel confident in my ability to learn

1 2 3 4 5

5. My instructor does not care if I succeed or fail

1 2 3 4 5

6. My instructor encourages me to be myself

1 2 3 4 5

1(Not at all true) 2(Not true) 3(No idea) 4(True) 5(Very true)

7. I feel that my instructor honestly enjoys spending time with me

1 2 3 4 5

8. My instructor provides me with opportunities to make decisions

1 2 3 4 5

9. The feedback I get from my instructor helps me learn

1 2 3 4 5

10. My instructor seems to be genuinely interested in what I do

1 2 3 4 5

11. My instructor tells me that I am capable of learning

1 2 3 4 5

12. My instructor accepts my thoughts and feelings even if they are different from his

1 2 3 4 5

APPENDIX D

Psychological Needs Support Observation Form

Observer: _____ Game: _____ Grade: _____ Period: _____ Date: _____

Psychological Needs Support	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Autonomy Support														
a) Providing choices														
b) Encouraging questions														
c) Encouraging opinions														
2. Competence Support														
a) Providing instructional information														
b) Providing feedback														
- Corrective														
- Praise (Verbal or Non-verbal)														
- Encouragement														
3. Relatedness Support														
a) Promoting teamwork or cooperation														
b) Interaction patterns														
- Individual														
- Group														
- Class														
c) Personal interactions														
- Verbal or Non-verbal														
- Individual or Group														

APPENDIX E

The Matrix of Initiative Games Characteristics

Games	Description	Autonomy	Competence	Relatedness
Mine field (Session 1 & 2)	Objects are scattered in an outdoor place. In pairs, one person verbally guides his partner, a blindfolded person, through the outdoor field.	-Leadership -A sense of choices -Maintaining task engagement	-Kinesiological knowledge (space perception) -Communication effectiveness -Feedback utilization from a partner	-Pair cooperation -Verbal and non-verbal communication -Trustfulness between a pair
Marble relay (Session 1)	The whole group works together using plastic tubes or slides, to roll a ball from a starting point to the finishing point of a pre-determined course in the shortest amount of time.	-Initiating strategies -A sense of choices -Maintaining task engagement	-Fine motor skill -Communication effectiveness -Feedback utilization from an instructor and peers	-Team cooperation -Verbal communication -Listening to peers' opinions
Hot lava (Session 1&2)	There are wooden boards on the ground connecting from the start line to the finish line. The whole group must cross the line by stepping on the wooden boards. Make sure no one touch on the ground until the last person arrives at the finish line.	-Initiating strategies -A sense of choices -Volition to get challenge steps	-Locomotor skill (galloping) -Realistic skills success experience -Feedback utilization from peers	-Team discussion -Verbal communication -Helping peers' performance
Hula hoop pass (Session 1)	Have the group form a circle holding hands. The team task is to pass the hula hoop around the circle in a specified direction until it returns to the starting point.	-Initiating strategies -Volition to accept peers' opinion -Maintaining task engagement	-Kinesiological skills (body balance and limbs movement) -Feedback utilization from peers	-Team cooperation -Verbal and non-verbal communication -Helping peers' performance
Jump rope (Session 2)	The task is to have everyone jump a twirling rope without allowing the rope to stop. If participants mess up, the whole group starts over.	-Leadership -Initiating strategies -Volition to accept challenge tasks	-Locomotor skill (skipping) -Realistic skills success experience -Feedback utilization from peers	-Team cooperation -Verbal communication -Accepting peers' mistakes

Pass the can (Session 2)	Ask the group to sit in a circle with legs out. The challenge is to pass the can around the circle, using only feet. Once they have completed this, place a ball in the can. Then, let the group complete this challenging task again.	-Initiating strategies -Volition to accept peers' performance -Maintaining task engagement and accepting challenge task	-Kinesiological skill (limb movement) -Feedback utilization from peers	-Team cooperation -Verbal communication -Helping peers' performance
Blind circle, triangle, square (Session 1&2)	Everyone puts on a blindfold and places their hand on the rope. The group must form the rope into various shapes increasing in difficulty: Circle, Triangle, Square, etc	-Initiating strategies -Volition to accept peers' opinions -Maintaining task engagement and accepting challenge task	-Kinesiological (space perception) and mathematic knowledge -Performance success experience -Feedback utilization from peers	-Team cooperation -Verbal communication -Helping peers' performance
Touching the hula hoop on the ground (Session 1&2)	Ask the group to form a circle. Everyone in the group holds a hula hoop with their fingers. All in the group must touch the hula hoop until they touch the hula hoop on the ground. If anyone detaches his finger from the hula hoop, the game starts over.	-Initiating strategies -Volition to accept peers' opinions -Maintaining task engagement	-Fine motor skill -Communication effectiveness -Feedback utilization from peers	-Team cooperation -Verbal and non-verbal communication -Accepting peers' mistakes
My precious (Session 1)	Ask the group to line up. The task is to get to the finish line with movement. The group should stop their movement when an instructor facing his back to the group calls "my pressure" after turning around. If anyone is still moving after the instructor calls "my pressure", the game starts over. Next challenge is to carry a can with the group' hiding strategy without the instructor's discovery for the can after turning around.	-Self-directive decision making -Maintaining task engagement -Initiating strategies	-Gross motor skill -Movement success experience -Communication effectiveness	-Team cooperation -Non-verbal communication -Accepting peers' mistakes
Maze (Session 2)	Prepare a broad sheet having several small square lines. An instructor has his own map that the group should get through according to a sequential order. The group should figure out a way to get through until all members get to the finish line.	-A sense of choices -Initiating strategies -Maintaining task engagement	-Locomotor skill (galloping) -Tracking success experience -Feedback utilization from peers	-Team cooperation -Verbal communication -Accepting peers' mistakes

APPENDIX F

Manual (Psychological Needs Support Observation Form)

This observation is designed to record the kinds and frequencies of instructor supportive behavior during initiative games. There are three sections: 1) autonomy support 2) competence support 3) relatedness support. Each section includes several subcomponents of behaviors an instructor provides.

Instructions

There are 14 blocks associated with each section in teaching technique. Each block represents a two minute time span. During the two minutes, autonomy, competence, and relatedness support, behaviors for which an instructor is providing are observed and coded. During the two minutes, each time one of the behaviors in these categories is observed, a tally is coded. At the end of the two minutes, the recorder moves over to time segment two and repeats the same process.

1. Autonomy Support

This section focuses on that students have opportunities for self-direction and where the students' opinions are considered in the teaching setting. The instructor provides occasions where autonomy support is exposed in students' physical activities and the teaching situations, etc.

Providing choices

These behaviors are coded any time the instructor provides opportunities for students' own decision during initiative games activities.

E.g., an instructor let students choose the strategies or actions to solve challenges.

Encouraging questions

These behaviors refer to that the instructor provides an opportunity students consciously acknowledge their ongoing activity through questions based on the objective of an activity. The behaviors might be occurred to students during an interaction between an instructor and students at the beginning and closure of a class and anytime.

E.g., after an instructor initiates or repeats the objective or a way to do a task, the instructor might ask questions to make students get some ideas related to their task performance.

Encouraging opinions

These behaviors are coded when the instructor accommodates students' ideas or thoughts or opinions in activities. Students' opinions should be related to their task performances. Otherwise, students' opinions will not be coded.

E.g., when a student suggests using both hands to lift his partner in "all board game", an instructor agrees with his opinion.

2. Competence Support

This section focuses on that students received feelings of mastery or competence on their skill performance in an activity or situational context. An instructor provides occasions where competence support is transmitted to students' action in activities or the teaching setting.

Providing instructional information

These behaviors refer to that an instructor provides students with instructional hints or clues to help them improve and progress learning or keep track of their task

performance. The instructional hints or cues are most likely to be provided at the beginning of class or as part of closure or debriefing session.

E.g., at the beginning of class (Mine field game), an instructor can say you guys need to have your own strategy such as using different signals to get through each obstacle smoothly.

Providing feedback

These behaviors occur when an instructor provides positive and meaningful information about students' performance. The feedback should be related to task-related performance rather than ordinary behaviors. The feedback can be categorized into several concepts: corrective, praise (verbal or non-verbal), and encouragement.

- Corrective

These behaviors refer to that an instructor provides mistake-contingent information or technical information for students who make mistakes or have difficulty in doing activities. As an indirect way, the instructor can also ask high-order questions to lead students to find ideas or solutions they want to get in a task.

E.g., when a couple of students get trouble in moving forward or make a mistake in "mine field game," an instructor can provide corrective information – you can not succeed with the way "because you lead your partner closely with each obstacle."

When a student has difficulty in jumping over an obstacle in "mine field game," an instructor can say "jump like a frog" to the student.

An indirect way: when a couple of students have trouble in getting through each obstacle in "mine field game," an instructor can ask, "why do you guys think you can not get

through each obstacle smoothly?” After the students respond, the instructor can offer corrective or technical information to them.

- Verbal praise

These behaviors are regarded as whenever an instructor provides positive verbal acknowledgement for students’ good task-related performances. When the instructor provides the verbal praise, the attention should necessarily be directed at the student.

E.g., when a student succeeds in leading his partner with an effective way such as whispering to partner’s ear in “mine field game,” an instructor praises “you guys did a good job”.

- Non-verbal praise

These behaviors are coded when an instructor provides behavioral signals for students’ good skill-related performances. When the instructor offers the non-verbal praise, the attention should directly be focused on the student.

E.g., an instructor smiles, waves, claps enthusiastically, pats a student on the back, or gives thumbs-up after the student performs well.

- Encouragement

The behaviors indicate whenever an instructor supports or encourages students’ performances in activities.

E.g., when a student is doing a task performance with his good effort, an instructor can say “hang in there” or when a student makes a mistake with his performance, an instructor can say “that’s ok, better luck in the next time.”

3. Relatedness Support

This section concentrates on that students receive close, stable, secure, and nurturing feelings from an instructor in the teaching setting. The instructor can also make students have those feelings from their peers through the learning activities.

Promoting teamwork or cooperation

These behaviors happen when an instructor promotes to share such caring, valuing, acceptance, and respect among students. The instructor might encourage students to work in a group to assist in sharing their ideas or listening to each other at the beginning of and during the activities. The instructor also facilitates a discussion before or during the activities to encourage help or care among students.

E.g., when a couple of students have difficulty in avoiding each obstacle during “mine field game,” the instructor can say “guys, your communication is not clear, so communicate with each other again and have clear commands.”

Additionally, before a group of students start doing “all board game,” an instructor can say “having a short discussion to get good cooperation.”

Interaction patterns

These behaviors occur when an instructor shows a direct contact with a student or a group of students or entire class. The interactions might be occurred at the beginning of activity and during activities as well as at closure of activities.

E.g., an instructor might interact with a student or check a student’s performance through the following: an instructor might initiate communication related to students’ performance or behavior, then, an instructor provides some information or comments

related to their performance. Likewise, the instructor might interact with students after students initiate communication related to their performance. Then, it should be double-coded into other sub-categories (e.g., “providing feedback,” “encouraging questions,” “promoting teamwork,” and so on) except for personal interactions.

If an instructor interacts with the same student or entire class more than one time, the sub-categories are only coded.

If an instructor calls a student’s name without giving information related to task or further interaction, it is coded to individual interaction pattern only.

If an instructor focuses or interacts with an individual at the time when the instructor is in flow for providing instructional information or feedback for entire class, it is regarded as providing information to the entire class.

Personal interactions

These behaviors are coded when an instructor communicates to students in a way to show them friendly atmosphere or personal interest rather than meets instructional objectives. These behaviors can occur at the beginning and end of class or anytime. Also, the instructor can provide individual or a group of students with personal interaction.

E.g., at the beginning of class, an instructor can ask a student, how are you doing today? are you doing ok today? Also, during in the middle of class, are you sick? do you have any problem? At the end of class, how was the class today? did you have a good time?