

Understanding Children's Physical Activity and Health-Related Quality of Life: An Expectancy-Value Approach

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Abstract

This review paper explores the motivational processes in physical education related to physical activity and health-related quality of life among children and adolescents. First, we review the existing body of literature relating to children's health-related quality of life. Next, we present the expectancy-value model of achievement choice as a framework for investigating how children's motivation in physical activity settings interacts with physical activity and health-related quality of life. In the following section, we discuss social-contextual factors within the motivational climate, and how they can enhance or constrain decisions to be physically active and influence health-related quality of life. We conclude by identifying emerging research issues, implications for practice, and suggestions for future research directions.

Keywords

Expectancy-Value Model, Motivational Climates, Quality of Life, Physical Activity

1. Introduction

Physical inactivity is associated with increasingly high rates of obesity and overweight in US populations (Centers for Disease Control and Prevention [CDC], 2012). A physically active lifestyle during childhood contributes to improved health status including physical and mental health during these years and later in life (See reviews: Hallal et al., 2006; Janssen & LeBlanc, 2010). That is, school-aged students who are active during their childhood are more likely to maintain high levels of physical activity and positive health status across their life span than those who are inactive. Although physical activity is associated with positive health-related outcomes, children are not as active as they should be and

health-related problems in children increase with age (Biddle & Asare, 2011; Carvalho & Matos, 2014).

Physical education (PE) is important settings to develop physically literate individual and consequently can play a critical role in promoting overall health-related well-being (Whitehead, 2013; USDHHS, 2010). It is recommended that PE be offered at every grade level, and that children should accumulate at least 60 minutes per day of moderate to vigorous physical activity (USDHHS, 2010). Although 97% of school students take PE classes, they cannot meet the physical activity recommendations within the allotted instructional time (National Association for Sport and Physical Education [NASPE], 2010). Furthermore, students' motivation to participate in PE and sport programs declines steadily over the school years, especially among girls (NASPE, 2010). To address school students' decreased motivation for physical activity participation with the goal of improving their quality of life, intervention programs incorporating the prevention of mental health problems and behavioral risk components into their program designs are needed (USDHHS, 2010).

There is a growing use of health related quality of life (HRQOL) as a measure of an individual's physical and mental health over time (CDC, 2007; Gu & Solomon, 2016; USDHHS, 2010; Varni et al., 2001). It has been suggested that HRQOL can be used to predict future health and health care needs as well as to identify the functional status of children's health-related well-being most at risk (Gu & Solomon, 2016; Lacy et al., 2012). Mental health problems significantly impact children's well-being, however it is often a limited area of investigation in school based interventions (Carvalho & Matos, 2014; Solomon, 2015). Given that the onset of mental health problems begins to increase at the early school years (Biddle & Asare, 2011), school PE and physical activity programs are ideal social contexts to influence children's health perceptions and behaviors prior to their onset.

Most previous studies on HRQOL have focused on adult and elderly populations especially with disabilities (Bize et al., 2007; Hörder et al., 2013; McAuley et al., 2008; Vuillemin et al., 2005). They support the notion that HRQOL has a positive association with physical activity. In recent years, researchers have focused their attention on the relationship between physical activity and HRQOL among school-aged children and explored how motivational process in PE influences HRQOL (Gu & Solomon, 2016; Gu et al. 2014; Standage & Gillison, 2007; Standage et al. 2012). In the HRQOL construct, characteristics of the individual and environment can affect the functional status of HRQOL including physical, emotional, school, and social functioning (Ferrans et al., 2005). For example, severe impairments of functional status might interfere with daily activity which might cause the individual to become sedentary in early childhood.

According to HRQOL structure (Ferrans et al., 2005), factors from different domains influence health outcomes. Besides individual behavioral factor (e.g., physical activity), research also suggests the importance of psychosocial factor such as motivation (e.g., expectancy-value beliefs; Armitage & Conner, 2001)

and environmental factors such as school/classroom climates (Gu & Solmon, 2016). Research focused on the individual and environment determinants of health-related behavior and outcomes (i.e., physical activity and HRQOL) may help us to understand variations in the developmental patterns of children and monitor their mental health status in their early school years (Gu & Solmon, 2016). Studying the quality of life of young children is relevant to public health as the foundation for quality of life and the functional status of health in adulthood are formed early in life.

In addition, motivational theories rooted in expectancy-value perspective have generally been shown to be useful identifying the motivational factors that underpin individual's health-related decisions (Van der Pligt & de Vries, 1998). Understanding the motivational processes in which psychosocial factors affect children's physical activity and HRQOL could provide a basis for developing theory-based health interventions during early school years. Initial work suggests this is an important area of inquiry for monitoring the functional status of individual health, however, the HRQOL construct has not been extensively investigated in the pediatric population (Ferrans et al., 2005; Gu et al., 2014). Relatively few studies have investigated the efficacy of the motivational models to guide health interventions with consideration of both individual and social contextual factors (Armitage & Conner, 2001).

The purpose of this review paper is to examine literature that explores motivational processes in PE related to school-aged children's physical activity and HRQOL. First, we review the existing body of knowledge relating to children's HRQOL. Second, we present the expectancy-value model of achievement choice as a framework for investigating how children's motivation in PE relates to their health-related outcomes including physical activity and HRQOL. Next, we discuss social-contextual factors (i.e., the motivational climate), and how they can enhance or constrain decisions to be physically active and influence HRQOL. We conclude by identifying emerging research issues, implications for practice, and suggestions for future research directions.

2. Health-Related Quality of Life

According to the Centers for Disease Control and Prevention (CDC, 2007), HRQOL is defined as a person's or group's perceived physical and mental health over time and represents an aspect of quality of life independent of socioeconomic conditions (Stocchi et al., 2007). This is an important element in determining the health benefits of various interventions for clinicians, researchers, and patients. The overall concept of the quality of life can be viewed as the individual's satisfaction with their life in the broadest possible sense and has been used to assess school students' perceptions of their own health including physical, emotional, social, and school functioning (Schwimmer et al., 2003). For example, to measure students' social function relative to HRQOL, students are asked whether they have trouble getting along with other children and making friends. It was proposed that motivational variables including individual (i.e.,

motivation for physical activity) and environmental characteristics (i.e., social support for physical activity) have a strong impact in those functional aspects of HRQOL (Ferrans et al., 2005; Gaspar et al., 2009).

Fox (1999) suggested that moderate physical activity should be considered as a viable means of promoting functional health and well-being that is commonly referred to as HRQOL in the general public. Researchers have provided sufficient evidence that individuals who meet public health recommendations for physical activity report higher HRQOL than those who do not among general adult populations (see reviews: Bize et al., 2007; Klavestrand & Vingard, 2009). The demonstration of a positive association between physical activity and HRQOL could provide individuals with motivation to become more physically active (Gu & Solmom, 2015), however, positive relationships reported in these populations may not be generalizable to school-aged children.

Health-Related Quality of Life in Youth

Initial investigations with school-aged children explored the relationship between HRQOL and obesity (Morales et al., 2013; Schwimmer et al., 2003; Swallen et al., 2005; Tsiros et al., 2009; Williams et al., 2005). Specifically, Schwimmer and colleagues (2003) found that obesity in children and adolescents is linked to significantly lower HRQOL. That is, in comparison with healthy children and adolescents, obese children and adolescents reported significant impairment (5.5 times greater) in all domains (physical, emotional, social, and school functioning). A longitudinal study (Swallen et al., 2005) confirmed this earlier finding that both underweight and overweight adolescents had worse physical functioning than those adolescents with a body mass index (BMI) in the healthy range. It appears likely that HRQOL begins to decline as soon as a child's BMI is above healthy normal limits, whereby increasing weight status has a negative influence on HRQOL in pediatric population (Tsiros et al., 2009).

Furthermore, Shoup and colleagues (2008) indicated that PA emerges as the more important correlate of HRQOL in overweight children, regardless of their weight status. Increased PA and weight loss may be effective strategies to improve HRQOL (Bize et al., 2007), though data on HRQOL from PA interventions are scarce. There is limited evidence examining the relationship between PA and HRQOL in children and adolescent populations, mostly using cross-sectional designs. Specifically, one recent study reported that higher levels of PA measured objectively with accelerometers was associated with better HRQOL among healthy adolescents (Gu et al., 2014). Lacy et al. (2012) also found that Australian adolescents who were physically active had higher HRQOL scores in their cross-sectional design.

School PE programs are the primary avenues that contribute to a healthy and physically active lifestyle by helping children learn the skills and knowledge needed to be active (Whitehead, 2013). Improving PA and HRQOL are identified as major priorities for school PE and are also major goals of Healthy People 2020 (USDHHS, 2010). Blair and colleague (2001) proposed a health model by

identifying the interrelationships between behavioral factors (e.g., physical activity, physical fitness, and motor component) and health outcomes. It was stated that individuals who are regularly physically active are less likely to develop health problems than sedentary individuals. The health model proposed by Blair and colleagues recognized the role of behavioral factor such as physical activity and fitness toward various health outcomes, which provide the initial frameworks for health practitioners in the effort of enhancing children and adolescents' HRQOL (Gu et al., 2015). Current efforts to fight childhood obesity and increase children's health have had limited success because most public efforts have focused mainly on behavioral factors and general health outcomes, and paid little attention to the comprehensive mechanism towards specific health outcome. Assessing children's HRQOL and identifying factors (e.g., individual and psychosocial factors) that enhance or constrain HRQOL at an early age is an important area of research that can yield valuable information about how schools and communities can foster positive physical and mental well-being.

A number of motivational models of health behavior have been proposed and identify proximal determinants of health-related behavior from public health perspectives (see reviews, [Armitage & Conner, 2001](#); [Van der Pligt & de Vries, 1998](#)). The prevailing models reviewed in those two papers that aim to explain health behavior are all rooted in expectancy-value approaches of achievement choice. According to the expectancy-value model ([Eccles et al., 1983](#)), it is essential to take account of the salience of expectancy beliefs and incorporate a measure of subjective values towards (preventive) health-related outcomes among school-aged children. However, the application of this model is limited in pediatric health intervention programs, especially among school-aged children.

In addition, as defined by the World Health Organization, HRQOL is seen as a personal perception of an individual's own life in their specific culture context and value system in association with their goals, expectations, values and perspectives ([World Health Organization Quality of Life Assessment Group, 1998](#)). Given the fact that PE has been characterized as an important health-promotion and achievement context for children ([NASPE, 2010](#)), expectancy-value beliefs toward PE could be used as a framework to help to explain why some children engage in physical activity while others do not ([Xiang, McBride, & Bruene, 2006](#)), as well as to study the relationship between physical activity and their health-related behavioral changes that affect HRQOL ([Gu et al., 2014, 2015](#)).

There is primary evidence that expectancy-value beliefs could provide an understanding of school-age students' health-related behaviors and outcomes such as physical activity and HRQOL ([Gu et al., 2014, 2015](#)). Specifically, these two studies reported that expectancy-related belief and value motivation toward PE were positively associated with the social, school, physical, and emotional domains of HRQOL among children and adolescents. Additionally, Gu and colleagues (2015) also reported that classroom environment (mastery or performance motivational climates) may also influence the degrees of mental health measured by HRQOL in elementary children. These two studies provide pre-

liminary evidence that HRQOL can be affected by individual factors such as domain specific motivation among children and adolescents.

3. Expectancy-Value Model of Achievement Choice

In order to optimize the application of the expectancy value model, it is important to consider how children's expectancies and values evolve as they progress through school. According to the expectancy-value model (Eccles et al., 1983), children's expectancy beliefs and task values together enable them to differentiate and evaluate their ability and activity values. If children can distinguish what they are good at and what they value, the expectancy value information is more likely to be used in decision making. It is evident that students' motivation to participate in PE programs declines as they grow older, and the decline is greater for adolescents than young children (Gao, Lee, Solmon, & Zhang, 2009; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002; Xiang, McBride, & Bruene, 2006). Thus, the primary school years seem to be an important period to build children's self-perceptions (e.g. attitude, beliefs, health knowledge) and the behavioral habits (e.g. physical activity participation).

Eccles and her colleagues (1983) developed the expectancy-value model of achievement choice. They proposed two primary determinants of achievement choices and behaviors: 1) the individual's expectancy-related beliefs, consisting of beliefs about ability and expectancies for success in a particular domain; and 2) the subjective values associated with the task. Beliefs about ability are defined as individuals' evaluations of their competence in different achievement tasks. Expectancies for success refer to individuals' beliefs about how well they will do on an upcoming task and are closely related to their beliefs about ability. According to the expectancy-value model of achievement choice, beliefs about ability and expectancies for success comprise the two major components of expectancy-related beliefs. Although conceptually distinct, these components relate to each other and constitute an individual's perceived competence in the specific context. Conceptually, beliefs about ability are distinguished from expectancies for success, with beliefs about ability focusing on individuals' perceptions of their current competence at a given task or activity, and expectancies for success focusing on the future.

Subjective task values explain how an achievement task meets various needs of individuals, and consists of four major components: attainment value (importance), intrinsic value (interest), utility value (usefulness), and cost (Eccles et al., 1983). Attainment value refers to the importance of doing well on a given task. Intrinsic value concerns the enjoyment the individual obtains from performing the task or the subjective interest the individual has for the task. Utility value or usefulness of the task reflects on how a task fits into an individual's current or future plans. Cost refers to how the decision to engage in an activity limits access to other activities, assessments of how much effort or time will be spent to accomplish the activity and its emotional cost. Generally, researchers have suggested that students participate in activities in which they believe they are com-

petent, and view as interesting, important, and useful in sport and school PE domains (Cox & Whaley, 2004; Eccles et al., 1983; Gao et al., 2009; Wigfield & Eccles, 2002; Xiang et al., 2006).

Some researchers have argued that expectancy-related beliefs and subjective task values may have a more direct effect on achievement behavior than other motivation constructs. A number of the studies have demonstrated that students' achievement outcomes, including their performance, effort/persistence, intention for future participation, and choices of achievement tasks are predicted by their expectancy-related beliefs and subjective task values (Eccles et al., 1983; Gao et al., 2009; Gu, Solmon, & Zhang, 2012; Gu et al., 2014; Jacobs et al., 2002; Xiang et al., 2006; Zhang et al., 2012). A recent review related to the expectancy-value model also suggests that expectancy-related beliefs are associated with performance and effort/persistence, whereas subjective task values are associated with engagement, intention, and task choice (Gao et al., 2008). Specifically, Gao and colleagues reviewed the conceptual similarities and differences between expectancy-value and self-efficacy theories, and their applications to students' motivation and achievement behaviors (i.e., choice, persistence and performance) in sport and PE.

Researchers also support the conclusion that expectancy-related beliefs and task values are adaptive motivators for various health-related outcomes in PE (Chen & Chen, 2012; Gu et al., 2012). Three recent studies have provided evidence that individuals with high levels of perceived ability and values towards PE are likely to be more physically active as assessed by objective measures of physical activity (i.e., accelerometer; Chen & Chen, 2012; Gao et al., 2008; Gu et al., 2012). For example, Gao, Newton, and Carson (2008) found that task values significantly predicted students' cardiovascular fitness and pedometer-based physical activity levels. In this study, they combined self-efficacy (not expectancy-related beliefs) and task values constructs to examine middle school students' in-class physical activity levels and physical fitness. Chen and Chen (2012) also reported that expectancy beliefs and interest value significantly influenced ninth graders' in-class physical activity. In contrast, Gu and colleagues (2012) found that expectancy-related beliefs were the only significant predictor of middle school students' accelerometer-based physical activity and cardiovascular fitness in their study. To date, scant research has examined the predictive utility of students' expectancy-value beliefs in association with children's other health-related outcomes such as HRQOL. From a public health perspective, the application of the expectancy-value model in school-aged children to explore how these constructs related to HRQOL is warranted.

The expectancy-value model further posits that within particular social contexts an individual's achievement beliefs and behaviors are affected by organization, structure, and teaching practices (Eccles et al., 1983). This motivational sequence of "social factors (individual's perception of socializer's beliefs, expectations and attitudes) → expectancies and values → motivational consequences" proposed by the expectancy-value model can be encountered at global, contex-

tual, and situational motivational levels (Eccles et al. 1983). It is of great consequence to review how children's expectancy-value beliefs may impact their decisions to engage in (or not to engage in) health-related outcomes such as physical activity and other choices that affect HRQOL during school PE based on expectancy-value approach (Gu et al., 2014). In general, the expectancy-value model not only emphasizes social-cognitive processing in the development of motivational beliefs but also in the social and cultural context. In the physical activity literature, many studies have clearly demonstrated the strong link between the strength and quality of students' motivational outcomes including persistence, effort, and intention (Gao et al., 2008), and beliefs about their own ability and goal perspectives (Nicholls, 1984).

In order to understand the predictive application of expectancy-value model from public health perspective, it has been suggested that we should pay attention to not only the anticipated effect but also the antecedents of health-related outcomes among school-aged children (Blair et al., 2001; Gu et al., 2014; Van der Pligt & de Vries, 1998). A single motivation theory may only provide a partial understanding of how motivation translates into children's health-related actions during school, so further research is needed from an integrative perspective (Armitage & Conner, 2001; Solmon, 2015). Exploring how expectancies and values interact with the motivational climate provides an avenue to extend this line of research. Moreover, such considerations could well be a promising avenue for the development of prevention and intervention programs.

4. Perceived Motivational Climate

The concept of motivational climates refers to the goal structures that individuals perceive within an achievement setting that are associated with competence-centered activities (Duda, 2001). Drawing from achievement goal theory (Ames, 1992; Nicholls, 1984), the perceived motivational climate as a social environmental feature is assumed to exert a powerful influence on children's variations in achievement behaviors in sport and PE settings (Ames, 1992; Vazou et al., 2006; Wallhead et al., 2013). Motivational climates created by sociocultural agents such as teachers influence individual's motivation through psychosocial mechanisms such as expectancies and values that help them realize their own progress and that accomplishments can be achieved (Liukkonen et al., 2010). Specifically, parents, coaches, PE teachers, sport heroes, and significant others can develop a mastery or performance motivational climate by communicating their expectations, values, and beliefs, and through the behaviors in sport and PE.

Individuals interpret their sport and physical activity experiences in unique ways and to perceive salient characteristics of the climate based on their experiences. According to Ames (1992), the motivational climate can be characterized in two contrasting dimensions: mastery and performance. A mastery motivational climate emphasizes self-referenced success, effort and individual improvement. The focus is on developing competence rather than demonstrating

normative ability. In contrast, a performance motivational climate focuses on social comparison (e.g. winning or outperforming others) and emphasizes normative ability. Researchers have documented that the motivational climate created by coaches, parents, teachers, and administrators affects individuals' achievement behaviors and competence beliefs (Reinboth & Duda, 2006; Xiang et al., 2006; Zhang et al. 2012). Moreover, how perceptions of ability are enhanced or constrained has been identified as an influential element in the motivational climate (Ames, 1992). Teachers cannot change students' ability levels, but they can create a supportive or mastery climate by using appropriate strategies to encourage and motivate children of diverse abilities to actively engage in class learning activities (Zhang et al., 2012).

Although the influence of significant others have in shaping goal orientations and motivational climates is well established, researchers suggest that the perceptions of motivational climate in PE affect students not only in terms of performance but also health-related well-being (Gu & Solmon, 2016; Liukkonen et al., 2010; Reinboth & Duda, 2006; Standage et al., 2003). Specifically, perceptions of a mastery motivational climate have been positively linked to students' motivation, affective responses and effort (Liukkonen et al., 2010; Standage et al., 2003), which in turn predicted indices of well-being (e.g., subjective vitality and physical symptoms; Reinboth & Duda, 2006). Perceptions of a performance motivational climate, on the other hand, have been associated with a lower sense of connection, value, mutual support, which in turn might negatively influence individual's indices of well-being. Interestingly, children interviewed by Watkinson and colleagues (2005) expressed awareness of the role of the motivational climate might play socially and physically to influence their decisions to participate in an activity. Consistent with this, Xiang, Solmon, and McBride (2006) indicated that if children are not afforded a mastery PE context, it is unlikely they will focus on learning, improving their skill levels, and acquiring the knowledge associated with living healthy and active lifestyles. The study by Standage and colleagues (2012) also revealed that the social context created by a PE teacher (e.g. supportive class climate) had a positive influence on students' motivation and HRQOL.

The literature related to implications of the social context such as motivational climate for children's health-related well-being tends, however, to be more anecdotal than evidence based (Gu et al., 2014). It is important to gain an understanding of how PE teachers can structure their classes to promote motivational processes such as expectancy and value beliefs that will in turn facilitate behaviors that will increase school-aged children's motivation, physical activity, and health-related well-being as reflected by their HRQOL. Moreover, the mechanisms by which the individual and social factors interacted together towards school-aged children's health-related well-being remain largely unexplored. Gao and colleagues (2008) concluded that the motivational climate in PE, is a powerful influence children's sense of expectancy beliefs, values and participation. Thus, the expectancy-value approach could help to enhance our understanding

of the antecedents of health-related outcomes and also help to enhance the predictive power of expectancy-value model from the public health perspective (Gu & Solmon, 2016; Van der Pligt & de Vries, 1998).

Sport and physical activity settings are contexts where children and adolescents frequently engage in spontaneous social interactions. There is a call for more empirical research that uses motivational constructs such as the expectancy-value approach to drive a research agenda that can guide efforts to structure climates designed to influence school-aged children's quality of life and health behaviors. Exploring the research application and motivational mechanism towards HRQOL among children and adolescents based on the expectancy-value approach is a viable avenue to pursue as we explore ways to encourage children to be physically active and adopt healthy life styles across the life span.

5. Future Research Directions

In light of the evidence that PA can enhance HRQOL across the lifespan, and that activity patterns established in childhood track into adulthood, investigating how PE programs can promote children's PA is an important area of research. The initial evidence that children's physical activity is positively related to their HRQOL aligned with Blair et al.'s health model (2001), which adds impetus to the need for further investigation. A series of research studies is needed to lay the foundation to establish this line of inquiry. First, there is a need further research to more clearly establish and explore the relationship between HRQOL and other behavioral factors (e.g., physical fitness and motor proficiency) proposed in the health model (Blair et al., 2001) among children and adolescents. Once the relationship between physical activity and HRQOL is better understood, consideration of both individual and social determinants of the HRQOL construct is an important area for further study (see reviews, Armitage & Conner, 2001; Van der Pligt & de Vries, 1998).

In this article we addressed the potential relevance of two factors (individual and social factors) in understanding physical activity and HRQOL based on expectancy-value model. Second, we presented evidence indicating that paying explicit attention to classroom climate and PE-related beliefs and values affect as a determinant of health behavior could help to improve our insight in the motivation structure underlying children and adolescents' HRQOL. Moreover, incorporating anticipated motivational mechanism could also help to improve the practical application of expectancy-value approach in the area of health promotion in school setting (Solmon, 2015),

The expectancy-value model of achievement choice is a viable framework to guide research to provide a clearer understanding of school-aged children's motivation and physical activity behaviors as they relate to health-related well-being reflected by HRQOL. Investigation of the characteristics of the motivational climates that have a positive influence on these relationships is also an important avenue of inquiry. Theoretical predictions are that a mastery climate in PE classes should positively relate to expectancies and values, which in turn trans-

late to higher levels of participation in physical activity, and ultimately improved HRQOL in children, but these hypotheses need to be tested.

As this line of research develops, we need to move past correlational and cross-sectional designs that represent a “snapshot” approach to explore these motivational constructs across time. Longitudinal studies where expectancy value beliefs, motivational climates, physical activity and HRQOL are assessed over several time periods are needed to further our understanding of the reciprocal effects of these constructs. In due course, based on this line of inquiry, theoretically driven interventions need to be designed and tested. It will be important to determine the effectiveness of interventions that manipulate motivational climates with the intent of fostering expectancies and values that will ultimately produce increased physical activity levels and HRQOL. In addition, there is a lack of information regarding the appropriate physical activity dose needed to achieve benefits in physical, psychological, and social function. Future research efforts should focus on identifying variations in the frequency, duration, and intensity components of physical activity programming that result in functional improvement in HRQOL.

6. Implications for Practice

Even though the investigation of the relationships among children’s HRQOL, physical activity, expectancy values, and motivational climates is in its infancy, several implications for practice are supported based on the evidence presented in this paper. First, the HRQOL construct can be used to identify children who are at-risk for poor physical and mental health status, which in turn can guide efforts to provide support for them from practitioners and significant others. Measuring HRQOL can provide parents and teachers with important information concerning school-aged children’s perceptions of health and quality of life that provides a basis for action when there is cause for concern. The demonstration of a positive relationship between HRQOL and physical activity levels could provide individuals with motivation to be more physically active. Assessment and promotion of physical activity may be beneficial in achieving desired mental health benefits across diverse populations.

In addition, health promotion programs for school-aged children should consider the expectancy-value approach and its applications in the field of school health psychology. Specifically, practitioners and researchers need to focus on the development and implementation of programs that maximize expectancy-value beliefs, and reinforce the value of positive activity outcomes (e.g., increased physical, psychological, and social aspects of quality of life). The application of such models related to school-aged children’s HRQOL in pediatric intervention programs, however, requires consideration of both individual and social level factors.

There is a broad agreement that effective public health approaches aimed at promoting health-related outcomes should emphasize not only the individual factors (i.e., expectancy-value beliefs) but also the role of social environment, characterized in this paper as the motivational climates, as a key modifiable de-

terminant of physical activity and improved HRQOL (Carvalho & Matos, 2014; Qusted & Duda, 2010). A supportive learning environment favoring a mastery-involved climate and individualized criteria for success should be emphasized so that students can more easily achieve a sense of success, establish and maintain positive ability perceptions, and promote a general sense of well-being.

Physical activity participation is a motivated behavior, in that a student ultimately must decide whether or not to actually engage in that behavior. As noted by Wigfield and Eccles (2002), there is an important decision-making component to motivation. Indeed, individuals make different types of decisions depending on the contextual information that is presented to them. Thus, one of the logical implications of the research on children's physical activity is that PE teachers and other professionals can and do affect students' decision-making process/intention. Consequently, they must make every effort to create a positive climate that will foster students' motivation.

7. Conclusion

School PE and sport programs are important settings in efforts to increase school-aged children's physical activity levels and therefore, are primary avenues for helping children learn the skill and knowledge needed to lead a healthy and physically active lifestyle (Whitehead, 2013). In addition, it has been suggested that HRQOL may be an influential predictor of future health and health care needs as well as identifying functional aspects of children's mental health that are at risk (Ferrans et al., 2005; Gu et al., 2014; Lacy et al., 2012). We do not, however, clearly understand the behavioral mechanism of health outcomes specifically referred as HRQOL in this article.

The relationship between children's motivation and the social context is complex (Liukkonen et al., 2010). From the theoretical perspective addressed in this review, children's physical activity and their HRQOL are influenced by social contexts. Limited studies, however, have examined the theoretical-based mechanism that influence children's HRQOL in a physical activity context. Children's HRQOL appears to be related to behavioral factors (Blair et al., 2001) and the expectancy-value beliefs (Gu & Solmon, 2016), thus the combined effects of both motivational and behavioral factors to HRQOL are suggested. The present evidence also suggests that a mastery motivational climate can directly or indirectly influence students' health outcomes (e.g., physical and mental function measured by HRQOL) through expectancy-value beliefs in PE (Gu & Solmon, 2016). Currently, there is no systematic approach guiding school-based health intervention and the motivational mechanism towards HRQOL among children and adolescents has not been clearly established. This area of inquiry has the potential to provide valuable insight that can guide interventions targeting school-aged children's overall health-related well-being.

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