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**PARENTAL INFLUENCES ON ADOLESCENTS'
PHYSICAL ACTIVITY MOTIVATION AND BEHAVIOR**

by
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**Thesis Submitted to the School of Graduate Studies and Research
in Partial Fulfillment of the Requirements
for the Degree of Master of Arts in Human Kinetics**

**School of Human Kinetics
University of Ottawa
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FOR ALL OF THOSE WHO BELIEVE THAT SOME THINGS IN LIFE ARE NOT FOR EVERYBODY...

I DARE YOU TO IMAGINE...

THE WORLD WILL OPEN IN FRONT OF YOU... AND YOU WILL NEVER BE THE SAME ONCE

YOU HAVE SEEN AND BELIEVED...

BELIEVE IN YOURSELF AND YOUR DREAMS WILL BECOME REALITY...

ACKNOWLEDGEMENTS

ACHIEVEMENT STEMS FROM COMMITMENT AND PERSEVERANCE

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ABSTRACT

Many studies conducted with youth populations have shown that regular involvement in physical activity is associated with a number of physiological and psychological benefits (e.g. Bouchard, Shephard, & Stephens, 1994; Calfas & Taylor, 1994; U.S. DHHS, 1996). Despite these findings, a large proportion of youths in North America maintain sedentary lifestyles (CLFRI, 1997; DiLorenzo, Stucky-Ropp, Vander Wal, & Gotham, 1998) and do not meet physical activity recommendations (Sallis, 1999). Accordingly, over the last two decades, researchers have started to examine the determinants of physical activity among youth populations (e.g. Sallis, Prochaska, Taylor, Hill, Geraci, 1999; Trost et al., 1997). Studies examining these factors have revealed that parents play an important role in influencing youths to adopt an active lifestyle (e.g. Brustad, 1993; Kimiecik, Horn, & Shurin, 1996; Taylor, Baranowski, & Sallis, 1994). These studies have indicated that parents influence their youths' motivation and physical activity behavior in multiple ways. Therefore the general purpose of this study was to examine multiple sources of parental influences on adolescents' physical activity motivation and behavior using Self-Determination Theory (Deci & Ryan, 1985, 1991) as the main theoretical framework. More specifically, this study attempted to develop and verify a Model of Parental Influences in the context of physical activity. It was hypothesized that the predicted relationships in the model would be significant and in the expected direction. A questionnaire, composed of several validated scales, that assessed: physical activity motivation, physical activity behavior and perceptions of parental influence, was administered to 829 ninth grade physical education students from the Ottawa, Canada region. Results from a recursive path analysis consisting of two multiple regressions revealed that perceived parental motivation towards physical activity, perceived parental involvement in their physical activities and

perceived parental autonomy support in the context of physical activity significantly influenced adolescents' physical activity motivation. Results also revealed that perceived parental expectations with regards to physical activity and adolescents' physical activity motivation were significant predictors of their physical activity behavior. Overall, findings support the notion that parents exert an influence on adolescents, especially on their physical activity motivation. The findings are discussed in light of the research on parental influences, theoretical and practical implications are outlined and directions for future research are suggested.

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CHAPTER I

Introduction

A considerable number of studies have shown that regular involvement in physical activity is associated with a number of physiological and psychological benefits (e.g. Bouchard, Shephard, & Stephens, 1994; Canadian Fitness and Lifestyle Research Institute [CFLRI], 1997; Powers & Dodds, 1997; Sallis, 1999; U.S. Department of Health and Human Services [U.S. DHHS], 1996). For instance, participation in physical activity is known to be a significant factor in preventing a number of ailments, including premature death (Hahn, Teutsch, Rothenberg, & Marks, 1990), deaths from cardiovascular diseases (Berlin & Colditz, 1990), obesity (Kahn et al., 1997), the risk of diabetes (Manson et al., 1991), cancer (Powell & Blair, 1994) and osteoporosis (Greendale, Barrett-Connor, Edelstein, Ingles, & Haile, 1995). In addition to looking at physiological benefits, researchers have also examined the psychological effects of physical activity (see Scully, Kremer, Meade, Graham, & Dudgeon, 1998 for a review). Involvement in physical activity is known to be a significant factor in the treatment of depression (Martinsen & Stephens, 1994) and anxiety (Plante & Rodin, 1990), and contributes to enhancement of self-esteem (McAuley, 1994), mood and emotional well-being (CFLRI, 1997). Accumulating evidence indicates that most of these health-related benefits have also been found in adolescents (Calfas & Taylor, 1994; Sallis & Patrick, 1994; U.S. DHHS, 1996).

Despite these findings, a large proportion of individuals in Canada and the United States maintain sedentary lifestyles (CFLRI, 1996; U.S. DHHS, 1996). In the United States, more than 60 percent of adults are not physically active on a regular basis and approximately 25 percent are completely inactive (U.S. DHHS, 1996). This physical inactivity is responsible for approximately 200,000 deaths in the United States each year, making it one of the leading causes

of death (Sallis, 1999). Most adults believe that youths are more physically active compared to them but studies have also shown that even adolescents do not engage regularly in physical activity (CLFRI, 1997; DiLorenzo, Stucky-Ropp, Vander Wal, & Gotham, 1998; Sallis & Patrick, 1994; Stephens & Craig, 1990) and do not meet physical activity recommendations (Pate, Long & Heath, 1994; Sallis, 1999). One of the most significant sedentary habit is certainly watching television. Studies in North America indicate that adolescents spend on average more than 20 hours a week in front of the television (Pate et al., 1994). Furthermore, Andersen, Crespo, Bartlett, Cheskin, & Pratt (1998), found that 26% of children watch four or more hours of television per day and numerous studies have shown positive associations between the amount of time spent in front of the television set and childhood obesity (e.g. Andersen et al. 1998, Robinson et al., 1993; Robinson & Killen, 1995). This is not even taking into consideration time spent surfing the Internet, a new fixation among youths.

There is concern over the rapidly increasing rates of obesity among adolescents (Kuczmarski, 1993) and approximately 25 percent of youths in Canada and the United States are overweight (Limbert, Crawford & McCargar, 1994; Centers for Disease Control, 1994). Not only is childhood obesity present, experts believe that it is on the rise (Troiano, Flegal, Kuczmarski, Campbell, & Johnson, 1995), therefore suggesting that children are becoming less active and not meeting current physical activity guidelines. In Canada, only 33 percent of 13 to 17 year-old adolescents participate in activities of sufficient intensity to meet the guidelines for optimal growth and healthy development (CFLRI, 1998). In the United States, approximately 50 percent of youths 12 to 21 years of age are not vigorously active on a regular basis (U.S. DHHS, 1996).

As a whole, studies indicate that youths are not active enough and some studies have shown that the level of physical activity declines as individuals get older (e.g. Stephens, Jacobs

& White 1985; U.S. DHHS, 1996). Other studies have also demonstrated that physical activity declines from early to late adolescence (Rowland, 1990; Sallis, 1993; Van Mechelen & Kemper, 1995). Based on the assumption that sedentary adolescents typically grow into inactive adults (Duda, 1996), the physical activity patterns and exercise habits that children and adolescents acquire are very important for maintaining an active lifestyle in adulthood (Reynolds et al., 1990; Telama, Yang, Laakso, & Viikari, 1997; Wankel, 1997).

Accordingly, over the last two decades, researchers have started to examine the determinants of physical activity among youth populations (e.g. Godin & Shephard, 1984; Sallis et al., 1999; Trost et al., 1997). Furthermore, Sallis (1999) and Trost et al. (1997) acknowledge the fact that current knowledge concerning the determinants that affect youths' physical activity behavior is limited and that more studies examining physical activity determinants are needed in order to understand the physical activity behavior of youths.

According to Sallis, Simons-Mortons, et al. (1992) and Brustad (1993), it is important for researchers to get some insight regarding the influences that affect physical activity behaviors among youths. Studies examining these factors have revealed that the social context, and more specifically, parents play an important role in influencing youths to adopt an active lifestyle (Brustad, 1992; 1993; DiLorenzo et al., 1998; Freedson & Evenson, 1991; Kimiecik, Horn, & Shurin, 1996; Mota & Queiros, 1996; Taylor et al., 1994). Although some studies have examined the influence of parents on youths' physical activity behavior, little is still known about this phenomenon (Sallis, 1999). Furthermore, not much research has sought to examine the impact of parental influences on adolescents' physical activity motivation (Frederick & Ryan, 1995). In addition, although many studies (e.g. Anderssen & Wold, 1992; Brustad, 1993; Moore et al., 1991; Sallis et al., 1999) have revealed that parents influence their youths' motivation and

physical activity behavior in multiple ways, very few have examined multiple parental influences within the same study. Finally, none of these studies have used Self-Determination Theory (SDT, Deci & Ryan, 1985, 1991) as the main theoretical framework.

Therefore, the general purpose of this study was to examine multiple sources of parental influences on adolescents' physical activity motivation and behavior using Self-Determination Theory as the main conceptual approach. More precisely, this study attempted to develop and verify a Model of Parental Influences in the context of physical activity (see Figure 1). This model is based mainly on Deci & Ryan's (1985, 1991) Self-Determination Theory but also incorporates elements from other theories such as the Social Learning Theory (Bandura, 1986) and the Theory of Reasoned Action (Ajzen & Fishbein, 1980). It is also based on past research relative to parental influences on youths' motivation and behavior in the context of education (e.g. Grolnick & Slowiaczek, 1994, Vallerand, Fortier & Guay, 1997) and physical activity (e.g. Brustad, 1992, 1993; Kimiecik et al., 1996; Sallis et al., 1999). Specifically, we examined the influence of adolescents' perceptions of six parental influences: parents' physical activity behavior, parents' motivation towards physical activity, parents' involvement in their physical activities, parents' autonomy support in the context of physical activity, parents' encouragement towards physical activity, and finally, parents' expectations with regards to physical activity on their physical activity motivation and behavior.

There are a number of reasons why Self-Determination Theory was chosen as the main conceptual approach. First, SDT has been proven to be theoretically sound and much research has been conducted in different areas of life using this theory (Fortier, Vallerand & Guay, 1995; Pelletier, Tuson & Haddad, 1997; Vallerand et al., 1997), including research in the field of physical activity (Brière, Vallerand, Blais & Pelletier, 1995; Pelletier, Fortier, Vallerand &

Brière, 2000). Second, SDT accounts for the energization of human behavior. The three basic human needs proposed in this particular theory give direction and intensity to human behavior. They guide people to engage or not to get involved in certain activities. Therefore, SDT takes into consideration the origins (determinants) of human motivation. Third, contrary to other theories, that considers only two types of motivation (intrinsic and extrinsic motivations or task and ego orientations), SDT classifies different types of motivation along a self-determination continuum. Finally, SDT accounts for the consequences of motivation and thus, gives a better understanding of motivational process as a whole. Much research has shown that specific types of motivations are associated to different types of outcomes (see Vallerand, 1997 for a review).

A study of parental influences on adolescents' physical activity motivation and behavior is significant for several reasons. First, this study would contribute to the body of knowledge concerning the different parental influences on the motivation and physical activity behavior of youths. Parental influences seem to be one of the most salient factor on youths' motivation and physical activity behaviors (Brustad, 1993; DiLorenzo et al., 1998; Kimiecik et al., 1996; Lewko & Greendorfer, 1988). In the last decade, some studies have been conducted regarding parental influences on the physical activity of youths but only a few have investigated the influence of parents on youths' physical activity motivation (Brustad, 1993; Frederick & Ryan, 1995). Although some studies have been conducted in this area of research, relatively little is known about the parental influences on motivation and physical activity behavior during adolescence. Sallis (1999) asserts that current knowledge concerning the parental influences that affect youths' physical activity behavior is limited and more studies are needed for the understanding of physical activity behavior among adolescents. This study could therefore contribute to this area of research. Second, most studies, in this field, have examined only one or two parental

influences on adolescents' motivation and physical activity behavior. This study proposes a model that will examine the influence of six distinct parental variables on the physical activity motivation and behavior of adolescents. This has not been done before in past research. A study examining multiple parental influences on adolescents' physical activity motivation and behavior would significantly contribute to the understanding of the multiple ways that parents influence their adolescents in the context of physical activity. Third, to our knowledge, no studies to date have examined the influence of parental variables on adolescents' motivation and physical activity behavior using Self-Determination Theory as the main conceptual approach (Deci & Ryan, 1985, 1991). This study could suggest a new avenue for exploring the influence of parental variables on adolescents' motivation and physical activity behavior.

From an applied perspective, this study could shed some light on the understanding of the determinants that influence physical activity behavior among adolescents. Specifically, the present study could give an insight into the specific parental influences that affect adolescents' physical activity motivation and behavior. A better understanding of parental influences in the physical activity domain could provide useful information for parents who want to know which behaviors to adopt in order to foster their adolescents' motivation and to positively influence them to participate in physical activity. Findings of this study could also be useful to practitioners for the development of family-based physical activity intervention programs.

Organization of the remainder of the document

The remainder of this thesis has been organized into three chapters. The following chapter (Chapter II) contains a review of the literature pertaining to the social determinants of youths' physical activity. More specifically, parental influences on the motivation and behavior of youths in the context of education and physical activity will be reviewed. Chapter II also

contains a review of literature on the motivational theory at the base of this study, namely Self-Determination Theory (Deci & Ryan, 1985, 1991). Furthermore, this chapter contains a description of the present study in which the proposed model, hypotheses and the significance of the study are discussed. The journal article that has been prepared for the submission to the academic journal *Preventive Medicine* is presented in Chapter III, which includes methods, results and discussion. Finally, a general discussion of the thesis is presented in Chapter IV, which includes elements of discussion pertaining to theoretical and practical implications as well as future research relative to this area of research.

In addition, three appendixes are included at the end of this thesis. Appendix A describes the contributions of each author that appears on the title page of the journal article. In Appendix B, a copy of the questionnaire for this study is included and finally, a copy of the parental letter of information and consent form is presented in Appendix C.

CHAPTER II

Review of Literature

The purpose of this chapter is twofold: first to discuss the relevant literature pertaining to this study and secondly, to present the Model of Parental Influences that we are proposing and attempting to verify in this study. To attain these goals, this chapter has been divided into three main sections. The first section examines the body of research that has looked at the determinants of youths' motivation and behavior in the context of education and physical activity. Because of the psychosocial orientation of this study, emphasis will be placed upon the social determinants, and more specifically, parental influences that affect youths' physical activity motivation and behavior. The conceptual and empirical evidence supporting the Model of Parental Influences is presented. The second section of the literature review looks at the motivational theory used as the main framework in this study. Here, Deci and Ryan's (1985, 1991) Self-Determination Theory is presented. Finally, the Model of Parental Influences that we developed and are attempting to verify in the present study is presented in detail in the third section. The hypotheses and significance of the present study are also addressed in this third section.

Determinants of Physical Activity Motivation and Behavior among Youths

Many studies conducted with youth populations have shown that regular involvement in physical activity is associated with a number of physiological and psychological benefits (e.g. Bouchard et al., 1994; Calfas & Taylor, 1994; U.S. DHHS, 1996). Despite these findings, a large proportion of youths in North America maintain sedentary lifestyles (CLFRI, 1997; DiLorenzo et al., 1998) and do not meet physical activity recommendations (Pate et al., 1994; Sallis, 1999). In Canada, only 33 percent of 13 to 17 year-old adolescents participate in activities of sufficient intensity to meet the guidelines for optimal growth and healthy development (CFLRI, 1998). In

the United States, approximately 50 percent of youths 12 to 21 years of age are not vigorously active on a regular basis (U.S. DHHS, 1996).

Accordingly, over the last two decades, researchers have started to examine the determinants of physical activity among youth populations (e.g. Godin & Shephard, 1984; Sallis et al., 1999; Trost et al., 1997). Furthermore, Sallis (1999) and Trost et al., (1997) acknowledge the fact that current literature concerning the determinants that affect youths' physical activity behavior is limited and more studies examining physical activity determinants are needed for the understanding of physical activity behavior among youths.

So far, researchers have found that many factors influence youths to engage in physical activity, including biological, psychological, physical and social factors (Sallis, 1999). Sallis (1999) has developed an extensive classification of determinants that influence physical activity behavior in youths. This classification is widely used among researchers and a brief overview of this classification will be presented at this point.

Determinants can be organized in two main categories. First, are the factors that come from within the individual, known as personal factors. These determinants include biological and psychological factors. Second, are the factors that influence physical activity behavior from the outside, known as environmental determinants. These include social and physical determinants of physical activity.

Personal Influences on Youths' Physical Activity

In the literature that examines the influence of biological determinants on physical activity, researchers have generally examined the effects of gender, age and obesity on physical activity behavior. In general, it was found that boys are more active than girls, activity declines with age and obese children seem to prefer low-intensity activities (see Sallis 1999, for a review).

Studies that have looked at the influence of psychological determinants on physical activity generally examined the variables presented in the Health Belief Model (Rosenstock, 1974). Researchers have generally studied the influence of knowledge of health effects, knowledge of how to exercise, cues to be active, barriers to physical activity, perceived susceptibility to obesity, intention to be active, attitudes about activity, subjective norms, self-efficacy about activity and personality traits on physical activity behavior (see Sallis, 1999, for a review).

Environmental Influences on Youths' Physical Activity

Physical environment is a broad term that includes factors from the setting (indoor, outdoor), weather (seasons), time of day or time of week (night, day, weekdays, weekends), availability of organized sport and finally, access to physical activity facilities. All of these variables have been examined and some have been shown to promote and others to hinder physical activity among youth populations. In sum, it has been found that youths are more active during the weekend, more active during the summer than during winter and finally, more active outdoors than indoors (see Sallis, 1999, for a review).

Social influences are central for understanding physical activity behaviors in adolescents. Social determinants are included in virtually all of the behavioral models applied to the study of physical activity. Since social influences are central in this study, they will be examined thoroughly in the next section.

Social Influences on Youths' Motivation and Behavior

With regards to motivation, Vallerand (1997) states the importance of social factors as significant determinants of motivation and that future research is needed. An extensive review of literature revealed that there is a lack of studies examining the influence of the social context on the physical activity motivation of youths (Frederick & Ryan, 1995). With regards to physical activity, researchers (e.g. Brustad, 1992; Tinsley, Holtgrave, Reise, Erdley, & Cupp, 1995) acknowledge the fact that the social context plays an important role in influencing youths to adopt an active lifestyle. Researchers recognize the significance of social determinants as key elements in the understanding of physical activity behavior and more research is needed regarding this issue (Sallis, 1999). In the next few sections, the social influences on youths' motivation and behavior in the context of education and physical activity will be examined.

Social Influences on Youths' Motivation and Behavior in the Context of Education

Several studies have examined the impact of social influences on youths' motivation and behavior in the context of education. Most of these have examined the role of teachers and parents in this process. In this part of the review of literature, the influence of teachers on youths' motivation and behaviors will be considered. Since parental influences on youths' motivation and behavior is the focus of this study, this will be examined thoroughly and separately in the section dedicated specifically to this subject.

Social Learning Theory, developed by Bandura (1986), emphasizes the important influence of social factors on behavior. According to Bandura's theory, individuals learn many of their attitudes and behaviors from role models. By observing the behaviors of their most salient socialization agents, adolescents imitate or adopt a similar pattern of behavior. There are forces in the environment of individuals that play a major role in influencing their behavior and

motivation. Some studies (Cellar & Wade, 1988; Fortier et al., 1994; Wild, Enzle & Hawkins, 1992) have shown that the motivation of social agents towards an activity could have an impact on the motivation of individuals towards that same activity. For example, Cellar & Wade (1988) have shown that individuals were intrinsically motivated towards an activity after seeing a “model” being intrinsically motivated in doing that same activity. More recently, Wild et al. (1992) also found that piano students were more intrinsically motivated when their piano teachers displayed a more self-determined type of motivation (intrinsic motivation). These results suggest that social learning or modeling occurred.

Teacher influences. Overall, studies seem to suggest that teachers are known to have an influence on adolescents’ motivation and achievement behaviors. Historically, most studies of teacher influence have examined the effect of teaching styles and teaching methods on youths’ achievement and motivation (Eccles, 1993). One aspect that appears fundamental in the study of motivation is whether the teachers support the students’ autonomy or try to control their behavior (Deci & Ryan, 1987). A teacher can have an autonomy supportive style or a controlling style of teaching. Autonomy supportive teachers integrate students in the decision making process in class and supports freedom. The opposite is the controlling style of teaching. Controlling teachers will use rewards and constraints to exert their power over the students and will not integrate them the decision making process.

Ryan, Deci and colleagues (Deci, Nezlek, & Sheinman, 1981; Deci, Schwartz, Sheinman & Ryan, 1981; Deci, Spiegel, Ryan, Koestner, & Kauffman, 1982; Grolnick & Ryan, 1989; Ryan & Grolnick, 1986) have examined the effects of teaching styles on students’ motivation and achievement behavior in the context of education. In general, the results of these studies suggested that students in the classroom of those teachers whose orientations were more

autonomy-oriented (versus controlling) reported higher levels of motivation, curiosity with respect to learning, more desire for challenge, more independent mastery attempts, had greater perceived competence, had more understanding of how to attain learning outcomes and performed better in school. For example, a study by Deci et al., (1981) assessed teachers' level of behavior control versus autonomy support toward students. Results revealed that students who were in class with an autonomy supportive teacher experienced an increase in their intrinsic motivation, whereas those who were with controlling teachers experienced a decrease in intrinsic motivation. Another study found that students participating in an evaluation under controlling conditions (i.e. teachers using controlling strategies) displayed lower levels of self-determined motivation and performance than when they engaged in the activity under autonomy-supportive conditions (Flink, Boggiano, & Barrett, 1990).

Teachers also transmit messages to students through their interactions during class. They transmit important information that could influence the students' motivation. This is best exemplified in the teacher expectancy literature (see Eccles & Wigfield, 1985). Teachers convey their interpretations of students' ability through their interactions. By the teachers' verbal and non-verbal behaviors, students learn more about themselves and they begin to comprehend what is expected of them. For example, according to Eccles (1993), teachers give high-expectancy students more opportunity to answer questions in class and if these students answer incorrectly, the teachers give these students more opportunity to correct the answer. The same opportunity is not given to the low-expectancy students.

Although there are a lot of similarities regarding the context between a teacher and a physical education teacher, they will be discussed separately because of the orientation of this study (related to physical activity).

Social Influences on Youths' Motivation and Behavior in the Context of Physical Activity

Numerous studies have examined the impact of social influences on youths' physical activity behavior (see Sallis, 1999 for a review). Significantly less studies have examined the influence of the social context on youths' physical activity motivation. Most of them have examined the role of parents, physical education teachers, coaches, siblings and peers in that process. In this section, the influence of physical education teachers, coaches, siblings and peers regarding youths' motivation and behaviors in the context of physical activity will be presented. As mentioned previously in this chapter, parental influences on youths' motivation and behavior is the focus of this study, and this will be examined thoroughly in the parental influence section.

Physical education teacher influences. Although few studies have examined the relationship between the physical activity levels of physical education teachers and their students physical activity levels (Sallis, 1991), some have demonstrated the potential influence of physical education teachers on student-athletes behaviors (e.g. Westcott, 1980).

With regards to motivation, a study conducted by Fortier, Kowal, Grenier & Leblanc (1996) examined the relations between physical education teachers' interpersonal style (autonomy supportive or controlling) and students' self-determined motivation toward physical education. The results showed a positive and significant relation between perceptions of autonomy support and self-determined motivation, indicating that an autonomy supportive style on the part of physical education teachers enhanced students' self-determined motivation. Another study by Goudas, Biddle, Fox & Underwood (1995) had similar results. They conducted a study examining the effects of different teaching styles in one sporting activity. When the physical education teacher used an autonomy-supportive style, students' levels of intrinsic

motivation increased whereas when the teacher used a controlling style, students' levels of intrinsic motivation decreased.

Coaches influences. Overall, researchers acknowledge the fact that coaches have a direct influence on youths' physical activity behavior (Brustad, 1992, 1993b; Kimiecik et al., 1996; Weiss & Chaumeton, 1992). Studies reveal that coaches have an influence on youths' motivation (Black & Weiss, 1992, Pelletier et al., 2000), enjoyment, a concept closely related to intrinsic motivation, (Scanlan, Carpenter, Lobel & Simons, 1993; Scanlan & Lewthwaite, 1986) and self-perceptions (Black & Weiss, 1992; Horn, 1985; Sinclair & Vealey, 1989; Smith, Smoll & Curtis, 1978; Smith, Smoll & Curtis, 1979). According to Self-Determination Theory (Deci & Ryan, 1985, 1991), these self-perceptions (e.g. perceived competence) have a direct impact on individuals' self-determined motivation (Self-Determination Theory is the main theoretical framework used in the present study and it will be explained later in this chapter).

According to Weiss and Chaumeton (1992), the coaching style (known as the interpersonal style in the Self-Determination Theory literature) can influence the motivation and behaviors of youths. Just like the teachers, coaches can have an autonomy supportive style or a controlling style. A recent study conducted by Pelletier et al., (2000) examined the influence of competitive swimmers' perceptions of coaches' interpersonal style on the different forms of regulation (motivation) and persistence. The results showed that experiencing relationships as controlling undermined or reduced the intrinsic motivation of athletes. Greater levels of self-determination forms of regulation occurred when athletes perceived their relationships with their coaches as autonomy supportive and athletes who demonstrated greater levels of self-determined forms of regulation showed to be more persistent in their endeavor.

Another study conducted by Black and Weiss (1992), assessed athletes' perceptions of coaches' behaviors and then examined their effects on ability and motivation. The athletes were adolescents aged between ten and 18 participating in competitive swimming. The results showed that praise following successful performances and encouragement following performance errors were associated with athletes who were higher in perceived competence and enjoyment of their sport. The findings of these studies were supported in a recent study by Amorose & Horn (2000).

Studies have also shown that coaches have significant influences on athletes' self-perceptions. A lot of these self-perceptions are directly linked with motivation. In a study by Smith et al. (1978), with little league baseball coaches and players, it was found that players low in self-esteem appeared to be the most affected by behavioral differences among coaches. Results also indicated that players with low self-esteem benefit most from playing for coaches that provide a lot of positive feedback.

Peers and siblings influences. Studies seem to suggest that peers have an impact on the motivation and physical activity behaviors of adolescents. A few recent studies have examined the link between peers' support (e.g. Anderssen & Wold, 1992; Zakarian, Hovell, Hofstetter, Sallis, & Keating, 1994) and peers' physical activity behavior (Anderssen & Wold, 1992; Stucky-Ropp & DiLorenzo, 1993; Reynolds et al., 1990; Zakarian et al., 1994) on youths' physical activity behavior. The results of these studies indicated that peer support and physical activity behavior were positively related to physical activity among youths.

As well, a few studies seem to demonstrate that siblings also have an influence the physical activity behaviors of adolescents. Sallis, Patterson, Buono, Atkins and Nader (1988) and Perusse et al. (1989) found that the physical activity of siblings was positively associated with physical activity among adolescents, thus, showing a possible modeling effect.

Although a wide variety of social influence seem to affect youths' motivation and physical activity behavior, parents seem to be a predominant and salient influence. It will be the object of study in the next section.

Parental Influences on Youths' Motivation and Behavior

Although physical education teachers, teachers, coaches, siblings and peers all seem to have influence on youths' motivation and physical activity behaviors, parental influences seem to be the most salient factor (Brustad, 1993; DiLorenzo et al., 1998; Kimiecik et al., 1996; Lewko & Greendorfer, 1988). In the last decade, some studies have examined the influence of parents on youths' physical activity behavior but there is still little that is known regarding this phenomenon (Sallis, 1999). Furthermore, not much research has sought to examine the impact of parental influences on youths' physical activity motivation (Frederick & Ryan, 1995).

As well, according to a study conducted by Vallerand et al., (1997) in the context of education, parents' influence on their adolescents' motivation proved to be significantly more important than the influence of teachers and school administration. There is a need to study parental influences on youths' motivation and behavior because not much research has been devoted to this topic and from an applied perspective, a better understanding of the role of parents could be useful for parents and practitioners. Parental influences on youths' motivation and achievement behavior in the context of education will be addressed first and then, the same will be done in the context of physical activity.

Parental Influences on Youths' Motivation and Behavior in the Context of Education

Although most studies examining the motivation and achievement behaviors of students in the context of education have put significant importance on the role of teachers and schools, it is indisputable that parents play an important role in students' educational orientations (Ryan &

Stiller, 1991). An in depth analysis of the literature pertaining to the influence of parents on the motivation and achievement behaviors of students revealed that most studies have investigated the effect of parental involvement, parenting style (autonomy support versus controlling), and finally, parents' expectations on the school motivation and achievement behaviors of youths.

Parental involvement. Grolnick & Slowiaczek (1994) have defined parental involvement as “the dedication of resources by the parent to the child within a given domain” (p.238), for example, parents who get involved in their children's school work by providing reading materials. Grolnick & Slowiaczek evaluated a motivational model in which children's motivational components (i.e. perceived competence, control understanding and self-regulation) are mediators between parental involvement and children's school performance. The results supported the propositions established in the motivational model. More specifically, it was found that parents' involvement in their children's schooling had an influence on their children's school performance and, children's motivational components were found to be significant mediators.

In earlier but similar studies, Grolnick & Ryan's (1989) and Grolnick, Ryan & Deci (1991) had examined the effects of youths' perceptions of their parents' involvement on their motivation and achievement. More specifically, the researchers examined how parents' involvement affects children's achievement behaviors in school and how motivational resources act as mediators between parents' involvement and children's school performance. Based on Self-Determination Theory (Deci & Ryan, 1985, 1991), it was hypothesized in these studies that inner resources provided by the parents would positively affect youths' motivation and achievement in school and that children's competence would be facilitated by parental involvement. The hypotheses were supported by the results of the study.

Parenting style. Parenting styles are like the teaching/coaching styles that were described earlier in this chapter. Parents can be autonomy supportive or controlling in their behaviors with their children. Autonomy support occurs when a parent takes his children's perspective into account, provides choices, reflects on his children's feeling and encourages initiative. Autonomy supportive parents also support freedom. For example parents that let their children decide for themselves which subjects they will take in high school is an example of an autonomy supportive behavior. Control occurs when parents pressure their children to perform up to external standards or use rewards and constraints to manipulate their behavior. Controlling parents rarely include their children in the decision making process. Parents who establish unrealistic outcome goals (specific grades to achieve), who don't take into account the suggestions of their children, and who punish their children for not meeting these goals are examples of controlling behavior.

A certain number of studies have examined the role of parenting styles on motivation and achievement behavior of children in the context of education (Grolnick & Ryan, 1989; Grolnick et al., 1991). The findings reported in these studies are quite similar. In sum, results indicated that children of autonomy supportive parents had higher self-reports of autonomy, higher teacher rated competence, better school grades and higher perceived competence and motivation.

In their study, Vallerand et al., (1997) proposed and tested a motivational model of high school dropout. They predicted that low levels of autonomy supportive behaviors from critical social agents in the school system (i.e. parents) would undermine students' self-determined motivation and therefore lead to high school dropout. Results strongly supported the model and hypotheses. Dropout students perceived their teachers, parents and school administration as being more controlling than did the persistent students. Furthermore, it was found that parents'

influences on motivation proved to be significantly more important than the influence of teachers and school administration.

Parental expectations. The influential Theory of Reasoned Action (Ajzen & Fishbein, 1980) has been used in a number of different studies to try to explain human behavior. The intention of voluntary behavior is influenced by two factors: the individual's attitudes towards the behavior and the subjective norm. The attitudes towards the behaviors are based on the perceived consequences of behavior. The second factor which is subjective norms is based on the individuals perceptions of the social influences. More specifically to this study, subjective norms reflect the individual's perceived expectations of significant others and the individual's motivation to comply with the perceived expectations. The family, particularly parents, can convey explicit or subtle expectations to their children regarding their achievement behavior. The expectations conveyed by the parents are also called normative expectations.

Parental expectations and beliefs about their children's level of ability are known to have an impact on their motivation and achievement behavior. Although most of the time parents do not say explicitly to their children what they expect of them, this information is transmitted in a subtle way through parents' behaviors. Parents' define and communicate standards of desirable behavior to their children. This process has been termed expectance socialization (Parsons, Adler & Kaczala, 1982). Parsons et al. (1982) examined the expectancy socialization influences on children's perceptions of their ability in math and their actual level of achievement in math. Results showed that children's perceptions of their math ability and level of effort required for math were strongly related to their parents' expectations.

Another study conducted by Phillips (1987) demonstrated the link between parental beliefs of their own academic ability and their children's perceptions of competence in an

academic setting. The findings revealed that children with low perceived competence believed that their parents had low perceptions of their academic ability and low expectations for their achievement. Dusek's (1980) study revealed that higher levels of test anxiety in a school setting are likely to be experienced by students that feel they did not attain their parents' expectations.

Parental Influences on Youths' Motivation and Behavior in the Context of Physical Activity

In this section, parental influences on youths' motivation and behaviors in the context of physical activity will be presented. An emphasis will be placed upon the influences of parents' physical activity behavior, parents' motivation towards physical activity, parents' involvement in their physical activities, parents' autonomy support in the context of physical activity, parents' encouragement towards physical activity and finally, parents' expectations with regards to physical activity on the physical activity motivation and behavior of youths.

The influence of parents' physical activity behavior on youths' physical activity behavior.

Social Learning Theory (Bandura, 1986) emphasizes the important influences of social factors on behavior. According to Bandura's theory, individuals learn many of their attitudes and behaviors from role models. By observing the behavior of their most salient socialization agents (i.e. parents), adolescents imitate or adopt similar patterns of behavior.

Parents can be role models for their child by participating regularly in physical activity. Some researchers (e.g. Moore et al., 1991; Sallis, Patterson, McKenzie, & Nader, 1988) have suggested that role modeling is an important form of parental influence. These studies demonstrated that youths of physically active parents tend to be active themselves. Positive and significant relationships between parental physical activity behavior and youths physical activity behavior have been found in numerous studies. These results were found with children (Anderssen & Wold, 1992; Freedson & Evenson, 1991; Hovell, Kolody, Sallis & Black, 1995;

Moore et al. 1991; Poest, Williams, Witt, & Atwood, 1989; Sallis, Patterson, McKenzie et al., 1988; Sallis et al., 1999; Stucky-Ropp & DiLorenzo, 1993) and adolescents (Gottlieb & Chen, 1985; Reynolds et al., 1990; Sallis, Patterson, Buono et al., 1988; Zakarian et al., 1994). Specifically, it was found in Moore et al.'s (1991) study that children of two active parents were six times more likely to be active than children of inactive parents.

Hovell et al. (1995) also found parental physical activity behavior to be a significant predictor of their nine year olds' physical activity behavior. Recently, Yang, Telama, & Laakso (1996) conducted a 12-year follow-up study in which it was demonstrated that parents' physical activity was significantly associated with their children's physical activity. They measured the physical activity levels of parents and their children five times across 12 years (1980, 1983, 1986, 1989, 1992) starting at the age of nine. This significantly contributed to the body of knowledge already stating that active parents are more likely to have active children.

The influence of parents' motivation towards physical activity on youths' physical activity motivation. As previously mentioned, in the context of education, some studies (Cellar & Wade, 1988; Fortier et al., 1994; Wild et al., 1992) have shown that the motivation of social agents towards an activity could have an impact on the motivation of individuals towards the same activity. For example, Wild et al. (1992) found that piano students were more intrinsically motivated when their piano teachers displayed a more self-determined type of motivation (intrinsic motivation). These results suggest that social learning or modeling occurred.

A study examining the relationship between parent and child self-reported goal orientation found that children's goal orientations were significantly related to those of their parents (Duda & Hom, 1993). Specifically, parents who are more task-oriented are more likely to have children who are task-oriented (task-orientation is similar to intrinsic motivation), whereas

parents who are more ego-oriented are more likely to have children who are also ego-oriented (ego-orientation is similar to extrinsic motivation).

Another salient variable is parental support. Some studies have examined the influence of parental support on adolescents' physical activity motivation and behavior. In general, studies indicate that parental support is positively associated with physical activity among adolescents (Anderssen and Wold, 1992; Biddle & Goudas, 1996; Butcher, 1985; Zakarian et al., 1994). Other studies have shown that parental support had a positive association with the pleasure (a concept closely related to intrinsic motivation) adolescents have towards physical activity (Power & Woolger, 1994; Weiss & Hayashi, 1995; Woolger & Power, 1993).

Recently, Sallis et al., (1999) examined multiple determinants of physical activity levels of youths aged nine to 17, including demographic, personal, environmental and social variables. They found that family support was one of the three most significant factors associated with youths' physical activity.

Parental support is a broad term that has been defined differently in past studies. For some researchers, parental support refers to parents' involvement in their youths' physical activities. Parental support is also viewed by some to be related to parents' interpersonal styles, and finally, this concept is also referred to, in some studies, as the encouragement parents provide to their children to engage in physical activity. Instead of incorporating all of these components in one general measure of parental support, we decided to classify these parental influences as three different variables: parental involvement, parental autonomy support and parental encouragement. The literature relevant to these parental variables is presented below.

The influence of parents' involvement in their physical activities on youths' physical activity motivation and behavior. Grolnick & Slowiaczek (1994) defined parental involvement as

“the dedication of resources by the parent to the child within a given domain” (p.238). We will use the same general definition for this study, however, this concept will be distinguished by three types of parental behavior: when parents do physical activity with their children, when parents provide transportation to their children to sporting/physical activity events, and finally, when parents take time to observe/watch their children’s practice or play. These items were selected based on the literature below.

Studies on young athletes aged nine and older have shown positive correlations between their perceptions of the amount of parental involvement and their current levels of physical activity (Hasbrook, 1987; Higginson, 1995). Brustad (1988) suggested that typically high levels of parental involvement have an important impact upon the affective outcomes of the children in physical activity. In another study, Weitzer (1989) examined the influence of parental involvement levels on children’s achievement orientations toward sport. He found that girls who reported higher levels of parental involvement in their sport experiences displayed higher levels of perceived competence.

Enjoyment, a concept closely related to intrinsic motivation, was also studied in relation with parental involvement. Studies conducted by Scanlan & Lewthwaite (1986) with young wrestlers and Ommundsen & Vaglum (1991) with soccer players revealed that athletes who perceived greater parental involvement experienced greater enjoyment of their season.

A few studies examined the influence of parents participating in physical activity with their children on their children’s physical activity behavior. DiLorenzo et al. (1998) and Hovell et al. (1995), found that parents actively participating in physical activity with their child was a significant predictor of children’s physical activity behavior.

Another dimension of involvement that seems to be critical is the parents' availability for providing their children with transportation to sporting/physical activity events. Studies in this area have demonstrated that parents providing transportation was strongly correlated to children's physical activity behavior (Sallis, Alcaraz et al., 1992; Snyder & Purdy, 1982).

To our knowledge, no studies to date have assessed, as a distinct variable, the influence of parents' observing/watching their child participate in physical activity on their child's physical activity behavior. Most of the studies that have examined this component have included it in an overall measure of parental or family support. However, a few studies (Csikszentmihalyi, Rathunde, & Whalen, 1993; Sloan, 1985) have shown that parents of dedicated athletes usually attend their children's competition and practice sessions, thus, providing elements of belief that parents who watch their children participate in physical activity might influence their children's engagement in physical activity.

The influence of parents' autonomy support on youths' physical activity motivation.

Parents can be autonomy supportive or controlling in their behaviors with their children.

Autonomy support occurs when a parent takes his children's perspective into account, provides choices, reflects on his children's feeling, encourages initiative and supports freedom, whereas control occurs when a parents pressure their children to perform up to external standards or use rewards and constraints to manipulate their behavior.

Although the number of studies regarding parental interpersonal style is limited in the context of physical activity, several studies have examined the role of parenting style on motivation and achievement behavior of children in the context of education. The findings reported in these studies are quite similar. In sum, results indicate that children of autonomy supportive parents have higher self-reports of autonomy, higher teacher rated competence, better

school grades and achievement, and higher perceived competence and motivation (Grolnick & Ryan, 1989; Grolnick et al., 1991). In their study, Vallerand et al., (1997) proposed and tested a motivational model of high school dropout. They predicted that low levels of autonomy supportive behaviors from critical social agents in the school system would undermine students' self-determined motivation and therefore lead to high school dropout. Results strongly supported the model. Dropout students perceived their teachers, parents and school administration as being more controlling than persistent students.

To our knowledge, no studies to date have examined the influence of parenting styles on the motivation and behavior of youths in the context of physical activity. However, Power & Woolger (1994) examined a concept that is related to parenting styles. They looked at parental directiveness (closely related to parental control) and its effect on children's enthusiasm towards swimming (closely related to enjoyment and intrinsic motivation). It was found that parents reporting moderate levels of directiveness had children reporting the greatest enthusiasm for swimming.

Still, in the context of physical activity, a recent study conducted by Pelletier et al., (2000) examined the influence of competitive swimmers' perceptions of coaches' interpersonal style on the different forms of regulation (motivation) and persistence. The results showed that experiencing relationships as controlling undermined intrinsic motivation. Greater levels of self-determined motivation occurred when athletes perceived their relationships with their coaches as autonomy supportive and athletes who demonstrated greater levels of self-determined motivation showed to be more persistent in their endeavor. Other studies (Fortier et al., 1996; Goudas et al., 1995) have examined the influence of physical education teachers interpersonal style on youths motivation and found similar results.

Since many studies conducted in the context of education strongly indicated that youths of autonomy supportive parents had higher self-reports of motivation and that studies examining other social agents (i.e. physical education teacher and coaches) interpersonal style in the context of physical activity found similar results, it would be logical to propose that parents' interpersonal style would also have an impact on adolescents' physical activity motivation.

The influence of parents' encouragement on youths' physical activity motivation and behavior. Parental encouragement's influence on adolescents' physical activity motivation and behavior has been relatively well documented. In sum, most studies reported that parental encouragement is an important and significant correlate of children's (Epstein, Smith, Vara, & Rodefer, 1991; Klesges, Malott, Boschee, & Weber, 1986; McKenzie, Sallis et al., 1991; Sallis, Buono, Roby, Micale, & Nelson, 1993) and adolescents' physical activity behavior (Anderssen & Wold, 1992; Sallis et al., 1999).

Other studies have examined the effect of parental encouragement on adolescents' physical activity motivation. More specifically, three studies conducted by Brustad & Weigand (1989), Brustad (1993) and Brustad (1996) are quite influential in this area of research. Brustad and Weigand (1989) investigated the influence of parental encouragement on the motivational orientation (intrinsic/extrinsic) of youth soccer players. It was found that athletes who perceived high parental encouragement towards their sport demonstrated higher levels of intrinsic motivation than the youths who perceived less parental encouragement.

The purpose of Brustad's (1993) study was to test a conceptual model that displayed the influence of parental physical activity orientations and parental socialization practices on the perceived competence and physical activity attraction of children. It was hypothesized that higher levels of parental encouragement would then translate into greater motivation. The results

of the study supported the hypothesis and the proposed model that he developed. In a more recent study, Brustad (1996) found that perceived parental encouragement was the most significant parental variable influencing children's physical activity behavior and perceived competence.

Although a significant amount of studies have examined the influence of parental encouragement, very few studies have looked at the influence of parents' expectations on adolescents' physical activity behavior.

The influence of parents' expectations on youths' physical activity behavior. The influential Theory of Reasoned Action (Ajzen & Fishbein, 1980) has been used in a number of different studies to try to explain human behavior. This theory states that an individual's perceptions of a salient social agent's (i.e. parents) expectations will influence this individual to comply with these perceived expectations.

Some authors have suggested that parents' expectations are important for the physical activity behavior of youths (Sage, 1986; Yang et al., 1996). Also, Eccles & Harold (1991) proposed that parental expectations influence youths to engage in particular activities. This premise is supported by a few studies which indicate that adolescents' physical activity behavior are associated to parental expectations (Brustad, 1996; Dempsey, Kimiecik, & Horn, 1993; Kimiecik, et al., 1996). A study by Godin & Shephard (1984), revealed that active children were more likely than sedentary children to report that parents expected them to be physically active.

Other studies have also found that significant others' expectations regarding physical activity were significantly associated with adolescents' reported amounts of weekly physical activity (Anderssen & Wold, 1992; Godin & Shephard, 1986).

Now that the literature pertaining to parental influences has been presented, we will present the main theoretical framework used in the present study.

Self-Determination Theory (Deci & Ryan, 1985, 1991)

One contemporary approach in the study of human motivation that has generated a considerable amount of research and has been found to be theoretically sound is Self-Determination Theory (SDT, Deci & Ryan, 1985, 1991). This humanistic theory is based on the premise that motivation derives from three basic human needs. These needs are psychological in nature and they are the need for competence, the need for autonomy and finally, the need for relatedness. According to Self-Determination Theory (Deci & Ryan, 1985, 1991), any situation or factor in the environment that has an effect on the individual's needs will have an impact on the individual's self-determined motivation. Specifically, it is posited that events that increase an individual's perceptions of competence or perceptions of autonomy or perceptions of relatedness to others will increase the individual's self-determined motivation, whereas events that decrease an individual's perceptions of competence, autonomy or relatedness will undermine self-determined motivation.

According to Brustad (1992), research exploring the influence of social agents on physical activity of youths and research on motivation should go hand in hand. Furthermore, Brustad suggested that theoretically sound motivational theories should be used to study this area of research. SDT has been proven to be theoretically sound in a number of studies (e.g. Pelletier, Fortier, Tuson, Brière, & Blais, 1995; Vallerand & Bissonnette, 1992). Accordingly, this study examines the influence of parental variables on adolescents' physical activity motivation and behavior using Self-Determination Theory.

There are a number of reasons why SDT was chosen as the main theoretical framework for this study. First, much research that has been conducted in different areas of life supports the use of SDT (Fortier, Vallerand & Guay, 1995; Pelletier et al., 1997; Vallerand et al., 1997), including physical activity (Brière et al., 1995; Pelletier et al., 2000). Second, SDT accounts for the energization of human behavior. The three basic human needs proposed in this particular theory give direction and intensity to human behavior. They guide people to engage or not to get involved in certain activities. Therefore, SDT takes into consideration the origins (determinants) of human motivation and behavior. For an individual to engage in an activity (e.g. physical activity), one must feel a certain degree of competence, autonomy and must feel related to others. Third, contrary to other theories that consider only two types of motivation (intrinsic and extrinsic motivation or task and ego orientation), SDT distinguishes among different types of motivation that can be classified in the degree in which the behavior can be considered self-determined. There are three main forms of motivation elaborated in SDT, bringing forth seven specific types of motivation (three types of intrinsic motivation, three types of extrinsic motivation and amotivation). These different types of motivation will be explained later in this chapter. Fourth, SDT accounts for the consequences of motivation and thus, gives a better understanding of motivational process as a whole. Much research has shown that specific types of outcomes (e.g. physical activity behavior) are associated with different types of motivation. In sum, these are the reasons why Self-Determination Theory has been chosen as the main theoretical framework in this study.

Self-Determination Theory is composed of two sub-theories, namely Organismic Integration Theory (OIT, Deci & Ryan 1985) and Cognitive Evaluation Theory (CET, Frederick & Ryan, 1995). These theories will be explained in the following sections.

Organismic Integration Theory

Organismic Integration Theory (Deci & Ryan, 1985) elaborates on the different types of motivation and the consequences related to them.

Types of motivation. In their theory, Deci & Ryan (1985) have proposed three main types of motivation: intrinsic motivation, extrinsic motivation and amotivation. Hence, behavior, or in this study physical activity behavior, can be intrinsically motivated, extrinsically motivated or amotivated. These different forms of motivation differ in the degree to which they are self-determined and can be placed on a self-determined continuum.

The most self-determined form of motivation is intrinsic motivation. Intrinsically motivated behaviors are engaged in for their own sake. They are performed by individuals for the sheer pleasure and satisfaction felt when engaged in the activity. “During the activity” is an important element of the definition of intrinsic motivation. Individuals who engage in physical activity for the psychological benefits they get after the activity itself (e.g. sense of calmness, relaxation, sense of well-being) are not intrinsically motivated. Intrinsically motivated individuals would engage in physical activity for the enjoyment they felt while performing the activity itself. Ryan & Stiller (1991) indicated that intrinsically motivated behaviors are “autotelic”, which means “an end in itself”. For a number of years, intrinsic motivation was seen and defined as one general concept by researchers. It is only recently that Vallerand et al. (1992) have proposed three forms of intrinsic motivation: intrinsic motivation to know, intrinsic motivation toward accomplishments and finally intrinsic motivation to experience stimulation (see Pelletier et al., 1995 for further elaboration).

Intrinsic motivation to know refers to engaging in an activity for the pleasure and the satisfaction that one experiences through learning, exploring or trying to understand something

new (Vallerand, 1993, 1997). An adolescent who practices different one on one skills in basketball after school for the enjoyment of learning which skills is best suited for his or her style of play is an example of an individual who is intrinsically motivated to know. Intrinsic motivation toward accomplishment is characterized by the sheer pleasure that one experiences while attempting to surpass oneself or to accomplish something. An example of intrinsic motivation to accomplish would be an adolescent who is trying to master a difficult skill in a sport in order to experience personal satisfaction. Finally, intrinsic motivation to experience stimulation refers to an individual who engages in an activity to live pleasant or exciting kinesthetic sensations. Extreme sport such as sky diving or downhill mountain biking are often types of physical activity where we would find individuals who would participate for such reasons.

Contrary to intrinsic motivation, extrinsic motivation refers to the involvement in an activity for instrumental reasons. Extrinsically motivated individuals engage in activities, such as physical activity, as a mean to an end and not for the activity itself. Deci & Ryan (1985) have further developed this type of motivation by proposing three different types of extrinsic motivation that differ in their degree of self-determination. From the least self-determined form of regulation to the most self-determined form of regulation they are, external regulation, introjected regulation and identified regulation.

External regulation is the least self-determined type of motivation since it refers to behaviors that are controlled or regulated by external sources such as rewards, constraints, praise or simply to avoid negative outcomes. This is generally the definition that appears in the literature when discussing extrinsic motivation. Adolescents who engage in physical activity to look good or to impress parents are typical examples of individuals motivated by external

regulation. Introjection regulation occurs when external sources are internalized and individuals perform certain activities because they feel bad if they don't perform the activity. In this case, adolescents who engage in physical activity because they would feel guilty or anxious if they wouldn't are examples of introjected regulation. Finally, identified regulation which is the most self-determined type of extrinsic motivation, refers to individuals who perform an activity because they learned to value it and therefore, perform it out of choice. The behavior is now chosen without any external pressures from the environment or internal pressures from the individual. An adolescent who participate in physical activity because he or she feel that being in good physical condition is important for his or her well-being and health is an example of identified regulation.

In addition to intrinsic and extrinsic motivation, Deci & Ryan (1985) have posited that another type of motivation is mandatory for the understanding of human motivation. At the least self-determined end of the continuum is the concept of amotivation. Amotivated individuals lack motivation, they don't have intrinsic nor extrinsic reasons for participating in an activity. They do not know why they are involved in the activity. The concept of amotivation is closely related to the concept of learned helplessness (Abramson, Seligman & Teasdale, 1978).

Although many studies have examined the different types of motivation separately, researchers in the self-determination literature have often regrouped these types of motivation to create an overall motivational profile (e.g. Kowal & Fortier, 2000; Vallerand et al., 1997). This motivational index is created specifically for assessing individual's overall motivational orientation towards an activity (e.g. physical activity). Individuals who have a more self-determined motivational profile toward physical activity, do physical activity out of pleasure and/or by choice (intrinsic motivation) or because they believe it's good for them (identified

regulation), whereas individuals that have a less self-determined motivational orientation, do physical activity extrinsic reasons (external regulation) or for no apparent reasons (amotivation).

Motivational consequences. Organismic Integration Theory also focuses on the consequences of motivation. More specifically, Deci & Ryan (1985) posit that the different types of motivation lead to different outcomes. Research in this area demonstrated that more self-determined forms of motivation (intrinsic motivation and identified motivation) lead to more positive outcomes, whereas less self-determined forms of motivation (external regulation, introjected regulation, and especially amotivation) should lead to negative outcomes (see Vallerand, 1997 for a review). In his Hierarchical Model of Intrinsic and Extrinsic Motivation, Vallerand (1997) suggested that consequences of motivation can be either cognitive, affective or behavioral in nature. In the present study, the adolescents' physical activity behavior is the consequence of motivation that was examined.

As mentioned previously, SDT and more specifically, OIT predicts that self-determined motivation should lead to positive outcomes (in this case higher levels of physical activity behavior). Researchers from this perspective have been interested recently in examining the relationship between motivation and physical activity persistence as an outcome (e.g. Frederick, Morrison, & Manning, 1996; Frederick & Ryan, 1994; Pelletier et al., 2000). In general, the findings of these studies conclude that participants with a more self-determined motivational profile towards physical activity persist more and remain involved in their activity longer compared to their less self-determined counterparts. More specifically, Pelletier et al., (2000) found that athletes with more self-determined types of physical activity motivation were more likely to persist in the activity than athletes with reporting less self-determined types of motivation. Other studies (Leblanc & Fortier, 2000; Mullan & Markland, 1997) have examined

the relationship between the self-determined motivation of individuals and their level of involvement in physical activity (they refer to stages of change). These studies found that self-determination motivation increases from the lower to the higher stages of change.

With regards to levels of physical activity involvement, a study conducted with 12 year-olds found that intrinsic motivation towards physical activity was significantly correlated with activity levels (Biddle & Armstrong, 1992). A concept closely related to intrinsic motivation is enjoyment. Stucky-Ropp & DiLorenzo (1993) and Tinsley et al., (1995) found that youths' enjoyment was significantly associated with their physical activity behavior. In a more recent study, DiLorenzo et al., (1998) found that enjoyment of physical activity was the most significant predictor of children's physical activity behavior. Sallis et al. (1999) also found that enjoyment was a significant predictor of physical activity levels of 1,504 grade 4-12 students.

Cognitive Evaluation Theory

The other sub-theory of SDT is Cognitive Evaluation Theory (CET, Deci & Ryan, 1985, 1991), and it examines the influence of determinants on motivation. According to Fortier (1994), there are proximal and distal determinants that affect self-determined motivation.

Proximal and distal determinants of Self-Determined Motivation. According to Deci & Ryan (1985, 1991), there are three basic human needs that are at the foundation of Self-Determination Theory. These needs are: perceived autonomy, perceptions of competence and perceived relatedness. These three needs are posited to directly influence individuals self-determined motivation. According to CET, any situation or event that has an effect on the individual's needs will have an impact on the individual's self-determined motivation. More specifically, CET posits that factors from the social environment that have a positive impact on one of the needs will subsequently positively influence self-determined motivation, whereas

factors from the social context that have a negative impact one of the proximal determinants will undermine self-determined motivation. Fortier (1994) proposed that both distal and proximal determinants can influence individuals' self-determined motivation. This study will examine the effect of distal determinants (i.e. parental influences) on adolescents' physical activity motivation and behavior.

The Present Study

In this study, "physical activity" is defined as "any bodily movement produced by skeletal muscles that results in energy expenditure" (Caspersen, Powell, & Christenson, 1985) that is performed outside of high school physical education classes. In other words, physical activity is any type of physical movement which include other concepts such as exercise and sport, but is not exclusively exercise or sport which are concepts more related with structure and organization than just physical activity. It was decided that only the physical activity behavior of adolescents outside of physical education classes was going to be measured. The rationale for this is based on the fact that we cannot assume that the physical activities that are performed in physical education classes are done out of choice. It is entirely possible for example that adolescents who play basketball in gym class would not play outside of the school context. Maybe their only reason for participating in a specific activity would be to get credits towards a high school degree.

Studies have revealed that parents play an important role in influencing youths to adopt an active lifestyle (Brustad, 1992; 1993; DiLorenzo et al., 1998; Freedson & Evenson, 1991; Kimiecik et al., 1996; Taylor et al., 1994). Although some studies have examined the influence of parents on youths' physical activity behavior, there is still little that is known regarding this phenomenon (Sallis, 1999). Furthermore, not much research has sought to examine the impact of

parental influences on adolescents' physical activity motivation (Frederick & Ryan, 1995). In addition, although many studies (e.g. Anderssen & Wold, 1992; Brustad, 1993; Moore et al., 1991; Sallis et al., 1999) have revealed that parents influence their children's motivation and physical activity behavior in multiple ways, very few have examined multiple parental influences within the same study. Finally, none of these studies have used Self-Determination Theory (SDT, Deci & Ryan, 1985, 1991) as the main theoretical framework.

Therefore, the general purpose of this study was to examine multiple sources of parental influences on adolescents' physical activity motivation and behavior using Self-Determination Theory. More precisely, this study attempted to develop and verify a Model of Parental Influences in the context of physical activity (see Figure 1). Specifically, we examined the influence of adolescents' perceptions of six parental influences: parents' physical activity behavior, parents' motivation towards physical activity, parents' involvement in their physical activities, parents' autonomy support in the context of physical activity, parents' encouragement towards physical activity, and finally, parents' expectations with regards to physical activity on their physical activity motivation and behavior.

The Model of Parental Influences

This study attempted to develop and verify a Model of Parental Influences in the context of physical activity. This model is based mainly on Deci & Ryan (1985, 1991) Self-Determination Theory as well as other theories (Social Learning Theory, Bandura, 1986; Theory of Reasoned Action, Ajzen & Fishbein, 1980) and past research relative to parental influences on youths' motivation and behavior in the context of education (e.g. Grolnick & Slowiaczek, 1994, Vallerand et al., 1997) and physical activity (e.g. Brustad, 1992, 1993; Kimiecik et al., 1996; Sallis et al., 1999). The conceptual and empirical evidence supporting the relationships proposed

in the model were presented in the review of literature, therefore, the hypotheses will be presented at this point.

Insert Figure 1 about here

Hypotheses

It is hypothesized that the predicted relationships in Model of Parental Influences will be significant and in the expected direction. More specifically, it is hypothesized that: the more adolescents perceive their parents to be physically active, the more they will also be physically active (H1), the more adolescents perceive their parents to be motivated towards physical activity in a self-determined way, the more their physical activity motivation will be self-determined (H2), the more adolescents perceive their parents to be involved in their physical activities, the more their physical activity motivation will be self-determined (H3a) and the more they will be physically active (H3b), the more adolescents perceive their parents as being autonomy supportive (versus controlling) in the context of physical activity, the more their physical activity motivation will be self-determined (H4), the more adolescents' perceive their parents to be encouraging in the physical activity context, the more their physical activity motivation will be self-determined (H5a) and the more they will be physically active (H5b), the more adolescents perceive their parents to have high expectations with regards to physical activity, the more they will be physically active (H6) and finally, the more adolescents are motivated towards physical activity in a self-determined way, the more they will be physically active (H7).

According to Cognitive Evaluation Theory (Frederick & Ryan, 1995), the actual behavior of social agents (i.e. parents) is not what really influences adolescents' motivation or behavior

but rather adolescents' perceptions of social agents behavior. In other words, the perceived behavior is more important and influential than the actual behavior. This is the main reason why we examined adolescents' perceptions of parents' behaviors and how these behaviors influences their physical activity motivation behavior instead of the actual parental behavior.

Significance of the Study

A study of parental influences on adolescents' physical activity motivation and behavior is significant for several reasons. First, this study could contribute to the body of knowledge related to the different parental influences on the motivation and physical activity behavior of youths. Parental influences seem to be one of the most salient factor on youths' motivation and physical activity behaviors (Brustad, 1993; DiLorenzo et al., 1998; Kimiecik et al., 1996; Lewko & Greendorfer, 1988). In the last decade, some studies have been conducted regarding parental influences on the physical activity of adolescents but only a few have investigated the influence of parents on youths physical activity motivation (Brustad, 1993; Frederick & Ryan, 1995). Although some studies have been conducted in this area of research, relatively little is known about the parental influences on physical activity behavior during adolescence. Sallis (1999) asserts that current knowledge concerning the parental influences that affect youths' physical activity behavior is limited and more studies are needed for the understanding of physical activity behavior among adolescents. This study would contribute to this area of research.

Second, most studies have examined only one or two parental influences on adolescents' motivation and physical activity behavior. This study proposes a model that will examine the influence of six distinct parental variables on the physical activity motivation and behavior of adolescents. This has not been done before in past research. A study examining multiple parental influences on adolescents physical activity motivation and behavior would significantly

contribute to the understanding of the multiple ways parents influence their adolescents in the context of physical activity.

Third, to our knowledge, no studies to date have examined the influence of parental variables on adolescents' motivation and physical activity behavior using Self-Determination Theory as the main conceptual approach (Deci & Ryan, 1985, 1991). This study could suggest a new avenue for exploring the influence of parental variables on adolescents' motivation and physical activity behavior.

From an applied perspective, this study could shed some light on the understanding of the determinants that influence physical activity behavior among adolescents. Specifically, the present study would give an insight into the specific parental influences that affect adolescents' physical activity motivation and behavior. A better understanding of parental influences in the physical activity domain could provide useful information for parents who want to know which behaviors to adopt to foster intrinsic motivation and positively influence their children to participate in physical activity. Findings of this study would also be useful to practitioners for the development of family-based physical activity intervention programs.

CHAPTER III

Presentation of the Journal Article

The Journal article entitled *Parental Influences on Adolescents' Physical Activity Motivation and Behavior* presented in this chapter has been prepared for submission to the academic journal of *Preventive Medicine*.

**Running head: PARENTAL INFLUENCES, MOTIVATION,
PHYSICAL ACTIVITY AND ADOLESCENTS**

Parental Influences on Adolescents' Physical Activity Motivation and Behavior

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Abstract

The general purpose of this study was to examine multiple sources of parental influences on adolescents' physical activity motivation and behavior using Self-Determination Theory (Deci & Ryan, 1985, 1991) as the main theoretical framework. More precisely, this study attempted to develop and verify a Model of Parental Influences in the context of physical activity. It was hypothesized that the predicted relationships in the model would be significant and in the expected direction. A questionnaire, composed of several validated scales that assessed: physical activity motivation, physical activity behavior and perceptions of parental influence, was administered to 829 ninth grade physical education students from the Ottawa, Canada region. Results from a recursive path analysis consisting of two multiple regressions revealed that perceived parental motivation towards physical activity, perceived parental involvement in their physical activities and perceived parental autonomy support in the context of physical activity significantly influenced adolescents' physical activity motivation. Results also revealed that perceived parental expectation with regards to physical activity and adolescents' physical activity motivation were significant predictors of their physical activity behavior. Overall, findings support the notion that parents exert an influence on adolescents, especially on their physical activity motivation. The findings are discussed in light of the research on parental influences, theoretical and practical implications are outlined and directions for future research are suggested.

Key Words: Parental influences, Motivation, Physical activity, Adolescents, Self-Determination Theory

Introduction

Many studies conducted with youth populations have shown that regular involvement in physical activity is associated with a number of physiological and psychological benefits (e.g. Bouchard, Shephard, & Stephens, 1994; Canadian Fitness and Lifestyle Research Institute [CFLRI], 1997; U.S. Department of Health and Human Services [U.S. DHHS], 1996) and accumulating evidence indicates that physical activity is important to the health of adolescents (Sallis & Patrick, 1994).

Despite these findings, studies have shown that adolescents in North America do not engage regularly in physical activity (CFLRI, 1997; DiLorenzo, Stucky-Ropp, Vander Wal, & Gotham, 1998; Sallis & Patrick, 1994; U.S. DHHS, 1996) and do not meet physical activity recommendations (Pate, Long & Heath, 1994; Sallis, 1999). In Canada, only 33% of 13-17 year-old adolescents participate in activities of sufficient intensity to meet the guidelines for optimal growth and healthy development (CFLRI, 1998), and in the United States, approximately 50 percent of youths 12-21 years of age are not vigorously active on a regular basis (U.S. DHHS, 1996).

Accordingly, over the last two decades, researchers have started to examine the determinants of physical activity among youth populations (e.g. Godin & Shephard, 1984; Sallis, Prochaska, Taylor, Hill, Geraci, 1999; Trost et al., 1997). So far, researchers have found that many factors influence youths to engage in physical activity, including biological, psychological, physical and social factors (Sallis, 1999).

Studies examining these factors have revealed that the social context, and more specifically parents, play an important role in influencing youths to adopt an active lifestyle (Brustad, 1992; 1993; DiLorenzo et al., 1998; Taylor, Baranowski, & Sallis, 1994). Although

some studies have been conducted in this area of research, relatively little is known about the determinants of physical activity patterns during adolescence (Sallis, 1999). Furthermore, not much research has sought to examine the impact of parental influences on adolescents' physical activity motivation (Frederick & Ryan, 1995). In addition, although many studies (e.g. Anderssen & Wold, 1992; Brustad, 1993; Moore et al., 1991; Sallis et al., 1999) have revealed that parents influence their children's motivation and physical activity behavior in multiple ways, just a few have examined multiple parental influences within the same study. Finally, none of these studies have used Self-Determination Theory (Deci & Ryan, 1985, 1991) as the main theoretical framework.

Therefore the general purpose of this study was to examine multiple sources of parental influences on adolescents' physical activity motivation and behavior using Self-Determination Theory as the main conceptual approach. More precisely, this study attempted to develop and verify a Model of Parental Influences in the context of physical activity (see Figure 1). This model is based mainly on Deci & Ryan (1985, 1991) Self-Determination Theory but also incorporates elements from other theories such as Social Learning Theory (Bandura, 1986) and the Theory of Reasoned Action (Ajzen & Fishbein, 1980). It is also based on past research relative to parental influences on youths' motivation and behavior in the context of education (e.g. Grolnick & Slowiaczek, 1994, Vallerand, Fortier & Guay, 1997) and physical activity (e.g. Brustad, 1992, 1993; Kimiecik, Horn, & Shurin, 1996; Sallis et al., 1999). Specifically, we examined the influence of adolescents' perceptions of six parental variables: parents' physical activity behavior, parents' motivation towards physical activity, parents' involvement in their physical activities, parents' autonomy support in the context of physical activity, parents'

encouragement towards physical activity, and finally, parents' expectations with regards to physical activity on adolescents' physical activity motivation and behavior.

The conceptual and empirical evidence supporting the relationships proposed in the Model of Parental Influences are outlined in the following sections. However, the main theoretical framework of the present study, namely Self-Determination Theory (SDT, Deci & Ryan, 1985, 1991), will be presented first.

Insert Figure 1 about here

Self-Determination Theory (Deci & Ryan, 1985, 1991)

One contemporary approach to the study of human motivation that has generated a considerable amount of research and has been found to be sound in different contexts is Self-Determination Theory (SDT, Deci & Ryan, 1985, 1991). SDT is composed of two sub-theories, namely Organismic Integration Theory (OIT, Deci & Ryan, 1985) and Cognitive Evaluation Theory (CET, Frederick & Ryan, 1995).

OIT (Deci & Ryan, 1985) elaborates on the different types of motivation and the consequences related to them. In this theory, Deci & Ryan (1985) propose three main types of motivation: intrinsic motivation, extrinsic motivation and amotivation.

The most self-determined form of motivation is intrinsic motivation (IM). Intrinsically motivated behaviors are engaged in for their own sake. They are performed by individuals for the sheer pleasure and satisfaction felt when engaged in the activity. An example of IM would be an adolescent who does physical activity for the fun and enjoyment experienced while doing the activity. For a number of years, intrinsic motivation was seen and defined by researchers as a

general concept. It is only recently that Vallerand et al. (1992) have proposed three forms of intrinsic motivation: intrinsic motivation to know, intrinsic motivation toward accomplishments and finally intrinsic motivation to experience stimulation (see Pelletier, Fortier, Tuson, Brière, & Blais, 1995, for an elaboration on these three types of IM in the physical activity context).

Contrary to intrinsic motivation, extrinsic motivation (EM) refers to the involvement in an activity for instrumental reasons. Extrinsically motivated individuals engage in activities, such as physical activity, as a mean to an end and not for the activity itself. Deci & Ryan (1985) have further developed this type of motivation by proposing three different types of EM that differ in their degree of self-determination. From the least self-determined form of regulation to the most self-determined form of regulation they are, external regulation, introjected regulation and identified regulation.

External regulation is the least self-determined type of EM since it refers to behaviors that are controlled or regulated by external sources such as rewards, constraints or praises. Adolescents who engage in physical activity to look good or to impress parents are typical examples of individuals motivated by external regulation. Introjection regulation occurs when the external sources are internalized and the individual now pressures himself/herself to do the activity. In this case, adolescents who engage in physical activity because they would feel guilty or anxious if they wouldn't is an example of introjected regulation. Finally, identified regulation, which is the most self-determined type of EM, refers to individuals who perform an activity because they have learned to value it and therefore perform it out of choice. The behavior is now chosen without any external pressures from the environment or internal pressures from the individual. An adolescent who participates in physical activity because he or she feels that being in good physical condition is important for his or her well-being and health is an example of

identified regulation.

In addition to intrinsic and extrinsic motivation, Deci & Ryan (1985) have posited that another type of motivation is mandatory for the understanding of human motivation. At the least self-determined end of the continuum is the concept of amotivation. Amotivated individuals lack motivation, they do not have intrinsic or extrinsic reasons for performing an activity. They do not know why they are involved in the activity. The concept of amotivation is closely related to the concept of learned helplessness (Abramson, Seligman & Teasdale, 1978).

Although many studies have examined the different types of motivation separately, researchers in the self-determination literature have often regrouped these types of motivation to create an overall motivational profile (e.g. Kowal & Fortier, 2000; Vallerand et al., 1997). This motivational index is created specifically for assessing individuals' overall motivational orientation towards an activity (e.g. physical activity). Individuals that have a more self-determined motivational profile toward physical activity, do physical activity out of pleasure and/or by choice (intrinsic motivation) or because they believe it's good for them (identified regulation), whereas individuals that have a less self-determined motivational orientation, do physical activity for extrinsic reasons (external regulation) or for no apparent reasons (amotivation).

OIT also focuses on the consequences of motivation. Specifically, Deci & Ryan (1985) posit that the different types of motivation lead to different outcomes. They predict that more self-determined types of motivation (IM, identified regulation) are associated with positive consequences, whereas less self-determined forms of motivation (external regulation, introjected regulation and especially amotivation) lead to negative outcomes (see Vallerand, 1997 for a review). In the present study, the adolescents' physical activity behavior is the consequence of

motivation that was examined.

The other sub-theory of SDT is Cognitive Evaluation Theory (CET, Deci & Ryan, 1985, 1991) and it examines the influence of determinants on motivation. This theory is based on the premise that motivation derives from three basic human needs: the need for competence, the need for autonomy and finally, the need for relatedness. These three needs are posited to directly influence individuals' motivation. According to CET, any situation or event that has an effect on the individual's needs will have an impact on the individual's self-determined motivation. More specifically, CET posits that factors from the social environment that have a positive impact on one of the needs will subsequently positively influence self-determined motivation, whereas factors from the social context that have a negative impact on one of the proximal determinants will undermine self-determined motivation. In this study, parental influences are considered as determinants.

The Model of Parental Influences

This study attempted to develop and verify a Model of Parental Influences in the context of physical activity (see Figure 1). The conceptual and empirical evidence supporting the relationships proposed in the Model of Parental Influences are outlined below.

The influence of parents' physical activity behavior on adolescents' physical activity behavior. Social Learning Theory developed by Bandura (1986) emphasizes the important influences of social factors on behavior. According to Bandura's theory, individuals learn many of their attitudes and behaviors from role models. By observing the behavior of their most salient socialization agents (i.e. parents), adolescents imitate or adopt a similar pattern of behavior.

Parents can be role models for their child by participating regularly in physical activity. Some researchers (e.g. Moore et al., 1991; Sallis, Patterson, McKenzie, & Nader, 1988) have

suggested that role modeling is an important form of parental influence. Positive and significant relationships between parental physical activity and youths physical activity behavior have been found in numerous studies. These results were found with children (Anderssen and Wold, 1992; Freedson & Evenson, 1991; Hovell, Kolody, Sallis & Black, 1995; Moore et al. 1991; Poest, Williams, Witt, & Atwood, 1989; Sallis, Patterson, McKenzie et al., 1988; Sallis et al., 1999; Stucky-Ropp & DiLorenzo, 1993) and adolescents (Gottlieb & Chen, 1985; Reynolds et al., 1990; Sallis, Patterson, Buono & Nader, 1988; Zakarian, Hovell, Hofstetter, Sallis, & Keating, 1994). Specifically, it was found in Moore et al.'s (1991) study that children of two active parents were six times more likely to be active than children of inactive parents.

The influence of parents' motivation towards physical activity on adolescents' physical activity motivation. Few studies have examined the influence of parents' motivation towards physical activity on adolescents' physical activity motivation. Although, some studies (Cellar & Wade, 1988; Fortier et al., 1994; Wild, Enzle, & Hawkins, 1992) have shown that the motivation of social agents towards an activity could have an impact on the motivation of individuals towards the same activity. For example, Wild et al. (1992) found that piano students were more intrinsically motivated when their piano teachers displayed a more self-determined type of motivation (intrinsic motivation). These results suggest that social learning or modeling occurred.

A study examining the relationship between parent and child self-reported goal orientation found that children's goal orientations were significantly related to those of their parents (Duda & Hom, 1993). Specifically, parents who are more task-oriented are more likely to have children who are task-oriented (task-orientation is similar to intrinsic motivation), whereas

parents who are more ego-oriented are more likely to have children who are also ego-oriented (ego-orientation is similar to extrinsic motivation).

Another salient variable is parental support. Some studies have examined the influence of parental support on adolescents' physical activity motivation and behavior. In general, studies indicate that parental support is positively associated with physical activity among adolescents (Anderssen and Wold, 1992; Biddle & Goudas, 1996; Butcher, 1985; Zakarian et al., 1994). Other studies have shown that parental support had a positive association with the pleasure (a concept closely related to intrinsic motivation) adolescents have towards physical activity (Power & Woolger, 1994; Weiss & Hayashi, 1995; Woolger & Power, 1993).

Recently, Sallis et al., 1999 examined multiple determinants of physical activity levels of youths aged nine to 17, including demographic, personal, environmental and social variables. They found that family support was one of the three most significant factors associated with youths' physical activity.

Parental support is a broad term that has been defined differently in past studies. For some researchers, parental support refers to parents' involvement in their youths' physical activities. Parental support is also viewed by some to be related to parenting styles, and finally, this concept is also referred in some studies as the encouragement parents provide to their children to engage in physical activity. Instead of incorporating all of these components in one measure of parental support, we decided to classify these parental influences as three different variables: parental involvement, parental autonomy support and parental encouragement. The literature relevant to these parental variables will be presented below.

The influence of parents' involvement in their physical activities on adolescents' physical activity motivation and behavior. Grolnick & Slowiaczek (1994) have defined parental

involvement as “the dedication of resources by the parent to the child within a given domain” (p.238). We will use the same general definition for this study, however, this concept will be distinguished by three types of parental behavior: when parents do physical activity with their children, when parents provide transportation to their children to sporting/physical activity events, and finally, when parents take time to observe/watch their children’s practice or play. These items were selected based on the literature below.

Studies on young athletes aged nine and older have shown positive correlations between their perceptions of the amount of parental involvement and their current levels of physical activity (Hasbrook, 1987; Higginson, 1995). Brustad (1988) suggested that typically high levels of parental involvement have an important impact upon the affective outcomes of children with regards to physical activity. Weitzer (1989) examined the influence of parental involvement level on children’s achievement orientations toward sport. He found that girls who reported higher levels of parental involvement in their sport experiences displayed higher levels of perceived competence.

Enjoyment, a concept closely related to intrinsic motivation, was also studied in relation with parental involvement. Studies conducted by Scanlan & Lewthwaite (1986) with young wrestlers and Ommundsen & Vaglum (1991) with soccer players revealed that athletes who perceived greater parental involvement experienced greater enjoyment of their season.

A few studies examined the influence of parents participating in physical activity with their children on their children’s physical activity behavior. DiLorenzo et al., (1998) and Hovell et al. (1995), found that parents actively participating in physical activity with their child was a significant predictor of children’s physical activity behavior.

Another dimension of involvement that seems to be critical is the parents' availability for providing their children with transportation to sporting/physical activity events. Studies in this area have demonstrated that parents providing transportation was strongly correlated to children's physical activity behavior (Sallis, Alcaraz et al., 1992; Snyder & Purdy, 1982).

To our knowledge, no studies to date have assessed, as a distinct variable, the influence of parents' observing/watching their child participate in physical activity on their child's physical activity behavior. Most of the studies that have examined this component have included it in an overall measure of parental or family support. However, a few studies (Csikszentmihalyi, Rathunde, & Whalen, 1993; Sloan, 1985) have shown that parents of dedicated athletes usually attend their children's competition and practice sessions, thus, providing elements of belief that parents who watch their children participate in physical activity might influence their children's engagement in physical activity.

The influence of parents' autonomy support on adolescents' physical activity motivation.

Parents can be autonomy supportive or controlling in their behaviors with their children. Autonomy support occurs when a parent takes his children's perspective into account, provides choices, reflects on his children's feeling, encourages initiative and supports freedom. In contrast, controlling behaviors occur when parents pressure their children to perform up to external standards or use rewards and constraints to manipulate their behavior.

Although the number of studies regarding parental interpersonal style is limited in the context of physical activity, several studies have examined the role of parenting style on motivation and achievement behavior of children in the context of education. The findings reported in these studies are similar. In sum, results indicate that children of autonomy supportive parents have higher self-reports of autonomy, higher teacher rated competence, better

school grades and achievement, and higher perceived competence and motivation (Grolnick & Ryan, 1989; Grolnick, Ryan and Deci, 1991).

To our knowledge, no studies to date have examined the influence of parenting styles on the motivation and behavior of children in the context of physical activity. However, Power & Woolger (1994) examined a concept that is related to parenting styles. They looked at parental directiveness (closely related to parental control) and its effect on children's enthusiasm towards swimming (closely related to enjoyment and intrinsic motivation). It was found that parents reporting moderate levels of directiveness had children reporting the greatest enthusiasm for swimming.

Still in the context of physical activity, a recent study conducted by Pelletier, Fortier, Vallerand, & Brière (2000) examined the influence of competitive swimmers' perceptions of coaches' interpersonal style on the different forms of regulation (motivation) and persistence. The results showed that experiencing relationships as controlling undermined intrinsic motivation. Greater levels of self-determined motivation occurred when athletes perceived their relationships with their coaches as autonomy supportive and athletes who demonstrated greater levels of self-determined motivation showed to be more persistent in their endeavor. Other studies (Fortier, Kowal, Grenier, & Leblanc, 1996; Goudas, Biddle, Fox & Underwood, 1995) have examined the influence of physical education teachers' interpersonal style on youths' motivation and found similar results.

Since many studies conducted in the context of education strongly indicated that children of autonomy supportive parents had higher self-reports of motivation and that studies examining other social agents' (i.e. physical education teacher and coaches) interpersonal style in the

context of physical activity found similar results, it would be logical to propose that parents' interpersonal style would also have an impact on adolescents' physical activity motivation.

The influence of parents' encouragement on adolescents' physical activity motivation and behavior. Parental encouragement's influence on adolescents' physical activity motivation and behavior has been relatively well documented. In sum, most studies reported that parental encouragement is an important and significant correlate of children's (Epstein, Smith, Vara & Rodefer, 1991; Klesges, Malott, Boschee & Weber, 1986; McKenzie, Sallis et al., 1991; Sallis, Buono, Roby, Micale, & Nelson, 1993) and adolescents' physical activity behavior (Anderssen & Wold, 1992; Sallis et al., 1999).

Other studies have examined the effect of parental encouragement on adolescents' physical activity motivation. More specifically, three studies conducted by Brustad & Weigand (1989) and Brustad (1993) and Brustad (1996) are quite influential in this area of research. Brustad and Weigand (1989) investigated the influence of parental encouragement on the motivational orientation (intrinsic/extrinsic) of youth soccer players. It was found that athletes who perceived high parental encouragement towards their sport demonstrated higher levels of intrinsic motivation than the youths who perceived less parental encouragement.

The purpose of Brustad's (1993) study was to test a conceptual model that displayed the influence of parental physical activity orientations and parental socialization practices on the perceived competence and physical activity attraction of children. It was hypothesized that higher levels of parental encouragement would then translate into greater motivation. The results of the study supported the hypothesis and the proposed model that he developed. In a more recent study, Brustad (1996) found that perceived parental encouragement was the most

significant parental variable influencing children's physical activity behavior and perceived competence.

Although a significant amount of studies have examined the influence of parental encouragement, very few studies have examined the influence of parents' expectations on adolescents' physical activity behavior.

The influence of parents' expectations on adolescents' physical activity behavior. The influential Theory of Reasoned Action (Ajzen & Fishbein, 1980) has been used in a number of different studies to try to explain human behavior. The intention of voluntary behavior is influenced by two factors: the individual's attitudes towards the behavior and the subjective norms. The attitudes towards the behaviors are based on the perceived consequences of behavior. The second factor which is subjective norms is based on the individuals' perceptions of the social influences. Specific to this study, subjective norms reflect the individual's perceived expectations of significant others and the individual's motivation to comply with the perceived expectations. The family, particularly parents, can convey explicit or subtle expectations to their children regarding their achievement behavior. The expectations conveyed by the parents are also called normative expectations.

Parental expectations and beliefs about their children's level of ability are known to have an impact on youths' motivation and achievement behavior. Although most of the time parents do not say explicitly to their children what they expect of them, this information is transmitted in a subtle way through parents' behaviors. Parents define and communicate standards of desirable behavior to their children.

Some authors have suggested that parents' expectations are important for the physical activity behavior of youths (Sage, 1986; Yang, Telama, Laakso, 1996). Also, Eccles & Harold

(1991) proposed that parental expectations influence youths to engage in particular activities.

This premise is supported by a few studies which indicate that adolescents' physical activity behavior are associated with parental expectations (Brustad, 1996; Dempsey, Kimiecik, & Horn, 1993; Kimiecik et al., 1996). A study by Godin & Shephard (1984), revealed that active children were more likely than sedentary children to report that parents expected them to be physically active.

Other studies have also found that significant others' expectations regarding physical activity were significantly associated with adolescents' reported amounts of weekly physical activity (Anderssen & Wold, 1992; Godin & Shephard, 1986).

The influence of adolescents' physical activity motivation on their physical activity behavior.

As mentioned previously, SDT and more specifically, OIT predicts that self-determined motivation should lead to positive outcomes (e.g. higher levels of physical activity behavior). Researchers from this perspective have been interested recently in examining the relationship between motivation and physical activity persistence as an outcome (e.g. Frederick, Morrison, & Manning, 1996; Frederick & Ryan, 1994; Pelletier et al., 2000). In general, the findings of these studies conclude that participants with a more self-determined motivational profile towards physical activity persist more and remain involved in their activity longer compared to their less self-determined counterparts. More specifically, Pelletier et al., (2000) found that athletes with more self-determined types of physical activity motivation were more likely to persist in the activity than athletes reporting less self-determined types of motivation. Other studies (Leblanc & Fortier, 2000; Mullan & Markland, 1997) have examined the relationship between the self-determined motivation of individuals and their level of involvement in physical activity (they refer to stages of change). These studies found that self-determination motivation increases from

the lower to the higher stages of change.

With regards to levels of physical activity involvement, a study conducted with 12 year-olds found that intrinsic motivation towards physical activity was significantly correlated with activity levels (Biddle & Armstrong, 1992). A concept closely related to intrinsic motivation is enjoyment. Stucky-Ropp & DiLorenzo (1993) and Tinsley, Holtgrave, Reise, Erdley, & Cupp (1995) found that youths' enjoyment was significantly associated with their physical activity behavior. In a more recent study, DiLorenzo et al., (1998) found that enjoyment of physical activity was the most significant predictor of children's physical activity behavior. Sallis et al. (1999) also found that enjoyment was a significant predictor of physical activity levels of 1,504 grade four to 12 students.

The Present Study

Although some studies have revealed that parents play an important role in influencing youths to adopt an active lifestyle (Brustad, 1993; DiLorenzo et al., 1998; Taylor et al., 1994), relatively little is known about the determinants of physical activity patterns during adolescence (Sallis, 1999). Furthermore, not much research has sought to examine the impact of parental influences on adolescents' physical activity motivation (Frederick & Ryan, 1995). In addition, although many studies have revealed that parents influence their children's motivation and physical activity behavior in multiple ways, just a few studies have examined multiple parental influences within the same study. Therefore, this study attempted to develop and verify a Model of Parental Influences in the context of physical activity (see Figure 1). It is hypothesized that the predicted relationships in the model will be significant and in the expected direction. More specifically, it is hypothesized that: the more adolescents perceive their parents to be physically active, the more they will also be physically active (H1), the more adolescents perceive their

parents to be motivated towards physical activity in a self-determined way, the more their physical activity motivation will be self-determined (H2), the more adolescents perceive their parents to be involved in their physical activities, the more their physical activity motivation will be self-determined (H3a) and the more they will be physically active (H3b), the more adolescents perceive their parents as being autonomy supportive (versus controlling) in the context of physical activity, the more their physical activity motivation will be self-determined (H4), the more adolescents perceive their parents to be encouraging in the physical activity context, the more their physical activity motivation will be self-determined (H5a) and the more they will be physically active (H5b), the more adolescents perceive their parents to have high expectations with regards to physical activity, the more they will be physically active (H6) and finally, the more adolescents are motivated towards physical activity in a self-determined way, the more they will be physically active (H7).

Significance of the Study

A study of parental influences on adolescents' physical activity motivation and behavior is significant for several reasons. First, this study could contribute to the body of knowledge related to the different parental influences on the motivation and physical activity behavior of youths. Parental influences seem to be one of the most salient factor on youths' motivation and physical activity behaviors (Brustad, 1993; DiLorenzo et al., 1998; Kimiecik et al., 1996; Lewko & Greendorfer, 1988). In the last decade, some studies have been conducted regarding parental influences on the physical activity of adolescents but only a few have investigated the influence of parents on youths' physical activity motivation (Brustad, 1993; Frederick & Ryan, 1995). Although some studies have been conducted in this area of research, relatively little is known about the parental influences on motivation and physical activity behavior during adolescence.

Sallis (1999) asserts that current knowledge concerning the parental influences that affect youths' physical activity behavior is limited and more research is needed for the understanding of physical activity behavior among adolescents. This study would contribute to this area of research. Second, most studies have examined only one or two parental influences on adolescents' motivation and physical activity behavior. This study proposes a model that will examine the influence of six distinct parental variables on the physical activity motivation and behavior of adolescents. This has not been done before in past research. A study examining multiple parental influences on adolescents' physical activity motivation and behavior would significantly contribute to the understanding of the multiple ways parents influence their adolescents in the context of physical activity. Third, to our knowledge, no studies to date have examined the influence of parental variables on adolescents' motivation and physical activity behavior using Self-Determination Theory as the main conceptual approach (Deci & Ryan, 1985, 1991). This study would suggest a new avenue for exploring the influence of parental variables on adolescents' motivation and physical activity behavior.

From an applied perspective, this study would shed some light on the understanding of the determinants that influence physical activity behavior among adolescents. Specifically, the present study could give an insight into the specific parental influences that affect adolescents' physical activity motivation and behavior. A better understanding of parental influences in the physical activity domain could provide useful information for parents who want to know which behaviors to adopt in order to foster motivation and positively influence their children to participate in physical activity. Findings of this study could also be useful to practitioners for the development of family-based physical activity intervention programs.

Methods

Participants

A total of 829 ninth grade physical education students coming from nine high schools from the Ottawa, Canada region participated in the present study. In total, 46 percent of the participants were male and 54 percent were female. Mean age for all participants was 14.0 years. Most of the participants were Caucasian and came from a middle-class socioeconomic background. They attended physical education classes on an average of 3.8 times a week and had varied levels of physical activity.

Questionnaire

The questionnaire consisted of four main sections. In the first part, participants completed a scale that assessed their physical activity behaviors. The second section measured the different types of motivation proposed by Deci & Ryan's Self-Determination Theory (1985, 1991). In the third section, participants completed six scales that assessed their perceptions of the different parental variables proposed in the Model of Parental Influences. Finally, relevant demographic information such as gender and age were gathered in the final section of the questionnaire (see questionnaire in Appendix B).

Measurement of Physical Activity

A self-administered one month recall was used in order to obtain a measure of adolescents' physical activity behavior. Specifically, the *Modifiable Activity Questionnaire for Adolescents* (MAQ - A; Aaron et al., 1995) was utilized. A list of common physical activities was provided to the adolescents and they were asked to indicate which physical activities they engaged in during the last month and to rate the frequency (number of times), the duration (in minutes) and the intensity (on a scale of one to three, 1=mild, 2=moderate, 3=vigorous) for each. Then we

computed a total physical activity score by multiplying the frequency by duration and then by intensity rating for each activity, and summing across all activities. The total physical activity score for adolescents ranged from 0.00 to 112,856.40 with an average of 6,927.96.

Measurement of Physical Activity Motivation

To assess the different types of motivation towards physical activity, we adapted a version of the validated *Sport Motivation Scale* (SMS; Pelletier et al., 1995) which is based on Self-Determination Theory (SDT; Deci & Ryan, 1985). The adolescents were asked the following general question: “In general, when you do physical activity why do you do it?”. The seven sub-scales of the SMS (representing the seven different types of motivation postulated by Deci & Ryan) were used to measure the different types of motivation, namely, intrinsic motivation (IM) [to know (IMK), towards accomplishment (IMA) and to experience stimulation (IMS)], extrinsic motivation (EM) [external regulation (ER), introjected regulation (IN) and identified regulation (ID)] and finally amotivation (AMO). Examples of items assessing each type of motivation were: “For the pleasure I experience while learning new things” (IMK), “For the pleasure of trying to surpass myself in this activity” (IMA), “For the excitement I feel when I am really involved in the activity” (IMS), “Because people around me think it is important to do physical activity” (ER), “Because I must do physical activity to feel good about myself” (IN), “Because I think its good for my overall development” (ID) and “I don’t know why I do it, lately I feel unmotivated” (AMO). A total of 28 items were used (four items measuring each type of motivation) and they were presented via a 7-point Likert scale ranging from (1) strongly disagree to (7) strongly agree. In the present study, the seven sub-scales yielded Cronbach alpha levels ranging from .69 to .87 ($M=.78$).

An overall motivational index was then created to determine the general motivational

orientation of each participant towards physical activity. This index was obtained by computing the motivational measures into one construct using the following formula: $[(2 \times (IMK + IMA + IMS/3) + ID) - (ER + 2 \times AMO)]$. The weights given to the different types of motivation reflect their position on the self-determined continuum (Deci & Ryan, 1985, 1991). Intrinsic motivation (IM) and identified motivation (ID) were assigned the weights of +2 and +1, respectively, because they are considered self-determined forms of motivation. On the other hand, amotivation (AMO) and external regulation (ER) were assigned the weights of -2 and -1, respectively, because they are considered less self-determined types of motivation. The theoretical mid-point of this index is zero, with scores ranging from +18 to -18. A high and positive score is an indication of a self-determined motivational profile whereas a high and negative score is indicative of a non self-determined motivational profile. Many studies using SDT have used this type of formula in calculating motivational indexes (e.g. Kowal & Fortier, 2000, Vallerand et al., 1997).

Measurement of Adolescents' Perceptions of Parental Influences

Perceptions of parents' physical activity behavior. In order to obtain a measure for this variable, we used two items that originated from the work of Zakarian et al. (1994). The first item was "During a normal week, how often does your mother/female guardian do physical activity for at least 20 minutes without stopping: _____ times per week. The second item was exactly the same but we replaced mother/female guardian with father/male guardian. These two items were combined in order to have an overall parental physical activity behavior measure. The scores for this variable ranged from 0 to 30. The inter-item correlation was .45.

Perceptions of parents' motivation towards physical activity. The purpose of this scale was to measure the adolescents' perceptions of their parents' motivational orientation towards

physical activity. Whether parents have a self-determined motivational profile or a non self-determined motivational profile. This scale was slightly adapted from Fortier et al. (1994). Adolescents were asked to answer the following general question: When my parents do physical activity, I believe they do it...". There were three sub-scales: intrinsic motivation (PIM), extrinsic self-determined motivation (PESD) and non self-determined motivation (PNSD) with two items for each. The items were presented via a 7-point Likert scale ranging from (1) strongly disagree to (7) strongly agree. An example of an intrinsic motivation item was; "... for the pleasure and satisfaction it gives them" (inter-item correlation=.64). An example of an extrinsic self-determined motivation item was; "... because they choose to do it for their own good" (inter-item correlation=.56) and an example of a non self-determined motivation item was; "... to please or impress others" (inter-item correlation=.54). First, a general score for parental self-determined motivation was computed (PSD) by combining PIM and PESD items. Then, an overall parental motivational index was created to determine the perceived general motivational orientation of the parents. This index was obtained by computing the motivational measures into one construct using the following formula: (PSD - PNSD). This motivational index generated score between -4.50 to 6.00 with a mean of 1.97. As it was indicated for the adolescents' motivational index, high and positive score is an indication of a perceived self-determined motivational profile whereas a high and negative score is indicative of a perceived non self-determined motivational profile.

Perceptions of parents' involvement in their physical activities. Adolescents' were asked to evaluate their parents' involvement in their physical activities. There were three items on this scale measuring the three different dimensions of involvement examined in this study. These items were adapted from Sallis et al., (1992). Specifically, the adolescents were asked if their

parents (1) did physical activity with them, (2) provided transportation to sporting/physical activity facilities and finally, (3) watched them participate in physical activity. All items were assessed using a 7-point Likert scale ranging from (1) never to (7) very often. A general measure of parental involvement was computed by combining the three items. The Cronbach alpha coefficient for this scale was .65.

Perceptions of parents' autonomy support in the context of physical activity. We adapted the *Perceptions of Significant Others' Interpersonal Style Scale* from Pelletier (1992) to obtain a measure for this variable. There were 4 items on this scale presented via a 7-point Likert scale ranging from (1) strongly disagree to (7) strongly agree. One of the items was "My parents often provide me with choices when it comes to doing physical activity". A general score for parental autonomy support was computed by combining the items and internal consistency for this scale was within an acceptable range, with an alpha of .78.

Perceptions of parents' encouragement towards physical activity. The two items on this scale originated from Sallis et al. (1992) and Brustad (1993). They were presented via a 7-point Likert scale ranging from (1) never to (7) very often. The items were "My parents verbally encourage me to participate in physical activity" and "My parents praise me if I participate in physical activity". A general measure of parental encouragement was created by combining the items and the inter-item correlation was .57.

Perceptions of parents' expectations with regards to physical activity. Adolescents' perceptions of their parents' expectations with regards to physical activity was assessed through three items. These items were adapted from Ajzen & Driver (1992) and they were presented via a 7-point Likert scale ranging from (1) strongly disagree to (7) strongly agree. One of the items was "My parents expect me to participate regularly in physical activity". A general measure of

parental expectations was created and we obtained a Cronbach alpha level of .83 for this scale.

Procedures

Before going in the physical education classes for data collection, consent was obtained from the administrators of the school board and school directors. First, we went into classes and sent letters of information and consent forms home to parents. Once the consent was obtained from the parents, the questionnaire described above was administered to the students on one occasion either in the school gymnasium, regular classes, auditorium or the school cafeteria. During data collection, a trained researcher provided standardized instructions to the participants. The researcher explained the purpose of the questionnaire, issues regarding anonymity and confidentiality and examples of questions on the questionnaire. The questionnaires took approximately 20 minutes to complete and when adolescents were finished, they returned the questionnaire to the researchers present. Data collection was done in early to end of November 1998.

Results

First, Pearson's correlations were calculated to determine the association between independent and dependent variables in the Model of Parental Influences. Second, a recursive path analysis consisting of two multiple regression analyses was conducted in order to determine if the postulated links in the model were confirmed and to explain the percentage of variance in the model.

Correlations

Means, standard deviations and correlations of the variables in the Model of Parental Influences are presented in Table 1. Results obtained from the correlational analysis supported most of the predicted relationships. All of the predicted relationships between independent and

dependent variables in the model were found to be significant and positive except for hypothesis H5b, the influence of parents' encouragement towards physical activity on adolescents' physical activity behavior was not found to be significant.

Insert Table 1 about here

Path Analysis

A recursive path analysis consisting of two multiple regression analyses was conducted in order to determine the influence of the different independent variables onto the dependent variables in the Model of Parental Influences (see Pedhazur, 1982). The results of these sets of analyses are represented in Figure 2. For the first multiple regression, the predictor variables were adolescents' perception of: parents' motivation, parents' involvement, parents' autonomy support and parents' encouragement. Adolescents' physical activity motivation was the criterion variable for this set of analyses. Results obtained from this statistical test revealed that three of the four hypothesized pathways between parental influences and adolescents' physical activity motivation were found to be significant (H2, H3a, H4). Specifically, it was found that the more adolescents perceive their parents: to be motivated towards physical activity in a self-determined way ($\beta=.12$, $p<.0001$), to be involved in their physical activities ($\beta=.14$, $p<.0005$), and as being autonomy supportive (versus controlling) in the context of physical activity ($\beta=.37$, $p<.0001$), the more their physical activity motivation is self-determined. However, the link between adolescents' perceptions of parents' encouragement and their physical activity motivation (H5a) was not found to be significant ($\beta=-.04$, $p<.24$). The percentage of variance explained was 23

percent.

Insert Figure 2 about here

For the second multiple regression, the predictor variables were adolescents' perception of: parents' physical activity behavior, parents' involvement, parents' encouragement, parents' expectations and adolescents' physical activity motivation. Adolescents' physical activity behavior was the dependent variable for this set of analysis. Results showed that two of the predicted pathways were found to be significant (H6, H7). Specifically, it was found that the more adolescents perceive their parents to have high expectations with regards to physical activity ($\beta=.12$, $p<.005$) and the more adolescents are motivated towards physical activity in a self-determined way ($\beta=.18$, $p<.0001$), the more they will be physically active. However, adolescents' perception of: parents' physical activity behavior ($\beta=.08$, $p<.016$), parent's involvement in their physical activities ($\beta=.11$, $p<.006$), and parents' encouragement ($\beta=-.10$, $p<.015$) were not found to be significant predictors of adolescents physical activity behavior. The percentage of variance explained was 8 percent.

Discussion

The general purpose of this study was to examine multiple sources of parental influences on adolescents' physical activity motivation and behavior using Self-Determination Theory as the main conceptual approach. More specifically, this study attempted to develop and verify a Model of Parental Influences in the context of physical activity. It was hypothesized that the

predicted relationships in the model would be significant and in the expected direction.

Overall, many of the hypothesized relationships in the model were found to be significant. The findings as a whole support the notion that parents do exert an influence in the physical activity context and especially on their adolescents' physical activity motivation. First, it was hypothesized that the more adolescents perceive their parents to be physically active, the more they would be physically active (H1). Results from the multiple regression did not support this hypothesis in spite of significant correlations. These findings are not in line with past research (Gottlieb & Chen, 1985; Reynolds et al., 1990; Sallis, Patterson, Buono et al., 1988; Zakarian et al., 1994). Other studies have also found no relationship between parental physical activity and physical activity among elementary school children (McMurray et al., 1993, Sallis, Alcaraz, et al., 1992) and middle school youths (Biddle & Goudas, 1996; Dempsey et al., 1993; Garcia et al., 1995; Stucky-Ropp & DiLorenzo 1993). The results of this study are similar to the findings in a recent study conducted by Sallis et al. 1999. The authors also found no significant relationship between parents' physical activity behavior and adolescents' physical activity behavior for grade seven to nine. In addition, Sallis (1999) has recently mentioned that more and more studies show no association between parents' and youths' physical activity behavior.

Results of this study contradicts the findings of Hovell et al. (1995). Although they measured the parents' actual level of physical activity, we measured the adolescents' perception of their parents' physical activity behavior. Perhaps this suggests that adolescents are not fully aware of their parents' physical activity behavior.

With regards to the second hypothesis, results supported the prediction that the more adolescents perceive their parents to be motivated towards physical activity in a self-determined way, the more their physical activity motivation would be self-determined (H2). These findings

are in line with past research that has shown that the motivation of social agents towards an activity has an impact on the motivation of individuals towards the same activity (Cellar & Wade, 1988; Fortier et al. 1994; Wild et al., 1992). The findings are also in line with studies in the context of physical activity that found that parents and their children seem to have similar motivational profiles (e.g. Duda & Hom, 1993). According to Wild, Enzle, & Deci (1997), this similarity between motivational orientations could be explained through a process model based on expectancy formation. They propose that perceptions of an other's motivation while performing an activity affects the perceiver's expectations about the occurrence of pleasure and enjoyment during activity engagement which in turn, influence motivation. This conceptual approach has generated a new way to address and explain the modeling process.

For the third hypothesis, it was predicted that the more adolescents perceive their parents to be involved in their physical activities, the more their physical activity motivation would be self-determined (H3a). This hypothesis was supported by the findings. The results are in line with previous studies (Ommundsen & Vaglum, 1991; Power & Woolger, 1994; Scanlan & Lewthwaite, 1986; Weiss & Hayashi, 1995; Weitzer, 1989; Woolger & Power, 1993) showing a positive and significant association between parental involvement and youths' motivation towards physical activity. It was also hypothesized that the more adolescents perceive their parents to be involved in their physical activities, the more they would be physically active (H3b). Results showed that parental involvement had no explanatory power on adolescents' physical activity behavior. However, significant and positive correlations were found between these two variables. Our findings contradict results from other studies that found that parents participating in physical activity with their adolescents, parents providing transportation and parents watching their adolescents participate in physical activity were significant predictors of

youths' physical activity behavior (Csikszentmihalyi et al., 1993; DiLorenzo et al., 1998; Hovell et al., 1995; Sallis, Alcaraz et al., 1992; Snyder & Purdy, 1982; Sloan, 1985). Maybe it would have been preferable to examine the different components of involvement separately to find significant results. Although, this was the first study that has defined parental involvement in this manner, more research using this approach of classification is needed to better understand the influence of parental involvement.

With regards to parental autonomy support, it was hypothesized that the more adolescents perceive their parents as being autonomy supportive (versus controlling) in the context of physical activity, the more their physical activity motivation would be self-determined (H4). Our findings supported this hypothesis. These results were also found in other studies in the context of physical activity (Pelletier et al., 2000; Power & Woolger, 1994) and education (Grolnick & Ryan, 1989; Grolnick, et al., 1991; Vallerand et al., 1997) indicating that significant others' interpersonal style (i.e. parents, physical education teachers) is significantly associated with more self-determined types of motivations. More specifically, the more youths perceived social agents as being autonomy supportive, the more their motivational orientation was self-determined, whereas, the more youths perceived social agents as being controlling, the more their motivational profile was less self-determined.

For the fifth hypothesis, it was predicted that the more adolescents perceive their parents to be encouraging in the physical activity context, the more their physical activity motivation would be self-determined (H5a) and the more they would be physically active (H5b). Findings did not support this hypothesis. These results are surprising considering the fact that the influence of parental encouragement on adolescents' physical activity motivation and behavior has been well documented. Indeed, many studies have reported that parental encouragement is an

important and significant correlate of adolescents' physical activity motivation (Brustad, 1993; Brustad, 1996; Brustad & Weigand, 1989) and physical activity behavior (Anderssen & Wold, 1992; Sallis et al., 1999). Although, the results of the multiple regressions found no significant relationships for this hypothesis, significant and positive correlations were found between perceived parental encouragement and adolescents' physical activity motivation. It should be noted that Hovell et al., (1995) also found a non significant relationship between parental encouragement and youths' physical activity behavior.

Parents who provide too much encouragement can be perceived as pressure by the children. In fact, some studies have also examined the effect of parental pressure on the enjoyment of physical activity among youths (Brustad, 1988; Scanlan & Lewthwaite, 1986; Hellstedt, 1990). These studies all found that children's reported enjoyment of physical activity was negatively associated with parental pressure.

The contradiction between our results and past research could generate a few speculations. Practically, the difference could simply rest in the manner encouragement was measured in this study compared to other studies. Conceptually, could suggest the existence of different levels of encouragement, some being more effective than others in influencing physical activity motivation and behavior among adolescents. Most studies to date have confirmed the positive influence of parental encouragement on motivation and physical activity behaviors of youths. However, parents who provide too much encouragement can be perceived as pressure by youths. Researchers could further investigate the different nuances of encouragement and specifically differentiate among the effects of different levels of parental encouragement.

It was also hypothesized that the more adolescents perceive their parents to have high expectations with regards to physical activity, the more they would be physically active (H6).

This relationship was found to be significant in our results. Similar results have been found in others studies (Brustad, 1996; Dempsey, et al., 1993; Eccles & Harold, 1991; Godin & Shephard, 1984; Kimiecik et al., 1996) which showed that parental expectations significantly influenced youths to engage in physical activity. The present findings support Godin and Shephard (1986), who reported that perceived norms of significant others about regular participation in physical activity were more strongly associated to 13 years-olds' amount of weekly physical activity than the physical activity reported by significant others.

Finally, in terms of the influence of adolescents' physical activity motivation on their physical activity behavior, the findings supported our hypothesis that the more adolescents' are motivated towards physical activity in a self-determined way, the more they would be physically active (H7). These results are in line with past research. Specifically, the results of this study support Organismic Integration Theory which predicts that self-determined motivation should lead to positive outcomes, (higher levels of physical activity behavior) and other studies (e.g. Frederick et al., 1996; Frederick & Ryan, 1994; Pelletier et al., 2000) indicating that youths with a more self-determined motivational profile towards physical activity persist more and remain involved in their activity longer compared to their less self-determined counterparts.

Our results are also in line with previous studies (DiLorenzo et al., 1998; Sallis et al., 1999; Stucky-Ropp & DiLorenzo, 1993; Tinsley et al., 1995) that have found that youths' enjoyment was significantly associated with their physical activity behavior.

Overall, many of the hypothesized relationships in the model were found to be significant. The findings as a whole support the notion that parents exert an influence in the physical activity context and especially on their adolescents' physical activity motivation. Researchers have suggested that some forms of parental influence have greater effects than

others (Sallis et al., 1992). In this study it was found that the strongest parental variable associated with adolescents' physical activity motivation was parents' interpersonal style. More specifically, if parents adopted an autonomy supportive or controlling interpersonal style with their adolescents. This could suggest a new avenue for researchers to explore.

We were better able to predict the relationships between parental influences on adolescents' physical activity motivation than physical activity behavior, thus indicating that behavior could be more effectively predicted through motivation. Future research should consider the use of a motivational approach (i.e. Self-Determination Theory) when trying to explain or predict physical activity behavior among youths.

When interpreting the results of the present study, it is important to consider some limitations. Although, self-report is one of the most practical and widely used measures of physical activity assessments, there are limitations associated with this subjective form of assessment. These problems include inaccuracy of recall and interpretation of terminology used in self-report questionnaires. It would be more favorable to assess physical activity with the combination of subjective and objective measures of physical activity. Therefore, researchers should make a concerted effort to consider this factor when conceptualizing their studies. Another limitation has to do with the manner in which variables were assessed. All of the variables were measured at a single point and time. Accordingly, causal inferences should be made with caution. Using a longitudinal (multiple-wave) design may be useful to confirm the strength and direction of these relationships over time. Researchers should strongly consider this type of design. In terms of statistical analysis, a path analysis consisting of a series of multiple regressions was used in the present study to verify the hypothesized relationships in the Model of Parental Influences. Another rigorous statistical test such as structural equation modeling (SEM)

could be useful for verifying the proposed links in the model. Future research might benefit from the use of SEM.

A portion of the variability of adolescents' physical activity motivation and especially physical activity behavior remains unexplained by parental variables. This should encourage researchers to examine and integrate other social influences (i.e. teachers, peers) and other psychological variables (i.e. barriers, self-efficacy) in models to better understand the determinants of motivation and physical activity among adolescents.

Overall, parents seem to influence their adolescents' physical activity motivation and in turn, influence their physical activity behavior. Further research is needed in order to better understand the influences of parents on the physical activity motivation and behavior of adolescents. Although health related problems associated with inactivity generally appear later in life, developing physical activity patterns during childhood and adolescence is important for these to be maintained in adulthood and prevent those ailments. It is important to establish active lifestyles during youth and parents seem to play a key role in doing so. The findings of this study could have significant implications for the development of family-based intervention programs designed to increase the level of physical activity among youths.

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Table 1

Means, standard deviations, and Pearson correlations for the independent and dependent variables in the Model of Parental Influences

Variables	M	SD	1	2	3	4	5	6	7	8
Parental Variables										
1. Perception of parents' physical activity (PA) behavior	3.07	2.31	--							
2. Perception of parents' motivation towards PA	1.97	1.97	.14*	--						
3. Perception of parents' involvement towards PA	4.40	1.52	.15*	.16*	--					
4. Perception of parents' autonomy support in PA	5.08	1.29	.16*	.20*	.50*	--				
5. Perception of parents' encouragement towards PA	4.89	1.57	.08	-.01	.50*	.38*	--			
6. Perception of parents' expectations with regards to PA	4.90	1.47	.12*	.02	.39*	.34*	.53*	--		
7. Adolescents' self-determined PA motivation										
	7.19	4.67	.08	.22*	.32*	.44*	.16*	.21*	--	
8. Adolescents' PA behavior										
	6927.96	8786.63	.12*	-.02	.18*	.18*	.05	.15*	.23*	--

Note. Variable 1 ranged from 0 to 30. Variable 2 was a perceived parental motivational index that ranged from -4.50 to +6.00. Mean scores for variable 3 to 6 are out of 1 to 7. Variable 7 was an adolescent motivational index that ranged from -18.00 to +18.00. Variable 8 was a total physical activity score that ranged from 0.00 to 112,856.40.
p < .001. N=829.

Figure Captions

Figure 1. The Model of Parental Influences

Figure 2. Standardized regression coefficients (β) for path analysis of the model and R^2 values for dependent variables. (N=829)

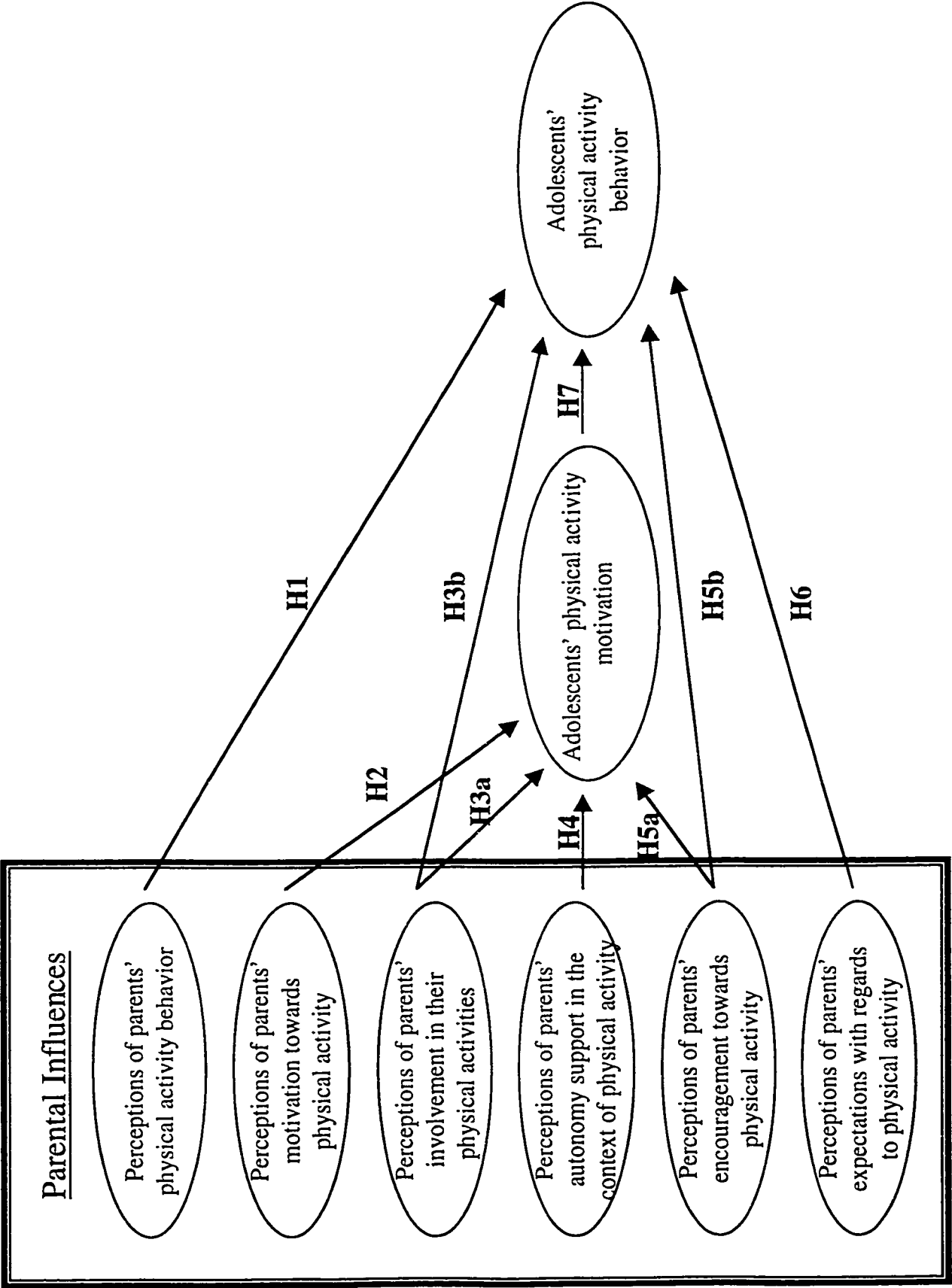


Figure 1. The Model of Parental Influences.

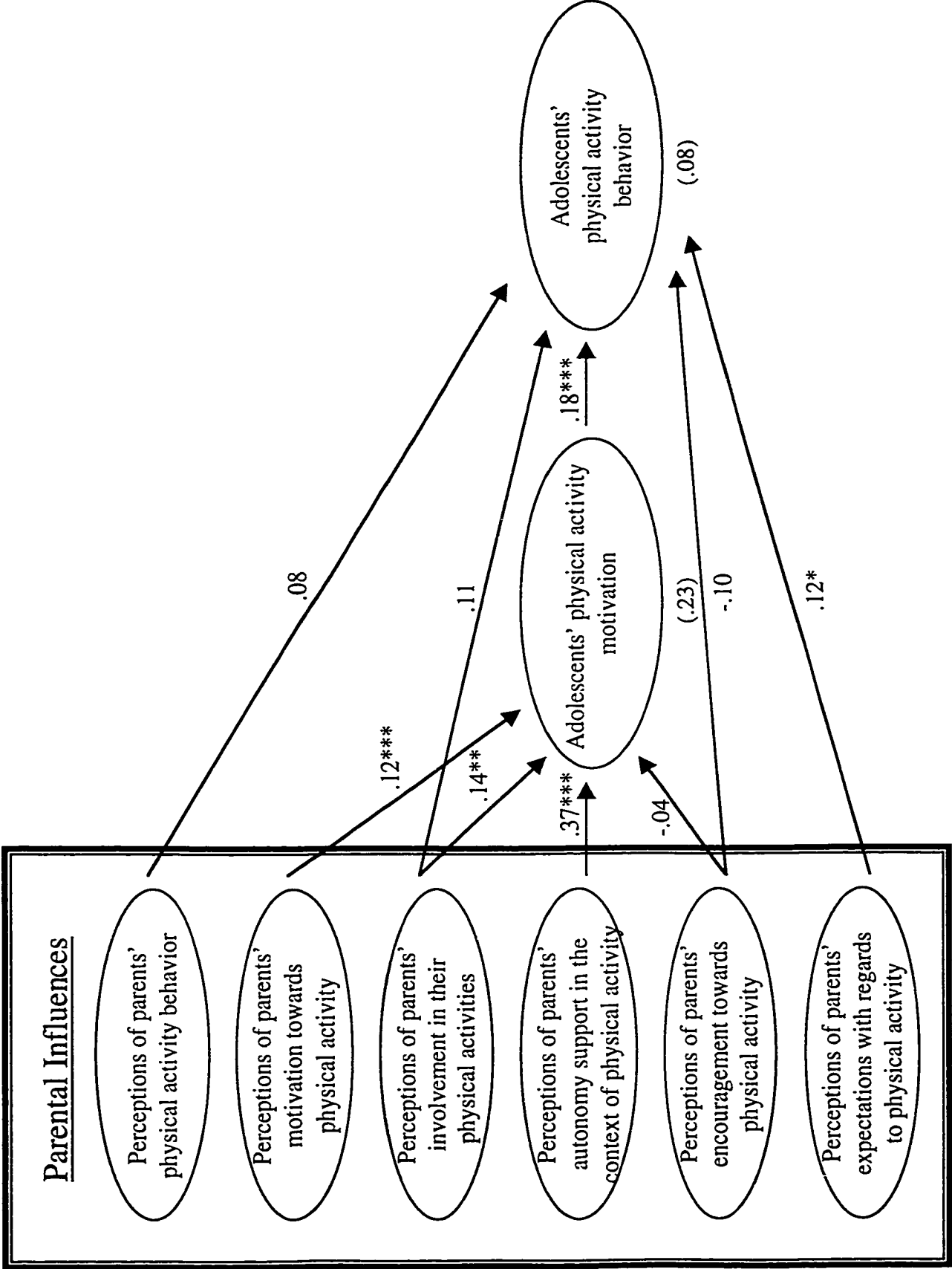


Figure 2. Standardized regression coefficients (β) for path analysis of the model and R^2 values for dependent variables. (N=829)

CHAPTER IV

General Discussion

Overview of Results

The general purpose of this study was to examine multiple sources of parental influences on adolescents' physical activity motivation and behavior using Self-Determination Theory as the main conceptual approach. More specifically, this study attempted to develop and verify a Model of Parental Influences in the context of physical activity. It was hypothesized that the predicted relationships in the model would be significant and in the expected direction. More specifically, it was hypothesized that: the more adolescents perceive their parents to be physically active, the more they will also be physically active (H1), the more adolescents perceive their parents to be motivated towards physical activity in a self-determined way, the more their physical activity motivation will be self-determined (H2), the more adolescents perceive their parents to be involved in their physical activities, the more their physical activity motivation will be self-determined (H3a) and the more they will be physically active (H3b), the more adolescents perceive their parents as being autonomy supportive (versus controlling) in the context of physical activity, the more their physical activity motivation will be self-determined (H4), the more adolescents perceive their parents to be encouraging in the physical activity context, the more their physical activity motivation will be self-determined (H5a) and the more they will be physically active (H5b), the more adolescents perceive their parents to have high expectations with regards to physical activity, the more they will be physically active (H6) and the last hypothesis is the more adolescents are motivated towards physical activity in a self-determined way, the more they will be physically active (H7). Results obtained from the correlational analysis supported all of the predicted relationships in the Model of Parental Influences except

for hypothesis H5b. Specifically, no significant relationship was found between perceived parental encouragement and adolescents' physical activity behavior.

A recursive path analysis consisting of two multiple regression analyses was conducted in order to determine the influence of the different independent variables onto the dependent variables in the Model of Parental Influences.

Significant relationships

With regards to adolescents physical activity motivation, results showed that three of the four hypothesized pathways between parental influences and adolescents' motivation were found to be significant (H2, H3a, H4). Specifically, it was found that the more adolescents perceive their parents to be motivated towards physical activity in a self-determined way, the more they perceive their parents to be involved in their physical activities, and the more they perceive their parents as being autonomy supportive (versus controlling) in the context of physical activity, the more their physical activity motivation is self-determined. These results are in line with past research (Duda & Hom, 1993; Weiss & Hayashi, 1995; Pelletier et al., 2000). Parental autonomy support was found to be the most significant predictor of adolescents' physical activity motivation. The percentage of variance explained at the motivational level was 23 percent.

With respect to adolescents' physical activity behavior, results showed that adolescents' perceptions of parents' expectations with regards to physical activity emerged as a significant predictor of adolescents' physical activity behavior (H6). Specifically, it was found that the more adolescents perceive their parents to have high expectations with regards to physical activity, the more they were physically active. These findings are in line with previous studies (Brustad, 1996; Kimiecik et al., 1996). In addition, results indicated, as postulated, that the more adolescents were motivated towards physical activity in a self-determined way, the more they

were be physically active (H7). These findings are also in line with past research (DiLorenzo et al., 1998; Frederick et al., 1996; Frederick & Ryan, 1994). The percentage of variance explained at the behavioral level was 8 percent.

Non significant relationships

At the motivational level (i.e. physical activity motivation as a dependent variable), the link between perceived parental encouragement and adolescents' physical activity motivation was not found to be significant (H5a). This finding is not in line with past studies (Brustad, 1993; Brustad, 1996; Brustad & Weigand, 1989) that have indicated a strong relationship between the two variables.

At the behavioral level, (i.e. physical activity behavior as a dependent variable), adolescents' perceptions of: parents' physical activity behavior (H1), parent's involvement in their physical activities (H3b) and parents' encouragement (H5b) were not found to be significant predictors of adolescents physical activity behavior. These results are not in line with past research (Hovell et al., 1995; Sallis et al., 1999; Zakarian et al., 1994) demonstrating significant relationships.

Overall, many of the hypothesized relationships in the model were found to be significant. The findings as a whole support the notion that parents exert an influence on their adolescents, especially on their physical activity motivation.

Theoretical Implications

The present study examining the influence of parents on adolescents' physical activity motivation and behavior was significant for various reasons. This study contributed to fill the gaps in the literature and supported the most of the propositions and postulations of some

important theories (Self-Determination Theory, Deci & Ryan, 1985, 1991; Social Learning Theory, Bandura, 1986; Theory of Reasoned Action, Ajzen & Fishbein, 1980).

Contributions to the literature

As it was mentioned previously, some studies have been conducted regarding parental influences on adolescents' physical activity behavior but still very little is known about these determinants of physical activity patterns during adolescence. Furthermore, not much research has sought to examine the impact of parental influences on adolescents' physical activity motivation. In addition, although some studies have revealed that parents influence their children's motivation and physical activity behavior in multiple ways, just a few have examined multiple parental influences within the same study. Finally, to our knowledge, no studies up to date had examined parental influences on adolescents' physical activity motivation and behavior using Self-Determination theory as the main theoretical framework. In an attempt to fill these gaps in the literature, this study proposed a model that examined the influence of six distinct parental variables on the physical activity motivation and behavior of adolescents using SDT. Overall, it was found that parents have a significant impact on their adolescents. More specifically, it was found that parental influences were significant at the behavioral level and especially at the motivational level. Furthermore, the results of this study showed that some parental variables were more influential than others. More specifically, it was found that parental autonomy support was the most important variable predicting adolescents' motivation.

Based on the findings of the present study with regards to motivation, it appears that Self-Determination Theory proved to be useful in furthering the understanding of the influences of parents on their adolescents' physical activity motivation and behavior. The results of this study could suggest a new avenue for research.

Contributions to theories

The results of this study supported the propositions and postulations elaborated in the Self-Determination Theory (Deci & Ryan, 1985, 1991). More specifically, results of this study showed that the more adolescents were motivated towards physical activity in a self-determined way, the more they were physically active. These results support Organismic Integration Theory, a sub-theory of SDT, stating that higher levels of self-determined motivation are associated with positive behavioral outcomes.

The results of this study also support the theoretical tenets proposed in Cognitive Evaluation Theory. CET posits that factors from the social environment (i.e. parental influences) that have a positive impact on one of the needs will subsequently positively influence an individual's motivation. This is in line with the results of this study. Our findings revealed that multiple parental variables influenced the motivation of adolescents.

The results of this study also showed that we were better able to predict adolescents' physical activity motivation than adolescents' physical activity behavior. Thus indicating that behavior could be more effectively predicted through motivation. Future research should consider the use of a motivational approach (i.e. Self-Determination Theory) when trying to explain or predict physical activity behavior among youths.

Results of this study partially supported the theoretical propositions in Bandura's (1986) Social Learning Theory. This theory emphasizes the important influences of social factors on behavior. According to Bandura's theory, individuals learn many of their attitudes and behaviors from role models. By observing the behavior of their most salient socialization agents, individuals imitate or adopt a similar pattern of behavior. It was found in our study that perceived parental physical activity behavior had no explanatory power on adolescents' physical activity

behavior. We did however, find significant associations between parents' and adolescents' physical activity motivation, thus showing a possible modeling effect.

With regards to influential Theory of Reasoned Action (Ajzen & Fishbein, 1980), our results supported this theory. This theory states that an individual's perceptions of a salient social agent's (i.e. parents) expectations will influence this individual to comply with these perceived expectations. Accordingly, the finding of this study revealed that parental expectations in the context of physical activity was significantly associated with adolescents' physical activity behavior.

Practical Applications

The results of this study can contribute to the understanding of the specific parental influences that positively affect adolescents' physical activity motivation and behavior. Specifically, it was found that perceived parental motivation, perceived parental involvement and perceived parental autonomy support were key parental variables influencing their adolescents' physical activity motivation. It was also found that perceived parental expectations was a significant variable influencing their adolescents' physical activity behavior. This information could be useful for parents who want to know how to foster motivation in their adolescents towards physical activity and how to positively influence their adolescents' engagement in physical activity. According to our results, if parents want to enhance the physical activity motivation of their children they should demonstrate that they engage in physical activity themselves for self-determined reasons. Results showed that adolescents' that perceive that their parents engage in physical activity for self-determined reasons, are also self-determined. Also, if parents want to increase the physical activity motivation of their adolescents, they should get involved in their adolescents' physical activities. More specifically, parents should participate in

physical activity with their adolescents, provide transportation and frequently watch their adolescents participate in physical activity. Another way for parents to enhance the physical activity motivation of their adolescents, is that they should adopt an interpersonal style that is autonomy supportive. This could mean that they should let their adolescents have the final decision on which physical activity to participate in, take their perspective into account, provide choices, reflect on their adolescents' feeling, encourage initiative and support freedom.

Our findings also show that if parents want to enhance adolescents' physical activity behavior, they should be aware that the expectations they have in regards to their adolescents participating in physical activity will affect them. Parents could explicitly or implicitly inform their adolescents of their expectations in the context of physical activity.

The results of this study could also be useful for the adolescents themselves. If adolescents know how their parents can influence their physical activity motivation and behavior, they could discuss these aspects with their parents and find strategies to increase motivation and physical activity behavior.

In the last decade, some researchers have developed physical activity intervention programs for youths and families (e.g. Baranowski et al., 1990). The results of this study could contribute to the modification of these interventions so that they can be tailored for the specific needs of youths. The findings of this study suggests that interventions should target specific parental influences that were found significant in the Model of Parental Influences. The findings in the present study could also be useful for practitioners in the development of workshops for parent. These workshops could inform parents of their influence on their adolescents' physical activity motivation and behavior. Practitioners could suggest patterns of behavior and strategies to parents that will increase the motivation of their adolescents and influence their physical

activity involvement.

Future Research

Self-Determination Theory was found to be useful in the study of parental influences on adolescents' physical activity motivation and behaviors. Further research is needed in this area and Self-Determination could be a sound theory to use as a main theoretical framework.

Parental autonomy support was the most significant predictor of adolescents' physical activity motivation in our study. To our knowledge, no studies to date have examined the influence of parenting styles on youths' physical activity motivation. This could suggest a new research avenue for researchers to explore.

We found no significant relationship between perceived parental encouragement and adolescents' physical activity motivation and behavior. This finding was contradictory to past research. This could suggest the existence of different levels of encouragement, some being more effective than others in influencing physical activity motivation and behavior among adolescents. Most studies to date have confirmed the positive influence of parental encouragement on motivation and physical activity behaviors of youths. However, parents who provide too much encouragement can be perceived as pressure by youths. Researchers could further investigate this matter and specifically differentiate among the effects of different levels of parental encouragement.

Although this study provided some good information regarding the influence of parents on their adolescents' physical activity motivation and behavior, not all of the expected links were significant and more research is needed to understand the influences of parents on the motivation and physical activity behavior of adolescents. Indeed, a portion of the variability of adolescents' physical activity motivation and especially physical activity behavior remains unexplained by

parental variables. This should encourage researchers to examine and integrate other social influences (i.e. teachers, peers) and other psychological variables (i.e. barriers, self-efficacy) in models to better understand determinants of motivation and physical activity among adolescents.

In this study, all of the variables including parental variables, adolescents' physical activity motivation and behavior were measured at a single point and time. Accordingly, causal inferences should be made with caution because we cannot infer that these influences are significant over time. Therefore, future research should consider using a longitudinal (multiple-wave) design. In addition, we used a path analysis consisting of a series of multiple regressions to verify the hypothesized relationships in the Model of Parental Influences. Another rigorous statistical test such as structural equation modeling (SEM) would be useful to test enhanced models. Future research might benefit from the use of SEM.

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APPENDIX A

Contributions of the Authors

The contributions of the two authors (Stéphane Gaumond and Dr. Michelle Fortier) referenced on the journal article comprising this thesis are outlined in this appendix.

Dr. Fortier and I both played a significant role in the elaboration and completion of this master's thesis and journal article. This research project was given birth through Dr. Fortier's grant project "Maintenance of an Active Healthy Lifestyle in Youth Populations" that was supported by the Social Sciences and Humanities Research Council of Canada (SSHRC). There are many advantages of having a research project embedded in a larger grant project (e.g. sample size and resources for data collection). I would like to mark my recognition and note my appreciation towards Dr. Fortier for involving my study in her grant project.

The specific topic of this study was decided through many discussions between Dr. Fortier and myself. In essence, my interest in the fields of motivation and physical activity was combined with Dr. Fortier's expertise and knowledge in these areas. Throughout the entire process, I met regularly with Dr. Fortier to conceptualize, develop and evaluate this study at various stages.

With regards to data collection, Dr. Fortier contacted and received approval from the Ottawa-Carleton District School Board and the directors of nine high schools. She also established first contacts with heads of physical education departments in these high schools to provide general information about the study. After this was done, mainly six other researchers (John, Robin, Karine, Lynne, Clare and Alex) and myself, working in teams, were responsible to meet with teachers and adolescents to explain the study more specifically, obtain parental consent and later, administer the questionnaires. More specifically, I was involved in this process for three of the nine high schools in the present study, and collected close to 50 percent of all questionnaires. All of these tasks were carried out under the supervision of Dr. Fortier.

In terms of data management, I was responsible for half of the data entry and mainly responsible for the preparation of the demo and the cleaning of the data bank. I would like to thank John Kowal for his involvement in the cleaning of the data bank. I was also primarily responsible for conducting the data analysis for my thesis. Again, Dr. Fortier was involved in all of those steps by providing information and resources and very much needed help to resolve the problems associated with managing relatively large data banks.

Finally, in terms of writing the thesis and the journal article, I was responsible for producing initial drafts of all sections included therein. Each of which were revised by Dr. Fortier and returned to me so that I could make the necessary adjustments and corrections. The final article contained in this thesis is the product of our efforts, and has been prepared to submission to the academic journal, *Preventive Medicine*.

APPENDIX B

¹ Questionnaire

¹ In the questionnaire, bolded items are the ones used in the analysis of the present study.

ATTITUDES AND PERCEPTIONS
TOWARDS PHYSICAL ACTIVITY AND HEALTH

We are conducting an important study to understand adolescents' attitudes, perceptions and behaviors towards physical activity and health. The following pages consist of questions about your involvement in health related activities. Please read each question carefully and indicate the extent to which the question corresponds to YOUR personal experience. It is important to answer, i.e., circle a number or choose an option for EVERY question.

This is not a test. Therefore, there are no right or wrong answers. We are only interested in your **HONEST** responses to the questions and ask that you answer as **SERIOUSLY** and **TRUTHFULLY** as possible. It is important to carefully read all of the instructions. If you do not understand a question, lift your hand, we will be pleased to help you.

300\$ PRIZE:

IF YOU FILL OUT THIS QUESTIONNAIRE SERIOUSLY AND TRUTHFULLY YOU HAVE THE CHANCE OF WINNING A 300\$ PRIZE

You do not have to write your name on the questionnaire, therefore we CANNOT identify you. However, we require your student number, date of birth and the last 4 digits of your telephone number (for identification purposes only). **The information that you provide us with is strictly confidential (private) and will be used for research purposes only.** That is, no one (not your friends, your parents nor your teachers) except us will see your answers.

VERY IMPORTANT

YOUR STUDENT NUMBER: _____

YOUR DATE OF BIRTH (DAY/MONTH/YEAR): ____/____/____

THE LAST 4 DIGITS OF YOUR TELEPHONE NUMBER: _____

Thank you for your participation.

Michelle Fortier, Ph.D.

School of Human Kinetics, University of Ottawa

1. PHYSICAL ACTIVITY BEHAVIOR I

Please answer the following questions about the kinds of physical activities you have been doing in your **FREE TIME** (outside of school physical education classes) over the **past month (4 weeks)**. For each activity you have done, indicate: how often you've done it in the **past month**, for how long you usually do it, and at what intensity (see below).

Intensity:

1= mildly-minimal effort

2= moderately- it gets the heart going but not too tiring, you start breathing a bit harder than usual

3= strenuously- you do the activity vigorously, your heart beats rapidly, you breath hard, your work up a sweat

Type of Activity	Did you do it or not last month in you FREE TIME	If YES # of times <u>last month</u>	If YES How long at a time	If YES At what intensity
Aerobics	yes ___ no ___	_____	_____ minutes	1 2 3
Badminton	yes ___ no ___	_____	_____ minutes	1 2 3
Baseball/softball	yes ___ no ___	_____	_____ minutes	1 2 3
Basketball	yes ___ no ___	_____	_____ minutes	1 2 3
Bicycling	yes ___ no ___	_____	_____ minutes	1 2 3
Bowling	yes ___ no ___	_____	_____ minutes	1 2 3
Boxing/kickboxing	yes ___ no ___	_____	_____ minutes	1 2 3
Canoeing/rowing	yes ___ no ___	_____	_____ minutes	1 2 3
Dancing	yes ___ no ___	_____	_____ minutes	1 2 3
Floor exercises (sit ups...)	yes ___ no ___	_____	_____ minutes	1 2 3
Football	yes ___ no ___	_____	_____ minutes	1 2 3
Frisbee	yes ___ no ___	_____	_____ minutes	1 2 3
Golf	yes ___ no ___	_____	_____ minutes	1 2 3
Gymnastics	yes ___ no ___	_____	_____ minutes	1 2 3
Hiking	yes ___ no ___	_____	_____ minutes	1 2 3
Hockey (ball, ice)	yes ___ no ___	_____	_____ minutes	1 2 3
Martial arts (karate, judo)	yes ___ no ___	_____	_____ minutes	1 2 3
Mountain/rock climbing	yes ___ no ___	_____	_____ minutes	1 2 3
Racquetball/squash	yes ___ no ___	_____	_____ minutes	1 2 3
Running/jogging	yes ___ no ___	_____	_____ minutes	1 2 3
Skating (roller, ice)	yes ___ no ___	_____	_____ minutes	1 2 3
Skateboarding	yes ___ no ___	_____	_____ minutes	1 2 3
Skiing - downhill	yes ___ no ___	_____	_____ minutes	1 2 3
Skiing - cross country	yes ___ no ___	_____	_____ minutes	1 2 3
Soccer/rugby	yes ___ no ___	_____	_____ minutes	1 2 3
Swimming	yes ___ no ___	_____	_____ minutes	1 2 3
Tennis	yes ___ no ___	_____	_____ minutes	1 2 3
Volleyball	yes ___ no ___	_____	_____ minutes	1 2 3
Walking fast	yes ___ no ___	_____	_____ minutes	1 2 3
Water skiing	yes ___ no ___	_____	_____ minutes	1 2 3
Weight/strength training	yes ___ no ___	_____	_____ minutes	1 2 3
Other: _____	yes ___ no ___	_____	_____ minutes	1 2 3
Other: _____	yes ___ no ___	_____	_____ minutes	1 2 3
Other: _____	yes ___ no ___	_____	_____ minutes	1 2 3

Was last month a normal month for you in terms of physical activity? Yes no

If "yes", for how many months have you been at this level of physical activity/inactivity? _____
months

If "no" does the past month represent: (check one) _____ more physical activity than usual
_____ less physical activity than usual

5. MOTIVATION TOWARDS PHYSICAL ACTIVITY

Using the scale below, please indicate **to what extent you agree** with the following items concerning **YOUR REASONS FOR DOING PHYSICAL ACTIVITY**.

Strongly Disagree		Moderately Agree			Strongly Agree	
1	2	3	4	5	6	7

In general, when you do physical activity **WHY** do you do it?

- | | | | | | | | |
|--|---|---|---|---|---|---|---|
| 1. For the enjoyment I feel when I am completely absorbed in the activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. To be attractive to others. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Because people around me think it is important to do physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. To improve my health. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. For the pleasure I experience while learning new things. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. Because I feel pressured to do so by others (for example by my parents, by my friends). | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. To relieve stress. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

8. Because I enjoy learning about this activity	1	2	3	4	5	6	7
9. I used to have good reasons for doing physical activity, but now I am asking myself if I should continue.	1	2	3	4	5	6	7
10. Because I should do physical activity if I want to be in shape	1	2	3	4	5	6	7
11. Because, in my opinion, it is one of the best ways to meet people.	1	2	3	4	5	6	7
12. To feel good mentally.	1	2	3	4	5	6	7
13. For the pleasure of trying to surpass myself in this activity.	1	2	3	4	5	6	7
14. To live longer.	1	2	3	4	5	6	7
15. I don't know why I do it, lately I feel unmotivated.	1	2	3	4	5	6	7
16. For the positive feelings I feel while I am doing something that I enjoy.	1	2	3	4	5	6	7
17. To improve my mood.	1	2	3	4	5	6	7
18. Because I enjoy the feeling of improving through practicing this activity.	1	2	3	4	5	6	7
19. Because I think its good for my overall development.	1	2	3	4	5	6	7
20. For the excitement I feel when I am really involved in the activity.	1	2	3	4	5	6	7
21. Because I must do physical activity to feel good about myself.	1	2	3	4	5	6	7
22. I don't really understand why I do it.	1	2	3	4	5	6	7
23. To increase my resistance to illness and disease.	1	2	3	4	5	6	7

24. For the satisfaction I experience while I m improving my abilities.	1	2	3	4	5	6	7
25. Because It is a good way to learn things which could be useful to me in other areas of my life.	1	2	3	4	5	6	7
26. It is not clear to me anymore; I don't really think physical activity is for me.	1	2	3	4	5	6	7
27. To improve my body shape.	1	2	3	4	5	6	7
28. For the pleasure of mastering this activity.	1	2	3	4	5	6	7
29. Because I would feel bad if I was not taking time to do physical activity.	1	2	3	4	5	6	7
30. To maintain my physical well-being.	1	2	3	4	5	6	7
31. To impress others.	1	2	3	4	5	6	7
32. For the pleasure of discovering new activities.	1	2	3	4	5	6	7
33. Because it is one of the best ways to maintain good relationships with my friends and/or family.	1	2	3	4	5	6	7
34. To show others how physically fit I am.	1	2	3	4	5	6	7
35. To increase my energy.	1	2	3	4	5	6	7
36. Because I like the feeling of being totally immersed in the activity.	1	2	3	4	5	6	7
37. To improve my appearance.	1	2	3	4	5	6	7
38. Because I would feel guilty if I wasn't doing it.	1	2	3	4	5	6	7
39. Because I enjoy learning new skills.	1	2	3	4	5	6	7

40. To lose or maintain my weight in order to look good.

1 2 3 4 5 6 7

7. PARENTAL AND BEST FRIEND INFLUENCES

The following statements concern your parents and your best friend. Using the scale below, **indicate how OFTEN these people do the following things** by circling the most appropriate number.

Never			Sometimes			Very often	
1	2	3	4	5	6	7	

MY PARENTS/ GUARDIAN...

1. ... verbally encourages me to participate in physical activity. 1 2 3 4 5 6 7
2. ... praises me if I participate in physical activity. 1 2 3 4 5 6 7
3. ... transports me to a place where I can participate in physical activity. 1 2 3 4 5 6 7
4. ... watches me participate in physical activity. 1 2 3 4 5 6 7
5. ... pressures me to participate in physical activity. 1 2 3 4 5 6 7
6. ... forces me to participate in physical activity. 1 2 3 4 5 6 7
7. ... criticizes me when I do physical activity. 1 2 3 4 5 6 7
8. ... does physical activity with me. 1 2 3 4 5 6 7
9. ... participates in physical activity themselves. 1 2 3 4 5 6 7

10. ... smokes cigarettes. 1 2 3 4 5 6 7

MY BEST FRIEND ...

1. ... verbally encourages me to participate in physical activity. 1 2 3 4 5 6 7

2. ... pressures me to participate in physical activity. 1 2 3 4 5 6 7

3. ... criticizes me when I do physical activity. 1 2 3 4 5 6 7

4. ... does physical activity with me. 1 2 3 4 5 6 7

5. ... participates in physical activity. 1 2 3 4 5 6 7

6. ... smokes cigarettes. 1 2 3 4 5 6 7

8. PEOPLE'S EXPECTATIONS REGARDING YOUR PHYSICAL ACTIVITY

The following statements concern your people's expectations about your physical activity. Using the scale below, **indicate the degree to which you agree** with each item by circling the most appropriate number.

Strongly Disagree		Moderately Agree			Strongly Agree	
1	2	3	4	5	6	7

MY PARENTS/ GUARDIAN...

1. ... thinks it is important that I participate regularly (at least 4 times a week during my FREE TIME) in physical activity. 1 2 3 4 5 6 7

- | | | | | | | | |
|--|---|---|---|---|---|---|---|
| 2. ... expects me to participate regularly in physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. ... thinks I should participate regularly in physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

MY BEST FRIEND ...

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. ... thinks it is important that I participate regularly (at least 4 times a week during my FREE TIME) in physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. ... expects me to participate regularly in physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. ... thinks I should participate regularly in physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
-

9. YOUR PARENTS

Using the scale below, please indicate **to what extent you agree** with each of the following items concerning how your parents act with you.

Strongly Disagree		Moderately Agree			Strongly Agree		
1	2	3	4	5	6	7	

- | | | | | | | | |
|--|---|---|---|---|---|---|---|
| 1. My parents often provide me with choices when it comes to doing physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. My parents openly consider my opinions and feelings when it comes to physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. My parents don't really care if I succeed or fail in physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. When my parents give me feedback when I do physical activity, I feel a sense of confidence in myself. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5. I feel that my parents are often watching over me when I do physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. My parents provide me with lots of opportunity to make my own decisions when it comes to physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. The feedback that I get from my parents when I do physical activity makes me feel uncertain about my capacities. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. My parents only tell me about my mistakes when I do physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. My parents make me feel guilty if I don't do enough physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. My parents asks me for my suggestions and/or opinions when it comes to physical activity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
-

10. PERCEPTIONS OF OTHERS I

Using the scale below, please indicate **to what extent you agree** with each of the following items by circling the most appropriate number.

Strongly Disagree		Moderately Agree			Strongly Agree		
1	2	3	4	5	6	7	

A) When my parents do physical activity I believe they do it...

- | | | | | | | | |
|--|---|---|---|---|---|---|---|
| 1. ... because they would feel bad if they weren't doing it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. ... to feel better. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. ... for the pleasure and satisfaction it gives them. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. ... because they feel they have to. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5. ... because they choose to do it for their own good. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. ... to improve their appearance. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. ... because they want to. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. ... because they enjoy it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. ... to please or impress others. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. ... to improve their health. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

B) When my best friend does physical activity I believe he/she does it...

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. ... because he/she would feel bad if he/she wasn't doing it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. ... to feel better. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. ... for the pleasure and satisfaction it gives him/her. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. ... because he/she feel he/she has to. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. ... because he/she chooses to do it for his/her own good. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. ... to improve his/her appearance. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. ... because he/she wants to. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. ... because he/she enjoys it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. ... to please or impress others. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

10. ... to improve his/her health.	1	2	3	4	5	6	7
------------------------------------	---	---	---	---	---	---	---

C) My physical education teacher...

1. ... is motivated to teach his/her classes.	1	2	3	4	5	6	7
---	---	---	---	---	---	---	---

2. ... enjoys teaching physical education.	1	2	3	4	5	6	7
--	---	---	---	---	---	---	---

13. BACKGROUND

Age: _____

Gender: Female _____ Male _____

Name of your school: _____

Name of your physical education teacher: _____

I am in a physical education class that is: all girls _____ all boys _____ mixed _____

Height (in feet and inches): _____ Weight (in pounds or in kilograms): _____

Do you smoke cigarettes: yes _____ no _____

If you SMOKE, do you have the intention of stopping over the next 4 months?

yes _____ no _____

Your perception of your health (on a scale of 1 to 10; 1= very bad health, 10=excellent health): _____

Do you have any specific health problems: _____

Who do you live with? (CIRCLE) my mom and dad my guardian
one of my parents one of my parents and his/her friend

How many kids in your family (including you): _____

How many hours of TV do you watch a day: _____ hours per DAY

How many days a week do you have gym/physical education class at school: _____ days a WEEK

On a scale from 0 to 100%, how much effort have you been putting in gym class since September: _____%

Next year in grade 10, if you have the choice of taking physical education class or not, what will you do?
Take PE in grade 10 _____ Not take PE in grade 10 _____

YOUR MOM/FEMALE GUARDIAN:

During a normal week, how often does your mom/female guardian do physical activity for at least 20 minutes without stopping: _____ times per WEEK

YOUR DAD/MALE GUARDIAN:

During a normal week, how often does your dad/male guardian do physical activity for at least 20 minutes without stopping: _____ times per WEEK

We thank you very much for your participation!

PLEASE REMIND YOUR PARENT TO RETURN HIS/HER QUESTIONNAIRE
TO YOUR PHYSICAL EDUCATION TEACHER IF THEY HAVEN'T DONE
SO

APPENDIX C

Parental Letter of Information and Consent Form

Université d'Ottawa - University of Ottawa

Parental Letter of Information and Consent Form

Dear parent/guardian:

We are currently conducting a study that aims to better understand **why certain youths regularly engage in physical activity while others tend to be inactive**. We are particularly interested in examining **what motivates youths to adopt and/or maintain an active healthy lifestyle**. In order to achieve this, we would like to involve your adolescent and yourself in this study. Results will be used to develop programs aimed at enhancing youths' motivation towards physical activity so that they may maintain an active healthy lifestyle and thus benefit from the numerous advantages of regular physical activity.

This research project is being conducted by Dr. Michelle Fortier from the University of Ottawa. If, for any reason, you would like to contact Dr. Fortier, she can be reached at the following address/number:

Dr. Michelle Fortier, Assistant Professor
School of Human Kinetics, University of Ottawa
Tel: 562-5800, Ext. 4275

For any additional information concerning ethical issues, you may also contact:

Dr. Roger Proulx, President of the Ethics Committee
Faculty of Health Sciences, University of Ottawa
Tel: 562-5800, Ext. 8055

Requirements: The only requirements are for your adolescent is to **answer a short questionnaire** at 4 different times over the next 2 years (Nov. 1998, March 1999, Nov. 1999 and March 2000). Data collection will take place at your adolescent's high school (**in his/her physical education class**), and should last approximately 25 minutes. The participation of your adolescent is completely voluntary and he/she may withdraw from this study at any time without fear of any negative consequences. We also ask that you fill out a short questionnaire (at your home) at these 4 times and return it to the school (to the 9th grade physical education teacher).

300\$ PRIZE:

FAMILIES (ADOLESCENTS AND PARENTS) THAT PARTICIPATE IN THIS STUDY (FILL) OUT THE 4 QUESTIONNAIRES OVER THE NEXT 2 YEARS) WILL HAVE A CHANCE TO WIN A 300\$ PRIZE

There are **NO** risks or discomforts involved in this study. We only require that your adolescent (and yourself) answer a short questionnaire on four separate occasions.

Anonymity and confidentiality: Nor you or your adolescent will have to identify him/herself (i.e. to put your name on the questionnaire) at any time during the study. In this way, anonymity can be assured. However, your responses will be matched with those of your adolescent. Only the members of the research team will have access to the data with this information being completely confidential and used only for the purpose of this study (nothing will appear in school records). In addition, questionnaires will be kept at the University of Ottawa in Dr. Fortier's laboratory. Finally, the data will be presented in a pooled format (everyone together) thus, individual responses will not be identifiable.

For your Information: This research project has been approved by the principal of the school. If you have any questions, please do not hesitate to contact us at the previously indicated number. If desired, you may also obtain a summary of the overall results once the study has been completed. If interested, please contact Dr. Fortier.

Your consent i.e., YOUR SIGNATURE, is required for your adolescent to participate in this important study.

I have read and understand the request for my son/daughter to participate in this study and ...

- ☐ I give permission for my son/daughter to participate AND I will also participate
☐ I give permission for my son/daughter to participate BUT I will not be participating
☐ I do not give permission for my son/daughter to participate

If you permit your adolescent to participate in this study, please: 1) **sign the two copies of this form and 2) keep one copy for yourself and RETURN the other to the school (physical education teacher) with your adolescent within the next week. Please RETURN your completed questionnaire to the physical education teacher as well.**

Name of student: (please print):
student's date of birth (day/month/year):
last 4 digits of your phone #:
(for identification purposes only)

signature of parent/guardian:
date:
signature of researcher:
